
FINAL

**ENVIRONMENTAL ASSESSMENT (EA)
FOR
CONSTRUCTION OF F-35/T-7 MAINTENANCE CAMPUS AT
HILL AIR FORCE BASE, UTAH**



PREPARED FOR:
Department of the Air Force

March 2021

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**FINAL Environmental Assessment for
Construction of F-35/T-7 Maintenance Campus at Hill AFB, Utah**

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GLOSSARY OF ABBREVIATIONS AND ACRONYMS

°F	Degree(s) Fahrenheit
ABW	Air Base Wing
ACAM	Air Force Conformity Applicability Model
AFB	Air Force Base
AFCEC	Air Force Civil Engineer Center
AFI	Air Force Instruction
AFMAN	Air Force Manual
AGE	Aerospace Ground Equipment
AICUZ	Air Installations Compatible Use Zones
amsl	Above Mean Sea Level
BASH	Bird/Wildlife Aircraft Strike Hazard
BMP	Best Management Practice
CDP	Chemical Disposal Pit
CEQ	Council on Environmental Quality
CFR	<i>Code of Federal Regulations</i>
CO	Carbon Monoxide
CO ₂ e	Carbon Dioxide Equivalent
dB	Decibel(s)
dBA	Decibel(s) (A-weighted scale)
DCE	Dichloroethene
DNL	Day-Night Average Sound Level
DNWG	Defense Noise Working Group
DoD	U.S. Department of Defense
DoDI	Department of Defense Instruction
DSOR	Designated Source of Repair
EA	Environmental Assessment
EIAP	Environmental Impact Analysis Process
EIS	Environmental Impact Statement
EO	Executive Order
EPA	U.S. Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FONSI	Finding of No Significant Impact
ft ²	Square Foot/Feet
GHG	Greenhouse Gas
gpd	Gallon(s) Per Day
HVAC	Heating, Ventilation, and Air Conditioning
INRMP	Integrated Natural Resources Management Plan
LNAPL	light non-aqueous phase liquid
MBTA	Migratory Bird Treaty Act of 1918
MCL	Maximum Contaminant Level
mg/y	Million Gallon(s) Per Year
NA	Not Applicable
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act of 1969
NH ₃	Ammonia
NHPA	National Historic Preservation Act of 1966
NOA	Notice of Availability
NOAA	National Oceanic and Atmospheric Administration

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NO _x	Nitrogen Oxides
O ₃	Ozone
OO-ALC	Ogden Air Logistic Complex
OU	Operable Unit
Pb	Lead
PM	Particulate Matter
PM ₁₀	Particulate Matter Less than 10 Micrometers in Aerodynamic Diameter
PM _{2.5}	Particulate Matter Less than 2.5 Micrometers in Aerodynamic Diameter
PTE	Potential to Emit
ROI	Region of Influence
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SO ₂	Sulfur Oxide
TACAN	Tactical Air Navigation
tpy	Ton(s) Per Year
TRC	Technology Repair Center
U.S.	United States
U.S.C.	<i>United States Code</i>
UDOT	Utah Department of Transportation
UFC	United Facilities Criteria
USAF	U.S. Air Force
USCB	U.S. Census Bureau
USDA	U.S. Department of Agricultural
USDOT	U.S. Department of Transportation
USGS	U.S. Geological Survey
VOC	Volatile Organic Compound
WBWCD	Weber Basin Water Conservancy District

1.0 PURPOSE OF AND NEED FOR ACTION

1.1 INTRODUCTION

The 75th Air Base Wing (75 ABW) at Hill Air Force Base (AFB), Utah, and Headquarters Air Force Materiel Command have identified the need to construct a new F-35/T-7 Maintenance Campus to support depot level maintenance of the F-35 and T-7 aircraft (Figure 1-1). This environmental assessment (EA) was prepared to evaluate the potential environmental impacts of this proposed project in compliance with the National Environmental Policy Act of 1969 (NEPA) (42 *United States Code* [U.S.C.] Sections 4331 et seq.), the regulations of the President's Council on Environmental Quality (CEQ) that implement NEPA procedures (*Code of Federal Regulations* [CFR], Title 40, Parts 1500 through 1508 and 1515 through 1518), the Air Force Environmental Impact Assessment Process Regulations at 32 CFR Part 989, and Air Force Instruction (AFI) 32-1020 (Secretary of the Air Force, 2019).

Hill AFB is in Utah, 30 miles north of Salt Lake City, and occupies 6,650 acres of land. It was established in 1940 and has hosted a variety of missions and aircraft types throughout its history. Hill AFB is home to the 75 ABW. Depot maintenance is performed by the Air Force at Hill AFB, Tinker AFB, and Robins AFB. The Ogden Air Logistics Complex (OO-ALC), headquartered at Hill AFB, performs fighter repairs; specifically, major industrial operations at Hill AFB include depot level maintenance of the F-35 Lightning II, F-22 Raptor, F-16 Fighting Falcon, C-130 Hercules, T-38 Talon, A-10 Thunderbolt II, and 27 other actively flying, mature, and proven weapon systems. Additionally, the OO-ALC performs depot maintenance of intercontinental ballistic missiles and related equipment and is a worldwide center for landing gear repair.

The Air Force uses the Designated Source of Repair (DSOR) decision process to ensure the effective use of depot maintenance resources and prevent unnecessary duplication while meeting statutory requirements. Ultimately, the DSOR process optimizes the use of established depot capabilities while reducing the overall program cost. In a memorandum dated 9 June 2019, the Air Force, through a strategic source of repair determination, identified Hill AFB as the installation designated to support depot maintenance capabilities for the F-35 and T-7 aircraft (USAF, 2019a). Hill AFB has also been designated the Technology Repair Center (TRC) for these aircraft.

Depot-level maintenance is major rework or repair requiring specialized tools, infrastructure, and personnel, and repairs to the F-35 and T-7 aircraft require elevated levels of security. The activities required include aircraft disassembly, cleaning, inspecting, reassembly, and operational testing. The maintenance facilities for the F-35 and T-7 aircraft must be located at an installation designated as the TRC for the weapon system and its components. In addition, the maintenance facilities must meet the elevated security requirements specific to the F-35 and the T-7 aircraft. Therefore, Hill AFB is the only installation where this maintenance facility can be constructed.

The F-35 aircraft began arriving at Hill AFB in 2015 for depot repair and modification. An increase in the workload for the F-35 aircraft is expected in the coming years. The T-7 aircraft are expected to start arriving at Hill AFB within the next 6 to 8 years. Currently, limited F-35 aircraft maintenance and repair activities are being conducted at Hill AFB. Existing repair facilities at Hill AFB are at full capacity, have no room to accommodate the projected increase in the F-35 and T-7 workload, and do not have the facilities and technical capabilities to complete the projected increased repair workload for the F-35 and T-7 aircraft. Construction of the proposed F-35/T-7 Maintenance Campus is expected to begin in the fall of 2021. F-35 maintenance is expected to begin in the new facilities as early as 2024.

The information presented in this document will serve as the basis for deciding whether the Proposed Action would result in a significant impact to the human environment, requiring the preparation of an environmental impact statement (EIS), or whether no significant impacts would occur, in which case a finding of no significant impact (FONSI) would be appropriate.

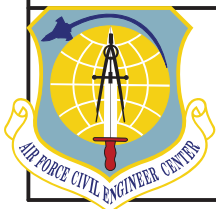
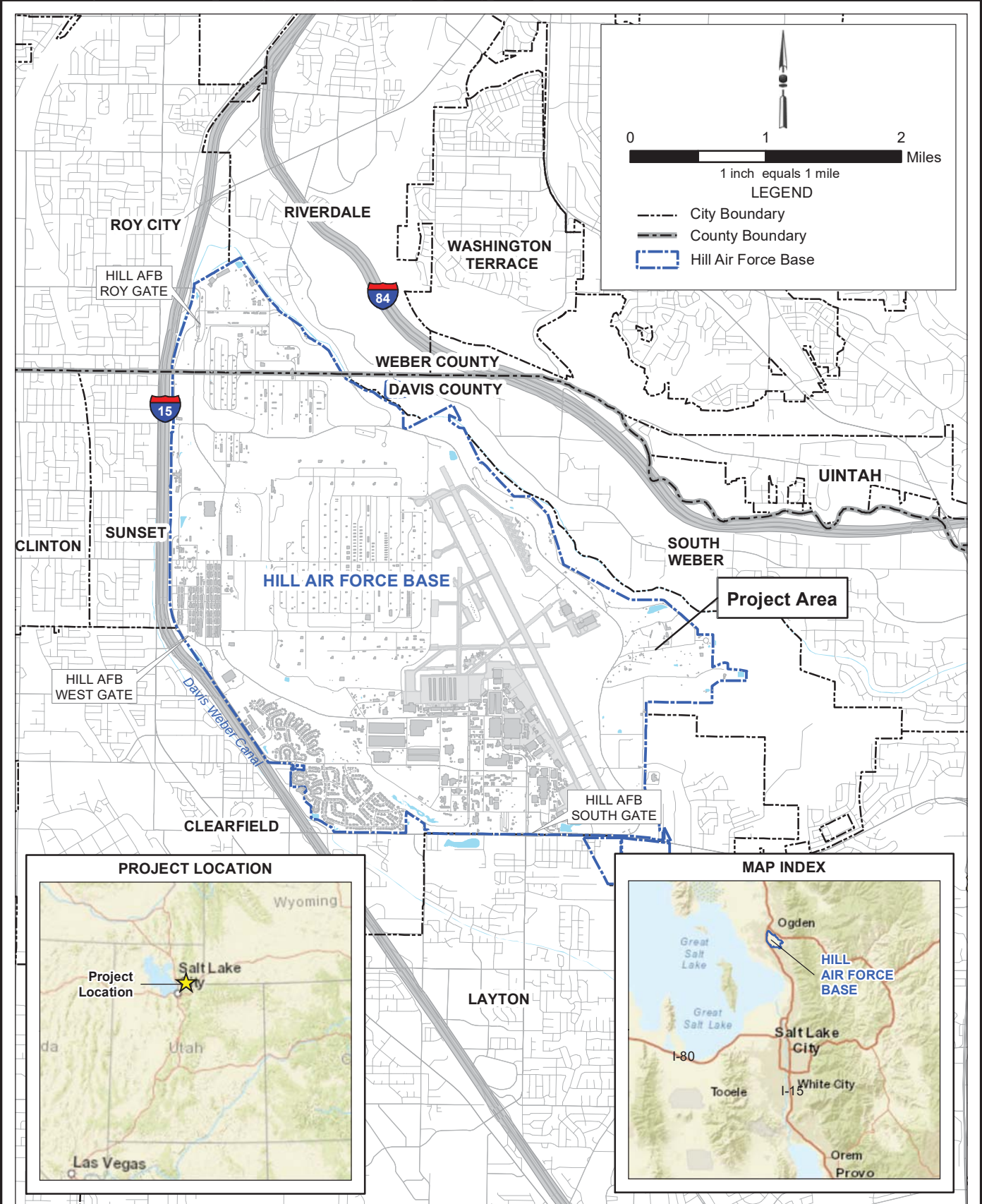


FIGURE 1-1
LOCATION OF HILL AIR FORCE BASE
 ENVIRONMENTAL ASSESSMENT
 PROPOSED F-35/T-7 MAINTENANCE CAMPUS AREA
 HILL AIR FORCE BASE, UTAH

1.2 PURPOSE OF AND NEED FOR THE ACTION

The purpose of the Proposed Action is to provide adequately sized facilities in support of F-35 and T-7 depot-level maintenance activities at Hill AFB. The need for the Proposed Action is to meet depot maintenance requirements driven by the Air Force's assignment of Hill AFB as the F-35/T-7 DSOR and TRC and to allow for future workload increases. The current facilities do not have enough capacity to meet the Air Force's goal of a mission-capable rate of 80 percent while continuing to support the overhaul, testing, and repair of these aircraft and their components. Without the Proposed Action, Hill AFB would lack the necessary resources to meet the current and future demands for advanced composite repairs.

1.3 INTERAGENCY/INTERGOVERNMENTAL COORDINATION AND CONSULTATIONS

1.3.1 Interagency Coordination and Consultations

Scoping is an early, 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 U.S.C. Section 4231(a)) and Executive Order (EO) 12372, "Intergovernmental Review of Federal Programs," federal, state, and local agencies with jurisdiction that could be affected by the Proposed Action were notified during the development of this EA.

Appendix A contains the list of agencies consulted during this analysis and copies of correspondence.

1.3.2 Government to Government Consultations

The National Historic Preservation Act of 1966 (NHPA) and its implementing regulations at 36 CFR Part 800 require agencies to engage in government-to-government consultation with federally recognized tribes to identify Traditional Cultural Properties within the area of potential effects and resolve effects. Consistent with Department of Defense Instruction (DoDI) 4710.02, *DoD Interactions with Federally Recognized Tribes*, and Air Force Instruction 90-2002, *Air Force Interactions with Federally-Recognized Tribes*, federally recognized tribes that are historically affiliated with the Hill AFB geographic region were invited during the project scoping phase to consult on all proposed undertakings that have the potential to affect properties of cultural, historic, or religious significance to the tribes. The tribal consultation process is distinct from NEPA consultation or the interagency coordination process, and it typically requires separate notification of all relevant tribes. The timelines for tribal consultation are also distinct from those of other consultations. The Hill AFB point-of-contact for Native American tribes is the Installation Commander. The Native American tribal governments that were coordinated or consulted with regarding these actions are listed in Appendix A.

1.3.3 Other Agency Consultations

Findings of effect and request for concurrence were transmitted to the Utah State Historic Preservation Officer (SHPO) per the requirements of Section 106 of the NHPA and implementing regulations (36 CFR Part 800).

Concurrence with the finding of "no adverse effect for the proposed undertaking" was received from the SHPO on 20 August 2020.

1.4 PUBLIC AND AGENCY REVIEW OF EA

A Notice of Availability (NOA) of the Draft EA and FONSI was published in the newspapers of record (listed below), announcing the availability of the EA for review on 26 January 2021. The NOA invited the public to review and comment on the Draft EA. The public and agency review period ended on 26

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February 2021. The NOA was published in the following newspaper: *Standard-Examiner*. One public comment was received during the public review period. The commenter stated that existing noise from the F-35 aircraft at Hill AFB disturbs the quality of life. The effects of noise from operation of F-35 aircraft on Hill AFB were analyzed previously in an Environmental Impact Statement (USAF, 2013) and in the 2018 Air Installations Compatible Use Zones (AICUZ) Study for Hill AFB. The AICUZ Program is an extensive analysis of the effects of aircraft noise, aircraft accident potential and land use development upon present and future neighbors of Hill AFB. The noise analysis included in Section 4.4 of this EA examines the increase in noise that would result from the Proposed Action and concludes that there would be an increase of approximately 2 percent in airfield operations which would be a slight increase in noise levels from aircraft. Therefore, changes to the noise section of this EA were not required.

1.5 DECISION TO BE MADE

The EA evaluates whether the Proposed Action would result in significant impacts on the human environment. If significant impacts are identified, Hill AFB would undertake mitigation to reduce impacts to below the level of significance, undertake the preparation of an EIS addressing the Proposed Action, or abandon the Proposed Action.

This EA is a planning and decision-making tool that will be used to guide Hill AFB in implementing the Proposed Action in a manner consistent with Air Force standards for environmental stewardship.

2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.1 PROPOSED ACTION

The Air Force and Hill AFB propose to construct a F-35/T-7 Maintenance Campus to satisfy the purpose of, and need for, the action described in Sections 1.2 and 1.3. The Proposed Action includes construction and operation of maintenance facilities at Hill AFB to support depot-level maintenance of F-35 and T-7 aircraft. Approximately 2,480 new personnel would be hired to support the maintenance mission, the majority of which would be civilian employees. The construction and operation of the proposed campus would:

- Meet applicable DoD installation master planning criteria, consistent with Unified Facilities Criteria (UFC) 2-100-01, *Installation Master Planning, with Change 2*.
- Align with the 2020 Air Force Civil Engineering Strategic Plan (USAF, 2020a).
- Meet current Air Force requirements for functional space, consistent with UFC 4-211-01, *Aircraft Maintenance Hangers, with Change 2* (18 May 2020).
- Meet applicable DoD antiterrorism/force protection criteria, consistent with UFC 4-010-01, *DoD Minimum Antiterrorism Standards for Buildings, with Change 1*.
- Meet applicable environmental laws and regulations, such as Section 106 of the NHPA and implementing regulations (36 CFR Part 800), Section 7 of the Endangered Species Act and implementing regulations, Fish and Wildlife Coordination Act of 1958, the Migratory Bird Treaty Act (MBTA), Migratory Bird Conservation Act, the Water Resources Development Act, the Clean Water Act, Clean Air Act, Safe Drinking Water Act, Resource Conservation and Recovery Act, and the Endangered Species Act.
- Meet UFC 3-260-01, *Airfield and Heliport Planning and Design, with Change 1*, to easily access and move an aircraft into a depot maintenance hangar bay.

Approximately 204 F-35 and 17 T-7 aircraft would be able to be serviced at Hill AFB each year after facilities are completed and as the F-35 and T-7 fleet reach their full complement. Four aircraft operations would be required for each aircraft flying into Hill AFB for maintenance: a landing at Hill AFB, a take-off and a landing for a Functional Check Flight, and a take-off from Hill AFB. Engine tests would not be conducted near the maintenance facilities; instead, they would be conducted on the runway during the Functional Check Flight, as required. Functional Check Flights would take place over the Utah Test and Training Range and would follow the existing Military Training Routes and other existing airspace areas designated for military flight operations conducted into and out of Hill AFB. No changes to airspace configurations (i.e., size, shape, or location) are proposed or would be required to support the implementation of the Proposed Action.

F-35 aircraft currently bedded down at Hill AFB are being maintained and repaired at existing facilities on Hill AFB. The construction of the F-35/T-7 Maintenance Campus would allow for an increase in the number of aircraft that can be maintained and for additional maintenance F-35-specific maintenance to occur. Additional F-35 aircraft could begin being maintained at Hill AFB starting in 2024 as new facilities are completed. The T-7 aircraft are still in the design and construction phase and the dates that these aircraft will start arriving at Hill AFB for maintenance activities and the detailed specification of the required maintenance are not known. The maintenance facilities would be constructed in a phased manner over the next 20 years. Detailed planning for construction of most of the facilities related to the F-35/T-7 maintenance is underway and is considered Phase 1 of the overall project. The remaining construction would occur under later phases of the project lifetime. Those projects are still being designed and details are not yet available. Therefore, this EA contains both programmatic analyses and detailed analyses of specific actions. The Proposed Action includes: (1) well-defined projects and aircraft operations that

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could be implemented upon completion of this NEPA analysis; and (2) projects and aircraft operations that are not well-defined or that have unspecified locations for which programmatic analyses are appropriate. As those projects and aircraft details become better defined, tiered NEPA documents would be completed in the future.

The F-35/T-7 Maintenance Campus would include the construction of the facilities described in this section and as shown on Figures 2-1, 2-2, and 2-3. The locations shown on Figures 2-1, 2-2, and 2-3 are approximate and could change slightly during final design.

2.1.1 F-35 Canopy Repair Facility

The F-35 Canopy Repair Facility would consist of a single-story, medium bay 75,000-square-foot (ft²) industrial facility with a 20-foot-high ceiling. The building would consist of reinforced concrete footings, foundation, and floor slabs; structural steel-framed, insulated masonry walls; and insulated, steel-frame roof. This facility would support a workforce of 200 people. The proposed facility would be for the maintenance and repair of canopy assemblies associated with fifth generation fighter aircraft. The facility would have secure areas. The facility would also include enclosed loading dock(s), restrooms, conference room(s), fire detection and suppression, intrusion detection, and all other supporting facilities, including an adequate parking lot, other required pavements, communication support, site improvements, and required utilities, such as sanitary sewer, storm drain system, industrial waste, potable and non-potable water, electrical, and natural gas. The construction of the canopy repair facility would occur in Phase 1 of the project and is analyzed in detail in this EA.

2.1.2 F-35 Maintenance Facility

The F-35 Maintenance Facility would consist of two multi-bay, medium height, approximately 250,000-ft² composite fighter aircraft maintenance hangars with parts storage, equipment, back shop, and administrative areas. Each building would support a workforce of 250 people. The buildings would include composite aircraft corrosion control capability with one paint booth and one de-paint bay. The buildings would have reinforced concrete footings, foundation, and floor slab and structural steel-frame insulated walls and roof. The buildings would have lightning protection, fire detection/suppression, intrusion detection, and all required facilities to fulfill mission requirements, including utilities, pavements, site improvements, and communication support. The construction of one hangar would occur in Phase 1 of the project and is analyzed in detail in this EA. The construction of the second hangar would occur in a later phase of the project, is considered programmatically in this EA, and will receive additional site-specific analysis prior to construction.

2.1.3 F-35 Composite Repair and Training Facility

Phase 1 of the F-35 Composite Repair and Training Facility would consist of a two-story 29,234-ft² secure facility and a collocated single-story 187,000-ft², 30-foot-high bay composite repair facility to house a workforce of approximately 100 people. These facilities would accommodate the maintenance, modification, remanufacturing, and replacement of component parts for F-35 fighter aircraft for depot repair or modification. The facility would provide specialized advanced technical training for workforce personnel currently maintaining and repairing composite components for the B-2, F-22, F-35, and unmanned aerial vehicles. It would be used to train personnel hired for future workloads associated with these programs. This would consolidate training and repair missions in the same location. The Composite Repair and Training Facility could be expanded during later phases of this project lifetime. Each additional phase could add an approximately 29,000-ft² two-story facility and a 187,000-ft² bay. Each addition would support a workforce of 100 people, for a total workforce of 400 people at the end of all construction. The Phase 1 portion of this facility is analyzed in detail in this EA. Later phases are considered programmatically in this EA and will receive additional site-specific analysis prior to construction.

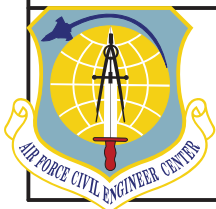
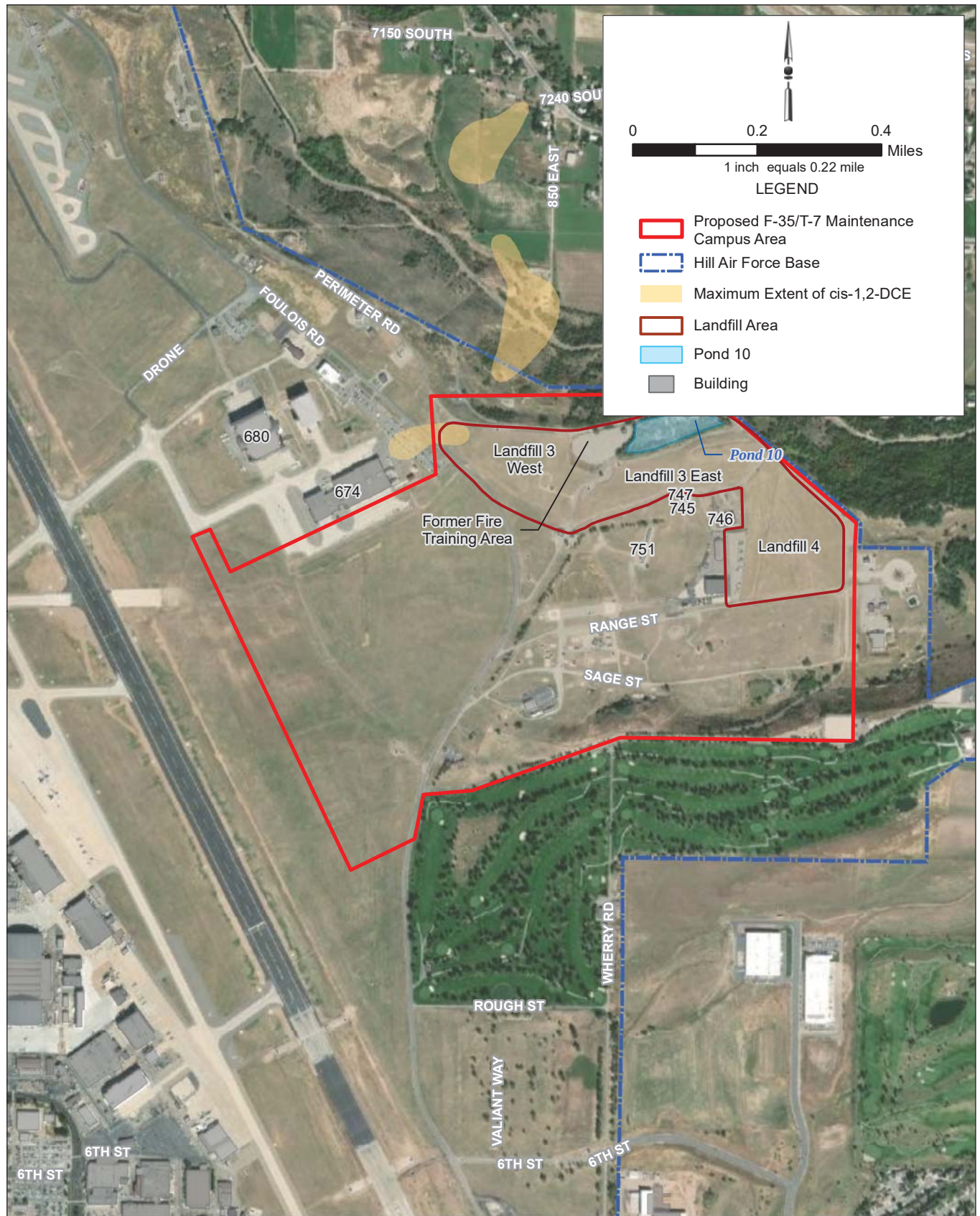
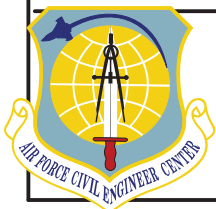
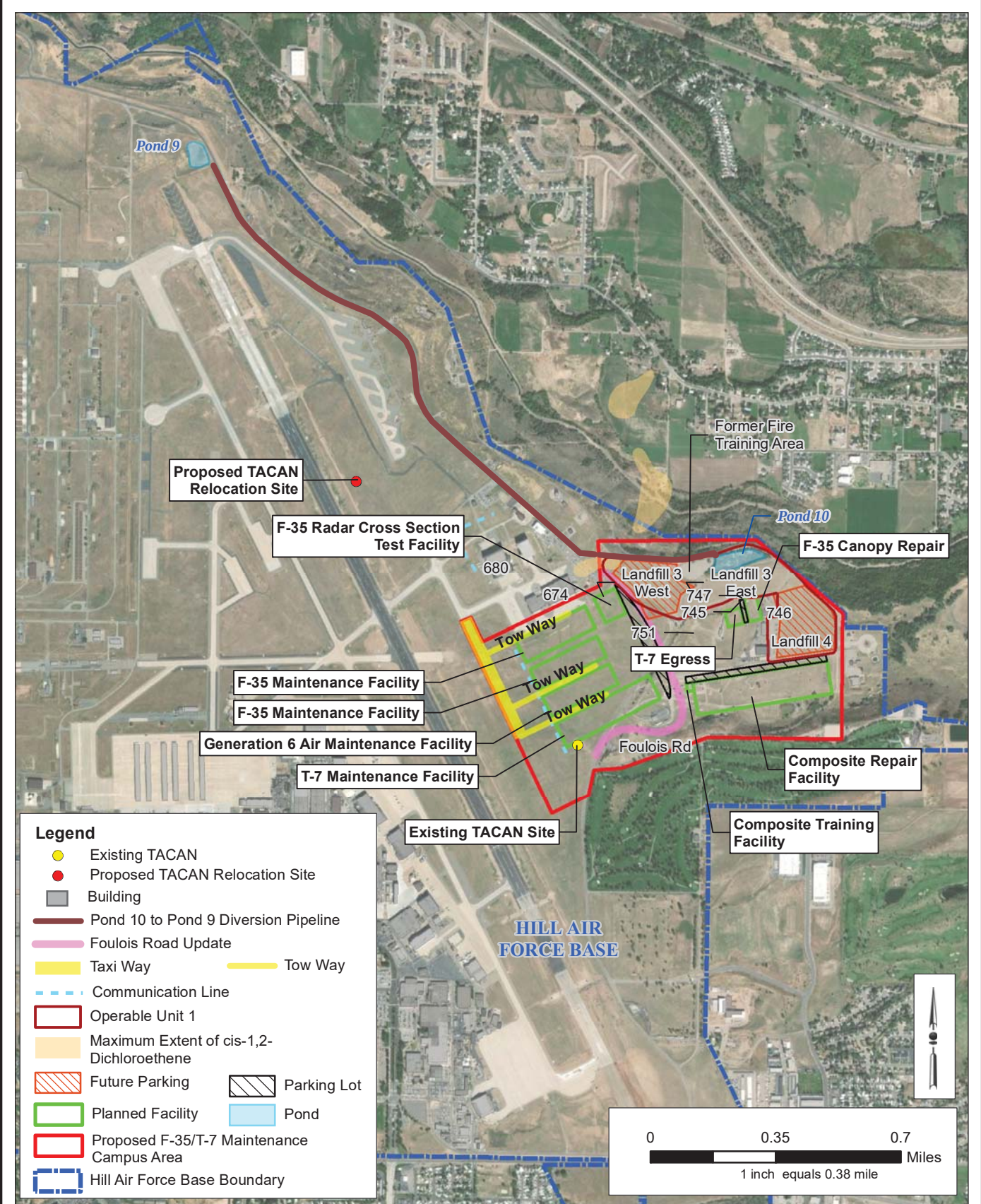


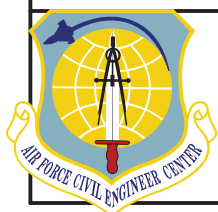
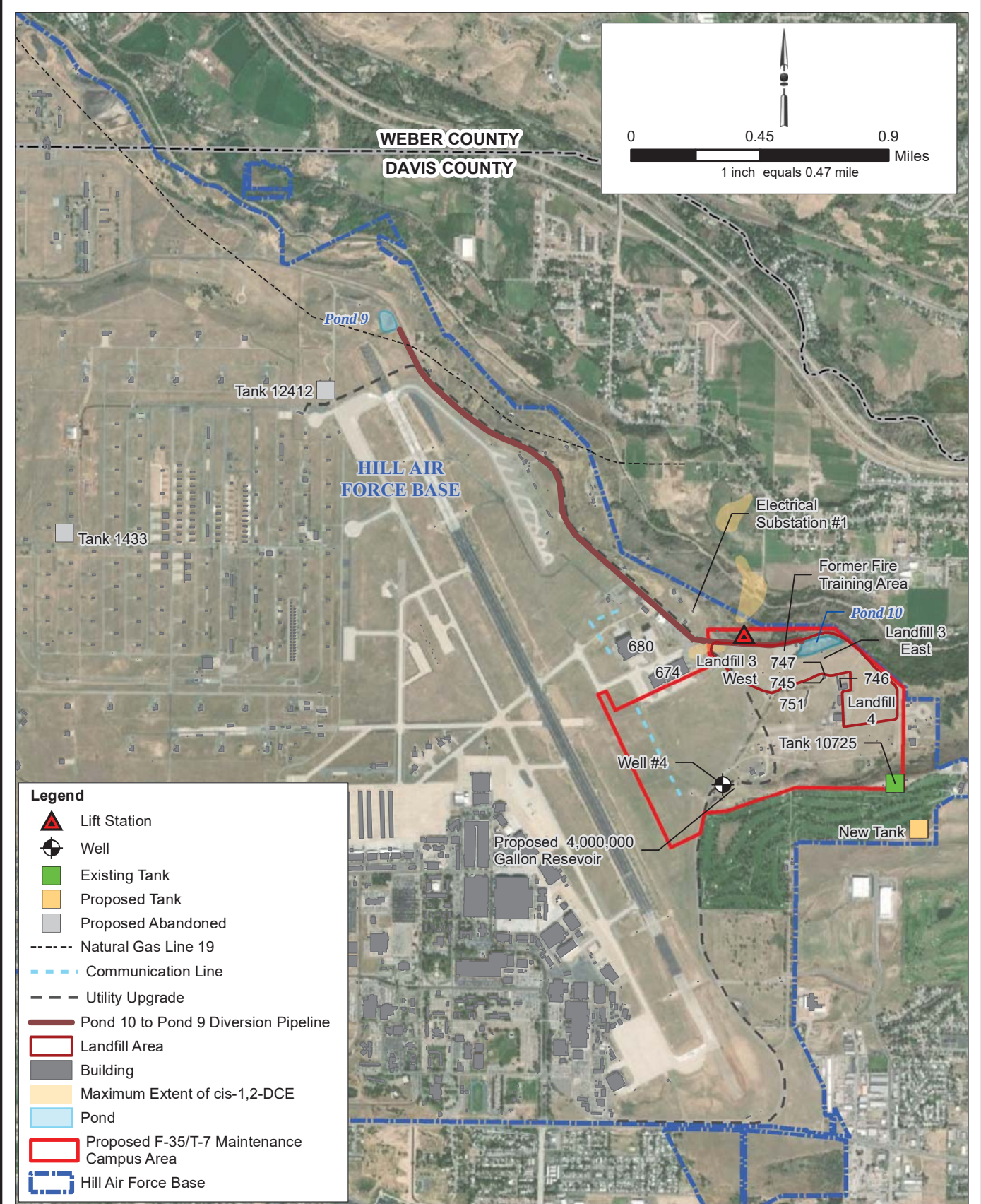
FIGURE 2-1
LOCATION OF PROPOSED F-35/T-7 MAINTENANCE CAMPUS ON HILL AFB
 ENVIRONMENTAL ASSESSMENT
 PROPOSED F-35/T-7 MAINTENANCE CAMPUS AREA
 HILL AIR FORCE BASE, UTAH

Source:
 Imagery from ESRI online image service: Maxtar, July 2018.



Source:
Imagery from ESRI online image service: Maxtar, July 2018.

FIGURE 2-2
CONCEPTUAL LAYOUT OF PROPOSED FACILITIES
ENVIRONMENTAL ASSESSMENT
PROPOSED F-35/T-7 MAINTENANCE CAMPUS AREA
HILL AIR FORCE BASE, UTAH



Source:
Imagery from ESRI online image service: Maxtar, July 2018.

FIGURE 2-3
CONCEPTUAL LAYOUT OF PROPOSED
UTILITY UPGRADES
ENVIRONMENTAL ASSESSMENT
PROPOSED F-35/T-7 MAINTENANCE CAMPUS AREA
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2.1.4 T-7 Maintenance Facility

The T-7 Maintenance Facility would consist of an open bay, medium height, approximately 441,000-ft² facility with parts storage, equipment, back shop, and administrative areas. The T-7 Maintenance Facility would include an Engine Shop and Program System Support Facility, which would house a workforce of approximately 260 support personnel for the maintenance, modification, remanufacturing, and replacement of component parts for T-7 aircraft. The facility would also provide technical training for workforce personnel. The T-7 Maintenance Facility would include one paint booth and one de-paint bay. The proposed facility would have reinforced concrete footings, foundation, and floor slab; structural steel-frame insulated walls and roof; lightning protection; fire detection and suppression; utilities; and communication support. This project is required to accommodate the airframe maintenance, modification, remanufacturing, and replacement of component parts for T-7 aircraft for depot repair or modification. The overhaul and repair activities required include aircraft disassembly, cleaning, inspecting, reassembly, and operational testing.

The construction of the T-7 Maintenance Facility would occur in Phase 1 of the project and is analyzed in detail in this EA.

2.1.5 T-7 Egress and Seat Shop

The T-7 Egress and Seat Shop would consist of a single-story 16,000-ft² egress canopy and seat shop repair facility. The facility would require blast-resistant walls for the ejection seat storage and repair bays. This facility would support a workforce of 10 people. The construction of the Egress and Seat Shop would occur in Phase 1 of the project and is analyzed in detail in this EA.

2.1.6 F-35 Radar Cross Section Test Facility

The Radar Cross Section Test Facility would consist of an approximately 60,000-ft² facility required to conduct radar cross testing on aircraft after depot maintenance and on fielded aircraft. This facility would support a workforce of 10 people. The construction of the Radar Cross Section Test Facility would occur in Phase 1 of the project and is analyzed in detail in this EA.

2.1.7 Corrosion Control Facility

The Corrosion Control Facility would consist of an approximately 223,000-ft² facility to support aircraft paint and blast operations. The facility would support a workforce of 150 people. The timing of the construction of the Corrosion Control Facility is not known at this time. The construction and operation of the Corrosion Control Facility is considered programmatically in this EA and will receive additional site-specific analysis prior to construction, once design and operations specifications are known.

2.1.8 Generation 6 Aircraft Maintenance Facility

The Generation 6 Aircraft Maintenance Facility would support aircraft paint and blast operations for the next generation of fighter jets that are anticipated to be added to the Hill AFB DSOR workload. Exact specifications for the facility are not yet known, but it is anticipated that the facility would support a workforce of 150 people and be approximately 223,000 ft². The timing of the construction of the Generation 6 Aircraft Maintenance Facility is not known at this time. The construction and operation of the Generation 6 Aircraft Maintenance Facility is considered programmatically in this EA and will receive additional site-specific analysis prior to construction, once design and operations specifications are known.

2.2 SELECTION STANDARDS

NEPA and the CEQ regulations mandate the consideration of reasonable alternatives for the Proposed Action. “Reasonable alternatives” are those that also could be used to meet the purpose of, and need for, the Proposed Action. Per the requirements of 32 CFR Part 989, *Environmental Impact Analysis Process (EIAP)*, the selection standards are used to identify alternatives for meeting the purpose of, and need for, the Proposed Action.

In selecting the best possible location for the construction of the proposed F-35/T-7 Maintenance Campus, the Air Force also considered the following technical criteria to evaluate sites on and off Hill AFB:

- A. TRC
 - a. Must be located at an installation designated as the TRC for a weapon system and its components
- B. Elevated Security
 - a. Must meet elevated security requirements specific to the F-35 and the T-7 aircraft
- C. Accommodate future workload
 - a. Must be able to support the existing and future workload of the F-35 and T-7 aircraft without disrupting the existing workload for other aircraft at Hill AFB
- D. Consolidated Activities
 - a. Optimize space utilization
 - b. Reduce transportation times
 - c. Reduce repair timelines
 - d. Minimize risk for parts to be damaged during transport
- E. Distance to repair facilities from the Hill AFB runway
 - a. Minimize travel distance when taxing or towing aircraft from the runway
- F. Facilities and infrastructure
 - a. Must be able to connect to utility and communications infrastructure

2.3 SCREENING OF THE ALTERNATIVES

The following potential alternatives that could meet the purpose and need for the Proposed Action were considered:

- Construct F-35/T-7 Maintenance Campus on Hill AFB
- Construct Separate F-35 and T-7 Maintenance Campuses at Hill AFB
- Lease Facilities Off-base
- Use Existing Facilities on Hill AFB
- Locate at Another Depot

The selection standards described in Section 2.2 were applied to these alternatives to determine which alternatives could serve the purpose of, and need for, the Proposed Action.

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2.3.1 Construct Separate F-35 and T-7 Maintenance Campuses at Hill AFB

Separate locations and campuses for the F-35 and T-7 aircraft were considered during the planning process. Both aircraft require maintenance facilities next to the runway. There are strict requirements regarding the areas to which these aircraft can be moved. For example, towing aircraft becomes more difficult with increased distance away from the runway, and towing aircraft across a roadway is not allowed without significant preparation. Therefore, construction of two separate campuses near the runway was considered. There is limited land space available near the runway because of existing development. As discussed under the Proposed Action, there is open space on the eastern side of the runway north of Building 680 and south of Building 674. However, the area north of Building 680 is set aside for another mission's facility and, therefore, is unavailable for construction. The only remaining location that exists on Hill AFB is east of the runway, south of Building 674.

This alternative was dismissed from further consideration because Hill AFB does not have two separate areas available in which to build separate campuses and because this alternative would not meet technical criteria A and B as shown in Table 2-1. Locating the support shops near the facilities has advantages, including reduced transportation times and emissions. In addition, it allows the program office to be near those maintenance activities that it oversees. Locating the support shops farther away on Hill AFB will remove those advantages.

Table 2-1. Screening of the Alternatives

Technical Criteria	Construct F-35/ T-7 Maintenance Campus on Hill AFB	Construct Separate F-35 and T-7 Maintenance Campuses at Hill AFB	Lease Facilities Off-base	Use Existing Facilities on Hill AFB	Locate at Another Depot
A. TRC	Yes	Yes	No	Yes	No
B. Elevated Security	Yes	Yes	No	Yes	Yes
C. Accommodate Future Workload	Yes	Yes	No	No	No
D. Consolidate Similar Activities	Yes	No	Yes	No	No
E. Adjacent to Runway	Yes	No	No	Yes	Yes
F. Facilities and Infrastructure	Yes	Yes	No	Yes	No

2.3.2 Lease Facilities Off-base

The main hurdle of leasing facilities off-base is the requirement to be adjacent to the runway (technical criteria E) and the strict security requirements for these aircraft (technical criteria B). Because of the security requirements, a civilian airport or other off-base facility would not be adequate. In addition, federal leasing language requires that federal emergency response time to leased areas be less than 5 minutes. No secure areas large enough for the proposed facility are available for lease within 5 minutes of Hill AFB. Permanent off-base leasing is not encouraged by regulations and temporary leasing situations are preferred (AFI-32-9001; AFCEC, 2015). These workloads are long term and not temporary; therefore, leasing facilities off-base would not be a feasible alternative (technical criteria C). The facilities would not be able to connect to the utility and communication infrastructure at Hill AFB (technical criteria F) and would not be located at an installation designated as the TRC for the F-35 and T-7 aircraft

(technical criteria A). This alternative was dismissed from further consideration because it did not meet technical criteria A, B, C, E or F as shown in Table 2-1.

2.3.3 Use Existing Facilities on Hill AFB

This alternative includes using existing facilities on Hill AFB for this new workload. Current facilities are at capacity and no space is available to accommodate additional or future workloads (technical criteria C). Some of the existing workloads would have to be stopped or moved off-base to accommodate this emerging workload in the existing facilities and, therefore, would not result in consolidated activities (technical criteria D). There are currently no plans to stop or relocate any existing workloads. This alternative was dismissed from further consideration because it did not meet technical criteria C or D as shown in Table 2-1.

2.3.4 Locate at Another Depot

Another alternative is to move the incoming workload to another depot. Hill AFB is the TRC for the F-35 and T-7 aircraft. This alternative would require changing the TRC for each workload to another base to move the workload. In addition, the Hill AFB workforce has experience repairing fighter aircraft, so it would not be logical to move the incoming workload to another depot. This alternative was dismissed from further consideration because it did not meet technical criteria A, C, D, or F as shown in Table 2-1.

2.4 DETAILED DESCRIPTION OF THE PROPOSED ACTION AND THE NO ACTION ALTERNATIVE

2.4.1 F-35/T-7 Maintenance Campus on Hill AFB

Constructing a combined F-35/T-7 Maintenance Campus on Hill AFB is the only alternative that completely satisfies all the technical criteria listed in Section 2.2.

Under the Proposed Action, Hill AFB would construct the proposed F-35/T-7 Maintenance Campus in one location on Hill AFB. Open space is available for such a facility on the eastern side of the runway (Proposed Site). The area north of Building 680 is set aside for another mission's facility and, therefore, is unavailable for construction of the F-35/T-7 Maintenance Campus. The only other area large enough for the F-35/T-7 Maintenance Campus is south of Building 674. As a result, under the Proposed Action, the F-35/T-7 maintenance facilities described in Section 2.1 of this EA would be constructed south of, and adjacent to, the existing F-22 maintenance facilities (Figure 2-1). Airfield operations would occur as described in Section 2.1.

The proposed conceptual layout for the Proposed Action would require that Foulis Road be reconfigured (Figure 2-2). The Proposed Action would include constructing approximately 552,500 ft² of asphalt parking lot areas to support the privately-owned vehicles for personnel supporting the new facilities. Parking lots would be constructed as the facilities are constructed. Parking lots could be located on the west side of Foulis Road, north of the Composite Repair and Training Facility, and west of the F-35 Canopy Repair Facility (Figure 2-2). In the future, if needed, parking lots could also be constructed on the northern and eastern sides of the project area (Figure 2-2). Landfill 3, Landfill 4, an old firefighting training area, and Pond 10 are within the project area (Figures 2-1, 2-2, 2-3, and 3-1). These features are described in detail in the Hazardous Materials/Waste section of this EA.

The Proposed Action would include constructing a new groundwater well and 2,000,000-gallon water tank on the southeastern corner of Hill AFB (Figure 2-3). This location was selected because it is the closest open space that is easily connected to Tank 10725 and is at the same elevation as Tank 10725. Existing Tanks 12412 and 1433 would be abandoned and removed. Tank 12412 violates airfield clear zone regulations as defined in DoDI 4165.57, *Air Installations Compatible Use Zones*. The elevation of Tank 1433 is too low to provide adequate operating pressures at several of the existing and proposed

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buildings on the eastern side of Hill AFB. The new well and tank are needed on the eastern side of Hill AFB to provide adequate fresh water for fire protection, process water, and sanitation for the planned facilities that support the expansion of the current aircraft depot maintenance mission and for future workloads. The existing potable water storage and distribution system is overstressed and inadequate for future expansion in this area. Flow tests conducted by the Fire Department on the few hydrants serving the area indicate water pressure is half of the minimum required for fire protection.

The Proposed Action would include constructing a new communications conduit from the existing F-22 facilities to the southeast to support the new F-35 and T-7 facilities (Figure 2-2). In addition, new sanitary sewer, potable water, natural gas, and electrical lines would extend from existing lines along the reconfigured Foulis Road to each new facility.

Buildings 745 and 747 are storage sheds that support the Gun Shop in Building 746. Both buildings would be demolished prior to the construction of the F-35 Canopy Repair Facility and the storage would be moved to Building 746. A Faraday cage would be constructed around Building 751, an Instrument Repair Building, to block electromagnetic fields from entering the building.

The Tactical Air Navigation (TACAN) antenna is currently located within the project area. Under the Proposed Action, the TACAN would be relocated north of the proposed project area and east of the runway (Figure 2-2). The TACAN requires a line of sight to the runway and a 1,000-foot clearance around the TACAN is required to remove all interference and allow proper functionality. Associated systems will require an instrument calibration to adjust for the new location and the regional TACAN layout map will need to be reworked. Notice provided 6 months in advance will be needed prior to moving the TACAN. The new antenna location will require an approximately 15- by 2-foot enclosure to secure the communication systems, as well as a support structure for the antenna.

Under the Proposed Action, the existing taxiway adjacent to the F-22 maintenance facilities would be extended to the south by approximately 10,000 linear feet to connect to the new facilities (Figure 2-2). The taxiway would be constructed with the intent to use it as a parallel runway. The runway would be 150 feet wide with 25-foot shoulders on each side.

The project components described in this section would occur within Phase 1 of the project.

2.4.2 No Action Alternative

The NEPA process is intended to support flexible, informed decision-making; the analysis provided by this EA and feedback from the public and other agencies will inform decisions made about whether, when, and how to execute the Proposed Action. Among the alternatives evaluated is a No Action Alternative. The No Action Alternative will substantively analyze the consequences of not undertaking the Proposed Action, instead of simply concluding there is no impact, and will serve to establish a comparative baseline for analysis.

Under the No Action Alternative, the proposed construction of F-35/T-7 Maintenance Campus at Hill AFB would not proceed and repair of F-35 and T-7 aircraft would continue at current levels, which are insufficient to sustain the mission. Hill AFB would not have the facilities or technical capabilities needed to complete the expected F-35/T-7 depot workload. Instead, Hill AFB would have to phase in the F-35/T-7 depot workload with the other aircraft depot workload currently serviced at the installation. This will cause different missions to compete for facility space. It is anticipated that depot repair times will increase by approximately 75 percent as the F-35 and T-7 flight hours increase.

The potential impact of no action is increased mission failure across all programs that would compete for facility space. Without this Proposed Action, the projected increased workload would need to be turned away, which would not fulfill the purpose and need for the project, would not meet the baseline requirements or technical criteria for an alternative, and is not allowed by regulation (Secretary of the Air Force, 2019).

3.0 AFFECTED ENVIRONMENT

The Region of Influence (ROI) for the Proposed Action is the area within Hill AFB within 1 mile of the Proposed Site, unless otherwise specified below for a particular resource area where a resource would have a different ROI.

3.1 SCOPE OF THE ANALYSIS

This section describes the current conditions of the environmental resources, either artificial or natural, that would be affected by implementing the Proposed Action or the No Action Alternative.

Resources that would not be affected by the Proposed Action were identified through a preliminary screening process. Those resource areas not carried forward for a detailed analysis, along with the rationale for their elimination, are described in the following sections. Those resources would not be affected by the Proposed Action and are not discussed in detail in this EA.

3.1.1 Land Use

The project area is made up of improved and semi-improved lands on a military base. The eastern boundary of Hill AFB is defined by the Davis-Weber Water Conservancy District's Distribution Canal and steeply sloping topography. Located beyond the canal is the primarily residential community of South Weber, approximately 850 feet north of the northern boundary and approximately 4,000 feet east of the eastern boundary of the project area. Large tracts of agricultural land exist in this area. Implementation of the Proposed Action would not result in adjacent land uses being incompatible with their current use. Land use within Hill AFB would remain as military use. Therefore, no impact on land use would result from the Proposed Action, and this resource is not considered further in this EA.

3.1.2 Geology

Hill AFB is located a few miles west of the low angle normal Wasatch fault, which divides the Basin and Range and Middle Rocky Mountain provinces. The plateau on which Hill AFB is located is an erosional remnant of a fan-delta complex from ancient Lake Bonneville. Hill AFB is underlain by basin fill, consisting of unconsolidated interbedded alluvial and lacustrine deposits, derived from the Wasatch Mountain Range during Tertiary and Quaternary times (Jacobs, 2020). No impact to geology would result from the Proposed Action, and this resource is not considered further in this EA.

3.1.3 Topography

The topography within the project area ranges from 4,800 feet above mean sea level (amsl) on the west to 4,840 feet amsl on the south near the golf course, to 4,010 feet amsl on the east (USGS, 2020). Within the project area, the ground is relatively flat and minimal grading would be required to construct the facilities included in the Proposed Action. Minimal grading required for the Proposed Action would not impact the overall topography. Therefore, this resource is not considered further in this EA.

3.1.4 Wetlands

According to the Integrated Natural Resources Management Plan (INRMP) for Hill AFB, no wetlands are within or adjacent to the project area (Hill AFB, 2020). Therefore, no impacts to wetlands would result from the Proposed Action, and this resource is not considered further in this EA.

3.1.5 Floodplains

According to Federal Emergency Management Agency Flood Insurance Rate Map for Davis County Utah, Map Numbers 49011C0089E and 49011C0230E, the project area is not in a 100-year floodplain

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(FEMA, 2007). Therefore, no impacts to floodplains would result from the Proposed Action, and this resource is not considered further in this EA.

3.1.6 Threatened and Endangered Species

No federal or state-listed threatened or endangered species protected under the Endangered Species Act are within Hill AFB or the project area (Hill AFB, 2020). Therefore, no impacts to threatened or endangered species would result from the Proposed Action and no Endangered Species Act consultation with the U.S. Fish and Wildlife Service is required. This resource is not considered further in this EA.

3.1.7 Environmental Justice

Table 3-1 presents population demographics for Davis and Weber counties and Utah (USCB, 2011). Davis and Weber counties are not identified as being in areas with meaningfully greater minority populations than the reference area of the state of Utah.

Table 3-1. Environmental Justice Population Information from 2010 U.S. Census for Davis County, Weber County, and Utah

Area	White	Black or African-American	American Indian and Alaska Native	Asian	Native Hawaiian and Other Pacific Islander	Some Other Race Alone	Two or More Races
Davis County ^a	90.0%	1.3%	0.4%	1.8%	0.6%	2.4%	3.4%
Weber County ^a	89.1%	1.1%	0.7%	1.1%	0.3%	4.3%	3.5%
Utah ^b	87.3%	1.2%	1.1%	2.4%	1.0%	3.8%	3.2%

Source: USCB, 2011, 2018

^a 2018 American Community Survey 5-Year Estimates

^b 2019 American Community Survey 1-Year Estimates

The Proposed Action would not result in environmental health or safety risks that may affect children. There would be no families or resident populations living at, or adjacent to, the Proposed Site. Access to construction areas would be controlled, thereby limiting unauthorized access by any person, including children. All members of the public would be prohibited from accessing the facility without authorization. No impacts would occur to populations of special concern with disproportionately high human health or environmental impacts on minority populations, low income populations, or child populations. Therefore, this resource is not considered further in this EA.

3.1.8 Cultural Resources

In August 2020, Hill AFB and the U.S. Air Force (Air Force) initiated consultation with the Utah SHPO, in accordance with Section 106 of the National Historic Preservation Act (Section 106) and its regulations at 36 CFR Part 800, regarding the construction of the F-35/T-7 Maintenance Complex. The Air Force determined that the project footprint was previously disturbed by past building and infrastructure construction and demolition activities, and no historic-era standing structures exist within the project footprint. Therefore, the project would have no adverse effect on cultural resources listed in, or determined eligible for listing in, the National Register of Historic Places. On 20 August 2020, the SHPO concurred with Hill AFB and the Air Force's finding of no adverse effect, per 36 CFR Section 800.5(b). In the event that cultural resources are identified during construction activities, the Hill AFB Unanticipated Discovery of Archaeological Resources Protocol will be implemented in accordance with Section 7.4 of the Hill AFB *Integrated Cultural Resources Management Plan* (USAF, 2019b).

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During the project scoping phase, consultation letters were sent to the 20 federally recognized tribes that are historically affiliated with the Hill AFB geographic region to consult on all proposed undertakings that have the potential to affect properties of cultural, historic, or religious significance to the tribes. Concurrence letters have been received from the Hopi Tribal Council and the Paiute Indian Tribe of Utah. Letters sent to, and responses received from, these tribes are in Appendix A. Hill AFB conducts quarterly meetings to keep tribal representatives up to date on actions occurring at Hill AFB. Tribes were briefed about this project at two quarterly meetings that were held on 30 July 2020 and 28 October 2020. In addition, all tribes receive copies of meeting minutes and presentation slides from the quarterly meetings. Tribes have informed the Hill AFB Cultural Resources Manager during Utah DoD Annual American Indian Meetings that they do not need to be consulted regarding projects occurring on Hill AFB; however, Hill AFB still notifies the Tribes of major projects.

The Proposed Action would have no adverse impacts on cultural resources and this resource is not considered further in this EA.

3.2 RESOURCES CONSIDERED IN DETAIL

The following resources were determined to warrant consideration because of their potential relevance to the alternatives. This section defines each resource, provides information on existing conditions, and summarizes the analysis of impacts that have the potential to occur if the Proposed Action were implemented.

3.2.1 Soils

The soils of Hill AFB are primarily composed of sands and gravels, with some silts and clays (Hill AFB, 2020). Within the project area, the predominant soils are Kidman fine sandy loam and Layton loamy fine sands (USDA, 2020). Other soils in the project area include Francis loamy fine sand, Francis-Kidman complex, gravel pits, Hillfield-Timpanogos-Parleys complex, Parleys loan, and Preston fine sand (USDA, 2020). Francis loamy fine sands and Kidman fine sandy loams are considered prime farmland if irrigated; Layton loamy sands are considered farmland of statewide importance; and Preston fine sands are considered farmland of unique importance (USDA, 2020).

3.2.2 Vegetation and Wildlife

There is no historically intact vegetation in the proposed project area (Hill AFB, 2020). The project area consists of improved and semi-improved lands. Vegetation in the improved and semi-improved areas consists of landscaped shrubs and trees, bunch grasses, forbs, sparse shrubs, and Kentucky bluegrass.

Wildlife in the project area include many species of birds and several mammals, including deer mouse (*Peromyscus maniculatus*), mule deer (*Odocoileus hemionus*), red fox (*Vulpes vulpes*), striped skunk (*Mephitis mephitis*), porcupine (*Erethizon dorsatum*), and raccoon (*Procyon lotor*). Bow hunting of deer is allowed in the northwestern and southeastern portions of the project area to help control the deer population.

3.2.3 Noise

Noise, often defined as unwanted sound, is one of the most common environmental issues associated with human activities. Public annoyance is the most common impact associated with exposure to elevated noise levels. Because the range of sound pressure ratios varies over many orders of magnitude, a base-10 logarithmic scale is used to express sound levels in dimensionless units of decibels (dB). The human ear does not respond equally to all frequencies. To obtain accurate measurements and descriptions of noise that are relevant to human receptors, noise frequencies are filtered or weighted to most closely approximate the average frequency response of the human ear. This weighting is called the “A” scale on sound-level meters and is the scale that is used for noise analyses. Decibel units described in this manner

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are referred to as “A-weighted” dB or dBA. The standard averaging metric for aircraft time-varying noise levels is called Day-Night Average Sound Level (DNL). DNL is an average level based on a 365-day time period and includes a 10-dB penalty for night operations occurring between 10:00 p.m. and 7:00 a.m.

The project area is adjacent to the Hill AFB flight line. Noise in this area is primarily from aircraft, including F-35 that are bedded down at Hill AFB, during take-off and landing. According to the Air Installation Compatible Use Zone Study, noise levels within the project area are between 65 and 85 dBA DNL (Figure 3-1; Hill AFB, 2018). Permissible land use within these noise zones includes commercial, industrial, public, recreation, open space, agriculture, and low-density.

3.2.4 Air Quality

Air quality is affected by the quantity, timing, and location of pollutant emissions and by meteorological conditions that influence movement and dispersal of pollutants in the atmosphere. Atmospheric conditions such as wind speed, wind direction, and air temperature gradients, along with local topography and seasonal influences, all play a role in the relationship of pollutant emissions and local air quality concentrations.

The Main Base of Hill AFB resides on a plateau with an elevation of approximately 4,800 feet at the mouth of Weber canyon just west of the Wasatch Mountains and east of the Great Salt Lake. Significant winds at the base of the canyon occur frequently and are the result of variable heating influences across the diverse topography. The nearby mountains rise to nearly 12,000 feet above sea level, contributing to significant snow during the winter and the development of thunderstorms in the summer.

Summers are characterized by hot, dry weather with low relative humidity. July is the hottest month with temperature readings above 90 degrees Fahrenheit (°F). The mean diurnal temperature range is about 30°F in the summer and 18°F during the winter. The average annual snowfall is under 60 inches at the Salt Lake City airport, but higher amounts fall at higher elevations (NOAA, 2020a).

The average annual precipitation at nearby Ogden Hinkley Airport is 19.1 inches, with an average temperature of 51.2°F, average high temperature of 61.6°F, and average low temperature of 40.8°F (NOAA, 2020b).

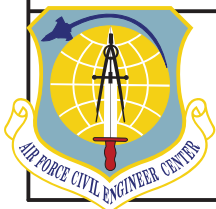
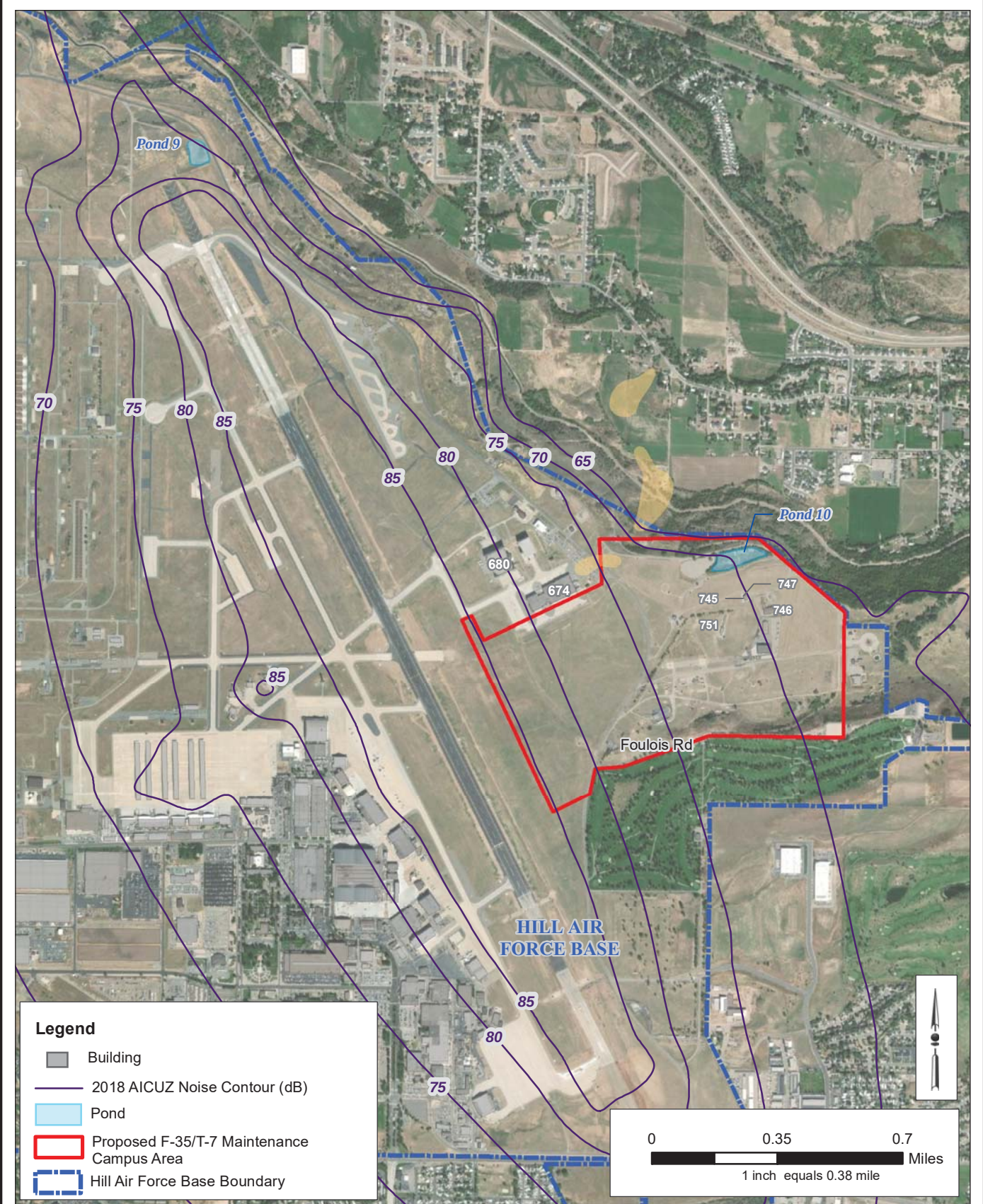
Hill AFB occupies over 6,650 acres within Davis and Weber counties. All of Davis County and a portion of Weber County are included in the Northern Wasatch Front marginal nonattainment area for the 2015 8-Hour Ozone (O₃) standards¹. All of Davis County and a portion of Weber County are included in the serious nonattainment area of Salt Lake City for the 2006 PM_{2.5} National Ambient Air Quality Standards (NAAQS) (EPA, 2020)². As a result, general conformity requirements apply to federal actions at Hill AFB that would result in net increases in emissions of PM_{2.5}, O₃, or their precursors³—sulfur dioxide (SO₂), ammonia (NH₃), nitrogen oxides (NO_x), and/or volatile organic compounds (VOCs)—unless

¹ The Utah Division of Air Quality has indicated that this area has failed to meet the ozone standard by the required deadline of 3 August 2021 and, therefore, will be re-classified as moderate nonattainment. Accessed 22 October 2020. <https://documents.deq.utah.gov/air-quality/planning/air-quality-policy/DAQ-2020-001226.pdf>.

² Published in the *Federal Register* on 6 November 2020, EPA has proposed to re-designate the Salt Lake City and Provo 2006 24-Hour PM_{2.5} area as attainment.

³ Precursors to PM_{2.5} must also be evaluated. Accessed 10 December 2020.

<https://www.natlawreview.com/article/epa-issues-final-guidance-states-consideration-pm25-precursors>



Source:
Imagery from ESRI online image service: Maxtar, July 2018.

FIGURE 3-1
EXISTING NOISE CONTOURS
ENVIRONMENTAL ASSESSMENT
PROPOSED F-35/T-7 MAINTENANCE CAMPUS AREA
HILL AIR FORCE BASE, UTAH

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exempt under 40 CFR Section 93.153. Federal actions with net emissions increases that are less than regulatory de minimis levels can be assumed to conform.

Weber County contains the PM₁₀ nonattainment area and the carbon monoxide (CO) maintenance area in Ogden City; however, Hill AFB is not included in these designations. Hill AFB is designated as **attainment** for PM₁₀, CO, and lead (Pb). Table 3-2 summarizes the attainment status at Hill AFB.

Table 3-2. Hill AFB Attainment Status

Pollutant	Area Attainment Status
CO	Attainment/Unclassified
NO ₂	Attainment/Unclassified
O ₃	Nonattainment – Marginal (2015 standard)
Pb	Attainment/Unclassified
PM ₁₀	Attainment
PM _{2.5}	Serious Nonattainment (2006 Standard)
SO ₂	Attainment/Unclassified

Source: U.S. Environmental Protection Agency (EPA). 2020a. Green Book National Area and County-Level Multi-Pollutant Information. Utah Nonattainment/Maintenance Status for Each County for All Criteria Pollutants. Data are current as of 30 September 2020. Accessed 19 October 2020. https://www3.epa.gov/airquality/greenbook/anayo_ut.html.

Hill AFB is classified as a major source of air pollution under Title V of the Clean Air Act because the facility has the potential to emit more than 100 tons per year of one or more regulated pollutants. As a result, Hill AFB operates under a Title V permit issued by the Utah Division of Air Quality (UDAQ) (dated 17 August 2016; latest revision 6 January 2020), which requires that existing and future emission sources comply with applicable permit limits. Hill AFB Title V limits and the existing percentage of use within the allowable operating and emission limits are provided in Appendix B, Title V Requirements.

3.2.5 Stormwater

According to the INRMP for Hill AFB, no natural surface water features are within or adjacent to the project area (Hill AFB, 2020). The Davis-Weber Canal winds around the outside perimeter east, north, and west of the Base. The canal receives no stormwater discharge from the Base. Hill AFB has constructed a series of stormwater ponds on and near Base boundaries to either detain or retain surface water (Jacobs, 2020). Stormwater north of the Proposed Site flows into perforated storage and infiltration pipes. Stormwater on the Proposed Site infiltrates into the ground (MOCA, 2019).

3.2.6 Groundwater

Groundwater at Hill AFB is part of the Weber Delta Subdistrict of the Weber Delta Hydrogeologic System (Jacobs, 2020). Deep wells in the Delta aquifer supply water for domestic and fire protection for the Base. Hill AFB has access to 10 drinking water intakes on-base: 9 groundwater wells and 1 wholesale connection to Weber Basin Water Conservancy District (WBWCD). Four of the groundwater wells are inactive as a result of lower aquifer levels and equipment failures. The five active groundwater wells supply approximately two-thirds of the water consumed on-base, with the wholesale connection to WBWCD providing the remaining one-third. Three groundwater wells on Hill AFB property belong to local municipalities, and eight additional wells near the Base belong to local municipalities and the WBWCD (Jacobs, 2020). Hill AFB has rights to withdraw groundwater at a rate of 13.223 cubic feet per second or 3,119 million gallons per year (mgd; Utah Division of Water Rights, 2020). On average, Hill

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AFB uses 825 mgy, with 330 mgy from the WBWCD and 495 mgy from groundwater sources (Goodliffe, pers. comm., 2020).

Depth to groundwater in the shallow aquifer within the project area is approximately 25 to 30 feet based on weekly groundwater elevations collected near the Proposed Site in 2018 (EA Engineering, 2019). Contaminated groundwater is discussed in detail in Sections 3.2.6 and 4.7 of this EA.

3.2.7 Utilities and Utility Infrastructure

Electricity at Hill AFB is provided by City Light and Power. An electrical substation is north of the project area.

Sanitary sewer waste from the F-22 campus north of the Proposed Site is collected by gravity piping, directed to a wastewater lift station, and discharged to the North Davis Sewer District. The pumping capacity of the sanitary sewer lift station pumps is 240 gallons per minute and has a wetwell of 5,000 gallons.

Industrial waste from the F-22 campus north of the Proposed Site is collected by gravity piping, directed to an industrial wastewater lift station, and pumped to the Industrial Wastewater Treatment Plant on Hill AFB. The pumping capacity of the sanitary sewer lift station is 7,500 gallons per day (gpd). The F-22 campus has a waste load of approximately 2,000 gpd.

Communication lines are available north of the Proposed Site.

Natural gas is provided to the east side of Hill AFB by Dominion Energy via a high pressure feeder line. From there it feeds to a meter set and then to one 4-inch line and one 8-inch line serving the buildings on the east side of the Base. The natural gas line system on the east side of Hill AFB does not have a backup system in place in case the feeder line from Dominion Energy stops functioning.

Solid waste disposal at Hill AFB follows the guidelines for waste diversion and disposal set in the Integrated Solid Waste Management Plan (Hill AFB, 2019). Waste is sorted and composted, used as mulch, reused to the extent possible, donated, recycled, or disposed of at an offsite municipal waste landfill managed by Wasatch Integrated Waste Management District (Hill AFB, 2019). Construction and demolition debris is disposed of at approved off-base landfills. Limited amounts of clean soil, asphalt, and concrete are managed at the Hill AFB Construction and Debris Landfill.

3.2.8 Traffic and Transportation Infrastructure

There are four gates into Hill AFB. The Main Gate is on the west side of Hill AFB. The gate closest to the Proposed Site is the South Gate at the intersection of State Route 193 and North Hill Field Road. The Main Gate and the South Gate are open 24 hours a day, 7 days a week. From the South Gate, personnel would travel north on South Gate Road, then turn east on Balmer Avenue to Foulis Road, which would lead into the Proposed Site.

The 2017 average annual daily traffic count on State Route 193 on the western side of the South Gate is 30,000 and on the eastern side of South Gate is 34,000. The capacity of State Route 193 in this area is 40,000 to 45,000 vehicle trips per day (Fristup, pers. comm., 2020). The average annual daily traffic on North Hill Field Road south of South Gate is 25,000 and north of South Gate is 9,000 (UDOT, 2020). Capacity of North Hill Field Road in this area is 40,000 vehicle trips per day (Fristup, pers. comm., 2020).

No pedestrian or bike paths or bus stops are within the Proposed Site.

3.2.9 Socioeconomics

Hill AFB employs approximately 22,000 military and civilian employees (Military One Source, 2020). Table 3-3 presents population, economic information, and percent of the population living below the

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poverty level in Davis and Weber counties and in Utah (USCB, 2011). Weber County has a higher percentage of individuals below the poverty level and a lower median household income than Davis County or Utah.

Table 3-3. Economic and Population Information from 2010 U.S. Census for Davis County, Weber County, and Utah

Area	Population from 2010 U.S. Census	Median Household Income*	Percent of Population Below Poverty Level
Davis County ^a	340,621	\$79,690	5.5%
Weber County ^a	247,731	\$64,636	11.3%
Utah ^b	3,205,958	\$75,780	8.9%

Source: USCB, 2011, 2018

^a 2018 American Community Survey 5-Year Estimates

^b 2019 American Community Survey 1-Year Estimates

Table 3-4 presents housing information for Davis and Weber counties and Utah (USCB, 2011, 2018). Home values and rental costs are lower in Weber County than in Davis County or Utah. Approximately 9.9 percent of housing units in Utah are vacant compared to 4 percent (approximately 4,000 vacant) in Davis County and 9 percent (approximately 8,000 vacant) in Weber County.

Table 3-4. Housing Information from 2010 U.S. Census for Davis County, Weber County, and Utah

Area	Renter costs	Housing Values	Percent of Vacant Housing Units	Number of Vacant Housing Units
Davis County ^a	\$1,055	\$265,900	4.0%	4,315
Weber County*	\$851	\$197,800	9.0%	8,193
Utah ^b	\$1,043	\$303,300	9.7%	109,688

Source: USCB, 2011, 2018

^a 2018 American Community Survey 5-Year Estimates

^b 2019 American Community Survey 1-Year Estimates

The Hubbard Golf Course is directly south of and outside the Proposed Site.

3.2.10 Hazardous Materials/Waste

Hill AFB manages hazardous materials under the following regulations and guidance manuals:

- Air Force Manual (AFMAN) 32-7002, *Environmental Compliance and Pollution Prevention*
- AFI 32-7001, *Environmental Management*
- AFI 32-7086, *Civil Engineering – Hazardous Materials Management*, Hill Air Force Base Supplement, 11 April 2019
- National Fire Protection Association 30, *Flammable and Combustible Liquids Code*
- HILL AFB Instruction 90-106 as a Hill AFB Hazard Communication reference
- AFMAN 91-203, *Air Force Occupational Safety, Fire and Health Standards*
- Hill AFB Integrated Contingency Plan (Jacobs, 2020)
- Hill AFB Spill Prevention, Control, and Countermeasures Plan

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- Hill AFB Spill Plan
- 29 CFR 1910, Occupational Safety and Health Act – Laws and Regulations

Hill AFB is a large quantity generator of hazardous waste and manages hazardous waste under U.S. Environmental Protection Agency (EPA) Identification Number and Permit Number UT0571724350. Hazardous waste storage and disposal procedures for Hill AFB are outlined in the Hazardous Waste Management Plan (USAF, 2020b). Hazardous waste is stored at 90-day accumulation sites and then transferred to the Transport, Storage, and Disposal Facility on Hill AFB where the hazardous waste can be stored for up to one year under a Resource Conservation and Recovery Act Part B Storage Permit (USAF, 2020b). Hazardous waste is then transported to an off-base approved hazardous waste landfill or incinerator by an approved hazardous waste hauler.

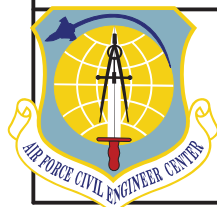
A portion of the project area is within Operable Unit 1 (OU1) (Hill AFB, 1998; Figure 3-2). OU1 has a source area that includes Landfills 3 and 4, Chemical Disposal Pits (CDPs) 1 and 2, Fire Training Areas 1 and 2, the Waste Phenol/Oil Pit, and the Waste Oil Storage Tank Site. OU1 also has an area that extends off-base. The off-base area is the contaminated area of OU1 that has traveled from the on-base sources to off-base areas. The non-source area includes shallow groundwater and springs containing dissolved-phase VOCs, mostly cis-1,2-dichloroethene (DCE). cis-1,2-DCE is a degradation product of chlorinated solvents evidently disposed of at OU1, together with other liquid wastes such as jet fuel. The dissolved-phase cis-1,2-DCE plume extends from within the Hill AFB property to the west and off-base into the City of South Weber (EA Engineering, 2019).

The chemical contaminants detected in soil, sediment, groundwater, surface water, and air at OU1 are primarily chlorinated VOCs, with cis-1,2-DCE being the most prevalent. Some sediments associated with a few off-base springs contain arsenic concentrations in excess of background concentrations. Additionally, shallow on-base groundwater associated with some of the on-base CDP sources contains a light non-aqueous phase liquid (LNAPL), typically consisting of a mixture of residual degreasing solvents and fuel hydrocarbons that float on water (EA Engineering, 2019).

Pond 10 serves as a surface water retention pond for runoff from the landfill caps (Figure 2-3; EA Engineering, 2019). Increases in groundwater levels in Pond 10 have indicated a hydraulic connection between the pond and groundwater beneath OU1. A pipeline was constructed in 2007 to pump water from Pond 10 to Pond 9. Water is pumped from Pond 10 to Pond 9 for infiltration and evaporation (Figure 2-3).

On 23 July 1984 the Utah Water Pollution Control Board (currently the State of Utah Division of Water Quality) issued a Cease and Desist Order when leachate discharge was observed in springs below Landfill 4. The following interim remedial measures were implemented:

- Installation of low-permeability caps over source areas in 1985 and 1986, designed to reduce infiltration of precipitation.
- Installation of a subsurface physical barrier in 1985 (soil/bentonite slurry cut-off wall) located downgradient of the source areas, designed to reduce groundwater recharge to the non-source areas.
- Collection and treatment of contaminated surface water in 1985 from off-base springs located downgradient from the source areas.



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- Extraction and treatment of contaminated groundwater in the on-base source area in 1985.
- Implementation of groundwater and surface water monitoring program in 1990.

The goals of the source area remedial action are to prevent migration of contaminated groundwater and LNAPL from the source area and to restore source area groundwater to maximum contaminant level (MCL) thresholds. Currently the source area is dewatered using groundwater interceptor extraction trenches (designated as trenches A through C; Figure 3-1). Recovered groundwater is then pumped from the source area to the OU2 Air Stripper Plant or the Industrial Wastewater Treatment Plant for treatment and discharge to a local publicly owned treatment facility. LNAPL is collected from the extraction trenches and then properly disposed of following federal and state disposal regulations. Low-permeability landfill caps and landfill gas vent systems are being maintained. Long-term monitoring is ongoing and institutional controls to prevent potential unacceptable risks to human health and the environment have been, and continue to be, implemented and maintained (EA Engineering, 2019). Figure 3-1 shows the infrastructure associated with OU1, including monitoring wells, trench cleanout access ports, groundwater extraction trenches and system sumps, landfill gas vent lines and vents, and the lift station.

The goals of the non-source area remedial action are to minimize the potential for human exposure to contaminated groundwater and surface water and to restore groundwater and surface water to MCLs. Ongoing remediation activities include seep collection systems to prevent discharge of seeps and springs at concentrations above MCLs, monitoring of natural attenuation of groundwater contaminants, long-term monitoring, and implementation of institutional and engineering controls to prevent potential unacceptable risks to human health and the environment (EA Engineering, 2019).

Since cleanup efforts began, LNAPL, the source of the groundwater contamination, has become increasingly immobile. The estimated source area of the cis-1,2-DCE plume remains near Trenches A and C, likely from nearby CDP 1 and 2. The current cis-1,2-DCE groundwater plume extends laterally from the source area to the west and off-Base to the north (EA Engineering, 2019). Extensive infrastructure, including electrical and water lines, trenches, pumps, and monitoring wells, is in place throughout OU1 as part of the remedial activities.

3.2.11 Safety and Occupational Health

The Hill AFB Fire Department provides emergency medical services, hazardous materials incident response, and fire protection service to the Base and has 20 mutual aid agreements with local community fire departments for both paramedic and medical transportation service. The Base Military Clinic is in Building 570, in the southern portion of the Base. Hill AFB does not have emergency facilities. The Davis Hospital Emergency Room is approximately 6 miles south of Hill AFB.

Hill AFB maintains Memorandums of Understanding with five community hospitals should medical capabilities of the Base clinic be overwhelmed and/or medical transfers are required. If a spill exceeds local capacity, then Hill AFB may request assistance from local Fire Department Hazardous Materials (HAZMAT) Teams.

All contractors performing construction activities at Hill AFB are responsible for complying with applicable safety requirements, including U.S. Occupational Safety and Health Administration regulations.

3.2.12 Aesthetics and Visual Resources

Visual resources refer to the natural and constructed features that give a particular environment its aesthetic qualities. In undeveloped areas, land forms, water surfaces, and vegetation are the primary components that characterize the landscape. Constructed elements, such as buildings, fences, and streets, also may be visible. These may dominate the landscape or be relatively unnoticeable. Attributes used to

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describe the visual resource value of an area include any significant views or vistas, landscape character, perceived aesthetic value, and uniqueness.

In developed areas, the natural landscape is likely to provide a background for the more obvious constructed features. The size, forms, materials, and functions of buildings, structures, roadways, and infrastructure, along with surrounding landscape features, define the visual context of an area. These features form observers' overall impressions of an area's visual character. Some urbanized areas or developments prescribe standards or design guidelines for achieving or preserving visual quality. In urban areas, there may be ordinances or zoning provisions that guide physical development.

In nonurban contexts, laws, such as the National Wild and Scenic Rivers Act, and management objectives protect the scenic quality of some special areas. Federal land managers also clarify the scenic value of lands in accordance with federal land management regulations.

Views into the Proposed Site include those typical of an area adjacent to a military flight line and include industrial buildings, roads, fences, and parking lots. There is also an outdoor training area in the southern portion of the Proposed Site. Views to the north and east include the Davis-Weber Water Conservancy District's Distribution Canal and the community of South Weber; to the south, the Hill AFB Golf Course; and to the west, the Hill AFB flight line.

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4.0 ENVIRONMENTAL CONSEQUENCES

4.1 INTRODUCTION

This chapter describes the potential environmental consequences that are likely to occur as a result of implementation of all Alternatives that are being considered and analyzed. Impacts described in this chapter are evaluated in terms of type (positive/beneficial or adverse), context (setting or location), intensity (none, negligible, minor, moderate, severe), and duration (short-term/temporary or long-term/permanent). The type, context, and intensity of an impact on a resource are explained under each resource area. Unless otherwise noted, short-term impacts are those that would result from the activities associated with a project's construction and/or demolition phase and that would end upon the completion of those phases. Long-term impacts are generally those resulting from the operation of a proposed project.

The NEPA analysis follows current CEQ NEPA regulations, which specify that the effects of the action be assessed such that what historically was treated as cumulative effects is addressed through the analysis of indirect effects. Indirect effects could occur when impacts from the proposed action overlap with impacts from other recently completed, ongoing, or planned construction, demolition, and transportation projects in the same general area. Indirect impacts are discussed at the end of each of the following consequences sections. Table 4-1 is a list of other recently completed, ongoing, or planned projects with impacts that could overlap with those of the Proposed Action.

Table 4-1 Recently Completed, Ongoing, or Planned Projects

Location	Type	Size	Description	Timeframe
Hill AFB	Construction	16,962 ft ² 7,472 ft ²	729th Air Control Squadron Aerospace Ground Equipment (AGE)/Heating, Ventilation, and Air Conditioning (HVAC) Maintenance Facility Multi-purpose addition to B1938 Improve AGE/HVAC Storage Facility B11938	
Hill AFB – north of B1515	Construction	74,000 ft ²	309th Software Group – EUL Software PIK Building	
Hill AFB – northeast of B10	Construction	8,667 ft ²	Air Traffic Control Tower	
Hill AFB – B891	Personnel increase	730 personnel	Increase in personnel to support Defensive Cyberspace Operations	2018–2020
Hill AFB	Construction Demolition	6,240 ft ² 14,530 ft ²	Munitions Storage Igloos (three) Demolish obsolete facilities	
Hill AFB – west side and off-base	Construction Demolition	8 million ft ²	Falcon Hill National Aerospace Research Park – Enhanced Use Lease of 550 acres of Air Force owned property to a private developer (includes moving the West Gate, realignment of the base boundary fence, demolition of antiquated World War II era buildings and utility easements for natural gas and power lines)	2008 and ongoing over the next 25 years
Hill AFB	Construction		Ground Based Strategic Deterrent Campus	Planned
Utah Department of Transportation	Transportation	I-15 from Layton Parkway to Riverdale Road	Extending I-15 express lanes	2019-2021
City of Layton	Transportation	State Route 193	Road resurfacing southeast of Hill AFB	Ongoing
City of Layton; 3100 North Church Street	Construction	48 units	Indigo Bend Townhomes	Ongoing

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Table 4-1 Recently Completed, Ongoing, or Planned Projects

Location	Type	Size	Description	Timeframe
City of Layton - 3000 North Church Street	Construction	87 units	Wheatridge Townhomes	Proposed
City of Layton – 3175 North 1625 East	Construction	94 lots	Vistas at Eastgate	Ongoing
City of Layton – 2650 North Fairfield Road	Construction	148 lots	Mecham Meadows	Ongoing
City of Layton – 1000 East 3000 North	Construction	79 units	Meacham Towns	Ongoing
City of Layton – 1333 East Highway 193	Construction	193 apartment units, 42 townhome units, 3,500 ft ² commercial	Jacques Wright Development Property	Proposed
City of Layton – 2600 North Fort Lane	Construction	116 RV Parking sites, 102-150 storage units	Big Rig RV and Storage	Proposed
City of Layton – 3650 North Fairfield Road	Construction	10,709 ft ² commercial	Kihomac Expansion	Proposed
City of Layton – 2900 North 725 West	Construction	14 lots	Manor Crest	Ongoing
City of Layton – 365 East Antelope Drive	Construction	20,000 ft ² commercial	Bill's Comfort Systems	Ongoing
City of Layton – 1104 East Cambridge Circle	Construction	13,000 ft ² commercial	Golden Stag	Ongoing
City of Layton – 2205 N 1400 W	Construction	170,000 ft ²	RC Wiley Furniture Store	Proposed

Sources: UDOT, 2020; Wilkinson, pers. comm., 2020

4.2 SOILS

The threshold for a significant impact to soils is one that would result in soil disturbances that result in areas of loose and erodible soils easily washed away during storm events, leading to subsidence or instability of the soils in the project area.

4.2.1 Proposed Action

Long-term, minor, adverse direct impacts to soil would occur from the construction of new facilities because soils would be disturbed and compacted during construction of the facilities, utility relocation and extension, and road improvements. Within the project area, the ground is relatively flat and minimal grading would be required to construct the new facilities. Soils in this area have already been disturbed from past construction and demolition activities.

Construction best management practices (BMPs) would be implemented to minimize soil erosion that would cause insignificant adverse impacts to the soils at the Proposed Site. BMPs could include installing silt fencing and sediment traps, applying water to disturbed soil, and revegetating disturbed areas as soon as possible after disturbance. Contaminated soils within OU1 would not be disturbed.

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The Proposed Site is zoned within a military installation and has been intended for military general land use and development since 1940. Therefore, coordination with the Natural Resources Conservation Service and completion of a Farmland Conversion Impact Rating Form (AD-1006 Form) is not required and the soils need not be given further consideration for protection under the Farmland Protection Policy Act of 1990.

The direct impacts to soils from the Proposed Action would be a minor incremental contribution to the impact to soils, such as soil erosion, from other projects in the area. Each project would implement site-specific BMPs to minimize soil erosion which would minimize the overall impacts.

4.2.2 No Action Alternative

No impact to soils would result from the No Action Alternative because there would be no construction of facilities or disturbance of soil.

4.3 VEGETATION AND WILDLIFE

The threshold level of significance for vegetation and wildlife is defined by any of the following: (1) loss or impairment of sensitive or other native habitats or riparian corridors, such that the loss or impairment of habitat negatively affects the population of a species; (2) the take of birds in violation of the Bald and Golden Eagle Protection Act of 1940, as amended, or the MBTA, as amended, that could result in an enforcement action against the Air Force; or (3) the introduction or spread of invasive or otherwise undesirable non-native species.

4.3.1 Proposed Action

The Proposed Action would result in minor impacts to vegetation from a change from semi-improved and unimproved vegetated areas to mostly improved and semi-improved areas. This change would not be significant because there would be no loss or impairment of habitat that would negatively affect a population of species present in the project area. The disturbance of soils and introduction of non-native or invasive species from construction equipment could lead to the spread of non-native and invasive species in the area. Invasive species management on Hill AFB is guided by the Integrated Invasive Plant Management Plan. Invasive species are controlled through herbicides, hand pulling, mowing, and biological control.

Implementation of the Proposed Action would likely result in no more than minor direct impacts to wildlife from mortality; however, long-term, minor, indirect, adverse impacts would occur to wildlife. Indirect impacts to wildlife would occur from a loss of habitat and foraging areas. Mule deer would have less habitat because of the increase in developed areas, as well as from fences around facilities preventing the deer from entering areas previously available for foraging. This would push the mule deer population into other areas to the north and south on-base and to the east off-base. Archery hunting of the mule deer would still be allowed in certain areas on the eastern side of Hill AFB to help control the population. When construction begins, smaller mammals and birds would move out of this area and predators such as the red fox would have to move to follow their prey. Competition for food sources in smaller areas would result in negative impacts to wildlife. Impacts to wildlife would not be significant because regional populations would not be affected.

The MBTA prohibits taking, killing, or possessing listed birds, unless permitted by regulation. To prevent potential impacts to birds protected by the MBTA, construction or vegetation-clearing activities would not occur during the nesting season from early January through late August, to the extent practicable (Hill AFB, 2020). Nest surveys would be conducted in areas to be cleared if construction were to occur during the nesting season. The surveys would occur no more than 7 to 10 days prior to the start of activities. If active nests are found in the project area, the guidelines regarding buffers around nests provided in the

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INRMP would be followed (Hill AFB, 2020). Impacts would not be significant because there would be no take of birds protected under the MBTA.

The Proposed Action would not provide new attractants to animals that may result in an increase in Bird/Wildlife Aircraft Strike Hazard (BASH) incidents at Hill AFB. Increased flights would add to the potential BASH risks associated with aircraft arriving for, or departing after, Depot maintenance. Repairs to aircraft would not increase BASH incidents at Hill AFB. Personnel at Hill AFB would follow the Hill AFB BASH Plan to minimize the potential for BASH risks.

The direct impacts to vegetation and wildlife from the Proposed Action would be a minor incremental contribution to the indirect impact to vegetation and wildlife from other development projects in the area. Impacts would include mortality and loss of habitat. The overall impacts would not be significant because construction projects are occurring in already developed areas such as the City of Layton and Hill AFB and not in large natural areas.

4.3.2 No Action Alternative

No impact to wildlife would result from the No Action Alternative because there would be no construction activities.

4.4 NOISE

Assessing impacts of noise involves several factors, including frequency, content, time of day during which noise occurs, duration, and loudness of the noise. A proposed action could have a significant effect on noise if noise-sensitive areas experience a long-term increase in noise exposures at or above 80 dB (DNWG, 2013). However, short-term exposures to elevated noise levels would not cause significant effects.

4.4.1 Proposed Action

Construction and operation of the F-35/T-7 Maintenance Campus is compatible with the existing noise levels and would not cause the noise levels to increase above existing levels. The U.S. Department of Transportation (USDOT) provides a methodology for estimating potential noise levels in Highway Construction Noise: Measurement, Prediction, and Mitigation (USDOT, 2006). Activities typically involved in construction generate noise levels ranging from 80 to 89 dBA at a distance of 50 feet (USDOT, 2006). Typically, as sound waves travel through air, geometric spreading of noise with distance from a point source results in decreases at a rate of 6 dBA per each doubling of distance; therefore, at a distance of 100 feet from a point source, the noise from construction equipment would be reduced from 80 to 89 dBA to approximately 74 to 83 dBA, and at 200 feet, to approximately 68 to 77 to 74 dBA. The use of multiple pieces of construction equipment at once would result in an increase in noise generated. If two pieces of equipment that produce the same amount of noise are used, there would be a 3 dBA increase; if four such pieces are used, a 6 dBA increase; if eight such pieces are used, a 9 dBA increase, and so forth. Therefore, the noise from two comparable pieces of equipment operating together at 50 feet would be between 83 and 92 dBA. To minimize potential noise impacts, the construction activities could be limited to typical working hours, from 7 a.m. to 8 p.m., to the extent possible, and the contractor would be required to maintain construction equipment in accordance with the manufacturer's specifications to keep unnecessary noise impacts to a minimum. Temporary construction-related noise impacts would end once construction is complete.

Noise resulting from operation of the F-35/T-7 Maintenance Campus would not unreasonably disturb the public. There would be additional F-35 and T-7 flights into and out of Hill AFB. At full capacity, approximately 204 F-35 and 17 T-7 aircraft would be able to be serviced at Hill AFB each year, with four aircraft operations for each aircraft flying into Hill AFB for maintenance, resulting in approximately 816 annual F-35 aircraft operations and 68 annual T-7 aircraft operations. There are currently approximately

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40,046 annual aircraft operations at Hill AFB (Hill AFB, 2018). Therefore, there would be a proposed increase of approximately 2 percent in airfield operations. This would result in an imperceptible increase in noise levels from aircraft. Engine tests would not be conducted near the maintenance facilities; instead, they would be conducted on the runway during the Functional Check Flight, as required. The increase in F-35 aircraft operations would result in similar noise levels of the existing F-35 aircraft operations at Hill AFB; however, they would occur more often.

Expected noise levels for the T-7 aircraft are not yet known. Once the aircraft specifications are known, the Air Force will update the AICUZ to determine the noise contours for aircraft coming into and out of Hill AFB and the potential impacts and mitigation. When that information is available, this EA will be updated accordingly.

The direct impacts to noise from the Proposed Action would be a minor incremental contribution to the indirect impact to noise from other development projects in the area. Construction noise from the Proposed Action would overlap with noise from other construction projects on and around Hill AFB. These impacts would not be significant because construction noise is temporary in nature, construction would occur during daytime hours, and contractors would maintain construction equipment in accordance with the manufacturer's specifications to keep unnecessary noise impacts to a minimum.

4.4.2 No Action Alternative

No impact to noise would result from the No Action Alternative because there would be no construction of facilities or additional flights.

4.5 AIR QUALITY

Air quality impacts for the Proposed Alternative are evaluated based on the net change in emissions estimated for regulated pollutants relative to existing conditions, the No Action Alternative, and relevant regulatory thresholds. A significant air quality impact may be indicated if emissions from a federal action would conflict with the state or local plans to achieve ambient air quality standards (the applicable State Implementation Plan [SIP]) or if the net changes in project-related emissions would result in any of the following:

- Cause or contribute to a violation of any national or state ambient air quality standard
- Increase the frequency or severity of a violation of any ambient air quality standard
- Delay the attainment of any standard or other milestone contained in the SIP or permit limitations.

The EPA General Conformity Rule establishes federal de minimis thresholds in 40 CFR Section 93.153(b) for individual criteria pollutants and their precursors. The applicable thresholds depend on the EPA-designated attainment status for each NAAQS pollutant in the project area. The thresholds are only applicable to increases of pollutants and their precursors associated with federal actions in nonattainment and maintenance areas. These de minimis thresholds (represented in tons per year [tpy]) are used to delineate federal actions with the potential to conflict with the applicable SIP or substantially and adversely affect air quality. If the federal action includes sources that require new source review permitting, that portion of the action is not subject to conformity determination (40 CFR Section 93.153(d)). Those sources will be managed separately as part of the permitting process.

4.5.1 Proposed Action

4.5.1.1 Construction and Demolition Activities

Demolition and construction associated with the Proposed Action would take place in a phased manner over the next 20 years. Due to the scope and duration of the Proposed Action, this analysis of emissions

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considers only well-defined projects that could be implemented upon completion of this NEPA analysis. As longer-term projects become better defined, tiered NEPA documents can be completed.

Emissions were estimated using the Air Force Conformity Applicability Model (ACAM), the required tool for analysis of potential air quality impacts associated with Air Force actions.

A summary of ACAM default parameters and those specific to individual project activities is provided in Appendix B, Air Quality General Information and Calculations.

4.5.1.2 Emissions and Impact Evaluation

Air quality impacts of the Proposed Action were evaluated using ACAM Version 5.0.17 which follows the *Air Force Air Quality Environmental Impact Analysis Process (EIAP) Guide – Fundamentals*, Volume 1 of 2 (AFCEC, 2019) and the *Air Force Air Quality Environmental Impact Analysis Process (EIAP) Guide*, Volume II – Advanced Assessments (AFCEC, 2020).

The ACAM Report and ACAM Detail Report are produced by the model to summarize results for the Proposed Action's total annual air emissions from construction and demolition activities. These reports are provided in Appendix B, Air Quality General Information and Calculations. ACAM emissions results for construction and demolition are summarized in Table 4-2.

Table 4-2. ACAM Results for Construction and Demolition Emissions

Year	Estimated Emissions (tpy)							
	VOC	NO _x	CO	SO ₂	PM ₁₀	PM _{2.5}	Pb	NH ₃
2021	0.31	2.02	1.94	0.01	2.11	0.08	0.00	0.00
2022	1.48	3.76	4.14	0.01	8.37	0.16	0.00	0.00
2023 ^a	1.55	5.49	5.64	0.02	19.3	0.21	0.00	0.01
2024	3.47	3.89	4.05	0.01	3.66	0.14	0.00	0.01
2025	2.83	1.99	2.36	0.01	0.31	0.07	0.00	0.00
2026	0.29	0.80	1.04	0.00	0.04	0.04	0.00	0.00
2027	0.09	1.64	1.38	0.01	0.12	0.13	0.00	0.00
2028	0.31	3.18	2.77	0.02	4.79	0.18	0.00	0.01
2029 ^b	5.50	3.42	3.28	0.02	0.17	0.16	0.00	0.01
2030	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	15.8	26.2	26.6	0.09	38.9	1.17	0.00	0.04

^a 2023 is the peak year for construction and demolition emissions for all criteria pollutants except for VOCs.

^b 2029 is the peak year for construction and demolition emissions for VOCs.

Construction and demolition activities would generate air pollutant emissions primarily from site-disturbing activities such as grading, filling, compacting, and trenching; fuel combustion in construction and demolition equipment; and evaporative emissions from architectural coatings. Construction worker commute trips to and from the construction site would also generate criteria pollutant emissions. Fugitive dust emissions would be greatest during the initial site preparation activities and would vary from day to day depending on the construction phase, level of activity, and prevailing weather conditions. The quantity of uncontrolled fugitive dust emissions from a construction site is typically proportional to the area of land being worked and the level of construction activity.

No specific thresholds for significance have been established for emissions from construction or operation of projects at Hill AFB. However, total construction-related emissions from the Proposed Action summed

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over the entire 10-year construction program would be less than the EPA's General Conformity de minimis thresholds. On that basis, emissions from construction and demolition may be considered less than significant. Construction and demolition activities would incorporate BMPs and control measures (such as frequent application of water for dust-control) to minimize fugitive particulate matter emissions.

Greenhouse gas (GHG) emissions would also result from the construction and demolition activities associated with the Proposed Action. Construction and demolition activities associated with the Proposed Action would contribute directly to emissions of GHGs from the combustion of fossil fuels in vehicles and equipment. ACAM results for GHG emissions estimated for construction and demolition are summarized in Table 4-3.

Table 4-3. ACAM Results for GHG Emissions Associated with Construction and Demolition Activities

Year	2021	2022	2023	2024	2025	2026	2027	2028 ^a	2029	2030	Total
Estimated CO ₂ e Emissions (tpy)	522	994	1,568	1,095	623	640	1,976	2,492	2,223	0	12,134

^a 2028 is the peak year for GHG construction and demolition emissions.

No specific thresholds for significance have been established for GHG emissions from construction or operation of federal projects. Total construction-related GHG emissions from the Proposed Action over the 10-year construction program would be less than EPA's Mandatory GHG Reporting rule threshold of 25,000 metric tons of carbon dioxide equivalent (CO₂e) emissions per year (per 40 CFR Part 98), so on that basis, these emissions may be considered less than significant.

4.5.1.3 Operational Emissions

Emissions are expected to ramp up as construction is completed and facilities become operational. Peak operational emissions would occur at buildout and continue at steady state. With implementation of the Proposed Action, four types of project-related activities would result in operational emissions:

- Aircraft sorties would increase as aircraft arrive for service and depart Hill AFB.
- Vehicle commute trips would increase due to additional personnel working at the facilities.
- Heating and cooling would be provided for the new buildings.
- Emission sources and activities subject to new source review and permitting would be added and operated under the Hill AFB Title V Operating Permit.

ACAM was used to estimate the emissions associated with the phased arrival, testing, and departure of F-35 aircraft. By 2040, maintenance for 204 F-35 aircraft would be completed at Hill AFB each year. Additionally, limited flight operations would occur for the T-7A; however, at the time of publication of this document, only two prototypes of this aircraft have been produced. These aircraft remain in the design phase and service protocols have not yet been established. The arrival date of these aircraft for maintenance at Hill AFB is not known. Additional tiered NEPA documents will be completed in the future when maintenance protocols become better defined. ACAM was also used to estimate the emissions that would be associated with vehicle commute trips for additional personnel, along with the increased use of fuel and electricity to heat and cool the new building spaces.

Activities and equipment subject to new source review and permitting, and consequently, Hill AFB's Title V Operating Permit, include the use of boilers, generators, paint booths, and other industrial equipment. The process for future permitting, which will address these sources of emissions, is described in Appendix B under Title V Requirements.

An estimate of impact on the Title V limits can be made by conservatively assuming the current emissions result from full servicing of aircraft only, and then proportionally increasing those emissions by

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the increase in expected aircraft. Despite the conservative nature of this estimate, the projected impact on the current Title V limits is relatively small; the Title V limit with the biggest impact is the boiler limit, which is estimated to increase from 40% (current) to 51% (projected).

The ACAM model run for the Proposed Action includes F-35 aircraft sorties, personnel commute trips, and heating and cooling from new buildings. Operational emissions peak at steady state in 2041 when all construction is complete, and the highest number of aircraft are visiting Hill AFB for maintenance. Emissions estimates for the Proposed Action are provided in the ACAM Summary Report and ACAM Detail Report in Appendix B. A summary of the total annual emissions estimated in ACAM for non-permitted, operational activities in 2041 is given in Table 4-4.

Table 4-4. ACAM Results for Estimated Operational Emissions in 2041 (Steady State)

Operational Category	Estimated Emissions Rates (tpy)							
	VOC	NO _x	CO	SO _x	PM 10	PM 2.5	Pb	NH ₃
Aircraft	0.01	16.6	3.52	1.16	1.44	1.30	0.00	0.00
Personnel	1.80	1.59	20.5	0.01	0.05	0.04	0.00	0.11
Heating and Cooling	0.21	3.89	3.27	0.02	0.30	0.30	0.00	0.00
Total	2.02	22.1	27.2	1.20	1.79	1.64	0.00	0.11

Activities associated with the Proposed Action indicate that minor, less-than-significant adverse impacts on local and regional air quality would occur.

ACAM results for GHG emissions associated with operational activities are provided in Appendix B and indicate that 2041 would be the peak year for GHG emissions. As discussed previously, no threshold for significance has been established for GHG emissions. However, ACAM results indicate low levels of annual GHG emissions would result from the operational activities associated with the Proposed Action. The CO₂e emissions estimated in ACAM for non-permitted, operational activities in 2041 are summarized in Table 4-5.

Table 4-5. ACAM Results for CO₂e (tpy) in 2041 (Steady State)

Aircraft (F-35)	Personnel	Heating and Cooling	Total
3,505	1,822	4,680	10,008

^a 2030 is the peak year for GHG operational emissions.

4.5.1.4 General Conformity Applicability

The highest annual construction emission rate and the highest annual operations emission rate for each criteria pollutant subject to general conformity applicability analysis have been hypothetically summed to provide maximum plausible estimates of the total net emissions increase for each pollutant. New boilers, tanks, and generators associated with facility operations would be subject to new source review and permitting, and as a result, emissions from these sources are not included in evaluation of general conformity applicability. Estimated, annual emission rates have been compared to the applicable general conformity de minimis thresholds, and the results are presented in Table 4-6. GHG emissions have also been included, though they are not applicable to the General Conformity Rule. None of the de minimis thresholds would be exceeded, indicating that the project can be assumed to conform, and no further general conformity analysis is required.

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Table 4-6. Estimated Emissions and General Conformity Applicability

Emission Source	Estimated Emissions Rates (tpy)									
	VOC	NO _x	O ₃	CO	SO ₂	PM ₁₀ ^d	PM _{2.5} ^d	Pb	NH ₃	CO _{2e}
Construction Emissions (max year)	5.50 (2029)	5.49 (2023)	8.92 (2029)	5.64 (2023)	0.02 (2023)	19.3 (2023)	0.21 (2023)	0.00	0.01 (2023)	2,492 (2033)
Operational Emissions (max year)	2.02 (2040)	22.1 (2040)	16.6 (2040)	27.2 (2040)	1.20 (2040)	1.79 (2040)	1.64 (2040)	0.00	0.11 (2040)	9,837 (2039)
Total Emissions (max year)	7.02 (2029)	22.1 (2040)	25.0 (2029)	27.2 (2040)	1.20 (2040)	19.3 (2023)	1.64 (2040)	0.00	0.11 (2040)	9,837 (2039)
Hypothetical Emissions Max Year ^a	7.52	27.6	25.5	32.8	1.22	21.1	1.86	0.00	0.12	12,329
PSD Potential to Emit (PTE) Significance thresholds for Stationary Sources of Attainment Pollutants (tpy) – Hill AFB is not a “Named Source” under PSD Major Source Thresholds (40 CFR § 51.166(b)(1))	250	250	250	250	250	250	NA	250	250	NA
General Conformity de minimis threshold (tpy) (40 CFR § 93.153(b)(1))	70 ^b 100 ^c	70 ^b 100 ^c	100	NA	70 ^b	NA	70	NA	70 ^b	NA
Threshold Exceeded?	No	No	No	No	No	No	No	No	No	NA

^a Hypothetical Emissions Max Year value is the max year construction emissions plus the max year operational emissions.

^b Precursor to serious non-attainment of PM_{2.5}

^c Precursor to marginal non-attainment of O₃

^d Directly-emitted PM

NA = not applicable

The direct impacts to air quality from the Proposed Action would be a minor, incremental contribution to impacts from other development projects in the area. Impacts would result from construction equipment, vehicles, and the operation of heating and cooling equipment in buildings. Impacts would not be significant because proposed projects must comply with the SIP, must not contribute to a violation of any national or state ambient air quality standard, must not increase the frequency or severity of a violation of any ambient air quality standard, and must not delay the attainment of any standard or other milestone contained in the SIP or permit limitations.

4.5.2 No Action Alternative

No impact to air quality would result from the No Action Alternative because there would be no construction of facilities or additional sources of air emissions.

4.6 STORMWATER

The threshold level of significance for stormwater is one that would result in an unpermitted release of stormwater into a receiving water that would result in a violation of state water quality regulations.

4.6.1 Proposed Action

The Proposed Action would have no impact on natural surface water features within or adjacent to the project area because there are no natural surface water features within or adjacent to the project area (Hill AFB, 2020).

A negligible impact on stormwater would occur from the Proposed Action. A Construction Stormwater Pollution Prevention Plan would be developed for the Utah General Stormwater Permit for the construction site in adherence with the Hill AFB Storm Water Management Plan (Hill AFB, 2020). Stormwater discharges at Hill AFB are regulated under the Utah Pollutant Discharge Elimination System General Permit for Discharges from Small Municipal Separate Storm Sewer System UTR090000.

The stormwater management system would be designed so that stormwater discharge does not exceed the 95th percentile storm in adherence with the Energy Independence and Security Act and the Hill AFB Storm Water Management Plan (Hill AFB, 2020). According to calculations of rainfall between 1980 and 2019, 95 percent of storms would generate approximately 1 inch of water and the Proposed Site would generate approximately 70,000 cubic feet of stormwater (MOCA, 2019). Post-construction runoff from impervious areas would be approximately 400,000 cubic feet (MOCA, 2019). To accommodate infiltration of the additional stormwater, collection pipes would be installed throughout the campus, which would lead to perforated storage and infiltration pipes mostly in the southern portion of the project area to divert water away from facilities and from OU1. Stormwater that exceeds the designed capacity would overflow into existing drainage patterns of the surrounding area. In this area, topography slopes to the east towards the Davis-Weber Canal, so the overflow would likely flow towards the Canal but the system would be designed so that stormwater would not leave the base boundaries.

The direct impacts to stormwater from the Proposed Action would be a negligible incremental contribution to the indirect impact to stormwater from other projects in the area. Projects would implement site-specific stormwater BMPs to encourage stormwater infiltration and reduce stormwater runoff during and after construction in accordance with state and local regulations to minimize the overall impacts.

4.6.2 No Action Alternative

No impact to stormwater would result from the No Action Alternative because there would be no construction of impermeable surfaces or disturbance of soil.

4.7 GROUNDWATER

The threshold level of significance for groundwater is one that would result in a release of contamination that creates concentrations that exceed the Utah drinking water standards or result in drinking water demand that exceeds aquifer capacity.

4.7.1 Proposed Action

The Proposed Action would result in a long-term, minor, adverse, direct impact on groundwater from the increase in use of groundwater as a potable water source. The amount of water available from WBWCD is contractually limited, so all additional water for the F-35/T-7 Maintenance Campus will be from groundwater. The operation of the new facilities on Hill AFB would require approximately 190,000 gpd or 69 mgy (Goodliffe, pers. comm., 2020). Groundwater capacity at Hill AFB is 3,119 mgy. Existing use is approximately 495 mgy and would be 564 mgy. This would leave an excess capacity of 2,555 mgy.

The Proposed Action could have a short-term, minor, direct adverse impact on shallow groundwater during construction if groundwater is encountered during excavation, grading, and other land-disturbing activities. Any dewatering necessary during such activities would be conducted using standard methods. Groundwater within the project area flows to the northwest and north. Therefore, if shallow groundwater

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were to be encountered, it would not be contaminated with chlorinated solvents from OU1. If contaminated groundwater is encountered during construction, it would be managed in accordance with applicable laws and regulations, as described in Section 3.2.6 of this EA.

The direct impacts to groundwater from the Proposed Action would be a minor incremental contribution to the indirect impact to groundwater withdrawals from other projects in the area that use groundwater as a water source. Impacts would not be significant because groundwater withdrawals would be monitored and regulated by the Utah Division of Water Rights to prevent excessive drawdown of groundwater aquifers.

4.7.2 No Action Alternative

No impact to groundwater would result from the No Action Alternative because there would be no need for additional groundwater use if no new facilities are constructed.

4.8 UTILITIES AND UTILITY INFRASTRUCTURE

The threshold level of significance for impacts to utilities and infrastructure would be an exceedance of the capacity of utilities or infrastructure.

4.8.1 Proposed Action

Electricity for the proposed F-35/T-7 Maintenance Campus would come from Substation 1 (Figure 3-1) north of the Proposed Site through a new underground line. The existing sanitary sewer lift station (Figure 3-1) does not have the capacity to process the additional wastewater from the proposed F-35/T-7 Maintenance Campus. Therefore, as part of the Proposed Action, a new lift station would be constructed for the new campus and would be in-line with the existing force main. A new wetwell would be constructed and would accommodate waste from both the F-22 Maintenance Campus and the F-35/T-7 Maintenance Campus. The exact locations of the proposed lift station and wetwell are not known but would be within the Proposed Site. The industrial waste from the proposed F-35/T-7 Maintenance Campus would be approximately 5,000 gpd. The existing treatment system has capacity to accommodate this increase and would not be upgraded. Communication lines would be extended from north of the Proposed Site into the proposed campus area.

Natural gas for the proposed F-35/T-7 Maintenance Campus would come from Line 19, which serves the east side of Hill AFB. If it is determined during the designs that Line 19 cannot provide enough gas for the new campus and other proposed development on the east side of Hill AFB, a new line would be constructed from natural gas Line 21 on the west side of Hill AFB to the new campus. The regional natural gas supply has the capacity to accommodate this increased demand for the new campus.

Construction contractors would be required to follow the procedures listed in the Hill AFB Integrated Solid Waste Management Plan, including reuse and recycling requirements (Hill AFB, 2019). Construction and demolition debris, including asphalt, concrete, and scrap metal, would be recycled to the extent possible before disposal. Municipal solid waste generated during operation of the new facilities would be collected and disposed of in a regional landfill by Wasatch Integrated Waste Management District (Hill AFB, 2019).

A short-term, minor, adverse, direct impact on utility demand infrastructure would occur from the Proposed Action and a long-term, minor, adverse, direct impact on utility demand would occur from the Proposed Action.

The direct impacts to utilities from the Proposed Action would be a minor contribution to the indirect impact to utilities from other projects in the area. Impacts would not be significant because the projects are in a developed area that has utility suppliers and the ability to connect to existing utility infrastructure.

4.8.2 No Action Alternative

No impact to utilities or utility infrastructure would result from the No Action Alternative because there would be no need for additional utility use or relocation of utility lines if no new facilities are constructed.

4.9 TRAFFIC AND TRANSPORTATION INFRASTRUCTURE

The threshold level for significant impacts to traffic and transportation would be a disruption in traffic flow on adjacent roadways or other surrounding roads. Factors considered in determining whether a significant traffic-related impact could occur include the extent to which the considered alternatives would result in the following:

- Increase in vehicle trips that would permanently disrupt or alter local circulation patterns
- Lane closures or other impediments to traffic
- Activities that would create potential traffic safety hazards
- Increased conflict with pedestrian and bicycle routes or fixed-route transit
- Parking demand that exceeds the supply

4.9.1 Proposed Action

The Proposed Site would result in impacts from the disruption of traffic patterns; lane closures; and parking demand that exceeds supply. Without the mitigation measures described below, these impacts would be significant.

A long-term, minor, adverse, direct impact on traffic within Hill AFB and at the entrances and exits of Hill AFB would occur during construction of the facilities and realignment of Foulois Road. Construction activities would be spread out over 20 years, with a large portion of the construction occurring between 2021 and 2026. Construction traffic would enter Hill AFB through the Roy Gate on the northwest side of the Base. From this entrance, the construction traffic could cross the north end of the Base to the east side and south to the Proposed Site, avoiding high traffic areas on the west side of the Base.

During portions of the Foulois Road realignment, traffic might need to be rerouted around the construction, which could lead to delays in on-post traffic on the east side of the Base. The realignment would likely be constructed while local traffic continued to use the original portion of Foulois Road. After completion of the new section, vehicles would use the new section of road while the old section was being demolished. The delays would occur when the two sections are connected. The road alignment would be constructed to meet the additional traffic requirements of the F-35/T-7 Maintenance Campus in accordance with American Association of State Highway and Transportation Officials regulations.

A long-term, minor adverse, indirect impact on traffic would occur along North Hill Field Road and State Route 193 during operation of the new facilities from the addition of approximately 2,500 new employees coming onto Hill AFB. Employees would most likely enter Hill AFB through the South Gate, which is closest to the Proposed Site. If all new employees enter and leave from the South Gate, the potential traffic would increase from 9,000 trips per day to at least 14,000 trips per day (UDOT, 2020). Employees would likely come from the west on State Route 193 and from the south on North Hill Field Road. If half of the incoming traffic came from State Route 193, traffic coming from the west would increase from 30,000 to 31,250, an increase of approximately 4 percent; if half of the incoming traffic came from North Hill Field Road, traffic from the south would increase from 25,000 to 26,250, an increase of approximately 5 percent (UDOT, 2020). These increases in traffic are within the capacity of this road, 40,000 to 45,000 trips per day. According to the City of Layton Public Works Department (2020), no road upgrade projects are planned for these roads.

Adequate parking for the new facilities is not available within the Proposed Site. Without an upgrade, this would result in a significant impact. Therefore, as part of the Proposed Action, approximately 552,500 ft² of new parking lots would be constructed within the Proposed Site for employee parking.

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The direct impacts to transportation from the Proposed Action would be a minor contribution to the indirect impact to transportation from other projects in the area. The large amount of development planned at Hill AFB and the surrounding areas would increase the amount of traffic in the area. Each development in the surrounding areas would be planned in coordination with, and with approval of, the city planning and transportation departments, including transportation upgrades to accommodate the new development. In addition, the expansion of Interstate 15 express lanes and other transportation projects planned in the area will alleviate some of the traffic.

4.9.2 No Action Alternative

No impact to transportation infrastructure or traffic would result from the No Action Alternative because there would be no additional personnel using the roads on or around Hill AFB if no new facilities are constructed.

4.10 SOCIOECONOMICS

The threshold level of significance for impacts to socioeconomics would be an increase in population that results in the displacement of people or housing, or unacceptable reductions in levels of service for fire and police protection, schools, parks and recreation, and other public services.

4.10.1 Proposed Action

The Proposed Action would result in short-term and long-term, minor, indirect, beneficial impacts to the local economy from an increase in spending during the construction period and during operation of the new facilities.

The Proposed Action would result in long-term, minor, direct, adverse impacts to housing and related support systems. If all new employees working at the proposed F-35/T-7 Maintenance Campus migrated to the area from other counties or states with families of four, there would be a population increase of less than 2 percent in Davis and Weber counties. Enough housing to accommodate the new employees is available in both counties; however, the amount of available housing would decrease as a result of the Proposed Action. Based upon the small percentage increase, the Proposed Action would not put a strain on local emergency departments, school systems, or recreational areas. The Proposed Action would not impact the Hubbard Golf Course. Therefore, while an adverse impact to housing availability and local support systems would occur, the impact would not be significant. The Proposed Action would result in long-term, minor, direct, beneficial impacts to socioeconomics from an increase in spending in the local economy from the new employees.

The direct impacts to socioeconomics from the Proposed Action would be a minor contribution to the indirect impact to socioeconomics from other projects in the area. The development of residential and commercial areas around Hill AFB would provide a benefit by adding housing units that would be available to the new personnel assigned to Hill AFB.

4.10.2 No Action Alternative

A long-term, minor, direct, adverse impact to socioeconomics in the area would occur from the No Action Alternative because there would be no increase in construction or full-time jobs and no increase in spending in the local community resulting from the increase in people and jobs in the area.

4.11 HAZARDOUS MATERIALS/WASTE

The threshold level of significance for impacts resulting from hazardous materials includes a release of reportable quantities of hazardous materials or a violation of local, state, or federal hazardous materials regulations.

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4.11.1 Proposed Action

The Proposed Action would have short-term and long-term, minor, indirect, adverse impacts from the use of hazardous materials and the creation, storage, and disposal of hazardous waste during construction and operation of the proposed F-35/T-7 Maintenance Campus. The hazardous materials used will include equipment fuel, grease, engine oil, hydraulic oil, and other related equipment operation and maintenance materials and lubricants used to maintain equipment. Any solid waste generated in the use of these materials or any solid waste otherwise encountered during the construction process would be collected on site and turned in in a manner consistent with all applicable local, state, and federal regulations applicable to the collection, characterization, and transport of solid and potentially hazardous waste. Storage and use of hazardous materials would follow the regulations cited in Section 3.2.10 of this EA. Hazardous materials used during the maintenance of aircraft would be stored in hazardous materials storage lockers and only be used by trained personnel. All hazardous materials will be authorized for use and tracked in the Enterprise Environmental, Safety, and Occupational Health - Management Information System in accordance with legal requirements.

USAF regulations prohibit the use of asbestos and lead-based paints for new construction. Some of the buildings scheduled for demolition or renovation could contain asbestos and lead-based paint. Sampling for asbestos and lead-based paint would occur prior to demolition; these materials would be handled in accordance with Hill AFB, USAF policy, and the Toxic Substances Control Act.

One or more hazardous waste 90-day accumulation points would be constructed as part of the Proposed Action. Hazardous wastes generated during operation of the new maintenance facilities would be stored in the 90-day accumulation point, transferred to the transfer, storage, and disposal facility on Hill AFB, and then disposed of in accordance with U.S. Air Force Hazardous Waste Management Plan for Hill AFB (USAF, 2020b). Hazardous wastes would be disposed of at an approved disposal site. Personnel involved with using, storing, or disposing of hazardous materials or waste would be trained following the requirements in the Hazardous Waste Management Plan for Hill AFB (USAF, 2020b).

If additional parking areas are needed in the future and are placed on top of OU1, precautions would be taken and coordination with EPA and state and local regulators would be conducted prior to conducting any ground-disturbing activities. Hill AFB would need to coordinate with EPA and state and local regulators to amend the existing Record of Decision for OU1 (Hill AFB, 1998) to include a parking lot as a landfill cap. If an amendment of the Record of Decision for OU1 is needed, the process could take up to 2 years to negotiate because of the complexities of OU1 related to off-base contaminated areas.

Infrastructure associated with the groundwater treatment system, including piping, electrical supply, and sheds, may require relocation and the ground would be disturbed during the construction of the parking lot. During these activities, contaminated soil could be encountered. The soil would need to be treated as hazardous waste and procedures for handling, storing, and disposal would need to follow the Hazardous Waste Management Plan (USAF, 2020b). If removal of contaminated soils within former fire training areas is required to construct these parking lots, the removal would follow guidelines in Air Force Guidance Memorandum 2019-32-01, *Establishing Aqueous Film Forming Foam (AFFF)-Related Waste Management Implementation Guidance*.

The direct impacts to hazardous materials and waste from the Proposed Action would be a moderate when added to the indirect impact to hazardous materials and waste from other projects in the area. The multitude of construction project areas around Hill AFB would generate some hazardous waste. The hazardous waste would be stored, handled, and disposed of per federal, state, and local regulations. Disposal of hazardous wastes would occur only in landfills certified to handle the waste and transport would occur by certified waste haulers.

4.11.2 No Action Alternative

No impacts to hazardous materials or waste would result from the No Action Alternative because there would be no new construction or demolition projects and no operation of new facilities.

4.12 SAFETY AND OCCUPATIONAL HEALTH

The threshold for a significant impact would be one that would: (1) substantially increase risks associated with the safety of construction personnel, contractors, or the local community; (2) substantially hinder the ability to respond to an emergency; or (3) introduce a new health or safety risk for which the installation is not prepared or does not have adequate management and response plans in place.

4.12.1 Proposed Action

During construction activities, implementation of the Proposed Action would have a short-term, minor, direct, adverse impact on the availability, capabilities, or capacity of emergency services available on Hill AFB and the neighboring communities. The Proposed Action would also have short-term, minor, direct, adverse impacts on worker safety and occupational health as well as emergency services during construction. All construction contractors are required to follow and implement U.S. Occupational Safety and Health Administration standards and applicable DoD and USAF regulations to establish and maintain safety procedures. In the event of non-serious injuries, affected personnel would use first aid or would visit a local urgent care facility. In the event of serious injuries, the local emergency services would be contacted to respond and care for injured personnel at a local emergency room, likely Davis Hospital as it is the closest to Hill AFB. The possibility for serious injury during construction activities would add to the availability, capabilities, or capacity of local emergency services. The impacts would not be significant because of the safety training and protocols that would be in place during construction.

A temporary secure perimeter fence would be installed around the construction area with a construction access gate. During construction, signs would be placed on Foulis Road to alert drivers to changes in traffic patterns and to trucks entering and exiting the road.

Once constructed, the Proposed Action would have long-term, minor, direct, adverse impacts on the overall safety of personnel working at the new campus. Employees would be trained in the use of equipment and safety procedures and would be required to follow and implement U.S. Occupational Safety and Health Administration standards and applicable DoD and USAF regulations to establish and maintain safety procedures. During operation, implementation of the Proposed Action would have a long-term, minor, direct, adverse impact on the availability, capabilities, or capacity of emergency services available on Hill AFB and the neighboring communities. The impacts would not be significant because of the safety training and protocols that would be in place during operation of the new facilities. Incidents that require additional emergency services above those that Hill AFB provides would be handled by the emergency service providers with which Hill AFB has mutual aid agreements.

The direct impacts to safety and occupational health from the Proposed Action would be a minor incremental contribution to the indirect impact to safety and occupational health from other projects in the area. Incidents requiring emergency response would increase on Hill AFB and in the surrounding areas from all of the planned development, putting an additional burden on those emergency services. However, the increased tax revenue for the local communities from the development projects would provide for additional emergency services to be provided.

4.12.2 No Action Alternative

Long-term, minor, adverse, indirect impacts to safety and occupational health would occur from the No Action Alternative because repairs to the F-35 and T-7 aircraft would continue to occur in facilities that are already at full capacity and not configured to repair the F-35 and T-7 aircraft. This could lead to longer work hours and working outside regular hours.

4.13 AESTHETICS AND VISUAL RESOURCES

The threshold level for significant impacts on visual resources is defined as a change in the viewshed that causes it to be dominated by views that are inconsistent with the existing visual character of the area.

4.13.1.1 Proposed Action

The Proposed Action would result in minor, short-term, direct, adverse impacts on visual resources during construction of the Maintenance Campus. Adverse impacts on visual resources could occur during construction from stockpiles of materials, construction vehicles onsite, and partially constructed buildings. These impacts would be temporary and would end after completion of the construction activities.

Following construction, the Proposed Action would result in minor, long-term, adverse direct impacts on visual resources because of the changes associated with the development of the Proposed Site. This impact may be viewed as adverse from the viewer's perspective if they prefer mowed grass to a developed site, especially when viewed from another open natural area such as the golf course. Visual impacts would not be significant because the proposed construction would not dominate the viewshed and would be consistent with the existing features visible within Hill AFB.

The Proposed Action would contribute to minor, short-term, adverse indirect impacts on visual resources during construction from other ongoing, planned, or recently completed projects in the area. The Proposed Action would contribute to minor, long-term indirect impacts on visual resources because of the changes associated with undeveloped areas becoming developed sites. Whether these impacts are considered adverse or beneficial is subjective and depends on an individual's preferences for developed or natural landscape.

4.13.1.2 No Action Alternative

No new construction or development activities are proposed under the No Action Alternative. Therefore, no impacts on visual resources would occur.

4.14 OTHER NEPA CONSIDERATIONS

4.14.1 Unavoidable Adverse Effects

This EA identifies any unavoidable adverse impacts that would be required to implement the Proposed Action and the significance of the potential impacts to resources and issues. 40 CFR Section 1501.3(b) specifies that a determination of significance requires consideration of potentially affected environment and degree of the effects. Construction of the F-35/T-7 Maintenance Campus would impact the local project area at Hill AFB. The severity of potential impacts would be limited by regulatory compliance for the protection of the human and natural environment.

Unavoidable short-term, adverse impacts associated with implementing the Proposed Action would include the following:

- Temporary erosion and sedimentation from soils disturbance
- Temporary increase in fugitive dust and air emissions during construction
- Intermittent noise
- Minor alterations to local traffic
- Hazardous material disposal
- Worker safety

However, these effects are considered minor and would be confined to the immediate area. Use of environmental controls and implementing controls required in permits and approvals would minimize these potential impacts.

**FINAL Environmental Assessment for
Construction of F-35/T-7 Maintenance Campus at Hill AFB, Utah**

For the Proposed Action to be accomplished, these impacts would occur. The Proposed Action is required to provide adequately sized facilities for depot-level maintenance of F-35 and T-7 aircraft at Hill AFB.

4.14.2 Relationship of Short-Term Uses and Long-Term Productivity

The relationship between short-term uses and enhancement of long-term productivity from the implementation of the Proposed Action is evaluated from the standpoint of short-term effects and long-term effects. Short-term effects would be those associated with the activities to construct the F-35/T-7 Maintenance Campus. The long-term enhancement of productivity would be those effects associated with operation of the new campus after implementation of the Proposed Action.

The Proposed Action represents an enhancement of long-term productivity for aircraft maintenance at Hill AFB. The negative effects of short-term operational changes during construction activities would be minor compared to the positive benefits from aircraft maintenance activities. Immediate and long-term benefits would be realized for operation and maintenance after completion of the Proposed Action.

4.14.3 Irreversible and Irretrievable Commitments of Resources

This EA identifies any irreversible and irretrievable commitments of resources that would be involved in the Proposed Action if implemented. An irreversible effect results from the use or destruction of resources (e.g., energy) that cannot be replaced within a reasonable time. An irretrievable effect results from the loss of resources (e.g., endangered species) that cannot be restored as a result of the Proposed Action. The short-term irreversible commitments of resources that would occur include planning and engineering costs; building materials and supplies and their cost; use of energy resources during construction; labor; the generation of fugitive dust emissions; and the creation of temporary construction noise. No long-term irretrievable commitments of resources would result.

**FINAL Environmental Assessment for
Construction of F-35/T-7 Maintenance Campus at Hill AFB, Utah**

5.0 LIST OF PREPARERS

This EA has been prepared under the direction of the Air Force Civil Engineer Center, USAF, 75 ABW, OO-ALC, and Headquarters Air Force Materiel Command.

The individuals that contributed to the preparation of this EA are listed in Table 5-1.

Table 5-1. List of Preparers

Name/Organization	Education	Resource Area	Years of Experience
Melissa Cary/CH2M	B.S., Environmental Science, 1999	Project Manager	21
Laura Haught/CH2M	B.S., Biology, 1998	NEPA Lead	22
Sara Van Klooster/CH2M	B.S., Atmospheric Science, 2003; M.S. Atmospheric Science, 2005	Air Quality	15
Michelle York /CH2M	B.S. Chemical Engineering, 2000	Air Quality	20
Rich Reaves/CH2M	Ph.D., Wildlife and Wetland Ecology, Purdue University, 1995	Subject Matter Expert, Senior Technical Reviewer	25+
Victoria Hernandez/CH2M	B.S., Bioenvironmental Sciences, 2016 M.S., Global Studies and International Relations, 2018	Senior Technical Reviewer	4
Pamela Vanderbilt/CH2M	B.S., Biology, 1977, M.A. Biology, 1979	Subject Matter Expert, Senior Technical Reviewer	40

**FINAL Environmental Assessment for
Construction of F-35/T-7 Maintenance Campus at Hill AFB, Utah**

6.0 PERSONS AND AGENCIES CONSULTED/COORDINATED

The persons and agencies listed in Table 6-1 were contacted in the preparation of this EA.

Table 6-1. Persons and Agencies Consulted/Coordinated

State Agencies	
Dr. Chris Merritt Mr. Chris Hansen State Historic Preservation Office 301 Rio Grande Salt Lake City, UT 84101	Darron Frstrup, Regional Director Utah Department of Transportation (801) 620-1607
Local Agencies	
Liz Felix City of Layton Public Works Department (801) 336-3700	Chad Wilkinson, Director City of Layton Planning Department (801) 336-3780
Tribal Agencies	
Blackfeet Indian Tribe Confederated Tribes of the Goshute Indian Reservation Crow Tribe of Montana Duckwater Shoshone Tribe Eastern Shoshone Tribe Ely Shoshone Tribe Hopi Tribe Navajo Nation Northern Arapaho Tribe Northwestern Band of Shoshone Nation Paiute Indian 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
Air Force Personnel	
Marc Pett, OO-ALC MILCON Program Manager Reed Olsen, Civil Engineering MILCON Program Manager Mark Holt, Civil Engineering Chief of Programming	Samuel Johnson, NEPA Program Manager Michelle Cottle, Compliance Chief Any Kitterman, Cultural Resources Manager

7.0 REFERENCES

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**FINAL Environmental Assessment for
Construction of F-35/T-7 Maintenance Campus at Hill AFB, Utah**

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**FINAL Environmental Assessment for
Construction of F-35/T-7 Maintenance Campus at Hill AFB, Utah**

**APPENDIX A
SECTION 106 CONSULTATION**



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

6 August 2020

Michelle Cottle
Chief, Environmental Quality Branch
75 CEG/CEIE
7290 Weiner St, Building 383
Hill AFB, UT 84056

Dr. Chris Merritt
Mr. Chris Hansen
State Historic Preservation Office
300 Rio Grande
Salt Lake City, Utah 84101

RE: Section 106 Review – Construction of F35/T7 Complex

Dear Dr. Merritt & Mr. Hansen,

Hill Air Force Base (AFB) is proposing to construct an F35/T7 Maintenance Complex at Hill AFB in Davis County, Utah (Attachment 1 – Location Map). The purpose of the proposed construction is to provide adequately sized facilities for the depot-level maintenance of F-35 and T-7 aircraft at Hill AFB. Hill AFB is currently developing an Environmental Assessment (EA) to determine impacts from this project.

The need for the proposed construction of the F-35/T-7 Maintenance Campus is driven by the Air Force's assignment of Hill AFB as the DSOR and TRC for depot-level sustainment of these aircraft and for future workloads. Without changes, the current facilities at Hill AFB do not have enough capacity to meet the Air Force's goal of mission-capable rate of 80 percent while continuing to support the overhaul, testing, and repair of these aircraft and their components. The activities required include aircraft disassembly, cleaning, inspecting, reassembly, and operational testing. The location has been previously disturbed by previous building construction and infrastructure (Attachment 2 – Proposed Location Disturbance Map). All previous disturbance within the project area have had continual use since the original disturbance and there are no above ground remnants of previous use remaining. This will further be discussed within the EA. Should anything be found during construction, the Hill AFB Unanticipated Discovery of Archaeological Resources Protocol will be followed.

In consideration of the lack of previous cultural resource findings and minimal opportunity for subsurface archaeology, Hill AFB has determined that the proposed work on the F35/T7 Facility will have No Impact to historic properties and recommends that the EA proceed. We request your concurrence in this determination as specified in 36 CFR 800. The SHPO and consulting tribes will have the opportunity to review and comment on the EA as well. Should you or your staff have any questions, please contact Ms. Anya Kitterman, Cultural Resource Manager, at (801) 586-2464 or at anya.kitterman@us.af.mil.

Sincerely

COTTLE.MICHELLE.L.1277363883
LE.L.1277363883

Digitally signed by
COTTLE.MICHELLE.L.1277363883
Date: 2020.08.06 11:56:39 -06'00'

Michelle Cottle
Chief, Environmental Branch
75th Civil Engineer Group

Attachments:

1. Project Location Map
2. Disturbance Location Map



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

6 August 2020

Michelle Cottle
Chief, Environmental Quality Branch
75 CEG/CEIE
7290 Weiner St, Building 383
Hill AFB, UT 84056

Lee Spoonhunter
Chairman
Arapaho Business Council
PO Box 396
Fort Washakie WY 82514

RE: Section 106 Review – Construction of F35/T7 Complex

Dear Chairman Spoonhunter,

Hill Air Force Base (AFB) is proposing to construct an F35/T7 Maintenance Complex at Hill AFB in Davis County, Utah (Attachment 1 – Location Map). The purpose of the proposed construction is to provide adequately sized facilities for the depot-level maintenance of F-35 and T-7 aircraft at Hill AFB. Hill AFB is currently developing an Environmental Assessment (EA) to determine impacts from this project.

The need for the proposed construction of the F-35/T-7 Maintenance Campus is driven by the Air Force's assignment of Hill AFB as the DSOR and TRC for depot-level sustainment of these aircraft and for future workloads. Without changes, the current facilities at Hill AFB do not have enough capacity to meet the Air Force's goal of mission-capable rate of 80 percent while continuing to support the overhaul, testing, and repair of these aircraft and their components. The activities required include aircraft disassembly, cleaning, inspecting, reassembly, and operational testing. The location has been previously disturbed by previous building construction and infrastructure (Attachment 2 – Proposed Location Disturbance Map). All previous disturbance within the project area have had continual use since the original disturbance and there are no above ground remnants of previous use remaining. This will further be discussed within the EA. Should anything be found during construction, the Hill AFB Unanticipated Discovery of Archaeological Resources Protocol will be followed.

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Sincerely

Michelle L Cottle

Michelle Cottle
Chief, Environmental Branch
75th Civil Engineer Group

Attachments:

1. Project Location Map
2. Disturbance Location Map

CC: Devin Oldman; Crystal C'Bearing, Tribal Historic Preservation Officer; Deputy THPO, Northern Arapaho Tribe

Distribution List

Blackfeet Indian Tribe
Confederated Tribes of the Goshute Indian Reservation
Crow Tribe of Montana
Duckwater Shoshone Tribe
Eastern Shoshone Tribe
Ely Shoshone Tribe
Hopi Tribe
Navajo Nation
Northern Arapaho Tribe
Northwestern Band of Shoshone Nation
Paiute Indian 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
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Te-Moak Tribe of Western Shoshone
Ute Indian Tribe
Ute Mountain Ute Tribe
Wells Band of Western Shoshone
Utah State Historic Preservation Office



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

6 August 2020

Michelle Cottle
Chief, Environmental Quality Branch
75 CEG/CEIE
7290 Weiner St, Building 383
Hill AFB, UT 84056

Timothy Davis
Chairman
Blackfeet Tribal Business Council
PO Box 850
Browning MT 59417

RE: Section 106 Review – Construction of F35/T7 Complex

Dear Chairman Davis,

Hill Air Force Base (AFB) is proposing to construct an F35/T7 Maintenance Complex at Hill AFB in Davis County, Utah (Attachment 1 – Location Map). The purpose of the proposed construction is to provide adequately sized facilities for the depot-level maintenance of F-35 and T-7 aircraft at Hill AFB. Hill AFB is currently developing an Environmental Assessment (EA) to determine impacts from this project.

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Sincerely

Michelle L Cottle

Michelle Cottle
Chief, Environmental Branch
75th Civil Engineer Group

Attachments:

1. Project Location Map
2. Disturbance Location Map

CC: John Murray; Virgil Edwards, Tribal Historic Preservation Officer; Deputy THPO, Blackfeet Tribe

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Utah State Historic Preservation Office



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

6 August 2020

Michelle Cottle
Chief, Environmental Quality Branch
75 CEG/CEIE
7290 Weiner St, Building 383
Hill AFB, UT 84056

Rupert Steele
Chairman
Confederated Tribes of the Goshute Reservation
PO Box 6104
Ibapah UT 83034

RE: Section 106 Review – Construction of F35/T7 Complex

Dear Chairman Steele,

Hill Air Force Base (AFB) is proposing to construct an F35/T7 Maintenance Complex at Hill AFB in Davis County, Utah (Attachment 1 – Location Map). The purpose of the proposed construction is to provide adequately sized facilities for the depot-level maintenance of F-35 and T-7 aircraft at Hill AFB. Hill AFB is currently developing an Environmental Assessment (EA) to determine impacts from this project.

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Sincerely

Michelle L Cottle

Michelle Cottle
Chief, Environmental Branch
75th Civil Engineer Group

Attachments:

1. Project Location Map
2. Disturbance Location Map

CC: Phyllis Naranjo, Secretary, Confederated Tribes of the Goshute Reservation

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Utah State Historic Preservation Office



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

6 August 2020

Michelle Cottle
Chief, Environmental Quality Branch
75 CEG/CEIE
7290 Weiner St, Building 383
Hill AFB, UT 84056

AJ Not Afraid
Chairman
Crow Tribal Council
PO Box 159
Crow Agency MT 59022

RE: Section 106 Review – Construction of F35/T7 Complex

Dear Chairman Not Afraid,

Hill Air Force Base (AFB) is proposing to construct an F35/T7 Maintenance Complex at Hill AFB in Davis County, Utah (Attachment 1 – Location Map). The purpose of the proposed construction is to provide adequately sized facilities for the depot-level maintenance of F-35 and T-7 aircraft at Hill AFB. Hill AFB is currently developing an Environmental Assessment (EA) to determine impacts from this project.

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Sincerely

Michelle L Cottle

Michelle Cottle
Chief, Environmental Branch
75th Civil Engineer Group

Attachments:

1. Project Location Map
2. Disturbance Location Map

CC: William Big Day; Jolene White Clay, Tribal Historic Preservation Officer; THPO Office Manager, Crow Tribe

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

6 August 2020

Michelle Cottle
Chief, Environmental Quality Branch
75 CEG/CEIE
7290 Weiner St, Building 383
Hill AFB, UT 84056

Rodney Mike
Chairman
Duckwater Shoshone Tribe
PO Box 140068
Duckwater NV 89314

RE: Section 106 Review – Construction of F35/T7 Complex

Dear Chairman Mike,

Hill Air Force Base (AFB) is proposing to construct an F35/T7 Maintenance Complex at Hill AFB in Davis County, Utah (Attachment 1 – Location Map). The purpose of the proposed construction is to provide adequately sized facilities for the depot-level maintenance of F-35 and T-7 aircraft at Hill AFB. Hill AFB is currently developing an Environmental Assessment (EA) to determine impacts from this project.

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Sincerely

Michelle L Cottle

Michelle Cottle
Chief, Environmental Branch
75th Civil Engineer Group

Attachments:

1. Project Location Map
2. Disturbance Location Map

CC: Warren Graham; Lili Ann Pete, Tribal Historic Preservation Officer; Secretary, Duckwater Shoshone Tribe

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

6 August 2020

Michelle Cottle
Chief, Environmental Quality Branch
75 CEG/CEIE
7290 Weiner St, Building 383
Hill AFB, UT 84056

Vernon Hill, Sr
Chairman
Eastern Shoshone Tribe
PO Box 538
Fort Washakie WY 82514

RE: Section 106 Review – Construction of F35/T7 Complex

Dear Chairman Hill,

Hill Air Force Base (AFB) is proposing to construct an F35/T7 Maintenance Complex at Hill AFB in Davis County, Utah (Attachment 1 – Location Map). The purpose of the proposed construction is to provide adequately sized facilities for the depot-level maintenance of F-35 and T-7 aircraft at Hill AFB. Hill AFB is currently developing an Environmental Assessment (EA) to determine impacts from this project.

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will have No Impact to historic properties and recommends that the EA proceed. We request your concurrence in this determination as specified in 36 CFR 800. The SHPO and consulting tribes will have the opportunity to review and comment on the EA as well. Should you or your staff have any questions, please contact Ms. Anya Kitterman, Cultural Resource Manager, at (801) 586-2464 or at anya.kitterman@us.af.mil.

Sincerely

Michelle L Cottle

Michelle Cottle
Chief, Environmental Branch
75th Civil Engineer Group

Attachments:

1. Project Location Map
2. Disturbance Location Map

CC: Joshua Mann; Phoebe Wilson, Tribal Historic Preservation Officer; Secretary, Eastern Shoshone Tribe

Distribution List

Blackfeet Indian Tribe
Confederated Tribes of the Goshute Indian Reservation
Crow Tribe of Montana
Duckwater Shoshone Tribe
Eastern Shoshone Tribe
Ely Shoshone Tribe
Hopi Tribe
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Utah State Historic Preservation Office



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

6 August 2020

Michelle Cottle
Chief, Environmental Quality Branch
75 CEG/CEIE
7290 Weiner St, Building 383
Hill AFB, UT 84056

Diane Buckner
Chairwoman
Ely Shoshone Tribe
16 Shoshone Circle
Ely NV 89301

RE: Section 106 Review – Construction of F35/T7 Complex

Dear Chairwoman Buckner,

Hill Air Force Base (AFB) is proposing to construct an F35/T7 Maintenance Complex at Hill AFB in Davis County, Utah (Attachment 1 – Location Map). The purpose of the proposed construction is to provide adequately sized facilities for the depot-level maintenance of F-35 and T-7 aircraft at Hill AFB. Hill AFB is currently developing an Environmental Assessment (EA) to determine impacts from this project.

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Sincerely

Michelle L Cottle

Michelle Cottle
Chief, Environmental Branch
75th Civil Engineer Group

Attachments:

1. Project Location Map
2. Disturbance Location Map

CC: Cindy Marques, Cultural Resources, Ely Shoshone Tribe

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

6 August 2020

Michelle Cottle
Chief, Environmental Quality Branch
75 CEG/CEIE
7290 Weiner St, Building 383
Hill AFB, UT 84056

Timothy Nuvangyaoma
Chairman
Hopi Tribal Council
PO Box 123
Kykotsmovi AZ 86039

RE: Section 106 Review – Construction of F35/T7 Complex

Dear Chairman Nuvangyaoma,

Hill Air Force Base (AFB) is proposing to construct an F35/T7 Maintenance Complex at Hill AFB in Davis County, Utah (Attachment 1 – Location Map). The purpose of the proposed construction is to provide adequately sized facilities for the depot-level maintenance of F-35 and T-7 aircraft at Hill AFB. Hill AFB is currently developing an Environmental Assessment (EA) to determine impacts from this project.

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Sincerely

Michelle L Cottle

Michelle Cottle
Chief, Environmental Branch
75th Civil Engineer Group

Attachments:

1. Project Location Map
2. Disturbance Location Map

CC: Leigh Kuwanwisiwma; Barbara Lomavetewa, Director of Cultural Preservation; Staff Assistant, Hopi Tribe

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

6 August 2020

Michelle Cottle
Chief, Environmental Quality Branch
75 CEG/CEIE
7290 Weiner St, Building 383
Hill AFB, UT 84056

Jonathan Nez
President
Navajo Nation
PO Box 7440
Window Rock AZ 86515-9000

RE: Section 106 Review – Construction of F35/T7 Complex

Dear President Nez,

Hill Air Force Base (AFB) is proposing to construct an F35/T7 Maintenance Complex at Hill AFB in Davis County, Utah (Attachment 1 – Location Map). The purpose of the proposed construction is to provide adequately sized facilities for the depot-level maintenance of F-35 and T-7 aircraft at Hill AFB. Hill AFB is currently developing an Environmental Assessment (EA) to determine impacts from this project.

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Sincerely

Michelle L Cottle

Michelle Cottle
Chief, Environmental Branch
75th Civil Engineer Group

Attachments:

1. Project Location Map
2. Disturbance Location Map

CC: Richard Begaye, Tamara Billie, Historic Preservation Office, Navajo Nation

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

6 August 2020

Michelle Cottle
Chief, Environmental Quality Branch
75 CEG/CEIE
7290 Weiner St, Building 383
Hill AFB, UT 84056

Alex Dennis
Chairman
Northwestern Band of Shoshone Nation
707 North Main Street
Brigham City UT 84302

RE: Section 106 Review – Construction of F35/T7 Complex

Dear Chairman Parry,

Hill Air Force Base (AFB) is proposing to construct an F35/T7 Maintenance Complex at Hill AFB in Davis County, Utah (Attachment 1 – Location Map). The purpose of the proposed construction is to provide adequately sized facilities for the depot-level maintenance of F-35 and T-7 aircraft at Hill AFB. Hill AFB is currently developing an Environmental Assessment (EA) to determine impacts from this project.

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Sincerely

Michelle L Cottle

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Chief, Environmental Branch
75th Civil Engineer Group

Attachments:

1. Project Location Map
2. Disturbance Location Map

CC: Patty Timbimboo-Madsen, Cultural Resources Director, Northwestern Band of Shoshone Nation

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

6 August 2020

Michelle Cottle
Chief, Environmental Quality Branch
75 CEG/CEIE
7290 Weiner St, Building 383
Hill AFB, UT 84056

Tami Borchardt-Slayton
Chairwoman
Paiute Indian Tribe of Utah
440 North Paiute Drive
Cedar City UT 84721

RE: Section 106 Review – Construction of F35/T7 Complex

Dear Chairwoman Borchardt-Slayton,

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Michelle L Cottle

Michelle Cottle
Chief, Environmental Branch
75th Civil Engineer Group

Attachments:

1. Project Location Map
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CC: Dorena Martineau, Cultural Resources Director, Paiute Indian Tribe of Utah

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

6 August 2020

Michelle Cottle
Chief, Environmental Quality Branch
75 CEG/CEIE
7290 Weiner St, Building 383
Hill AFB, UT 84056

Val R. Panteah Sr.
Governor
Pueblo of Zuni
PO Box 339
Zuni NM 87327

RE: Section 106 Review – Construction of F35/T7 Complex

Dear Governor Panteah,

Hill Air Force Base (AFB) is proposing to construct an F35/T7 Maintenance Complex at Hill AFB in Davis County, Utah (Attachment 1 – Location Map). The purpose of the proposed construction is to provide adequately sized facilities for the depot-level maintenance of F-35 and T-7 aircraft at Hill AFB. Hill AFB is currently developing an Environmental Assessment (EA) to determine impacts from this project.

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Chief, Environmental Branch
75th Civil Engineer Group

Attachments:

1. Project Location Map
2. Disturbance Location Map

CC: Kurt Dongoske, Tribal Historic Preservation Officer, Pueblo of Zuni Heritage and Historic Preservation Office

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6 August 2020

Michelle Cottle
Chief, Environmental Quality Branch
75 CEG/CEIE
7290 Weiner St, Building 383
Hill AFB, UT 84056

Carlene Yellowhair
President
San Juan Southern Paiute Tribe
PO Box 2950
Tuba City AZ 86045

RE: Section 106 Review – Construction of F35/T7 Complex

Dear President Yellowhair,

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Sincerely

Michelle L Cottle

Michelle Cottle
Chief, Environmental Branch
75th Civil Engineer Group

Attachments:

1. Project Location Map
2. Disturbance Location Map

CC: Tamara Talaswaima, Tribal Secretary, San Juan Southern Paiute

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

6 August 2020

Michelle Cottle
Chief, Environmental Quality Branch
75 CEG/CEIE
7290 Weiner St, Building 383
Hill AFB, UT 84056

Ladd Edmo
Chairman
Shoshone-Bannock Tribes of the Fort Hall Reservation
PO Box 306
Fort Hall ID 83203

RE: Section 106 Review – Construction of F35/T7 Complex

Dear Chairman Edmo,

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Sincerely

Michelle L Cottle

Michelle Cottle
Chief, Environmental Branch
75th Civil Engineer Group

Attachments:

1. Project Location Map
2. Disturbance Location Map

CC: Louise Dixey; Carolyn Smith, Cultural Resources Director; Cultural Resources Coordinator, Shoshone-Bannock Tribes of the Fort Hall Reservation

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

6 August 2020

Michelle Cottle
Chief, Environmental Quality Branch
75 CEG/CEIE
7290 Weiner St, Building 383
Hill AFB, UT 84056

Ted Howard
Chairman
Shoshone-Paiute Tribes of the Duck Valley Reservation
PO Box 219
Owyhee NV 89832

RE: Section 106 Review – Construction of F35/T7 Complex

Dear Chairman Howard,

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Michelle L Cottle

Michelle Cottle
Chief, Environmental Branch
75th Civil Engineer Group

Attachments:

1. Project Location Map
2. Disturbance Location Map

CC: Lynneil Brady; Yconnw Powers, Acting Cultural Resources Director; Secretary, Shoshone-Paiute Tribes of the Duck Valley Reservation

Distribution List

Blackfeet Indian Tribe
Confederated Tribes of the Goshute Indian Reservation
Crow Tribe of Montana
Duckwater Shoshone Tribe
Eastern Shoshone Tribe
Ely Shoshone Tribe
Hopi Tribe
Navajo Nation
Northern Arapaho Tribe
Northwestern Band of Shoshone Nation
Paiute Indian Tribe of Utah
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Te-Moak Tribe of Western Shoshone
Ute Indian Tribe
Ute Mountain Ute Tribe
Wells Band of Western Shoshone
Utah State Historic Preservation Office



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

6 August 2020

Michelle Cottle
Chief, Environmental Quality Branch
75 CEG/CEIE
7290 Weiner St, Building 383
Hill AFB, UT 84056

Candace Bear
Chairwoman
Skull Valley Band of Goshute Indians
PO Box 448
Grantsville, UT 84029

RE: Section 106 Review – Construction of F35/T7 Complex

Dear Chairwoman Bear,

Hill Air Force Base (AFB) is proposing to construct an F35/T7 Maintenance Complex at Hill AFB in Davis County, Utah (Attachment 1 – Location Map). The purpose of the proposed construction is to provide adequately sized facilities for the depot-level maintenance of F-35 and T-7 aircraft at Hill AFB. Hill AFB is currently developing an Environmental Assessment (EA) to determine impacts from this project.

The need for the proposed construction of the F-35/T-7 Maintenance Campus is driven by the Air Force's assignment of Hill AFB as the DSOR and TRC for depot-level sustainment of these aircraft and for future workloads. Without changes, the current facilities at Hill AFB do not have enough capacity to meet the Air Force's goal of mission-capable rate of 80 percent while continuing to support the overhaul, testing, and repair of these aircraft and their components. The activities required include aircraft disassembly, cleaning, inspecting, reassembly, and operational testing. The location has been previously disturbed by previous building construction and infrastructure (Attachment 2 – Proposed Location Disturbance Map). All previous disturbance within the project area have had continual use since the original disturbance and there are no above ground remnants of previous use remaining. This will further be discussed within the EA. Should anything be found during construction, the Hill AFB Unanticipated Discovery of Archaeological Resources Protocol will be followed.

In consideration of the lack of previous cultural resource findings and minimal opportunity for subsurface archaeology, Hill AFB has determined that the proposed work on the F35/T7 Facility

will have No Impact to historic properties and recommends that the EA proceed. We request your concurrence in this determination as specified in 36 CFR 800. The SHPO and consulting tribes will have the opportunity to review and comment on the EA as well. Should you or your staff have any questions, please contact Ms. Anya Kitterman, Cultural Resource Manager, at (801) 586-2464 or at anya.kitterman@us.af.mil.

Sincerely

Michelle L Cottle

Michelle Cottle
Chief, Environmental Branch
75th Civil Engineer Group

Attachments:

1. Project Location Map
2. Disturbance Location Map

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

6 August 2020

Michelle Cottle
Chief, Environmental Quality Branch
75 CEG/CEIE
7290 Weiner St, Building 383
Hill AFB, UT 84056

Joseph Holley
Chairman
Te-Moak Tribe of Western Shoshone
525 Sunset Street
Elko NV 89801

RE: Section 106 Review – Construction of F35/T7 Complex

Dear Chairman Holley,

Hill Air Force Base (AFB) is proposing to construct an F35/T7 Maintenance Complex at Hill AFB in Davis County, Utah (Attachment 1 – Location Map). The purpose of the proposed construction is to provide adequately sized facilities for the depot-level maintenance of F-35 and T-7 aircraft at Hill AFB. Hill AFB is currently developing an Environmental Assessment (EA) to determine impacts from this project.

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Sincerely

Michelle L Cottle

Michelle Cottle
Chief, Environmental Branch
75th Civil Engineer Group

Attachments:

1. Project Location Map
2. Disturbance Location Map

CC: Alice Tybo; Clifton Oppenheim, Council, Te-Moak Tribe of the Western Shoshone

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

6 August 2020

Michelle Cottle
Chief, Environmental Quality Branch
75 CEG/CEIE
7290 Weiner St, Building 383
Hill AFB, UT 84056

Luke Duncan
Chairman
Ute Indian Tribe
PO Box 190
Fort Duchesne UT 84026

RE: Section 106 Review – Construction of F35/T7 Complex

Dear Chairman Duncan,

Hill Air Force Base (AFB) is proposing to construct an F35/T7 Maintenance Complex at Hill AFB in Davis County, Utah (Attachment 1 – Location Map). The purpose of the proposed construction is to provide adequately sized facilities for the depot-level maintenance of F-35 and T-7 aircraft at Hill AFB. Hill AFB is currently developing an Environmental Assessment (EA) to determine impacts from this project.

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Sincerely

Michelle L Cottle

Michelle Cottle
Chief, Environmental Branch
75th Civil Engineer Group

Attachments:

1. Project Location Map
2. Disturbance Location Map

CC: Betsy Chapoose, Director of Cultural Rights & Protection, Ute Indian Tribe

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Utah State Historic Preservation Office



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

6 August 2020

Michelle Cottle
Chief, Environmental Quality Branch
75 CEG/CEIE
7290 Weiner St, Building 383
Hill AFB, UT 84056

Manuel Heart
Chairman
Ute Mountain Ute Tribe
PO Box JJ
Towaoc CO 81334

RE: Section 106 Review – Construction of F35/T7 Complex

Dear Chairman Cuthair,

Hill Air Force Base (AFB) is proposing to construct an F35/T7 Maintenance Complex at Hill AFB in Davis County, Utah (Attachment 1 – Location Map). The purpose of the proposed construction is to provide adequately sized facilities for the depot-level maintenance of F-35 and T-7 aircraft at Hill AFB. Hill AFB is currently developing an Environmental Assessment (EA) to determine impacts from this project.

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Sincerely

Michelle L Cottle

Michelle Cottle
Chief, Environmental Branch
75th Civil Engineer Group

Attachments:

1. Project Location Map
2. Disturbance Location Map

CC: Terry Knight, Nichol Shurack, Tribal Historic Preservation Office, Ute Mountain Ute Tribe

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

6 August 2020

Michelle Cottle
Chief, Environmental Quality Branch
75 CEG/CEIE
7290 Weiner St, Building 383
Hill AFB, UT 84056

Andrea Woods
Chairman
Wells Band of Western Shoshone
PO Box 809
Well NV 89835

RE: Section 106 Review – Construction of F35/T7 Complex

Dear Chairwoman Woods,

Hill Air Force Base (AFB) is proposing to construct an F35/T7 Maintenance Complex at Hill AFB in Davis County, Utah (Attachment 1 – Location Map). The purpose of the proposed construction is to provide adequately sized facilities for the depot-level maintenance of F-35 and T-7 aircraft at Hill AFB. Hill AFB is currently developing an Environmental Assessment (EA) to determine impacts from this project.

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Sincerely

Michelle L Cottle

Michelle Cottle
Chief, Environmental Branch
75th Civil Engineer Group

Attachments:

1. Project Location Map
2. Disturbance Location Map

CC: Alicia Aquilar, Wells Band Administrator & Finance Director, Wells Band of Western Shoshone

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Utah State Historic Preservation Office

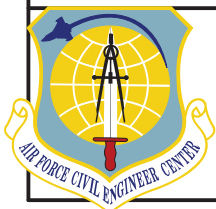
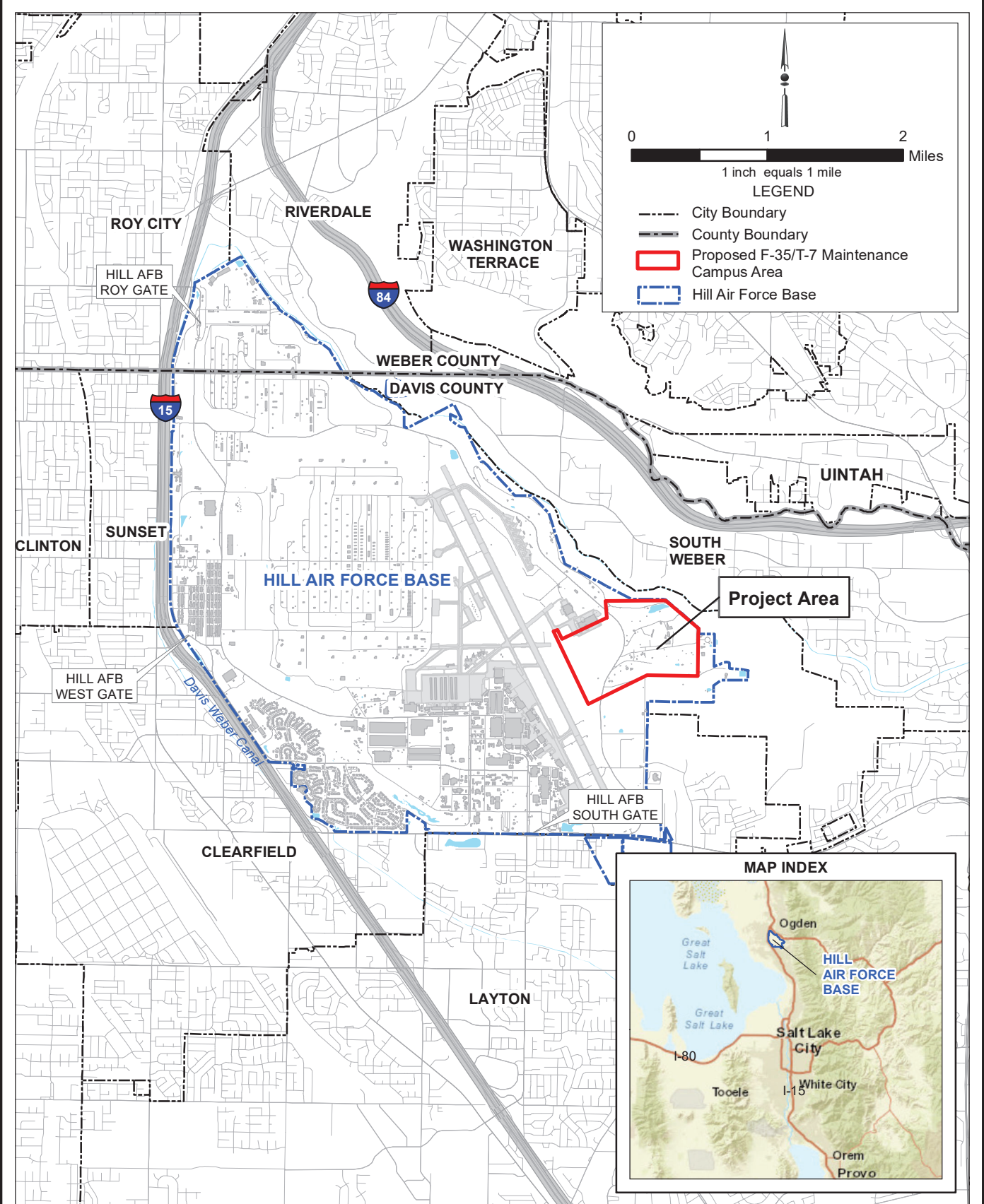


FIGURE 1-1
LOCATION OF HILL AIR FORCE BASE
 ENVIRONMENTAL ASSESSMENT
 PROPOSED F-35/T-7 MAINTENANCE CAMPUS AREA
 HILL AIR FORCE BASE, UTAH

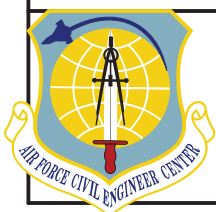
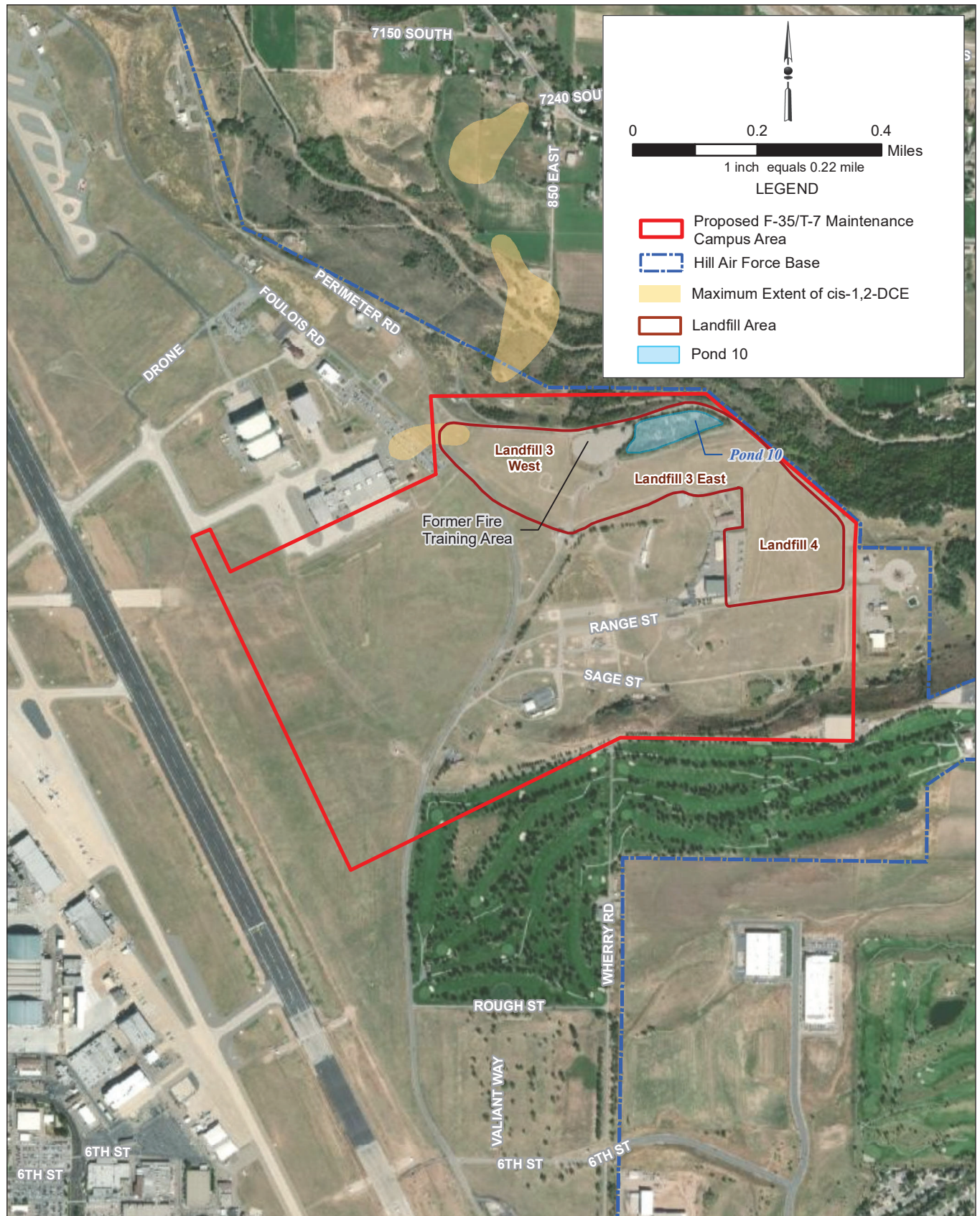
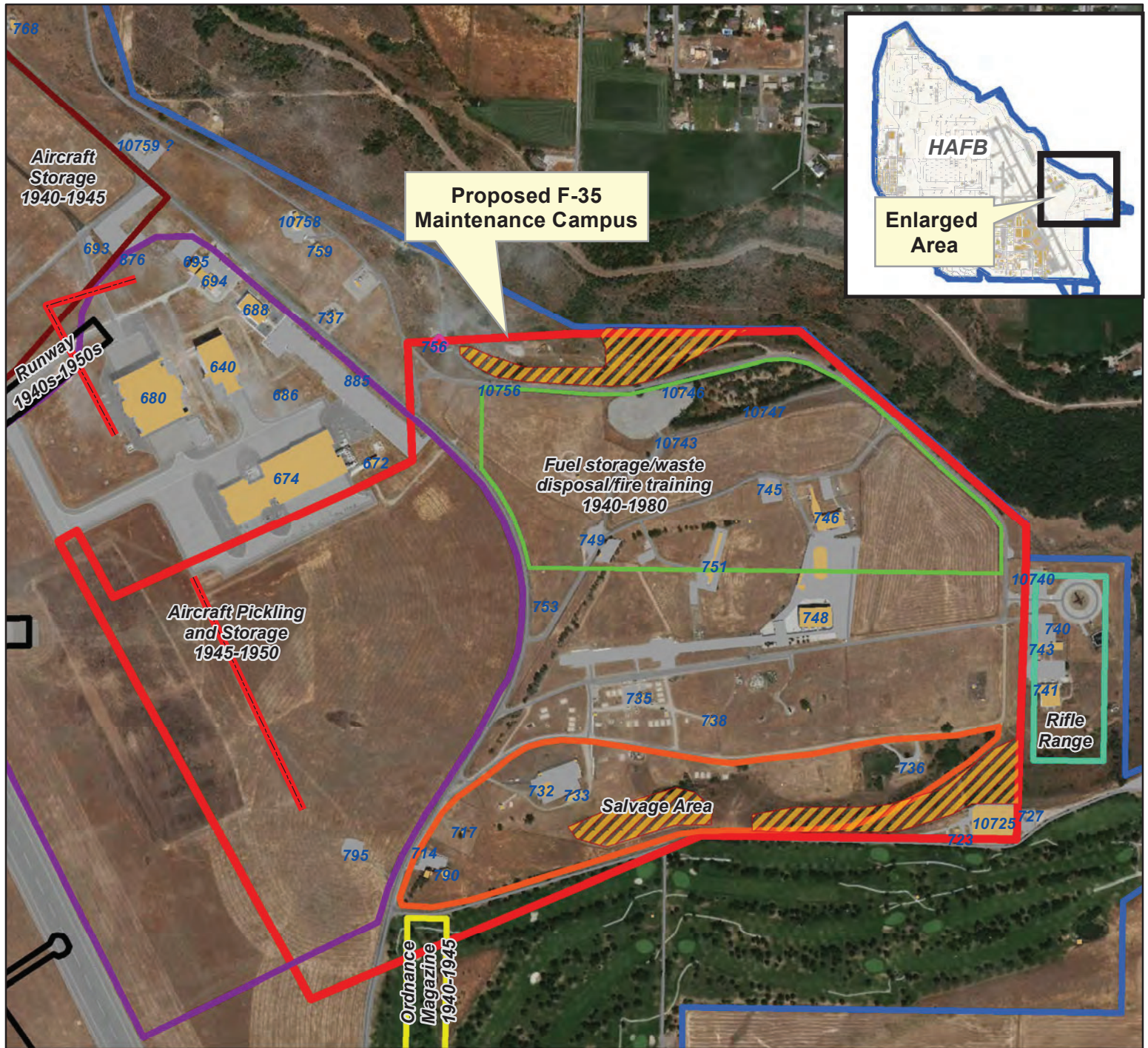


FIGURE 1-2
LOCATION OF PROPOSED F-35/T-7 MAINTENANCE CAMPUS ON HILL AFB
 ENVIRONMENTAL ASSESSMENT
 PROPOSED F-35/T-7 MAINTENANCE CAMPUS AREA
 HILL AIR FORCE BASE, UTAH

Source:
 Imagery from ESRI online image service: Maxtar, July 2018.



Comm Line	Historic Use Area	Ordnance Magazine
Project Area	Aircraft Pickling and Storage	Rifle Range
Low Disturbance Area	Aircraft Storage	Runway
Structure	Electrical Sub-Station	Salvage Area
Pavement	Fuel storage/waste disposal/fire training	
Installation		

**Proposed F-35
Maintenance
Campus
HILL AFB**

FOR OFFICIAL USE ONLY



Prepared by:
Center for Environmental
Management of Military
Lands(CEMML)/
Colorado State University
Date: 6/29/2020
Contact: Kate Stratford
kate.stratford@colostate.edu
801-775-6838
Cooperative Agreement:
Number W9126G-20-2-0004



Coordinate System: WGS 1984 UTM Zone 12N
Projection: Transverse Mercator
Datum: WGS 1984
Scale: 1:10,000



Map created for presentation purposes only. Although efforts
have been made to verify data, accuracy cannot be guaranteed



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

6 August 2020

Michelle Cottle
Chief, Environmental Quality Branch
75 CEG/CEIE
7290 Weiner St, Building 383
Hill AFB, UT 84056

Timothy Nuvangyaoma
Chairman
Hopi Tribal Council
PO Box 123
Kykotsmovi AZ 86039

RE: Section 106 Review – Construction of F35/T7 Complex

Dear Chairman Nuvangyaoma,

Hill Air Force Base (AFB) is proposing to construct an F35/T7 Maintenance Complex at Hill AFB in Davis County, Utah (Attachment 1 – Location Map). The purpose of the proposed construction is to provide adequately sized facilities for the depot-level maintenance of F-35 and T-7 aircraft at Hill AFB. Hill AFB is currently developing an Environmental Assessment (EA) to determine impacts from this project.

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Concurrence

Margaret
Koukumtewa
8-12-20

Sincerely

Michelle L Cottle

Michelle Cottle
Chief, Environmental Branch
75th Civil Engineer Group

Attachments:

1. Project Location Map
2. Disturbance Location Map

CC: Leigh Kuwanwisiwma; Barbara Lomavetewa, Director of Cultural Preservation; Staff Assistant, Hopi Tribe

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Utah State Historic Preservation Office



THE PAIUTE INDIAN TRIBE OF UTAH

440 North Paiute Drive • Cedar City, Utah 84721 • (435) 586-1112 • Fax (435) 867-2659

August 11, 2020

Michelle Cottle
Chief, Environmental Branch
75 CEG/CEIE
7290 Weiner St. Building 383
Hill Air Force Base, Utah 84056

Dear Ms. Cottle,

SUBJECT: Construction of F35/T7 Complex

The Paiute Indian Tribe of Utah is in receipt of your correspondence dated August 06, 2020 and has reviewed the material and do not have any objections pertaining to the above-named project. As you are aware the tribe supports the identification and avoidance of prehistoric sites and traditional cultural properties.

We concur with your determination of eligibility and effort for this undertaking. This letter serves as our comment on the determinations you have made.

The Paiute Indian Tribe of Utah sincerely appreciates your accomplishments and consideration you and your staff have made to consult with the tribes.

Thank You,

Dorena Martineau/ Cultural Resource Director
Paiute Indian Tribe of Utah
440 North Paiute Drive
Cedar City, Utah 84721
dmartineau@utahpaiutes.org
435-586-1112 ext. 3107



GARY R. HERBERT
Governor

SPENCER J. COX
Lieutenant Governor

Jill Remington Love
Executive Director
Department of
Heritage & Arts



Christopher Merritt
State Historic Preservation Officer

Kevin Fayles
Interim Director

August 20, 2020

Michelle Cottle
Chief, Environmental Quality Branch
75 CEG/CEIE
7290 Weiner St, Building 383
Hill AFB, UT 84056

RE: F35/T7 Complex

For future correspondence, please reference Case No. 20-2810

Dear Ms. Cottle,

The Utah State Historic Preservation Office received your submission and request for our comment on the above-referenced undertaking on August 11, 2020. Based on the information provided to our office, we concur with your determinations of eligibility and finding of no adverse effect for the proposed undertaking.

This information is provided to assist with Section 106 responsibilities as per §36CFR800. If you have questions, please contact me at (801) 245-7239 or by email at clhansen@utah.gov.

Sincerely,

Christopher Hansen
Preservation Planner/Utah SHPO

**FINAL Environmental Assessment for
Construction of F-35/T-7 Maintenance Campus at Hill AFB, Utah**

**APPENDIX B
AIR QUALITY GENERAL INFORMATION AND CALCULATIONS**

Appendix B

Air Quality General Information and Calculations

B.1 Affected Environment

B.1.1 Definition of Resource and Regulatory Setting

In accordance with federal Clean Air Act (CAA) requirements, the air quality in a given region or area is measured by the concentrations of criteria pollutants in ambient air, defined as that portion of the atmosphere to which the public has access. The air quality in a region is a result of not only the types and quantities of atmospheric pollutants and pollutant sources in an area, but also surface topography, the size of the topological “air basin,” and the prevailing meteorological conditions.

B.1.2 National Ambient Air Quality Standards and Criteria Pollutants

Air quality for a given location is defined by ambient air concentrations of the specific pollutants determined by U.S. Environmental Protection Agency (EPA) to affect public health and welfare and the environment. Air pollutant emissions typically refer to the amount of pollutants or pollutant precursors released into the atmosphere by a source or group of sources. Pollutant concentrations in the ambient air result from pollutants directly emitted by emission sources, and/or formed by precursor pollutants interacting in the atmosphere. Air quality is influenced by many factors, including the type and amount of pollutants emitted into the atmosphere, the size and topography of an area, and local and regional meteorological conditions. The implications of air pollutant concentrations in a region or geographical area can be evaluated by comparing the measured concentrations to applicable federal and/or state ambient air quality standards.

Nationwide air quality policies are regulated through the EPA. Pursuant to the CAA, EPA has established numerical, concentration-based standards to protect public health and welfare, with an adequate margin of safety. The National Ambient Air Quality Standards (NAAQS) are the maximum allowable atmospheric concentrations for the criteria pollutants: ozone (O₃), oxides of nitrogen (NO_x) as nitrogen dioxide (NO₂), carbon monoxide (CO), particulate matter equal to or less than 10 micrometers in aerodynamic diameter (PM₁₀), particulate matter equal to or less than 2.5 micrometers in aerodynamic diameter (PM_{2.5}), sulfur dioxide (SO₂), and lead (Pb) (Title 40 *Code of Federal Regulations* [CFR] Part 50). The NAAQS include: (1) primary standards that protect public health, including sensitive populations such as asthmatics, children, and the elderly; and (2) secondary standards that protect public welfare, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings. The NAAQS are defined in terms of concentration (for example, parts per million [ppm] or micrograms per cubic meter [μg/m³]) determined over various periods of time (averaging periods). A summary of the NAAQS is provided in Table B-1.

Table B-1. National Ambient Air Quality Standards

Criteria Pollutant	Federal Standard (Averaging Period) ^a
CO	35 ppm (1-hour)
	9 ppm (8-hour)
NO ₂	0.100 ppm (1-hour)
	0.053 ppm (annual arithmetic mean)
O ₃	0.070 ppm (8-hour)
PM _{2.5}	12 μg/m ³ (annual arithmetic mean)

Table B-1. National Ambient Air Quality Standards

Criteria Pollutant	Federal Standard (Averaging Period) ^a
	35 µg/m ³ (24-hour) ^b
PM ₁₀	150 µg/m ³ (24-hour)
SO ₂	0.5 ppm (3-hour, secondary standard)
	0.075 ppm (1-hour) ^b
Pb	0.15 µg/m ³ (rolling 3-month average)

Source: <https://www.epa.gov/criteria-air-pollutants/naaqs-table>, accessed October 2020.

^a National standards other than O₃, particulate matter, and those based on annual averages or annual arithmetic means are not to be exceeded more than once a year. The O₃ standard is attained when the fourth highest 8-hour concentration in a year, averaged over 3 years, is equal to or less than the standard. For PM₁₀, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m³ is equal to or less than 1. For PM_{2.5}, the 24-hour standard is attained when 98% of the daily concentrations, averaged over 3 years, is equal to or less than the standard. For NO₂, the 1-hour standard is achieved if the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each monitor in an area does not exceed 0.100 ppm (100 ppb). The Pb standard is not to be exceeded.

^b To attain this standard, the 3-year average of the 99th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 75 ppb.

ppb = part(s) per billion, by volume

The pollutants CO, SO₂, NO₂, Pb, and most types of particulate matter are emitted directly into the ambient air by mobile sources (for example, on-road cars, trucks, buses, and non-road construction equipment); stationary point sources (for example, power plants, industrial facilities, and refineries); and area sources (for example, unpaved roads, residential heating, wood burning, gas stations, dry cleaners). O₃ is formed when emissions of precursor pollutants, in this case NO_x and volatile organic compounds (VOCs), react in the presence of sunlight. PM_{2.5} may also be formed from secondary chemical reactions of precursor pollutants in ambient air. Air pollutants are also emitted by natural events such as forest fires and volcanic eruptions.

B.1.3 Hazardous Air Pollutants

Hazardous air pollutants (HAPs) are pollutants known or suspected to cause serious health or adverse environmental impacts if present above risk-based concentrations. The CAA identifies 187 compounds as HAPs. HAPs are emitted by mobile sources, such as vehicles and aircraft, gasoline dispensing, chemical use, industrial processes, and fuel combustion.

B.1.4 Greenhouse Gases

Greenhouse gases (GHGs) include naturally occurring and anthropogenic gases that trap heat in the earth's atmosphere. GHGs include, but are not limited to, carbon dioxide (CO₂), methane, nitrous oxide, hydrochlorofluorocarbons, perfluorocarbons, and sulfur hexafluoride. These gases trap the energy from the sun and help maintain the temperature of the Earth's surface, creating a process known as the greenhouse effect. GHG emissions occur from natural processes and human activities. The accumulation of GHGs in the atmosphere influences the long-term range of average atmospheric temperatures. EPA's authority to regulate GHG emissions stems from the U.S. Supreme Court decision in *Massachusetts v. EPA* in 2007. The Supreme Court ruled that GHGs meet the definition of air pollutants under the existing CAA and must be regulated if these gases could be reasonably anticipated to endanger public health or welfare. Responding to the Court's ruling, EPA finalized the endangerment finding in December 2009.

B.1.5 Assessment Methodology

EPA designates the attainment status of geographic areas depending on whether the concentrations of criteria pollutants in ambient air meet or exceed the NAAQS. A region consistently meeting an air quality standard for a given pollutant is designated as being in “attainment” for that pollutant. If the area does not meet an air quality standard, it is designated as “nonattainment.” Areas with insufficient data or designations that have yet to be made are “unclassified.” Maintenance areas are former nonattainment areas that are now consistently meeting the NAAQS and have been reclassified by EPA from nonattainment to attainment with a maintenance plan.

B.1.5.1 General Conformity

The General Conformity Rule (40 CFR Part 93 Subpart B) was established under the CAA Section 176(c)(4) to ensure that actions taken by federal agencies in nonattainment and maintenance areas do not interfere with a state’s plans for bringing these areas back into attainment with the NAAQS. Under the conformity provisions of the CAA, no federal agency can approve or undertake a federal action or project in a nonattainment or maintenance area unless it has been demonstrated to conform to the applicable state implementation plans. The purpose of the rule is to ensure that federal actions do not cause or contribute to:

- New violations of the NAAQS
- Worsening of existing violations of the NAAQS
- Delays in attaining the NAAQS

The General Conformity Rule applies only to federal actions in EPA-designated nonattainment or maintenance areas.

B.1.5.2 Federal Nonattainment New Source Review Requirements

Federal nonattainment new source review regulations apply in nonattainment areas to major stationary sources (that is, sources with the potential to emit 100 tons per year (tpy) of any nonattainment criteria pollutant or its precursors; this level may be lower depending on the severity of nonattainment). Significant modifications to existing major stationary sources (that is, any net change that would add 15 to 40 tpy to the facility’s potential to emit depending on the pollutant) also trigger federal nonattainment new source review (40 CFR Section 51.165).

B.1.5.3 Federal Prevention of Significant Deterioration

Federal prevention of significant deterioration (PSD) regulations apply in attainment areas to major stationary sources (that is, sources with the potential to emit 250 tpy of any attainment criteria pollutant or its precursors; for a subset of sources listed in the regulations, this level is 100 tpy) and significant modifications to existing major stationary sources (that is, any change that would add 15 to 40 tpy to the facility’s potential to emit depending on the pollutant). Additional PSD major source and significant modification thresholds apply for GHGs. PSD regulations can also apply to stationary sources if (1) a proposed project is within 10 kilometers of national parks or wilderness areas (that is, Class I Areas), and (2) regulated stationary source pollutant emissions would cause an increase in the 24-hour average concentration of any regulated pollutant in the Class I area of 1 $\mu\text{g}/\text{m}^3$ or more (40 CFR Section 52.21(b)(23)(iii)). A Class I area includes national parks larger than 6,000 acres, national wilderness areas and national memorial parks larger than 5,000 acres, and international parks. PSD regulations also define ambient air increments, limiting the allowable increases to any area’s baseline air contaminant concentrations, based on the area’s class designation (40 CFR Section 52.21(c)).

Appendix B - Air Quality General Information and Calculations

B.1.5.3.1 Title V Requirements

Title V of the CAA Amendments of 1990 requires states and local agencies to issue operating permits to major stationary sources. Under Title V, a major stationary source has the potential to emit more than 100 tpy of any one criteria air pollutant or precursor pollutant, 10 tpy of a HAP, or 25 tpy of any combination of HAPs. The purpose of the permitting rule is to establish regulatory control over large, industrial-type activities and monitor their impacts on air quality. Section 112 of the CAA defines the sources and kinds of HAPs that are to be regulated.

Existing Hill AFB Title V limits and the current percentage of use within the allowable limits are provided in Table B-2.

Table B-2. Hill AFB Title V Limits

Source Type	Applicable Title V Limit	3-year Average Percentage of Limit with Existing Workload
Generators less than 1,700 kilowatts	8,670 combined maintenance hours as calculated on a 12-month rolling total	13%
Abrasive blasting units	2,350 tons of blasting media as calculated on a 12-month rolling total	9%
Degreasing operations	35 tons of VOC as calculated on a 12-month rolling total	24%
Coating operations subject to 40 CFR Part 63 Subpart GG	201.2 tons of VOC as calculated on a 12-month rolling total	39%
Coating operations not subject to 40 CFR Part 63 Subpart GG		
Solvent cleaning operations subject to 40 CFR Part 63 Subpart GG		
Chemical depainting operations subject to 40 CFR Part 63 Subpart GG		
Chemical depainting operations not subject to 40 CFR Part 63 Subpart GG		
Boilers	2,760,000 MMBtu combined heat input as calculated on a 12-month rolling total	40%
Air handlers greater than 5 MMBtu/hour	450 MMcf natural gas usage as calculated on a 12-month rolling total	9%
Gasoline aboveground tanks greater than 19,812 gallons	642,000 gallons as calculated on a 12-month rolling total	26%
Diesel aboveground tanks greater than 19,812 gallons	7,500,000 gallons as calculated on a 12-month rolling total	10%
JET A aboveground tanks greater than 19,812 gallons	102,000,000 gallons as calculated on a 12-month rolling total	8%
Materials containing VOC	VOC contents must meet limits of 40 CFR Part 63 Subpart GG	N/A

Notes:

MMBtu = Million British thermal unit

MMcf = Million cubic feet

The new source review permitting process in Utah is initiated with the submittal of either a Notice of Intent or Flexibility Notification to the Utah Division of Air Quality (UDAQ). Flexibility notifications allow Hill AFB to install the new equipment 7 days after the notification has been submitted to UDAQ. Flexibility notifications may be submitted for abrasive blasting units, generators less than 1,700 kilowatts, degreasing units, paint booths, chemical stripping operations, air handler units greater than 5 MMBtu/hour, and aboveground and underground fuel storage tanks with a capacity between 500 and 19,812 gallons. The notifications must demonstrate the new equipment would not exceed the applicable Title V limits. If equipment to be installed would not meet the flexibility notification requirements, a Notice of Intent must be submitted. If the Notice of Intent is approved by UDAQ, it becomes an Approval Order and is incorporated into the Title V Permit. The Notice of Intent must also demonstrate that the new equipment would not exceed applicable Title V limits. Specific details of the operational equipment associated with the Proposed Action are unknown at this time.

B.1.5.4 Greenhouse Gas Emissions Requirements

The EPA's Mandatory GHG Reporting Rule requires source categories identified in the rule to collect comprehensive and accurate data on CO₂ and other GHG emissions that can be used to inform future policy decisions. In general, the threshold for reporting is 25,000 metric tons or more of CO₂ equivalent emissions per year from stationary sources.

B.2 Environmental Consequences

The Air Force Conformity Applicability Model (ACAM) is designed to evaluate air emissions and identify proposed actions and alternatives that would likely result in no or minimal emission increases, and flag those actions that may require further air quality analysis, such as a general conformity determination.

Construction and demolition activities associated with the F-35/T-7 Maintenance Campus have been distinguished in ACAM as the following (note the numbering begins with Activity 2 as mirrored in ACAM):

- Activity 2: Demolish Building 747
- Activity 3: Relocate Building 745
- Activity 4: Construct F-35 Canopy Repair Building
- Activity 5: Construct F-35 Maintenance Facility and demolish the existing section of Foulis Road
- Activity 6: Construct F-35 Composite Repair Facility
- Activity 7: Construct F-35 Training Facility
- Activity 8: Construct T-7 Maintenance Facility
- Activity 9: Construct T-7 Egress and Seat Shop
- Activity 10: Construct Radar Cross Section Test Facility
- Activity 11: Construct 2-million-gallon water tank, new well, and pump house. Connect the new tank to Tank 10725 with 1,050 feet of 16-inch pipe. Demolish Tank 12412 and Tank 1433.
- Activity 12: Upgrade campus freshwater line (24-inch main)
- Activity 13: Upgrade campus sanitary sewer gravity line and lift station
- Activity 14: Upgrade campus natural gas line
- Activity 15: Construct Tactical Air Navigation antenna at new location, demolition at old location

Appendix B - Air Quality General Information and Calculations

- Activity 16: Construct new section of Foulois Road
- Activity 17: Construct new taxiway and aprons

Default ACAM parameters were used in the model runs when project-specific data were not available. These parameters include:

- Working hours per day and working days of the week
- Worker commute distance
- Equipment types and number of each type of equipment for each phase/activity
- Haul truck/delivery truck trip numbers and trip distances

Project-specific data and assumptions were based on engineering information available at the time of the analysis.

B.3 Preferred Alternative

The EPA General Conformity Rule establishes federal *de minimis* thresholds in 40 CFR Section 93.153(b) for individual criteria pollutants and their precursors. The applicable thresholds depend on the EPA-designated attainment status for each NAAQS pollutant in the project area. The thresholds are only applicable to increases of pollutants and their precursors associated with federal actions in nonattainment and maintenance areas. These emissions rates (represented in tpy) are used to delineate federal actions with the potential to conflict with the applicable state implementation plan or substantially and adversely affect air quality. If the federal action includes sources that require new source review permitting, that portion of the action is not subject to conformity determination (40 CFR Section 93.153(d)). Those sources will be managed separately as part of the permitting process.

Table B-3 presents the *de minimis* thresholds applicable to Hill Air Force Base. With respect to the General Conformity Rule, effects of the project on air quality would be considered significant if the proposed federal action would result in any net emissions increase greater than the applicable *de minimis* threshold in Table B-3.

Table B-3. General Conformity de minimus Thresholds Applicable to Hill Air Force Base

Pollutant	Area Attainment Status	PSD Potential to Emit (PTE) Significance Thresholds for Stationary Sources of Attainment Pollutants (tpy) – Hill AFB is not a “Named Source” under PSD Major Source Thresholds (40 CFR Section 51.166(b)(1))	Most Stringent Applicable General Conformity de minimis Threshold (tpy) (40 CFR Section 93.153(b)(1))
VOC	NA	250	70 (as a precursor to serious non-attainment PM _{2.5})
NO ₂	Attainment/Unclassified	250	70 (as a precursor to serious non-attainment PM _{2.5})
O ₃	Nonattainment – Marginal	250	100 (as VOCs or NO _x)
CO	Attainment/Unclassified	250	NA
SO ₂	Attainment/Unclassified	250	70 (as a precursor to serious non-attainment PM _{2.5})
PM ₁₀	Attainment	250 ^a	NA
PM _{2.5} (Directly-emitted)	Serious Nonattainment	NA (Area is designated as nonattainment for PM _{2.5} ; therefore, PSD is not applicable)	70

Appendix B - Air Quality General Information and Calculations

Table B-3. General Conformity de minimis Thresholds Applicable to Hill Air Force Base

Pollutant	Area Attainment Status	PSD Potential to Emit (PTE) Significance Thresholds for Stationary Sources of Attainment Pollutants (tpy) – Hill AFB is not a “Named Source” under PSD Major Source Thresholds (40 CFR Section 51.166(b)(1))	Most Stringent Applicable General Conformity de minimis Threshold (tpy) (40 CFR Section 93.153(b)(1))
Pb	Attainment/Unclassified	250	NA
NH ₃	NA	250	70 (as a precursor to serious non-attainment PM _{2.5})

Source: EPA 2020b. *De Minimis Tables*. Accessed October 20, 2020. <https://www.epa.gov/general-conformity/de-minimis-tables>.

^a De minimis thresholds are not applicable to attainment pollutants that are not precursors to nonattainment or maintenance pollutants.

NA = Not Applicable

B.4 Operational Emissions

Operational emissions have been distinguished in ACAM follows:

- Activity 18: Additional personnel for F-35 Canopy Repair
- Activity 19: Additional personnel for F-35 Maintenance Facility
- Activity 20: Additional personnel for F-35 Composite Repair Facility
- Activity 21: Additional personnel for T-7 Maintenance Facility
- Activity 22: Additional personnel for Radar Cross Section Facility
- Activity 23: Heating associated with new F-35 Canopy Repair
- Activity 24: Heating associated with new F-35 Maintenance Facility
- Activity 25: Heating associated with new F-35 Composite Repair Facility
- Activity 26: Heating associated with new T-7 Maintenance Facility
- Activity 27: Heating associated with new Radar Cross Section Facility
- Activity 28: Heating associated with new F-35 Training Facility
- Activity 29: Heating associated with new T-7 Egress and Seat Shop
- Activity 30-45: F-35 Aircraft operations for years 2024 through 2040

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

1. General Information

- Action Location

Base: HILL AFB

State: Utah

County(s): Davis; Weber

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

- Action Title: CONSTRUCTION OF F-35/T-7 MAINTENANCE CAMPUS AT HILL AIR FORCE BASE, UTAH

- Project Number/s (if applicable):

- Projected Action Start Date: 4 / 2021

- Action Purpose and Need:

The purpose of the proposed construction of the F-35/T-7 Maintenance Campus is to provide adequately sized facilities for the depot-level maintenance of F-35 and T-7 aircraft at Hill AFB. Depot-level 3 maintenance is major rework or repair that requires specialized tools, infrastructure, and personnel and repairs to the F-35 and T-7 aircraft require elevated levels of security.

The need for the proposed construction of the F-35/T-7 Maintenance Campus is driven by the Air Force's assignment of Hill AFB as the DSOR and TRC for depot-level sustainment of these aircraft and for future workloads. Without changes, the current facilities at Hill AFB do not have enough capacity to meet the Air Force's goal of mission-capable rate of 80 percent while continuing to support the overhaul, testing, and repair of these aircraft and their components. The activities required include aircraft disassembly, cleaning, inspecting, reassembly, and operational testing. Without the Proposed Action, Hill AFB would lack the necessary resources to meet demand for advanced composite repairs.

- Action Description:

The maintenance facilities would be constructed in a phased manner over the next 20 years. Detailed planning for the first 5 years of construction is underway and is considered Phase 1 of the overall project. The remaining construction would occur under Phases 2 through 4 over the remaining 15 years.

This ACAM analysis evaluates the well-defined activities associated with Phase 1 of the Proposed Action:

- 1) F-35 Canopy Repair Facility
- 2) F-35 Maintenance Facility
- 3) F-35 Composite Repair
- 4) F-35 Training Facility
- 5) T-7 Maintenance Facility
- 6) T-7 Egress Canopy and Seat Shop/Engine Shop
- 7) F-35 Radar Cross Section Test Facility
- 8) Aircraft Operations for the F-35 from 2024 to 2040

- Point of Contact

Name: Michelle York
Title: Contractor / Air Quality Consultant
Organization: Jacobs
Email: michelle.york@jacobs.com
Phone Number: 360-694-6756

- Activity List:

Activity Type	Activity Title

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

2.	Construction / Demolition	Demolish Bldg 747
3.	Construction / Demolition	Move Bldg 745
4.	Construction / Demolition	F-35 Canopy Repair Bldg
5.	Construction / Demolition	F-35 Maintenance Facility, Demolish Existing section of Foulis Road
6.	Construction / Demolition	F-35 Composite Repair Facility
7.	Construction / Demolition	F-35 Training Facility
8.	Construction / Demolition	T-7 Maintenance Facility
9.	Construction / Demolition	T-7 Egress and Seat Shop
10.	Construction / Demolition	Radar Cross Section Test Facility
11.	Construction / Demolition	2 Mil Gal Water Tank and New Well, Demolish tank 12412 and 1433
12.	Construction / Demolition	Campus Freshwater Line (24" main)
13.	Construction / Demolition	Campus Sanitary Sewer Gravity Line and Lift Station
14.	Construction / Demolition	Campus Natural Gas Line
15.	Construction / Demolition	TACAN Antenna construction at new location, demolition at old location
16.	Construction / Demolition	Construct New Roadway
17.	Construction / Demolition	New Taxiway and Aprons
18.	Personnel	F-35 Canopy Personnel
19.	Personnel	F-35 Maintenance Personnel
20.	Personnel	F-35 Composite Repair Personnel
21.	Personnel	T-7 Maintenance Personnel
22.	Personnel	F-35 Radar Cross Section Test Personnel
23.	Heating	F-35 Canopy Repair Facility
24.	Heating	F-35 Maintenance Facility
25.	Heating	F-35 Composite Repair Facility
26.	Heating	T-7 Maintenance Facility
27.	Heating	F-35 Radar Cross Section Test Bldg
28.	Heating	F-35 Training Facility
29.	Heating	T-7 Egress and Seat Shop
30.	Aircraft	F-35 Aircraft Operations - 2024
31.	Aircraft	F-35 Aircraft Operations - 2025
32.	Aircraft	F-35 Aircraft Operations - 2026
33.	Aircraft	F-35 Aircraft Operations - 2027
34.	Aircraft	F-35 Aircraft Operations - 2028
35.	Aircraft	F-35 Aircraft Operations - 2029
36.	Aircraft	F-35 Aircraft Operations - 2030
37.	Aircraft	F-35 Aircraft Operations - 2031
38.	Aircraft	F-35 Aircraft Operations - 2032
39.	Aircraft	F-35 Aircraft Operations - 2033
40.	Aircraft	F-35 Aircraft Operations - 2034
41.	Aircraft	F-35 Aircraft Operations - 2035
42.	Aircraft	F-35 Aircraft Operations - 2036
43.	Aircraft	F-35 Aircraft Operations - 2037
44.	Aircraft	F-35 Aircraft Operations - 2038 & 2039
45.	Aircraft	F-35 Aircraft Operations - 2040

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

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Activity Location

County: Davis; Weber

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

- Activity Title: Demolish Bldg 747

- Activity Description:

- Activity Start Date

Start Month: 4

Start Month: 2021

- Activity End Date

Indefinite: False

End Month: 4

End Month: 2021

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.005859
SO _x	0.000089
NO _x	0.038356
CO	0.045933
PM 10	0.014085

Pollutant	Total Emissions (TONs)
PM 2.5	0.001747
Pb	0.000000
NH ₃	0.000043
CO ₂ e	8.9

2.1 Demolition Phase

2.1.1 Demolition Phase Timeline Assumptions

- Phase Start Date

Start Month: 4

Start Quarter: 1

Start Year: 2021

- Phase Duration

Number of Month: 0

Number of Days: 14

2.1.2 Demolition Phase Assumptions

- General Demolition Information

Area of Building to be demolished (ft²): 6180

Height of Building to be demolished (ft): 9.5

- Default Settings Used: Yes

- Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Concrete/Industrial Saws Composite	1	8
Rubber Tired Dozers Composite	1	1
Tractors/Loaders/Backhoes Composite	2	6

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Vehicle Exhaust

Average Hauling Truck Capacity (yd³): 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 Demolition Phase Emission Factor(s)

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

Concrete/Industrial Saws Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0443	0.0006	0.3176	0.3761	0.0170	0.0170	0.0040	58.563
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.2015	0.0024	1.4660	0.7661	0.0581	0.0581	0.0181	239.53
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

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

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308
LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961
HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

2.1.4 Demolition Phase Formula(s)

- Fugitive Dust Emissions per Phase

$$PM10_{FD} = (0.00042 * BA * BH) / 2000$$

PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)

0.00042: Emission Factor (lb/ft³)

BA: Area of Building to be demolished (ft²)

BH: Height of Building to be demolished (ft)

2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

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

CEE_{POL}: Construction Exhaust Emissions (TONs)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

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

- Vehicle Exhaust Emissions per Phase

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

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building being demolish (ft²)
BH: Height of Building being demolish (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd³ / 27 ft³)
0.25: Volume reduction factor (material reduced by 75% to account for air space)
HC: Average Hauling Truck Capacity (yd³)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)
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. Construction / Demolition

3.1 General Information & Timeline Assumptions

- Activity Location

County: Davis; Weber

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

- Activity Title: Move Bldg 745

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Activity Description:

- Activity Start Date

Start Month: 4
Start Month: 2021

- Activity End Date

Indefinite: False
End Month: 7
End Month: 2021

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.067112
SO _x	0.001138
NO _x	0.400718
CO	0.460099
PM 10	0.049285

Pollutant	Total Emissions (TONs)
PM 2.5	0.016561
Pb	0.000000
NH ₃	0.000297
CO ₂ e	110.3

3.1 Demolition Phase

3.1.1 Demolition Phase Timeline Assumptions

- Phase Start Date

Start Month: 4
Start Quarter: 1
Start Year: 2021

- Phase Duration

Number of Month: 0
Number of Days: 14

3.1.2 Demolition Phase Assumptions

- General Demolition Information

Area of Building to be demolished (ft²): 3085
Height of Building to be demolished (ft): 17

- Default Settings Used: Yes

- Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Concrete/Industrial Saws Composite	1	8
Rubber Tired Dozers Composite	1	1
Tractors/Loaders/Backhoes Composite	2	6

- Vehicle Exhaust

Average Hauling Truck Capacity (yd³): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- 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 Demolition Phase Emission Factor(s)

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

Concrete/Industrial Saws Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0443	0.0006	0.3176	0.3761	0.0170	0.0170	0.0040	58.563
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.2015	0.0024	1.4660	0.7661	0.0581	0.0581	0.0181	239.53
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

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

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308
LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961
HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

3.1.4 Demolition Phase Formula(s)

- Fugitive Dust Emissions per Phase

$$PM10_{FD} = (0.00042 * BA * BH) / 2000$$

PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)

0.00042: Emission Factor (lb/ft³)

BA: Area of Building to be demolished (ft²)

BH: Height of Building to be demolished (ft)

2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

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

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Vehicle Exhaust Emissions per Phase

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

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

BA: Area of Building being demolish (ft²)

BH: Height of Building being demolish (ft)

(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd³ / 27 ft³)

0.25: Volume reduction factor (material reduced by 75% to account for air space)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

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 Site Grading Phase

3.2.1 Site Grading Phase Timeline Assumptions

- Phase Start Date

Start Month: 4

Start Quarter: 3

Start Year: 2021

- Phase Duration

Number of Month: 0

Number of Days: 14

3.2.2 Site Grading Phase Assumptions

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- General Site Grading Information

Area of Site to be Graded (ft²): 3085
 Amount of Material to be Hauled On-Site (yd³): 0
 Amount of Material to be Hauled Off-Site (yd³): 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 (yd³): 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 Site Grading Phase Emission Factor(s)

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

Graders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0860	0.0014	0.5212	0.5747	0.0247	0.0247	0.0077	132.93
Other Construction Equipment Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0533	0.0012	0.3119	0.3497	0.0121	0.0121	0.0048	122.61
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.2015	0.0024	1.4660	0.7661	0.0581	0.0581	0.0181	239.53
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

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

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308
LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961
HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

3.2.4 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

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

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

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

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³)

HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

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

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

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

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

3.3 Trenching/Excavating Phase

3.3.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date

Start Month: 5
Start Quarter: 1
Start Year: 2021

- Phase Duration

Number of Month: 1
Number of Days: 0

3.3.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information

Area of Site to be Trenched/Excavated (ft²): 754
Amount of Material to be Hauled On-Site (yd³): 588
Amount of Material to be Hauled Off-Site (yd³): 588

- 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 Equipmen Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust

Average Hauling Truck Capacity (yd³): 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

3.3.3 Trenching / Excavating Phase Emission Factor(s)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

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

Graders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0860	0.0014	0.5212	0.5747	0.0247	0.0247	0.0077	132.93
Other Construction Equipment Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0533	0.0012	0.3119	0.3497	0.0121	0.0121	0.0048	122.61
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.2015	0.0024	1.4660	0.7661	0.0581	0.0581	0.0181	239.53
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

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

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308
LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961
HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

3.3.4 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

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

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

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

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³)

HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

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

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

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

3.4 Building Construction Phase

3.4.1 Building Construction Phase Timeline Assumptions

- Phase Start Date

Start Month: 6
Start Quarter: 1
Start Year: 2021

- Phase Duration

Number of Month: 2
Number of Days: 0

3.4.2 Building Construction Phase Assumptions

- General Building Construction Information

Building Category: Office or Industrial
Area of Building (ft²): 3085
Height of Building (ft): 17
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

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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

3.4.3 Building Construction Phase Emission Factor(s)

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

Cranes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0845	0.0013	0.6033	0.3865	0.0228	0.0228	0.0076	128.82
Forklifts Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0293	0.0006	0.1458	0.2148	0.0056	0.0056	0.0026	54.462
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

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

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308
LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961
HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

3.4.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

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

CEE_{POL}: Construction Exhaust Emissions (TONs)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

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

- Vehicle Exhaust Emissions per Phase

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

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft³ to trips (0.42 trip / 1000 ft³)
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 (ft²)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft³ to trips (0.38 trip / 1000 ft³)
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)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

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. Construction / Demolition

4.1 General Information & Timeline Assumptions

- Activity Location

County: Davis; Weber

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

- Activity Title: F-35 Canopy Repair Bldg

- Activity Description:

- Activity Start Date

Start Month: 10

Start Month: 2021

- Activity End Date

Indefinite: False

End Month: 9

End Month: 2022

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	1.194818
SO _x	0.005199
NO _x	2.102905
CO	2.096960
PM 10	1.167965

Pollutant	Total Emissions (TONs)
PM 2.5	0.089203
Pb	0.000000
NH ₃	0.003344
CO ₂ e	518.1

4.1 Site Grading Phase

4.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date

Start Month: 10

Start Quarter: 1

Start Year: 2021

- Phase Duration

Number of Month: 0

Number of Days: 18

4.1.2 Site Grading Phase Assumptions

- General Site Grading Information

Area of Site to be Graded (ft²): 150380

Amount of Material to be Hauled On-Site (yd³): 0

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Amount of Material to be Hauled Off-Site (yd³): 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	8
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	8
Tractors/Loaders/Backhoes Composite	2	7

- Vehicle Exhaust

Average Hauling Truck Capacity (yd³): 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 Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0860	0.0014	0.5212	0.5747	0.0247	0.0247	0.0077	132.93
Other Construction Equipment Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0533	0.0012	0.3119	0.3497	0.0121	0.0121	0.0048	122.61
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.2015	0.0024	1.4660	0.7661	0.0581	0.0581	0.0181	239.53
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

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

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308
LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961
HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

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

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

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

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

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³)

HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

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

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

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: 10
Start Quarter: 3
Start Year: 2021

- Phase Duration

Number of Month: 0
Number of Days: 18

4.2.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information

Area of Site to be Trenched/Excavated (ft²): 32186
Amount of Material to be Hauled On-Site (yd³): 19577
Amount of Material to be Hauled Off-Site (yd³): 19577

- 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 Equipmen Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust

Average Hauling Truck Capacity (yd³): 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 Emission Factors (lb/hour) (default)

Graders Composite

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0860	0.0014	0.5212	0.5747	0.0247	0.0247	0.0077	132.93
Other Construction Equipment Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0533	0.0012	0.3119	0.3497	0.0121	0.0121	0.0048	122.61
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.2015	0.0024	1.4660	0.7661	0.0581	0.0581	0.0181	239.53
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

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

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308
LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961
HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

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

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

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

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

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³)

HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

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

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

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

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: 11
Start Quarter: 2
Start Year: 2021

- Phase Duration

Number of Month: 9
Number of Days: 16

4.3.2 Building Construction Phase Assumptions

- General Building Construction Information

Building Category: Office or Industrial
Area of Building (ft²): 75000
Height of Building (ft): 24
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

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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

4.3.3 Building Construction Phase Emission Factor(s)

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

Cranes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0845	0.0013	0.6033	0.3865	0.0228	0.0228	0.0076	128.82
Forklifts Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0293	0.0006	0.1458	0.2148	0.0056	0.0056	0.0026	54.462
Generator Sets Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0362	0.0006	0.2977	0.2707	0.0130	0.0130	0.0032	61.074
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890
Welders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0280	0.0003	0.1634	0.1787	0.0088	0.0088	0.0025	25.665

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

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308
LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961
HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

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4.3.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

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

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

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

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

BA: Area of Building (ft²)

BH: Height of Building (ft)

(0.42 / 1000): Conversion Factor ft³ to trips (0.42 trip / 1000 ft³)

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 (ft²)

BH: Height of Building (ft)

(0.38 / 1000): Conversion Factor ft³ to trips (0.38 trip / 1000 ft³)

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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 Architectural Coatings Phase

4.4.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date

Start Month: 8

Start Quarter: 4

Start Year: 2022

- Phase Duration

Number of Month: 0

Number of Days: 18

4.4.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information

Building Category: Non-Residential

Total Square Footage (ft²): 75000

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

4.4.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO ₂ e
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308
LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961
HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

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4.4.4 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 (ft²)

800: Conversion Factor square feet to man days (1 ft² / 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 (ft²)

2.0: Conversion Factor total area to coated area (2.0 ft² coated area / total area)

0.0116: Emission Factor (lb/ft²)

2000: Conversion Factor pounds to tons

4.5 Paving Phase

4.5.1 Paving Phase Timeline Assumptions

- Phase Start Date

Start Month: 9

Start Quarter: 2

Start Year: 2022

- Phase Duration

Number of Month: 0

Number of Days: 19

4.5.2 Paving Phase Assumptions

- General Paving Information

Paving Area (ft²): 109000

- 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

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Pavers Composite	1	7
Paving Equipment Composite	2	6
Rollers 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

4.5.3 Paving Phase Emission Factor(s)

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

Graders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0860	0.0014	0.5212	0.5747	0.0247	0.0247	0.0077	132.93
Other Construction Equipment Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0533	0.0012	0.3119	0.3497	0.0121	0.0121	0.0048	122.61
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.2015	0.0024	1.4660	0.7661	0.0581	0.0581	0.0181	239.53
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

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

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308
LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961
HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

4.5.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

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

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

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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 (ft²)

0.25: Thickness of Paving Area (ft)

(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd³ / 27 ft³)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

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

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

V_{POL} : Vehicle Emissions (TONs)

VMT_{VE} : Vehicle Exhaust Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF_{POL} : Emission Factor for Pollutant (grams/mile)

VM: Vehicle Exhaust On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

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

VMT_{WT} : Worker Trips Vehicle Miles Travel (miles)

WD: Number of Total Work Days (days)

WT: Average Worker Round Trip Commute (mile)

1.25: Conversion Factor Number of Construction Equipment to Number of Works

NE: Number of Construction Equipment

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

V_{POL} : Vehicle Emissions (TONs)

VMT_{VE} : Worker Trips Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF_{POL} : Emission Factor for Pollutant (grams/mile)

VM: Worker Trips On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

$$VOC_P = (2.62 * PA) / 43560$$

VOC_P : Paving VOC Emissions (TONs)

2.62: Emission Factor (lb/acre)

PA: Paving Area (ft²)

43560: Conversion Factor square feet to acre (43560 ft² / acre)² / acre)

5. Construction / Demolition

5.1 General Information & Timeline Assumptions

- Activity Location

County: Davis; Weber

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

- Activity Title: F-35 Maintenance Facility, Demolish Existing section of Foulis Road

- Activity Description:

- Activity Start Date

Start Month: 4

Start Month: 2023

- Activity End Date

Indefinite: False

End Month: 9

End Month: 2024

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	3.327971
SO _x	0.008714
NO _x	3.131448
CO	2.900295
PM 10	4.761960

Pollutant	Total Emissions (TONs)
PM 2.5	0.114326
Pb	0.000000
NH ₃	0.008448
CO ₂ e	900.2

5.1 Demolition Phase

5.1.1 Demolition Phase Timeline Assumptions

- Phase Start Date

Start Month: 4

Start Quarter: 1

Start Year: 2023

- Phase Duration

Number of Month: 2

Number of Days: 1

5.1.2 Demolition Phase Assumptions

- General Demolition Information

Area of Building to be demolished (ft²): 143567

Height of Building to be demolished (ft): 1

- Default Settings Used: Yes

- Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Concrete/Industrial Saws Composite	1	8
Rubber Tired Dozers Composite	1	1
Tractors/Loaders/Backhoes Composite	3	8

- Vehicle Exhaust

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Average Hauling Truck Capacity (yd³): 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 Demolition Phase Emission Factor(s)

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

Concrete/Industrial Saws Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0382	0.0006	0.2766	0.3728	0.0127	0.0127	0.0034	58.549
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.1830	0.0024	1.2623	0.7077	0.0494	0.0494	0.0165	239.49
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0364	0.0007	0.2127	0.3593	0.0080	0.0080	0.0032	66.879

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

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308
LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961
HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

5.1.4 Demolition Phase Formula(s)

- Fugitive Dust Emissions per Phase

$$PM10_{FD} = (0.00042 * BA * BH) / 2000$$

PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)

0.00042: Emission Factor (lb/ft³)

BA: Area of Building to be demolished (ft²)

BH: Height of Building to be demolished (ft)

2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

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

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

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

- Vehicle Exhaust Emissions per Phase

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

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building being demolish (ft²)
BH: Height of Building being demolish (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd³ / 27 ft³)
0.25: Volume reduction factor (material reduced by 75% to account for air space)
HC: Average Hauling Truck Capacity (yd³)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)
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

5.2 Site Grading Phase

5.2.1 Site Grading Phase Timeline Assumptions

- Phase Start Date

Start Month: 10
Start Quarter: 1
Start Year: 2023

- Phase Duration

Number of Month: 0
Number of Days: 19

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5.2.2 Site Grading Phase Assumptions

- General Site Grading Information

Area of Site to be Graded (ft²): 700000
 Amount of Material to be Hauled On-Site (yd³): 0
 Amount of Material to be Hauled Off-Site (yd³): 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
Excavators Composite	1	8
Graders Composite	1	8
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	8
Scrapers Composite	2	8
Tractors/Loaders/Backhoes Composite	3	8

- Vehicle Exhaust

Average Hauling Truck Capacity (yd³): 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

5.2.3 Site Grading Phase Emission Factor(s)

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

Excavators Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0614	0.0013	0.2820	0.5096	0.0117	0.0117	0.0055	119.71
Graders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0757	0.0014	0.4155	0.5717	0.0191	0.0191	0.0068	132.91
Other Construction Equipment Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0483	0.0012	0.2497	0.3481	0.0091	0.0091	0.0043	122.61
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.1830	0.0024	1.2623	0.7077	0.0494	0.0494	0.0165	239.49
Scrapers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}

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Emission Factors	0.1640	0.0026	1.0170	0.7431	0.0406	0.0406	0.0148	262.85
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH₄	CO_{2e}
Emission Factors	0.0364	0.0007	0.2127	0.3593	0.0080	0.0080	0.0032	66.879

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

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH₃	CO_{2e}
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308
LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961
HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

5.2.4 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

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

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

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

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³)

HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

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

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- 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

5.3 Trenching/Excavating Phase

5.3.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date

Start Month: 10

Start Quarter: 3

Start Year: 2023

- Phase Duration

Number of Month: 0

Number of Days: 18

5.3.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information

Area of Site to be Trenched/Excavated (ft²): 42750

Amount of Material to be Hauled On-Site (yd³): 32767

Amount of Material to be Hauled Off-Site (yd³): 32767

- 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 Equipmen Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust

Average Hauling Truck Capacity (yd³): 20 (default)

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

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC

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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

5.3.3 Trenching / Excavating Phase Emission Factor(s)

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

Excavators Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0614	0.0013	0.2820	0.5096	0.0117	0.0117	0.0055	119.71
Graders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0757	0.0014	0.4155	0.5717	0.0191	0.0191	0.0068	132.91
Other Construction Equipment Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0483	0.0012	0.2497	0.3481	0.0091	0.0091	0.0043	122.61
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.1830	0.0024	1.2623	0.7077	0.0494	0.0494	0.0165	239.49
Scrapers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.1640	0.0026	1.0170	0.7431	0.0406	0.0406	0.0148	262.85
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0364	0.0007	0.2127	0.3593	0.0080	0.0080	0.0032	66.879

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

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308
LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961
HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

5.3.4 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

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

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CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$\text{VMT}_{\text{VE}} = (\text{HA}_{\text{OnSite}} + \text{HA}_{\text{OffSite}}) * (1 / \text{HC}) * \text{HT}$$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³)

HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

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

$$\text{V}_{\text{POL}} = (\text{VMT}_{\text{VE}} * 0.002205 * \text{EF}_{\text{POL}} * \text{VM}) / 2000$$

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

$$\text{VMT}_{\text{WT}} = \text{WD} * \text{WT} * 1.25 * \text{NE}$$

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

$$\text{V}_{\text{POL}} = (\text{VMT}_{\text{WT}} * 0.002205 * \text{EF}_{\text{POL}} * \text{VM}) / 2000$$

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

5.4 Building Construction Phase

5.4.1 Building Construction Phase Timeline Assumptions

- Phase Start Date

Start Month: 11

Start Quarter: 2

Start Year: 2023

- Phase Duration

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Number of Month: 9
Number of Days: 17

5.4.2 Building Construction Phase Assumptions

- General Building Construction Information

Building Category: Office or Industrial
Area of Building (ft²): 248314
Height of Building (ft): 40
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	7
Forklifts Composite	2	7
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

5.4.3 Building Construction Phase Emission Factor(s)

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

Cranes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0754	0.0013	0.5027	0.3786	0.0181	0.0181	0.0068	128.79
Forklifts Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0258	0.0006	0.1108	0.2145	0.0034	0.0034	0.0023	54.454

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Generator Sets Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0320	0.0006	0.2612	0.2683	0.0103	0.0103	0.0028	61.065
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0364	0.0007	0.2127	0.3593	0.0080	0.0080	0.0032	66.879
Welders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0242	0.0003	0.1487	0.1761	0.0067	0.0067	0.0021	25.657

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

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308
LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961
HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

5.4.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

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

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

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

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

BA: Area of Building (ft²)

BH: Height of Building (ft)

(0.42 / 1000): Conversion Factor ft³ to trips (0.42 trip / 1000 ft³)

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)

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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 (ft²)

BH: Height of Building (ft)

(0.38 / 1000): Conversion Factor ft³ to trips (0.38 trip / 1000 ft³)

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

5.5 Architectural Coatings Phase

5.5.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date

Start Month: 8

Start Quarter: 4

Start Year: 2024

- Phase Duration

Number of Month: 0

Number of Days: 18

5.5.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information

Building Category: Non-Residential

Total Square Footage (ft²): 248314

Number of Units: N/A

- Architectural Coatings Default Settings

Default Settings Used: Yes

Average Day(s) worked per week: 5 (default)

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- 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

5.5.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308
LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961
HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

5.5.4 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 (ft²)

800: Conversion Factor square feet to man days (1 ft² / 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 (ft²)

2.0: Conversion Factor total area to coated area (2.0 ft² coated area / total area)

0.0116: Emission Factor (lb/ft²)

2000: Conversion Factor pounds to tons

5.6 Paving Phase

5.6.1 Paving Phase Timeline Assumptions

- Phase Start Date

Start Month: 9

Start Quarter: 2

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Start Year: 2024

- Phase Duration

Number of Month: 0

Number of Days: 19

5.6.2 Paving Phase Assumptions

- General Paving Information

Paving Area (ft²): 214000

- Paving Default Settings

Default Settings Used: Yes

Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

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

- 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

5.6.3 Paving Phase Emission Factor(s)

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

Excavators Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0614	0.0013	0.2820	0.5096	0.0117	0.0117	0.0055	119.71
Graders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0757	0.0014	0.4155	0.5717	0.0191	0.0191	0.0068	132.91
Other Construction Equipment Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0483	0.0012	0.2497	0.3481	0.0091	0.0091	0.0043	122.61
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.1830	0.0024	1.2623	0.7077	0.0494	0.0494	0.0165	239.49
Scrapers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}

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Emission Factors	0.1640	0.0026	1.0170	0.7431	0.0406	0.0406	0.0148	262.85
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH₄	CO_{2e}
Emission Factors	0.0364	0.0007	0.2127	0.3593	0.0080	0.0080	0.0032	66.879

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

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH₃	CO_{2e}
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308
LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961
HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

5.6.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

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

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

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

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

PA: Paving Area (ft²)

0.25: Thickness of Paving Area (ft)

(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd³ / 27 ft³)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

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

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

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

- Off-Gassing Emissions per Phase

$$VOC_P = (2.62 * PA) / 43560$$

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

6. Construction / Demolition

6.1 General Information & Timeline Assumptions

- Activity Location

County: Davis; Weber

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

- Activity Title: F-35 Composite Repair Facility

- Activity Description:

- Activity Start Date

Start Month: 10

Start Month: 2024

- Activity End Date

Indefinite: False

End Month: 9

End Month: 2025

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	2.513731
SO _x	0.006772
NO _x	2.317183
CO	2.366470
PM 10	2.899887

Pollutant	Total Emissions (TONs)
PM 2.5	0.082553
Pb	0.000000
NH ₃	0.005877
CO ₂ e	691.9

6.1 Site Grading Phase

6.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date

Start Month:	10
Start Quarter:	1
Start Year:	2024

Number of Month: 0
Number of Days: 18

Area of Site to be Graded (ft²):	450000
Amount of Material to be Hauled On-Site (yd³):	0
Amount of Material to be Hauled Off-Site (yd³):	0

Excavators Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO ₂ e
Emission Factors	0.0584	0.0013	0.2523	0.5090	0.0100	0.0100	0.0052	119.71
Graders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO ₂ e
Emission Factors	0.0714	0.0014	0.3708	0.5706	0.0167	0.0167	0.0064	132.90
Other Construction Equipment Composite								

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0461	0.0012	0.2243	0.3477	0.0079	0.0079	0.0041	122.61
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.1747	0.0024	1.1695	0.6834	0.0454	0.0454	0.0157	239.47
Scrapers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.1564	0.0026	0.9241	0.7301	0.0368	0.0368	0.0141	262.83
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0348	0.0007	0.1980	0.3589	0.0068	0.0068	0.0031	66.875

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

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308
LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961
HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

6.1.4 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

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

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

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

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³)

HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

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

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

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

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

6.2 Trenching/Excavating Phase

6.2.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date

Start Month: 10
Start Quarter: 3
Start Year: 2024

- Phase Duration

Number of Month: 0
Number of Days: 18

6.2.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information

Area of Site to be Trenched/Excavated (ft²): 26884
Amount of Material to be Hauled On-Site (yd³): 29490
Amount of Material to be Hauled Off-Site (yd³): 29490

- 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 Equipmen Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Vehicle Exhaust

Average Hauling Truck Capacity (yd³): 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

6.2.3 Trenching / Excavating Phase Emission Factor(s)

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

Excavators Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0584	0.0013	0.2523	0.5090	0.0100	0.0100	0.0052	119.71
Graders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0714	0.0014	0.3708	0.5706	0.0167	0.0167	0.0064	132.90
Other Construction Equipment Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0461	0.0012	0.2243	0.3477	0.0079	0.0079	0.0041	122.61
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.1747	0.0024	1.1695	0.6834	0.0454	0.0454	0.0157	239.47
Scrapers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.1564	0.0026	0.9241	0.7301	0.0368	0.0368	0.0141	262.83
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0348	0.0007	0.1980	0.3589	0.0068	0.0068	0.0031	66.875

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

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308
LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961
HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

6.2.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase

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

PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)

ACRE: Total acres (acres)

WD: Number of Total Work Days (days)

2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

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

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

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

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³)

HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

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

6.3 Building Construction Phase

6.3.1 Building Construction Phase Timeline Assumptions

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Phase Start Date

Start Month: 11
Start Quarter: 2
Start Year: 2024

- Phase Duration

Number of Month: 9
Number of Days: 16

6.3.2 Building Construction Phase Assumptions

- General Building Construction Information

Building Category: Office or Industrial
Area of Building (ft²): 187000
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

6.3.3 Building Construction Phase Emission Factor(s)

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

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Cranes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0715	0.0013	0.4600	0.3758	0.0161	0.0161	0.0064	128.78
Forklifts Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0246	0.0006	0.0973	0.2146	0.0029	0.0029	0.0022	54.451
Generator Sets Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0303	0.0006	0.2464	0.2674	0.0091	0.0091	0.0027	61.061
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0348	0.0007	0.1980	0.3589	0.0068	0.0068	0.0031	66.875
Welders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0227	0.0003	0.1427	0.1752	0.0059	0.0059	0.0020	25.653

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

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308
LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961
HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

6.3.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

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

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

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

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

BA: Area of Building (ft²)

BH: Height of Building (ft)

(0.42 / 1000): Conversion Factor ft³ to trips (0.42 trip / 1000 ft³)

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

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- 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 (ft²)

BH: Height of Building (ft)

(0.38 / 1000): Conversion Factor ft³ to trips (0.38 trip / 1000 ft³)

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

6.4 Architectural Coatings Phase

6.4.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date

Start Month: 8

Start Quarter: 4

Start Year: 2025

- Phase Duration

Number of Month: 0

Number of Days: 18

6.4.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information

Building Category: Non-Residential

Total Square Footage (ft²): 187000

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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

6.4.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308
LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961
HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

6.4.4 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 (ft²)

800: Conversion Factor square feet to man days (1 ft² / 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 (ft²)

2.0: Conversion Factor total area to coated area (2.0 ft² coated area / total area)

0.0116: Emission Factor (lb/ft²)

2000: Conversion Factor pounds to tons

6.5 Paving Phase

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6.5.1 Paving Phase Timeline Assumptions

- Phase Start Date

Start Month: 9
Start Quarter: 2
Start Year: 2025

- Phase Duration

Number of Month: 0
Number of Days: 19

6.5.2 Paving Phase Assumptions

- General Paving Information

Paving Area (ft²): 97500

- Paving Default Settings

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

- Construction Exhaust (default)

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

- Vehicle Exhaust

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

- Vehicle Exhaust Vehicle Mixture (%)

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

- Worker Trips

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

- Worker Trips Vehicle Mixture (%)

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

6.5.3 Paving Phase Emission Factor(s)

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

Excavators Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO ₂ e
Emission Factors	0.0584	0.0013	0.2523	0.5090	0.0100	0.0100	0.0052	119.71
Graders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO ₂ e
Emission Factors	0.0714	0.0014	0.3708	0.5706	0.0167	0.0167	0.0064	132.90
Other Construction Equipment Composite								

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	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0461	0.0012	0.2243	0.3477	0.0079	0.0079	0.0041	122.61
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.1747	0.0024	1.1695	0.6834	0.0454	0.0454	0.0157	239.47
Scrapers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.1564	0.0026	0.9241	0.7301	0.0368	0.0368	0.0141	262.83
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0348	0.0007	0.1980	0.3589	0.0068	0.0068	0.0031	66.875

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

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308
LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961
HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

6.5.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

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

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

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

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

PA: Paving Area (ft²)

0.25: Thickness of Paving Area (ft)

(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd³ / 27 ft³)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

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

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

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

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

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

- Off-Gassing Emissions per Phase

$$VOC_P = (2.62 * PA) / 43560$$

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

7. Construction / Demolition

7.1 General Information & Timeline Assumptions

- Activity Location

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

- Activity Title: F-35 Training Facility

- Activity Description:

- Activity Start Date

Start Month: 4
Start Month: 2024

- Activity End Date

Indefinite: False
End Month: 3
End Month: 2025

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.589807
SO _x	0.004541
NO _x	1.479942
CO	1.965936

Pollutant	Total Emissions (TONs)
PM 2.5	0.053755
Pb	0.000000
NH ₃	0.001932
CO _{2e}	442.3

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PM 10	0.762016

7.1 Site Grading Phase

7.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date

Start Month: 4
Start Quarter: 1
Start Year: 2024

- Phase Duration

Number of Month: 0
Number of Days: 19

7.1.2 Site Grading Phase Assumptions

- General Site Grading Information

Area of Site to be Graded (ft²): 107500
Amount of Material to be Hauled On-Site (yd³): 0
Amount of Material to be Hauled Off-Site (yd³): 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 (yd³): 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

7.1.3 Site Grading Phase Emission Factor(s)

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

Graders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}

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Emission Factors	0.0714	0.0014	0.3708	0.5706	0.0167	0.0167	0.0064	132.90
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH₄	CO_{2e}
Emission Factors	0.0461	0.0012	0.2243	0.3477	0.0079	0.0079	0.0041	122.61
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH₄	CO_{2e}
Emission Factors	0.1747	0.0024	1.1695	0.6834	0.0454	0.0454	0.0157	239.47
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH₄	CO_{2e}
Emission Factors	0.0348	0.0007	0.1980	0.3589	0.0068	0.0068	0.0031	66.875

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

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH₃	CO_{2e}
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308
LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961
HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

7.1.4 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

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

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

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

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³)

HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

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

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

V_{POL}: Vehicle Emissions (TONs)

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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

7.2 Trenching/Excavating Phase

7.2.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date

Start Month: 4
Start Quarter: 4
Start Year: 2024

- Phase Duration

Number of Month: 0
Number of Days: 19

7.2.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information

Area of Site to be Trenched/Excavated (ft²): 6102
Amount of Material to be Hauled On-Site (yd³): 4824
Amount of Material to be Hauled Off-Site (yd³): 4824

- 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 Equipmen Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

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- Vehicle Exhaust

Average Hauling Truck Capacity (yd³): 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

7.2.3 Trenching / Excavating Phase Emission Factor(s)

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

Graders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0714	0.0014	0.3708	0.5706	0.0167	0.0167	0.0064	132.90
Other Construction Equipment Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0461	0.0012	0.2243	0.3477	0.0079	0.0079	0.0041	122.61
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.1747	0.0024	1.1695	0.6834	0.0454	0.0454	0.0157	239.47
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0348	0.0007	0.1980	0.3589	0.0068	0.0068	0.0031	66.875

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

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308
LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961
HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

7.2.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase

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

PM_{10FD}: Fugitive Dust PM 10 Emissions (TONs)

20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)

ACRE: Total acres (acres)

WD: Number of Total Work Days (days)

2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

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

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CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

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

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³)

HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

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

7.3 Building Construction Phase

7.3.1 Building Construction Phase Timeline Assumptions

- Phase Start Date

Start Month: 5

Start Quarter: 2

Start Year: 2024

- Phase Duration

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Number of Month: 10

Number of Days: 2

7.3.2 Building Construction Phase Assumptions

- General Building Construction Information

Building Category: Office or Industrial

Area of Building (ft²): 29240

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

7.3.3 Building Construction Phase Emission Factor(s)

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

Cranes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0715	0.0013	0.4600	0.3758	0.0161	0.0161	0.0064	128.78
Forklifts Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0246	0.0006	0.0973	0.2146	0.0029	0.0029	0.0022	54.451

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Generator Sets Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0303	0.0006	0.2464	0.2674	0.0091	0.0091	0.0027	61.061
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0348	0.0007	0.1980	0.3589	0.0068	0.0068	0.0031	66.875
Welders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0227	0.0003	0.1427	0.1752	0.0059	0.0059	0.0020	25.653

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

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308
LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961
HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

7.3.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

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

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

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

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

BA: Area of Building (ft²)

BH: Height of Building (ft)

(0.42 / 1000): Conversion Factor ft³ to trips (0.42 trip / 1000 ft³)

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)

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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 (ft²)

BH: Height of Building (ft)

(0.38 / 1000): Conversion Factor ft³ to trips (0.38 trip / 1000 ft³)

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

7.4 Architectural Coatings Phase

7.4.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date

Start Month: 3

Start Quarter: 2

Start Year: 2025

- Phase Duration

Number of Month: 0

Number of Days: 20

7.4.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information

Building Category: Non-Residential

Total Square Footage (ft²): 29240

Number of Units: N/A

- Architectural Coatings Default Settings

Default Settings Used: Yes

Average Day(s) worked per week: 5 (default)

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- 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

7.4.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308
LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961
HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

7.4.4 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 (ft²)

800: Conversion Factor square feet to man days (1 ft² / 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 (ft²)

2.0: Conversion Factor total area to coated area (2.0 ft² coated area / total area)

0.0116: Emission Factor (lb/ft²)

2000: Conversion Factor pounds to tons

8. Construction / Demolition

8.1 General Information & Timeline Assumptions

- Activity Location

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County: Davis; Weber

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

- **Activity Title:** T-7 Maintenance Facility

- **Activity Description:**

- **Activity Start Date**

Start Month: 10

Start Month: 2028

- **Activity End Date**

Indefinite: False

End Month: 9

End Month: 2029

- **Activity Emissions:**

Pollutant	Total Emissions (TONs)
VOC	5.604715
SO _x	0.011205
NO _x	3.524158
CO	3.286788
PM 10	4.726025

Pollutant	Total Emissions (TONs)
PM 2.5	0.114753
Pb	0.000000
NH ₃	0.012376
CO _{2e}	1174.7

8.1 Site Grading Phase

8.1.1 Site Grading Phase Timeline Assumptions

- **Phase Start Date**

Start Month: 10

Start Quarter: 1

Start Year: 2028

- **Phase Duration**

Number of Month: 0

Number of Days: 19

8.1.2 Site Grading Phase Assumptions

- **General Site Grading Information**

Area of Site to be Graded (ft²): 650000

Amount of Material to be Hauled On-Site (yd³): 0

Amount of Material to be Hauled Off-Site (yd³): 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
Excavators Composite	1	8
Graders Composite	1	8
Other Construction Equipment Composite	1	8

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Rubber Tired Dozers Composite	1	8
Scrapers Composite	2	8
Tractors/Loaders/Backhoes Composite	3	8

- Vehicle Exhaust

Average Hauling Truck Capacity (yd³): 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

8.1.3 Site Grading Phase Emission Factor(s)

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

Excavators Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0559	0.0013	0.2269	0.5086	0.0086	0.0086	0.0050	119.70
Graders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0676	0.0014	0.3314	0.5695	0.0147	0.0147	0.0061	132.89
Other Construction Equipment Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0442	0.0012	0.2021	0.3473	0.0068	0.0068	0.0039	122.60
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45
Scrapers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.1495	0.0026	0.8387	0.7186	0.0334	0.0334	0.0134	262.81
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

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

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308
LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961
HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

8.1.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

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

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

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

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

- Vehicle Exhaust Emissions per Phase

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

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³)
HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³)
HC: Average Hauling Truck Capacity (yd³)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)
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

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8.2 Trenching/Excavating Phase

8.2.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date

Start Month: 10
Start Quarter: 3
Start Year: 2028

- Phase Duration

Number of Month: 0
Number of Days: 19

8.2.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information

Area of Site to be Trenched/Excavated (ft²): 89208
Amount of Material to be Hauled On-Site (yd³): 54410
Amount of Material to be Hauled Off-Site (yd³): 54410

- 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 Equipmen Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust

Average Hauling Truck Capacity (yd³): 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

8.2.3 Trenching / Excavating Phase Emission Factor(s)

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

Excavators Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0559	0.0013	0.2269	0.5086	0.0086	0.0086	0.0050	119.70
Graders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}

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Emission Factors	0.0676	0.0014	0.3314	0.5695	0.0147	0.0147	0.0061	132.89
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH₄	CO_{2e}
Emission Factors	0.0442	0.0012	0.2021	0.3473	0.0068	0.0068	0.0039	122.60
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH₄	CO_{2e}
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45
Scrapers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH₄	CO_{2e}
Emission Factors	0.1495	0.0026	0.8387	0.7186	0.0334	0.0334	0.0134	262.81
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH₄	CO_{2e}
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

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

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH₃	CO_{2e}
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308
LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961
HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

8.2.4 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

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

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

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

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³)

HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

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

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

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

8.3 Building Construction Phase

8.3.1 Building Construction Phase Timeline Assumptions

- Phase Start Date

Start Month: 11
Start Quarter: 2
Start Year: 2028

- Phase Duration

Number of Month: 10
Number of Days: 2

8.3.2 Building Construction Phase Assumptions

- General Building Construction Information

Building Category: Office or Industrial
Area of Building (ft²): 441440
Height of Building (ft): 35
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

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Cranes Composite	1	7
Forklifts Composite	3	8
Generator Sets Composite	1	8
Tractors/Loaders/Backhoes Composite	3	7
Welders 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

8.3.3 Building Construction Phase Emission Factor(s)

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

Cranes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0680	0.0013	0.4222	0.3737	0.0143	0.0143	0.0061	128.77
Forklifts Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0236	0.0006	0.0859	0.2147	0.0025	0.0025	0.0021	54.449
Generator Sets Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0287	0.0006	0.2329	0.2666	0.0080	0.0080	0.0025	61.057
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872
Welders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0214	0.0003	0.1373	0.1745	0.0051	0.0051	0.0019	25.650

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

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308
LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961
HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057

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MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

8.3.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

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

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

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

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

BA: Area of Building (ft²)

BH: Height of Building (ft)

(0.42 / 1000): Conversion Factor ft³ to trips (0.42 trip / 1000 ft³)

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 (ft²)

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BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft³ to trips (0.38 trip / 1000 ft³)
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

8.4 Architectural Coatings Phase

8.4.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date

Start Month: 9
Start Quarter: 2
Start Year: 2029

- Phase Duration

Number of Month: 0
Number of Days: 20

8.4.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information

Building Category: Non-Residential
Total Square Footage (ft²): 441440
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

8.4.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO ₂ e
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308
LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961
HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

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8.4.4 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 (ft²)

800: Conversion Factor square feet to man days (1 ft² / 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 (ft²)

2.0: Conversion Factor total area to coated area (2.0 ft² coated area / total area)

0.0116: Emission Factor (lb/ft²)

2000: Conversion Factor pounds to tons

9. Construction / Demolition

9.1 General Information & Timeline Assumptions

- Activity Location

County: Davis; Weber

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

- Activity Title: T-7 Egress and Seat Shop

- Activity Description:

- Activity Start Date

Start Month: 10

Start Month: 2025

- Activity End Date

Indefinite: False

End Month: 9

End Month: 2026

- Activity Emissions:

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Pollutant	Total Emissions (TONs)
VOC	0.316673
SO _x	0.002746
NO _x	0.674741
CO	1.075215
PM 10	0.260844

Pollutant	Total Emissions (TONs)
PM 2.5	0.022081
Pb	0.000000
NH ₃	0.001058
CO _{2e}	268.3

9.1 Site Grading Phase

9.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date

Start Month: 10
Start Quarter: 1
Start Year: 2025

- Phase Duration

Number of Month: 0
Number of Days: 19

9.1.2 Site Grading Phase Assumptions

- General Site Grading Information

Area of Site to be Graded (ft²): 32120
Amount of Material to be Hauled On-Site (yd³): 0
Amount of Material to be Hauled Off-Site (yd³): 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 (yd³): 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

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9.1.3 Site Grading Phase Emission Factor(s)

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

Graders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0676	0.0014	0.3314	0.5695	0.0147	0.0147	0.0061	132.89
Other Construction Equipment Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0442	0.0012	0.2021	0.3473	0.0068	0.0068	0.0039	122.60
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

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

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308
LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961
HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

9.1.4 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

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

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

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

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³)

HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

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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

9.2 Trenching/Excavating Phase

9.2.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date

Start Month: 10

Start Quarter: 3

Start Year: 2025

- Phase Duration

Number of Month: 0

Number of Days: 19

9.2.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information

Area of Site to be Trenched/Excavated (ft²): 6162

Amount of Material to be Hauled On-Site (yd³): 4924

Amount of Material to be Hauled Off-Site (yd³): 4924

- Trenching Default Settings

Default Settings Used: Yes

Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of	Hours Per Day

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	Equipment	
Excavators Composite	2	8
Other General Industrial Equipmen Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust

Average Hauling Truck Capacity (yd³): 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

9.2.3 Trenching / Excavating Phase Emission Factor(s)

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

Graders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0676	0.0014	0.3314	0.5695	0.0147	0.0147	0.0061	132.89
Other Construction Equipment Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0442	0.0012	0.2021	0.3473	0.0068	0.0068	0.0039	122.60
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

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

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308
LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961
HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

9.2.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase

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

PM_{10FD}: Fugitive Dust PM 10 Emissions (TONs)

20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)

ACRE: Total acres (acres)

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WD: Number of Total Work Days (days)

2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

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

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

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

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³)

HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

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

9.3 Building Construction Phase

9.3.1 Building Construction Phase Timeline Assumptions

- Phase Start Date

Start Month: 11
Start Quarter: 2
Start Year: 2025

Number of Month: 10
Number of Days: 2

Building Category:	Office or Industrial
Area of Building (ft²):	16000
Height of Building (ft):	15
Number of Units:	N/A

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

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	8

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

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

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

Construction Exhaust Emission Factors (lb/hour) (default)								
Cranes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0680	0.0013	0.4222	0.3737	0.0143	0.0143	0.0061	128.77
Forklifts Composite								

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	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0236	0.0006	0.0859	0.2147	0.0025	0.0025	0.0021	54.449
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

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

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308
LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961
HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

9.3.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

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

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

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

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

BA: Area of Building (ft²)

BH: Height of Building (ft)

(0.42 / 1000): Conversion Factor ft³ to trips (0.42 trip / 1000 ft³)

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

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

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 (ft²)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft³ to trips (0.38 trip / 1000 ft³)
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

9.4 Architectural Coatings Phase

9.4.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date

Start Month: 9
Start Quarter: 2
Start Year: 2026

- Phase Duration

Number of Month: 0
Number of Days: 20

9.4.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information

Building Category: Non-Residential
Total Square Footage (ft²): 16000
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 (%)

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

9.4.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308
LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961
HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

9.4.4 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 (ft²)

800: Conversion Factor square feet to man days (1 ft² / 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 (ft²)

2.0: Conversion Factor total area to coated area (2.0 ft² coated area / total area)

0.0116: Emission Factor (lb/ft²)

2000: Conversion Factor pounds to tons

10. Construction / Demolition

10.1 General Information & Timeline Assumptions

- Activity Location

County: Davis; Weber

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

- Activity Title: Radar Cross Section Test Facility

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- Activity Description:

- Activity Start Date

Start Month: 10
Start Month: 2022

- Activity End Date

Indefinite: False
End Month: 9
End Month: 2023

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.995271
SO _x	0.005157
NO _x	1.933940
CO	2.084116
PM 10	1.012597

Pollutant	Total Emissions (TONs)
PM 2.5	0.077067
Pb	0.000000
NH ₃	0.003082
CO ₂ e	511.6

10.1 Site Grading Phase

10.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date

Start Month: 10
Start Quarter: 1
Start Year: 2022

- Phase Duration

Number of Month: 0
Number of Days: 19

10.1.2 Site Grading Phase Assumptions

- General Site Grading Information

Area of Site to be Graded (ft²): 139800
Amount of Material to be Hauled On-Site (yd³): 0
Amount of Material to be Hauled Off-Site (yd³): 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	8
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	8
Tractors/Loaders/Backhoes Composite	2	7

- Vehicle Exhaust

Average Hauling Truck Capacity (yd³): 20 (default)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

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

10.1.3 Site Grading Phase Emission Factor(s)

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

Graders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0806	0.0014	0.4657	0.5731	0.0217	0.0217	0.0072	132.92
Other Construction Equipment Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0507	0.0012	0.2785	0.3488	0.0105	0.0105	0.0045	122.61
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.1919	0.0024	1.3611	0.7352	0.0536	0.0536	0.0173	239.51
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0383	0.0007	0.2301	0.3598	0.0095	0.0095	0.0034	66.884

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

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308
LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961
HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

10.1.4 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

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

CEE_{POL}: Construction Exhaust Emissions (TONs)

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

- Vehicle Exhaust Emissions per Phase

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

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³)
HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³)
HC: Average Hauling Truck Capacity (yd³)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)
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

10.2 Trenching/Excavating Phase

10.2.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date

Start Month: 10
Start Quarter: 3
Start Year: 2022

- Phase Duration

Number of Month: 0
Number of Days: 19

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

10.2.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information

Area of Site to be Trenched/Excavated (ft²): 10190
 Amount of Material to be Hauled On-Site (yd³): 11204
 Amount of Material to be Hauled Off-Site (yd³): 11204

- 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 Equipmen Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust

Average Hauling Truck Capacity (yd³): 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

10.2.3 Trenching / Excavating Phase Emission Factor(s)

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

Graders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0806	0.0014	0.4657	0.5731	0.0217	0.0217	0.0072	132.92
Other Construction Equipment Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0507	0.0012	0.2785	0.3488	0.0105	0.0105	0.0045	122.61
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.1919	0.0024	1.3611	0.7352	0.0536	0.0536	0.0173	239.51
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0383	0.0007	0.2301	0.3598	0.0095	0.0095	0.0034	66.884

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

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308
LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961

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HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

10.2.4 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

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

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

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

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³)

HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

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

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

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

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

10.3 Building Construction Phase

10.3.1 Building Construction Phase Timeline Assumptions

- Phase Start Date

Start Month: 11
Start Quarter: 2
Start Year: 2022

- Phase Duration

Number of Month: 10
Number of Days: 2

10.3.2 Building Construction Phase Assumptions

- General Building Construction Information

Building Category: Office or Industrial
Area of Building (ft²): 59800
Height of Building (ft): 40
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

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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

10.3.3 Building Construction Phase Emission Factor(s)

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

Cranes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0797	0.0013	0.5505	0.3821	0.0203	0.0203	0.0071	128.81
Forklifts Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0274	0.0006	0.1265	0.2146	0.0043	0.0043	0.0024	54.457
Generator Sets Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0340	0.0006	0.2783	0.2694	0.0116	0.0116	0.0030	61.069
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0383	0.0007	0.2301	0.3598	0.0095	0.0095	0.0034	66.884
Welders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0260	0.0003	0.1557	0.1772	0.0077	0.0077	0.0023	25.661

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

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308
LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961
HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

10.3.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

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

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

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

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

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BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft³ to trips (0.42 trip / 1000 ft³)
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 (ft²)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft³ to trips (0.38 trip / 1000 ft³)
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

10.4 Architectural Coatings Phase

10.4.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date

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Start Month: 9
Start Quarter: 2
Start Year: 2023

- Phase Duration

Number of Month: 0
Number of Days: 20

10.4.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information

Building Category: Non-Residential
Total Square Footage (ft²): 59800
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

10.4.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO ₂ e
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308
LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961
HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

10.4.4 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 (ft²)

800: Conversion Factor square feet to man days (1 ft² / 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)

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VM: Worker Trips On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

$$\text{VOC}_{AC} = (\text{AB} * 2.0 * 0.0116) / 2000.0$$

VOC_{AC} : Architectural Coating VOC Emissions (TONs)

BA: Area of Building (ft²)

2.0: Conversion Factor total area to coated area (2.0 ft² coated area / total area)

0.0116: Emission Factor (lb/ft²)

2000: Conversion Factor pounds to tons

11. Construction / Demolition

11.1 General Information & Timeline Assumptions

- Activity Location

County: Davis; Weber

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

- Activity Title: 2 Mil Gal Water Tank and New Well, Demolish tank 12412 and 1433

- Activity Description:

- Activity Start Date

Start Month: 10

Start Month: 2021

- Activity End Date

Indefinite: False

End Month: 9

End Month: 2022

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.165203
SO _x	0.002849
NO _x	0.992240
CO	1.153621
PM 10	0.460136

Pollutant	Total Emissions (TONs)
PM 2.5	0.039756
Pb	0.000000
NH ₃	0.001042
CO _{2e}	278.2

11.1 Demolition Phase

11.1.1 Demolition Phase Timeline Assumptions

- Phase Start Date

Start Month: 9

Start Quarter: 2

Start Year: 2022

- Phase Duration

Number of Month: 0

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Number of Days: 20

11.1.2 Demolition Phase Assumptions

- General Demolition Information

Area of Building to be demolished (ft²): 45946

Height of Building to be demolished (ft): 15

- Default Settings Used: Yes

- Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Concrete/Industrial Saws Composite	1	8
Rubber Tired Dozers Composite	1	1
Tractors/Loaders/Backhoes Composite	2	6

- Vehicle Exhaust

Average Hauling Truck Capacity (yd³): 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

11.1.3 Demolition Phase Emission Factor(s)

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

Concrete/Industrial Saws Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0410	0.0006	0.2961	0.3743	0.0148	0.0148	0.0037	58.556
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.1919	0.0024	1.3611	0.7352	0.0536	0.0536	0.0173	239.51
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0383	0.0007	0.2301	0.3598	0.0095	0.0095	0.0034	66.884

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

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308
LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961
HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014

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HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

11.1.4 Demolition Phase Formula(s)

- Fugitive Dust Emissions per Phase

$$PM10_{FD} = (0.00042 * BA * BH) / 2000$$

PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)

0.00042: Emission Factor (lb/ft³)

BA: Area of Building to be demolished (ft²)

BH: Height of Building to be demolished (ft)

2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

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

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

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

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

BA: Area of Building being demolish (ft²)

BH: Height of Building being demolish (ft)

(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd³ / 27 ft³)

0.25: Volume reduction factor (material reduced by 75% to account for air space)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

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

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

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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

11.2 Site Grading Phase

11.2.1 Site Grading Phase Timeline Assumptions

- Phase Start Date

Start Month: 10
Start Quarter: 1
Start Year: 2021

- Phase Duration

Number of Month: 0
Number of Days: 20

11.2.2 Site Grading Phase Assumptions

- General Site Grading Information

Area of Site to be Graded (ft²): 21536
Amount of Material to be Hauled On-Site (yd³): 0
Amount of Material to be Hauled Off-Site (yd³): 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 (yd³): 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

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11.2.3 Site Grading Phase Emission Factor(s)

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

Graders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0860	0.0014	0.5212	0.5747	0.0247	0.0247	0.0077	132.93
Other Construction Equipment Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0533	0.0012	0.3119	0.3497	0.0121	0.0121	0.0048	122.61
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.2015	0.0024	1.4660	0.7661	0.0581	0.0581	0.0181	239.53
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

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

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308
LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961
HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

11.2.4 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

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

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

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

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³)

HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

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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

11.3 Trenching/Excavating Phase

11.3.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date

Start Month: 10

Start Quarter: 3

Start Year: 2021

- Phase Duration

Number of Month: 0

Number of Days: 19

11.3.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information

Area of Site to be Trenched/Excavated (ft²): 21536

Amount of Material to be Hauled On-Site (yd³): 798

Amount of Material to be Hauled Off-Site (yd³): 485

- Trenching Default Settings

Default Settings Used: Yes

Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of	Hours Per Day

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	Equipment	
Excavators Composite	2	8
Other General Industrial Equipmen Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust

Average Hauling Truck Capacity (yd³): 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

11.3.3 Trenching / Excavating Phase Emission Factor(s)

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

Graders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0860	0.0014	0.5212	0.5747	0.0247	0.0247	0.0077	132.93
Other Construction Equipment Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0533	0.0012	0.3119	0.3497	0.0121	0.0121	0.0048	122.61
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.2015	0.0024	1.4660	0.7661	0.0581	0.0581	0.0181	239.53
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

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

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308
LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961
HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

11.3.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase

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

PM_{10FD}: Fugitive Dust PM 10 Emissions (TONs)

20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)

ACRE: Total acres (acres)

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WD: Number of Total Work Days (days)

2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

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

CEE_{POL} : Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL} : Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

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

VMT_{VE} : Vehicle Exhaust Vehicle Miles Travel (miles)

HA_{OnSite} : Amount of Material to be Hauled On-Site (yd³)

$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd³)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

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

11.4 Building Construction Phase

11.4.1 Building Construction Phase Timeline Assumptions

- Phase Start Date

Start Month: 11
Start Quarter: 2
Start Year: 2021

Number of Month: 10
Number of Days: 2

Building Category:	Office or Industrial
Area of Building (ft²):	17671
Height of Building (ft):	15
Number of Units:	N/A

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

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	8

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

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

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

Construction Exhaust Emission Factors (lb/hour) (default)								
Cranes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0845	0.0013	0.6033	0.3865	0.0228	0.0228	0.0076	128.82
Forklifts Composite								

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	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0293	0.0006	0.1458	0.2148	0.0056	0.0056	0.0026	54.462
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

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

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308
LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961
HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

11.4.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

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

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

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

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

BA: Area of Building (ft²)

BH: Height of Building (ft)

(0.42 / 1000): Conversion Factor ft³ to trips (0.42 trip / 1000 ft³)

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

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

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 (ft²)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft³ to trips (0.38 trip / 1000 ft³)
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

12. Construction / Demolition

12.1 General Information & Timeline Assumptions

- Activity Location

County: Davis; Weber

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

- Activity Title: Campus Freshwater Line (24" main)

- Activity Description:

- Activity Start Date

Start Month: 4

Start Month: 2023

- Activity End Date

Indefinite: False

End Month: 9

End Month: 2023

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.148548
SO _x	0.002790
NO _x	0.873210

Pollutant	Total Emissions (TONs)
PM 2.5	0.033631
Pb	0.000000
NH ₃	0.000888

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CO	0.990854
PM 10	4.482147

CO ₂ e	274.9

12.1 Site Grading Phase

12.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date

Start Month: 4
Start Quarter: 1
Start Year: 2023

- Phase Duration

Number of Month: 3
Number of Days: 1

12.1.2 Site Grading Phase Assumptions

- General Site Grading Information

Area of Site to be Graded (ft²): 74118
Amount of Material to be Hauled On-Site (yd³): 0
Amount of Material to be Hauled Off-Site (yd³): 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 (yd³): 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

12.1.3 Site Grading Phase Emission Factor(s)

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

Graders Composite

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	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0757	0.0014	0.4155	0.5717	0.0191	0.0191	0.0068	132.91
Other Construction Equipment Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0483	0.0012	0.2497	0.3481	0.0091	0.0091	0.0043	122.61
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.1830	0.0024	1.2623	0.7077	0.0494	0.0494	0.0165	239.49
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0364	0.0007	0.2127	0.3593	0.0080	0.0080	0.0032	66.879

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

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308
LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961
HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

12.1.4 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

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

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

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

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³)

HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

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

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

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

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

12.2 Trenching/Excavating Phase

12.2.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date

Start Month: 7
Start Quarter: 1
Start Year: 2023

- Phase Duration

Number of Month: 3
Number of Days: 0

12.2.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information

Area of Site to be Trenched/Excavated (ft²): 74118
Amount of Material to be Hauled On-Site (yd³): 8171
Amount of Material to be Hauled Off-Site (yd³): 9608

- 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 Equipmen Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Vehicle Exhaust

Average Hauling Truck Capacity (yd³): 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

12.2.3 Trenching / Excavating Phase Emission Factor(s)

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

Graders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0757	0.0014	0.4155	0.5717	0.0191	0.0191	0.0068	132.91
Other Construction Equipment Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0483	0.0012	0.2497	0.3481	0.0091	0.0091	0.0043	122.61
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.1830	0.0024	1.2623	0.7077	0.0494	0.0494	0.0165	239.49
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0364	0.0007	0.2127	0.3593	0.0080	0.0080	0.0032	66.879

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

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308
LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961
HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

12.2.4 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

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

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

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

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

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³)

HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

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

13. Construction / Demolition

13.1 General Information & Timeline Assumptions

- Activity Location

County: Davis; Weber

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

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- **Activity Title:** Campus Sanitary Sewer Gravity Line and Lift Station

- **Activity Description:**

- **Activity Start Date**

Start Month: 10

Start Month: 2021

- **Activity End Date**

Indefinite: False

End Month: 3

End Month: 2022

- **Activity Emissions:**

Pollutant	Total Emissions (TONs)
VOC	0.152676
SO _x	0.002584
NO _x	0.916563
CO	0.978190
PM 10	1.297901

Pollutant	Total Emissions (TONs)
PM 2.5	0.037508
Pb	0.000000
NH ₃	0.000442
CO ₂ e	251.3

13.1 Site Grading Phase

13.1.1 Site Grading Phase Timeline Assumptions

- **Phase Start Date**

Start Month: 10

Start Quarter: 1

Start Year: 2021

- **Phase Duration**

Number of Month: 3

Number of Days: 1

13.1.2 Site Grading Phase Assumptions

- **General Site Grading Information**

Area of Site to be Graded (ft²): 21000

Amount of Material to be Hauled On-Site (yd³): 0

Amount of Material to be Hauled Off-Site (yd³): 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**

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Average Hauling Truck Capacity (yd³): 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

13.1.3 Site Grading Phase Emission Factor(s)

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

Graders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0860	0.0014	0.5212	0.5747	0.0247	0.0247	0.0077	132.93
Other Construction Equipment Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0533	0.0012	0.3119	0.3497	0.0121	0.0121	0.0048	122.61
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.2015	0.0024	1.4660	0.7661	0.0581	0.0581	0.0181	239.53
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

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

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308
LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961
HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

13.1.4 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

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

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$\text{VMT}_{\text{VE}} = (\text{HA}_{\text{OnSite}} + \text{HA}_{\text{OffSite}}) * (1 / \text{HC}) * \text{HT}$$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³)

HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

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

$$\text{V}_{\text{POL}} = (\text{VMT}_{\text{VE}} * 0.002205 * \text{EF}_{\text{POL}} * \text{VM}) / 2000$$

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

$$\text{VMT}_{\text{WT}} = \text{WD} * \text{WT} * 1.25 * \text{NE}$$

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

$$\text{V}_{\text{POL}} = (\text{VMT}_{\text{WT}} * 0.002205 * \text{EF}_{\text{POL}} * \text{VM}) / 2000$$

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

13.2 Trenching/Excavating Phase

13.2.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date

Start Month: 1

Start Quarter: 1

Start Year: 2022

- Phase Duration

Number of Month: 3

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Number of Days: 0

13.2.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information

Area of Site to be Trenched/Excavated (ft²): 21000
 Amount of Material to be Hauled On-Site (yd³): 1640
 Amount of Material to be Hauled Off-Site (yd³): 1722

- 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 Equipmen Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust

Average Hauling Truck Capacity (yd³): 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

13.2.3 Trenching / Excavating Phase Emission Factor(s)

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

Graders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0860	0.0014	0.5212	0.5747	0.0247	0.0247	0.0077	132.93
Other Construction Equipment Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0533	0.0012	0.3119	0.3497	0.0121	0.0121	0.0048	122.61
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.2015	0.0024	1.4660	0.7661	0.0581	0.0581	0.0181	239.53
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

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

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961
HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

13.2.4 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

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

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

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

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³)

HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

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

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

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

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

14. Construction / Demolition

14.1 General Information & Timeline Assumptions

- Activity Location

County: Davis; Weber

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

- **Activity Title:** Campus Natural Gas Line

- Activity Description:

- Activity Start Date

Start Month: 4

Start Month: 2023

- Activity End Date

Indefinite: False

End Month: 9

End Month: 2023

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.139629
SO _x	0.002536
NO _x	0.776678
CO	0.958494
PM 10	0.189010

Pollutant	Total Emissions (TONs)
PM 2.5	0.030554
Pb	0.000000
NH ₃	0.000339
CO _{2e}	245.7

14.1 Site Grading Phase

14.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date

Start Month: 4

Start Quarter: 1

Start Year: 2023

- Phase Duration

Number of Month: 3

Number of Days: 1

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

14.1.2 Site Grading Phase Assumptions

- General Site Grading Information

Area of Site to be Graded (ft²): 2640
 Amount of Material to be Hauled On-Site (yd³): 0
 Amount of Material to be Hauled Off-Site (yd³): 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 (yd³): 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

14.1.3 Site Grading Phase Emission Factor(s)

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

Graders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0757	0.0014	0.4155	0.5717	0.0191	0.0191	0.0068	132.91
Other Construction Equipment Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0483	0.0012	0.2497	0.3481	0.0091	0.0091	0.0043	122.61
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.1830	0.0024	1.2623	0.7077	0.0494	0.0494	0.0165	239.49
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0364	0.0007	0.2127	0.3593	0.0080	0.0080	0.0032	66.879

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

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308
LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961

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HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

14.1.4 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

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

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

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

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³)

HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

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

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

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

14.2 Trenching/Excavating Phase

14.2.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date

Start Month: 7
Start Quarter: 1
Start Year: 2023

- Phase Duration

Number of Month: 3
Number of Days: 0

14.2.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information

Area of Site to be Trenched/Excavated (ft²): 2640
Amount of Material to be Hauled On-Site (yd³): 0
Amount of Material to be Hauled Off-Site (yd³): 0.8

- 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 Equipmen Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust

Average Hauling Truck Capacity (yd³): 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

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14.2.3 Trenching / Excavating Phase Emission Factor(s)

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

Graders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0757	0.0014	0.4155	0.5717	0.0191	0.0191	0.0068	132.91
Other Construction Equipment Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0483	0.0012	0.2497	0.3481	0.0091	0.0091	0.0043	122.61
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.1830	0.0024	1.2623	0.7077	0.0494	0.0494	0.0165	239.49
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0364	0.0007	0.2127	0.3593	0.0080	0.0080	0.0032	66.879

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

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308
LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961
HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

14.2.4 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

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

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

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

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³)

HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

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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

15. Construction / Demolition

15.1 General Information & Timeline Assumptions

- Activity Location

County: Davis; Weber

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

- Activity Title: TACAN Antenna construction at new location, demolition at old location

- Activity Description:

- Activity Start Date

Start Month: 4

Start Month: 2028

- Activity End Date

Indefinite: False

End Month: 8

End Month: 2028

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.045264

Pollutant	Total Emissions (TONs)
PM 2.5	0.007270

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SO _x	0.000839
NO _x	0.210972
CO	0.347041
PM 10	0.010727

Pb	0.000000
NH ₃	0.000201
CO _{2e}	81.3

15.1 Demolition Phase

15.1.1 Demolition Phase Timeline Assumptions

- Phase Start Date

Start Month: 8
Start Quarter: 1
Start Year: 2028

- Phase Duration

Number of Month: 0
Number of Days: 14

15.1.2 Demolition Phase Assumptions

- General Demolition Information

Area of Building to be demolished (ft²): 275
Height of Building to be demolished (ft): 12

- Default Settings Used: Yes

- Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Concrete/Industrial Saws Composite	1	8
Rubber Tired Dozers Composite	1	1
Tractors/Loaders/Backhoes Composite	2	6

- Vehicle Exhaust

Average Hauling Truck Capacity (yd³): 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

15.1.3 Demolition Phase Emission Factor(s)

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

Concrete/Industrial Saws Composite

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	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0336	0.0006	0.2470	0.3705	0.0093	0.0093	0.0030	58.539
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

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

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308
LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961
HDBGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

15.1.4 Demolition Phase Formula(s)

- Fugitive Dust Emissions per Phase

$$PM10_{FD} = (0.00042 * BA * BH) / 2000$$

PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)

0.00042: Emission Factor (lb/ft³)

BA: Area of Building to be demolished (ft²)

BH: Height of Building to be demolished (ft)

2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

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

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

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

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

BA: Area of Building being demolish (ft²)

BH: Height of Building being demolish (ft)

(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd³ / 27 ft³)

0.25: Volume reduction factor (material reduced by 75% to account for air space)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

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

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

V_{POL}: Vehicle Emissions (TONs)

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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

15.2 Site Grading Phase

15.2.1 Site Grading Phase Timeline Assumptions

- Phase Start Date

Start Month: 4
Start Quarter: 1
Start Year: 2028

- Phase Duration

Number of Month: 0
Number of Days: 14

15.2.2 Site Grading Phase Assumptions

- General Site Grading Information

Area of Site to be Graded (ft²): 400
Amount of Material to be Hauled On-Site (yd³): 0
Amount of Material to be Hauled Off-Site (yd³): 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

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- Vehicle Exhaust

Average Hauling Truck Capacity (yd³): 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

15.2.3 Site Grading Phase Emission Factor(s)

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

Graders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0676	0.0014	0.3314	0.5695	0.0147	0.0147	0.0061	132.89
Other Construction Equipment Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0442	0.0012	0.2021	0.3473	0.0068	0.0068	0.0039	122.60
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

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

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308
LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961
HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

15.2.4 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

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

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

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

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³)

HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

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

15.3 Trenching/Excavating Phase

15.3.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date

Start Month: 4

Start Quarter: 3

Start Year: 2028

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- Phase Duration

Number of Month: 0
Number of Days: 14

15.3.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information

Area of Site to be Trenched/Excavated (ft²): 200
Amount of Material to be Hauled On-Site (yd³): 1.85
Amount of Material to be Hauled Off-Site (yd³): 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 Equipmen Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust

Average Hauling Truck Capacity (yd³): 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

15.3.3 Trenching / Excavating Phase Emission Factor(s)

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

Graders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0676	0.0014	0.3314	0.5695	0.0147	0.0147	0.0061	132.89
Other Construction Equipment Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0442	0.0012	0.2021	0.3473	0.0068	0.0068	0.0039	122.60
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

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

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	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO ₂ e
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308
LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961
HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

15.3.4 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

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

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

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

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³)

HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

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)

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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

15.4 Building Construction Phase

15.4.1 Building Construction Phase Timeline Assumptions

- Phase Start Date

Start Month: 5
Start Quarter: 1
Start Year: 2028

- Phase Duration

Number of Month: 1
Number of Days: 25

15.4.2 Building Construction Phase Assumptions

- General Building Construction Information

Building Category: Office or Industrial
Area of Building (ft²): 275
Height of Building (ft): 12
Number of Units: N/A

- Building Construction Default Settings

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

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	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 (%)

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	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

15.4.3 Building Construction Phase Emission Factor(s)

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

Cranes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0680	0.0013	0.4222	0.3737	0.0143	0.0143	0.0061	128.77
Forklifts Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0236	0.0006	0.0859	0.2147	0.0025	0.0025	0.0021	54.449
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

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

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308
LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961
HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

15.4.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

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

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

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

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

BA: Area of Building (ft²)

BH: Height of Building (ft)

(0.42 / 1000): Conversion Factor ft³ to trips (0.42 trip / 1000 ft³)

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

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

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 (ft²)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft³ to trips (0.38 trip / 1000 ft³)
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

15.5 Architectural Coatings Phase

15.5.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date

Start Month: 6
Start Quarter: 4
Start Year: 2028

- Phase Duration

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Number of Month: 0

Number of Days: 4

15.5.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information

Building Category: Non-Residential

Total Square Footage (ft²): 275

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

15.5.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO ₂ e
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308
LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961
HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

15.5.4 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 (ft²)

800: Conversion Factor square feet to man days (1 ft² / 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

$$VOC_{AC} = (AB * 2.0 * 0.0116) / 2000.0$$

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VOC_{AC}: Architectural Coating VOC Emissions (TONs)

BA: Area of Building (ft²)

2.0: Conversion Factor total area to coated area (2.0 ft² coated area / total area)

0.0116: Emission Factor (lb/ft²)

2000: Conversion Factor pounds to tons

16. Construction / Demolition

16.1 General Information & Timeline Assumptions

- Activity Location

County: Davis; Weber

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

- Activity Title: Construct New Roadway

- Activity Description:

- Activity Start Date

Start Month: 10

Start Month: 2022

- Activity End Date

Indefinite: False

End Month: 2

End Month: 2023

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.168858
SO _x	0.002335
NO _x	0.979615
CO	1.056964
PM 10	6.549352

Pollutant	Total Emissions (TONs)
PM 2.5	0.046513
Pb	0.000000
NH ₃	0.000814
CO _{2e}	230.5

16.1 Site Grading Phase

16.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date

Start Month: 10

Start Quarter: 1

Start Year: 2022

- Phase Duration

Number of Month: 2

Number of Days: 0

16.1.2 Site Grading Phase Assumptions

- General Site Grading Information

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Area of Site to be Graded (ft²): 326835
 Amount of Material to be Hauled On-Site (yd³): 7263
 Amount of Material to be Hauled Off-Site (yd³): 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
Excavators Composite	1	8
Graders Composite	1	8
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	8
Tractors/Loaders/Backhoes Composite	3	8

- Vehicle Exhaust

Average Hauling Truck Capacity (yd³): 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

16.1.3 Site Grading Phase Emission Factor(s)

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

Excavators Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0648	0.0013	0.3170	0.5103	0.0136	0.0136	0.0058	119.72
Graders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0806	0.0014	0.4657	0.5731	0.0217	0.0217	0.0072	132.92
Other Construction Equipment Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0507	0.0012	0.2785	0.3488	0.0105	0.0105	0.0045	122.61
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.1919	0.0024	1.3611	0.7352	0.0536	0.0536	0.0173	239.51
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0383	0.0007	0.2301	0.3598	0.0095	0.0095	0.0034	66.884

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

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308

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LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961
HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

16.1.4 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

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

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

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

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³)

HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

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

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

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

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

16.2 Paving Phase

16.2.1 Paving Phase Timeline Assumptions

- Phase Start Date

Start Month: 12
Start Quarter: 1
Start Year: 2022

- Phase Duration

Number of Month: 3
Number of Days: 0

16.2.2 Paving Phase Assumptions

- General Paving Information

Paving Area (ft²): 196101

- Paving Default Settings

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

- Construction Exhaust (default)

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

- 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

16.2.3 Paving Phase Emission Factor(s)

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

Excavators Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0648	0.0013	0.3170	0.5103	0.0136	0.0136	0.0058	119.72
Graders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0806	0.0014	0.4657	0.5731	0.0217	0.0217	0.0072	132.92
Other Construction Equipment Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0507	0.0012	0.2785	0.3488	0.0105	0.0105	0.0045	122.61
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.1919	0.0024	1.3611	0.7352	0.0536	0.0536	0.0173	239.51
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0383	0.0007	0.2301	0.3598	0.0095	0.0095	0.0034	66.884

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

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308
LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961
HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

16.2.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

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

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

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

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

PA: Paving Area (ft²)

0.25: Thickness of Paving Area (ft)

(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd³ / 27 ft³)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

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)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

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

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

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

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

- Off-Gassing Emissions per Phase

$$VOC_P = (2.62 * PA) / 43560$$

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

17. Construction / Demolition

17.1 General Information & Timeline Assumptions

- Activity Location

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

- Activity Title: New Taxiway and Aprons

- Activity Description:

- Activity Start Date

Start Month: 10
Start Month: 2023

- Activity End Date

Indefinite: False
End Month: 11
End Month: 2023

- Activity Emissions:

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Pollutant	Total Emissions (TONs)
VOC	0.134049
SO _x	0.002820
NO _x	0.988585
CO	0.758319
PM 10	9.875121

Pollutant	Total Emissions (TONs)
PM 2.5	0.035232
Pb	0.000000
NH ₃	0.002878
CO _{2e}	296.7

17.1 Site Grading Phase

17.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date

Start Month: 10
Start Quarter: 1
Start Year: 2023

- Phase Duration

Number of Month: 0
Number of Days: 20

17.1.2 Site Grading Phase Assumptions

- General Site Grading Information

Area of Site to be Graded (ft²): 750000
Amount of Material to be Hauled On-Site (yd³): 0
Amount of Material to be Hauled Off-Site (yd³): 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
Excavators Composite	1	8
Graders Composite	1	8
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	8
Scrapers Composite	3	8
Tractors/Loaders/Backhoes Composite	3	8

- Vehicle Exhaust

Average Hauling Truck Capacity (yd³): 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

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POVs	50.00	50.00	0	0	0	0	0

17.1.3 Site Grading Phase Emission Factor(s)

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

Excavators Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0614	0.0013	0.2820	0.5096	0.0117	0.0117	0.0055	119.71
Graders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0757	0.0014	0.4155	0.5717	0.0191	0.0191	0.0068	132.91
Other Construction Equipment Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0483	0.0012	0.2497	0.3481	0.0091	0.0091	0.0043	122.61
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.1830	0.0024	1.2623	0.7077	0.0494	0.0494	0.0165	239.49
Scrapers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.1640	0.0026	1.0170	0.7431	0.0406	0.0406	0.0148	262.85
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0364	0.0007	0.2127	0.3593	0.0080	0.0080	0.0032	66.879

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

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308
LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961
HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

17.1.4 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

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

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- 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 (yd³)

HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

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

17.2 Trenching/Excavating Phase

17.2.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date

Start Month: 10

Start Quarter: 3

Start Year: 2023

- Phase Duration

Number of Month: 0

Number of Days: 20

17.2.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information

Area of Site to be Trenched/Excavated (ft²): 750000

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Amount of Material to be Hauled On-Site (yd³): 23148

Amount of Material to be Hauled Off-Site (yd³): 50926

- 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 Equipmen Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust

Average Hauling Truck Capacity (yd³): 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

17.2.3 Trenching / Excavating Phase Emission Factor(s)

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

Excavators Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0614	0.0013	0.2820	0.5096	0.0117	0.0117	0.0055	119.71
Graders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0757	0.0014	0.4155	0.5717	0.0191	0.0191	0.0068	132.91
Other Construction Equipment Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0483	0.0012	0.2497	0.3481	0.0091	0.0091	0.0043	122.61
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.1830	0.0024	1.2623	0.7077	0.0494	0.0494	0.0165	239.49
Scrapers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.1640	0.0026	1.0170	0.7431	0.0406	0.0406	0.0148	262.85
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0364	0.0007	0.2127	0.3593	0.0080	0.0080	0.0032	66.879

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

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308

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LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961
HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

17.2.4 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

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

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

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

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³)

HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

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

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

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

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

17.3 Building Construction Phase

17.3.1 Building Construction Phase Timeline Assumptions

- Phase Start Date

Start Month: 11
Start Quarter: 2
Start Year: 2023

- Phase Duration

Number of Month: 0
Number of Days: 22

17.3.2 Building Construction Phase Assumptions

- General Building Construction Information

Building Category: Office or Industrial
Area of Building (ft²): 750000
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	7
Forklifts Composite	3	8
Generator Sets Composite	1	8
Tractors/Loaders/Backhoes Composite	3	7
Welders 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 (%)

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	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

17.3.3 Building Construction Phase Emission Factor(s)

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

Cranes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0754	0.0013	0.5027	0.3786	0.0181	0.0181	0.0068	128.79
Forklifts Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0258	0.0006	0.1108	0.2145	0.0034	0.0034	0.0023	54.454
Generator Sets Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0320	0.0006	0.2612	0.2683	0.0103	0.0103	0.0028	61.065
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0364	0.0007	0.2127	0.3593	0.0080	0.0080	0.0032	66.879
Welders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0242	0.0003	0.1487	0.1761	0.0067	0.0067	0.0021	25.657

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

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308
LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961
HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

17.3.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

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

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

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

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VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft³ to trips (0.42 trip / 1000 ft³)
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 (ft²)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft³ to trips (0.38 trip / 1000 ft³)
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

18. Personnel

18.1 General Information & Timeline Assumptions

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Davis; Weber

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

- Activity Title: F-35 Canopy Personnel

- Activity Description:

- Activity Start Date

Start Month: 10

Start Year: 2022

- Activity End Date

Indefinite: Yes

End Month: N/A

End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.439426
SO _x	0.003012
NO _x	0.388429
CO	4.987458
PM 10	0.012132

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.010920
Pb	0.000000
NH ₃	0.027677
CO ₂ e	444.4

18.2 Personnel Assumptions

- Number of Personnel

Active Duty Personnel: 0

Civilian Personnel: 200

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)

18.3 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

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

18.4 Personnel Emission Factor(s)

- On Road Vehicle Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO ₂ e
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308
LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961
HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

18.5 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

19. Personnel

19.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Davis; Weber

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

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Activity Title: F-35 Maintenance Personnel

- Activity Description:

- Activity Start Date

Start Month: 10

Start Year: 2024

- Activity End Date

Indefinite: Yes

End Month: N/A

End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.549282
SO _x	0.003764
NO _x	0.485536
CO	6.234322
PM 10	0.015165

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.013651
Pb	0.000000
NH ₃	0.034597
CO ₂ e	555.5

19.2 Personnel Assumptions

- Number of Personnel

Active Duty Personnel: 0

Civilian Personnel: 250

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)

19.3 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

19.4 Personnel Emission Factor(s)

- On Road Vehicle Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO ₂ e
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308
LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961

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HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

19.5 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

20. Personnel

20.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Davis; Weber

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

- Activity Title: F-35 Composite Repair Personnel

- Activity Description:

- Activity Start Date

Start Month: 10

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Start Year: 2025

- Activity End Date

Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.219713
SO _x	0.001506
NO _x	0.194215
CO	2.493729
PM 10	0.006066

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.005460
Pb	0.000000
NH ₃	0.013839
CO ₂ e	222.2

20.2 Personnel Assumptions

- Number of Personnel

Active Duty Personnel: 0
Civilian Personnel: 100
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)

20.3 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

20.4 Personnel Emission Factor(s)

- On Road Vehicle Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO ₂ e
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308
LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961
HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

20.5 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

21. Personnel

21.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Davis; Weber

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

- Activity Title: T-7 Maintenance Personnel

- Activity Description:

- Activity Start Date

Start Month: 10

Start Year: 2029

- Activity End Date

Indefinite: Yes

End Month: N/A

End Year: N/A

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.571254
SO _x	0.003915
NO _x	0.504958
CO	6.483695
PM 10	0.015772

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.014197
Pb	0.000000
NH ₃	0.035981
CO _{2e}	577.7

21.2 Personnel Assumptions

- Number of Personnel

Active Duty Personnel:	0
Civilian Personnel:	260
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)

21.3 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

21.4 Personnel Emission Factor(s)

- On Road Vehicle Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308
LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961
HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

21.5 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

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

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

22. Personnel

22.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Davis; Weber

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

- Activity Title: F-35 Radar Cross Section Test Personnel

- Activity Description:

- Activity Start Date

Start Month: 10

Start Year: 2023

- Activity End Date

Indefinite: Yes

End Month: N/A

End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.021971
SO _x	0.000151
NO _x	0.019421
CO	0.249373

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.000546
Pb	0.000000
NH ₃	0.001384
CO ₂ e	22.2

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PM 10	0.000607

22.2 Personnel Assumptions

- Number of Personnel

Active Duty Personnel:	0
Civilian Personnel:	10
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)

22.3 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

22.4 Personnel Emission Factor(s)

- On Road Vehicle Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.295	000.002	000.223	003.377	000.009	000.008		000.023	00328.308
LDGT	000.367	000.003	000.395	004.664	000.011	000.010		000.024	00423.961
HDGV	000.747	000.005	001.118	016.415	000.026	000.023		000.045	00780.112
LDDV	000.122	000.003	000.135	002.483	000.004	000.004		000.008	00317.249
LDDT	000.269	000.004	000.392	004.291	000.007	000.006		000.008	00451.014
HDDV	000.455	000.013	004.925	001.651	000.170	000.157		000.028	01491.057
MC	002.659	000.003	000.839	013.635	000.029	000.025		000.053	00399.234

22.5 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

$$VMT_{Total} = VMT_{AD} + VMT_C + VMT_{SC} + VMT_{ANG} + VMT_{AFRC}$$

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

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

23. Heating

23.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Davis; Weber

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

- Activity Title: F-35 Canopy Repair Facility

- Activity Description:

- Activity Start Date

Start Month: 10

Start Year: 2022

- Activity End Date

Indefinite: Yes

End Month: N/A

End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.013279
SO _x	0.001449
NO _x	0.241429
CO	0.202800
PM 10	0.018349

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.018349
Pb	0.000000
NH ₃	0.000000
CO ₂ e	290.7

23.2 Heating Assumptions

- Heating

Heating Calculation Type: Heat Energy Requirement Method

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Heat Energy Requirement Method

Area of floorspace to be heated (ft²): 75000
Type of fuel: Natural Gas
Type of boiler/furnace: Commercial/Institutional (0.3 - 9.9 MMBtu/hr)
Heat Value (MMBtu/ft³): 0.00105
Energy Intensity (MMBtu/ft²): 0.0676

- Default Settings Used: Yes

- Boiler/Furnace Usage

Operating Time Per Year (hours): 900 (default)

23.3 Heating Emission Factor(s)

- Heating Emission Factors (lb/1000000 scf)

VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO ₂ e
5.5	0.6	100	84	7.6	7.6			120390

23.4 Heating Formula(s)

- Heating Fuel Consumption ft³ per Year

$$FC_{HER} = HA * EI / HV / 1000000$$

FC_{HER}: Fuel Consumption for Heat Energy Requirement Method

HA: Area of floorspace to be heated (ft²)

EI: Energy Intensity Requirement (MMBtu/ft²)

HV: Heat Value (MMBTU/ft³)

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

24. Heating

24.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Davis; Weber

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

- Activity Title: F-35 Maintenance Facility

- Activity Description:

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Activity Start Date

Start Month: 10
Start Year: 2024

- Activity End Date

Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.050792
SO _x	0.005541
NO _x	0.923492
CO	0.775733
PM 10	0.070185

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.070185
Pb	0.000000
NH ₃	0.000000
CO _{2e}	1111.8

24.2 Heating Assumptions

- Heating

Heating Calculation Type: Heat Energy Requirement Method

- Heat Energy Requirement Method

Area of floorspace to be heated (ft²): 248314
Type of fuel: Natural Gas
Type of boiler/furnace: Commercial/Institutional (0.3 - 9.9 MMBtu/hr)
Heat Value (MMBtu/ft³): 0.00105
Energy Intensity (MMBtu/ft²): 0.0781

- Default Settings Used: Yes

- Boiler/Furnace Usage

Operating Time Per Year (hours): 900 (default)

24.3 Heating Emission Factor(s)

- Heating Emission Factors (lb/1000000 scf)

VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
5.5	0.6	100	84	7.6	7.6			120390

24.4 Heating Formula(s)

- Heating Fuel Consumption ft³ per Year

$$FC_{HER} = HA * EI / HV / 1000000$$

FC_{HER}: Fuel Consumption for Heat Energy Requirement Method

HA: Area of floorspace to be heated (ft²)

EI: Energy Intensity Requirement (MMBtu/ft²)

HV: Heat Value (MMBTU/ft³)

1000000: Conversion Factor

- Heating Emissions per Year

$$HE_{POL} = FC * EF_{POL} / 2000$$

HE_{POL}: Heating Emission Emissions (TONs)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

FC: Fuel Consumption
EF_{POL}: Emission Factor for Pollutant
2000: Conversion Factor pounds to tons

25. Heating

25.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Davis; Weber

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

- Activity Title: F-35 Composite Repair Facility

- Activity Description:

- Activity Start Date

Start Month: 10

Start Year: 2025

- Activity End Date

Indefinite: Yes

End Month: N/A

End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.040503
SO _x	0.004419
NO _x	0.736424
CO	0.618596
PM 10	0.055968

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.055968
Pb	0.000000
NH ₃	0.000000
CO ₂ e	886.6

25.2 Heating Assumptions

- Heating

Heating Calculation Type: Heat Energy Requirement Method

- Heat Energy Requirement Method

Area of floorspace to be heated (ft²): 187000

Type of fuel: Natural Gas

Type of boiler/furnace: Commercial/Institutional (0.3 - 9.9 MMBtu/hr)

Heat Value (MMBtu/ft³): 0.00105

Energy Intensity (MMBtu/ft²): 0.0827

- Default Settings Used: Yes

- Boiler/Furnace Usage

Operating Time Per Year (hours): 900 (default)

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25.3 Heating Emission Factor(s)

- Heating Emission Factors (lb/1000000 scf)

VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
5.5	0.6	100	84	7.6	7.6			120390

25.4 Heating Formula(s)

- Heating Fuel Consumption ft³ per Year

$$FC_{HER} = HA * EI / HV / 1000000$$

FC_{HER}: Fuel Consumption for Heat Energy Requirement Method

HA: Area of floorspace to be heated (ft²)

EI: Energy Intensity Requirement (MMBtu/ft²)

HV: Heat Value (MMBTU/ft³)

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

26. Heating

26.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Davis; Weber

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

- Activity Title: T-7 Maintenance Facility

- Activity Description:

- Activity Start Date

Start Month: 10

Start Year: 2026

- Activity End Date

Indefinite: Yes

End Month: N/A

End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.090296
SO _x	0.009850

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.124772
Pb	0.000000

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

NO _x	1.641736
CO	1.379059
PM 10	0.124772

NH ₃	0.000000
CO ₂ e	1976.5

26.2 Heating Assumptions

- Heating

Heating Calculation Type: Heat Energy Requirement Method

- Heat Energy Requirement Method

Area of floorspace to be heated (ft²): 441440
Type of fuel: Natural Gas
Type of boiler/furnace: Commercial/Institutional (0.3 - 9.9 MMBtu/hr)
Heat Value (MMBtu/ft³): 0.00105
Energy Intensity (MMBtu/ft²): 0.0781

- Default Settings Used: Yes

- Boiler/Furnace Usage

Operating Time Per Year (hours): 900 (default)

26.3 Heating Emission Factor(s)

- Heating Emission Factors (lb/1000000 scf)

VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO ₂ e
5.5	0.6	100	84	7.6	7.6			120390

26.4 Heating Formula(s)

- Heating Fuel Consumption ft³ per Year

$$FC_{HER} = HA * EI / HV / 1000000$$

FC_{HER}: Fuel Consumption for Heat Energy Requirement Method

HA: Area of floorspace to be heated (ft²)

EI: Energy Intensity Requirement (MMBtu/ft²)

HV: Heat Value (MMBTU/ft³)

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

27. Heating

27.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

County: Davis; Weber

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

- **Activity Title:** F-35 Radar Cross Section Test Bldg

- **Activity Description:**

- **Activity Start Date**

Start Month: 10

Start Year: 2023

- **Activity End Date**

Indefinite: Yes

End Month: N/A

End Year: N/A

- **Activity Emissions:**

Pollutant	Emissions Per Year (TONs)
VOC	0.010587
SO _x	0.001155
NO _x	0.192499
CO	0.161699
PM 10	0.014630

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.014630
Pb	0.000000
NH ₃	0.000000
CO _{2e}	231.7

27.2 Heating Assumptions

- **Heating**

Heating Calculation Type: Heat Energy Requirement Method

- **Heat Energy Requirement Method**

Area of floorspace to be heated (ft²): 59800

Type of fuel: Natural Gas

Type of boiler/furnace: Commercial/Institutional (0.3 - 9.9 MMBtu/hr)

Heat Value (MMBtu/ft³): 0.00105

Energy Intensity (MMBtu/ft²): 0.0676

- **Default Settings Used:** Yes

- **Boiler/Furnace Usage**

Operating Time Per Year (hours): 900 (default)

27.3 Heating Emission Factor(s)

- **Heating Emission Factors (lb/1000000 scf)**

VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
5.5	0.6	100	84	7.6	7.6			120390

27.4 Heating Formula(s)

- **Heating Fuel Consumption ft³ per Year**

$$FC_{HER} = HA * EI / HV / 1000000$$

FC_{HER}: Fuel Consumption for Heat Energy Requirement Method

HA: Area of floorspace to be heated (ft²)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

EI: Energy Intensity Requirement (MMBtu/ft²)
HV: Heat Value (MMBTU/ft³)
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

28. Heating

28.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Davis; Weber

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

- Activity Title: F-35 Training Facility

- Activity Description:

- Activity Start Date

Start Month: 4

Start Year: 2025

- Activity End Date

Indefinite: Yes

End Month: N/A

End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.005347
SO _x	0.000583
NO _x	0.097226
CO	0.081670
PM 10	0.007389

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.007389
Pb	0.000000
NH ₃	0.000000
CO ₂ e	117.1

28.2 Heating Assumptions

- Heating

Heating Calculation Type: Heat Energy Requirement Method

- Heat Energy Requirement Method

Area of floorspace to be heated (ft²): 29420

Type of fuel: Natural Gas

Type of boiler/furnace: Commercial/Institutional (0.3 - 9.9 MMBtu/hr)

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Heat Value (MMBtu/ft³): 0.00105
Energy Intensity (MMBtu/ft²): 0.0694

- Default Settings Used: Yes

- Boiler/Furnace Usage

Operating Time Per Year (hours): 900 (default)

28.3 Heating Emission Factor(s)

- Heating Emission Factors (lb/1000000 scf)

VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
5.5	0.6	100	84	7.6	7.6			120390

28.4 Heating Formula(s)

- Heating Fuel Consumption ft³ per Year

$$FC_{HER} = HA * EI / HV / 1000000$$

FC_{HER}: Fuel Consumption for Heat Energy Requirement Method

HA: Area of floorspace to be heated (ft²)

EI: Energy Intensity Requirement (MMBtu/ft²)

HV: Heat Value (MMBTU/ft³)

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

29. Heating

29.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Davis; Weber

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

- Activity Title: T-7 Egress and Seat Shop

- Activity Description:

- Activity Start Date

Start Month: 10

Start Year: 2026

- Activity End Date

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.003005
SO _x	0.000328
NO _x	0.054629
CO	0.045888
PM 10	0.004152

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.004152
Pb	0.000000
NH ₃	0.000000
CO _{2e}	65.8

29.2 Heating Assumptions

- Heating

Heating Calculation Type: Heat Energy Requirement Method

- Heat Energy Requirement Method

Area of floorspace to be heated (ft²): 16000
Type of fuel: Natural Gas
Type of boiler/furnace: Commercial/Institutional (0.3 - 9.9 MMBtu/hr)
Heat Value (MMBtu/ft³): 0.00105
Energy Intensity (MMBtu/ft²): 0.0717

- Default Settings Used: Yes

- Boiler/Furnace Usage

Operating Time Per Year (hours): 900 (default)

29.3 Heating Emission Factor(s)

- Heating Emission Factors (lb/1000000 scf)

VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
5.5	0.6	100	84	7.6	7.6			120390

29.4 Heating Formula(s)

- Heating Fuel Consumption ft³ per Year

$$FC_{HER} = HA * EI / HV / 1000000$$

FC_{HER}: Fuel Consumption for Heat Energy Requirement Method

HA: Area of floorspace to be heated (ft²)

EI: Energy Intensity Requirement (MMBtu/ft²)

HV: Heat Value (MMBTU/ft³)

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

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

30. Aircraft

30.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Davis; Weber

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

- Activity Title: F-35 Aircraft Operations - 2024

- Activity Description:

F-35 Aircraft Operations - 2024

- Activity Start Date

Start Month: 1

Start Year: 2024

- Activity End Date

Indefinite: No

End Month: 12

End Year: 2024

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.002701
SO _x	0.427597
NO _x	6.116434
CO	1.310285
PM 10	0.533202

Pollutant	Total Emissions (TONs)
PM 2.5	0.479938
Pb	0.000000
NH ₃	0.000000
CO ₂ e	1292.4

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

Pollutant	Total Emissions (TONs)
VOC	0.002701
SO _x	0.427597
NO _x	6.116434
CO	1.310285
PM 10	0.533202

Pollutant	Total Emissions (TONs)
PM 2.5	0.479938
Pb	0.000000
NH ₃	0.000000
CO ₂ e	1292.4

30.2 Aircraft & Engines

30.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine

Aircraft Designation: F-35A

Engine Model: F135-PW-100

Primary Function: Combat

Aircraft has After burn: Yes

Number of Engines: 1

- Aircraft & Engine Surrogate

Is Aircraft & Engine a Surrogate? No

Original Aircraft Name:

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Original Engine Name:

30.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

30.3 Flight Operations

30.3.1 Flight Operations Assumptions

- Flight Operations

Number of Aircraft:	75
Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft:	2
Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft:	0
Number of Annual Trim Test(s) per Aircraft:	1

- Default Settings Used: No

- Flight Operations TIMs (Time In Mode)

Taxi/Idle Out [Idle] (mins):	18.5
Takeoff [Military] (mins):	1.065
Takeoff [After Burn] (mins):	0.013
Climb Out [Intermediate] (mins):	0.012
Approach [Approach] (mins):	2.501
Taxi/Idle In [Idle] (mins):	11.3

Per the Air Emissions Guide for Air Force Mobile Sources, the defaults values for military aircraft equipped with after burner for takeoff is 50% military power and 50% afterburner. (Exception made for F-35 where KARNES 3.2 flight profile was used)

- Trim Test

Idle (mins):	12
Approach (mins):	27
Intermediate (mins):	9
Military (mins):	9
AfterBurn (mins):	3

30.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

$$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

LTO: Number of Landing and Take-off Cycles (for all aircraft)

2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

$$AE_{LTO} = AEM_{IDLE\_IN} + AEM_{IDLE\_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$$

AE_{LTO} : Aircraft Emissions (TONs)

AEM_{IDLE_IN} : Aircraft Emissions for Idle-In Mode (TONs)

AEM_{IDLE_OUT} : Aircraft Emissions for Idle-Out Mode (TONs)

$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)

$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)

$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

$$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$$

AEM_{POL} : Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

TGO: Number of Touch-and-Go Cycles (for all aircraft)

2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

$$AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$$

AE_{TGO} : Aircraft Emissions (TONs)

$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)

$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)

$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

$$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$$

$AEPS_{POL}$: Aircraft Emissions per Pollutant & Power Setting (TONs)

TD: Test Duration (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

NA: Number of Aircraft

NTT: Number of Trim Test

2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

$$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$$

AE_{TRIM} : Aircraft Emissions (TONs)

$AEPS_{IDLE}$: Aircraft Emissions for Idle Power Setting (TONs)

$AEPS_{APPROACH}$: Aircraft Emissions for Approach Power Setting (TONs)

$AEPS_{INTERMEDIATE}$: Aircraft Emissions for Intermediate Power Setting (TONs)

$AEPS_{MILITARY}$: Aircraft Emissions for Military Power Setting (TONs)

$AEPS_{AFTERBURN}$: Aircraft Emissions for After Burner Power Setting (TONs)

30.4 Auxiliary Power Unit (APU)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

30.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: No

- Auxiliary Power Unit (APU)

Number of APU per Aircraft	Operation Hours for Each LTO	Exempt Source?	Designation	Manufacturer

30.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CO _{2e}

30.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

$$APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)

APU: Number of Auxiliary Power Units

OH: Operation Hours for Each LTO (hour)

LTO: Number of LTOs

EF_{POL}: Emission Factor for Pollutant (lb/hr)

2000: Conversion Factor pounds to tons

31. Aircraft

31.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Davis; Weber

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

- Activity Title: F-35 Aircraft Operations - 2025

- Activity Description:

F-35 Aircraft Operations - 2025

- Activity Start Date

Start Month: 1

Start Year: 2025

- Activity End Date

Indefinite: No

End Month: 12

End Year: 2025

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.003089

Pollutant	Total Emissions (TONs)
PM 2.5	0.549921

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

SO _x	0.490046
NO _x	7.011716
CO	1.498969
PM 10	0.610951

Pb	0.000000
NH ₃	0.000000
CO _{2e}	1481.1

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

Pollutant	Total Emissions (TONs)
VOC	0.003089
SO _x	0.490046
NO _x	7.011716
CO	1.498969
PM 10	0.610951

Pollutant	Total Emissions (TONs)
PM 2.5	0.549921
Pb	0.000000
NH ₃	0.000000
CO _{2e}	1481.1

31.2 Aircraft & Engines

31.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine

Aircraft Designation: F-35A
Engine Model: F135-PW-100
Primary Function: Combat
Aircraft has After burn: Yes
Number of Engines: 1

- Aircraft & Engine Surrogate

Is Aircraft & Engine a Surrogate? No
Original Aircraft Name:
Original Engine Name:

31.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

31.3 Flight Operations

31.3.1 Flight Operations Assumptions

- Flight Operations

Number of Aircraft: 86
Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 2
Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 0
Number of Annual Trim Test(s) per Aircraft: 1

- Default Settings Used:

No

- Flight Operations TIMs (Time In Mode)

Taxi/Idle Out [Idle] (mins): 18.5
Takeoff [Military] (mins): 1.065
Takeoff [After Burn] (mins): 0.013
Climb Out [Intermediate] (mins): 0.012
Approach [Approach] (mins): 2.501
Taxi/Idle In [Idle] (mins): 11.3

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Per the Air Emissions Guide for Air Force Mobile Sources, the defaults values for military aircraft equipped with after burner for takeoff is 50% military power and 50% afterburner. (Exception made for F-35 where KARNES 3.2 flight profile was used)

- Trim Test

Idle (mins):	12
Approach (mins):	27
Intermediate (mins):	9
Military (mins):	9
AfterBurn (mins):	3

31.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

$$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

LTO: Number of Landing and Take-off Cycles (for all aircraft)

2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

$$AE_{LTO} = AEM_{IDLE\_IN} + AEM_{IDLE\_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$$

AE_{LTO}: Aircraft Emissions (TONs)

AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs)

AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs)

AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs)

AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs)

AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

$$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

TGO: Number of Touch-and-Go Cycles (for all aircraft)

2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

$$AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$$

AE_{TGO}: Aircraft Emissions (TONs)

AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs)

AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

$$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)

TD: Test Duration (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

NA: Number of Aircraft

NTT: Number of Trim Test

2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

$$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$$

AE_{TRIM}: Aircraft Emissions (TONs)

AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs)

AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs)

AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs)

AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs)

AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

31.4 Auxiliary Power Unit (APU)

31.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

Number of APU per Aircraft	Operation Hours for Each LTO	Exempt Source?	Designation	Manufacturer

31.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CO _{2e}

31.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

$$APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)

APU: Number of Auxiliary Power Units

OH: Operation Hours for Each LTO (hour)

LTO: Number of LTOs

EF_{POL}: Emission Factor for Pollutant (lb/hr)

2000: Conversion Factor pounds to tons

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

32. Aircraft

32.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Davis; Weber

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

- Activity Title: F-35 Aircraft Operations - 2026

- Activity Description:

F-35 Aircraft Operations - 2026

- Activity Start Date

Start Month: 1

Start Year: 2026

- Activity End Date

Indefinite: No

End Month: 12

End Year: 2026

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.002877
SO _x	0.455983
NO _x	6.523380
CO	1.396051
PM 10	0.568542

Pollutant	Total Emissions (TONs)
PM 2.5	0.511748
Pb	0.000000
NH ₃	0.000000
CO ₂ e	1378.2

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

Pollutant	Total Emissions (TONs)
VOC	0.002877
SO _x	0.455983
NO _x	6.523380
CO	1.396051
PM 10	0.568542

Pollutant	Total Emissions (TONs)
PM 2.5	0.511748
Pb	0.000000
NH ₃	0.000000
CO ₂ e	1378.2

32.2 Aircraft & Engines

32.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine

Aircraft Designation: F-35A

Engine Model: F135-PW-100

Primary Function: Combat

Aircraft has After burn: Yes

Number of Engines: 1

- Aircraft & Engine Surrogate

Is Aircraft & Engine a Surrogate? No

Original Aircraft Name:

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Original Engine Name:

32.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

32.3 Flight Operations

32.3.1 Flight Operations Assumptions

- Flight Operations

Number of Aircraft:	80
Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft:	2
Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft:	0
Number of Annual Trim Test(s) per Aircraft:	1

- Default Settings Used: No

- Flight Operations TIMs (Time In Mode)

Taxi/Idle Out [Idle] (mins):	18.5
Takeoff [Military] (mins):	1.065
Takeoff [After Burn] (mins):	0.013
Climb Out [Intermediate] (mins):	0.012
Approach [Approach] (mins):	2.501
Taxi/Idle In [Idle] (mins):	11.3

Per the Air Emissions Guide for Air Force Mobile Sources, the defaults values for military aircraft equipped with after burner for takeoff is 50% military power and 50% afterburner. (Exception made for F-35 where KARNES 3.2 flight profile was used)

- Trim Test

Idle (mins):	12
Approach (mins):	27
Intermediate (mins):	9
Military (mins):	9
AfterBurn (mins):	3

32.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

$$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

LTO: Number of Landing and Take-off Cycles (for all aircraft)

2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

$$AE_{LTO} = AEM_{IDLE\_IN} + AEM_{IDLE\_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$$

AE_{LTO} : Aircraft Emissions (TONs)

AEM_{IDLE_IN} : Aircraft Emissions for Idle-In Mode (TONs)

AEM_{IDLE_OUT} : Aircraft Emissions for Idle-Out Mode (TONs)

$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)

$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)

$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

$$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$$

AEM_{POL} : Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

TGO: Number of Touch-and-Go Cycles (for all aircraft)

2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

$$AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$$

AE_{TGO} : Aircraft Emissions (TONs)

$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)

$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)

$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

$$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$$

$AEPS_{POL}$: Aircraft Emissions per Pollutant & Power Setting (TONs)

TD: Test Duration (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

NA: Number of Aircraft

NTT: Number of Trim Test

2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

$$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$$

AE_{TRIM} : Aircraft Emissions (TONs)

$AEPS_{IDLE}$: Aircraft Emissions for Idle Power Setting (TONs)

$AEPS_{APPROACH}$: Aircraft Emissions for Approach Power Setting (TONs)

$AEPS_{INTERMEDIATE}$: Aircraft Emissions for Intermediate Power Setting (TONs)

$AEPS_{MILITARY}$: Aircraft Emissions for Military Power Setting (TONs)

$AEPS_{AFTERBURN}$: Aircraft Emissions for After Burner Power Setting (TONs)

32.4 Auxiliary Power Unit (APU)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

32.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

Number of APU per Aircraft	Operation Hours for Each LTO	Exempt Source?	Designation	Manufacturer

32.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CO _{2e}

32.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

$$APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)

APU: Number of Auxiliary Power Units

OH: Operation Hours for Each LTO (hour)

LTO: Number of LTOs

EF_{POL}: Emission Factor for Pollutant (lb/hr)

2000: Conversion Factor pounds to tons

33. Aircraft

33.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Davis; Weber

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

- Activity Title: F-35 Aircraft Operations - 2027

- Activity Description:

F-35 Aircraft Operations - 2027

- Activity Start Date

Start Month: 1

Start Year: 2027

- Activity End Date

Indefinite: No

End Month: 12

End Year: 2027

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.003935

Pollutant	Total Emissions (TONs)
PM 2.5	0.702611

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SO _x	0.626300
NO _x	8.965058
CO	1.910642
PM 10	0.780585

Pb	0.000000
NH ₃	0.000000
CO _{2e}	1892.9

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

Pollutant	Total Emissions (TONs)
VOC	0.003935
SO _x	0.626300
NO _x	8.965058
CO	1.910642
PM 10	0.780585

Pollutant	Total Emissions (TONs)
PM 2.5	0.702611
Pb	0.000000
NH ₃	0.000000
CO _{2e}	1892.9

33.2 Aircraft & Engines

33.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine

Aircraft Designation: F-35A
Engine Model: F135-PW-100
Primary Function: Combat
Aircraft has After burn: Yes
Number of Engines: 1

- Aircraft & Engine Surrogate

Is Aircraft & Engine a Surrogate? No
Original Aircraft Name:
Original Engine Name:

33.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

33.3 Flight Operations

33.3.1 Flight Operations Assumptions

- Flight Operations

Number of Aircraft: 110
Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 2
Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 0
Number of Annual Trim Test(s) per Aircraft: 1

- Default Settings Used:

No

- Flight Operations TIMs (Time In Mode)

Taxi/Idle Out [Idle] (mins): 18.5
Takeoff [Military] (mins): 1.065
Takeoff [After Burn] (mins): 0.013
Climb Out [Intermediate] (mins): 0.012
Approach [Approach] (mins): 2.501
Taxi/Idle In [Idle] (mins): 11.3

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Per the Air Emissions Guide for Air Force Mobile Sources, the defaults values for military aircraft equipped with after burner for takeoff is 50% military power and 50% afterburner. (Exception made for F-35 where KARNES 3.2 flight profile was used)

- Trim Test

Idle (mins):	12
Approach (mins):	27
Intermediate (mins):	9
Military (mins):	9
AfterBurn (mins):	3

33.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

$$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

LTO: Number of Landing and Take-off Cycles (for all aircraft)

2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

$$AE_{LTO} = AEM_{IDLE\_IN} + AEM_{IDLE\_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$$

AE_{LTO}: Aircraft Emissions (TONs)

AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs)

AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs)

AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs)

AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs)

AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

$$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

TGO: Number of Touch-and-Go Cycles (for all aircraft)

2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

$$AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$$

AE_{TGO}: Aircraft Emissions (TONs)

AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs)

AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

$$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)

TD: Test Duration (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

NA: Number of Aircraft

NTT: Number of Trim Test

2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

$$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$$

AE_{TRIM}: Aircraft Emissions (TONs)

AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs)

AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs)

AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs)

AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs)

AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

33.4 Auxiliary Power Unit (APU)

33.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

Number of APU per Aircraft	Operation Hours for Each LTO	Exempt Source?	Designation	Manufacturer

33.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CO _{2e}

33.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

$$APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)

APU: Number of Auxiliary Power Units

OH: Operation Hours for Each LTO (hour)

LTO: Number of LTOs

EF_{POL}: Emission Factor for Pollutant (lb/hr)

2000: Conversion Factor pounds to tons

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

34. Aircraft

34.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Davis; Weber

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

- Activity Title: F-35 Aircraft Operations - 2028

- Activity Description:

F-35 Aircraft Operations - 2028

- Activity Start Date

Start Month: 1

Start Year: 2028

- Activity End Date

Indefinite: No

End Month: 12

End Year: 2028

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.004746
SO _x	0.756876
NO _x	10.837012
CO	2.305162
PM 10	0.943150

Pollutant	Total Emissions (TONs)
PM 2.5	0.848940
Pb	0.000000
NH ₃	0.000000
CO ₂ e	2287.6

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

Pollutant	Total Emissions (TONs)
VOC	0.004746
SO _x	0.756876
NO _x	10.837012
CO	2.305162
PM 10	0.943150

Pollutant	Total Emissions (TONs)
PM 2.5	0.848940
Pb	0.000000
NH ₃	0.000000
CO ₂ e	2287.6

34.2 Aircraft & Engines

34.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine

Aircraft Designation: F-35A

Engine Model: F135-PW-100

Primary Function: Combat

Aircraft has After burn: Yes

Number of Engines: 1

- Aircraft & Engine Surrogate

Is Aircraft & Engine a Surrogate? No

Original Aircraft Name:

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Original Engine Name:

34.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

34.3 Flight Operations

34.3.1 Flight Operations Assumptions

- Flight Operations

Number of Aircraft:	133
Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft:	2
Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft:	0
Number of Annual Trim Test(s) per Aircraft:	1

- Default Settings Used: No

- Flight Operations TIMs (Time In Mode)

Taxi/Idle Out [Idle] (mins):	18.5
Takeoff [Military] (mins):	1.065
Takeoff [After Burn] (mins):	0.013
Climb Out [Intermediate] (mins):	0.012
Approach [Approach] (mins):	2.501
Taxi/Idle In [Idle] (mins):	11.3

Per the Air Emissions Guide for Air Force Mobile Sources, the defaults values for military aircraft equipped with after burner for takeoff is 50% military power and 50% afterburner. (Exception made for F-35 where KARNES 3.2 flight profile was used)

- Trim Test

Idle (mins):	12
Approach (mins):	27
Intermediate (mins):	9
Military (mins):	9
AfterBurn (mins):	3

34.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

$$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

LTO: Number of Landing and Take-off Cycles (for all aircraft)

2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

$$AE_{LTO} = AEM_{IDLE\_IN} + AEM_{IDLE\_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$$

AE_{LTO} : Aircraft Emissions (TONs)

AEM_{IDLE_IN} : Aircraft Emissions for Idle-In Mode (TONs)

AEM_{IDLE_OUT} : Aircraft Emissions for Idle-Out Mode (TONs)

$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)

$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)

$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

$$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$$

AEM_{POL} : Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

TGO: Number of Touch-and-Go Cycles (for all aircraft)

2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

$$AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$$

AE_{TGO} : Aircraft Emissions (TONs)

$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)

$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)

$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

$$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$$

$AEPS_{POL}$: Aircraft Emissions per Pollutant & Power Setting (TONs)

TD: Test Duration (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

NA: Number of Aircraft

NTT: Number of Trim Test

2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

$$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$$

AE_{TRIM} : Aircraft Emissions (TONs)

$AEPS_{IDLE}$: Aircraft Emissions for Idle Power Setting (TONs)

$AEPS_{APPROACH}$: Aircraft Emissions for Approach Power Setting (TONs)

$AEPS_{INTERMEDIATE}$: Aircraft Emissions for Intermediate Power Setting (TONs)

$AEPS_{MILITARY}$: Aircraft Emissions for Military Power Setting (TONs)

$AEPS_{AFTERBURN}$: Aircraft Emissions for After Burner Power Setting (TONs)

34.4 Auxiliary Power Unit (APU)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

34.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

Number of APU per Aircraft	Operation Hours for Each LTO	Exempt Source?	Designation	Manufacturer

34.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CO _{2e}

34.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

$$APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)

APU: Number of Auxiliary Power Units

OH: Operation Hours for Each LTO (hour)

LTO: Number of LTOs

EF_{POL}: Emission Factor for Pollutant (lb/hr)

2000: Conversion Factor pounds to tons

35. Aircraft

35.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Davis; Weber

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

- Activity Title: F-35 Aircraft Operations - 2029

- Activity Description:

F-35 Aircraft Operations - 2029

- Activity Start Date

Start Month: 1

Start Year: 2029

- Activity End Date

Indefinite: No

End Month: 12

End Year: 2029

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.004676

Pollutant	Total Emissions (TONs)
PM 2.5	0.836215

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SO _x	0.745522
NO _x	10.674233
CO	2.270856
PM 10	0.929014

Pb	0.000000
NH ₃	0.000000
CO _{2e}	2253.3

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

Pollutant	Total Emissions (TONs)
VOC	0.004676
SO _x	0.745522
NO _x	10.674233
CO	2.270856
PM 10	0.929014

Pollutant	Total Emissions (TONs)
PM 2.5	0.836215
Pb	0.000000
NH ₃	0.000000
CO _{2e}	2253.3

35.2 Aircraft & Engines

35.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine

Aircraft Designation: F-35A
Engine Model: F135-PW-100
Primary Function: Combat
Aircraft has After burn: Yes
Number of Engines: 1

- Aircraft & Engine Surrogate

Is Aircraft & Engine a Surrogate? No
Original Aircraft Name:
Original Engine Name:

35.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

35.3 Flight Operations

35.3.1 Flight Operations Assumptions

- Flight Operations

Number of Aircraft: 131
Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 2
Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 0
Number of Annual Trim Test(s) per Aircraft: 1

- Default Settings Used:

No

- Flight Operations TIMs (Time In Mode)

Taxi/Idle Out [Idle] (mins): 18.5
Takeoff [Military] (mins): 1.065
Takeoff [After Burn] (mins): 0.013
Climb Out [Intermediate] (mins): 0.012
Approach [Approach] (mins): 2.501
Taxi/Idle In [Idle] (mins): 11.3

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Per the Air Emissions Guide for Air Force Mobile Sources, the defaults values for military aircraft equipped with after burner for takeoff is 50% military power and 50% afterburner. (Exception made for F-35 where KARNES 3.2 flight profile was used)

- Trim Test

Idle (mins):	12
Approach (mins):	27
Intermediate (mins):	9
Military (mins):	9
AfterBurn (mins):	3

35.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

$$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

LTO: Number of Landing and Take-off Cycles (for all aircraft)

2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

$$AE_{LTO} = AEM_{IDLE\_IN} + AEM_{IDLE\_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$$

AE_{LTO}: Aircraft Emissions (TONs)

AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs)

AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs)

AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs)

AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs)

AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

$$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

TGO: Number of Touch-and-Go Cycles (for all aircraft)

2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

$$AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$$

AE_{TGO}: Aircraft Emissions (TONs)

AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs)

AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

$$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)

TD: Test Duration (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

NA: Number of Aircraft

NTT: Number of Trim Test

2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

$$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$$

AE_{TRIM}: Aircraft Emissions (TONs)

AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs)

AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs)

AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs)

AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs)

AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

35.4 Auxiliary Power Unit (APU)

35.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

Number of APU per Aircraft	Operation Hours for Each LTO	Exempt Source?	Designation	Manufacturer

35.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CO _{2e}

35.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

$$APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)

APU: Number of Auxiliary Power Units

OH: Operation Hours for Each LTO (hour)

LTO: Number of LTOs

EF_{POL}: Emission Factor for Pollutant (lb/hr)

2000: Conversion Factor pounds to tons

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

36. Aircraft

36.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Davis; Weber

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

- Activity Title: F-35 Aircraft Operations - 2030

- Activity Description:

F-35 Aircraft Operations - 2030

- Activity Start Date

Start Month: 1

Start Year: 2030

- Activity End Date

Indefinite: No

End Month: 12

End Year: 2030

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.004887
SO _x	0.779585
NO _x	11.162569
CO	2.373775
PM 10	0.971423

Pollutant	Total Emissions (TONs)
PM 2.5	0.874388
Pb	0.000000
NH ₃	0.000000
CO ₂ e	2356.2

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

Pollutant	Total Emissions (TONs)
VOC	0.004887
SO _x	0.779585
NO _x	11.162569
CO	2.373775
PM 10	0.971423

Pollutant	Total Emissions (TONs)
PM 2.5	0.874388
Pb	0.000000
NH ₃	0.000000
CO ₂ e	2356.2

36.2 Aircraft & Engines

36.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine

Aircraft Designation: F-35A

Engine Model: F135-PW-100

Primary Function: Combat

Aircraft has After burn: Yes

Number of Engines: 1

- Aircraft & Engine Surrogate

Is Aircraft & Engine a Surrogate? No

Original Aircraft Name:

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Original Engine Name:

36.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

36.3 Flight Operations

36.3.1 Flight Operations Assumptions

- Flight Operations

Number of Aircraft:	137
Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft:	2
Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft:	0
Number of Annual Trim Test(s) per Aircraft:	1

- Default Settings Used: No

- Flight Operations TIMs (Time In Mode)

Taxi/Idle Out [Idle] (mins):	18.5
Takeoff [Military] (mins):	1.065
Takeoff [After Burn] (mins):	0.013
Climb Out [Intermediate] (mins):	0.012
Approach [Approach] (mins):	2.501
Taxi/Idle In [Idle] (mins):	11.3

Per the Air Emissions Guide for Air Force Mobile Sources, the defaults values for military aircraft equipped with after burner for takeoff is 50% military power and 50% afterburner. (Exception made for F-35 where KARNES 3.2 flight profile was used)

- Trim Test

Idle (mins):	12
Approach (mins):	27
Intermediate (mins):	9
Military (mins):	9
AfterBurn (mins):	3

36.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

$$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

LTO: Number of Landing and Take-off Cycles (for all aircraft)

2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

$$AE_{LTO} = AEM_{IDLE\_IN} + AEM_{IDLE\_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$$

AE_{LTO} : Aircraft Emissions (TONs)

AEM_{IDLE_IN} : Aircraft Emissions for Idle-In Mode (TONs)

AEM_{IDLE_OUT} : Aircraft Emissions for Idle-Out Mode (TONs)

$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)

$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)

$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

$$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$$

AEM_{POL} : Aircraft Emissions per Pollutant & Mode (TONs)

TIM : Time in Mode (min)

60: Conversion Factor minutes to hours

FC : Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF : Emission Factor (lb/1000lb fuel)

NE : Number of Engines

TGO : Number of Touch-and-Go Cycles (for all aircraft)

2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

$$AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$$

AE_{TGO} : Aircraft Emissions (TONs)

$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)

$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)

$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

$$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$$

$AEPS_{POL}$: Aircraft Emissions per Pollutant & Power Setting (TONs)

TD : Test Duration (min)

60: Conversion Factor minutes to hours

FC : Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF : Emission Factor (lb/1000lb fuel)

NE : Number of Engines

NA : Number of Aircraft

NTT : Number of Trim Test

2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

$$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$$

AE_{TRIM} : Aircraft Emissions (TONs)

$AEPS_{IDLE}$: Aircraft Emissions for Idle Power Setting (TONs)

$AEPS_{APPROACH}$: Aircraft Emissions for Approach Power Setting (TONs)

$AEPS_{INTERMEDIATE}$: Aircraft Emissions for Intermediate Power Setting (TONs)

$AEPS_{MILITARY}$: Aircraft Emissions for Military Power Setting (TONs)

$AEPS_{AFTERBURN}$: Aircraft Emissions for After Burner Power Setting (TONs)

36.4 Auxiliary Power Unit (APU)

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36.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

Number of APU per Aircraft	Operation Hours for Each LTO	Exempt Source?	Designation	Manufacturer

36.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CO _{2e}

36.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

$$APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)

APU: Number of Auxiliary Power Units

OH: Operation Hours for Each LTO (hour)

LTO: Number of LTOs

EF_{POL}: Emission Factor for Pollutant (lb/hr)

2000: Conversion Factor pounds to tons

37. Aircraft

37.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Davis; Weber

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

- Activity Title: F-35 Aircraft Operations - 2031

- Activity Description:

F-35 Aircraft Operations - 2031

- Activity Start Date

Start Month: 1

Start Year: 2031

- Activity End Date

Indefinite: No

End Month: 12

End Year: 2031

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.005205

Pollutant	Total Emissions (TONs)
PM 2.5	0.931647

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SO _x	0.830680
NO _x	11.895073
CO	2.528152
PM 10	1.035035

Pb	0.000000
NH ₃	0.000000
CO _{2e}	2510.7

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

Pollutant	Total Emissions (TONs)
VOC	0.005205
SO _x	0.830680
NO _x	11.895073
CO	2.528152
PM 10	1.035035

Pollutant	Total Emissions (TONs)
PM 2.5	0.931647
Pb	0.000000
NH ₃	0.000000
CO _{2e}	2510.7

37.2 Aircraft & Engines

37.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine

Aircraft Designation: F-35A
Engine Model: F135-PW-100
Primary Function: Combat
Aircraft has After burn: Yes
Number of Engines: 1

- Aircraft & Engine Surrogate

Is Aircraft & Engine a Surrogate? No
Original Aircraft Name:
Original Engine Name:

37.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

37.3 Flight Operations

37.3.1 Flight Operations Assumptions

- Flight Operations

Number of Aircraft: 146
Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 2
Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 0
Number of Annual Trim Test(s) per Aircraft: 1

- Default Settings Used:

No

- Flight Operations TIMs (Time In Mode)

Taxi/Idle Out [Idle] (mins): 18.5
Takeoff [Military] (mins): 1.065
Takeoff [After Burn] (mins): 0.013
Climb Out [Intermediate] (mins): 0.012
Approach [Approach] (mins): 2.501
Taxi/Idle In [Idle] (mins): 11.3

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Per the Air Emissions Guide for Air Force Mobile Sources, the defaults values for military aircraft equipped with after burner for takeoff is 50% military power and 50% afterburner. (Exception made for F-35 where KARNES 3.2 flight profile was used)

- Trim Test

Idle (mins):	12
Approach (mins):	27
Intermediate (mins):	9
Military (mins):	9
AfterBurn (mins):	3

37.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

$$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

LTO: Number of Landing and Take-off Cycles (for all aircraft)

2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

$$AE_{LTO} = AEM_{IDLE\_IN} + AEM_{IDLE\_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$$

AE_{LTO}: Aircraft Emissions (TONs)

AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs)

AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs)

AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs)

AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs)

AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

$$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

TGO: Number of Touch-and-Go Cycles (for all aircraft)

2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

$$AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$$

AE_{TGO}: Aircraft Emissions (TONs)

AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs)

AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

$$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)

TD: Test Duration (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

NA: Number of Aircraft

NTT: Number of Trim Test

2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

$$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$$

AE_{TRIM}: Aircraft Emissions (TONs)

AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs)

AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs)

AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs)

AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs)

AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

37.4 Auxiliary Power Unit (APU)

37.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

Number of APU per Aircraft	Operation Hours for Each LTO	Exempt Source?	Designation	Manufacturer

37.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CO _{2e}

37.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

$$APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)

APU: Number of Auxiliary Power Units

OH: Operation Hours for Each LTO (hour)

LTO: Number of LTOs

EF_{POL}: Emission Factor for Pollutant (lb/hr)

2000: Conversion Factor pounds to tons

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

38. Aircraft

38.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Davis; Weber

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

- Activity Title: F-35 Aircraft Operations - 2032

- Activity Description:

F-35 Aircraft Operations - 2032

- Activity Start Date

Start Month: 1

Start Year: 2032

- Activity End Date

Indefinite: No

End Month: 12

End Year: 2032

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.005169
SO _x	0.825003
NO _x	11.813683
CO	2.510999
PM 10	1.027967

Pollutant	Total Emissions (TONs)
PM 2.5	0.925285
Pb	0.000000
NH ₃	0.000000
CO ₂ e	2493.5

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

Pollutant	Total Emissions (TONs)
VOC	0.005169
SO _x	0.825003
NO _x	11.813683
CO	2.510999
PM 10	1.027967

Pollutant	Total Emissions (TONs)
PM 2.5	0.925285
Pb	0.000000
NH ₃	0.000000
CO ₂ e	2493.5

38.2 Aircraft & Engines

38.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine

Aircraft Designation: F-35A

Engine Model: F135-PW-100

Primary Function: Combat

Aircraft has After burn: Yes

Number of Engines: 1

- Aircraft & Engine Surrogate

Is Aircraft & Engine a Surrogate? No

Original Aircraft Name:

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Original Engine Name:

38.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

38.3 Flight Operations

38.3.1 Flight Operations Assumptions

- Flight Operations

Number of Aircraft:	145
Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft:	2
Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft:	0
Number of Annual Trim Test(s) per Aircraft:	1

- Default Settings Used: No

- Flight Operations TIMs (Time In Mode)

Taxi/Idle Out [Idle] (mins):	18.5
Takeoff [Military] (mins):	1.065
Takeoff [After Burn] (mins):	0.013
Climb Out [Intermediate] (mins):	0.012
Approach [Approach] (mins):	2.501
Taxi/Idle In [Idle] (mins):	11.3

Per the Air Emissions Guide for Air Force Mobile Sources, the defaults values for military aircraft equipped with after burner for takeoff is 50% military power and 50% afterburner. (Exception made for F-35 where KARNES 3.2 flight profile was used)

- Trim Test

Idle (mins):	12
Approach (mins):	27
Intermediate (mins):	9
Military (mins):	9
AfterBurn (mins):	3

38.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

$$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

LTO: Number of Landing and Take-off Cycles (for all aircraft)

2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

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$$AE_{LTO} = AEM_{IDLE\_IN} + AEM_{IDLE\_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$$

AE_{LTO} : Aircraft Emissions (TONs)

AEM_{IDLE_IN} : Aircraft Emissions for Idle-In Mode (TONs)

AEM_{IDLE_OUT} : Aircraft Emissions for Idle-Out Mode (TONs)

$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)

$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)

$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

$$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$$

AEM_{POL} : Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

TGO: Number of Touch-and-Go Cycles (for all aircraft)

2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

$$AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$$

AE_{TGO} : Aircraft Emissions (TONs)

$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)

$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)

$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

$$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$$

$AEPS_{POL}$: Aircraft Emissions per Pollutant & Power Setting (TONs)

TD: Test Duration (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

NA: Number of Aircraft

NTT: Number of Trim Test

2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

$$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$$

AE_{TRIM} : Aircraft Emissions (TONs)

$AEPS_{IDLE}$: Aircraft Emissions for Idle Power Setting (TONs)

$AEPS_{APPROACH}$: Aircraft Emissions for Approach Power Setting (TONs)

$AEPS_{INTERMEDIATE}$: Aircraft Emissions for Intermediate Power Setting (TONs)

$AEPS_{MILITARY}$: Aircraft Emissions for Military Power Setting (TONs)

$AEPS_{AFTERBURN}$: Aircraft Emissions for After Burner Power Setting (TONs)

38.4 Auxiliary Power Unit (APU)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

38.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

Number of APU per Aircraft	Operation Hours for Each LTO	Exempt Source?	Designation	Manufacturer

38.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CO _{2e}

38.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

$$APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)

APU: Number of Auxiliary Power Units

OH: Operation Hours for Each LTO (hour)

LTO: Number of LTOs

EF_{POL}: Emission Factor for Pollutant (lb/hr)

2000: Conversion Factor pounds to tons

39. Aircraft

39.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Davis; Weber

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

- Activity Title: F-35 Aircraft Operations - 2033

- Activity Description:

F-35 Aircraft Operations - 2033

- Activity Start Date

Start Month: 1

Start Year: 2033

- Activity End Date

Indefinite: No

End Month: 12

End Year: 2033

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.006157

Pollutant	Total Emissions (TONs)
PM 2.5	1.103424

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SO _x	0.983965
NO _x	14.092583
CO	2.991284
PM 10	1.225873

Pb	0.000000
NH ₃	0.000000
CO _{2e}	2974.0

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

Pollutant	Total Emissions (TONs)
VOC	0.006157
SO _x	0.983965
NO _x	14.092583
CO	2.991284
PM 10	1.225873

Pollutant	Total Emissions (TONs)
PM 2.5	1.103424
Pb	0.000000
NH ₃	0.000000
CO _{2e}	2974.0

39.2 Aircraft & Engines

39.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine

Aircraft Designation: F-35A
Engine Model: F135-PW-100
Primary Function: Combat
Aircraft has After burn: Yes
Number of Engines: 1

- Aircraft & Engine Surrogate

Is Aircraft & Engine a Surrogate? No
Original Aircraft Name:
Original Engine Name:

39.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

39.3 Flight Operations

39.3.1 Flight Operations Assumptions

- Flight Operations

Number of Aircraft: 173
Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 2
Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 0
Number of Annual Trim Test(s) per Aircraft: 1

- Default Settings Used:

No

- Flight Operations TIMs (Time In Mode)

Taxi/Idle Out [Idle] (mins): 18.5
Takeoff [Military] (mins): 1.065
Takeoff [After Burn] (mins): 0.013
Climb Out [Intermediate] (mins): 0.012
Approach [Approach] (mins): 2.501
Taxi/Idle In [Idle] (mins): 11.3

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Per the Air Emissions Guide for Air Force Mobile Sources, the defaults values for military aircraft equipped with after burner for takeoff is 50% military power and 50% afterburner. (Exception made for F-35 where KARNES 3.2 flight profile was used)

- Trim Test

Idle (mins):	12
Approach (mins):	27
Intermediate (mins):	9
Military (mins):	9
AfterBurn (mins):	3

39.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

$$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

LTO: Number of Landing and Take-off Cycles (for all aircraft)

2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

$$AE_{LTO} = AEM_{IDLE\_IN} + AEM_{IDLE\_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$$

AE_{LTO}: Aircraft Emissions (TONs)

AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs)

AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs)

AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs)

AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs)

AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

$$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

TGO: Number of Touch-and-Go Cycles (for all aircraft)

2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

$$AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$$

AE_{TGO}: Aircraft Emissions (TONs)

AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs)

AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

$$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)

TD: Test Duration (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

NA: Number of Aircraft

NTT: Number of Trim Test

2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

$$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$$

AE_{TRIM}: Aircraft Emissions (TONs)

AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs)

AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs)

AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs)

AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs)

AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

39.4 Auxiliary Power Unit (APU)

39.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

Number of APU per Aircraft	Operation Hours for Each LTO	Exempt Source?	Designation	Manufacturer

39.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CO _{2e}

39.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

$$APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)

APU: Number of Auxiliary Power Units

OH: Operation Hours for Each LTO (hour)

LTO: Number of LTOs

EF_{POL}: Emission Factor for Pollutant (lb/hr)

2000: Conversion Factor pounds to tons

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40. Aircraft

40.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Davis; Weber

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

- Activity Title: F-35 Aircraft Operations - 2034

- Activity Description:

F-35 Aircraft Operations - 2034

- Activity Start Date

Start Month: 1

Start Year: 2034

- Activity End Date

Indefinite: No

End Month: 12

End Year: 2034

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.006898
SO _x	1.103187
NO _x	15.801758
CO	3.351499
PM 10	1.374303

Pollutant	Total Emissions (TONs)
PM 2.5	1.237028
Pb	0.000000
NH ₃	0.000000
CO ₂ e	3334.3

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

Pollutant	Total Emissions (TONs)
VOC	0.006898
SO _x	1.103187
NO _x	15.801758
CO	3.351499
PM 10	1.374303

Pollutant	Total Emissions (TONs)
PM 2.5	1.237028
Pb	0.000000
NH ₃	0.000000
CO ₂ e	3334.3

40.2 Aircraft & Engines

40.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine

Aircraft Designation: F-35A

Engine Model: F135-PW-100

Primary Function: Combat

Aircraft has After burn: Yes

Number of Engines: 1

- Aircraft & Engine Surrogate

Is Aircraft & Engine a Surrogate? No

Original Aircraft Name:

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Original Engine Name:

40.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

40.3 Flight Operations

40.3.1 Flight Operations Assumptions

- Flight Operations

Number of Aircraft:	194
Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft:	2
Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft:	0
Number of Annual Trim Test(s) per Aircraft:	1

- Default Settings Used: No

- Flight Operations TIMs (Time In Mode)

Taxi/Idle Out [Idle] (mins):	18.5
Takeoff [Military] (mins):	1.065
Takeoff [After Burn] (mins):	0.013
Climb Out [Intermediate] (mins):	0.012
Approach [Approach] (mins):	2.501
Taxi/Idle In [Idle] (mins):	11.3

Per the Air Emissions Guide for Air Force Mobile Sources, the defaults values for military aircraft equipped with after burner for takeoff is 50% military power and 50% afterburner. (Exception made for F-35 where KARNES 3.2 flight profile was used)

- Trim Test

Idle (mins):	12
Approach (mins):	27
Intermediate (mins):	9
Military (mins):	9
AfterBurn (mins):	3

40.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

$$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

LTO: Number of Landing and Take-off Cycles (for all aircraft)

2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

$$AE_{LTO} = AEM_{IDLE\_IN} + AEM_{IDLE\_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$$

AE_{LTO} : Aircraft Emissions (TONs)

AEM_{IDLE_IN} : Aircraft Emissions for Idle-In Mode (TONs)

AEM_{IDLE_OUT} : Aircraft Emissions for Idle-Out Mode (TONs)

$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)

$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)

$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

$$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$$

AEM_{POL} : Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

TGO: Number of Touch-and-Go Cycles (for all aircraft)

2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

$$AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$$

AE_{TGO} : Aircraft Emissions (TONs)

$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)

$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)

$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

$$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$$

$AEPS_{POL}$: Aircraft Emissions per Pollutant & Power Setting (TONs)

TD: Test Duration (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

NA: Number of Aircraft

NTT: Number of Trim Test

2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

$$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$$

AE_{TRIM} : Aircraft Emissions (TONs)

$AEPS_{IDLE}$: Aircraft Emissions for Idle Power Setting (TONs)

$AEPS_{APPROACH}$: Aircraft Emissions for Approach Power Setting (TONs)

$AEPS_{INTERMEDIATE}$: Aircraft Emissions for Intermediate Power Setting (TONs)

$AEPS_{MILITARY}$: Aircraft Emissions for Military Power Setting (TONs)

$AEPS_{AFTERBURN}$: Aircraft Emissions for After Burner Power Setting (TONs)

40.4 Auxiliary Power Unit (APU)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

40.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

Number of APU per Aircraft	Operation Hours for Each LTO	Exempt Source?	Designation	Manufacturer

40.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CO _{2e}

40.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

$$APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)

APU: Number of Auxiliary Power Units

OH: Operation Hours for Each LTO (hour)

LTO: Number of LTOs

EF_{POL}: Emission Factor for Pollutant (lb/hr)

2000: Conversion Factor pounds to tons

41. Aircraft

41.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Davis; Weber

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

- Activity Title: F-35 Aircraft Operations - 2035

- Activity Description:

F-35 Aircraft Operations - 2035

- Activity Start Date

Start Month: 1

Start Year: 2035

- Activity End Date

Indefinite: No

End Month: 12

End Year: 2035

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.006862

Pollutant	Total Emissions (TONs)
PM 2.5	1.230666

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

SO _x	1.097510
NO _x	15.720369
CO	3.334346
PM 10	1.367235

Pb	0.000000
NH ₃	0.000000
CO _{2e}	3317.1

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

Pollutant	Total Emissions (TONs)
VOC	0.006862
SO _x	1.097510
NO _x	15.720369
CO	3.334346
PM 10	1.367235

Pollutant	Total Emissions (TONs)
PM 2.5	1.230666
Pb	0.000000
NH ₃	0.000000
CO _{2e}	3317.1

41.2 Aircraft & Engines

41.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine

Aircraft Designation: F-35A
Engine Model: F135-PW-100
Primary Function: Combat
Aircraft has After burn: Yes
Number of Engines: 1

- Aircraft & Engine Surrogate

Is Aircraft & Engine a Surrogate? No
Original Aircraft Name:
Original Engine Name:

41.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

41.3 Flight Operations

41.3.1 Flight Operations Assumptions

- Flight Operations

Number of Aircraft: 193
Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 2
Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 0
Number of Annual Trim Test(s) per Aircraft: 1

- Default Settings Used:

No

- Flight Operations TIMs (Time In Mode)

Taxi/Idle Out [Idle] (mins): 18.5
Takeoff [Military] (mins): 1.065
Takeoff [After Burn] (mins): 0.013
Climb Out [Intermediate] (mins): 0.012
Approach [Approach] (mins): 2.501
Taxi/Idle In [Idle] (mins): 11.3

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Per the Air Emissions Guide for Air Force Mobile Sources, the defaults values for military aircraft equipped with after burner for takeoff is 50% military power and 50% afterburner. (Exception made for F-35 where KARNES 3.2 flight profile was used)

- Trim Test

Idle (mins):	12
Approach (mins):	27
Intermediate (mins):	9
Military (mins):	9
AfterBurn (mins):	3

41.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

$$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

LTO: Number of Landing and Take-off Cycles (for all aircraft)

2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

$$AE_{LTO} = AEM_{IDLE\_IN} + AEM_{IDLE\_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$$

AE_{LTO}: Aircraft Emissions (TONs)

AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs)

AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs)

AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs)

AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs)

AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

$$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

TGO: Number of Touch-and-Go Cycles (for all aircraft)

2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

$$AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$$

AE_{TGO}: Aircraft Emissions (TONs)

AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs)

AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

$$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)

TD: Test Duration (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

NA: Number of Aircraft

NTT: Number of Trim Test

2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

$$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$$

AE_{TRIM}: Aircraft Emissions (TONs)

AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs)

AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs)

AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs)

AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs)

AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

41.4 Auxiliary Power Unit (APU)

41.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

Number of APU per Aircraft	Operation Hours for Each LTO	Exempt Source?	Designation	Manufacturer

41.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CO _{2e}

41.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

$$APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)

APU: Number of Auxiliary Power Units

OH: Operation Hours for Each LTO (hour)

LTO: Number of LTOs

EF_{POL}: Emission Factor for Pollutant (lb/hr)

2000: Conversion Factor pounds to tons

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

42. Aircraft

42.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Davis; Weber

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

- Activity Title: F-35 Aircraft Operations - 2036

- Activity Description:

F-35 Aircraft Operations - 2036

- Activity Start Date

Start Month: 1

Start Year: 2036

- Activity End Date

Indefinite: No

End Month: 12

End Year: 2036

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.007039
SO _x	1.125896
NO _x	16.127315
CO	3.420111
PM 10	1.402575

Pollutant	Total Emissions (TONs)
PM 2.5	1.262476
Pb	0.000000
NH ₃	0.000000
CO _{2e}	3402.9

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

Pollutant	Total Emissions (TONs)
VOC	0.007039
SO _x	1.125896
NO _x	16.127315
CO	3.420111
PM 10	1.402575

Pollutant	Total Emissions (TONs)
PM 2.5	1.262476
Pb	0.000000
NH ₃	0.000000
CO _{2e}	3402.9

42.2 Aircraft & Engines

42.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine

Aircraft Designation: F-35A

Engine Model: F135-PW-100

Primary Function: Combat

Aircraft has After burn: Yes

Number of Engines: 1

- Aircraft & Engine Surrogate

Is Aircraft & Engine a Surrogate? No

Original Aircraft Name:

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Original Engine Name:

42.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

42.3 Flight Operations

42.3.1 Flight Operations Assumptions

- Flight Operations

Number of Aircraft:	198
Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft:	2
Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft:	0
Number of Annual Trim Test(s) per Aircraft:	1

- Default Settings Used: No

- Flight Operations TIMs (Time In Mode)

Taxi/Idle Out [Idle] (mins):	18.5
Takeoff [Military] (mins):	1.065
Takeoff [After Burn] (mins):	0.013
Climb Out [Intermediate] (mins):	0.012
Approach [Approach] (mins):	2.501
Taxi/Idle In [Idle] (mins):	11.3

Per the Air Emissions Guide for Air Force Mobile Sources, the defaults values for military aircraft equipped with after burner for takeoff is 50% military power and 50% afterburner. (Exception made for F-35 where KARNES 3.2 flight profile was used)

- Trim Test

Idle (mins):	12
Approach (mins):	27
Intermediate (mins):	9
Military (mins):	9
AfterBurn (mins):	3

42.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

$$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

LTO: Number of Landing and Take-off Cycles (for all aircraft)

2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

$$AE_{LTO} = AEM_{IDLE\_IN} + AEM_{IDLE\_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$$

AE_{LTO} : Aircraft Emissions (TONs)

AEM_{IDLE_IN} : Aircraft Emissions for Idle-In Mode (TONs)

AEM_{IDLE_OUT} : Aircraft Emissions for Idle-Out Mode (TONs)

$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)

$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)

$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

$$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$$

AEM_{POL} : Aircraft Emissions per Pollutant & Mode (TONs)

TIM : Time in Mode (min)

60: Conversion Factor minutes to hours

FC : Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF : Emission Factor (lb/1000lb fuel)

NE : Number of Engines

TGO : Number of Touch-and-Go Cycles (for all aircraft)

2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

$$AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$$

AE_{TGO} : Aircraft Emissions (TONs)

$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)

$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)

$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

$$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$$

$AEPS_{POL}$: Aircraft Emissions per Pollutant & Power Setting (TONs)

TD : Test Duration (min)

60: Conversion Factor minutes to hours

FC : Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF : Emission Factor (lb/1000lb fuel)

NE : Number of Engines

NA : Number of Aircraft

NTT : Number of Trim Test

2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

$$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$$

AE_{TRIM} : Aircraft Emissions (TONs)

$AEPS_{IDLE}$: Aircraft Emissions for Idle Power Setting (TONs)

$AEPS_{APPROACH}$: Aircraft Emissions for Approach Power Setting (TONs)

$AEPS_{INTERMEDIATE}$: Aircraft Emissions for Intermediate Power Setting (TONs)

$AEPS_{MILITARY}$: Aircraft Emissions for Military Power Setting (TONs)

$AEPS_{AFTERBURN}$: Aircraft Emissions for After Burner Power Setting (TONs)

42.4 Auxiliary Power Unit (APU)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

42.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

Number of APU per Aircraft	Operation Hours for Each LTO	Exempt Source?	Designation	Manufacturer

42.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CO _{2e}

42.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

$$APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)

APU: Number of Auxiliary Power Units

OH: Operation Hours for Each LTO (hour)

LTO: Number of LTOs

EF_{POL}: Emission Factor for Pollutant (lb/hr)

2000: Conversion Factor pounds to tons

43. Aircraft

43.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Davis; Weber

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

- Activity Title: F-35 Aircraft Operations - 2037

- Activity Description:

F-35 Aircraft Operations - 2037

- Activity Start Date

Start Month: 1

Start Year: 2037

- Activity End Date

Indefinite: No

End Month: 12

End Year: 2037

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.006968

Pollutant	Total Emissions (TONs)
PM 2.5	1.249752

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SO _x	1.114542
NO _x	15.964537
CO	3.385805
PM 10	1.388439

Pb	0.000000
NH ₃	0.000000
CO _{2e}	3368.6

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

Pollutant	Total Emissions (TONs)
VOC	0.006968
SO _x	1.114542
NO _x	15.964537
CO	3.385805
PM 10	1.388439

Pollutant	Total Emissions (TONs)
PM 2.5	1.249752
Pb	0.000000
NH ₃	0.000000
CO _{2e}	3368.6

43.2 Aircraft & Engines

43.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine

Aircraft Designation: F-35A
Engine Model: F135-PW-100
Primary Function: Combat
Aircraft has After burn: Yes
Number of Engines: 1

- Aircraft & Engine Surrogate

Is Aircraft & Engine a Surrogate? No
Original Aircraft Name:
Original Engine Name:

43.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

43.3 Flight Operations

43.3.1 Flight Operations Assumptions

- Flight Operations

Number of Aircraft: 196
Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 2
Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 0
Number of Annual Trim Test(s) per Aircraft: 1

- Default Settings Used:

No

- Flight Operations TIMs (Time In Mode)

Taxi/Idle Out [Idle] (mins): 18.5
Takeoff [Military] (mins): 1.065
Takeoff [After Burn] (mins): 0.013
Climb Out [Intermediate] (mins): 0.012
Approach [Approach] (mins): 2.501
Taxi/Idle In [Idle] (mins): 11.3

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Per the Air Emissions Guide for Air Force Mobile Sources, the defaults values for military aircraft equipped with after burner for takeoff is 50% military power and 50% afterburner. (Exception made for F-35 where KARNES 3.2 flight profile was used)

- Trim Test

Idle (mins):	12
Approach (mins):	27
Intermediate (mins):	9
Military (mins):	9
AfterBurn (mins):	3

43.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

$$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

LTO: Number of Landing and Take-off Cycles (for all aircraft)

2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

$$AE_{LTO} = AEM_{IDLE\_IN} + AEM_{IDLE\_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$$

AE_{LTO}: Aircraft Emissions (TONs)

AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs)

AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs)

AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs)

AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs)

AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

$$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

TGO: Number of Touch-and-Go Cycles (for all aircraft)

2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

$$AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$$

AE_{TGO}: Aircraft Emissions (TONs)

AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs)

AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

$$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)

TD: Test Duration (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

NA: Number of Aircraft

NTT: Number of Trim Test

2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

$$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$$

AE_{TRIM}: Aircraft Emissions (TONs)

AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs)

AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs)

AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs)

AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs)

AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

43.4 Auxiliary Power Unit (APU)

43.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

Number of APU per Aircraft	Operation Hours for Each LTO	Exempt Source?	Designation	Manufacturer

43.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CO _{2e}

43.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

$$APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)

APU: Number of Auxiliary Power Units

OH: Operation Hours for Each LTO (hour)

LTO: Number of LTOs

EF_{POL}: Emission Factor for Pollutant (lb/hr)

2000: Conversion Factor pounds to tons

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

44. Aircraft

44.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Davis; Weber

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

- Activity Title: F-35 Aircraft Operations - 2038 & 2039

- Activity Description:

F-35 Aircraft Operations - 2038 & 2039

- Activity Start Date

Start Month: 1

Start Year: 2038

- Activity End Date

Indefinite: No

End Month: 12

End Year: 2039

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.014218
SO _x	2.274502
NO _x	32.580188
CO	6.908834
PM 10	2.833423

Pollutant	Total Emissions (TONs)
PM 2.5	2.550401
Pb	0.000000
NH ₃	0.000000
CO ₂ e	6874.5

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

Pollutant	Total Emissions (TONs)
VOC	0.014218
SO _x	2.274502
NO _x	32.580188
CO	6.908834
PM 10	2.833423

Pollutant	Total Emissions (TONs)
PM 2.5	2.550401
Pb	0.000000
NH ₃	0.000000
CO ₂ e	6874.5

44.2 Aircraft & Engines

44.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine

Aircraft Designation: F-35A

Engine Model: F135-PW-100

Primary Function: Combat

Aircraft has After burn: Yes

Number of Engines: 1

- Aircraft & Engine Surrogate

Is Aircraft & Engine a Surrogate? No

Original Aircraft Name:

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Original Engine Name:

44.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

44.3 Flight Operations

44.3.1 Flight Operations Assumptions

- Flight Operations

Number of Aircraft:	200
Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft:	2
Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft:	0
Number of Annual Trim Test(s) per Aircraft:	1

- Default Settings Used: No

- Flight Operations TIMs (Time In Mode)

Taxi/Idle Out [Idle] (mins):	18.5
Takeoff [Military] (mins):	1.065
Takeoff [After Burn] (mins):	0.013
Climb Out [Intermediate] (mins):	0.012
Approach [Approach] (mins):	2.501
Taxi/Idle In [Idle] (mins):	11.3

Per the Air Emissions Guide for Air Force Mobile Sources, the defaults values for military aircraft equipped with after burner for takeoff is 50% military power and 50% afterburner. (Exception made for F-35 where KARNES 3.2 flight profile was used)

- Trim Test

Idle (mins):	12
Approach (mins):	27
Intermediate (mins):	9
Military (mins):	9
AfterBurn (mins):	3

44.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

$$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

LTO: Number of Landing and Take-off Cycles (for all aircraft)

2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

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$$AE_{LTO} = AEM_{IDLE\_IN} + AEM_{IDLE\_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$$

AE_{LTO} : Aircraft Emissions (TONs)

AEM_{IDLE_IN} : Aircraft Emissions for Idle-In Mode (TONs)

AEM_{IDLE_OUT} : Aircraft Emissions for Idle-Out Mode (TONs)

$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)

$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)

$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

$$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$$

AEM_{POL} : Aircraft Emissions per Pollutant & Mode (TONs)

TIM : Time in Mode (min)

60: Conversion Factor minutes to hours

FC : Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF : Emission Factor (lb/1000lb fuel)

NE : Number of Engines

TGO : Number of Touch-and-Go Cycles (for all aircraft)

2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

$$AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$$

AE_{TGO} : Aircraft Emissions (TONs)

$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)

$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)

$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

$$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$$

$AEPS_{POL}$: Aircraft Emissions per Pollutant & Power Setting (TONs)

TD : Test Duration (min)

60: Conversion Factor minutes to hours

FC : Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF : Emission Factor (lb/1000lb fuel)

NE : Number of Engines

NA : Number of Aircraft

NTT : Number of Trim Test

2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

$$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$$

AE_{TRIM} : Aircraft Emissions (TONs)

$AEPS_{IDLE}$: Aircraft Emissions for Idle Power Setting (TONs)

$AEPS_{APPROACH}$: Aircraft Emissions for Approach Power Setting (TONs)

$AEPS_{INTERMEDIATE}$: Aircraft Emissions for Intermediate Power Setting (TONs)

$AEPS_{MILITARY}$: Aircraft Emissions for Military Power Setting (TONs)

$AEPS_{AFTERBURN}$: Aircraft Emissions for After Burner Power Setting (TONs)

44.4 Auxiliary Power Unit (APU)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

44.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

Number of APU per Aircraft	Operation Hours for Each LTO	Exempt Source?	Designation	Manufacturer

44.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CO _{2e}

44.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

$$APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)

APU: Number of Auxiliary Power Units

OH: Operation Hours for Each LTO (hour)

LTO: Number of LTOs

EF_{POL}: Emission Factor for Pollutant (lb/hr)

2000: Conversion Factor pounds to tons

45. Aircraft

45.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Davis; Weber

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

- Activity Title: F-35 Aircraft Operations - 2040

- Activity Description:

F-35 Aircraft Operations - 2040

- Activity Start Date

Start Month: 1

Start Year: 2040

- Activity End Date

Indefinite: Yes

End Month: N/A

End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.007250

Pollutant	Emissions Per Year (TONs)
PM 2.5	1.300649

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SO _x	1.159960
NO _x	16.615651
CO	3.523029
PM 10	1.444984

Pb	0.000000
NH ₃	0.000000
CO _{2e}	3505.9

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

Pollutant	Emissions Per Year (TONs)
VOC	0.007250
SO _x	1.159960
NO _x	16.615651
CO	3.523029
PM 10	1.444984

Pollutant	Emissions Per Year (TONs)
PM 2.5	1.300649
Pb	0.000000
NH ₃	0.000000
CO _{2e}	3505.9

45.2 Aircraft & Engines

45.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine

Aircraft Designation: F-35A
Engine Model: F135-PW-100
Primary Function: Combat
Aircraft has After burn: Yes
Number of Engines: 1

- Aircraft & Engine Surrogate

Is Aircraft & Engine a Surrogate? No
Original Aircraft Name:
Original Engine Name:

45.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

45.3 Flight Operations

45.3.1 Flight Operations Assumptions

- Flight Operations

Number of Aircraft: 204
Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 2
Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 0
Number of Annual Trim Test(s) per Aircraft: 1

- Default Settings Used:

No

- Flight Operations TIMs (Time In Mode)

Taxi/Idle Out [Idle] (mins): 18.5
Takeoff [Military] (mins): 1.065
Takeoff [After Burn] (mins): 0.013
Climb Out [Intermediate] (mins): 0.012
Approach [Approach] (mins): 2.501
Taxi/Idle In [Idle] (mins): 11.3

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Per the Air Emissions Guide for Air Force Mobile Sources, the defaults values for military aircraft equipped with after burner for takeoff is 50% military power and 50% afterburner. (Exception made for F-35 where KARNES 3.2 flight profile was used)

- Trim Test

Idle (mins):	12
Approach (mins):	27
Intermediate (mins):	9
Military (mins):	9
AfterBurn (mins):	3

45.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

$$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

LTO: Number of Landing and Take-off Cycles (for all aircraft)

2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

$$AE_{LTO} = AEM_{IDLE\_IN} + AEM_{IDLE\_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$$

AE_{LTO}: Aircraft Emissions (TONs)

AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs)

AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs)

AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs)

AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs)

AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

$$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

TGO: Number of Touch-and-Go Cycles (for all aircraft)

2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

$$AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$$

AE_{TGO}: Aircraft Emissions (TONs)

AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs)

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AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs)

AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

$$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)

TD: Test Duration (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

NA: Number of Aircraft

NTT: Number of Trim Test

2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

$$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$$

AE_{TRIM}: Aircraft Emissions (TONs)

AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs)

AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs)

AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs)

AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs)

AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

45.4 Auxiliary Power Unit (APU)

45.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

Number of APU per Aircraft	Operation Hours for Each LTO	Exempt Source?	Designation	Manufacturer

45.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CO _{2e}

45.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

$$APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)

APU: Number of Auxiliary Power Units

OH: Operation Hours for Each LTO (hour)

LTO: Number of LTOs

EF_{POL}: Emission Factor for Pollutant (lb/hr)

2000: Conversion Factor pounds to tons

AIR CONFORMITY APPLICABILITY MODEL REPORT

RECORD OF CONFORMITY ANALYSIS (ROCA)

1. General Information: The Air Force's Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action 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 General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a summary of the ACAM analysis.

a. Action Location:

Base: HILL AFB

State: Utah

County(s): Davis; Weber

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

b. Action Title: CONSTRUCTION OF F-35/T-7 MAINTENANCE CAMPUS AT HILL AIR FORCE BASE, UTAH

c. Project Number/s (if applicable):

d. Projected Action Start Date: 4 / 2021

e. Action Description:

The maintenance facilities would be constructed in a phased manner over the next 20 years. Detailed planning for the first 5 years of construction is underway and is considered Phase 1 of the overall project. The remaining construction would occur under Phases 2 through 4 over the remaining 15 years.

This ACAM analysis evaluates the well-defined activities associated with Phase 1 of the Proposed Action:

- 1) F-35 Canopy Repair Facility
- 2) F-35 Maintenance Facility
- 3) F-35 Composite Repair
- 4) F-35 Training Facility
- 5) T-7 Maintenance Facility
- 6) T-7 Egress Canopy and Seat Shop/Engine Shop
- 7) F-35 Radar Cross Section Test Facility
- 8) Aircraft Operations for the F-35 from 2024 to 2040

f. Point of Contact:

Name: Michelle York

Title: Contractor / Air Quality Consultant

Organization: Jacobs

Email: michelle.york@jacobs.com

Phone Number: 360-694-6756

2. Analysis: Total combined direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the "worst-case" and "steady state" (net gain/loss upon action 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.

Based on the analysis, the requirements of this rule are:

☐ applicable
☒ not applicable

Conformity Analysis Summary:

AIR CONFORMITY APPLICABILITY MODEL REPORT

RECORD OF CONFORMITY ANALYSIS (ROCA)

2021

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Salt Lake City, UT			
VOC	0.311	70	No
NOx	2.022	70	No
CO	1.941		
SOx	0.005	70	No
PM 10	2.108		
PM 2.5	0.082	70	No
Pb	0.000		
NH3	0.002	70	No
CO2e	521.8		
Northern Wasatch Front, UT			
VOC	0.311	100	No
NOx	2.022	100	No
CO	1.941		
SOx	0.005		
PM 10	2.108		
PM 2.5	0.082		
Pb	0.000		
NH3	0.002		
CO2e	521.8		
Ogden, UT			
VOC	0.311		
NOx	2.022		
CO	1.941	100	No
SOx	0.005		
PM 10	2.108	100	No
PM 2.5	0.082		
Pb	0.000		
NH3	0.002		
CO2e	521.8		

2022

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Salt Lake City, UT			
VOC	1.598	70	No
NOx	3.913	70	No
CO	5.442		
SOx	0.011	70	No
PM 10	8.382		
PM 2.5	0.165	70	No
Pb	0.000		
NH3	0.011	70	No
CO2e	1178.2		
Northern Wasatch Front, UT			
VOC	1.598	100	No
NOx	3.913	100	No
CO	5.442		
SOx	0.011		

AIR CONFORMITY APPLICABILITY MODEL REPORT

RECORD OF CONFORMITY ANALYSIS (ROCA)

PM 10	8.382		
PM 2.5	0.165		
Pb	0.000		
NH3	0.011		
CO2e	1178.2		
Ogden, UT			
VOC	1.598		
NOx	3.913		
CO	5.442	100	No
SOx	0.011		
PM 10	8.382	100	No
PM 2.5	0.165		
Pb	0.000		
NH3	0.011		
CO2e	1178.2		

2023

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Salt Lake City, UT			
VOC	2.016	70	No
NOx	6.189	70	No
CO	10.946		
SOx	0.021	70	No
PM 10	19.342		
PM 2.5	0.248	70	No
Pb	0.000		
NH3	0.038	70	No
CO2e	2383.4		
Northern Wasatch Front, UT			
VOC	2.016	100	No
NOx	6.189	100	No
CO	10.946		
SOx	0.021		
PM 10	19.342		
PM 2.5	0.248		
Pb	0.000		
NH3	0.038		
CO2e	2383.4		
Ogden, UT			
VOC	2.016		
NOx	6.189		
CO	10.946	100	No
SOx	0.021		
PM 10	19.342	100	No
PM 2.5	0.248		
Pb	0.000		
NH3	0.038		
CO2e	2383.4		

2024

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)

AIR CONFORMITY APPLICABILITY MODEL REPORT

RECORD OF CONFORMITY ANALYSIS (ROCA)

Salt Lake City, UT			
VOC	4.115	70	No
NOx	11.254	70	No
CO	12.761		
SOx	0.447	70	No
PM 10	4.269		
PM 2.5	0.688	70	No
Pb	0.000		
NH3	0.047	70	No
CO2e	3859.1		
Northern Wasatch Front, UT			
VOC	4.115	100	No
NOx	11.254	100	No
CO	12.761		
SOx	0.447		
PM 10	4.269		
PM 2.5	0.688		
Pb	0.000		
NH3	0.047		
CO2e	3859.1		
Ogden, UT			
VOC	4.115		
NOx	11.254		
CO	12.761	100	No
SOx	0.447		
PM 10	4.269	100	No
PM 2.5	0.688		
Pb	0.000		
NH3	0.047		
CO2e	3859.1		

2025

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Salt Lake City, UT			
VOC	3.982	70	No
NOx	11.544	70	No
CO	17.295		
SOx	0.513	70	No
PM 10	1.074		
PM 2.5	0.770	70	No
Pb	0.000		
NH3	0.071	70	No
CO2e	5103.3		
Northern Wasatch Front, UT			
VOC	3.982	100	No
NOx	11.544	100	No
CO	17.295		
SOx	0.513		
PM 10	1.074		
PM 2.5	0.770		
Pb	0.000		
NH3	0.071		

AIR CONFORMITY APPLICABILITY MODEL REPORT

RECORD OF CONFORMITY ANALYSIS (ROCA)

CO2e	5103.3		
Ogden, UT			
VOC	3.982		
NOx	11.544		
CO	17.295	100	No
SOx	0.513		
PM 10	1.074	100	No
PM 2.5	0.770		
Pb	0.000		
NH3	0.071		
CO2e	5103.3		

2026

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Salt Lake City, UT			
VOC	1.645	70	No
NOx	10.628	70	No
CO	18.269		
SOx	0.482	70	No
PM 10	0.814		
PM 2.5	0.754	70	No
Pb	0.000		
NH3	0.078	70	No
CO2e	5937.1		
Northern Wasatch Front, UT			
VOC	1.645	100	No
NOx	10.628	100	No
CO	18.269		
SOx	0.482		
PM 10	0.814		
PM 2.5	0.754		
Pb	0.000		
NH3	0.078		
CO2e	5937.1		
Ogden, UT			
VOC	1.645		
NOx	10.628		
CO	18.269	100	No
SOx	0.482		
PM 10	0.814	100	No
PM 2.5	0.754		
Pb	0.000		
NH3	0.078		
CO2e	5937.1		

2027

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Salt Lake City, UT			
VOC	1.448	70	No
NOx	13.940	70	No
CO	19.141		

AIR CONFORMITY APPLICABILITY MODEL REPORT

RECORD OF CONFORMITY ANALYSIS (ROCA)

SOx	0.658	70	No
PM 10	1.110		
PM 2.5	1.029	70	No
Pb	0.000		
NH3	0.077	70	No
CO2e	7817.4		
Northern Wasatch Front, UT			
VOC	1.448	100	No
NOx	13.940	100	No
CO	19.141		
SOx	0.658		
PM 10	1.110		
PM 2.5	1.029		
Pb	0.000		
NH3	0.077		
CO2e	7817.4		
Ogden, UT			
VOC	1.448		
NOx	13.940		
CO	19.141	100	No
SOx	0.658		
PM 10	1.110	100	No
PM 2.5	1.029		
Pb	0.000		
NH3	0.077		
CO2e	7817.4		

2028

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Salt Lake City, UT			
VOC	1.668	70	No
NOx	17.354	70	No
CO	20.922		
SOx	0.794	70	No
PM 10	5.936		
PM 2.5	1.226	70	No
Pb	0.000		
NH3	0.083	70	No
CO2e	8727.6		
Northern Wasatch Front, UT			
VOC	1.668	100	No
NOx	17.354	100	No
CO	20.922		
SOx	0.794		
PM 10	5.936		
PM 2.5	1.226		
Pb	0.000		
NH3	0.083		
CO2e	8727.6		
Ogden, UT			
VOC	1.668		
NOx	17.354		

AIR CONFORMITY APPLICABILITY MODEL REPORT

RECORD OF CONFORMITY ANALYSIS (ROCA)

CO	20.922	100	No
SOx	0.794		
PM 10	5.936	100	No
PM 2.5	1.226		
Pb	0.000		
NH3	0.083		
CO2e	8727.6		

2029

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Salt Lake City, UT			
VOC	7.023	70	No
NOx	17.968	70	No
CO	23.370		
SOx	0.785	70	No
PM 10	1.336		
PM 2.5	1.236	70	No
Pb	0.000		
NH3	0.094	70	No
CO2e	9062.6		
Northern Wasatch Front, UT			
VOC	7.023	100	No
NOx	17.968	100	No
CO	23.370		
SOx	0.785		
PM 10	1.336		
PM 2.5	1.236		
Pb	0.000		
NH3	0.094		
CO2e	9062.6		
Ogden, UT			
VOC	7.023		
NOx	17.968		
CO	23.370	100	No
SOx	0.785		
PM 10	1.336	100	No
PM 2.5	1.236		
Pb	0.000		
NH3	0.094		
CO2e	9062.6		

2030

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Salt Lake City, UT			
VOC	2.020	70	No
NOx	16.643	70	No
CO	26.088		
SOx	0.815	70	No
PM 10	1.317		
PM 2.5	1.215	70	No
Pb	0.000		

AIR CONFORMITY APPLICABILITY MODEL REPORT

RECORD OF CONFORMITY ANALYSIS (ROCA)

NH3	0.113	70	No
CO2e	8858.4		
Northern Wasatch Front, UT			
VOC	2.020	100	No
NOx	16.643	100	No
CO	26.088		
SOx	0.815		
PM 10	1.317		
PM 2.5	1.215		
Pb	0.000		
NH3	0.113		
CO2e	8858.4		
Ogden, UT			
VOC	2.020		
NOx	16.643		
CO	26.088	100	No
SOx	0.815		
PM 10	1.317	100	No
PM 2.5	1.215		
Pb	0.000		
NH3	0.113		
CO2e	8858.4		

2031

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Salt Lake City, UT			
VOC	2.021	70	No
NOx	17.375	70	No
CO	26.242		
SOx	0.866	70	No
PM 10	1.380		
PM 2.5	1.272	70	No
Pb	0.000		
NH3	0.113	70	No
CO2e	9012.9		
Northern Wasatch Front, UT			
VOC	2.021	100	No
NOx	17.375	100	No
CO	26.242		
SOx	0.866		
PM 10	1.380		
PM 2.5	1.272		
Pb	0.000		
NH3	0.113		
CO2e	9012.9		
Ogden, UT			
VOC	2.021		
NOx	17.375		
CO	26.242	100	No
SOx	0.866		
PM 10	1.380	100	No
PM 2.5	1.272		

AIR CONFORMITY APPLICABILITY MODEL REPORT

RECORD OF CONFORMITY ANALYSIS (ROCA)

Pb	0.000		
NH3	0.113		
CO2e	9012.9		

2032

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Salt Lake City, UT			
VOC	2.021	70	No
NOx	17.294	70	No
CO	26.225		
SOx	0.861	70	No
PM 10	1.373		
PM 2.5	1.266	70	No
Pb	0.000		
NH3	0.113	70	No
CO2e	8995.7		
Northern Wasatch Front, UT			
VOC	2.021	100	No
NOx	17.294	100	No
CO	26.225		
SOx	0.861		
PM 10	1.373		
PM 2.5	1.266		
Pb	0.000		
NH3	0.113		
CO2e	8995.7		
Ogden, UT			
VOC	2.021		
NOx	17.294		
CO	26.225	100	No
SOx	0.861		
PM 10	1.373	100	No
PM 2.5	1.266		
Pb	0.000		
NH3	0.113		
CO2e	8995.7		

2033

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Salt Lake City, UT			
VOC	2.022	70	No
NOx	19.573	70	No
CO	26.705		
SOx	1.020	70	No
PM 10	1.571		
PM 2.5	1.444	70	No
Pb	0.000		
NH3	0.113	70	No
CO2e	9476.1		
Northern Wasatch Front, UT			
VOC	2.022	100	No

AIR CONFORMITY APPLICABILITY MODEL REPORT

RECORD OF CONFORMITY ANALYSIS (ROCA)

NO_x	19.573	100	No
CO	26.705		
SO_x	1.020		
PM 10	1.571		
PM 2.5	1.444		
Pb	0.000		
NH₃	0.113		
CO_{2e}	9476.1		
Ogden, UT			
VOC	2.022		
NO_x	19.573		
CO	26.705	100	No
SO_x	1.020		
PM 10	1.571	100	No
PM 2.5	1.444		
Pb	0.000		
NH₃	0.113		
CO_{2e}	9476.1		

2034

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Salt Lake City, UT			
VOC	2.022	70	No
NOx	21.282	70	No
CO	27.066		
SOx	1.139	70	No
PM 10	1.719		
PM 2.5	1.577	70	No
Pb	0.000		
NH3	0.113	70	No
CO2e	9836.5		
Northern Wasatch Front, UT			
VOC	2.022	100	No
NOx	21.282	100	No
CO	27.066		
SOx	1.139		
PM 10	1.719		
PM 2.5	1.577		
Pb	0.000		
NH3	0.113		
CO2e	9836.5		
Ogden, UT			
VOC	2.022		
NOx	21.282		
CO	27.066	100	No
SOx	1.139		
PM 10	1.719	100	No
PM 2.5	1.577		
Pb	0.000		
NH3	0.113		
CO2e	9836.5		

AIR CONFORMITY APPLICABILITY MODEL REPORT

RECORD OF CONFORMITY ANALYSIS (ROCA)

2035

2023

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Salt Lake City, UT			
VOC	2.022	70	No
NOx	21.200	70	No
CO	27.048		
SOx	1.133	70	No
PM 10	1.712		
PM 2.5	1.571	70	No
Pb	0.000		
NH3	0.113	70	No
CO2e	9819.3		
Northern Wasatch Front, UT			
VOC	2.022	100	No
NOx	21.200	100	No
CO	27.048		
SOx	1.133		
PM 10	1.712		
PM 2.5	1.571		
Pb	0.000		
NH3	0.113		
CO2e	9819.3		
Ogden, UT			
VOC	2.022		
NOx	21.200		
CO	27.048	100	No
SOx	1.133		
PM 10	1.712	100	No
PM 2.5	1.571		
Pb	0.000		
NH3	0.113		
CO2e	9819.3		

2036

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Salt Lake City, UT			
VOC	2.022	70	No
NOx	21.607	70	No
CO	27.134		
SOx	1.162	70	No
PM 10	1.748		
PM 2.5	1.603	70	No
Pb	0.000		
NH3	0.113	70	No
CO2e	9905.1		
Northern Wasatch Front, UT			
VOC	2.022	100	No
NOx	21.607	100	No
CO	27.134		
SOx	1.162		
PM 10	1.748		

AIR CONFORMITY APPLICABILITY MODEL REPORT

RECORD OF CONFORMITY ANALYSIS (ROCA)

PM 2.5	1.603		
Pb	0.000		
NH3	0.113		
CO2e	9905.1		
Ogden, UT			
VOC	2.022		
NOx	21.607		
CO	27.134	100	No
SOx	1.162		
PM 10	1.748	100	No
PM 2.5	1.603		
Pb	0.000		
NH3	0.113		
CO2e	9905.1		

2037

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Salt Lake City, UT			
VOC	2.022	70	No
NOx	21.445	70	No
CO	27.100		
SOx	1.150	70	No
PM 10	1.734		
PM 2.5	1.590	70	No
Pb	0.000		
NH3	0.113	70	No
CO2e	9870.8		
Northern Wasatch Front, UT			
VOC	2.022	100	No
NOx	21.445	100	No
CO	27.100		
SOx	1.150		
PM 10	1.734		
PM 2.5	1.590		
Pb	0.000		
NH3	0.113		
CO2e	9870.8		
Ogden, UT			
VOC	2.022		
NOx	21.445		
CO	27.100	100	No
SOx	1.150		
PM 10	1.734	100	No
PM 2.5	1.590		
Pb	0.000		
NH3	0.113		
CO2e	9870.8		

2038

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Salt Lake City, UT			

AIR CONFORMITY APPLICABILITY MODEL REPORT

RECORD OF CONFORMITY ANALYSIS (ROCA)

VOC	2.023	70	No
NOx	21.770	70	No
CO	27.168		
SOx	1.173	70	No
PM 10	1.762		
PM 2.5	1.615	70	No
Pb	0.000		
NH3	0.113	70	No
CO2e	9939.4		
Northern Wasatch Front, UT			
VOC	2.023	100	No
NOx	21.770	100	No
CO	27.168		
SOx	1.173		
PM 10	1.762		
PM 2.5	1.615		
Pb	0.000		
NH3	0.113		
CO2e	9939.4		
Ogden, UT			
VOC	2.023		
NOx	21.770		
CO	27.168	100	No
SOx	1.173		
PM 10	1.762	100	No
PM 2.5	1.615		
Pb	0.000		
NH3	0.113		
CO2e	9939.4		

2039

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Salt Lake City, UT			
VOC	2.023	70	No
NOx	21.770	70	No
CO	27.168		
SOx	1.173	70	No
PM 10	1.762		
PM 2.5	1.615	70	No
Pb	0.000		
NH3	0.113	70	No
CO2e	9939.4		
Northern Wasatch Front, UT			
VOC	2.023	100	No
NOx	21.770	100	No
CO	27.168		
SOx	1.173		
PM 10	1.762		
PM 2.5	1.615		
Pb	0.000		
NH3	0.113		
CO2e	9939.4		

AIR CONFORMITY APPLICABILITY MODEL REPORT

RECORD OF CONFORMITY ANALYSIS (ROCA)

Ogden, UT			
VOC	2.023		
NO _x	21.770		
CO	27.168	100	No
SO _x	1.173		
PM 10	1.762	100	No
PM 2.5	1.615		
Pb	0.000		
NH ₃	0.113		
CO _{2e}	9939.4		

2040

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Salt Lake City, UT			
VOC	2.023	70	No
NOx	22.096	70	No
CO	27.237		
SOx	1.196	70	No
PM 10	1.790		
PM 2.5	1.641	70	No
Pb	0.000		
NH3	0.113	70	No
CO2e	10008.1		
Northern Wasatch Front, UT			
VOC	2.023	100	No
NOx	22.096	100	No
CO	27.237		
SOx	1.196		
PM 10	1.790		
PM 2.5	1.641		
Pb	0.000		
NH3	0.113		
CO2e	10008.1		
Ogden, UT			
VOC	2.023		
NOx	22.096		
CO	27.237	100	No
SOx	1.196		
PM 10	1.790	100	No
PM 2.5	1.641		
Pb	0.000		
NH3	0.113		
CO2e	10008.1		

2041 - (Steady State)

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Salt Lake City, UT			
VOC	2.023	70	No
NOx	22.096	70	No
CO	27.237		
SOx	1.196	70	No

AIR CONFORMITY APPLICABILITY MODEL REPORT RECORD OF CONFORMITY ANALYSIS (ROCA)

PM 10	1.790		
PM 2.5	1.641	70	No
Pb	0.000		
NH3	0.113	70	No
CO2e	10008.1		
Northern Wasatch Front, UT			
VOC	2.023	100	No
NOx	22.096	100	No
CO	27.237		
SOx	1.196		
PM 10	1.790		
PM 2.5	1.641		
Pb	0.000		
NH3	0.113		
CO2e	10008.1		
Ogden, UT			
VOC	2.023		
NOx	22.096		
CO	27.237	100	No
SOx	1.196		
PM 10	1.790	100	No
PM 2.5	1.641		
Pb	0.000		
NH3	0.113		
CO2e	10008.1		

None of estimated emissions associated with this action are above the conformity threshold values established at 40 CFR 93.153 (b); Therefore, the requirements of the General Conformity Rule are not applicable.


 Digitally signed by Michelle S
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Michelle York, Contractor / Air Quality Consultant

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