Draft

Environmental Assessment

Addressing Short-Term Construction at
Schenectady Air National Guard Base

Scotia, New York

Prepared for:
109th Airlift Wing
National Guard Bureau

US Army Corps of Engineers ®

July
2024

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Acronyms and Abbreviations

109 AW	109th Airlift Wing
ACM	Asbestos-Containing Materials
AFFF	Aqueous Film-Forming Foam
AFI	Air Force Instruction
AFPD	Air Force Policy Directive
AGE	Aerospace Ground Equipment
AIM	American Innovation and Manufacturing
ANG	Air National Guard
ANGB	Air National Guard Base
APE	Area of Potential Effects
AST	Aboveground Storage Tank
AT	Antiterrorism
AT/FP	Antiterrorism/Force Protection
BGEPA	Bald and Golden Eagle Protection Act
bgs	below grounds surface
BMP	Best Management Practice
CAA	Clean Air Act
CATM	Combat and Arms Training Maintenance
CCF	Corrosion Control Facility
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CH_4	Methane
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide Equivalent
CWA	Clean Water Act
DAF	Department of the Air Force
dB	Decibels
dBA	A-weighted Decibels
DoD	Department of Defense
EA	Environmental Assessment
EIAP	Environmental Impact Analysis Process
EO	Executive Order
EOC	Environmental, Operations and Construction
ERP	Environmental Restoration Program
ESA	Endangered Species Act
ESCP	Erosion and Sediment Control Plan
ESQD	Explosive Safety Quantity Distance
ETC	Engineering Technical Criteria
FC	Federal Candidate
FCON	Force Protection Condition
FE	Federal Endangered
FEMA	Federal Emergency Management Agency
FONSI	Finding of No Significant Impact
FT	Federal Threatened
FY	Fiscal Year
GHG	Greenhouse Gas
HEF	High Expansion Foam
HVAC	Heating, Ventilation, and Air-Conditioning
HWMP	Hazardous Waste Management Plan
IAG	Interagency Working Group
IICEP	Interagency/Intergovernmental Coordination for Environmental Planning

IPaC	Information for Planning and Consultation
IRP	Installation Restoration Program
LBP	Lead-Based Paint
LID	Low Impact Development
MBTA	Migratory Bird Treaty Act
MMRP	Military Munitions Response Program
MOU	Memorandum of Understanding
MS4	Municipal Separate Storm Sewer System
MSA	Munitions Storage Area
N_2O	Nitrous Oxide
NA	Not Applicable
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NEPA	National Environmental Policy Act
NFPA	National Fire Protection Association
NGB	National Guard Bureau
NHPA	National Historic Preservation Act
NO_X	Nitrogen Oxides
NPDES	National Pollution Discharge Elimination System
NRHP	National Register of Historic Places
NVG	Night Vision Goggles
NYSDEC	New York State Department of Environmental Conservation
NY SHPO	New York State Historic Preservation Office
NY	New York
NYANG	New York Air National Guard
O_3	Ozone
OPSEC	Operations Security
OSHA	Occupational Safety and Health Administration
PCB	Polychlorinated Biphenyls
PFAS	Polyfluoroalkyl Substances
PFE	Proposed Federal Endangered
PM	Microns in Diameter
POL	Petroleum, Oils, and Lubricants
POV	Privately Owned Vehicle
PPE	Personal Protective Equipment
ppm	Parts per Million
PSD	Prevention of Significant Deterioration
RCRA	Resource Conservation and Recovery Act
SAP	Satellite accumulation point
SE	State Endangered
SF	Square Feet
SGCN	Species of Greatest Conservation Need
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SOC	Species of Concern
SO_X	Sulfur Oxides
SPB	State-Protected Bird
SPCC	Spill Prevention, Control and Countermeasure
SPDES	State Pollutant Discharge Elimination System
SQG	Small Quantity Generator
ST	State Threatened

SWPPP	Stormwater Pollution Prevention Plan
SY	Square Yards
TBD	To Be Determined
TDY	Temporary Duty Assignment
tpy	Tons per Year
UFC	Unified Facilities Criteria
USACE	U.S. Army Corps of Engineers
USC	United States Code
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UST	Underground Storage Tank
VOC	Volatile Organic Compound
WOTUS	Waters of the United States

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Cover Sheet

Draft
Environmental Assessment
Addressing Short-Term Construction at
Schenectady Air National Guard Base,
Scotia, New York

Responsible Agency: National Guard Bureau.

Affected Location: Schenectady Air National Guard Base (ANGB), New York (NY).

Proposed Action: Short-term Construction for Schenectady ANGB.

Report Designation: Draft Environmental Assessment (EA).

Abstract: The 109th Airlift Wing (109 AW) at Schenectady ANGB has identified priorities for short-term construction and proposes to implement the priority projects anticipated to occur between 2025 and 2030. The intent of implementing short-term construction projects at Schenectady ANGB is to provide the installation improvements necessary to support the ongoing mission of the 109 AW. The Environmental Assessment (EA) addresses the proposed 19 infrastructure improvement projects including eight new construction projects, seven renovation projects, and four demolition projects. The EA analyzes the potential for environmental impacts associated with the Proposed Action and Alternatives, including the No Action Alternative, and will assist in determining whether a Finding of No Significant Impact (FONSI) can be prepared, or an Environmental Impact Statement is required. Resource areas to be considered in the impact analysis for the EA are safety, air quality, noise; land use, geological resources, water resources, biological resources, transportation and circulation, visual resources, cultural resources, socioeconomics and environmental justice, and hazardous materials and waste, toxic substances, and other contaminants.

Written comments and inquiries regarding this document should be directed by mail to Ms. Johnna Scepansky, ATTN: 109 AW EA, 3501 Fetchet Avenue, Joint Base Andrews ND 20762-5157 or by email at NGB.A4.A4A.NEPA.COMMENTS.Org@us.af.mil with the subject titled as ATTN: 109 AW EA.

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Disclosure Statement

The Draft Environmental Assessment (EA) is provided for public comment in accordance with the National Environmental Policy Act, the President's Council on Environmental Quality National Environmental Policy Act Regulations (40 Code of Federal Regulations §§ 1500-1508), and 32 Code of Federal Regulations § 989, *Environmental Impact Analysis Process*. The Environmental Impact Analysis Process provides an opportunity for public input on National Guard Bureau (NGB) decision-making, allows the public to offer inputs on alternative ways for NGB to accomplish what it is proposing, and solicits comments on NGB's analysis of environmental effects.

Public commenting allows NGB to make better, informed decisions. Letters or other written or oral comments provided on the Draft EA may be published in the Final EA. As required by law, comments provided on the Draft EA will be addressed in the Final EA and made available to the public. Providing personal information is voluntary. Any personal information provided will be used only to identify your desire to make a statement during the public comment period or to fulfill requests for copies of the Draft EA or associated documents. Private addresses will be compiled to develop a mailing list for those requesting copies of the Final EA. However, only the names of the individuals making comments and specific comments will be disclosed. Personal home addresses and phone numbers will not be published in the Final EA.

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Draft

ENVIRONMENTAL ASSESSMENT

ADDRESSING

SHORT-TERM CONSTRUCTION

AT

SCHENECTADY

AIR NATIONAL GUARD BASE

SCOTIA, NEW YORK

Prepared for:

109th Airlift Wing

National Guard Bureau

JULY 2024

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1. Introduction

The National Guard Bureau (NGB) prepared an Environmental Assessment (EA) to consider the potential consequences to the human and natural environment associated with the necessary real estate action and short-term construction projects for infrastructure improvements at the Schenectady Air National Guard Base (ANGB), Scotia, New York (NY). The 109th Airlift Wing (109 AW) at Schenectady ANGB proposes to complete 19 infrastructure improvement projects anticipated to occur between 2025 and 2030, including eight new construction projects, seven renovation projects, and four demolition projects. The EA identifies applicable management actions and best management practices (BMPs) that would avoid or minimize impacts relevant to the implementation of the Proposed Action or alternatives (to include the No Action Alternative).

1.1 Purpose and Need for Proposed Action

The purpose of the Proposed Action is to provide the 109 AW with new and properly upgraded, sized, and configured facilities that are required to effectively accomplish its mission at Schenectady ANGB and meet United States (U.S.) Department of Defense (DoD) Anti-Terrorism/Force Protection (AT/FP) standards.

The Proposed Action is needed to rectify space deficiencies, lack of adequate facilities and infrastructure, and because some facilities do not meet AT/FP standards. The proposed construction and renovation projects would enhance mission efficiency by improving base access and utilities, consolidating mission functions, providing adequate training facilities for regional training, and upgrading facilities to meet current safety and security standards. The proposed demolition projects would remove excess, obsolete, deteriorating, and underused facilities. The Proposed Action is also necessary to replace outdated facilities and to secure installation assets.

The new facilities would comply with Air National Guard (ANG) Instruction 32-1023, *Criteria and Standards for Air National Guard Construction*; ANG Handbook 32-1084, *Facility Space Standards*; and *DoD Minimum Antiterrorism Standards for Buildings*, as presented in Unified Facilities Criteria (UFC) 4-010-01.

1.2 Location and Description of Installation

Schenectady ANGB, also known as Stratton ANGB, consists of approximately 132 acres of leased land in two non-contiguous areas adjacent to the Schenectady County Airport in Scotia, NY (**Figure 1-1**). The base is bound by the airfield to the northwest, west, and southwest, a railroad and road to the southeast, and a residential area to the northeast. The main installation area consists of 119.2 acres adjacent to the airfield and contains most of the 109 AW's control and support function. A former small arms training range with munitions storage is located on a separate 12.8-acre parcel southwest of the main installation area.

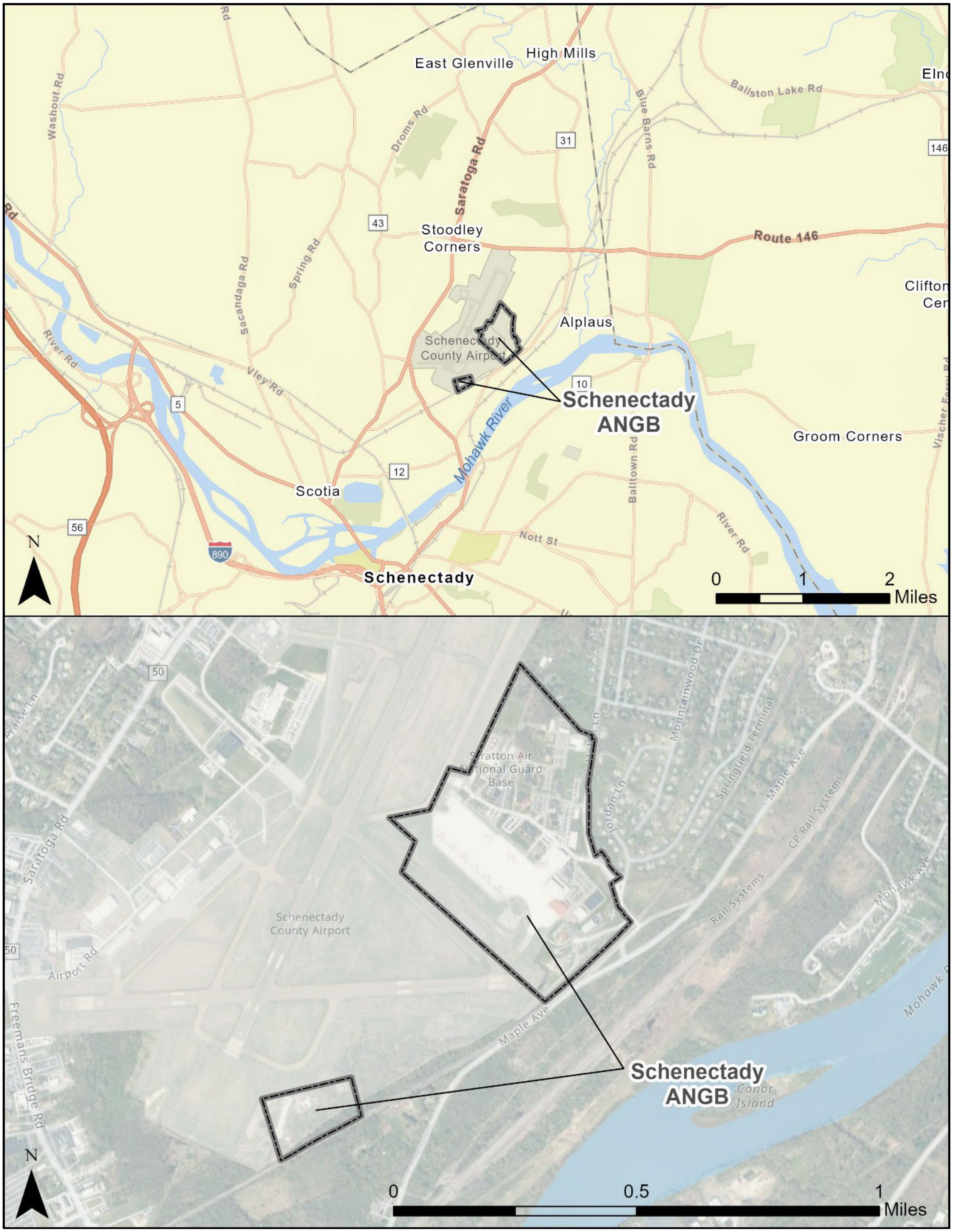


Figure 1-1. Location of Schenectady ANGB and Surrounding Area

1.3 Scope and Organization of the EA

The scope of analysis in the EA consists of evaluation of the Proposed Action and reasonable alternatives and their impacts on environmental resources in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended.

Section 1 of this EA provides the project background, purpose and need, and regulatory considerations for the Proposed Action. **Section 2** presents, in detail, the scope of the Proposed Action and the range of alternatives to be considered, to include the No Action Alternative. **Section 3** describes the existing conditions of the affected environment and identifies the potential environmental consequences, including cumulative impacts, of implementing all reasonable alternatives. **Section 4** provides conclusions for the potential environmental consequences discussed in Section 3; identifies appropriate measures not already included in the Proposed Action or alternatives that would be implemented to avoid, minimize, or compensate for adverse environmental impacts; and describes required permits and consultations for the Proposed Action. **Section 5** lists the references used in the preparation of the EA. **Section 6** provides the names of those who prepared the EA.

Appendix A provides an overview of federal, state, and local laws, regulations and policies that are or may be applicable to the Proposed Action. **Appendix B** provides the interagency/intergovernmental coordination for environmental planning (IICEP) correspondence and consultation information, including the lists of stakeholders and Tribes contacted, and correspondences for this NEPA compliance effort. **Appendix C** provides public involvement materials. **Appendix D** provides photographs of the short-term construction project sites. **Appendix E** provides the Record of Conformity Analysis and associated air quality analysis supporting documentation. **Appendix F** provides a report of the biological species known to occur in the affected area.

1.4 Summary of Key Environmental Study Requirements

To comply with NEPA, the planning and decision-making process refers to other relevant environmental laws, regulations, and Executive Orders (EOs). The NEPA process does not replace procedural or substantive requirements of other environmental laws; it addresses them collectively in an analysis, which enables decision makers to have a comprehensive view of major environmental issues and requirements associated with the Proposed Action. An overview of federal, state, and local laws, regulations, and policies that are or may be applicable to the Proposed Action is provided in **Appendix A**.

1.5 Public and Agency Review of Environmental Assessments

Compliance with the DAF's EIAP (32 CFR § 989) and Council on Environmental Quality (CEQ) NEPA regulations (40 CFR § 1500–1508), as amended in 2022, requires several steps to ensure agency and public involvement in the process. The Intergovernmental Coordination Act, EO 12372, *Intergovernmental Review of Federal Programs*, and EO 13352, *Facilitation of Cooperative Conservation*, require federal agencies to cooperate with and consider state and local views in implementing a federal proposal. Therefore, the NGB has sent notification letters to federal, state, and local agencies; elected officials; federally recognized tribes;

nongovernmental organizations; and interested individuals, informing them of the Proposed Action and the intent to prepare an EA. **Appendix B** (IICEP) provides the stakeholder and tribal contact lists, sample copies of notification letters, and copies of all response correspondences received.

A Notice of Availability announcing that the Draft EA and Draft Finding of No Significant Impact (FONSI) will be available for a 30-day comment period has been published in a local newspaper; a copy of the newspaper notice is provided in **Appendix C**. The Draft EA and FONSI is also available in electronic format on the 109 AW website (https://www.109aw.ang.af.mil/About/Environmental/). Public comments on the Draft EA will be considered prior to a decision being made on whether to sign the FONSI.

2. Description of the Proposed Action and Alternatives

2.1 Proposed Action

2.1.1 Introduction

The NGB and Schenectady ANGB propose to implement 19 infrastructure improvement projects, including eight construction projects, seven renovation projects, and four demolition projects to satisfy the purpose of and need for the Proposed Action as described in **Section 1.1**. Site photos for the proposed project locations are provided in **Appendix D**.

2.1.2 Selection Standards

Schenectady ANGB civil engineering personnel, along with supporting installation and NGB staff specialists, developed the following mission goals as part of the construction planning process (NYANG 2015):

- **Mission Operability:** Maximize opportunities to enhance the current mission, while remaining flexible and adaptable as missions change; maintain the capability and capacity to develop new missions.
- **Safety/Force Protection:** Maximize flight, weapon, and ground safety by promoting safe practices and creating a safe environment; meet the requirements of all applicable AT/FP regulations.
- **Environmental Stewardship/Energy Efficiency:** Meet or exceed standards for air, water, and waste, while enhancing programs that minimize the installation's footprint.
- **Smart Growth/Right-Size/Installation Appearance:** Collocate compatible land uses; develop optimal installation layout that maximizes mission effectiveness and enhances overall circulation; demolish excess facilities; encourage multi-use and joint-use facilities; reconcile existing square footage, authorization, and actual needs; create campus-like environment that is attractive, cohesive, and harmonious, providing visitors and Airmen with a sense of community and a pride of place.
- **Community:** Foster awareness of the installation with the local community, adjacent neighborhoods, the state, the county (including the airport), the Division of Military and Naval Affairs, and other stakeholders to present concerns, constraints, support, and opportunities.

NGB then used these goals to develop three selection standards that establish the parameters that must be met for alternatives to be considered reasonable and sufficient. The selection standards are defined as follows:

Selection Standard 1: The alternative(s) must meet the purpose of the Proposed Action to remedy deficiencies in the infrastructure of Schenectady ANGB. The alternative(s) must also address the need to provide and maintain infrastructure that is adequate to support the installation's mission, including providing regional ANG training, and applicable ANG, NGB, state, and federal requirements. Alternatives must also satisfy the purpose of and need for each individual project.

Selection Standard 2: The alternative(s) must make as much use as possible of existing land and facilities, avoid creating or maintaining redundant space or infrastructure, avoid or minimize operational inefficiencies, and represent the most cost and operationally effective and sustainable alternative.

Selection Standard 3: The alternative(s) must be consistent with all Schenectady ANGB internal planning documents and zoning requirements, applicable installation sustainability guides, and relevant legal and regulatory requirements, and must accommodate applicable, known man-made and natural development constraints.

Alternatives that failed to meet any one of the selection standards were insufficient to meet the project purpose and need and therefore, were not considered further in the EA.

2.2 Detailed Descriptions of Alternatives

This EA analyzes two alternatives: the Proposed Action (Preferred) and a No Action Alternative, which are described in this section. **Section 2.3** discusses other alternatives that were considered but dismissed from detailed analysis and also explains why those alternatives were not carried forward.

2.2.1 Proposed Action Alternative (Preferred)

The Proposed Action includes construction, renovation, and demolition projects that would accommodate existing and future mission activities at Schenectady ANGB. Many existing facilities on the installation do not adequately support current or future mission requirements and/or are not adequately sized.

Under the Proposed Action, the NGB would complete 19 infrastructure improvement projects as summarized in **Table 2-1** and shown in **Figure 2-1**. Details on each of the proposed projects are provided in **Sections 2.2.1.1**, **2.2.1.2**, and **2.2.1.3**. The 19 proposed infrastructure improvement projects would include the demolition of four facilities to accommodate the proposed actions. Site photographs of the proposed infrastructure improvement project locations are provided in **Appendix D**. For planning and operational efficiency, the proposed construction projects would be completed in phases between 2025 and 2030 (with some projects possibly extending to 2034).

Table 2-1. Schenectady ANGB Proposed Projects List

Project ID [1]	ANG Project Number	Project Title	Project Year [2]	Description	Change in Developed Area [3,4] (+/-)
Construction					
4	VBDZ199076	Construct Small Arms Range	2025	Construct a fully enclosed small arms firing range in the location of the former outdoor small arms range. Remove the remaining collapsed baffles.	+7,600 SF (0.2 acre)
5	VBDZ152020	Construct AGE Covered Storage	2025	Construct covered storage with spill containment for AGE equipment, which is currently exposed to the elements and causing damage.	NA
9	TBD	Construct POL Delivery Transport Bypass Road	2026	Construct a bypass road around the perimeter of the main base for POL transportation routes.	+9,740 SF (0.22 acre)
10	VBDZ159012	Maintenance Control Complex (Building 19)	2027	Demolish existing Building 19 and construct new building in same location, to include a corrosion control facility.	+6,270 SF (0.1 acre)
14	TBD	Construct Vehicle Search Pit	2030	Construct a covered vehicle search pit near the entry control point/entrance.	+1,800 SF (0.04 acre)
15	VBDZ162010	Construct Vehicle Operations Covered Parking	2030	Construct a covered parking area for vehicle operations unit.	+3,420 SF (0.08 acre)
16	VBDZ149008	Construct Logistics Complex	2030	Construct a new logistics complex in the open space to the north of Building 15 and south of Building 43.	+20,400 SF (0.47 acre)
17	VBDZ159089	Construct Operations and Training Facility	2030	Reconstruct the Operations and Training Facility (Building 1).	NA
Renovation					
1	TBD	Pave TDY Lot and Other Degraded Surfaces	2025	Add asphalt overlay to the degraded paved surfaces and pave the long-term TDY parking lot.	+16,200 SF (0.37 acre)

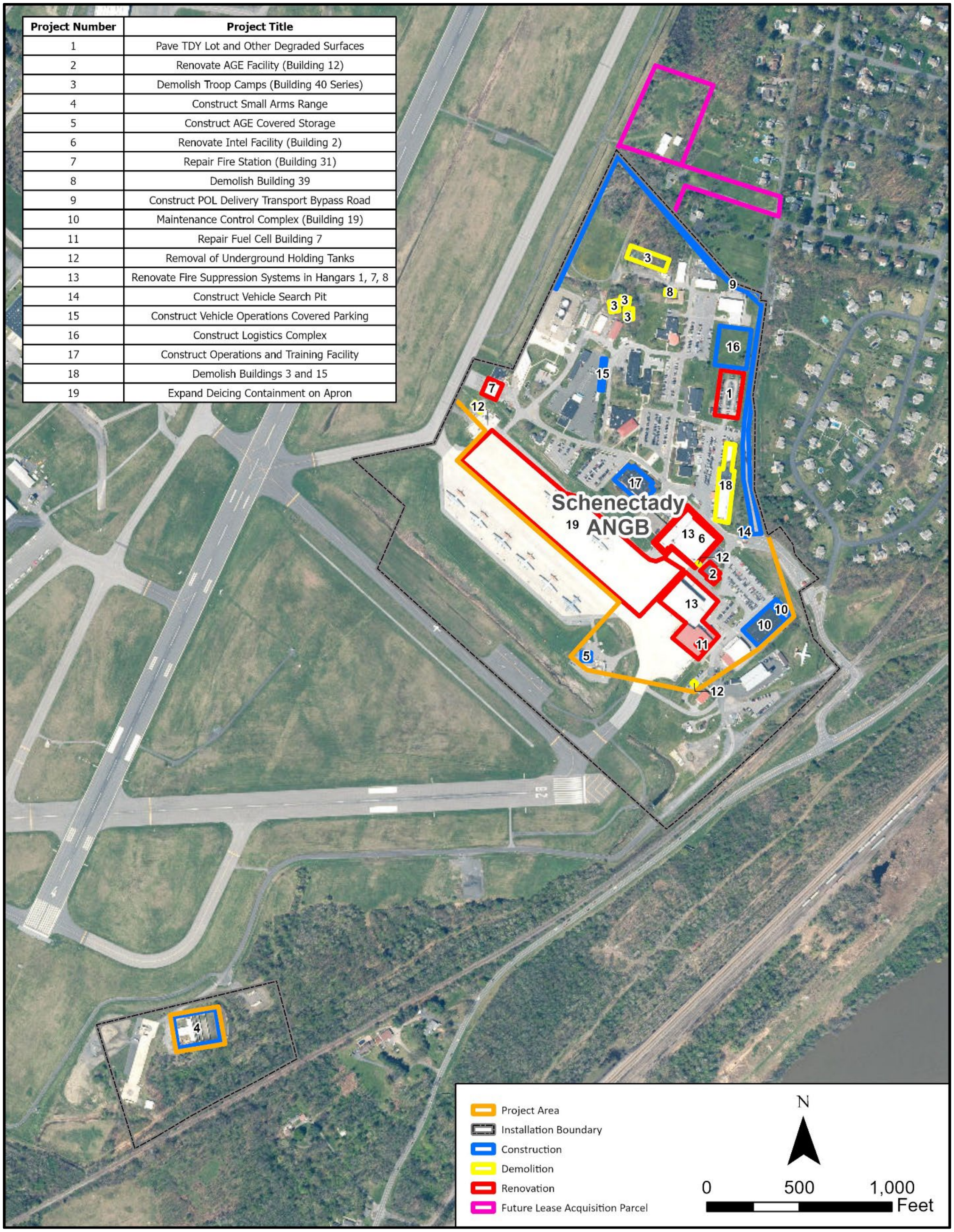
Project ID [1]	ANG Project Number	Project Title	Project Year [2]	Description	Change in Developed Area [3,4] (+/-)
2	VBDZ152016	Renovate AGE Facility (Building 12)	2025	Expand and renovate female restrooms, demolish an adjacent chimney and mezzanine due to safety concerns; and update the space with a male restroom.	NA
6	VBDZ222201	Renovate Intel Facility (Building 2A)	2025	Convert training and office areas into a DoD secure space to meet security and safety needs.	NA
7	VBDZ232202	Repair Fire Station (Building 31)	2025	Repair and/or replace portions of the roof and update interior spaces and the fire suppression system. Also, install a replacement generator and a new back-up generator.	+ 4,570 SF (0.1 acre)
11	VBDZ152011	Repair Fuel Cell (Building 7)	2028	Renovate ventilation and climate control systems for fuel cell hangar and surrounding offices and renovate work areas and breakroom to improve space utilization; remove ductwork impacted with heavy metals.	NA
13	VBDZ192323, VBDZ192324, VBDZ192322	Renovate Fire Suppression Systems in Hangars 1, 7, 8	2030	Renovate the fire suppression systems to meet National Fire Protection Association standards due to removal of High Expansion Foam; system upgrades may include the installation of a new pump or pressure system.	NA
19	TBD	Expand Deicing Containment on Apron	2030	Upgrade the stormwater drainage system at the aircraft apron to ensure deicing fluid is properly contained for all aircraft parking areas; current containment limits deicing to parking spots 11 through 16.	NA
Demolition					
3	TBD	Demolish Troop Camps (Building 40 Series)	2025	Demolish troop camp areas (Building 40 Series; T1-T10).	-5,120 SF (0.1 acre)
8	TBD	Demolish Building 39	2025	Demolish Building 39 to meet construction growth offset.	- 1,152 SF (0.03 acre)
12	TBD	Removal of Hangar Foam Recovery Tanks	2028	Remove three underground hangar foam recovery tanks; two from Building 2 and one from Building 8 and remove two wastewater recovery tanks from former Building 11.	NA

Project ID [1]	ANG Project Number	Project Title	Project Year [2]	Description	Change in Developed Area [3,4] (+/-)
18	VBDZ070417	Demolish Buildings 3 and 15	2030	Demolish Building 3 (21,798 SF) and Building 15 (5,000 SF) due to current building conditions and construction growth offsets.	- 26,798 SF (0.6 acre)
				Net Change in Developed Area [3,4]	**+80,080 SF (1.65 acre)**

Key (in order of occurrence): ANG – Air National Guard; HVAC – heating, ventilation, air conditioning; SF – square feet; TBD – To Be Determined; NA – not applicable; POL – petroleum, oil, and lubricants; AGE – aerospace ground equipment; TDY – temporary duty assignment

Table Notes:

1 – Project IDs are sorted by their timeline.
2 – Indicates the start of the anticipated development timeframe for each project.
3 – (+) indicates added developed area resulting from construction and renovation actions. (-) indicates reduced developed area resulting from demolition actions.
4 – Represents the change in developed area, not impervious surface. Projects area initially provided by the installation in square yards were converted to SF to enable consistent estimation of total proposed development. Most of the projects would be constructed on already developed land that contains pavement that would be utilized or replaced for the Proposed Action or left in place.
5 – Reflects the net sum of added SF (acres) resulting from construction and renovation actions minus the SF (acres) associated with demolition actions. For accuracy, net change in developed area acreage calculation is conversion of total SF to acres, rather than a sum of acres provided in the Changed in Developed Area column, which are rounded conversions.



Project Number	Project Title
1	Pave TDY Lot and Other Degraded Surfaces
2	Renovate AGE Facility (Building 12)
3	Demolish Troop Camps (Building 40 Series)
4	Construct Small Arms Range
5	Construct AGE Covered Storage
6	Renovate Intel Facility (Building 2)
7	Repair Fire Station (Building 31)
8	Demolish Building 39
9	Construct POL Delivery Transport Bypass Road
10	Maintenance Control Complex (Building 19)
11	Repair Fuel Cell Building 7
12	Removal of Underground Holding Tanks
13	Renovate Fire Suppression Systems in Hangars 1, 7, 8
14	Construct Vehicle Search Pit
15	Construct Vehicle Operations Covered Parking
16	Construct Logistics Complex
17	Construct Operations and Training Facility
18	Demolish Buildings 3 and 15
19	Expand Deicing Containment on Apron

Key: TDY – temporary duty assignment; POL – petroleum, oil, and lubricants; AGE – aerospace ground equipment

Figure 2-1. Proposed Short-term Construction Projects Overview for Schenectady ANGB

All proposed construction would be designed in accordance with the DoD UFC 1-200-01, *General Building Requirements* and UFC 1-200-02, *High Performance and Sustainable Building Requirements* and in accordance with the DoD *2022 Sustainability Plan*. In addition, DoD and DAF AT/FP Standards were considered in siting and planning all construction, renovation, and demolition projects to enhance and ensure security on the installation. AT/FP standards are outlined in DoD Instruction 2000.16, *DoD Antiterrorism (AT) Standards*; Air Force Policy Directive (AFPD) 10-2, *Readiness*; Air Force Instruction (AFI) 10-245 (ANG Supplement) *Antiterrorism*; AFI 10-701, *Operations Security (OPSEC)*; and UFC 4-010-01, which outline various planning, construction, and operational standards that address potential terrorist threats.

Under the Proposed Action, the infrastructure improvement projects would result in a net increase of approximately 80,080 SF (1.65 acres) of developed area on the installation. This change would represent a less than one percent increase in the overall developed area at Schenectady ANGB. Proposed improvements would maximize, to the extent possible, existing developed and paved areas to minimize addition of impervious surface area. Analysis in the EA uses the largest possible construction footprint for each proposed project to conservatively evaluate environmental effects; environmental constraints identified during project evaluation are noted where applicable.

2.2.1.1 CONSTRUCTION PROJECTS

Project 4 – Construct Small Arms Range

Project 4 would include construction of a 7,600 SF (0.2 acre), fully enclosed 10-lane small arms firing range with ballistic proof walls and an airtight connection to a standing seam metal roof. The firing range would provide facilities for small arms training thus enabling the 109 AW to meet DAF policy that requires every installation to support small arms proficiency training for personnel. Currently, personnel must travel off-site for this training. The site for the proposed range was chosen due to the existing area of disturbance associated with previous site use as a small arms training area. Prior to construction, any remaining safety baffles, utilized to restrict errant misfires or ricochets, associated with the previous outdoor arms range would be demolished.

Project 5 – Construct Aerospace Ground Equipment (AGE) Covered Storage

Project 5 would construct an overhang to provide a covered storage area with a spill containment system to protect AGE equipment from exposure to the elements. The project is needed to protect and increase longevity of equipment, as AGE is presently stored outside and is susceptible to corrosion due to year-round exposure to the elements.

Project 9 – Construct Petroleum, Oil, and Lubricants (POL) Delivery Transport Bypass Road

POL deliveries currently transit the main road through the base, resulting in environmental and AT/FP threats to critical infrastructure (NYANG 2015); therefore, a safer POL delivery route is needed. Project 9 would construct a POL Delivery Vehicle Bypass Road along the northern perimeter of the base, thereby rerouting POL deliveries away from occupied areas. The proposed location of the project was chosen due to existing disturbance associated with the old Habel Lane and an unimproved gravel perimeter road, and because the perimeter route would move POL transit away from critical infrastructure. The project would consist of an estimated 9,740 SF (0.22 acre) of soil disturbance and an increase in impermeable surface area.

Project 10 – Maintenance Control Complex (Building 19)

To meet mission requirements, the 109 AW requires a properly functioning Corrosion Control Facility (CCF) with adequate space for personnel and CCF equipment components. Existing facilities are inadequately sized and inadequately equipped for current CCF operation requirements. Project 10 would include demolition of Building 19 and new construction of a 34,000 SF Maintenance Control Complex that contains a CCF. Project components would include construction of a CCF with a paint booth, blast booth, composite booth, and an air shower. An oil and water separator, overhead doors, heating, ventilation, and air conditioning (HVAC) system, and a safety control logic system would also be installed to meet CCF system component requirements and follow American Innovation and Manufacturing (AIM) Act guidelines. Fill material and utility relocation are also anticipated with the proposed project. CCF and personnel workspace requirements would be addressed with the project.

The site was chosen due to proximity to existing maintenance operations. The new CCF would be constructed in accordance with UFC 4-211-02, *Aircraft Corrosion Control and Paint Facilities*. Emission levels would not exceed those of the current temporary paint booth operation on the installation, so no anticipated additional air emissions would be produced by activities occurring at the new facility. Requirements for any air permits would be conducted as part of the project.

The project would also incorporate Leadership in Energy and Environmental Design and sustainable development concepts, to achieve optimum resource efficiency, constructability, sustainability, and energy conservation, while minimizing adverse impacts to the built and natural environments through all phases of its life cycle as consistent with the applicable requirements including the Energy Policy Act of 2005 and EO 13990, *Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis*.

Project 14 – Construct Covered Vehicle Search Pit

Project 14 would construct a covered, approximately 1,800 SF (0.04 acre), vehicle search pit near the Entry Control Point to meet inspection and security requirements per UFC 4-022-01, *Security Engineering: Entry Control Facilities/Access Control Points* including *Section 6-6.4, Inspection Areas*. The proposed structure would consist of a covered, metal framed facility with a driver containment area per UFC 4-022-01, including *Section 6-6.4, Inspection Areas* (NYANG 2015). The proposed site location was chosen due to proximity to the Entry Control Point and available open space for traffic control.

Project 15 – Construct Vehicle Operations Covered Parking

Covered parking for vehicle operations storage is needed to protect equipment from weather exposure. Project 15 would construct an approximately 3,420 SF (0.08 acre), four-sided covered parking area east of Building 36 to provide covered storage of vehicle operations equipment. This site was chosen due to proximity to Vehicle Operations complex. The proposed location is currently a paved parking area, so no new impervious surfaces would result from execution of this project.

Project 16 – Construct Logistics Complex

To improve space and security inefficiencies at the logistics operations facility, Project 16 would construct a new 20,400 SF (0.47 acre) logistics operations facility to the north of Building 15 and south of Building 43. Current logistics operations are based out of Building 3, but the facility is undersized and does not meet security needs or other requirements for the facility. An assessment of alternative locations for this project determined that upgrading the current facility would be too costly and would still not meet space requirements. Off-site locations were assessed, but security considerations determined that an off-site location would not be feasible. Therefore, the only open space on the installation for construction of a facility meeting the size requirements was selected as the location for this project.

Due to the anticipated soil disturbance and location of the proposed project site within a partially vegetated area, tree removal and replanting requirements would be required per Air Force Manual 32-7003, *Environmental Conservation* guidelines, and installation of a stormwater management system would be required per federal, state and DAF stormwater management design standards.

Project 17 – Construct Operations and Training Facility (Building 1)

Project 17 would demolish and reconstruct the approximately 32,760 SF (0.75 acre) Operations and Training Facility (Building 1) within the same footprint to provide additional space for medical operations and training and mitigate lead impacted water supply lines. The project is needed due to inefficient space utilization within the medical clinic facility. This project would potentially disturb areas with asbestos-containing materials (ACMs) (NYANG 1996); therefore, this project would be required to meet all applicable state, local and DAF ACM survey and removal requirements, including providing notification for asbestos removal and mitigation prior to the work being done.

2.2.1.2 RENOVATION PROJECTS

Project 1 – Pave Temporary Duty Assignment (TDY) Parking Lot and Other Degraded Surfaces

Project 1 would pave and improve the approximately 16,200 SF (0.37 acre) TDY parking area and would repair and repave aircraft parking apron surfaces and vehicle parking and roadway surfaces that are in degraded and failing condition throughout the installation, including portions of the existing perimeter road. Project components would mitigate poor roadway surface conditions.

Project 2 – Renovate AGE Facility (Building 12)

The AGE Facility (Building 12) is currently inefficiently designed for space utilization, and the building's restrooms are not working properly because the current design does not allow simple plumbing maintenance and/or repairs within the restroom facilities. Project 2 would include demolition of a chimney and mezzanine associated with Building 12 due to safety and space utilization concerns; thus, creating additional space for restroom facility improvements. Additional space is needed to allow construction of a new men's restroom and expansion of the women's restroom including plumbing and design upgrades; floor tile and ceiling tile would also be removed and replaced.

Project 6 – Renovate Intel Facility (Building 2A)

Project 6 would convert 1,900 SF (0.04 acre) of existing training and office areas within the Intel Facility (Building 2A) into a DoD secure space to meet DoD UFC security standards which would provide the appropriate on-site secure facilities which are needed to effectively support the 109 AW mission. This project would also add new HVAC to the building, following AIM Act guidelines.

Project 7 – Repair Fire Station (Building 31)

Project 7 would renovate interior spaces of the Fire Station (Building 31) to facilitate efficient use of space and upgrade building components which are needed to meet current building code requirements, including replacing interior and exterior finishes. Project components also include HVAC system upgrades and/or replacement, upgrade of the fire detection system and installation of a fire sprinkler system, installation of a 100% back-up generator, roof replacement and/or repair, and upgrade of vehicle exhaust systems with four additional air drop lines within the work bay. All HVAC upgrades and/or replacement would follow guidance of the AIM Act. Exterior improvements would include repaving existing and construction additional parking areas for a total of 4,580 SF (0.1 acre) of additional impervious surface.

Project 11 – Repair Fuel Cell (Building 7)

Project 11 would renovate ventilation and climate control systems for the fuel cell hangar and surrounding offices and work areas and breakroom to improve space utilization in Hangar 7 (Building 7). The project is needed to provide improved control over temperature and humidity requirements within the hangar. In addition, it would involve removal of ductwork contaminated with heavy metals. Removal and disposal of equipment impacted with heavy metals must meet hazardous waste management and disposal requirements as identified in NY State Codes, Rules, and Regulations Part 370 through 374 and 376.

Project 13 – Renovate Fire Suppression Systems in Hangars 1, 7, and 8

Project 13 would renovate fire suppression systems located in Hangars 1, 7, and 8 (Buildings 2, 7, and 8) to meet National Fire Protection Association (NFPA) standards due to removal of High Expansion Foam (HEF). System upgrades may also include the installation of a new pump or pressure system. System component upgrades are needed to ensure the fire suppression systems remain operational due to the recent alteration of use of HEF within the system.

Project 19 – Expand Deicing Containment on Apron

Project 19 would reconfigure and add diversion valves to the stormwater drainage system at the aircraft apron to ensure deicing fluid is properly contained for all aircraft parking areas. Current containment limits deicing to parking spots 11 through 16, which limits how many aircraft can be operated during icy conditions. The project would expand deicing capabilities to aircraft parking spots 4 through 10, thus doubling deicing capabilities.

2.2.1.3 DEMOLITION PROJECTS

Project 3 – Demolish Troop Camps (Building 40 Series)

Due to safety concerns and the need to ensure proper utilization of space for mission needs, Project 3 would demolish the remaining Troop Camps (Building 40 Series), thereby removing 5,120 SF (0.1 acre) of development. These facilities are currently vacant and in deteriorating condition, preventing future use.

Project 8 – Demolish Building 39

Project 8 would demolish Building 39 to meet construction growth offset requirements. A total of 1,152 SF (0.03 acre) would be offset under this project. The facility is currently used for storage and not used for personnel; therefore, this project is needed to maintain construction growth offsets and to mitigate safety hazards associated with vacant structures.

Project 12 – Removal of Hangar Foam Recovery Tanks

HEF was removed from service; therefore, Project 12 would remove three foam recovery underground tanks, two from Building 2 and one from Building 8. Additionally, two recovery tanks would be removed from Building 11. Removal of these tanks is needed to ensure proper utilization of space.

Project 18 – Demolish Buildings 3 and 15

Project 18 would demolish Buildings 3 and 15 to comply with construction growth offset requirements per *Air Force Infrastructure Investment Strategy*. A total of 26,798 SF would be offset under this project: 21,798 SF for Building 3 and 5,000 SF (0.6 acre) for Building 15. This project is needed to consolidate outdated base facilities and to mitigate safety hazards associated with the structures.

2.2.2 No Action Alternative

In accordance with CEQ NEPA regulations, the No Action Alternative provides the baseline against which the potential environmental impacts from the proposed alternatives can be compared. Under the No Action Alternative, the short-term construction projects would not occur. Facilities and infrastructure would continue to be inappropriately sized and configured, and in some cases uninhabitable or unsafe, and, therefore, insufficient to support current and future mission needs for the 109 AW. The installation would continue to lack the capacity to support small arms proficiency training, and, therefore, remain non-compliant with DAF policy regarding required facilities and training standards. Training ANG units would continue to need to travel to other installations to complete small arms proficiency requirements. The POL delivery route would continue to pass through critical infrastructure, and appropriate vehicle search areas would not be available. Aircraft deicing capabilities would also continue to be insufficient, and the installation's military vehicle and equipment storage space would remain exposed to harsh weather conditions. Inefficient and aged fire suppression and HVAC systems would remain in use and vulnerable to breakages or remain inoperable due to operational changes. Personnel would also continue to travel to other locations for weapons training and Secure Space meeting needs, thus continuing inefficient use of available resources.

The No Action Alternative would not meet the purpose of or need for the Proposed Action as described in **Section 1.1**; however, the DAF EIAP (32 CFR § 989.8[d]) requires consideration of the No Action Alternative. Therefore, the No Action Alternative will be carried forward for detailed analysis in the EA.

2.3 Alternatives Considered but Eliminated from Further Consideration

During the project siting phase, alternative locations for each construction project were evaluated based on the mission needs and other selection criteria, such as the ability to collocate like services, site availability, and facility conditions. Based on evaluation, the proposed location for each of the construction projects was determined to be the only feasible alternative that met the purpose of and need for the Proposed Action.

As explained in **Section 1.2**, the area of land available for ANG development and use on the installation is constrained, and the utility of existing land and infrastructure must be maximized to efficiently meet program needs. The 109 AW determined that only the Proposed Action alternative presented in this EA met the three selection standards. Therefore, additional alternatives are eliminated from further consideration because they do not meet the selection standards due to environmental and space constraints.

2.4 Resources Not Carried Forward for Detailed Analysis

The determination of issues to be analyzed in detail in this EA and those not carried forward for detailed analysis is part of the EA scoping process, as described in 40 CFR § 1501.9(f)(1), which states that issues addressed in prior environmental reviews or that are not significant may be eliminated from discussion in the EA. No impacts or negligible impacts would be expected on the following describes those resource areas from implementation of the Proposed Action or alternatives, and as such, were found to not be significant and are not being carried forward for detailed analysis:

- ***Airspace Management.*** Under the Proposed Action, no changes to current airspace configurations, ongoing intermittent flight activities on or near the installation, and no flight training would occur. Similarly, the No Action Alternative would not change any current airspace features or flight patterns for aircraft in the area. The NGB anticipates no impacts on airspace management and proposed facilities would not violate building height restrictions for the airfield; therefore, airspace management has been eliminated from detailed analysis in this EA.

- ***Socioeconomics.*** Construction and demolition associated with the Proposed Action would result in temporary increases in payroll tax revenue from hired construction workers and the purchase of construction materials and goods in the local area. In the long-term, the addition of new facilities and infrastructure would provide modern, more energy efficient, and right-sized administrative, storage, and training spaces that would contribute to a lower operating cost at the installation compared with existing conditions. Because these beneficial impacts would not result in appreciable changes in the local economy, socioeconomics is not carried forward for detailed analysis.

- ***Infrastructure.*** Construction and demolition associated with the Proposed Action could result in temporary disruptions in electricity, potable water, natural gas, sanitary sewer, and communications services when disconnecting buildings to be demolished and connecting new facilities to existing utilities. Solid waste generated from construction, renovation, and demolition would be disposed of off installation with recycling used to divert some of the materials from landfills. Although a few new facilities would be added to the installation under the Proposed Action, the consolidation of mission functions and personnel into fewer facilities would reduce the overall demand on utilities in the long-term. Because of the temporary or beneficial nature of these minimal impacts, infrastructure disruptions are not carried forward for detailed analysis.

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3. Affected Environment and Impacts

This section describes the natural and human environment that would be affected by the implementation of the Proposed Action and alternatives, including the No Action Alternative. In compliance with guidelines established by NEPA, CEQ regulations, and 32 CFR § 989, *Environmental Impact Analysis Process*, the description of the affected environment focuses on only those aspects potentially subject to impacts. The affected environment description is limited to Schenectady ANGB and the adjacent lands in Scotia, New York.

Sections 3.1 through **3.12** provide the affected environment discussions and analyses for the following resources: safety; air quality; noise; land use; geological resources; water resources; biological resources; transportation and circulation; visual resources; cultural resources; environmental justice; and hazardous materials and waste, toxic substances, and other contaminants. As explained in **Section 2.4**, airspace management, socioeconomics, and infrastructure would not be affected by the Proposed Action and are not carried forward for analysis in the EA.

This EA was prepared in accordance with the 2020 CEQ NEPA regulations, and therefore analyzes environmental impacts from the Proposed Action combined with potential impacts from the reasonably foreseeable actions on or near the installation. CEQ regulations implementing the procedural provisions of NEPA define cumulative effects as follows (40 CFR § 1508(1)(g)(3)):

> "Effects on the environment that result from the incremental effects of the action when added to the effects of other past, present, and reasonably foreseeable actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time."

Past actions are those actions, and their associated impacts, that have shaped the current environmental conditions of the project area. Therefore, the impacts of past actions are now part of the existing environment and are included in the affected environment described for each resource area in **Sections 3.1** through **3.12**. This EA considers present and reasonably foreseeable actions based out of Schenectady ANGB and surrounding areas that could have a causal relationship to the Proposed Action and may result in cumulative impacts. These present and reasonably foreseeable future actions are listed in **Table 3-1**. The cumulative effects of the environment that would result from the incremental impacts of the Proposed Action, when combined with the potential impacts of the present and reasonably foreseeable actions, are discussed qualitatively within the respective impacts sections of each resource area.

Table 3-1. Reasonably Foreseeable Actions

Project Name	Description
Apron Repairs	The 109 AW requires adequate facilities for eight LC-130 and two C-130 with mission to conduct aircraft operations and training of personnel. The apron was deteriorating, creating dangerous foreign object debris. Therefore, the project is underway to restore and repair failed apron asphalt shoulders, three tiedowns, and multiple areas of failed concrete pavement totaling approximately 9,000 SY of surface repairs.
Construct Polar Skiway Team Storage	The 109 AW plans to construct an approximately 4,000 SF warehouse for storing larger tracked vehicles and snow/skiway landing equipment.
Land Acquisition/ Night Vision Goggle (NVG) Training Area	The 109 AW plans to acquire two additional lease parcels totaling 5.99 acres located to the northwest of the existing installation boundary. The leased parcels would be utilized for a NVG training area and allow for an alternate, non-routine egress for the installation.

Key: 109 AW – 109th Airlift Wing; SY – Square Yards; SF – Square Feet

3.1 Safety

3.1.1 Definition of Resource

Human health and safety address personnel and public health and safety during construction, demolition, and renovation activities as well as daily operations.

Site safety includes implementation of engineering and administrative practices that aim to reduce risks of illness, injury, death, and property damage. The health and safety of onsite military and civilian workers are safeguarded by numerous DoD and military branch-specific requirements designed to comply with standards issued by federal Occupational Safety and Health Administration (OSHA), such as AFI 48-145, *Occupational and Environmental Health Program* (ANG Supplement); and AFPD 90-8, *Environmental, Safety & Occupational Health Management and Risk Management.* In addition, safety is also governed by the United States Environmental Protection Agency (USEPA), and state occupational safety and health agencies. These standards specify health and safety requirements, the amount and type of training required for workers, the use of personal protective equipment (PPE), administrative controls, engineering controls, and permissible exposure limits for workplace stressors.

As a result of terrorist activities, DoD and DAF have developed a series of AT/FP guidelines for military installations with the intent to improve security, protect personnel, and limit damage to facilities in the event of a terrorist attack. Antiterrorism standards are based on DoD Instruction 2000.16, *DoD AT Standards*; AFPD 10-2, *Readiness*; AFI 10-245 (ANG Supplement), *Antiterrorism*; AFI 10-701, *Operations Security (OPSEC)*; and UFC 4-010-01, which outline various planning, construction, and operational standards that address potential terrorist threats.

On ANG installations, ordnance is handled and stored in accordance with AFI 91-201, *Explosives Safety Standards*. Explosive safety quantity distance (ESQD) zones are delineated to minimize risk to facilities and personnel from explosives, explosives operations, and explosive storage areas. Changes to the amount and location of munitions being stored will change the size and position of these arcs. Prior to the placement or planning of new facilities, the most current ESQD arcs should be used where applicable to ensure safety and meet DoD requirements.

3.1.2 Existing Conditions

3.1.2.1 CONSTRUCTION- AND OPERATIONS-RELATED SAFETY

Construction work site safety is largely a matter of adherence to regulatory requirements imposed for the benefit of employees and implementation of operational practices that reduce risks of illness, injury, death, and property damage. The health and safety of onsite military and civilian workers are safeguarded by numerous DoD and DAF regulations designed to comply with standards issued by the OSHA and USEPA. All contractors performing construction activities at the 109 AW are responsible for meeting OSHA standards and for protecting their employees during contracted operations, per AFI 48-145. Personnel must comply with ANG's Occupational and Environmental Health Program and AFPD 90-8 during daily operations.

During construction and operations, traffic and pedestrian safety is addressed by following guidance for roadside safety, signage, pavement marking, and pedestrian accommodations along with other safety and operations areas in accordance with Surface Deployment and Distribution Command Transportation Engineering Agency *Pamphlet 55-17, Better Military Traffic Engineering*.

3.1.2.2 ANTI-TERRORISM/FORCE PROTECTION (AT/FP)

Maintaining base security is a top priority for Schenectady ANGB. Current AT/FP vulnerabilities at the installation include POL deliveries currently transiting the main road through the base and a vehicle search area that does not fully comply with AT/FP requirements, resulting in environmental and AT/FP threats to critical infrastructure. The commercial vehicle search area does not meet UFC 4-022-01 requirements, including Section 6-6.4, *Inspection Area*, and needs to be covered and provide a driver holding area (NYANG 2015).

3.1.2.3 EXPLOSIVES SAFETY

At Schenectady ANGB, ordnance is handled and stored in accordance with AFI 91-201, *Explosives Safety Standards,* and all munitions maintenance is carried out by trained and qualified personnel. ESQD zones are generated to minimize risk to facilities and personnel from explosives, explosives operations, and explosive storage areas. Prior to the placement or planning of new facilities, the most current ESQD arcs should be used to ensure safety and to meet DoD requirements. Currently, the explosives storage on base is located in two small facilities. No habitable structures or other conflicting land use activities occur within the established ESQD areas for the facilities (NYANG 2015).

3.1.3 Methodology and Significance Criteria

Federal agencies must comply with federal work and public safety laws as well as with agency regulations, policies, and guidance. Actions that would substantially increase risks associated with the safety of construction and installation personnel, contractors, or the local community; 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; or hinder the ability to respond in an emergency would be considered significant impacts. Actions or activities that are not compliant with current laws and regulations would likewise potentially result in significant impacts. The significance of safety issues can be mitigated by rigorous application of safety standards and practices.

3.1.4 Impacts

3.1.4.1 PROPOSED ACTION

Short-term, negligible adverse impacts could occur during construction, renovation, and demolition of the proposed projects. Construction activities pose an inherent risk of accidents to workers, but this level of risk would be managed by adhering to established federal, state, DAF, NGB, and Schenectady ANGB safety regulations and policies. Construction and demolition contractors would establish and maintain health and safety programs for their workers. Construction workers would be required to wear PPE such as ear protection, steel-toed boots, hard hats, gloves, and other appropriate safety gear. Health and safety for non-construction-related personnel or dependents that might be in the area during construction would be maintained through administrative and engineering controls, such as construction barriers and warning posters and signs.

Providing new and renovated facilities for the 109 AW that are properly sited with adequate space and a modernized supporting infrastructure would generally enhance safety, resulting in long-term, minor, beneficial impacts on safety during operations, training, maintenance and support procedures, and security functions. DoD and DAF AT/FP standards were considered in siting and planning all construction and renovation projects to enhance and ensure security on the installation. The construction of a POL delivery transport bypass road around the perimeter of the installation (Project 9) would address AT/FP and base security concerns by providing a delivery route that minimizes environmental and infrastructure threats and disruptions to traffic and operations. Likewise, the construction of a vehicle search pit (Project 14) would address AT/FP compliance to meet UFC 4-022-01 requirements.

The renovation and upgrade of various buildings would also have long-term, minor, beneficial impacts on safety at the installation. The renovation of Building 12, the AGE Facility (Project 2), would demolish an adjacent chimney and mezzanine that have created a safety concern. As part of the Building 2A (Project 6) renovation, the intel facility would be converted into a DoD secure space to meet security and safety needs. The proposed new maintenance control complex (Project 10) would support a properly functioning CCF with adequate space for personnel and CCF equipment components that include proper clearance for safety zones around work areas, providing increased safety to staff working in and around the facility. Some of the safety concerns caused by water supply and distribution issues on base would be remedied by the construction of a new operations and training facility (Project 17) and repair of the fire suppression systems in Hangars 1, 7, and 8 (Project 13) to meet NFPA standards.

The construction of an indoor small arms range (Project 4) would replace the former small arms range that did not meet requirements outlined in UFC 4-179-02, *Small Arms Ranges*. The construction of a new indoor small arms range would be in compliance with the UFC. The munitions storage area (MSA) was previously located within the surface danger zone for the small arms range, making it so that MSA personnel could not work in their facility while firing was in process. The former range is now closed and training is conducted off-site at other installations, which requires personnel to travel to off-site facilities for long days to meet firing and training requirements. The construction of a new range would increase safety by removing the remaining collapsing baffles, constructing a facility that meets required safety guidelines, and providing an on-site facility to meet training requirements.

3.1.4.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, the proposed development projects would not be implemented, and the existing conditions discussed in **Section 3.1.2** would remain unchanged. AT/FP requirements would not be met and associated security liabilities would remain a threat to safety on the installation. Therefore, long-term, minor, adverse impacts on safety would be expected to continue.

3.1.4.3 CUMULATIVE IMPACTS

The Proposed Action and other reasonably foreseeable actions on Schenectady ANGB and surrounding areas, identified in **Table 3-1**, would be expected to have short-term, negligible, adverse impacts to safety as a result of construction, renovation, and demolition activities that would present increased risk to workers. Long-term, minor, beneficial impacts are anticipated on safety with the completion of the Proposed Action and other projects, including improved safety and traffic flow for trucks accessing the POL facility via a new bypass road and construction of an adequate vehicle search pit to minimize risk to human health and safety during inspections.

3.2 Air Quality

3.2.1 Definition of Resource

Air quality is defined by the concentration of various pollutants in the atmosphere at a given location. Under the CAA, the six pollutants defining air quality, called “criteria pollutants,” are carbon monoxide (CO), sulfur dioxide, nitrogen dioxide, ozone (O_3), suspended particulate matter (measured less than or equal to 10 microns in diameter [PM_{10}] and less than or equal to 2.5 microns in diameter [$PM_{2.5}$]), and lead.

Under the CAA (42 USC § 85 et seq.), USEPA has established National Ambient Air Quality Standards (NAAQS) (40 CFR § 50) for criteria pollutants. Areas that are and have historically been in compliance with the NAAQS or have not been evaluated for NAAQS compliance are designated as attainment areas. Areas that exceed a NAAQS are designated as nonattainment areas. Areas that have transitioned from nonattainment to attainment are designated as maintenance areas. Nonattainment and maintenance areas are required to adhere to a State Implementation Plan (SIP) to reach attainment or ensure continued attainment.

The USEPA General Conformity Rule applies to federal actions occurring in nonattainment and maintenance areas; this rule is not applicable to federal actions occurring in attainment areas. A conformity applicability analysis is the first step to determine whether a federal action must be supported by a general conformity determination. A conformity applicability analysis is done by quantifying applicable direct and indirect emissions that would result from an action. When the total emissions of nonattainment and maintenance pollutants (or their precursors) exceed specified thresholds, a general conformity determination is required.

Global climate change refers to long-term fluctuations in temperature, precipitation, wind, sea level, and other elements of Earth's climate. Of particular interest, greenhouse gases (GHGs) are gas emissions that trap heat in the atmosphere. GHGs include water vapor, carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), tropospheric O_3, and several fluorinated and chlorinated gaseous compounds. To estimate global warming potential, all GHGs are expressed relative to a CO_2, the predominant GHG, which is assigned a global warming potential of one. All GHGs are multiplied by their global warming potential, and the results are added to calculate total equivalent emissions of CO_2 (CO_2e).

EO 13990, Protecting the Public Health and the Environment and Restoring Science to Tackle the Climate Crisis, signed January 20, 2021, reinstated the Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act Reviews, issued August 5, 2016, by CEQ, that required federal agencies to consider GHG emissions and the effects of climate change in NEPA reviews (CEQ 2016). EO 13990 required federal agencies to capture the full costs of GHG emissions as accurately as possible to facilitate sound decision-making, recognize the breadth of climate impacts, and support the international leadership of the U.S. on climate issues. The "social cost of GHGs" is an estimate of the monetized damages associated with incremental increases in GHG emissions, such as reduced agricultural productivity, human health effects, property damage from increased flood risk, and the value of ecosystem services. The Interagency Working Group (IWG) on the Social Cost of Greenhouse Gases published updated social costs of GHGs in 2021 in *Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide Interim Estimates under Executive Order 13990*. The interim social cost of CO_2, CH_4, and N_2O established by the Interagency Working Group for the years in which the construction, renovation, and demolition projects would occur are shown in **Table 3-2**.

Table 3-2. Social Cost of GHGs (in 2020 dollars)[1]

Year	Social Cost of CO_2 (per metric ton of CO_2)	Social Cost of CH_4 (per metric ton of CH_4)	Social Cost of N_2O (per metric ton of N_2O)
2025	$56	$1,700	$21,000
2026	$57	$1,800	$21,000
2027	$59	$1,800	$21,000
2028	$60	$1,900	$22,000
2029	$61	$1,900	$22,000
2030	$62	$2,000	$23,000
2031	$63	$2,000	$23,000

Key (in order of occurrence): CO_2 – carbon dioxide; CH_4 – methane; N_2O – nitrous oxide

Source: IWG-SCGHG 2021

Table Notes:

1 – Social costs shown use a 3 percent average discount rate in 2020 dollars.

EO 14008, Tackling the Climate Crisis at Home and Abroad, further strengthens EO 13990 by implementing objectives to reduce GHG emissions and bolster resilience to the impacts of climate change, and requiring federal agencies to develop and implement climate action plans. The DAF Climate Action Plan recognizes the Department's role in contributing to climate change and aims to address the challenges and risks posed by climate change through the implementation of climate priorities including making climate-informed decisions, optimizing energy use, and pursuing alternative energy sources (DAF SAF/IE 2022). The NGB also follows the *DoD Climate Adaptation Plan* and considers the *DoD Climate Risk Analysis* for climate change planning. The *Long-Term Strategy of the United States: Pathways to Net-Zero Greenhouse Gas Emissions by 2050* sets target benchmarks to achieve net-zero GHG emissions by no later than 2050 through emission-reducing investments such as carbon-free power generation, zero-emission vehicles, energy-efficient buildings, and expansion and protection of forest areas (DOS EOP 2021).

3.2.2 Existing Conditions

3.2.2.1 LOCAL AIR QUALITY

Schenectady ANGB is within Schenectady County, New York, which is within the Hudson Valley Intrastate Air Quality Control Region (40 CFR § 81.129). Schenectady County also is within the ozone transport region that includes 11 states and Washington D.C. (40 CFR § 81.457). USEPA Region 2 and the New York State Department of Environmental Conservation regulate air quality in New York. USEPA has designated Schenectady County as in attainment or unclassified for all criteria pollutants (USEPA 2023b). As a result, the General Conformity Rule is not applicable to federal actions occurring in the county.

Table 3-3 summarizes the county-level air quality design values for Schenectady County. These design concentrations are derived from monitoring sites throughout the entire county and are used to indicate compliance with the NAAQS based on 3-year averages, which is the basis for USEPA attainment/nonattainment designations. **Table 3-4** includes the most recent available annual emissions inventory for Schenectady County.

Table 3-3. 2022 Air Quality Design Values for Schenectady County [1]

Criteria Pollutant	Averaging Period	NAAQS	2022 Design Concentration [2]	Exceeds NAAQS?
O_3	8-hour	0.070 ppm	0.058 [3]	No
$PM_{2.5}$	Annual	12 µg/m^3	5.4 [4]	No
	24-hour	35 µg/m^3	13 [4]	No

Key (in order of occurrence): NAAQS – National Ambient Air Quality Standard; O_3 – ozone; ppm – parts per million; $PM_{2.5}$ – particulate matter measured less than or equal to 2.5 microns in diameter; µg/m^3 – micrograms per cubic meter.

Source: USEPA 2023c

Table Notes:
1 – 2022 design concentrations for CO, nitrogen dioxide, PM_{10}, Lead, and sulfur dioxide were not available.
2 – The design concentration is the monitored (ranked or percentiles based) concentration that is used to assess compliance with the NAAQS using an average of the previous 3 years).
3 – Design concentration measured at Saratoga National Historical Park, Saratoga County.
4 – Design concentration measured at Loudonville Reservoir, Albany County.

Table 3-4. 2020 Emissions Inventory for Schenectady County

County	NO_X (tpy)	VOC (tpy)	CO (tpy)	SO_X (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	Lead (tpy)	CO_2e [1] (tpy)
Schenectady County	1,522	4,778	9,350	36	1,877	722	0.11	691,054

Key (in order of occurrence): NO_X – nitrogen oxides; tpy – tons per year; VOC – volatile organic compound; CO – carbon monoxide; SO_X – sulfur oxides; PM_{10} – particulate matter measured less than or equal to 10 microns in diameter; $PM_{2.5}$ – particulate matter measures less than or equal to 2.5 microns in diameter; CO_2e – carbon dioxide equivalent.

Source: USEPA 2023d

Table Notes:
1 – To calculate the total CO_2e, all GHGs are multiplied by their global warming potential and the results are added together. The global warming potentials used to calculate CO_2e are as follows: CO_2 = 1; CH4 = 25; nitrous oxide = 298.

3.2.2.2 EMISSIONS AT SCHENECTADY ANGB

Stationary sources of air emissions present at the installation include an external combustion engine (i.e., boiler), internal combustion engines (i.e., a fire pump and emergency generators), degreasing and solvent usage, and fuel storage and dispensing. Mobile sources of air emissions include aircraft flight operations, maintenance equipment, and vehicles. At the project locations, solvent degreasers are used and a jet fuel storage tank is located at Building 12, a diesel-fired emergency generator is located at Building 2A, and a natural gas-fired emergency generator is located at Building 31. Air emissions inventory data from 2019 indicated Schenectady ANGB does not emit nor has the potential to emit criteria pollutants or hazardous air pollutants in exceedance of any major source threshold and therefore is not subject to the Title V Operating Permit Program or Minor Source Permitting under the CAA (AECOM 2021). The most recent air emissions inventory for stationary sources at Schenectady ANGB is presented in **Table 3-5**.

Table 3-5. 2019 Stationary Source Emissions Inventory for Schenectady ANGB

Emissions Inventory	NO_X (tpy)	VOC (tpy)	CO (tpy)	SO_X (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	Lead (tpy)	CO_2e (tpy)
Actual Emissions	2.30	1.07	1.42	0.15	0.16	0.16	<0.005	1,963.4
Potential to Emit	15.02	7.21	13.98	1.20	1.19	1.13	<0.005	Not available
Major Source Permit Threshold	100	50 [1]	100	100	100	100	100	100,000

Key (in order of occurrence): NO_X – nitrogen oxides; tpy – tons per year; VOC – volatile organic compound; CO – carbon monoxide; SO_X – sulfur oxides; PM_{10} – particulate matter measured less than or equal to 10 microns in diameter; $PM_{2.5}$ – particulate matter measures less than or equal to 2.5 microns in diameter; CO_2e – carbon dioxide equivalent.

Source: AECOM 2021

3.2.2.3 CLIMATE

Schenectady County has a humid continental climate marked by distinct seasons and large seasonal temperature differences with warm to hot, humid summers and freezing cold winters. The average temperature in Schenectady is 71 degrees Fahrenheit (°F) in the hottest month of July, with high temperatures exceeding 80 °F, and the average low temperature is 22 °F in the coldest month of January, with low temperatures reaching below 13 °F. The average annual temperature is 47.5 °F. The annual average precipitation of the region is 36.8 inches. The wettest month of the year is June with an average rainfall of 3.8 inches (IDcide 2023).

Ongoing climate change in the northeastern U.S., including New York, has contributed to increased average temperatures, longer duration of heatwaves, extreme precipitation, stronger storm surges, increased frequency and severity of flood and drought events, and disruption of natural ecosystems. Social vulnerability to climate stressors and extreme weather is unequally distributed throughout the region. High air temperatures can cause adverse health effects such as heat stroke and dehydration, especially in vulnerable populations (i.e., children, elderly, sick, and low-income populations), which can affect cardiovascular and nervous systems. Warmer air can increase the formation of ground-level O3, which has a variety of health effects, including aggravation of lung diseases and increased risk of death from heart or lung disease (Whitehead et al. 2023).

In 2020, Schenectady County produced 691,054 tons of CO_2e, while Schenectady ANGB produced 1,963.4 tons of CO_2e in 2019 (2023d). In 2021, New York produced 156 million metric tons of CO_2, and was ranked the ninth highest state producer of CO_2 in the U.S. (USEIA 2023).

3.2.3 Methodology and Significance Criteria

This air quality analysis estimates the effects on air quality and climate change that would result from the Proposed Action and the No Action Alternative. Effects on air quality are evaluated by comparing the annual net change in emissions for each criteria pollutant against applicable thresholds. Per the DAF Air Quality EIAP Guide, insignificance indicators are applied to emissions of pollutants designated as attainment or unclassified to provide an indication of the significance of potential impacts on air quality. The significance indicator is the 250 tpy Prevention of Significant Deterioration (PSD) major source threshold, as identified by USEPA, and is applied to emissions of all criteria pollutants, except lead, occurring in areas that are “Clearly Attainment” (i.e., not within 5 percent of exceeding the NAAQS). The PSD threshold for lead is 25 tpy. The PSD thresholds do not denote a significant impact; however, they do provide a threshold to identify actions that have insignificant impacts on air quality. Any action with net emissions below the insignificance indicators is considered so insignificant that the action will not cause or contribute to an exceedance of one or more NAAQS (AFCEC 2020).

The DAF Air Conformity Applicability Model, version 5.0.18a, was used to estimate the annual air emissions from the infrastructure improvement projects. The potential for air quality impacts was assessed in accordance with Air Force Manual 32-7002, *Environmental Compliance and Pollution Prevention*; the EIAP (32 CFR § 989); and the General Conformity Rule (40 CFR § 93 Subpart B). The Air Conformity Applicability Model with detailed emissions calculations is included in **Appendix E**.

3.2.4 Impacts

3.2.4.1 PROPOSED ACTION

Based on compliance with the NAAQS, the General Conformity Rule is not applicable to emissions of criteria pollutants from the Proposed Action. As such, the PSD threshold (i.e., 250 tpy for criteria pollutants besides lead and 25 tpy for lead) was used as an insignificance indicator to determine impact significance from air emissions. The Proposed Action would result in short-term, minor, adverse impacts on air quality during the construction periods for the infrastructure improvement projects. Emissions of criteria pollutants would be directly produced from operation of heavy equipment, building and pavement demolition, heavy-duty diesel vehicles hauling supplies and debris to and from the project locations, workers commuting daily to and from the project locations in their personal vehicles, and ground disturbance. All such emissions would be temporary in nature and produced only when construction activities are occurring.

Table 3-6 lists the estimated annual air emissions associated with the infrastructure improvement projects. The analysis assumes a conservative 1-year construction timeline for each project to equate a worse-case emissions scenario in which all construction for a single project occurs in the same year. The actual timeline for construction may be different than what was assumed for this air emissions analysis. The construction year used for each project is as identified in **Table 2-1**. When considering each individual project or the combination of projects that would occur in the same year, annual emissions would not exceed the PSD thresholds for any criteria pollutant; therefore, construction under the Proposed Action would not result in significant impacts on air quality.

The air pollutants with the greatest emission potential during the construction period are NO_X, CO, and particulate matter, such as fugitive dust. CO and NO_X are produced from internal combustion engines such as those found in gas-powered equipment and generators. Fugitive dust is produced from earth-moving activities and vehicle equipment traveling over paved and unpaved roads. Construction activities would incorporate BMPs and environmental control measures (e.g., wetting the ground surface, using diesel particulate filters in vehicles and equipment) to minimize fugitive dust and other criteria pollutant emissions. These BMPs and environmental control measures could reduce particulate matter emissions from a construction site by approximately 50 percent (USEPA 1985). Emissions from construction would be temporary and would cease once construction is completed.

The Proposed Action would result in long-term, negligible, adverse impacts on air quality from operation of new facilities (Projects 4, 10, 16, 17), which would add new building space to Schenectady ANGB that would require permanent heating systems, and the addition of a back-up generator (Project 7), which would produce air emissions while operating. Heating systems for demolished facilities (Projects 8 and 18) would no longer be needed and operational emissions from such demolition projects would decrease. The remaining projects (i.e., Projects 1, 2, 3, 5, 6, 9, 11, 12, 13, 14, 15, and 19) would not require the addition or removal of air emissions sources; therefore, these projects would not result in changes to operational emissions. **Table 3-7** provides the estimated total net change in operational emissions for the Proposed Action. The net increase in operational air emissions at Schenectady ANGB from the Proposed Action would be less than 0.2 tpy for each criteria pollutant. The annual net change of criteria pollutant emissions from operations would not exceed the PSD thresholds. Therefore, adverse impacts on air quality from operations would not be significant.

Table 3-6. Estimated Annual Air Emissions from Construction for the Infrastructure Improvement Projects

Year	ANG Project Number	Project Title	NO_X (tpy)	VOC (tpy)	CO (tpy)	SO_X (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	Lead (tpy)	CO_2e (tpy)
2025	1	Pave TDY Lot and Other Degraded Surfaces	1.416	0.260	5.052	0.004	0.279	0.066	<0.001	377.7
2025	2	Renovate AGE Facility (Building 12)	0.506	0.175	0.906	0.002	0.016	0.016	<0.001	213.0
2025	3	Demolish Troop Camps (Building 40 Series)	0.766	0.127	1.171	0.002	0.094	0.027	<0.001	234.2
2025	4	Construct Small Arms Range	0.677	0.220	1.096	0.003	0.285	0.024	<0.001	256.9
2025	5	Construct AGE Covered Storage	0.506	0.136	0.904	0.002	0.016	0.016	<0.001	213.1
2025	6	Renovate Intel Facility (Building 2)	0.531	0.873	0.925	0.002	0.023	0.017	<0.001	217.8
2025	7	Repair Fire Station (Building 31)	0.629	0.275	1.012	0.002	0.070	0.022	<0.001	233.6
2025	8	Demolish Building 39	0.759	0.127	1.167	0.002	0.042	0.027	<0.001	230.9
		Total Emissions for 2025	**5.790**	**2.193**	**9.232**	**0.020**	**0.825**	**0.215**	**<0.001**	**1,977.2**
2026	9	Construct POL Delivery Transport Bypass Road	1.320	0.239	1.792	0.004	2.001	0.061	<0.001	353.6
		Total Emissions for 2026	**1.320**	**0.239**	**1.792**	**0.004**	**2.001**	**0.061**	**<0.001**	**353.6**
2027	10	Maintenance Control Complex (Building 19)	1.172	0.598	1.704	0.004	0.547	0.041	<0.001	385.1
		Total Emissions for 2027	**1.172**	**0.598**	**1.704**	**0.004**	**0.547**	**0.041**	**<0.001**	**385.1**
2028	11	Repair Fuel Cell (Building 7)	0.516	0.408	0.912	0.002	0.016	0.016	<0.001	218.1
2028	12	Removal of Hangar Foam Recovery Tanks	1.163	0.223	1.694	0.004	0.234	0.046	<0.001	403.4
		Total Emissions for 2028	**1.679**	**0.631**	**2.607**	**0.006**	**0.251**	**0.062**	**<0.001**	**621.5**
2030	13	Renovate Fire Suppression Systems in Hangars 1, 7, 8	1.270	1.465	1.852	0.004	0.043	0.043	<0.001	407.2
2030	14	Construct Vehicle Search Pit	1.012	0.196	1.518	0.004	0.146	0.039	<0.001	361.4
2030	15	Construct Vehicle Operations Covered Parking	0.507	0.143	0.906	0.002	0.016	0.016	<0.001	213.4
2030	16	Construct Logistics Complex	0.684	0.369	1.097	0.003	0.529	0.024	<0.001	268.5
2030	17	Construct Operations and Training Facility	1.130	0.567	1.646	0.004	0.244	0.038	<0.001	364.5
2030	18	Demolish Buildings 3 and 15	0.808	0.130	1.197	0.002	0.392	0.028	<0.001	255.6
2030	19	Expand Deicing Containment on Apron	1.114	0.238	1.931	0.005	14.965	0.043	<0.001	454.8

Year	ANG Project Number	Project Title	NO_X (tpy)	VOC (tpy)	CO (tpy)	SO_X (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	Lead (tpy)	CO_2e (tpy)
		Total Emissions for 2030	**6.524**	**3.107**	**10.147**	**0.024**	**16.334**	**0.229**	**<0.001**	**2,325.4**
		Annual Maximum	**6.524**	**3.107**	**10.147**	**0.024**	**16.334**	**0.229**	**<0.001**	**2,325.4**
		PSD Threshold	**250**	**250**	**250**	**250**	**250**	**250**	**25**	**N/A**
		Exceeds Threshold?	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**N/A**

Key (in order of occurrence): ANG – Air National Guard; NO_X – nitrogen oxides; tpy – tons per year; VOC – volatile organic compound; CO – carbon monoxide; SO_X – sulfur oxides; PM_{10} – particulate matter measured less than or equal to 10 microns in diameter; $PM_{2.5}$ – particulate matter measures less than or equal to 2.5 microns in diameter; CO_2e – carbon dioxide equivalent; TDY – temporary duty assignment; AGE – aerospace ground equipment; POL – petroleum, oil, and lubricants; PSD – Prevention of Significant Deterioration; N/A – not applicable.

Table 3-7. Estimated Net Annual Air Emissions from Operations

Add or Remove Operation	ANG Project Number	Project Title	NO_X (tpy)	VOC (tpy)	CO (tpy)	SO_X (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	Lead (tpy)	CO_2e (tpy)
Add Heating for Facility	4	Construct Small Arms Range	0.048	0.004	0.027	0.000	0.003	0.003	0.000	46.4
Add Emergency Generator	7	Repair Fire Station (Building 31)	0.023	0.006	0.016	0.005	0.005	0.005	0.000	2.7
Remove Heating for Facility	8	Demolish Building 39	-0.006	0.000	-0.005	0.000	0.000	0.000	0.000	-7.6
Add Heating for Facility	10	Maintenance Control Complex (Building 19)	0.039	0.002	0.033	0.000	0.003	0.003	0.000	46.7
Add Heating for Facility	16	Construct Logistics Complex	0.073	0.004	0.061	0.000	0.006	0.006	0.000	88.1
Add Heating for Facility	17	Construct Operations and Training Facility	0.129	0.007	0.108	0.001	0.010	0.010	0.000	154.8
Remove Heating for Facility	20	Demolish Buildings 3 and 15	-0.109	-0.006	-0.092	-0.001	-0.008	-0.008	0.000	-131.3
		Net Annual Emissions	**0.196**	**0.016**	**0.148**	**0.006**	**0.017**	**0.017**	**0.000**	**199.8**
		PSD Threshold	**250**	**250**	**250**	**250**	**250**	**250**	**25**	**N/A**
		Exceeds Threshold?	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**N/A**

Key (in order of occurrence): ANG – Air National Guard; NO_X – nitrogen oxides; tpy – tons per year; VOC – volatile organic compound; CO – carbon monoxide; SO_X – sulfur oxides; PM_{10} – particulate matter measured less than or equal to 10 microns in diameter; $PM_{2.5}$ – particulate matter measures less than or equal to 2.5 microns in diameter; CO_2e – carbon dioxide equivalent; TDY – temporary duty assignment; AGE – aerospace ground equipment; POL – petroleum, oil, and lubricants; PSD – Prevention of Significant Deterioration; N/A – not applicable.

Climate and GHGs. Construction for all infrastructure improvement projects would produce an estimated 5,662.8 tons (5,137 metric tons) of CO_2e. By comparison, 5,662.8 tons of CO_2e is approximately the GHG footprint of 1,223 passenger vehicles driven for 1 year or 670 homes' energy use for 1 year (USEPA 2023e). During the highest greatest CO_2e emissions year (i.e., 2030) during construction, approximately 2,325.4 tons (2,110 metric tons) of CO_2e would be produced, representing approximately 0.34 percent of annual CO_2e emissions in Schenectady County and less than 0.002 percent of annual CO_2 emissions in New York. As such, air emissions produced during construction would not meaningfully contribute to the potential effects of climate change and would not considerably increase the total CO_2e emissions produced by Schenectady County or the state. Therefore, construction would result in short-term, negligible, adverse impacts from GHGs. The estimated social cost of GHGs from construction for all infrastructure improvement projects would be equal to $304,044.77. Social cost of GHGs from each infrastructure improvement project are listed in **Table 3-8**. Detailed calculations are included in **Appendix E**.

Operational activities under the Proposed Action would result in a net increase of CO_2e emissions by 199.8 tpy (181 metric tpy), which represents approximately 0.03 percent of annual CO_2e emissions in Schenectady County and less than 0.0002 percent of annual CO_2 emissions in New York. By comparison, 199.8 tons of CO_2e is approximately the GHG footprint of 43.1 passenger vehicles driven for 1 year or 23.6 homes' energy use for 1 year (CH.15). As such, air emissions produced from operations would not meaningfully contribute to the potential effects of climate change and would not considerably increase the total CO_2e emissions produced by Schenectady County or the state. Therefore, long-term, adverse impacts from operations would be negligible. The estimated net annual social cost of GHGs from operations from the first year of operations would be equal to $11,069.14 per year (see **Table 3-8**). Operational emissions would continue indefinitely.

Ongoing changes to climate patterns in New York are described in **Section 3.2.2.3**. These climate changes are unlikely to affect the NGB's ability to implement the Proposed Action. All project areas have been previously disturbed and are outside a designated floodplain; therefore, extreme precipitation, increased frequency and severity of flooding, disruption of natural ecosystems, and other results from ongoing climate change would not affect implementation of the Proposed Action. The climate stressors with the greatest potential to affect the Proposed Action are higher temperatures, longer duration of heat waves, and stronger storm surges, which can cause equipment to operate less efficiently, leading to greater fuel burn requirements, and has the potential to damage infrastructure.

All elements of the Proposed Action in-and-of-themselves are only indirectly dependent on any of the elements associated with future climate scenarios (e.g., meteorological changes). At this time, no future climate scenario or potential climate stressor would have significant effects on any element of the Proposed Action, nor would the Proposed Action meaningfully contribute to the occurrence of events.

Table 3-8. Social Costs of GHGs for the Proposed Action

Year	ANG Project Number	Project Title	CO_2e (tpy) [1]	Social Cost [2,3]
Construction [4]				
2025	1	Pave TDY Lot and Other Degraded Surfaces	377.7	$19,192.26
2025	2	Renovate AGE Facility (Building 12)	213.0	$10,823.28
2025	3	Demolish Troop Camps (Building 40 Series)	234.2	$11,900.52
2025	4	Construct Small Arms Range	256.9	$13,054.00
2025	5	Construct AGE Covered Storage	213.1	$10,828.36
2025	6	Renovate Intel Facility (Building 2)	217.8	$11,067.19
2025	7	Repair Fire Station (Building 31)	233.6	$11,870.04
2025	8	Demolish Building 39	230.9	$11,732.84
2026	9	Construct POL Delivery Transport Bypass Road	353.6	$18,289.41
2027	10	Maintenance Control Complex (Building 19)	385.1	$20,616.71
2028	11	Repair Fuel Cell (Building 7)	218.1	$11,874.66
2028	12	Removal of Hangar Foam Recovery Tanks	403.4	$21,963.49
2030	13	Renovate Fire Suppression Systems in Hangars 1, 7, 8	407.2	$22,909.95
2030	14	Construct Vehicle Search Pit	361.4	$20,333.14
2030	15	Construct Vehicle Operations Covered Parking	213.4	$12,006.34
2030	16	Construct Logistics Complex	268.5	$15,106.39
2030	17	Construct Operations and Training Facility	364.5	$20,507.55
2030	18	Demolish Buildings 3 and 15	255.6	$14,380.61
2030	19	Expand Deicing Containment on Apron	454.8	$25,588.03
		Construction Total (total tons, total $)	**5,662.8**	$304,044.77
Operations [5]				
2026	4	Construct Small Arms Range	46.4	$2,399.97
2026	7	Repair Fire Station (Building 31)	2.7	$139.65
2026	8	Demolish Building 39	-7.6	-$393.10
2028	10	Maintenance Control Complex (Building 19)	46.7	$2,542.63
2031	16	Construct Logistics Complex	88.1	$5,036.54
2031	17	Construct Operations and Training Facility	154.8	$8,849.67
2031	18	Demolish Buildings 3 and 15	-131.3	-$7,506.21
		Operations Net Total (tpy, $ per year) [6]	**199.8**	$11,069.14

Key (in order of occurrence): GHG – greenhouse gas; ANG – Air National Guard; CO_2e – carbon dioxide equivalent; tpy – tons per year.

Source: IWG-SCGHG 2021

Table Notes:
1 – 1 tpy is 1 US short ton which is equal to 0.907184 metric tons.
2 – Detailed social cost calculations are included in Appendix E.

3 – Social costs shown use a 3 percent average discount rate in 2020 dollars.
4 – For construction calculations, the year in which the project would occur was used to calculate the social cost of GHGs.
5 – For operations calculations, some projects, such as construction of new facilities, operational CO_2e emissions are annual emissions and would not occur until the facility becomes operational, which typically occurs after construction is complete. The year following the year in which project construction would occur was used to calculate the social cost of GHGs.
6 – The net social cost from operations that is shown represents the additive social cost from the first year of operations for each project. Social cost for subsequent years would be higher than what is shown, as social cost of GHGs increases over time.

3.2.4.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, the proposed infrastructure improvement projects would not be implemented, and the existing conditions discussed in **Section 3.2.2** would remain unchanged. Therefore, no impacts on air quality would be expected.

3.2.4.3 CUMULATIVE IMPACTS

The Proposed Action would result in short- and long-term, negligible to minor, adverse impacts on air quality from construction and operations. Reasonably foreseeable construction actions that coincide with the construction periods for the infrastructure improvement projects, including the apron repairs and polar skiway team storage warehouse construction, may contribute additional emissions of criteria pollutants and GHGs. Emissions from reasonably foreseeable construction actions, when combined with emissions from the Proposed Action, would be greater than what was analyzed for the Proposed Action alone, resulting in short-term, minor, adverse, cumulative impacts. All such occurrences would be temporary in nature and cease upon completion of such construction activities. The General Conformity Rule is applied only to individual federal projects; therefore, the additive (i.e., combined) emissions of criteria pollutants from the Proposed Action and the reasonably foreseeable projects would not be subject to a general conformity determination. Because emissions from the Proposed Action would not be considered significant for the region, cumulative impacts on air quality from the Proposed Action, when combined with other reasonably foreseeable actions, would not be significant.

Long-term, negligible, adverse, cumulative impacts could occur from operations under the reasonably foreseeable actions (i.e., new polar skiway team storage warehouse) when combined with operations under the Proposed Action. Emissions from the Proposed Action would not be considered significant for the region; therefore, cumulative impacts on air quality from the Proposed Action, when combined with other reasonably foreseeable actions, would not be significant. Ongoing changes to climate patterns in New York are described in **Section 3.2.2.3**. These changes are unlikely to adversely impact construction associated with the reasonably foreseeable actions in Schenectady County.

3.3 Noise

3.3.1 Definition of Resource

Noise is defined as unwanted, obnoxious, or harmful sound. Sound is measured in decibels (dB), while sound that humans detect is measured in A-weighted decibels (dBA). Excessive noise can become irritating or harmful for populations living near a construction site and can become dangerous near sensitive receptors such as children or the elderly.

3.3.2 Existing Conditions

Schenectady ANGB is located in the Town of Glenville in Schenectady County, New York. One neighborhood borders Schenectady ANGB directly to the east. The main sources of noise are aircraft takeoffs and landings, and traffic at the airport and on nearby New York Route 50. Aircraft and jet engine activities are the greatest contributor to the noise environment. Other noise sources in the vicinity of the base are airport maintenance activities, road traffic, and use of a railroad corridor to the southeast. Typical urban noise sources, including from construction activities, are listed below in **Table 3-9.**

Table 3-9. Typical Sources of Noise and Sound Levels

Equipment	Noise Level (dBA) at 50 feet
Excavator	85
Bulldozer	85
Front-End Loader	80
Dump Truck	84
Outdoor	
Freeway Traffic	70
Heavy Traffic / Noisy Restaurant	85
Airplane Take-off	140

Source: FWHA 2017, Noise Awareness 2023

The nearest sensitive receptors to Schenectady ANGB are:

- Woodhaven Neighborhood, approximately 0.2 miles to the northeast.
- Glen-Worden Elementary School, approximately 1.2 miles to the west.
- Scotia-Glenville Senior Citizens Center, approximately 1.3 miles to the west.
- Judson Meadows Assisted Living, approximately 1.6 miles to the southwest.

Schenectady County's noise ordinances regulate noise from vehicles, prohibiting modification of mufflers or exhaust systems that increases the noise emitted by the vehicle above the original parameters when manufactured. The ordinances also restrict construction, demolition, and repair of a building to between 6:00 a.m. and 9:00 p.m. except in emergency as designated by permit. Excessive noise is also prohibited near schools or other institutions, such as churches, when it unreasonably interferes with activities at these institutions (City of Schenectady 2023).

OSHA established workplace standards for noise with the Noise Control Act of 1972, stating that constant noise exposure in a workplace must not exceed 90 dBA over an 8-hour period. The highest allowable sound level to which workers can be exposed is 115 dBA, but exposure near this level must not exceed 15 minutes within an 8-hour period. Hearing protection is to be issued if noise levels exceed these standards.

3.3.2.1 AIRCRAFT ACTIVITY

The 109 AW flies C-130 H and ski-equipped LC-130H aircraft for Air Mobility Command and polar airlift missions (AECOM 2020).

3.3.2.2 GROUND-BASED ACTIVITY

Most of the 109 AW's ground-based activities are related to takeoffs and departures, and transportation across the airport. As such, other than aircraft maintenance activities, there are no substantial ground-based noise sources.

3.3.3 Methodology and Significance Criteria

Noise impacts would be considered significant if the Proposed Action would result in:

- Violations of OSHA noise regulations
- Noise that would exceed Schenectady County noise ordinances

3.3.4 Impacts

3.3.4.1 PROPOSED ACTION

Under the Proposed Action, short-term, minor, adverse impacts would occur on some nearby sensitive receptors. Noise from construction, renovation, and demolition would produce substantial amounts of noise during the duration of project timelines across Schenectady ANGB, although noise at this level would not be atypical in the environment. Construction equipment produces noises considered high at 50 feet from the source, and the intensity of the noise decreases by 6 dBA as the distance from the source doubles. The closest sensitive noise receptor thus would experience noise averaging approximately 20 dBA for the proposed projects with the loudest equipment (excavators and bulldozers), and approximately 42 dBA for the closest neighborhood (GEG 2023). BMPs would be implemented to further reduce noise and follow standard OSHA regulations for construction activities, such as factory mufflers on construction vehicles, and following the county ordinance's daytime work hours. No projects under the Proposed Action would require specialized vehicles or unique circumstances. Schenectady ANGB personnel would experience heightened noise levels, although these levels would be intermittent throughout short-term construction activities and would not be expected to reach uncomfortable levels. Construction traffic would increase but would have a minimal impact on the noise environment for surrounding receptors.

No long-term impacts are expected under the Proposed Action. Operation of facilities at Schenectady ANGB under the Proposed Action would not cause a substantial change in the noise environment. The projects that would produce the largest impacts are the Small Arms Range and the POL Delivery Transport Bypass. Small arms training and qualifications in the newly constructed indoor range would be intermittently audible during use and not greater than the surrounding noise environment due to operations at the Schenectady County Airport, and traffic on the POL delivery transport bypass road would be limited and not notably contribute to existing traffic noise.

3.3.4.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, the proposed action would not be implemented, and the existing ambient noise levels would remain unchanged.

3.3.4.3 CUMULATIVE IMPACTS

The Proposed Action, combined with reasonably foreseeable actions, would result in short-term, minor, adverse cumulative impacts on noise levels in the vicinity of Schenectady ANGB. The proposed cumulative construction projects would create construction noise similar to the projects outlined under the Proposed Action. These projects would, however, likely result in slight improvements to aircraft operations, reducing excess noise to some degree. Repairs to the taxiways and aprons would reduce friction for vehicles using these pavements and thus lessen road noise. No significant cumulative noise impacts would be expected to occur.

3.4 Land Use

3.4.1 Definition of Resource

The term land can be classified into two primary categories: natural or human-modified conditions. Land use descriptions are identified in installation master planning and local zoning laws. Land use categories do not follow a nationally recognized convention or uniform terminology. As a result, the meanings of various land use descriptions, labels, and definitions vary among jurisdictions.

Natural conditions of property can be described or categorized as unimproved, undeveloped, conservation or preservation area, and natural or scenic areas. A wide variety of land use categories result from human-modified activity. Descriptive terms often used include residential, commercial, industrial, agricultural, institutional, and recreational.

The two main objectives of land use planning are to ensure orderly growth and compatible uses among adjacent property parcels or areas. Compatibility among land uses fosters the societal interest of obtaining the highest and best use of real property. The term real property includes the land itself and any buildings and other improvements attached to the land. Tools supporting land use planning include written master plans and zoning regulations. In appropriate cases, the location and extent of a proposed action need to be evaluated for their potential effects on a project site and adjacent land uses. The primary factor affecting a proposed action in terms of land use is its compliance with any applicable land use or zoning regulations. Other relevant factors include existing land use at the project site, the type of land uses on adjacent properties and their proximity to a proposed action, and the duration and permanence of a proposed activity.

3.4.2 Existing Conditions

The 109 Airlift Wing at Schenectady ANGB consists of approximately 132 acres of leased land in two non-contiguous areas adjacent to the Schenectady County Airport. The installation is bound by the airfield to the northwest, west, and southwest, a railroad and road to the southeast, and a residential area to the northeast.

Several siting criteria have been established specific to land development and use at commercial and military airfields. To maintain safety, DAF has established siting criteria for land development of DAF installations. These criteria include clear zones, obstruction zones relative to runways, and explosive safety quantity-distance criteria relative to storage of munitions. While these criteria are related to safety, they are used to assist decision-makers and planners with appropriate siting of facilities on ANG installations. Federal Aviation Administration airfield criteria are used at commercial airports and are generally the same as DAF criteria.

3.4.2.1 REGIONAL LAND USE

Schenectady ANGB is located within the jurisdiction of the Town of Glenville and Schenectady County. The eastern portion of Glenville (the surrounding area of Schenectady ANGB), called East Glenville, is composed of suburban residential areas and commercial establishments. Public parks are also spread across the town (NYANG 2014).

3.4.2.2 LOCAL LAND USE

According to the official zoning map of the Town of Glenville, land use for the areas directly around the installation are used for airport zoning, suburban residential, and research/development/technology (Town of Glenville 2021). Lands to the south, west, and northwest of the Schenectady County Airport are mainly zoned for general business as well as research/development/technology. Areas to the east, west, and northeast are comprised of suburban residential communities (NYANG 2014) **(Figure 3-1)**.

The Town of Glenville Comprehensive Plan details the growing community's goals and initiatives for the following years: Recreational Resources, Community/Economic Development, Commercial and Industrial Facilities, Housing, Natural Resources, Institutional, Government, and Educational Resources, Infrastructure and Utilities, Transportation, Health and Emergency Services, Agricultural Resources, and Renewable Energy. The comprehensive plan details repairing and preserving already existing structures/pavements, which would not change the existing land use. The Freemans Bridge Road Corridor and New York Route 50 zoning is being amended to encourage commercial development, redevelopment, and mixed-use office space (Town of Glenville 2017).

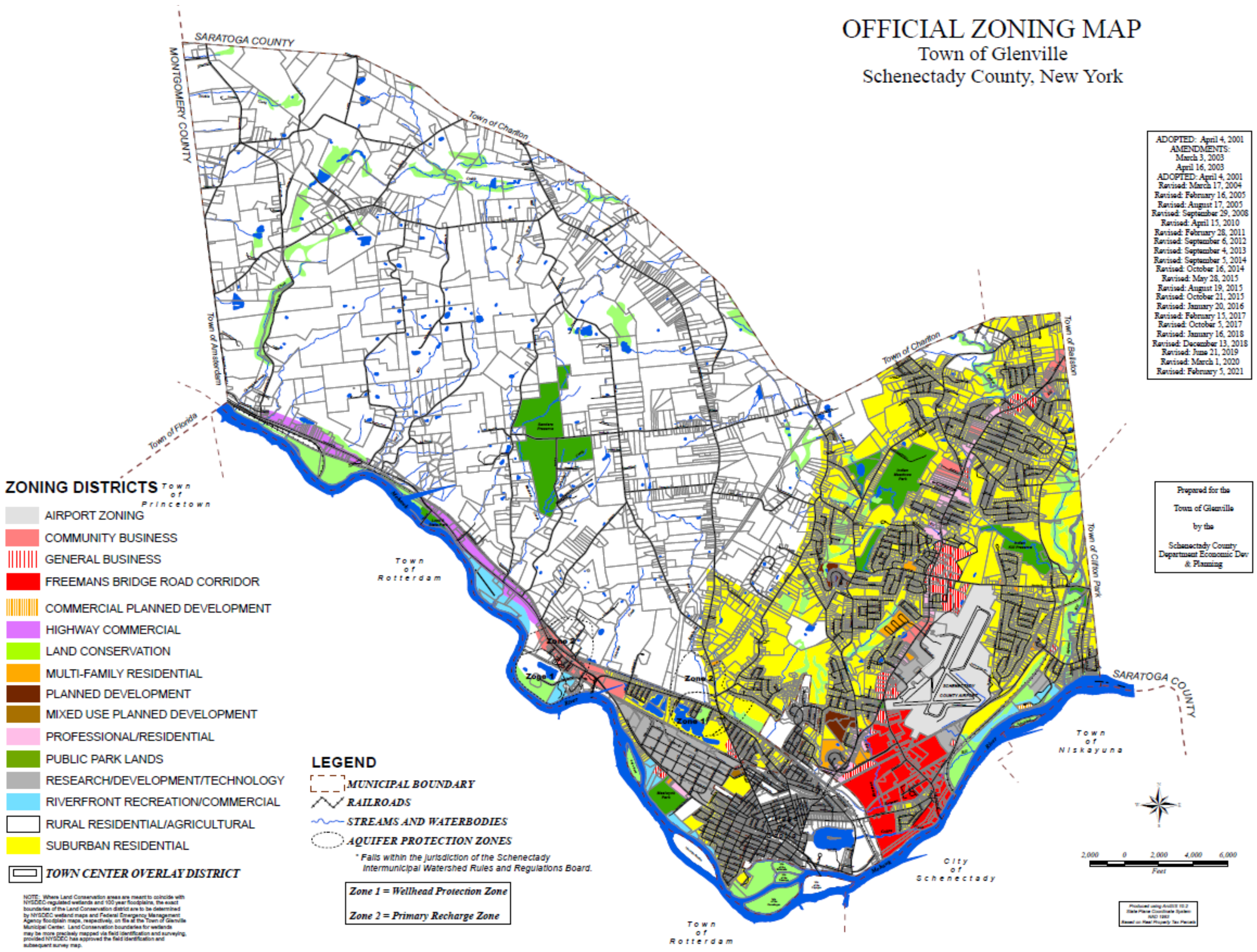

Figure 3-1. Town of Glenville Zoning Districts

3.4.2.3 INSTALLATION LAND USE

The main installation area consists of 119.2 acres adjacent to the airfield and supports most of the 109 AW's control. A former small arms training range with munitions storage is located on a separate 12.8-acre parcel southwest of the majority of the installation.

The eight ANG Standard Land Use Classification categories include: Safety Zones and Airfield Clearance Areas; Airfield Pavement Areas; Aircraft Operations; Aircraft Maintenance Facilities; Industrial Facilities; Command and Support Facilities; Special Categories; and Open Space (NYANG 2014). The existing land use of Schenectady ANGB is divided up by Aircraft Operations and Maintenance, Command and Support, Industrial, Open Space/Recreation, and Special Categories (NYANG 2015). Primarily, Aircraft Operations and Maintenance land uses are located in proximity to the flightline, Command and Support Facilities are located in the center of the installation, and Industrial Facilities are either grouped together or toward the edges of the installation. **Table 3-10** identifies the existing land use category associated with each project in the Proposed Action.

Table 3-10. Schenectady ANGB Existing Land Use at Proposed Projects

Project ID	Project Title	Existing Land Use Category	Impact on Land Use Category
Construction			
4	Construct Small Arms Range	Command and Support	Compatible
5	Construct AGE Covered Storage	Aircraft Operations and Maintenance	Compatible
9	Construct POL Delivery Transport Bypass Road	Open Space/ Recreation	Conversion to Command and Support
10	Maintenance Control Complex (Building 19)	Aircraft Operations and Maintenance; Command and Support	Compatible
14	Construct Vehicle Search Pit	Industrial	Compatible
15	Construct Vehicle Operations Covered Parking	Industrial	Compatible
16	Construct Logistics Complex	Open Space/ Recreation	Conversion to Command and Support
17	Construct Operations and Training Facility	Command and Support	Compatible
Renovation			
1	Pave TDY Lot and Other Degraded Surfaces	Industrial	Compatible
2	Renovate AGE Facility (Building 12)	Command and Support	Compatible
6	Renovate Intel Facility (Building 2)	Command and Support	Compatible
7	Repair Fire Station (Building 31)	Command and Support	Compatible
11	Repair Fuel Cell (Building 7)	Aircraft Operations and Maintenance	Compatible
13	Renovate Fire Suppression Systems in Hangars 1, 7, 8	Aircraft Operations and Maintenance	Compatible
19	Expand Deicing Containment on Apron	Aircraft Operations and Maintenance	Compatible
Demolition			
3	Demolish Troop Camps (Building 40 Series)	Industrial	Compatible
8	Demolish Building 39	Industrial	Compatible
12	Removal of Hangar Foam Recovery Tanks	Industrial	Compatible
18	Demolish Buildings 3 and 15	Industrial	Compatible

Key (in order of occurrence): AGE – aerospace ground equipment; POL – petroleum, oil, and lubricants; TDY – temporary duty assignment

3.4.3 Methodology and Significance Criteria

Understanding potential impacts on land use from a proposed action requires evaluation criteria based on existing and future land use, development, and management. A project could have a significant impact on land use if it were to prevent the viability of a land use or the continued use or occupation of an area; be incompatible with adjacent land use to the extent that public health or safety is threatened or the installation's mission is compromised; conflict with planning criteria established to ensure the safety and protection of human life and property; or result in noncompliance with laws, regulations, or orders applicable to land use.

3.4.4 Impacts

3.4.4.1 PROPOSED ACTION

Long-term, minor, adverse, and moderate, beneficial impacts on land use would be expected. The 19 projects associated with the Proposed Action would result in a net increase of approximately 80,000 SF (1.7 acres) of developed area on the installation. Changes to the land use categories on the installation due to each project are identified in **Table 3-10**.

Although some project types may differ from the existing land use category at their proposed location, land uses would generally be considered compatible, and therefore, no impacts on land use would be anticipated. The proposed location of the indoor Small Arms Range (Project 4) was based on existing area of disturbance associated with previous site use as a small arms training area. The land use category would remain the same because the new Small Arms Range constructed would be fully enclosed.

Each construction and renovation project included in the Proposed Action has been sited to consolidate like land uses and improve the operational efficiency and safety at Schenectady ANGB. Consequently, each construction project included in the Proposed Action would be inherently consistent with ANG planning policies and guidelines. Further, all projects would be designed and sited to be generally compatible with existing land use and airfield safety guidelines.

Long-term, minor, adverse impacts on land use would occur from the construction of the POL Delivery Transport Road (Project 9) and the Logistics Complex (Project 16). These projects would change existing Open Space/Recreation land use to Command and Support.

Long-term, moderate, beneficial impacts on land use from the Proposed Action would result from providing the 109 AW with new and properly upgraded, sized, and configured facilities.

3.4.4.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, the proposed installation construction, renovation, and demolition would not occur, and the existing conditions discussed in **Section 3.4.2** would remain unchanged. The current layout contains space deficiencies and inadequate facilities and infrastructure that do not help to enhance mission efficiency. Therefore, minor to moderate adverse impacts on land use would be expected if continued long-term.

3.4.4.3 CUMULATIVE IMPACTS

Long-term, minor, adverse, and moderate, beneficial impacts on land would be expected from the Proposed Action when combined with other reasonably foreseeable projects due to changes in land use on the installation and in the surrounding area including additional land acquired for training. The beneficial impacts would result from improving current facilities, improving safety, and efficiency.

3.5 Geological Resources

3.5.1 Definition of Resource

Geological resources consist of surface and subsurface materials and their properties. They are defined as the topography, geology, and geological hazards of a given area. Topography generally describes the local elevation, slope, aspect, and surface features. Geology includes the surface and subsurface materials, soil, paleontological resources, and bedrock composition that may be unique to an area. Geologic hazards are natural geologic events that can endanger human lives and threaten property. Examples of geologic hazards include erosion, earthquakes, landslides, ground subsidence, and sinkholes. These factors influence the ground stability and capacity to support structural integrity where construction and operation of new buildings may be sited. Therefore, proximity to specific geologic or topographic features or locations are also considered.

3.5.2 Existing Conditions

3.5.2.1 REGIONAL SETTING

Schenectady County is located in the Mohawk Valley Physiographic Province, which is bounded by the Adirondack Mountains to the north and the Plateau and Catskill Provinces to the south. The Mohawk Valley is a broad, well-developed valley, irregular and hilly, and generally cut out of shales and limestones. Topographic materials within the Mohawk Valley Province have been created by glacial erosion during the Pleistocene era, which shaped the dominant landforms by removing hilltops, scouring some valleys while filling others in, and leaving a mantle of unconsolidated material over the land surface. Parent material of soils throughout Schenectady County include shale, sandstone, limestone, siltstone, and granite (NYANG 2014).

3.5.2.2 INSTALLATION SETTING

Topography. Schenectady ANGB is located on a slightly southeastern sloping plain. The maximum elevation on the base is 390 feet above mean sea level on the northern side. This gradually decreases to 300 feet above mean sea level, once closer to the Mohawk River (NYANG 2014). Schenectady ANGB is located on land that has been predominantly cleared and leveled.

Geology. The installation is underlain by the Ordovician-age Schenectady Formation, which is composed of flat-lying shale interbedded with sandstone lenses, graywackes, and siltstones (NYANG 2014). The bedrock beneath the ANGB is approximately 2,000 to 3,500 feet thick and slopes to the south and southwest. Several linear bedrock edges exist in the vicinity of the installation and are aligned in the northeast-southwest direction. Glacial till covers bedrock over much of the base and ranges in thickness from 10 to 30 feet. On the southern and southwestern areas of Schenectady ANGB, Lake Albany sands and silts ranging between approximately 45 to 130 feet thick cover the till deposits (FPM Remediations 2012).

Soils. The majority of naturally occurring soils around the installation have been disturbed, making it difficult to classify the naturally occurring soils (FPM Remediations 2012). The remaining naturally occurring soils include Burdett-Scriba Association, Hornell Silt Loam, Lordstown Gravelly Silt Loam, Mardin Gravelly Silt Loam, Nunda Extremely Stony Soils, and the Tuller-Brockport Complex. All of these natural soils present moderate to severe building constraints due to slopes, shallow depths to bedrock, and seasonal wetness (NYANG 2014).

Geological Hazards. Potential geological hazards in Schenectady County include landslides and earthquakes. An area of high landslide occurrence is located along the eastern side of Schenectady County. The county is transversed by two inactive faults, Hoffman's Fault and McGregor Fault. There is no historical record of earthquakes among these faults. Earthquakes have been recorded in nearby areas such as the Adirondacks or the Montreal, Quebec region, and the effects of these earthquakes may be felt throughout the county. The region around the installation is not likely to have substantial geologic hazards (NYANG 2014).

3.5.3 Methodology and Significance Criteria

This section analyzes the relationship between geology, topography, and soil composition and how development on Schenectady ANGB could cause disturbances. It considers:

- impacts on soil or geological formations that would cause erosion or surface degradation.
- increases in risk to humans or wildlife from geological hazards.
- increases in risk to existing or planned buildings.

Significant impacts would result if substantial erosion or increase in risk were to occur.

3.5.4 Impacts

3.5.4.1 PROPOSED ACTION

Topography. Long-term, negligible to minor, adverse impacts would be expected on the natural topography of Schenectady ANGB due to site preparation (i.e., grading, excavating, and recontouring), demolition, construction, and renovation.

Geology. Construction, demolition, and renovation would create ground disturbances and changes in exiting impervious surfaces, resulting in minor impacts on geology in the area.

Addition of impervious surface area would be associated with the construction of the fully enclosed Small Arms Range (Project 4), POL Delivery Transport Bypass Road (Project 9), and Logistics Complex (Project 16). The proposed Small Arms Range and POL Delivery Transport Bypass Road project locations were based on use of existing disturbed areas. The POL Delivery Transport Bypass Road would consist of 9,740 SF (0.2 acre) of soil disturbance and an increase in impermeable surface area. The construction of the Logistics Complex is anticipated to create soil disturbance due to its location within a partially vegetated area. The remaining proposed projects would not create additional impervious surfaces.

Soils. Short- and long-term, minor, adverse impacts on soils would be expected from implementation of the projects due to ground disturbance, an increase in impervious surfaces, increased vehicle transportation, and associated erosion and sedimentation.

Compaction of soils during demolition, construction, and renovation activities would disturb and modify the soil structure. Soil productivity, the capacity of the soil to produce vegetative biomass, would decline in disturbed areas, and be eliminated in construction areas. Foot and vehicle traffic would also change soil structure and create new drainage patterns. Soil decompaction methods such as aeration would be implemented to minimize impacts.

BMPs, such as silt fencing, sediment traps, and application of water to disturbed soils, would be implemented to lower risk of erosion, and the installation and individual Stormwater Pollution Prevention Plans (SWPPPs) would be implemented for each project as appropriate to minimize the adverse effects of erosion.

Overall, the execution of the 19 proposed projects would have short- and long-term, negligible to minor impacts on geological resources at Schenectady ANGB.

3.5.4.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, no construction, renovation, or demolition would be performed, and the existing conditions discussed in **Section 3.5.2** would remain unchanged. Therefore, no impacts on geological resources would be expected.

3.5.4.3 CUMULATIVE IMPACTS

Cumulative projects at Schenectady ANGB include Apron Repairs of eight LC-130 and two C-130, and construction of a Polar Skiway Team Storage Warehouse. Short-term, negligible to minor, adverse, cumulative impacts on geological resources would be expected from construction related ground disturbance. Impacts on topography, geology and soils from construction would be localized to the site that is being developed. Implementation of BMPs in accordance with SWPPP requirements and inclusion of stormwater management systems would minimize the potential for impacts offsite. Long-term negligible to minor, adverse, cumulative impacts from the Proposed Action and the Polar Skiway Storage Warehouse could occur as a result of conversion of undeveloped land to urban land. Any resulting impacts would be partially offset by low impact development (LID) strategies and other sustainable measures. The other two projects are renovations on already impervious surfaces, and therefore no impacts are to be expected.

3.6 Water Resources

3.6.1 Definition of Resource

Surface Water. Surface water includes all lakes, ponds, rivers, and streams and is important for a variety of reasons including drinking water, irrigation, power generation, recreation, flood control, and human health. The nation's waters are protected under the Clean Water Act (CWA). The goal of the CWA is to restore and maintain the chemical, physical, and biological integrity of the nation's waters so that they can support "the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water." Under Section 404 of the CWA, USEPA and U.S. Army Corps of Engineers (USACE) regulate discharge of dredged or fill material into WOTUS, which includes navigable and non-navigable surface waters, including wetlands, as defined under 40 CFR § 230.3(s). If a federal permit is required, a 401 Water Quality Certification identifying the activity authorized by the federal permit complying with all applicable water quality standards, limitations, and restrictions must be obtained from the state, territory, or Tribe where work will be conducted. Under the CWA Section 402, it is illegal to discharge any point and/or nonpoint pollution sources into any surface water without a National Pollutant Discharge Elimination System (NPDES) permit. Stormwater controls for federal projects are also regulated under Section 438 of the Independence and Security Act of 2007, which requires federal agencies to reduce water quality impacts from federal development that exceeds 5,000 SF to maintain or restore pre-development hydrology. Requirements under this regulation have been incorporated into DoD UFC 3-210-10, *Low Impact Development.*

Groundwater. Groundwater includes the subsurface hydrologic resources of the physical environment and is often a safe and reliable source of water for the general population, especially those in areas of limited precipitation. Groundwater is commonly used for potable water consumption, agricultural, irrigation and industrial applications. Groundwater also plays an important part in the overall hydrologic cycle and its properties are described in terms of depth to aquifer or water table, water quality, and surrounding geologic composition.

Wetlands. Wetlands are considered sensitive habitats and are subject to federal regulatory authority under Sections 401 and 404 (as WOTUS) of the CWA and EO 11990, *Protection of Wetlands*. Wetlands are defined by the USACE as those "areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (USACE 1987). Wetlands generally include swamps, marshes, bogs, and similar areas. Like vegetation, the affected environment for wetlands includes only those areas potentially subject to ground disturbance.

Floodplains. Floodplains are areas of low-level ground present along rivers, stream channels, or coastal waters which are subject to periodic or infrequent inundation because of rain or melting snow. The risk of flooding typically depends on local topography, the frequency of precipitation events, and the size of the watershed above the floodplain. Flood potential is evaluated by the Federal Emergency Management Agency, which defines the 100-year floodplain as an area that has a 1 percent chance of inundation by flood event in each year and the 500-year floodplain as an area that has a 0.2 percent chance of inundation by flood event in each year. EO 11988, *Floodplain Management*, requires federal agencies to avoid, to the extent possible, the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development whenever there is a practicable alternative.

Stormwater. Stormwater conveyance systems can consist of man-made and natural drainage features including stormwater drains, pipes, culverts, ditches, swales, and retention ponds. New York State Department of Environmental Conservation (NYSDEC) is responsible for stormwater management and design reviews, including issuance of applicable State Pollutant Discharge Elimination System (SPDES) permits.

Drinking Water and Wastewater Utilities. The availability and condition of drinking water and wastewater systems enable a population within a specific area to properly function. Drinking water utility systems are designed to provide reliable and safe drinking water resources to a population while wastewater systems are designed to effectively remove wastewater for applicable treatment.

3.6.2 Existing Conditions

3.6.2.1 REGIONAL CONDITIONS

Surface Water. Schenectady County spans three watersheds, including the Mohawk River and the Schoharie and Middle Hudson watersheds (NYANG 2014). According to the NYSDEC Environmental Resource Mapper, the Mohawk River is located approximately 0.3 miles south and downstream of Schenectady ANGB with the nearest segment (hydrological unit code #0202000411) classified as a class “A” waterbody indicating best usage is as a source of drinking water, swimming, fishing, and other recreation. The use assessment identified possible impacts to water supply where threatened and aquatic life and recreation were stressed due to suspected nutrient and silt/sediment pollutants; however, the nearest segment is not identified as a 303(d) listed water body (NYSDEC 2010).

Groundwater. The Mohawk River Basin covers 3,500 miles in New York and is underlain by shale, sandstone, carbonate, and crystalline bedrock. The bedrock is overlain by till in much of the basin, but surficial deposits of saturated sand and gravel are present in some areas (USGS 2011). The Schenectady-Niskayuna Aquifer, locally known as the Great Flats Aquifer, serves as a reliable source of high-quality drinking water for residents of Schenectady County. On an average day, approximately 25 million gallons of water are withdrawn by five County municipalities including the City of Schenectady, Village of Scotia, Town of Glenville, Town of Niskayuna, and the Town of Rotterdam (Town of Glenville 2012). In 1990, the New York State Public Health Department established a series of watershed rules and regulations, adopted by each of the water systems to protect the Schenectady-Niskayuna Aquifer (NYANG 2014). Additionally, NYSDEC has established water quality standards and classifications for groundwater resources throughout the state.

Wetlands. In New York State, two main types of wetlands are the focus of protection: tidal wetlands around Long Island, New York City and up the Hudson River to Troy Dam; and freshwater wetlands found on river and lake floodplains across the state. It is estimated that as of the mid-1990s, there are approximately 2.4 million acres of wetlands in New York (NYSDEC 2023a). State protected wetlands are present within areas of Schenectady County due to the relatively flat topography associated with the Mohawk River Basin. The New York Environmental Conservation Law, Article 24, Freshwater Wetlands, is the state policy established to preserve, protect, and conserve freshwater wetlands.

Floodplains. The Mohawk River’s 100-year floodplain poses the greatest single flood hazard in Schenectady County (Schenectady County 2007). Flooding of the Mohawk River is categorized as free water flood events and break up flood events. Free water flood events are associated with large amounts of precipitation that commonly occur in late summer and early fall, during the peak of hurricane season. Break up events, which account for the majority of the large-scale flooding events, are associated with the breakup of river ice and commonly occur during winter and early spring (NYANG 2014).

Other floodplains for the minor streams that are mapped within the County generally have a very small area and no significant incidents of flood damage have been recorded. While Glenville has a substantial number of properties located within a flood plain, they are primarily located along tributaries to the Mohawk River and do not have any documented history of property damage or flood loss (NYANG 2014).

Stormwater. Schenectady ANGB is collocated with the Schenectady County Airport within the city limits of Glenville, NY. Glenville developed a Stormwater Management Plan to comply with the New York Department of Conservation General Permit (GP-0-15-003) for Stormwater Discharges from Municipal Separate Storm Sewer Systems (MS4s). Under the permit, the city of Glenville is allowed stormwater discharges from MS4 outfalls to segments of minor tributaries of the Mohawk River, the Mohawk River, and the Indian Kill (stream) and associated tributaries (Town of Glenville 2019). Under the MS4 program, the town of Glenville is required to help identify and reduce sources of illicit discharges including sanitary sewer overflows, effluent from septic tanks, and improper oil disposal.

Drinking Water and Wastewater Utilities. The town of Glenville provides drinking water to the base and areas to the north and east of the installation (NYANG 2014); source water is provided by four wells located within the Schenectady-Niskayuna Aquifer. The Glenville wells are located approximately five miles west of the installation and are approximately 50 feet below ground surface (bgs) (Town of Glenville 2022).

Glenville Public Works currently manages and operates the wastewater system conveyance infrastructure within Glenville city limits including wastewater discharges associated with Schenectady County Airport and Schenectady ANGB.

3.6.2.2 INSTALLATION

Surface Water. Schenectady ANGB is located within the Mohawk River basin; the Mohawk River is located approximately 0.3 miles south and downstream of Schenectady ANGB. Surface water drainage on the installation generally follows the topography from north to south. An unnamed minor tributary to the Mohawk River is along the southwestern boundary of the base and south of the small arms range (see **Figure 3-2**). According to the NYSDEC Environmental Resource Mapper, the minor tributary (Segment ID #1201-0040) is classified as a “C” waterbody with the best use categorized as “fishing”. The use assessment identified the tributary as an impaired water body due to unknown biological impacts per the 2010 New York State 303(d) list; no total maximum daily load requirements were identified. Additional unnamed intermittent stream channels were identified during the May 2023 WOTUS survey for Schenectady ANGB. Additional details are provided in the *Wetlands* section below.

Ground Water. The installation does not have high potential availability to large groundwater resources, although it lies close to the recharge zone of the Schenectady-Niskayuna Aquifer system. Groundwater underlying the base is perched and intermittent and is not a viable aquifer. In some locations on the installation, groundwater may be encountered at less than one foot bgs during the wet season. Groundwater flow within the region typically moves in the direction of topography. Therefore, groundwater flow at the base is generally to the south and southeast toward the Mohawk River (BB&E 2022). The Schenectady-Niskayuna Aquifer System protection zone is located in the eastern and southern regions of the installation and is considered a sensitive and significant aquifer recharge area (NYANG 2014).

VOCs have impacted groundwater near the southwest corner of the base at Installation Restoration Program (IRP) Site 6; groundwater remediation activities are ongoing (BB&E 2022). There is currently no groundwater use restrictions at the base.

Wetlands. In May 2023, A WOTUS Survey was conducted at Schenectady ANGB and for two parcels of land located immediately north of Schenectady ANGB. The survey was completed to identify potential jurisdictional waterways, including wetlands, to facilitate future land management decisions. The wetland delineations were conducted in accordance with the “Routine Determination” procedures outlined in the *U.S. Army Corps of Engineers Wetlands Delineation Manual* (USACE 1987), and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region, Version 2.0* (USACE 2012). The wetland delineation approach set forth in these delineation manuals requires the presence of hydrophytic vegetation, hydric soil, and wetland hydrology. The USACE technical guidelines for wetlands require that a positive wetland indicator be present for each of the three parameters, except in specialized cases identified in the regional supplement. Six wetlands (totaling 2.1 acres) and four WOTUS (totaling approximately 0.7 acres/4,947 linear feet) were delineated within Schenectady ANGB. In addition, three excavated stormwater drainage features were identified within Schenectady ANGB (see **Figure 3-2**). The draft final report is being submitted to the USACE New York District for review and a request for jurisdictional determination (HDR-Tehama JV 2024a).

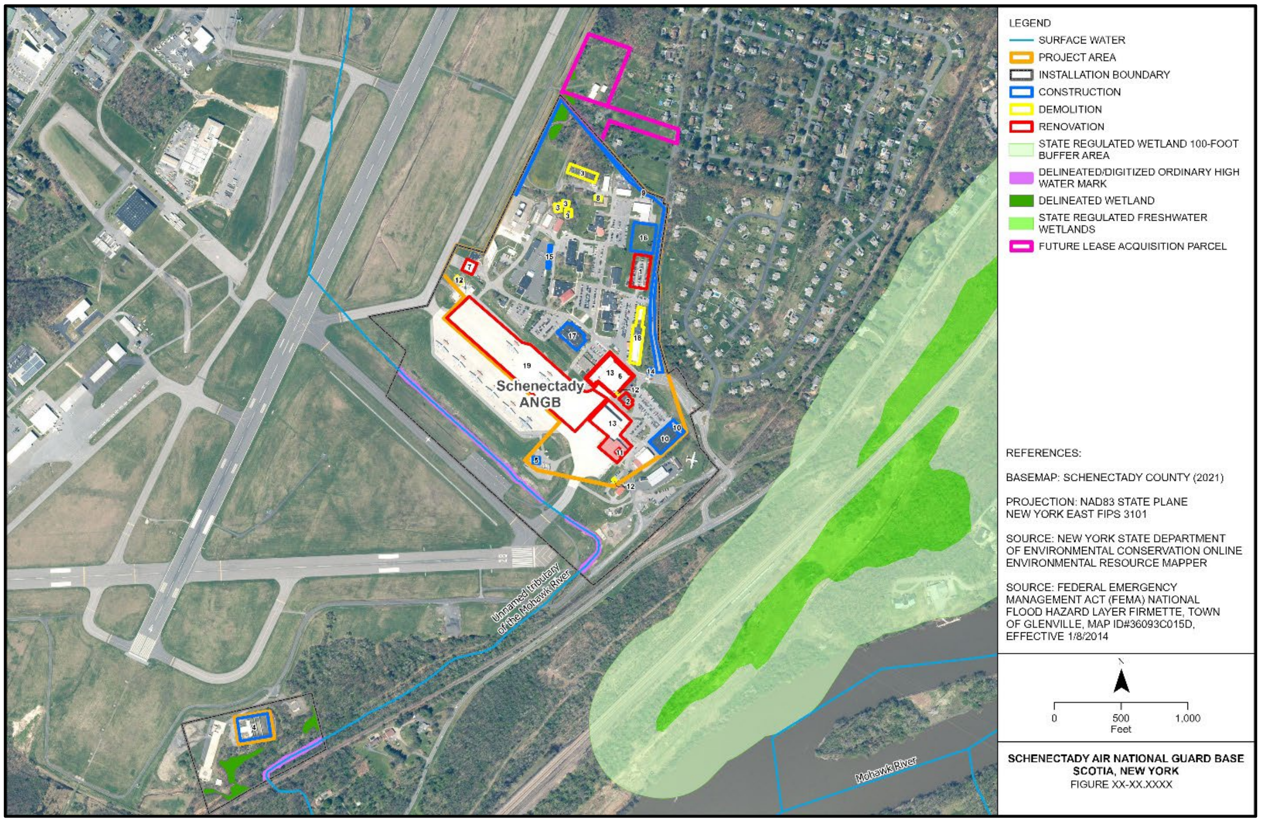

Figure 3-2. Schenectady ANGB Surface Waters and Wetlands

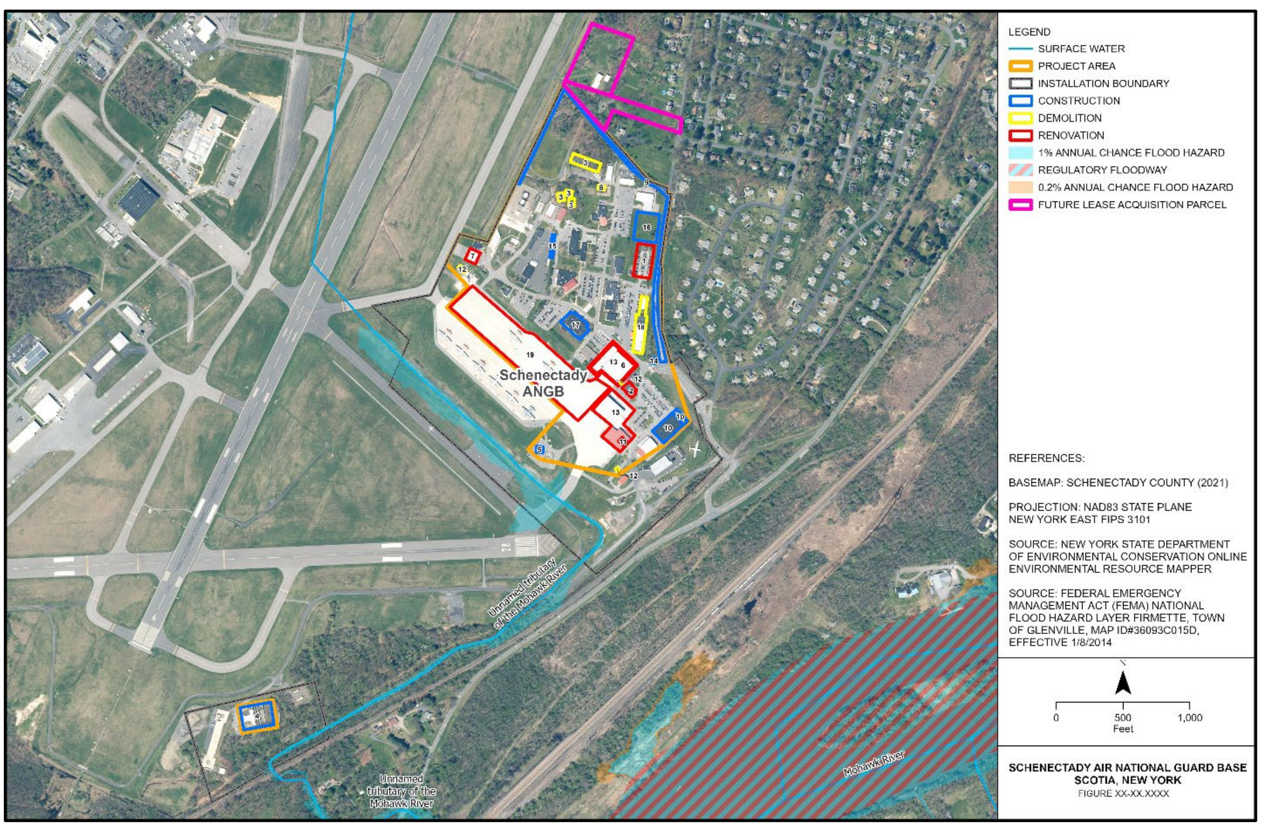

Figure 3-3. Schenectady ANGB Floodplains

Floodplains. A Federal Emergency Management Agency (FEMA) Designated Zone A floodplain is located along the unnamed tributary of the Mohawk River located along the southwestern boundary of the installation and on the southern portion of the small arms training area (westernmost boundary area). Zone A is designated as an area with a 1 percent annual chance of flooding, also referred to as the 100-year flood zone (FEMA 2014). No other FEMA designated flood zones were identified within the base boundary (see **Figure 3-3**).

Stormwater. Stormwater is conveyed through a system of drainage pipes, culverts, and ditches with stormwater outfalls discharging into the unnamed tributary of the Mohawk River located along southwestern and southern base boundary. The State of New York is fully authorized by the USEPA to administer the NPDES permit program. Schenectady ANGB operates under State Pollutant Discharge Elimination System (SPDES) permit NY0023442. In addition to the SPDES permit requirements, the most recent SWPPP for the base is dated April 2023 (NYANG 2023a). Requirements under the SWPPP identify BMPs required to reduce stormwater runoff and resultant impacts on local surface and groundwater quality and quantity.

Drinking Water and Wastewater Utilities. Drinking water is provided by the City of Glenville groundwater wells located approximately five miles west and cross-gradient from the installation (NYANG 2014). Water quality or source water supply contingency issues were not identified (Town of Glenville 2022). Sanitary sewers on the installation discharge to the town of Glenville's wastewater distribution system. There are currently no wastewater pretreatment permits or specific requirements associated with the base's sanitary sewer/wastewater system.

3.6.3 Methodology and Significance Criteria

Criteria for evaluating impacts related to water resources associated with the Proposed Action are water availability, water quality, groundwater recharge, and adherence to applicable regulations. Affects to water resources would be significant if they were to: (1) substantially affect water quality or endanger public health by creating or worsening adverse health hazard conditions; (2) threaten or damage unique hydrologic characteristics; or (3) violate established laws or regulations that have been adopted to protect or manage the water resources of an area.

3.6.4 Impacts

3.6.4.1 PROPOSED ACTION

Short-term, negligible, adverse impacts on water resources would be expected as a result of ground disturbance under the Proposed Action. Construction, renovation, and demolition projects under the Proposed Action would result in ground disturbance that could temporarily increase stormwater runoff and subsequent erosion and sedimentation on the installation and in the surrounding area. Development and implementation of an Erosion and Sediment Control Plan and associated BMPs, such as use of silt fences and construction phasing, could minimize these potential impacts. More than one acre of land would be disturbed during construction and demolition activities; therefore, Schenectady ANGB would be required to obtain a SPDES Stormwater Permit for Construction Activity.

Long-term, minor to moderate, adverse impacts could be expected on surface water and groundwater due to an increase in stormwater runoff and erosion and sedimentation potential associated with the net increase in impervious surfaces under the Proposed Action. New construction for the POL Delivery Transport Bypass Road (Project 9), Vehicle Search Pit (Project 14), Logistics Complex (Project 16), and Operations and Training Facility (Project 17) will result in a net increase in impervious surfaces even after accounting for the demolition of the Troop Camps (Project 3) and Buildings 3 and 15 (Project 18). The increase in impervious surfaces would result in an increase in stormwater runoff that could increase erosion and sedimentation potential in the area and result in a potential increase of pollutant loading into local surface water and groundwater. Impacts would be avoided or minimized to the extent possible through incorporation of LID strategies and implementation of proper stormwater management controls as required under UFC 3-210-10 and EISA Section 438, including revision of the SWPPP with stormwater BMPs, to prevent flooding, erosion and sedimentation, and pollutant loading into local surface and groundwater. No direct impacts on wetlands or floodplains would occur as a result of the Proposed Action. Additionally, the projects would be oriented and designed to include LID and BMPs to avoid potential for indirect effects on these resources.

3.6.4.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, the proposed installation development projects would not be implemented, and the existing conditions discussed in **Section 3.6.2** would remain unchanged. Therefore, no new impacts on water resources would be expected.

3.6.4.3 CUMULATIVE IMPACTS

Development under the Proposed Action, in conjunction with the activities associated with the cumulative projects identified in **Section 3.1**, could result in cumulative long-term, minor to moderate, adverse impacts on water resources. The additional increase in impervious surface on the installation would contribute to increased stormwater runoff and subsequent increased erosion and sedimentation potential and pollutant loading. Impacts would be minimized to the greatest extent possible with the incorporation of LID practices and implementation of proper stormwater management controls, including stormwater BMPs, to minimize flooding, erosion, and sedimentation.

3.7 Biological Resources

3.7.1 Definition of Resource

Biological resources include native or naturalized flora and fauna and the habitats (e.g., grasslands, forests, wetlands) in which they exist. Protected and sensitive biological resources include species listed as threatened, endangered, or proposed under the Endangered Species Act (ESA) (16 USC § 1531 et seq.), as designated by the United States Fish and Wildlife Service (USFWS); migratory birds; bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*); and species that are protected by state laws or programs. Sensitive habitats include areas designated by the USFWS as critical habitat protected under the ESA and sensitive ecological areas designated by other federal or state regulations. Sensitive habitats also include wetlands, plant communities that are unusual or limited in distribution, and important seasonal use areas for wildlife (e.g., migration routes, breeding areas, crucial summer or winter habitats).

Protected Species. The ESA establishes a federal program to protect and recover imperiled species and the ecosystems upon which they depend. The ESA requires federal agencies, in consultation with the USFWS, to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of any listed species nor result in the destruction or adverse modification of designated critical habitat of such species. Under the ESA, "jeopardy" occurs when an action is reasonably expected, directly or indirectly, to diminish the number, reproduction, or distribution of a species so that the likelihood of survival and recovery in the wild is appreciably reduced. An "endangered species" is defined by the ESA as any species in danger of extinction throughout all or a significant portion of its range. A "threatened species" is defined by the ESA as any species likely to become an endangered species in the foreseeable future. The ESA also prohibits any action that causes a "take" of any listed species. "Take" is defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct." Federal species of concern are not protected by law; however, these species could become listed and, therefore, are given consideration when addressing impacts from a proposed action. Listed plants are not protected from take, although it is illegal to collect or maliciously harm them on federal land. The USFWS has primary responsibility for terrestrial and freshwater organisms protected under the ESA.

Under the ESA, critical habitat is designated if the USFWS determines that the habitat is essential to the conservation of a federally threatened or endangered species. In consultation for those species with critical habitat, federal agencies must ensure that their activities do not adversely modify critical habitat to the point that it would no longer aid in the species' recovery.

NYSDEC oversees the protection and management of state-protected, including endangered species, threatened species, and species of special concern, under the Official Compilation of Codes, Rules and Regulations of The State Of New York Title 6 Part 182 (6 CRR-NY182).

Migratory Bird Treaty Act. The Migratory Bird Treaty Act (MBTA) was enacted to protect migratory birds and their parts (i.e., eggs, nest, and feathers). Migratory birds are protected under the MBTA of 1918 (16 USC §§ 703–712) as amended, and EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*. A Memorandum of Understanding (MOU) was executed in September 2014 and extended in May 2022 until both parties deem a revised MOU is required, between DoD and USFWS to promote the conservation of migratory birds. Section 315 of the National Defense Authorization Act for fiscal year (FY) 2003 (Public Law 107-314, 116 Stat. 2458) exempts military readiness activities carried out in accordance with 50 CFR § 21.15 from the prohibition against the incidental taking of migratory birds. Military readiness activities, as defined in the Authorization Act and implementing regulations at 50 CFR § 21.3, include all training and operations of the Armed Forces that relate to combat, and the adequate and realistic testing of military equipment, vehicles, weapons, and sensors for proper operation and suitability for combat use.

EO 13186 requires federal agencies to avoid or minimize impacts on migratory birds listed in 50 CFR § 10.13, *List of Migratory Birds*. If design and implementation of a federal action cannot avoid measurable adverse impacts on migratory birds, EO 13186 requires the responsible agency to consult with the USFWS.

Bald and Golden Eagle Protection Act. Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (BGEPA) of 1940 (16 USC Parts 668–668c), as amended in 1962. The BGEPA prohibits the take, possession, or transport of bald eagles; golden eagles; and the parts (e.g., feathers, body parts), nests, and eggs without authorization from the USFWS. This includes inactive and active nests. “Take,” according to the BGEPA means to pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, destroy, molest, or disturb. Activities that directly or indirectly lead to a “take” are prohibited without a permit from the USFWS.

3.7.2 Existing Conditions

Based on a review of a USFWS Information for Planning and Consultation (IPaC) species list (USFWS 2023a, 2023b) generated for the Proposed Action (in **Appendix F**) with the 2023 installation flora and fauna survey results (HDR-Tehama JV 2024b), the 2023 bat survey results (HDR-Tehama JV 2024c), and the NYSDEC endangered species list (NYSDEC 2023b) the following biological resources conditions are present at Schenectady ANGB.

3.7.2.1 VEGETATION AND FORESTRY

As reported in a 2023 flora and fauna survey of the installation, Schenectady AFB has four vegetation or habitat types: maintained, disturbed, grassland and woodland (HDR-Tehama JV 2024b). Maintained vegetation is the most predominant, covering approximately 109 acres of the installation. These landscaped areas and mowed grasses or lawns include species such as Kentucky bluegrass (*Poa pratensis*), common dandelion (*Taraxacum officinale*), annual bluegrass (*Poa annua*), bitter wintercress (*Barbarea vulgaris*), field madder (*Sherardia arvense*), and ground ivy (*Glechoma hederacea*). Disturbed vegetation occurs in areas used for training purposes, approximately 5 acres. Vegetation present in these disturbed areas include garlic mustard (*Alliaria petiolata*), spotted knapweed (*Centaurea stoebe*), greater clenandine (*Chelidonium majus*), common dandelion, and Virginia strawberry (*Fragaria virginiana*). Approximately 2 acres of grasslands occur in the northernmost extent of the installation and largely consists of Kentucky bluegrass. The remaining undeveloped 16 acres are woodlands. A woodland, within the small arms training area, is dominated by silver maple (*Acer saccharinum*), northern red oak (*Quercus rubra*), and American hornbean (*Carpinus caroliniana*). The woodland located on the main installation is a coniferous-oak woodland dominated by eastern white pine (*Pinus strobus*), northern red oak, and sugar maple (*Acer saccharum*) (HDR-Tehama JV 2024b).

The 2023 flora and fauna survey documented a total of 119 flora species on the installation. Eighty-one of the species are considered native, thirty-five are introduced species, and three species are considered both introduced and native. Twenty-three invasive species and twelve noxious weed species were documented during the survey. Garlic mustard comprised the largest coverage of invasive species occurring in several areas of the installation and is a dominant herbaceous species in woodland areas. Although the NYSDEC has identified 61 state-listed plant species within the County (NYSDEC 2023b), no federal or state-listed plant species were observed on the installation. Therefore, federally and state-listed plant species are not considered further in this analysis.

3.7.2.2 WILDLIFE

The 2023 flora and fauna survey documented 35 wildlife species on the installation: 31 bird and 4 mammal species. Of those documented, 27 birds are considered state protected birds. One wildlife species is considered invasive, the European starling (*Sturnus vulgaris*), and 17 are MBTA-protected (HDR-Tehama JV 2024b, USFWS 2023a, USFWS 2023b). The remaining documented species are game or common species. State protected birds are species protected by New York law from hunting or are game species with protection through open/closed season. Representative wildlife species documented in the survey include the American crow (*Corvus brachyrhynchos*), house sparrow (*Passer domesticus*), common grackle (*Quiscalus quiscula*), white-tailed deer (*Odocoileus virginianus*), eastern gray squirrel (*Sciurus carolinensis*), and the eastern cottontail (*Sylvilagus floridanus*) (HDR-Tehama JV 2024b).

During a 2023 bat survey for Schenectady ANGB, bat roosting habitat, including woodland habitat and manmade structures such as buildings, and 8 bat species were identified as having the potential to be present at Schenectady ANGB: big brown bat (*Eptesicus fuscus),* eastern red bat (*Lasiurus borealis),* hoary bat (*Lasiurus cinereus),* silver-haired bat (*Lasionycteris noctivagans*), little brown bat (*Myotis lucifugus)* northern long-eared bat (*Myotis septentrionalis*), Indiana bat (*Myotis sodalis*), and tricolored bat (*Perimyotis subflavus*) (HDR-Tehama JV 2024c). The 2023 bat survey included mist netting surveys and acoustic surveys in June 2023. No federal or state-listed bat species were observed, captured, or acoustically detected, and were further determined to have probable absence from the installation. Therefore, federal and state-listed bat species are not considered further in this EA.

3.7.2.3 THREATENED AND ENDANGERED SPECIES

The NYSDEC has identified 84 federal and state-listed species in Schenectady County, however, none of these species have been observed or otherwise detected on Schenectady ANGB, including during recent surveys. The USFWS IPaC report indicates 1 federally endangered species (northern long-eared bat [*Myotis septentrionalis]*), no federally threatened species, no species proposed endangered/threatened, 1 candidate species (monarch butterfly [*Danaus plexippus]*), and 17 MBTA-protected Birds of Conservation Concern have the potential to occur within the Schenectady ANGB. There is no designated critical habitat within the installation (NYSDEC 2023a, USFWS 2023a, USFWS 2023b). **Table 3-11** consolidates species information from these reports to present a conservative list of state and federal protected species potentially present on the installation. The 2023 flora and fauna and separate bat surveys on the installation did not observe or detect any federal or state-listed species.

Of the 84 species, there are 6 state-listed amphibian or reptile species and 1 state-listed insect species. While potential habitat exists, there have been no documented occurrences of the spotted turtle, wood turtle, Jefferson salamander, and blue-spotted salamander on the installation; therefore, these species are not discussed further. There have been no documented occurrences, nor is there habitat for the Karner blue butterfly, eastern hog-nosed snake, or timber rattlesnake within the installation; therefore, these species are not discussed further.

Seven of the state-listed bird species within the county have been observed in the region and have the potential to occur on Schenectady ANGB. Of the 7 species documented in the surrounding region, Schenectady ANGB has potential habitat for 6 species; Cooper's hawk (*Accipiter cooperii*); grasshopper sparrow (*Ammodramus savannarum*); red-shouldered hawk

(*Buteo lineatus)*; northern harrier (*Circus hudsonius*); and bald eagle (*Haliaeetus leucocephalus*).While the pied-billed grebe (*Podilymbus podiceps*) has been documented approximately 1.3 miles southwest of the installation, no suitable habitat occurs on the installation. No other state-listed bird species have been observed on or near the installation and therefore will not be discussed further.

The IPaC report for Schenectady ANGB identified one federal candidate species (monarch butterfly [*Danaus plexippus]*) (USFWS 2023a, 2023b). Monarch butterflies are found across North America wherever suitable habitat exists. Schenectady ANGB is located in the monarch butterfly north exterior conservation unit. While not within the core breeding region, breeding of the eastern population of the monarch does occur in the region. Monarchs require milkweed (*Asclepias* spp.) for reproduction because they feed on milkweed during the larval stage and visit milkweed flowers for nectar as adults. No milkweed species were identified during the recent survey; therefore, breeding is unlikely to occur. Because Schenectady ANGB contains flowering species that are potential nectar resources for adult monarchs, suitable habitat exists.

No federally- or state-listed fauna species have been documented during recent natural resources surveys and no state-listed plant species were observed during the 2023 surveys.

3.7.3 Methodology and Significance Criteria

The biological resources analysis discusses impacts from construction, renovation, and demolition activities on vegetation, wildlife, and protected species. For vegetation and wildlife, species have a fundamental need for food, water, and shelter, and can be sustained only where their specific combination of habitat requirements are available. The removal of elements necessary for a species' habitat impacts the individual's ability to exist. Therefore, the framework for analysis of impacts on wildlife and vegetation is based on whether the action would cause habitat displacement resulting in reduced feeding or reproduction, removal of critical habitat for sensitive species, and/or behavioral avoidance of available habitat as a result of noise or human disturbance. The level of impacts on biological resources is based on (1) the importance (i.e., legal, commercial, recreational, ecological, scientific) of the resource, (2) the proportion of the resource that would be affected relative to its occurrence in the region, (3) the sensitivity of the resource to the proposed activities, and (4) the duration of ecological ramifications. Impacts on biological resources are considered significant if species or special habitats are adversely affected over large areas, or if disturbances cause population size or distribution reductions of a species of concern.

Table 3-11. Special Status Species that Potentially Occur on Schenectady ANGB

Common Name	Protection Status 1, 2, 3, 4	Habitat Preferences	Suitable Habitat on the Installation? Yes/No	Documented on the Installation? Yes/No
Insects				
Monarch butterfly (*Danaus plexippus)*	FC	Migratory and journey to central Mexico for the winter. During the summer they are found in grasslands and fields, along roadsides, and in gardens. This species lays eggs on obligate milkweed plants.	Yes	No
Karner blue butterfly (*Plebejus melissa samuelis)*	SE	Occur within the inland pitch-pine-scrub oak barren habitat between Albany and Schenectady, which is locally called the “Pine Bush”. Their larvae feed only on native lupine (Lupinus perennis).	No	No
Amphibians and Reptiles				
Jefferson salamander (*Ambystoma jeffersonianum)*	SOC	Generally associated with lowland swamps and marshes and surrounding uplands with sandy or loamy soils in overgrown pastures	Yes	No
Blue-spotted salamander (*Ambystoma laterale)*	SOC	Generally associated with lowland swamps and marshes and surrounding uplands with sandy or loamy soils in overgrown pastures	Yes	No
Spotted turtle (*Clemmys guttata)*	SOC	Inhabit mostly unpolluted, shallow bodies of water with a soft bottom and aquatic vegetation, small marshes, marshy pastures, bogs, fens, woodland streams, swamps, small ponds, vernal pools, and lake margins; Ponds surrounded by relatively undisturbed meadow or undergrowth.	Yes	No
Timber rattlesnake (*Crotalus horridus)*	ST	Inhabit mountainous or hilly deciduous or mixed deciduous-coniferous forests, often with rocky outcroppings, steep ledges, and rock slides. Dens are often located in accumulations of talus below ledges or in fractures within or underneath ledges or rock outcrops.	No	No
Wood turtle (*Glyptemys insculpta)*	SOC	Live along permanent streams during much of each year but in summer may roam widely overland and can be found in a variety of terrestrial habitats adjacent to streams, including deciduous woods, cultivated fields, and woodland bogs, marshy pastures.	Yes	No
Eastern hog-nosed snake (*Heterodon platirhinos)*	SOC	Openly wooded upland hills, forest edges, fields, woodland meadows, prairies, forest-grassland ecotones, sand plains, barrier islands, fire-managed pinelands, river valleys, riparian zones, and various other habitats with loose soils and amphibian prey. It overwinters in burrows (made by mammal or self-dug) or under rocks of talus slopes.	No	No

Birds				
Cooper's hawk *(Accipiter cooperii)*	SOC	Generally inhabits deep woods, utilizing thick cover both for nesting and hunting	Yes	No
Grasshopper sparrow *(Ammodramus savannarum)*	SOC	Found in hay and open fields, grasslands, and cultivated fields; prefers drier sites with tall dense grassy vegetation.	Yes	No
Eastern whip-poor-will *(Antrostomus vociferus)*	SOC	Prefers forests with open understories in deciduous or mixed deciduous-pine forests, often in areas with sandy soil.	Yes	No
Red-shouldered hawk *(Buteo lineatus)*	SOC	Breeds in moist woodlands, riverine forests, the borders of swamps, open pine woods, and similar habitats.	Yes	No
Northern harrier *(Circus hudsonius)*	ST	Breed and winter in a variety of grassland habitats including open wetlands, marshy meadows, old fields, and croplands	Yes	No
Bald eagle *(Haliaeetus leucocephalus)*	MBTA, BGEPA, ST	Generally, lives within 2.5 miles of the bays, lakes, coast, or other bodies of water. Nest in large, mature, accessible trees, but may also use cliffs or man-made structures.	Yes	No
Pied-billed grebe *(Podilymbus podiceps)*	ST	Breed on ponds and other bodies of slow-moving or still water and have been documented approximately 21.3 miles southwest of the installation.	No	No
Belted kingfisher *(Megaceryle alcyon)*	MBTA	Streams, lakes, bays, coasts; nests in dirt banks.	No	No
Black-billed cuckoo *(Coccyzus erythropthalmus)*	MBTA	Wood edges, groves, thickets. Breeds mostly in deciduous thickets and shrubby places, often on the edges of woodland or around marshes.	Yes	No
Blue-winged warbler *(Vermivora pinus)*	MBTA	Brushy hillsides, bogs, overgrown pastures, stream and woodland edges. Breeds in dry uplands in low shrubbery, brier patches, weed-grown fencerows, and bushy thickets.	Yes	No
Bobolink *(Dolichonyx oryzivorus)*	MBTA	Open grassy fields, especially hay fields.	Yes	No
Canada warbler *(Cardellina canadensis)*	MBTA	Hayfields, meadows. Breeds in damp meadows and natural prairies with dense growth of grass and weeds and a few low bushes.	Yes	No
Chimney swift *(Chaetura pelagica)*	MBTA	Likely preferred nesting in caves and hollow trees; currently uses chimneys as their preferred nesting site. Need a vertical surface for nesting.	Yes	No
Eastern meadowlark *(Sturnella magna)*	MBTA, SPB	Open fields and pastures, meadows, prairies. Breeds in natural grasslands, meadows, weedy pastures, hayfields.	Yes	Yes
Evening Grosbeak *(Coccothraustes vespertinus)*	MBTA	Conifer forests and mixed forests often associated with spruce and fir.	No	No
Golden-winged warbler (*Vermivora chrysoptera)*	MBTA	Open woodlands, brushy clearings, undergrowth. Breeds in brushy areas with patches of weeds, shrubs, and scattered trees.	Yes	No
Lesser yellowlegs *(Tringa flavipes)*	MBTA	Prefers boreal forest and forest/tundra transition areas.	No	No
Pectoral sandpiper *(Calidris melanotos)*	MBTA	Prairie pools, muddy shores, fresh and tidal marshes; in summer, tundra.	No	No

Prairie warbler *(Dendroica discolor)*	MBTA	Brushy slashings, bushy pastures, low pines. Breeds in dry old clearings, edges of forest, and sandy pine barrens with undergrowth of scrub oaks, especially on ends of slopes and ridges.	No	No
Red-headed woodpecker (*Melanerpes erythrocephalus)*	MBTA	Prefers deciduous woodlands, open woods, savannahs, river bottoms, orchards, parks, and grasslands with scattered trees.	Yes	No
Short-billed dowitcher (*Limnodromus griseus)*	MBTA	Mudflats, tidal marshes, pond edges.	No	No
Upland sandpiper (*Bartramia longicauda)*	MBTA	Grassy prairies, open meadows, fields. Nesting in native grassland, with mixture of tall grass and broad-leafed weeds	Yes	No
Wood thrush *(Hylocichla mustelina)*	MBTA, SPB	Prefers upland mesic forests with a moderately-dense shrub layer and trees taller than 45 feet with an open forest floor, moist soil, and leaf litter.	Yes	Yes
Bats				
Northern long-eared bat *(Myotis septentrionalis)*	FE, SE	Summer habitat includes buildings, shutters, under tree bark, or caves; winter hibernacula are often mines or caves. Foraging habitat includes ridges, forested areas, and small streams or ponds.	Yes	No
Little brown bat *(Myotis lucifugus)*	SGCN	Summer habitat includes artificial structures, bat houses, trees, under rocks, and in piles of wood; mines and caves are used in the winter. Foraging habitat includes forests, forest edges, and waterbodies, forests, and forest edges.	Yes	Yes
Indiana bat *(Myotis sodalis)*	FE, SE	Summer habitat includes forested areas that receive direct sunlight under the exfoliating bark of dead or dying, bottomland and floodplain habitats, riparian areas. Winter hibernacula are often mines or caves. Foraging habitat occurs in closed or semi-open forested habitat, riparian areas, and forest edges.	Yes	No
Tricolored bat *(Perimyotis subflavus)*	PFE, SGCN	Summer roosting can include trees and foliage; winter hibernacula are generally caves. Foraging habitat includes waterways and forest edges.	Yes	No

Table Notes:
1 - State status from NYSDEC list of state-protected species potentially present in Schenectady County, NY (NYSDEC 2023b).
2 - Federal status from IPaC Report on species potentially present on the Main Base (USFWS 2023a).
3 - Federal status from IPaC Report on species potentially present on the small arms training area portion of Schenectady ANGB (USFWS 2023b).
4 - Information on bats incorporated from 2023 Bat Survey (HDR-Tehama JV 2024c).

Key: federal candidate (FC); federal threatened (FT); federal endangered (FE); state endangered (SE); state threatened (ST); Species of Concern (SOC); Migratory Bird Treaty Act (MBTA); Bald and Gold Eagle Protection Act (BGEPA); state-protected bird (SPB); species of greatest conservation need (SGCN); proposed federal endangered (PFE)

3.7.4 Impacts

3.7.4.1 PROPOSED ACTION

Vegetation. There would be short- and long-term, negligible to minor, adverse impacts on vegetation from temporary and permanent soil and vegetation disturbance from construction, demolition, and renovation.

Short-term impacts would occur from temporary disturbance of vegetation from the use of heavy equipment and may include trampling and soil compaction. Long-term, minor, adverse impacts would be expected from the permanent removal of vegetation at new construction sites resulting in a net increase of approximately 80,000 SF (1.7 acres) of developed area on the installation. With exception of the woodland habitat within the project areas for Project 3 and Project 9, the remaining 17 projects of the Proposed Action are within areas of the installation that are already highly disturbed from ongoing routine maintenance and landscaping activities. This vegetation is of low ecological value and these impacts would be minor. Project 9 would consist of an estimated 9,700 SF (0.2 acre) of woodland removal and an increase in impermeable surface area. While the woodland areas should remain intact to the degree feasible and be managed to create a diversity of size and age class, the removal of 0.2 acres is considered minor relative to the overall woodland acreage on the installation and in the region. Removal of woodland vegetation would be linear, and the surrounding vegetation would remain intact, resulting in minor impacts. Vegetation disturbance from demolition activity within Project 3 would be temporary in nature and negligibly impact the woodland.

Mitigation for vegetation disturbance would include reseeding and mulching areas impacted by temporary disturbance with native seed in accordance with the erosion and sediment control plan.

Wildlife. Short- and long-term, negligible to minor, adverse impacts on wildlife may occur from increased noise and woodland removal with the proposed construction, renovation, and demolition projects.

Short-term, negligible, adverse impacts on wildlife would occur from noise associated with heavy equipment use. The increase in the frequency or intensity of noise from project construction, renovation, and demolition could temporarily displace wildlife. Wildlife species would be expected to use adjacent suitable habitat during construction and potentially return to the area once the noise from heavy equipment use has ceased. These short-term impacts would be negligible because wildlife inhabiting the project area would be habituated to regular noise disturbances typical of the natural environment at the installations ongoing human activity and training activities. See **Section 3.3** for more detailed discussion on expected noise impacts and the increase in noise from the use of heavy equipment.

Because most of the proposed construction activities would occur on improved or semi-improved areas that do not provide high-quality habitat for wildlife species, permanent loss of potential suitable habitat would result in long-term, minor, adverse impacts on wildlife. Removal of dead trees and vegetation, which provide habitat for birds and bats, would be permanently lost from the removal of woodland vegetation (Project 9). While these project areas have higher-value wildlife habitat, the vegetation removal is considered minor relative to the overall size of the woodland.

BMPs would be used to the extent feasible to mitigate impacts. BMPs could include topping trees or removing dead limbs instead of removing the entire tree, leaving as much trunk height as possible, and creating manmade tree cavities or installing nest boxes. Pre-demolition inspections/walk-throughs would occur to confirm no wildlife, including nesting bats, are present. Strategic replanting of trees in alternative locations could also offset potential impacts. In addition, to the extent feasible, the demolition of structures or large-scale renovations to roof and wall areas would be conducted outside of the little brown bat maternity period (May 1 to August 30).

Special Status Species. No effects on federal or state-listed species are anticipated. **Table 3-11** notes species with the potential to occur on the installation; however, none of the species listed in the table have been documented on the installation and are unlikely to be present.

3.7.4.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, the proposed installation development projects would not be implemented, and the existing conditions discussed in **Section 3.7.2** would remain unchanged. Therefore, no new impacts on water resources would be expected.

3.7.4.3 CUMULATIVE IMPACTS

Development under the Proposed Action, in conjunction with the activities associated with the reasonably foreseeable actions identified in **Section 3.1**, could result in cumulative short- and long-term, minor, adverse impacts on biological resources. The additional construction and demolition on the installation would contribute to increased temporary and permanent soil and vegetation disturbance and permanent loss of potential suitable habitat, adversely impacting wildlife. Impacts would be minimized to the greatest extent possible with the incorporation of reseeding and mulching areas impacted by temporary disturbance with native seed and BMPs aimed at preventing the spread of invasive species. Pre-demolition inspections would be implemented to ensure no wildlife, including bats, have taken up residence in buildings slated for demolition. No cumulative effects on federal or state-listed species are anticipated.

3.8 Transportation and Circulation

3.8.1 Definition of Resource

Transportation and circulation refer to the passage of vehicles through a connected system of roads and highways, varying in size and function. Main roads are principal arterials, such as major streets and interstates, designed to keep traffic moving but often do not provide access directly to surrounding sites. Secondary roads are smaller arterials such as rural roads and connecting surface streets, which provide access to residential and commercial areas, hospitals, and schools. Secondary roads also provide connections between primary and secondary roads.

3.8.2 Existing Conditions

3.8.2.1 REGIONAL AND LOCAL CIRCULATION

Direct access to Schenectady ANGB is provided by Ronald Reagan Way from Maple Avenue, which parallels the eastern boundary of the facility. Maple Avenue is the main arterial county road that supports nearby high traffic volumes. Additionally, there is a railroad crossing on Ronald Reagan Way within 250 feet of its intersection with Maple Avenue. Both existing roads have two-way single-lane traffic with turn lanes.

3.8.2.2 BASE CIRCULATION

The transportation network within Schenectady ANGB is constructed around two primary roads, Ronald Reagan Way and Air National Guard Road, which provide east-west and north-south access respectively. Secondary roads branch off of these primary roads and provide facility access and access to parking within the installation. Additionally, Range Road provides access to the small arms training range located on a separate parcel southwest of the main installation area.

3.8.2.3 ON-BASE PARKING

Schenectady ANGB currently has 40 acres of parking, of which 2.4 acres are restricted by building setback requirements. The installation has 1,069 authorized parking spaces for privately owned vehicles (POVs), which is approximately 82 percent of the current authorized manning of 1,304 (NYANG 2015). Parking at the proposed Project 1 site is currently degraded.

Due to frequent deployments for military and non-military personnel with the 109 AW, there is a requirement for long-term parking on base to allow for deployed personnel to store their vehicles while they are deployed. These long-term spaces allow deployed individuals to store their vehicles while not occupying spaces that are intended for daily use.

3.8.3 Methodology and Significance Criteria

Potential impacts to transportation and circulation are evaluated regarding the anticipated level of disturbance or improvement of the current transportation patterns and systems; deterioration or improvement of exiting levels of service; and changes in exiting levels of transportation safety. Impacts (beneficial or adverse) may arise from physical changes to circulation (e.g., closing, rerouting, or creating roads), construction and demolition activity, introduction of construction-related traffic on local roads, or changes in daily or peak-hour traffic volumes created by either direct or indirect workforce and population changes related to ANG activities. Adverse impacts on roadway capacities would be significant if roads with no history of capacity exceedance were forced to operate at or above their full design capacity.

3.8.4 Impacts

3.8.4.1 PROPOSED ACTION

The Proposed Action would not result in a long-term increase in traffic at Schenectady ANGB. During construction, projects associated with the Proposed Action would result in minor, temporary road closures and route detours. These impacts would be short-term in duration and would not be expected to have a significant Impact on the surrounding transportation network. Implementation of the Proposed Action would reduce POL deliveries that currently utilize roads through the main road of the base. Project 9 would divert POL deliveries around the base through the construction of a perimeter delivery route bypass along the northern perimeter of the installation. The Proposed Action would also result in a decrease in traffic and congestion at the installation's Entry Control Point. Project 14 would provide a vehicle search area near the Entry Control Point of the base. By having this space to conduct security protocols, vehicles that undergo these additional measures would have a location to move to that would free up the Entry Control Point for other vehicles to keep moving through the access facility. Consequently, the Proposed Action would have short-term, minor, adverse and long-term, minor to moderate, beneficial impacts on transportation and circulation in the vicinity of the installation.

3.8.4.2 NO ACTION ALTERNATIVE

Implementation of critical infrastructure changes would not occur at Schenectady ANGB under the No Action Alternative. None of the proposed construction, demolition, or renovation projects would occur. Without the Proposed Action moving forward, existing conditions would continue to be degraded. POL deliveries would continue to use main roadways on the installation and continue to impact overall traffic flow. Vehicles requiring enhanced security screenings at the Entry Control Point would remain in the traffic lanes and continue to impede traffic onto the installation. The No Action Alternative would also result in the continuation of the lack of parking capacity to support personnel and the ongoing mission activities. The base would remain at an insufficient compliance level for DoD's AT/FP security requirements.

3.8.4.3 CUMULATIVE IMPACTS

The Proposed Action when combined with other reasonably foreseeable actions would have short- and long-term, minor, adverse impacts on traffic on Schenectady ANGB. Implementation of the Proposed Action would require delivery of construction materials to and removal of demolition-related debris from project sites. Construction traffic would however comprise only a small portion of the total existing traffic volume on New York Route 50 and Maple Avenue. Additionally, a majority of the heavy vehicles would be driven to and kept on-site for the duration of construction, resulting in a low number of increased trips. Activities under the Proposed Action would be implemented in FYs 2025 through 2030; therefore, the number of concurrent projects and associated potential increases in traffic volume would be distributed over a longer time period, reducing impacts. Further, any increases in traffic volumes on the installation associated with construction activities would be temporary; therefore, implementation of the Proposed Action would have a negligible to minor impact on traffic circulation within the installation.

3.9 Visual Resources

3.9.1 Definition of Resource

Visual resources are defined as the natural and cultural landscape features that make up the aesthetic qualities of an area. Visual resource is a collective term that describes the natural landforms, vegetation, water features, and human modifications within a landscape. These features form the overall impressions that an observer receives of an area or its landscape character. The overall value of a resource is subjective, because the value is placed on it by an individual or group, and each person will have a different perspective based on their life experiences. Generally, aesthetic and visual resource impacts are defined in terms of the extent to which a proposed project's physical characteristics and visibility would perceptibly change the character and quality of the landscape in the area.

3.9.2 Existing Conditions

3.9.2.1 REGIONAL VISUAL CHARACTER

Schenectady County has a largely rural landscape, dominated primarily by undeveloped forests, brushland, and surface water features of varying size. The Mohawk River runs from the northwestern corner of the county, through the eastern portion, and forms the southeastern county boundary. The topography of the county is considered rolling, with level portions that turn into rolling hills (NYANG 2014). The numerous streams and hillsides in the northwest portion of the county are an important visual resource and have helped the county to maintain its agricultural nature. The Mohawk River is considered a primary visual resource for the area; the surrounding hills, woodlands, and alluvial plains along the river are important visual resources. In addition, there are approximately 1,120 acres of publicly owned parks, preserves, open spaces, and natural areas that have been created in and around the town of Glenville, which is located near the base (Town of Glenville 2017). These areas include Sanders Preserve, Indian Meadows Park, Indian Kill Nature Preserve, the Mohawk-Hudson Bike-Hike Trail, Maalwyck Park, Collins Lake and Freedom Park. Visitors to these parks may partake in activities such as swimming, biking, playing sports, and hiking.

3.9.2.2 INSTALLATION

Schenectady ANGB is located just east of the Schenectady County Airport, and the visual environment at the installation is considered industrial. The 109 AW was moved to the Schenectady County Airport in 1949 and construction of military buildings and hangars followed (Town of Glenville 2017). The Mohawk River is located to the southeast of the installation boundary, beyond Maple Avenue and a railroad. The area to the northeast of the installation is a residential area. In general, the area is considered to have a low visual sensitivity, as rural properties in the area have been replaced with residential subdivisions, retail centers, and commercial properties. The installation's visual character is typical of a military establishment with large buildings, aircraft, aircraft hangars, storage areas, and commercial support buildings (NYANG 2014).

3.9.3 Methodology and Significance Criteria

A proposed action or alternative is considered to have an adverse impact on visual quality if changes to a landscape's visual character or the viewer's experience substantially degrades the collective judgment viewers have of visual quality. Adverse changes to a landscape's visual character could include altering or damaging scenic resources, or otherwise degrading the existing visual character of a proposed action area and its surroundings. Adverse changes to the viewers' experiences could include altering or impeding a scenic vista or creating a new source of glare or substantial light that would affect day or nighttime views. A significant or major adverse impact on visual quality would likely occur if a proposed action were to remove or detrimentally alter an existing desired visual resource or existing view that has been designated as being protected by local, tribal, state, or federal authorities, or has traditionally been considered to be an iconic visual resource or view that is central to a region or community's identity.

3.9.4 Impacts

3.9.4.1 PROPOSED ACTION

The Proposed Action would result in short-term, minor, adverse impacts on visual resources from the temporary presence of construction equipment, introduction of new pavement, and the demolition and construction of new buildings that would alter the existing visual landscape of the base. The presence of construction activities would impact the viewshed of the base as well as the immediate vicinity. The base itself is not a primary or visually significant resource, and the construction impacts would be minor and temporary. New facilities would be placed at or near the location of existing structures on the parcels to be visually consistent with existing conditions, and trees would be left in place along the installation boundary to the extent practicable to provide a natural screen. Therefore, the implementation of the Proposed Action is not expected to result in any long-term impacts to visual resources.

3.9.4.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, 109 AW would not implement the Proposed Action and the existing conditions described in **Section 3.9.2** would remain unchanged. No impacts on existing visual conditions would result from the No Action Alternative.

3.9.4.3 CUMULATIVE IMPACTS

Long-term, negligible to minor, cumulative adverse impacts on visual resources would be expected as a result of the Proposed Action in combination with the reasonably foreseeable actions discussed in **Table 3-1**. All renovations and structures would be constructed and operated consistent with the surrounding uses on the installation and in the vicinity. The NVG project would have the greatest potential impact on visual resources, because the land acquisition and proposed NVG training area is located near residential areas. Surrounding residential property owners would experience long-term, adverse impacts as a result of changes to their viewshed from installation of fencing and construction of new facilities on the properties. Impacts on residential properties would be minimized, because the NVG training area would be used at night, with gear that is designed to be undetectable. Because new construction would occur within the already largely developed areas, it would not impact viewsheds, and cumulative adverse impacts on visual resources would be minimal.

3.10 Cultural Resources

3.10.1 Definition of Resource

Cultural resources is an umbrella term for many heritage-related resources defined in several federal laws and EOs. These include the NHPA (1966), Archaeological and Historic Preservation Act (1974), American Indian Religious Freedom Act (1978), Archaeological Protection Act (1979), and the Native American Graves Protection and Repatriation Act (NAGPRA) (1990).

The NHPA focuses on cultural resources such as prehistoric and historic sites, buildings and structures, districts, or other physical evidence of human activity considered important to a culture, subculture, or community for scientific, traditional, religious, or other reason. Such resources might provide insight into the cultural practices of previous civilizations, or they might represent a cultural and religious significance to modern groups. Resources found significant under criteria established in the NHPA are considered eligible for listing in the National Register of Historic Places (NRHP). These are termed “historic properties” and are protected under the NHPA. NAGPRA requires consultation with culturally affiliated Native American Tribes for the disposition of Native American human remains, burial goods, and cultural items recovered from federally owned or controlled lands.

Typically, cultural resources are subdivided into archaeological resources, architectural resources, and resources of traditional, cultural, or religious significance.

Archaeological resources include prehistoric or historic sites containing physical evidence of human activity, but no structures remain standing. These are areas where human activity has measurably altered the Earth or deposits of physical remains are found (e.g., projectile points, bottles).

Architectural resources include standing buildings, bridges, dams, other structures, groups of buildings or structures, or designed landscapes of historic or aesthetic significance. Generally, architectural resources must be more than 50 years old to warrant consideration for the NRHP. More recent buildings or structures might warrant protection if they are of exceptional importance or if they have the potential to gain significance in the future.

Resources of traditional, religious, or cultural significance can include archeological resources, sacred sites, structures, neighborhoods, prominent topographic features, habitat, plants, animals, and minerals considered essential for the preservation of traditional culture.

Under Section 106 of the NHPA, federal agencies must take into account the effect of their undertakings on historic properties and allow the Advisory Council on Historic Preservation a reasonable opportunity to comment. Under this process, the federal agency evaluates the NRHP eligibility of resources within a proposed undertaking’s Area of Potential Effects (APE) and assesses the possible effects of the proposed undertaking on historic properties in consultation with the State Historic Preservation Office (SHPO) and other parties. The APE is defined as the geographic area(s) “within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist.” The APE for the proposed project is defined as the expected area of direct effects from ground disturbance and infrastructure demolition, renovation, and development within the proposed project area and indirect effects such as temporary construction noise and visual effects from changes to the visual landscape. The historic properties evaluated under this EA were identified previously pursuant to Section 110 of the NHPA, which requires federal agencies to establish programs to inventory and nominate cultural resources under their purview to the NRHP.

3.10.2 Historical Context

3.10.2.1 REGIONAL HISTORY

Schenectady ANGB is located in the Mohawk River Valley, which people have utilized for thousands of years, as it provides a direct route between the coast and interior lands. Regional prehistory is divided into four major stages of Native American occupation: Paleoindian (12,000 to 10,000 B.P), Archaic (10,000 to 3500 B.P), Transitional (3500 to 3000 B.P.), and Woodland (3000 B.P to A.D. 1600). Around the time of European contact, the Mohicans controlled areas around the confluence of the Mohawk and Hudson Rivers. The area surrounding present-day Schenectady was in dispute between the Mohawk Iroquois and the Mohicans. The European settlers of Schenectady successfully negotiated for land rights with the four leaders of the Mohawk Iroquois tribe: Cantuque, Sonareetsie, Aiadane, and Sodachdrasse (HDR 2012, Hartgen 2001).

European settlement of the area that is now Schenectady County began around 1661 in the New Netherland Colony on land purchased from the Mohawks. Schenectady was patented as a township in 1684, chartered as a borough in 1765, and incorporated as a city in 1798. Transportation of goods along the Mohawk River by boat and by railroad was key to the development and success of Schenectady as an industrial center. In 1795, Schenectady became home to the first Union College, which was the second college incorporated in the state, and the Schenectady Locomotive Works was founded to produce railroad locomotives in 1848 (French 1860, SCTA 1913). Although Schenectady was predominately rural throughout most of the 19th century, the founding of General Electric in 1892 led to renewed industrial development and population growth in the area.

The Schenectady County Airport, originally known as Port Schenectady, was constructed in 1927 and publicly financed by the sale of $100,000 worth of bonds. U.S. Air Mail service was launched at Port Schenectady in 1928, and the airport was visited by notable fliers such as Charles Lindbergh, Amelia Earheart, and Wiley Post, among others (Hart 1997; HDR 2012).

3.10.2.2 INSTALLATION

In 1951, Schenectady ANGB was established as a fighter aircraft base, and the northeastern taxiway of the Schenectady County Airport was extended to accommodate aircraft from the installation. At the time of construction, the base was largely clustered around the parking apron at the eastern end of the airport. Over time, the base developed in several stages to the northeast and southeast, all tied to specific missions or mission needs. These missions included an airlift mission in 1960, the adoption of an Arctic support mission in 1975, and Antarctic mission in the late 1980s. The last major building phase on the installation occurred from 1995-2000, when aircraft and personnel support-related buildings were constructed for its command of the U.S. Arctic Program mission (HDR 2012).

3.10.3 Existing Conditions

3.10.3.1 REGIONAL CONDITIONS

A records review using the NY SHPO’s Cultural Resources Information System online database identified 46 archaeological and architectural surveys within one mile of the project area. The records review of the Cultural Resources Information System database also revealed that 54 archaeological sites have been recorded within one mile of the project area. Of these sites, 12 are prehistoric and 42 are historic. The prehistoric sites recorded are predominantly located along the banks of the Mohawk River, approximately 0.5 miles northeast and southeast of the project area. No prehistoric sites recorded within a one-mile radius of the project area are considered eligible for inclusion in the NRHP. Historical sites include historical residences, family burial plots, and a school. The dates for these sites range from the 1830s to the 1940s. Also included are two historical sites identified in a 2012 survey of Schenectady ANGB (HDR 2012). None of these sites were determined eligible for inclusion in the NRHP.

3.10.3.2 INSTALLATION

Cultural Resources Surveys. A comprehensive cultural resources survey for Schenectady ANGB was conducted in 2012, with no archaeological sites, buildings, or structures recommended eligible for the NRHP. Two historic-period sites were identified, neither of which were determined to be NRHP-eligible. Due to the paucity of archaeological sites identified both within the boundaries of Schenectady ANGB and within a one-mile radius, the 2012 survey assessed the archaeological potential of the installation as low. This is in part due to a large amount of disturbance from the development of the base (HDR 2012).

The 2012 survey also included an architectural survey with 18 buildings constructed before 1990 being evaluated for NRHP eligibility using criterion A, B, C, and D, and buildings constructed within the last 50 years were evaluated for eligibility under Criterion G. None of the buildings met criterion A through D or requirements of integrity of location, design, setting, materials, workmanship, feeling or association. The buildings were not distinctive, did not retain archaeological integrity, and were not deemed significant per NRHP standards (HDR 2012). There are currently no historically significant buildings or structures present on Schenectady ANGB. Due to the results of this survey, Schenectady ANGB consulted with and received concurrence from the NY SHPO on 23 March 2016 for its Integrated Cultural Resources Management Plan waiver request (NGB 2016

Resources of Traditional, Religious, or Cultural Significance to Native American Tribes. Seven federally recognized tribes in the U.S. have historical affiliations with the land occupied by Schenectady ANGB. At present, no traditional cultural properties or Native American sacred sites are known to occur within or near the project area or Schenectady ANGB.

Schenectady ANGB is coordinating NHPA Section 106 consultation with the NY SHPO and federally recognized tribes under the NHPA for the projects described in **Section 2.2.1**. Through NHPA Section 106 consultation, Schenectady ANGB will identify the APE and identify any historic properties within the APE. Consultation with Tribes is ongoing, and additional information regarding NHPA Section 106 consultation is provided in **Section 3.10.5.1**.

3.10.4 Methodology and Significance Criteria

Adverse effects on cultural resources can include physically altering, damaging, or destroying all or part of a resource; altering characteristics of the surrounding environment that contribute to the resource's significance; introducing visual or audible elements that are out of character with the property or that alter its setting; neglecting the resource to the extent that it deteriorates or is destroyed; or selling, transferring, or leasing the property out of agency ownership (or control) without adequate legally enforceable restrictions or conditions to ensure preservation of the property's historic significance. Both temporary and long-term project effects on cultural resources were considered and evaluated for their potential effects.

3.10.5 Impacts

3.10.5.1 PROPOSED ACTION

Under the Proposed Action, no impacts on cultural resources are anticipated. There are no NRHP-listed or potentially eligible architectural or archaeological resources located on Schenectady ANGB or within the project area. There is the potential for adverse impacts to cultural resources in the event of an inadvertent discovery during construction work that requires vegetation removal or causes subsurface disturbance. To ensure potential impacts on historical and archaeological sites are avoided, Schenectady ANGB initiated Section 106 consultation with the NY SHPO to ascertain potential impacts of the Proposed Action on historic and archaeological sites prior to implementing the Proposed Action. Consultation with seven Native American tribes was initiated in order to identify any traditional religious or cultural resources or historic properties that may be located within the project area. No responses were received during the 30-day scoping period. The notice of availability for the Draft EA is also being sent to the Tribes for comment.

To minimize any potential impact on previously unidentified cultural resources during subsurface work, Schenectady ANGB would implement an “Accidental Discovery” plan in compliance with the NHPA, Archaeological Resources Protection Act of 1979, NAGPRA, American Indian Religious Freedom Act, 36 CFR § 79, and EO 13007, *Indian Sacred Sites*. According to this plan, if prehistoric or historic artifacts with potential associations to Native American, early European, or American settlement are found at any point during construction or operations in the project area, Schenectady ANGB would halt all subsurface-disturbing activities in the vicinity of the discovery. In the event that human remains or other cultural items, as defined by NAGPRA, are uncovered during project construction, all construction work would immediately stop. The Schenectady ANGB Federal Environmental Manager, NY SHPO, and selected Native American Tribes would then be contacted to properly identify and appropriately handle the discovered items in accordance with applicable state and federal laws. The implementation of these measures is designed to ensure that the Proposed Action has “No Adverse Effect” on historic properties or cultural resources.

No additional impacts are anticipated from operation and maintenance of the Proposed Action.

3.10.5.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, 109 AW would not implement the projects, and existing conditions would remain. No intentional ground disturbance would affect archaeological, architectural, or traditional, religious, or culturally significant resources. Therefore, no impacts on cultural resources would be expected.

3.10.5.3 CUMULATIVE IMPACTS

The Proposed Action and other reasonably foreseeable actions on Schenectady ANGB and the surrounding areas would use the Section 106 consultation process to minimize any adverse effects on cultural resources to the extent practicable. No cumulative impacts on any previously identified archaeological or architectural resources have been identified in association with the construction, renovation, or demolition activities of the Proposed Action or other reasonably foreseeable actions. No NRHP-eligible buildings are proposed for demolition, no archaeological sites would be adversely affected, and no known traditional cultural properties or Native American sacred sites are known to occur within the project area.

3.11 Environmental Justice

3.11.1 Definition of Resource

Environmental justice encompasses the principle of fair treatment and meaningful engagement for all individuals regardless of race, color, ethnicity, culture, national origin, income, or educational background with respect to the development, implementation, and enforcement of protective environmental laws, regulations, and policies.

EO 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations*, issued in 1994, mandates that federal agencies assess whether their actions may lead to disproportionately adverse impacts on minority (People of Color) and low-income communities. EO 14096, Revitalizing our Nation's Commitment to Environmental Justice for All, extends the scope of EO 12898 to also include Tribal affiliation and disability within the definition of environmental justice. Assessments are conducted to identify potential disproportionate adverse effects on environmental justice communities of concern from proposed actions and to identify alternatives that might mitigate these effects.

EO 13985 *Advancing Racial Equity and Support for Underserved Communities*, signed in January 2021, directs federal agencies to advance equity, including through outreach initiatives, for all individuals, including those from historically underserved, marginalized, and adversely impacted groups such as people of color, in the face of persistent poverty and inequality.

In addition, due to the heightened vulnerability of children to environmental health and safety hazards, EO 13045, *Protection of Children from Environmental Health and Safety Risks*, was enacted in 1997. The primary objective of this order is to prioritize the recognition and evaluation of environmental health and safety threats specifically impacting children. It aims to guarantee that policies, programs, activities, and standards established by Federal agencies adequately address the risks posed to children in the realm of environmental health and safety.

Data used for the environmental justice and protection of children analyses were collected from the 2022 *Decennial Census* and 2022 *American Community Survey 1-Year Estimates* (U.S. Census Bureau 2022).

3.11.2 Existing Conditions

3.11.2.1 MINORITY AND LOW-INCOME POPULATIONS

The term "minority population" encompasses individuals who self-identify as African American, Asian or Pacific Islander, Native American or Alaska Native, or Hispanic. A minority population is recognized when the proportion of minorities in a given area surpasses 50 percent or is significantly higher than in the broader population of the larger surrounding area.

Based on U.S. Census Bureau data for 2023, the minority population of Schenectady County comprises approximately 31 percent of the total population of Schenectady County, which is substantially lower that the overall minority percentage in the State of New York. Therefore, since the percentage of individuals identifying with one of the mentioned populations is less than 50 percent, Schenectady County is not categorized as an environmental justice population.

Table 3-12 provides regional racial demographics for Schenectady County, New York State, and the United States (U.S. Census Bureau 2022).

Table 3-12. Regional Racial Demographics

Racial Data	Schenectady County	New York State	United States
Total Population	155,079	20,201,249	333,449,281
Minority Population	47,586 (30.7%)	9,057,900 (44.8%)	129,172,008 (38.7%)
Hispanic/Latino	0 (0%)	3,948,032 (19.5%)	62,080,044 (18.6%)
Asian American	8,354 (5.4%)	1,933,127 (9.6%)	19,886,049 (6%)
African American	17,322 (11.2%)	2,986,172 (14.7%)	41,104,200 (12.3%)
Native American/Alaska Native	1,125 (.72%)	149,690 (.72%)	3,727,135 (1.1%)
Native Hawai'ian/Pacific Islander	145 (.09%)	10,815 (.05%)	689,966 (0.2%)
Other/Multi-Racial	24,614 (15.9%)	3,978,096 (19.7%)	61,764,658 (18.52%)
Non-Minority Population	107,493 (69.3%)	11,143,349 (55%)	204,277,273 (61.3%)
Income Data	**Schenectady County**	**New York State**	**United States**
Percent Below Poverty Level	11.3%	14.3%	12.6%
Age Data	**Schenectady County**	**New York State**	**United States**
Population Under 18	33,726 (21.7%)	3,904,005 (19.3%)	72,325,602 (21.7%)

3.11.2.2 GEOGRAPHIC DISTRIBUTION OF LOW-INCOME POPULATIONS

According to the U.S. Census Bureau, a "poverty area" is defined as a Census tract where 20 percent or more of the residents have incomes below the poverty threshold, and an "extreme poverty area" has 40 percent or more below the poverty level. According to U.S. Census Bureau data, in 2022, Schenectady County's poverty rate was estimated at 11.3 percent, and the rate for the State of New York was estimated at 14.3 percent. The Census poverty level is determined by income levels; considering family size, age of the householder, and the number of children under 18 years old; deemed insufficient to meet essential living requirements. The criteria for establishing poverty levels are applied nationally, excluding Alaska and Hawaii, without factoring in the local cost of living. As per the U.S. Census Bureau's definition, Schenectady County does not qualify as a poverty area (U.S. Census Bureau 2022).

3.11.3 Protection of Children from Environmental Health Risks and Safety Risks

To comply with EO 13045, an evaluation was conducted to compare the count of children under the age of 18 in the proximity of the installation with county, state, and national benchmarks. Moreover, specific areas with potentially concentrated child populations, such as schools and child care centers, were identified. The objective of this analysis is to mitigate possible disproportionate health and safety risks to children that could arise from the implementation of the Proposed Action.

3.11.3.1 AGE DISTRIBUTION

The percentage of the Schenectady County population represented by individuals under the age of 18 is slightly higher than the corresponding percentage within the State of New York but falls below the national average. In 2022, approximately 22 percent of the county's total population consisted of children under the age of 18. In contrast, about 19 percent of the state's population and 22 percent of the nation's total population were under the age of 18 (U.S. Census Bureau 2022).

3.11.3.2 SCHOOLS AND CHILD CARE CENTERS

The closest schools and child care centers are situated in the neighboring communities around the installation, such as the Village of Scotia and the Town of Glenville. The Mayfair Nursery School is the nearest school, located just under one mile from Schenectady ANGB, approximately 0.4 miles northeast of the Schenectady County airport's main runway. The Scotia-Glenville Central School is positioned adjacent to the southern part of Schenectady County Airport and is approximately one mile west of the installation.

3.11.3.3 CONSULTATION AND COORDINATION WITH INDIAN TRIBAL GOVERNMENTS AND DOD AMERICAN INDIAN AND ALASKA NATIVE POLICY

Since the initiation of USEPA's EJ program in 1992, that agency has recognized the need to collaborate with both federally recognized tribes and all other indigenous communities.

There are no identified federally recognized tribes that have historical affiliations with the land occupied by Schenectady ANGB. At present, there are also no known traditional cultural properties or Native American sacred sites known to occur within or near Schenectady ANGB. The Mohawk and various Iroquois groups were historically associated with the Mohawk Valley area. Accordingly, ANG consulted with the Saint Regis Mohawk Nation, and the Cayuga, Oneida, Onondaga, Seneca, Tonawanda, and the Tuscarora Nations of New York in addition to coordinating NHPA Section 106 consultation with the New York SHPO for the projects described in **Section 2.** See **Section 3.10 and Appendix B** for details on tribal consultation.

3.11.4 Methodology and Significance Criteria

Impacts on minority, low-income, child, and elderly populations would be considered significant if they are disproportionate and adverse, although such effects may be inherent for child and elderly populations because children and elderly individuals are more vulnerable to levels of noise and air pollution exposure.

3.11.5 Impacts

3.11.5.1 PROPOSED ACTION

Under the Proposed Action, all construction activities would be confined to the limits of Schenectady ANGB. The analysis of each resource has determined that populations, including minority populations and low-income populations beyond the installation boundaries, would not experience significant impacts from the implementation of the Proposed Action. Consequently, there would be no disproportionate impacts on minority or low-income populations. Moreover, the construction proposed would not pose environmental health or safety risks to children, because there are no schools or child care facilities in the proximity of the planned construction activities.

3.11.5.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, no construction, renovation, or demolition would be performed, and environmental justice conditions would be expected to remain as described under affected environment in **Section 2**. Therefore, there would be no additional impacts to regional or location minority populations, low-income populations, or children under the No Action Alternative.

3.11.5.3 CUMULATIVE IMPACTS

The Proposed Action at Schenectady ANGB, when considered with projects listed in **Table 3-1**, would not be expected to impact environmental justice communities or children. Therefore, no cumulative impacts to the health or safety of environmental justice populations or children are anticipated under the Proposed Action at Schenectady ANGB.

3.12 Hazardous Materials and Wastes, Toxic Substances, and Other Contaminants

3.12.1 Definition of Resources

Hazardous materials and hazardous wastes are related terms that are defined in accordance with the governing authorities (USEPA, U.S. Department of Transportation, and OSHA) that regulate the handling and management of these materials over their life cycles.

Hazardous wastes are defined by the Resource Conservation and Recovery Act (RCRA) at 42 USC § 6903(5), as amended by the Hazardous and Solid Waste Amendments, as “a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may (A) cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (B) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed.”

Certain types of common hazardous wastes are subject to special management provisions intended to ease the management burden and facilitate the recycling of such materials. These are called universal wastes and the standards for managing them are established in 40 CFR § 273. Wastes covered under the universal waste standards include batteries, herbicides and pesticides, mercury-containing equipment, lamps, and aerosol cans. Respectively, herbicides and pesticides are chemical substances that are toxic and used to control harmful plants and insects and other pest species.

Special hazards are those substances that might pose a risk to human health and are addressed separately from other hazardous substances. Special hazards include ACM, lead-based paint (LBP), and polychlorinated biphenyls (PCBs), all of which are typically found in buildings and utilities infrastructure. The USEPA is given authority to regulate these special hazards by the Toxic Substances Control Act, 15 USC § 53.

The Comprehensive Environmental Response, Compensation, and Liability Act governs response or cleanup actions to address releases of hazardous substances, pollutants, and contaminants into the environment. The Defense Environmental Restoration Program was formally established by Congress in 1986 to provide for the cleanup of DoD property at active installations, Base Realignment and Closure installations, and formerly used defense sites throughout the U.S. and its territories. The two significant program areas under the DoD Environmental Restoration Program are the IRP and the Military Munitions Response Program (MMRP). The IRP addresses contaminated sites, while the MMRP addresses nonoperational military ranges and other sites suspected or known to contain unexploded ordinance (UXO), discarded military munitions, or munitions constituents. When no further remedial action is necessary for a given site, the site is closed, and it no longer represents a threat to human health.

DoD is currently investigating potential effects related to chemicals known as per- and polyfluoroalkyl substances (PFAS). This family of chemicals was developed in the 1940s and includes the chemicals perfluorooctane sulfonate and perfluorooctanoic acid. Aqueous film-forming foam (AFFF) containing PFAS was developed in the early 1960s and used at airports, municipal fire stations, petroleum facilities, and in other industries in the U.S. to extinguish hydrocarbon-based fires effectively. Fire fighters at military installations regularly used AFFF in emergencies or were trained with AFFF in an unconfined manner.

3.12.2 Existing Conditions

3.12.2.1 HAZARDOUS MATERIALS, HAZARDOUS WASTES, AND PETROLEUM PRODUCTS

Hazardous materials and petroleum products typically used at the installation include fuels, hydraulic fluid, antifreeze, aqueous brake solution, solvents, lead acid batteries, paints, corrosives, pesticides, and cleaners. The installation's SWPPP establishes BMPs for activities and areas on the installation that have a potential for stormwater pollution (AECOM 2023a). One such BMP is maintaining a hazardous materials management system that uses waste characterization procedures to ensure that toxic chemicals do not enter the solid waste stream (NYANG 2023a). The installation's Spill Prevention, Control and Countermeasure (SPCC) Plan establishes and implements procedures that meet the requirements of 40 CFR § 112, Oil Pollution Prevention (AECOM 2023b; NYANG 2018).

The installation's Hazardous Waste Management Plan (HWMP) outlines procedures for the management of hazardous wastes from identification, accumulation, off-site transportation, and disposal. Schenectady ANGB produces between 100 and 1000 kilograms of hazardous waste per month and is therefore a RCRA Small Quantity Generator (SQG) (USEPA identification number NY3570025897) (NYANG 2023a). Schenectady ANGB also complies with New York State hazardous waste regulations for SQGs. There are 26 satellite accumulation points (SAPs) and one central accumulation area at Schenectady ANGB. Hazardous wastes generated at the installation include used motor oil, waste fuels, filters, rags, petroleum distillates, paint, paint strippers and thinners, carbon removers, hydraulic fluids, batteries, light bulbs, cleaning solvents, medical wastes, medical gloves, and needles which are collected and disposed of by licensed contractors (NYANG 2023a). The central accumulation area is at Building 46, and SAPs are located in Buildings 2, 2A, 7, 8, 12, 18, 28, 29, 35, and 46; some of which are proposed for renovation under the Proposed Action.

According to the installation's Asbestos Management Plan, 37 facilities on the installation were surveyed for the presence of ACM, to document the current condition of the ACM, and to assess the current and potential hazards of exposure to ACM. The survey results and recommended actions for each of the nine buildings with ACM are outlined in the Asbestos Management Plan. The survey was a nondestructive survey, where areas such as walls were not penetrated, and roofing materials were not sampled due to the type of destructive sampling that would be required. Therefore, facilities involved in renovation or demolition would require additional sampling for the presence of ACM. Buildings 1, 2, 3, 12, and 19, which are included in the Proposed Action, are documented to contain the presence of ACM (NYANG 1996). Based on the year of construction of the buildings associated with the Proposed Action, they are assumed to contain ACMs.

A comprehensive LBP survey has not been conducted at Schenectady ANGB; however, paint samples are collected at the installation when facilities undergo any construction activities, including maintenance, repair, or demolition, which may result in the release of LBP. LBP was used as a primer for metals and maintenance painting into the 1970s. In 1973, the Consumer Product Safety Commission established a maximum lead content in paint of 0.5 percent by weight; in 1978, it was lowered to 0.06 percent. It is assumed that buildings painted prior to 1978 contain LBP. Therefore, most of the buildings associated with the proposed renovation and demolition projects under the Proposed Action are assumed to contain LBP (NYANG 2015).

3.12.2.2 STORAGE TANKS AND OIL-WATER SEPARATORS

There are ten aboveground storage tanks (ASTs) at Schenectady ANGB. One contains diesel, one contains gasoline, four contain used oil/fuel, and four contain jet fuel. All of the ASTs on the installation are inspected on a monthly basis. ASTs associated with used waste oil are at the location of Buildings 8 and 12 (Projects 13 and 2, respectively). Building 12 also has a 250-gallon oil-water separator that discharge to the sanitary sewer system. Oil-water separators are located near the fire station (Project 7) and Building 8 (Project 13) (NYANG 2023a).

The two former underground storage tanks (USTs) on the installation, which were used for storage of diesel fuel and gasoline, were removed in 2014 (NYANG 2018). Historically, Schenectady ANGB used other USTs for fuel oil; however, in the 1970s, the installation began using natural gas and many of the USTs were removed. Because there are no longer USTs present, they are not discussed further in this EA.

3.12.2.3 INSTALLATION RESTORATION PROGRAM

A total of six IRP sites have been identified at Schenectady ANGB. By June 2022, NYSDEC concurred with the No Further Action decisions on all six sites.

There are no identified MMRP sites at Schenectady ANGB (FPM Remediations 2012). Therefore, are no active IRP or MMRP sites are within the project area and none of the projects under the Proposed Action would have the potential to impact or be impacted by the active IRP sites. Additionally, PFAS investigations are ongoing at Schenectady ANGB with a Preliminary Assessment, Site Inspection, and Site Inspection Addendum completed at the installation (BB&E 2016; AECOM 2020). It has been recommended that seven Potential Release Locations be investigated during the Remedial Investigation, to include Building 12 (Project 2), Hangar 1/Building 2 and Hangar 7/Building 7 (Project 13), the apron (Project 19), and IRP Site 3.

3.12.2.4 HERBICIDES AND PESTICIDES

Numerous types of herbicides and pesticides have been used and are currently used at Schenectady ANGB. Pesticides have been used to control pests such as bees, ants, spiders, flies, and mice. Herbicides are used to control weeds such as crab grasses, dandelions, and poison ivy. The pesticides and herbicides are applied as needed by certified contractors and only small quantities (i.e., retail-size containers) of these substances are stored on installation (NYANG 2006).

3.12.3 Methodology and Significance Criteria

Impacts on hazardous materials and wastes would be considered adverse if a proposed action resulted in noncompliance with applicable federal or state regulations or increased the amounts of hazardous materials and petroleum products procured and hazardous wastes generated beyond current management procedures and capacities. Impacts would also be considered adverse if a proposed action resulted in the disturbance of ACM, LBP, PCBs, or contaminated sites resulting in negative effects on human health or the environment. Adverse impacts also result from actions that make it more difficult or costly to remediate environmental contamination sites or discoveries that may impact on-site construction.

3.12.4 Impacts

3.12.4.1 PROPOSED ACTION

Short-term, negligible to minor, adverse impacts from the use of hazardous materials and petroleum products could occur. Construction and demolition would require the use of certain hazardous materials such as concrete, asphalt, sealants, paints, welding gases, solvents, and preservatives. Petroleum products, such as diesel, gasoline, oil, antifreeze, solvents, and hydraulic fluids, would be used in construction vehicles and other heavy equipment. Hazardous materials could be used for minor equipment servicing and repair activities. Should any hazardous materials or petroleum products be released into the environment, the installation's SPCC Plan would be adhered to. The quantities of hazardous materials and petroleum products used during construction would be minimal, and their use would be short in duration. Contractors would be responsible for the storage and use of these materials in accordance with federal, state, and local laws and regulations. All hazardous materials and petroleum products would be stored in containers that meet federal, state, and local requirements and handled in accordance with the installation's SWPPP and SPCC Plan. Secondary containment systems would be used as necessary to prevent or limit accidental spills. Additionally, all construction equipment would be maintained according to the manufacturer's specifications and drip mats would be placed under parked equipment as needed. The ASTs located near Projects 2, 5, and 9, would be avoided or relocated prior to construction and renovation activities.

Short-term, negligible to minor, adverse impacts from the generation of hazardous and petroleum wastes accumulation could occur. Construction and demolition would involve the use of hazardous material and petroleum products, which would result in the generation of hazardous wastes and used petroleum products. Implementation of BMPs and environmental protection measures outlined in the installation's SPCC Plan would reduce the potential for an accidental release of these materials. Additionally, all hazardous and petroleum wastes generated would be handled and disposed of in accordance with the installation's HWMP and federal, state, and local regulations.

Dependent on the location of the ASTs and SAPs, in relation to the proposed facility expansion and renovations under the Proposed Action, relocation of the accumulation areas and storage containers may be necessary prior to any construction activities.

Short-term, minor, adverse impacts would result from the potential for exposure to ACM, LBP, and universal wastes. Toxic substances such as ACM and LBP are known to exist in some of the buildings being renovated or demolished under the Proposed Action. Additionally, based on the years of construction, the buildings proposed for renovation or demolition are assumed to contain ACM, LBP, and universal wastes such as light bulbs. The installation's Asbestos Management Plan mandates that all facilities be inspected for the presence of ACM prior to renovation, repair, or demolition. Prior to renovation or demolition, surveys for ACM and LBP would be completed, as necessary, by a certified contractor to ensure that appropriate measures are taken to reduce the potential for exposure to, and release of, toxic substances. Material potentially containing ACM or LBP should be tested prior to its removal and offsite disposal by a contractor. Contractors would wear appropriate personal protective equipment and adhere to all federal, state, and local regulations as well as installation's ACM and LBP Management Plans. All ACM- and LBP-contaminated debris would be disposed of at a USEPA-approved landfill. New construction is not likely to include the use of these substances because federal policies and laws limit their use in building construction applications. All universal waste would be handled and disposed of in accordance with the installation's HWMP.

Renovation and demolition of buildings containing toxic substances would result in long-term, minor, beneficial impacts on toxic substances from the reduced potential for future human exposure to and reduced amounts of ACM and LBP to maintain at Schenectady ANGB. Long-term, negligible to minor, adverse impacts would result from operations and maintenance of newly constructed and renovated facilities. When necessary, pesticides and herbicides would be applied. Additionally, there is potential for oil leaks and spills related to the storage of vehicles in the new Vehicle Operations Covered Parking (Project 15), which would be minimized by following the installation's SWPPP and SPCC Plan and utilizing spill pans.

Construction and demolition activities may require the temporary use of ASTs onsite for power generation or equipment fuel, their use and maintenance would comply with applicable federal, state, and local laws and regulations to include secondary containment. ASTs would be used temporarily and removed upon project completion. In the event of a spill, the contractor would follow the appropriate measures outlined in the installation's SPCC Plan.

Should unknown, potentially hazardous wastes be discovered or unearthed during construction and demolition, construction contractors would immediately cease work, contact appropriate installation personnel, and await sampling and analysis results before taking any further action. Any unknown wastes determined to be hazardous would be managed or disposed of in accordance with applicable laws and regulations.

3.12.4.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, the 109 AW would not implement the projects under the Proposed Action. Additional quantities of hazardous materials, petroleum products, and hazardous wastes associated with construction and demolition would not be used, stored, or generated, and the management of hazardous materials, petroleum products, and hazardous wastes would not change. Toxic substances in the buildings proposed for renovation and demolition would remain and would continue to require maintenance by installation personnel resulting in continued long-term, negligible to minor, adverse impacts. Existing facilities would remain in use and the existing conditions for hazardous materials and wastes would remain unchanged.

3.12.4.3 CUMULATIVE IMPACTS

The Proposed Action and the other reasonably foreseeable actions on Schenectady ANGB and surrounding areas would be expected to have short-term, negligible to minor, adverse impacts as a result of use and storage of hazardous materials and petroleum products, as well as the generation of hazardous wastes during construction activities. All hazardous material and petroleum product use and storage would be conducted in accordance with existing installation management plans and all federal, state, and local laws and regulations. Hazardous and petroleum wastes would be contained and disposed of in accordance with procedures already in place at the installation as well as all federal, state, and local laws and regulations.

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4. Findings and Conclusions

4.1 Summary of Environmental Impacts

Table 4.1 summarizes the impacts comparison for each alternative analyzed in the EA.

Table 4-1. Summary of Environmental Consequences

Resource	Proposed Action Alternative	No Action Alternative
Safety	Short-term, negligible, adverse impacts to safety as a result of construction, renovation, and demolition activities that would present increased risk to workers. Long-term, minor, beneficial impacts are anticipated on safety and traffic flow.	Long-term, minor, adverse impacts on traffic and safety would be expected.
Air Quality	Short- and long-term, negligible to minor, adverse impacts would occur during construction and operations.	No change from the existing condition.
Noise	Short-term, minor, adverse impacts would occur on some nearby sensitive receptors during construction.	No change from the existing condition.
Land Use	Although some project types may differ from the existing land use category at their proposed location, land uses would generally be considered compatible. Long-term, minor, adverse, and moderate, beneficial impacts on land use would be expected overall.	Continued land use deficiencies and long-term, minor to moderate, adverse impacts on land use would be expected.
Geological Resources	Short- and long-term, negligible to minor impacts on soils, topography, and geology associated with ground disturbances and compaction.	No change from the existing condition.
Water Resources	Short- and long-term, negligible, adverse impacts on water resources from increases in stormwater runoff and subsequent erosion and sedimentation associated with construction and a net increase in impervious surfaces.	No change from the existing condition.
Biological Resources	Short- and long-term, minor, adverse impacts on biological resources from construction and demolition due to temporary and permanent soil and vegetation disturbance and permanent loss of potential suitable habitat. No cumulative effects on federal or state-listed species are anticipated.	No change from the existing condition.
Transportation and Circulation	Short-term, minor, adverse impacts due to construction activities and long-term, minor to moderate, beneficial impacts on transportation and circulation in the vicinity of the installation from roadway and inspection enhancements.	Continued long-term, minor to moderate, adverse impacts on transportation and circulation.
Visual Resources	Short-term, minor, adverse impacts on visual resources from the temporary presence of construction equipment, introduction of new pavement, and the demolition and construction of new buildings. No long-term impacts are anticipated.	No change from the existing condition.
Cultural Resources	No cumulative impacts on any previously identified archaeological or architectural resources have been identified. No NRHP-eligible buildings are proposed for	No change from the existing condition.

	demolition, no archaeological sites would be adversely affected, and no known traditional cultural properties or Native American sacred sites are known to occur within the project area.	
Environmental Justice	No disproportionate impacts on minority or low-income populations, nor environmental health or safety risks to children.	No change from the existing condition.
Hazardous Materials and Wastes, Toxic Substances	Short-term, negligible to minor, adverse impacts as a result of use and storage of hazardous materials and petroleum products, as well as the generation of hazardous wastes during construction activities.	No change from the existing condition.

4.2 Best Management Practices

The following BMPs would be implemented to the extent practicable to reduce potential adverse environmental and social impacts under the Proposed Action:

Air Quality:

- Construction activities would incorporate BMPs and environmental control measures (e.g., wetting the ground surface) to minimize fugitive dust emissions.
- Work vehicles would be well-maintained and could use diesel particulate filters to reduce emissions of criteria pollutants.

Noise:

- The use of exhaust mufflers can reduce the noise level of construction vehicles and heavy equipment up to 10 dBA.
- Phasing of construction would minimize potential compounded noise impacts from multiple concurrent construction, renovation, or demolition activities.

Geological Resources:

- Development and implementation of an Erosion and Sediment Control Plan (ESCP), project-specific and the installation-wide SWPPPs, incorporation of LID practices, and stormwater management BMPs, such as silt fences and construction phasing, could reduce impacts from and on stormwater runoff and subsequent erosion and sedimentation potential.

Water Resources:

- Similar to Geological Resources, development and implementation of an ESCP, project-specific and the installation-wide SWPPPs, incorporation of LID practices, and stormwater management BMPs, such as silt fences and construction phasing, could reduce impacts from and on stormwater runoff and subsequent erosion and sedimentation potential or pollutant loading.

Biological Resources:

- BMPs could include topping trees or removing dead limbs instead of removing the entire tree, leaving as much trunk height as possible, creating artificial cavities (nest boxes), and drilling into trees to replace cavities lost during tree removal.
- Pre-demolition biological surveys could be implemented to ensure no wildlife, including bats, have taken up residence in buildings slated for demolition.
- Strategic replanting of trees in alternative locations could offset potential impacts.

Hazardous Materials and Wastes, Toxic Substances, and Other Contaminants:

- Prior to renovation or demolition, surveys for ACM, LBP, and PCBs would be completed, as necessary, by a certified contractor to ensure that appropriate measures are taken to reduce the potential for exposure to, and release of, toxic substances. Contractors would wear appropriate personal protective equipment and adhere to all federal, state, and local regulations as well as installation’s ACM and LBP Management Plans. All ACM- and LBP-contaminated debris would be disposed of at a USEPA-approved landfill.
- Use of secondary containment for temporary ASTs onsite for power generation or equipment fuel during construction activities and adherence applicable federal, state, and local laws and regulations would minimize potential impacts. In the event of a spill, the contractor would follow the appropriate measures outlined in the installation’s SPCC Plan.
- All hazardous and petroleum wastes generated would be handled and disposed of in accordance with the installation’s HWMP and federal, state, and local regulations.
- All hazardous materials and petroleum products would be stored in containers that meet federal, state, and local requirements and handled in accordance with the installation’s SWPPP and SPCC Plan.
- Secondary containment systems would be used as necessary to prevent or limit accidental spills. Additionally, all construction equipment would be maintained according to the manufacturer’s specifications and drip mats would be placed under parked equipment as needed.
- Should unknown, potentially hazardous wastes be discovered or unearthed during construction and demolition, construction contractors would immediately cease work, contact appropriate installation personnel, and await sampling and analysis results before taking any further action. Any unknown wastes determined to be hazardous would be managed or disposed of in accordance with applicable laws and regulations.
- Maintaining a hazardous materials management system that uses waste characterization procedures to ensure that toxic chemicals do not enter the solid waste stream could reduce potential impacts.

- The potential for oil leaks and spills related to the storage of vehicles in the new Vehicle Storage Lot (Project 15) would be minimized by following the installation's SWPPP and SPCC Plan and utilizing spill pans.

4.3 Required Permits and Consultations

The following permits would be obtained prior to construction activities:

•• A NPDES Stormwater Permit for Construction Activity required for any potential land disturbance greater than one acre.

Additionally, this EA is being prepared concurrently with an informal consultation under Section 7 of the ESA and Section 106 of the NHPA; consultations are currently ongoing.

4.4 Conclusions

Based on the analysis presented in the EA, implementation of the Proposed Actions would not result in significant adverse impacts on any of the resources analyzed within this document, and no further analysis or documentation, such as the preparation of an Environmental Impact Statement, is required.

All practical and reasonable means would be employed by the 109 AW and NGB to minimize the potential adverse impacts on the human and natural environment. Therefore, a FONSI is warranted.

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Key NEPA Environmental Study Components

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Appendix A – Key NEPA Environmental Study Components

National Environmental Policy Act

NEPA of 1969 (42 United States Code (USC) §§ 4321–4347) is a federal statute requiring the identification and analysis of potential environmental impacts associated with proposed federal actions before those actions are taken. The intent of NEPA is to help decision makers make well-informed decisions based on an understanding of the potential environmental consequences, and take actions to protect, restore, or enhance the environment. In July 2020, the Council on Environmental Quality (CEQ) made wholesale revisions to the NEPA regulations and is now engaged in a comprehensive review of the 2020 rule pursuant to EO 13990, *Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis* (January 20, 2021). CEQ announced a phased approach to amending the NEPA regulations and on April 20, 2022, issued the Phase 1 Final Rule that went into effect on May 20, 2022. The Phase 1 Final Rule finalized a narrow set of changes to generally restore regulatory provisions that were in effect before being modified by the 2020 rule.

This EA was prepared in accordance with NEPA; the July 16, 2020, version of the CEQ NEPA regulations (85 *Federal Register* 43304–43376); the May 2022 amendments of the 2020 CEQ NEPA regulations (85 *Federal Register* 23453–23470); and the Department of the Air Force (DAF) procedures for implementing NEPA per the Environmental Impact Analysis Process (EIAP; at 32 Code of Federal Regulations [CFR] § 989). The EA analyzes the potential for environmental impacts associated with the Proposed Action and alternatives, including the No Action Alternative, and will assist in determining whether a FONSI can be prepared, or an Environmental Impact Statement is required (see **Section 4**).

Air Conformity Requirements

The Clean Air Act (CAA; 42 USC §§ 7401–7671, as amended) provided the authority for the U.S. Environmental Protection Agency (UESPA) to establish nationwide air quality standards and regulate emission of toxic air pollutants to protect public health and welfare. Federal standards, known as the National Ambient Air Quality Standards (NAAQS), were developed for six criteria pollutants. The CAA also requires that each state prepare a State Implementation Plan (SIP) for maintaining and improving air quality and eliminating violations of the NAAQS. Federal agencies are required to determine whether their undertakings are in conformance with the applicable SIP and demonstrate that their actions will not cause or contribute to a new violation of the NAAQS; increase the frequency or severity of any existing violation; or delay timely attainment of any standard, emission reduction, or milestone contained in the SIP.

Water Resources Regulatory Requirements

The Clean Water Act (CWA) of 1977 (33 USC § 1251 *et seq*.) regulates pollutant discharges that could affect aquatic life forms or human health and safety. Section 404 of the CWA and EO 11990, *Protection of Wetlands*, regulate development activities in or near streams or wetlands. Section 404 also requires a permit from the U.S. Army Corps of Engineers (USACE) for dredging and filling in wetlands. EO 11988, *Floodplain Management*, requires federal agencies to take action to reduce the risk of flood damage; minimize the impacts of floods on human safety, health, and welfare; and restore and preserve the natural and beneficial values served by floodplains. The Energy Independence and Security Act Section 438 requires that federal facility projects greater than 5,000 square feet (SF) must "maintain or restore, to the maximum extent technically feasible, the predevelopment hydrology of the property with regard to the temperature, rate, volume, and duration of flow."

Cultural Resources Regulatory Requirements

The National Historic Preservation Act (NHPA) of 1966 (16 USC § 470) established the National Register of Historic Places (NRHP) and the Advisory Council on Historic Preservation, which outlined procedures for the management of cultural resources on federal property. Cultural resources can include archaeological remains, architectural structures, and traditional cultural properties such as ancestral settlements, historic trails, and places where significant historic events occurred. The NHPA requires federal agencies to consider potential effects on cultural resources that are listed, nominated to, or eligible for listing on the NRHP; designated a National Historic Landmark; or valued by modern Native Americans for maintaining their traditional culture. Section 106 of NHPA requires federal agencies to consult with the appropriate State Historic Preservation Office (SHPO) if their undertakings might affect such resources. Protection of Historic and Cultural Properties (36 CFR § 800) provides an explicit set of procedures for federal agencies to meet their obligations under the NHPA, which includes inventorying of resources and consultation with SHPO. The Archaeological Resources Protection Act of 1979 (16 USC §§ 470aa-mm) was enacted to protect archaeological resources and sites on public and Native American lands in addition to encouraging cooperation and exchange of information between governmental authorities, professionals, and private individuals. The act establishes civil and criminal penalties for destroying and altering cultural resources. Further, NEPA Section 101 (42 USC § 4331) requires that federal agencies "preserve important historic, cultural, and natural aspects of our national heritage." Accordingly, the NGB and installation leadership are engaged in early coordination with the SHPO regarding the proposed facility and infrastructure improvement actions at Schenectady ANGB.

EO 13007, *Indian Sacred Sites*, directs federal land[1] managing agencies to accommodate access to, and ceremonial use of, Indian sacred sites[2], provided that the tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site.

The American Indian Religious Freedom Act (42 USC § 1996 et seq.) established federal policy to protect and preserve the rights of Native Americans to believe, express, and exercise their traditional religions, including providing access to sacred sites. The Native American Graves Protection and Repatriation Act (NAGPRA) (25 USC §§ 3001–3013) requires consultation with

[1] Any land or interests in land owned by the United States, including leasehold interests held by the United States, except Indian trust lands

[2] Any specific, discrete, narrowly delineated location on federal land that is identified by an Indian tribe [an Indian or Alaska Native tribe, band, nation, Pueblo, village, or community that the Secretary of the Interior acknowledges to exist as an Indian tribe pursuant to Public Law No. 103-454, 108 Stat. 4791, an "Indian" refers to a member of such an Indian tribe] or Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion

Native American tribes prior to excavation or removal of human remains and certain objects of cultural importance.

Additionally, DoD Instruction 4710.02, *DoD Interactions with Federally-Recognized Tribes*, assigns responsibilities and provides procedures for DoD interactions with federally recognized tribes in accordance with EO 13175, *Consultation and Coordination with Indian Tribal Governments*. This DoD Instruction requires that all DoD components shall consult with tribes whenever proposing an action that may have the potential to significantly affect protected tribal resources, tribal rights, or Indian lands. DAF Instruction 90-2002, *Interactions with Federally Recognized Tribes*, implements the Air Force program in accordance with DoD Instruction 4710.02, and contains requirements that must be followed as part of analyzing proposed actions.

Endangered Species Act

The Endangered Species Act (ESA) of 1973 (16 USC §§ 1531–1544, as amended) established measures for the protection of plant and animal species that are federally listed as threatened or endangered, and for the conservation of habitats that are critical to the continued existence of those species. Per Section 7 of the ESA, federal agencies must evaluate the effects of their proposed actions through a set of defined procedures, which can include the preparation of a Biological Assessment and can require formal consultation with the U.S. Fish and Wildlife Service (USFWS).

Other Environmental Requirements

Other regulatory requirements considered in the environmental analysis include, but are not limited to, those outlined below. Additional regulatory requirements will be described for each resource area in the EA.

- EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, to ensure that citizens in either of these categories are not disproportionately affected.
- EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks,* which provides guidelines to assess potential health and safety impacts that could disproportionately affect children.
- EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*, which requires that federal agencies proposing actions that could affect migratory birds must enter into a Memorandum of Understanding with the U.S. Fish and Wildlife Service and implement measures to conserve migratory birds.
- EO 13985, *Advancing Racial Equity and Support for Underserved Communities Through the Federal Government* (20 January 2021), which directs agencies to evaluate whether their policies generate racially inequitable results when implemented and to make necessary changes to ensure underserved communities are properly supported.

- *2022 Department of Defense Equity Act Plan*, pursuant to EO 13985, includes a strategy to advance equity and rectify past harms resulting from environmental and other impacts from defense activities on ancestral lands.
- EO 14008, *Tackling the Climate Crisis at Home and Abroad,* which requires federal agencies to plan, procure, and manage resources in support of climate resilience.
- EO 14091, *Further Advancing Racial Equity and Support for Underserved Communities Through the Federal Government* (February 16, 2023), which builds on EO 13985 by mandating a whole-of-government, multi-generational commitment to extending and strengthening equity-advancing requirements to support underserved community workforces, economy, housing, equity in health (including mental and behavioral health), civil rights, and equal justice under law.
- EO 14096, *Revitalizing Our Nation's Commitment to Environmental Justice for All* (April 21, 2023), affirms that environmental justice is central to the implementation of our civil rights and environmental laws. It directs all agencies to consider measures to address and prevent disproportionate and adverse environmental and health impacts on communities, including the cumulative impacts on pollution and other burdens like climate change.

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B

Interagency and Intergovernmental Coordination for Environmental Planning (IICEP) Correspondence and Agency Consultations

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NATIONAL GUARD BUREAU
3501 FETCHET AVENUE
JOINT BASE ANDREWS 20762-5157

23 July 2024

Ms. Melanie A. Frisch
Natural Resources and Pest
Management Program Manager
Air National Guard Readiness Center,
NGB/A4VN
3501 Fetchet Ave
Joint Base Andrews MD 20762-5157

Mr. David Stillwell
Field Supervisor
U.S Fish and Wildlife Service
New York Field Office
3817 Luker Road
Cortland, NY 13045

Dear Mr. Stillwell:

The National Guard Bureau (NGB) has prepared a Draft Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI) for construction, renovation, and demolition of facilities at the Air National Guard's (ANG's) 109th Airlift Wing (109 AW) located at the Schenectady Air National Guard Base (ANGB), Scotia, New York (NY). The Draft EA evaluates potential impacts to the human and natural environment as a result of the implementation of the proposed infrastructure improvement projects at the 109 AW. The environmental analysis for the Proposed Action is being conducted by the NGB in accordance with the Council on Environmental Quality guidelines pursuant to the National Environmental Policy Act of 1969, as amended. Copies of the Draft EA and Draft FONSI are available at: https://www.109aw.ang.af.mil/About/Environmental

Under the Proposed Action, the 109 AW has identified 19 construction, renovation, or demolition projects that would enhance current and future missions and operational efficiency (see **Section 2.2.1** of the Draft EA). The Project Area (**Attachment 1**) for the Proposed Action is defined as any area where ground disturbance would occur; this includes the staging areas for equipment and materials. Pursuant to Section 7 of the Endangered Species Act of 1973 (16 USC 1531 to 1544), the NGB has determined the implementation of the Proposed Action would have no effect on any federally listed species (**Attachment 2**).

Threatened, Endangered, and Candidate Species and Critical Habitat

The U.S. Fish and Wildlife (USFWS) Information for Planning and Consultation (IPaC) System report for the project area (**Attachment 3**), a Final Flora and Fauna Report, Schenectady Air National Guard Base Schenectady, New York (October 2023) and a Final Bat Survey Report, Schenectady Air National Guard Base Schenectady, New York (October 2023), were reviewed to determine if any federally listed, proposed, or candidate species, or their habitats, could potentially occur in the vicinity of the Proposed Action. None of the identified species have been reported, observed, or acoustically detected within the project area, which is low quality habitat. No federally listed threatened or endangered species currently listed under the ESA was observed or detected, and there is no critical habitat within the project area (see **Section 3.7** of the Draft EA).

A Waters of the US (WOTUS) identification and delineation was completed at the installation and submitted for USACE review and determination in 2023. The report identified six wetlands (totaling 2.1 acres) and four WOTUS (totaling approximately 0.7 acres/4,947 linear feet) were delineated within Schenectady ANGB. In addition, three excavated stormwater drainage features were identified within Schenectady ANGB. Findings indicate the six delineated wetlands are likely jurisdictional under Section 404 of the CWA. The draft final report has been submitted to the USACE New York District for review and a request for jurisdictional determination.

The final Flora and Fauna, Bat Survey, and Waters of the US reports are available for review upon request.

We seek your concurrence on the finding that the Proposed Action will have *no effect* for the species identified in **Attachment 2**. If you require additional information, please contact Ms. Melanie A. Frisch, ATTN: 109 AW EA, 3501 Fetchet Avenue, Joint Base Andrews, MD 20762-5157 or by email at NGB.A4.A4A.NEPA.COMMENTS.Org@us.af.mil with the subject titled as ATTN: 109 AW EA. Thank you for your support of this project.

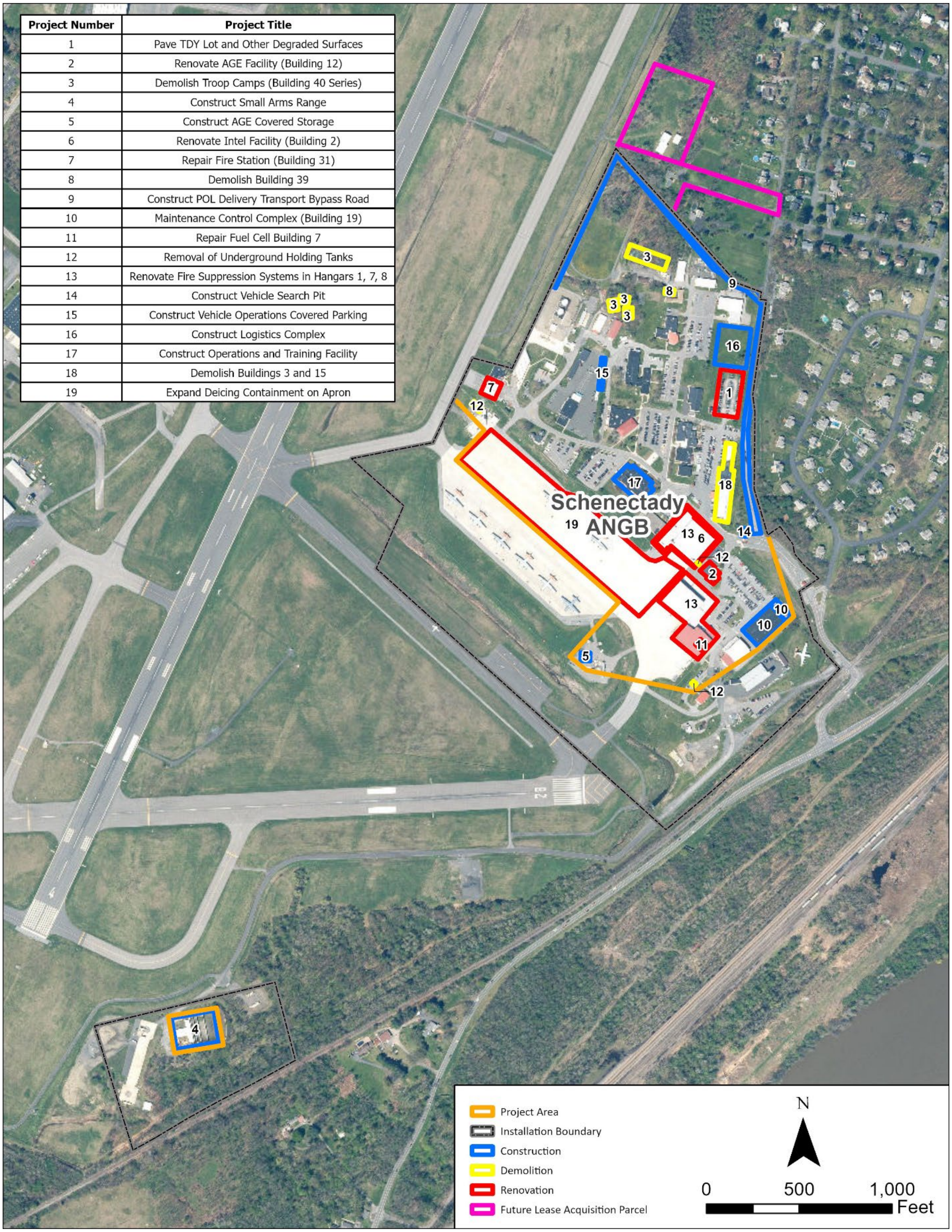
Sincerely

MELANIE A. FRISCH, GS-13, DAF
Natural Resources and Pest Management
Program Manager

3 Attachments:

1. Proposed Project Locations
2. Federally Listed, Candidate, Proposed, or Under Review Species with Potential to Occur on Schenectady ANGB and Effects Determination, 12 July 2023
3. USFWS IPaC Species List, 12 July 2023

Attachment 1. Proposed Project Locations



Project Number	Project Title
1	Pave TDY Lot and Other Degraded Surfaces
2	Renovate AGE Facility (Building 12)
3	Demolish Troop Camps (Building 40 Series)
4	Construct Small Arms Range
5	Construct AGE Covered Storage
6	Renovate Intel Facility (Building 2)
7	Repair Fire Station (Building 31)
8	Demolish Building 39
9	Construct POL Delivery Transport Bypass Road
10	Maintenance Control Complex (Building 19)
11	Repair Fuel Cell Building 7
12	Removal of Underground Holding Tanks
13	Renovate Fire Suppression Systems in Hangars 1, 7, 8
14	Construct Vehicle Search Pit
15	Construct Vehicle Operations Covered Parking
16	Construct Logistics Complex
17	Construct Operations and Training Facility
18	Demolish Buildings 3 and 15
19	Expand Deicing Containment on Apron

Attachment 2. Federally Listed Species with Potential to Occur on Schenectady ANGB and Effects Determination

Species	Federal	Habitat	Effects Determination and Justification
Indiana bat (*Myotis sodalis*)	Endangered	Summer habitat includes forested areas that receive direct sunlight under the exfoliating bark of dead or dying, bottomland and floodplain habitats, riparian areas. Winter hibernacula incudes mines or caves. Foraging habitat occurs in closed or semi-open forested habitat and edges, and riparian areas.	**No effect –** No documented observations, roosts, or acoustical occurrences on the installation.
Little brown bat (*Myotis lucifugus*)	Under Review	Summer habitat includes artificial structures, bat houses, trees, under rocks, and in piles of wood; mines and caves are used in the winter. Foraging habitat occurs in closed or semi-open forested habitat and edges, and riparian areas.	**No effect –** No documented observations, roosts, or acoustical occurrences on the installation.
Northern long-eared bat (*Myotis septentrionalis*)	Endangered	Summer habitat includes buildings, shutters, under tree bark, or caves; winter hibernacula are often mines or caves. Foraging habitat includes ridges, forested areas, and small streams or ponds.	**No effect –** No documented observations, roosts, or acoustic occurrences on the installation.
Tricolored bat (*Perimyotis subflavus*)	Proposed Endangered	Summer roosting can include trees and foliage; winter hibernacula are generally caves. Foraging habitat includes waterways and forest edges.	**No effect –** No documented observations, roosts, or acoustic occurrences on the installation.
Monarch butterfly (*Danaus plexippus*)	Candidate	Migratory and journey to central Mexico for the winter. During the summer they are found in grasslands and fields, along roadsides, and in gardens. This species lays eggs on obligate milkweed plants.	**No effect –** No documented observations on the installation.

Table Notes:
1 - State status from NYSDEC list of state-protected species potentially present in Schenectady County, NY (NYSDEC 2023b).
2 - Federal status from IPaC Report on species potentially present on the Main Base (USFWS 2023a).
3 - Federal status from IPaC Report on species potentially present on the small arms training area portion of Schenectady ANGB (USFWS 2023b).
4 - Information on bats incorporated from 2023 Bat Survey (HDR-Tehama JV 2024c).

Attachment 3. USFWS IPaC Species List

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New York Ecological Services Field Office
3817 Luker Road
Cortland, NY 13045-9385
Phone: (607) 753-9334 Fax: (607) 753-9699
Email Address: fw5es_nyfo@fws.gov

In Reply Refer To: July 12, 2023
Project Code: 2023-0103498
Project Name: Air National Guard Base: Schenectady Baseline Flora/Fauna Surveys

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see https://www.fws.gov/birds/policies-and-regulations.php.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/birds/policies-and-regulations/executive-orders/e0-13186.php.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. **Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.**

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New York Ecological Services Field Office
3817 Luker Road
Cortland, NY 13045-9385
(607) 753-9334

PROJECT SUMMARY

Project Code: 2023-0103498

Project Name: Air National Guard Base: Schenectady Baseline Flora/Fauna Surveys

Project Type: Military Operations

Project Description: The National Guard Bureau (NGB) is performing reconnaissance-level surveys for the flora and fauna located on the property of the Schenectady National Guard Base (SNGB). SNGB is located in the Town of Glenville, New York, across the Mohawk River from the City of Schenectady in Schenectady County.

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@42.851734,-73.92195668039074,14z

Counties: Schenectady County, New York

ENDANGERED SPECIES ACT SPECIES

There is a total of 2 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Endangered

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

IPAC USER CONTACT INFORMATION

Agency:	HDR
Name:	Kelly Albery
Address:	369 Inverness Parkway
Address Line 2:	Suite 325
City:	Englewood
State:	CO
Zip:	80112
Email	kelly.albery@hdrinc.com
Phone:	8088961890

NATIONAL GUARD BUREAU
3501 FETCHET AVENUE
JOINT BASE ANDREWS 20762-5157

23 July 2024

Robert E. Donaldson, Colonel, NYANG
Commander, 109th Airlift Wing
1 Air National Guard Rd
Scotia, NY 12302

Clint Halftown
Federal Representative
Cayuga Nation of New York
P.O. Box 803
Seneca Falls, NY 13148

Dear Mr. Halftown:

The National Guard Bureau (NGB) has prepared a Draft Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI) for construction, renovation, and demolition of facilities at the Air National Guard's (ANG's) 109th Airlift Wing (109 AW) located at the Schenectady Air National Guard Base (ANGB), Scotia, New York, in accordance with the Council on Environmental Quality guidelines pursuant to the National Environmental Policy Act of 1969, as amended. The Draft EA evaluates potential impacts to the human and natural environment as a result of the implementation of the proposed infrastructure improvement projects at the 109 AW. The Draft EA and Draft FONSI are available at https://www.109aw.ang.af.mil/About/Environmental for your review and comment. As noted within both documents, NGB recognizes that Tribal consultation for the proposed EA is ongoing. As consultation progresses, NGB will update the cultural resources sections of both the Draft EA and Draft FONSI.

As a follow up to our initial government-to-government consultation letter regarding the infrastructure projects proposed at the 109 AW, we respectfully request your participation by reviewing the Draft EA. In order for the NGB to address your concerns in a timely manner for both the Tribe and the proposed undertaking, please provide any comments within thirty days of receipt of this letter to Mr. Mark Barron, Cultural Resources Specialist (A4) by email at NGB.A4.A4A.NEPA.COMMENTS.Org@us.af.mil with the subject titled as ATTN: 109 AW Construction EA. Thank you for your assistance.

Sincerely

Robert E. Donaldson, Colonel,
NYANG Commander, 109 AW

NATIONAL GUARD BUREAU
3501 FETCHET AVENUE
JOINT BASE ANDREWS 20762-5157

23 July 2024

Robert E. Donaldson, Colonel, NYANG
Commander, 109th Airlift Wing
1 Air National Guard Rd
Scotia, NY 12302

Michael L. Coners, Ronald LaFrances, Jr.,
and Beverly Kiohawiton Cook, Chiefs
Saint Regis Band of Mohawk Indians of New York
71 Margaret Terrance Memorial
Akwesasne, NY 13655

Dear Chiefs Conners, LaFrances, and Cook:

The National Guard Bureau (NGB) has prepared a Draft Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI) for construction, renovation, and demolition of facilities at the Air National Guard's (ANG's) 109th Airlift Wing (109 AW) located at the Schenectady Air National Guard Base (ANGB), Scotia, New York, in accordance with the Council on Environmental Quality guidelines pursuant to the National Environmental Policy Act of 1969, as amended. The Draft EA evaluates potential impacts to the human and natural environment as a result of the implementation of the proposed infrastructure improvement projects at the 109 AW. The Draft EA and Draft FONSI are available at https://www.109aw.ang.af.mil/About/Environmental for your review and comment. As noted within both documents, NGB recognizes that Tribal consultation for the proposed EA is ongoing. As consultation progresses, NGB will update the cultural resources sections of both the Draft EA and Draft FONSI.

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Sincerely

Robert E. Donaldson, Colonel,
NYANG Commander, 109 AW

NATIONAL GUARD BUREAU
3501 FETCHET AVENUE
JOINT BASE ANDREWS 20762-5157

23 July 2024

Robert E. Donaldson, Colonel, NYANG
Commander, 109th Airlift Wing
1 Air National Guard Rd
Scotia, NY 12302

Sidney Hill, Chief
Onondaga Nation of New York
4040 Route 11
Nedrow, NY 13120

Dear Chief Hill:

The National Guard Bureau (NGB) has prepared a Draft Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI) for construction, renovation, and demolition of facilities at the Air National Guard's (ANG's) 109th Airlift Wing (109 AW) located at the Schenectady Air National Guard Base (ANGB), Scotia, New York, in accordance with the Council on Environmental Quality guidelines pursuant to the National Environmental Policy Act of 1969, as amended. The Draft EA evaluates potential impacts to the human and natural environment as a result of the implementation of the proposed infrastructure improvement projects at the 109 AW. The Draft EA and Draft FONSI are available at https://www.109aw.ang.af.mil/About/Environmental for your review and comment. As noted within both documents, NGB recognizes that Tribal consultation for the proposed EA is ongoing. As consultation progresses, NGB will update the cultural resources sections of both the Draft EA and Draft FONSI.

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Sincerely

Robert E. Donaldson, Colonel,
NYANG Commander, 109 AW

NATIONAL GUARD BUREAU
3501 FETCHET AVENUE
JOINT BASE ANDREWS 20762-5157

23 July 2024

Robert E. Donaldson, Colonel, NYANG
Commander, 109th Airlift Wing
1 Air National Guard Rd
Scotia, NY 12302

Ray Halbritter
Nation Representative
Oneida Nation of New York
2037 Dream Catcher Plaza
Oneida, NY 13421

Dear Mr. Halbritter:

The National Guard Bureau (NGB) has prepared a Draft Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI) for construction, renovation, and demolition of facilities at the Air National Guard's (ANG's) 109th Airlift Wing (109 AW) located at the Schenectady Air National Guard Base (ANGB), Scotia, New York, in accordance with the Council on Environmental Quality guidelines pursuant to the National Environmental Policy Act of 1969, as amended. The Draft EA evaluates potential impacts to the human and natural environment as a result of the implementation of the proposed infrastructure improvement projects at the 109 AW. The Draft EA and Draft FONSI are available at https://www.109aw.ang.af.mil/About/Environmental for your review and comment. As noted within both documents, NGB recognizes that Tribal consultation for the proposed EA is ongoing. As consultation progresses, NGB will update the cultural resources sections of both the Draft EA and Draft FONSI.

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Sincerely

Robert E. Donaldson, Colonel,
NYANG Commander, 109 AW

NATIONAL GUARD BUREAU
3501 FETCHET AVENUE
JOINT BASE ANDREWS 20762-5157

23 July 2024

Robert E. Donaldson, Colonel, NYANG
Commander, 109th Airlift Wing
1 Air National Guard Rd
Scotia, NY 12302

Ricky L. Armstrong, President
Seneca Nation of New York
12387 Route 438
Irving, NY 14081

Dear President Armstrong:

The National Guard Bureau (NGB) has prepared a Draft Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI) for construction, renovation, and demolition of facilities at the Air National Guard's (ANG's) 109th Airlift Wing (109 AW) located at the Schenectady Air National Guard Base (ANGB), Scotia, New York, in accordance with the Council on Environmental Quality guidelines pursuant to the National Environmental Policy Act of 1969, as amended. The Draft EA evaluates potential impacts to the human and natural environment as a result of the implementation of the proposed infrastructure improvement projects at the 109 AW. The Draft EA and Draft FONSI are available at https://www.109aw.ang.af.mil/About/Environmental for your review and comment. As noted within both documents, NGB recognizes that Tribal consultation for the proposed EA is ongoing. As consultation progresses, NGB will update the cultural resources sections of both the Draft EA and Draft FONSI.

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Sincerely

Robert E. Donaldson, Colonel,
NYANG Commander, 109 AW

NATIONAL GUARD BUREAU
3501 FETCHET AVENUE
JOINT BASE ANDREWS 20762-5157

23 July 2024

Robert E. Donaldson, Colonel, NYANG
Commander, 109th Airlift Wing
1 Air National Guard Rd
Scotia, NY 12302

Roger Hill, Chief
Tonawanda Band of Seneca Indians
of New York
7027 Meadville Road
P.O. Box 795
Basom, NY 14013

Dear Chief Hill:

The National Guard Bureau (NGB) has prepared a Draft Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI) for construction, renovation, and demolition of facilities at the Air National Guard's (ANG's) 109th Airlift Wing (109 AW) located at the Schenectady Air National Guard Base (ANGB), Scotia, New York, in accordance with the Council on Environmental Quality guidelines pursuant to the National Environmental Policy Act of 1969, as amended. The Draft EA evaluates potential impacts to the human and natural environment as a result of the implementation of the proposed infrastructure improvement projects at the 109 AW. The Draft EA and Draft FONSI are available at https://www.109aw.ang.af.mil/About/Environmental for your review and comment. As noted within both documents, NGB recognizes that Tribal consultation for the proposed EA is ongoing. As consultation progresses, NGB will update the cultural resources sections of both the Draft EA and Draft FONSI.

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Sincerely

Robert E. Donaldson, Colonel,
NYANG Commander, 109 AW

NATIONAL GUARD BUREAU
3501 FETCHET AVENUE
JOINT BASE ANDREWS 20762-5157

23 July 2024

Robert E. Donaldson, Colonel, NYANG
Commander, 109th Airlift Wing
1 Air National Guard Rd
Scotia, NY 12302

Tom Johnathan, Chief
Tuscarora Nation of New York
5226 Walmore Road
Lewistown, NY 14092

Dear Chief Johnathon:

The National Guard Bureau (NGB) has prepared a Draft Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI) for construction, renovation, and demolition of facilities at the Air National Guard's (ANG's) 109th Airlift Wing (109 AW) located at the Schenectady Air National Guard Base (ANGB), Scotia, New York, in accordance with the Council on Environmental Quality guidelines pursuant to the National Environmental Policy Act of 1969, as amended. The Draft EA evaluates potential impacts to the human and natural environment as a result of the implementation of the proposed infrastructure improvement projects at the 109 AW. The Draft EA and Draft FONSI are available at https://www.109aw.ang.af.mil/About/Environmental for your review and comment. As noted within both documents, NGB recognizes that Tribal consultation for the proposed EA is ongoing. As consultation progresses, NGB will update the cultural resources sections of both the Draft EA and Draft FONSI.

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Robert E. Donaldson, Colonel,
NYANG Commander, 109 AW

NATIONAL GUARD BUREAU
3501 FETCHET AVENUE
JOINT BASE ANDREWS 20762-5157

23 July 2024

Michelle Kasunic
Acting Cultural Resources Program Manager
Air National Guard Readiness Center, NGB/A4VN
3501 Fetchet Ave
Joint Base Andrews MD 20762

Ms. Jessica Schreyer
State Historic Preservation Officer
New York State Historic Preservation Office
P.O. Box 189
Waterford, NY 12188

Dear Ms. Schreyer:

The National Guard Bureau (NGB) has prepared a Draft Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI) for construction, renovation, and demolition of facilities at the Air National Guard's (ANG's) 109th Airlift Wing (109 AW) located at the Schenectady Air National Guard Base (ANGB), Scotia, New York, in accordance with the Council on Environmental Quality guidelines pursuant to the National Environmental Policy Act of 1969, as amended. The Draft EA evaluates potential impacts to the human and natural environment as a result of the implementation of the proposed infrastructure improvement projects at the 109 AW. The Draft EA and Draft FONSI are available at https://www.109aw.ang.af.mil/About/Environmental for your review and comment.

As a follow up to our scoping letter regarding the infrastructure projects proposed at the 109AW, we now invite you to participate further by reviewing the Draft EA and Draft FONSI and providing your comments concerning the proposal and any potential cultural resources consequences of the action. If upon completion of the environmental impact analysis process it is determined that the FONSI is appropriate, the FONSI will be signed. Please indicate in writing if you wish to receive the Final EA and/or signed FONSI and provide an e-mail address if you prefer to receive the document electronically.

The Proposed Action on Schenectady ANGB would use the Section 106 consultation process to minimize any adverse effects on cultural resources to the greatest extent possible. NGB conducted a Cultural Resources study of Schenectady ANGB in 2012. This study included a Phase I archaeological survey and an architectural survey. During the archeological survey, two historic archaeological sites were identified; however, NGB determined that the sites are not eligible for inclusion in the National Register of Historic Places (NRHP). Additionally, NGB evaluated the buildings within the APE for eligibility for listing in the NRHP, and no buildings were determined eligible either individually or as a historic district. The NY SHPO reviewed the Schenectady Integrated Cultural Resources Management Plan (ICRMP) Waiver on 23 March

2016 and concurred that no historic properties were present within the installation boundary. In 2023, NGB conducted an archaeological and architectural survey for two parcels being acquired north of Schenectady ANGB and did not identify any historic resources. The NY SHPO concurred with this finding on 17 January 2024.

Proposed new construction projects would adhere to the installation's architectural style and visual aesthetic. The Integrated Cultural Resources Management Plan guidelines and procedures would be followed to enable Schenectady ANGB to meet its legal responsibilities related to historic preservation and cultural resources management at the installation, including stipulation for inadvertent discoveries should any cultural materials be uncovered during building demolition or construction or other ground disturbing activities. If areas proposed for ground disturbing activities have not been surveyed by a professional archaeologist, additional archaeological survey may be required. Consultation with your office and other stakeholders will continue throughout the construction and design process to ensure and adverse effects on cultural resources are minimized to the greatest extent possible. In addition to your office, NGB is consulting with federally recognized tribes who may have current or historical interests in the area.

Please provide comments to Mr. Mark Barron, Cultural Resources Specialist (A4) by email at NGB.A4.A4A.NEPA.COMMENTS.Org@us.af.mil with the subject titled as ATTN: 109 AW Construction EA. Thank you for your assistance.

Sincerely

Michelle Kasunic
Branch Chief, Environmental Quality
Air National Guard Readiness Center, NGB/A4VN
3501 Fetchet Ave
Joint Base Andrews MD 20762

NATIONAL GUARD BUREAU
3501 FETCHET AVENUE
JOINT BASE ANDREWS 20762-5157

23 July 2024

Ms. Johnna T. Scepansky
NEPA/EBS Program Manager
Air National Guard Readiness Center,
NGB/A4AM
3501 Fetchet Ave
Joint Base Andrews MD 20762-5157

Mr. Mark Austin
Environmental Review Team Lead
US Environmental Protection Agency, Region 2
290 Broadway, 29th Floor
New York, NY 10007-1866

Dear Mr. Austin:

The National Guard Bureau (NGB) has prepared a Draft Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI) for construction, renovation, and demolition of facilities at the Air National Guard's (ANG's) 109th Airlift Wing (109 AW) located at the Schenectady Air National Guard Base (ANGB), Scotia, New York (NY). The Draft EA evaluates potential impacts to the human and natural environment as a result of the implementation of the proposed infrastructure improvement projects at the 109 AW. The environmental analysis for the Proposed Action is being conducted by the NGB in accordance with the Council on Environmental Quality guidelines pursuant to the National Environmental Policy Act of 1969, as amended. The Draft EA and Draft FONSI are available at https://www.109aw.ang.af.mil/About/Environmental for your review and comment.

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Please provide any comments you may have within thirty (30) days of receipt of this letter to Ms. Johnna Scepansky, ATTN: 109 AW Construction EA, 3501 Fetchet Avenue, Joint Base Andrews MD 20762-5157 or by email at NGB.A4.A4A.NEPA.COMMENTS.Org@us.af.mil with the subject titled as ATTN: 109 Construction AW EA. Thank you for your assistance.

Sincerely

JOHNNA T. SCEPANSKY, GS-13, DAF
NEPA/EBS Program Manager

NATIONAL GUARD BUREAU
3501 FETCHET AVENUE
JOINT BASE ANDREWS 20762-5157

23 July 2024

Ms. Johnna T. Scepansky
NEPA/EBS Program Manager
Air National Guard Readiness Center,
NGB/A4AM
3501 Fetchet Ave
Joint Base Andrews MD 20762-5157

Mr. Rory Fluman
County Manager
County Office Building
620 State Street, 6th Floor
Schenectady, NY 12305

Dear Mr. Fluman:

The National Guard Bureau (NGB) has prepared a Draft Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI) for construction, renovation, and demolition of facilities at the Air National Guard's (ANG's) 109th Airlift Wing (109 AW) located at the Schenectady Air National Guard Base (ANGB), Scotia, New York (NY). The Draft EA evaluates potential impacts to the human and natural environment as a result of the implementation of the proposed infrastructure improvement projects at the 109 AW. The environmental analysis for the Proposed Action is being conducted by the NGB in accordance with the Council on Environmental Quality guidelines pursuant to the National Environmental Policy Act of 1969, as amended. The Draft EA and Draft FONSI are available at https://www.109aw.ang.af.mil/About/Environmental for your review and comment.

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Sincerely

JOHNNA T. SCEPANSKY, GS-13, DAF
NEPA/EBS Program Manager

NATIONAL GUARD BUREAU
3501 FETCHET AVENUE
JOINT BASE ANDREWS 20762-5157

23 July 2024

Ms. Johnna T. Scepansky
NEPA/EBS Program Manager
Air National Guard Readiness Center,
NGB/A4AM
3501 Fetchet Ave
Joint Base Andrews MD 20762-5157

US Army Corps of Engineers
New York District, Albany Field Office
1 Bond Street
Troy, NY 12180

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JOHNNA T. SCEPANSKY, GS-13, DAF
NEPA/EBS Program Manager

NATIONAL GUARD BUREAU
3501 FETCHET AVENUE
JOINT BASE ANDREWS 20762-5157

23 July 2024

Ms. Johnna T. Scepansky
NEPA/EBS Program Manager
Air National Guard Readiness Center,
NGB/A4AM
3501 Fetchet Ave
Joint Base Andrews MD 20762-5157

Schenectady Department of Transportation
3008 Chrisler Ave.
Schenectady, NY 12303

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JOHNNA T. SCEPANSKY, GS-13, DAF
NEPA/EBS Program Manager

NATIONAL GUARD BUREAU
3501 FETCHET AVENUE
JOINT BASE ANDREWS 20762-5157

23 July 2024

Ms. Johnna T. Scepansky
NEPA/EBS Program Manager
Air National Guard Readiness Center,
NGB/A4AM
3501 Fetchet Ave
Joint Base Andrews MD 20762-5157

Mr. Tony Luisi
Director, Region 4
NY Dept. of Environmental Conservation
1130 N. Westcott Road
Schenectady, NY 12306

Dear Mr. Luisi:

The National Guard Bureau (NGB) has prepared a Draft Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI) for construction, renovation, and demolition of facilities at the Air National Guard's (ANG's) 109th Airlift Wing (109 AW) located at the Schenectady Air National Guard Base (ANGB), Scotia, New York (NY). The Draft EA evaluates potential impacts to the human and natural environment as a result of the implementation of the proposed infrastructure improvement projects at the 109 AW. The environmental analysis for the Proposed Action is being conducted by the NGB in accordance with the Council on Environmental Quality guidelines pursuant to the National Environmental Policy Act of 1969, as amended. The Draft EA and Draft FONSI are available at https://www.109aw.ang.af.mil/About/Environmental for your review and comment.

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NEPA/EBS Program Manager

NATIONAL GUARD BUREAU
3501 FETCHET AVENUE
JOINT BASE ANDREWS 20762-5157

23 July 2024

Ms. Johnna T. Scepansky
NEPA/EBS Program Manager
Air National Guard Readiness Center,
NGB/A4AM
3501 Fetchet Ave
Joint Base Andrews MD 20762-5157

Schenectady County Environmental Advisory Council
107 Nott Terrace, Suite 103
Schenectady, NY 12305

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NEPA/EBS Program Manager

NATIONAL GUARD BUREAU
3501 FETCHET AVENUE
JOINT BASE ANDREWS 20762-5157

23 July 2024

Ms. Johnna T. Scepansky
NEPA/EBS Program Manager
Air National Guard Readiness Center,
NGB/A4AM
3501 Fetchet Ave
Joint Base Andrews MD 20762-5157

Schenectady Heritage Foundation
P.O. Box 1173
Schenectady, NY 12305-1173

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JOHNNA T. SCEPANSKY, GS-13, DAF
NEPA/EBS Program Manager

NATIONAL GUARD BUREAU
3501 FETCHET AVENUE
JOINT BASE ANDREWS 20762-5157

23 July 2024

Ms. Johnna T. Scepansky
NEPA/EBS Program Manager
Air National Guard Readiness Center,
NGB/A4AM
3501 Fetchet Ave
Joint Base Andrews MD 20762-5157

Mr. Anthony Tozzi
Director of Planning
Town of Glenville Planning Dept.
18 Glenridge Road
Glenville, NY 12302

Dear Mr. Tozzi:

The National Guard Bureau (NGB) has prepared a Draft Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI) for construction, renovation, and demolition of facilities at the Air National Guard's (ANG's) 109th Airlift Wing (109 AW) located at the Schenectady Air National Guard Base (ANGB), Scotia, New York (NY). The Draft EA evaluates potential impacts to the human and natural environment as a result of the implementation of the proposed infrastructure improvement projects at the 109 AW. The environmental analysis for the Proposed Action is being conducted by the NGB in accordance with the Council on Environmental Quality guidelines pursuant to the National Environmental Policy Act of 1969, as amended. The Draft EA and Draft FONSI are available at https://www.109aw.ang.af.mil/About/Environmental for your review and comment.

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JOHNNA T. SCEPANSKY, GS-13, DAF
NEPA/EBS Program Manager

NATIONAL GUARD BUREAU
3501 FETCHET AVENUE
JOINT BASE ANDREWS 20762-5157

23 July 2024

Ms. Johnna T. Scepansky
NEPA/EBS Program Manager
Air National Guard Readiness Center,
NGB/A4AM
3501 Fetchet Ave
Joint Base Andrews MD 20762-5157

Mr. David Bucciferro
Mayor, Village of Scotia
10 N. Ten Broeck Street
Scotia, NY 12302

Dear Mayor Bucciferro:

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JOHNNA T. SCEPANSKY, GS-13, DAF
NEPA/EBS Program Manager

NATIONAL GUARD BUREAU
3501 FETCHET AVENUE
JOINT BASE ANDREWS 20762-5157

23 July 2024

Ms. Johnna T. Scepansky
NEPA/EBS Program Manager
Air National Guard Readiness Center,
NGB/A4AM
3501 Fetchet Ave
Joint Base Andrews MD 20762-5157

Mr. Ray Gillen
Schenectady County Planning Department
107 Nott Terrace, Suite 303
Schenectady, NY 12308

Dear Mr. Gillen:

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NEPA/EBS Program Manager

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23 July 2024

Ms. Johnna T. Scepansky
NEPA/EBS Program Manager
Air National Guard Readiness Center,
NGB/A4AM
3501 Fetchet Ave
Joint Base Andrews MD 20762-5157

Mr. Paul Sheldon
Commissioner of Aviation
Schenectady County Airport
21 Airport Road
Scotia, NY 12302-3487

Dear Mr. Sheldon:

The National Guard Bureau (NGB) has prepared a Draft Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI) for construction, renovation, and demolition of facilities at the Air National Guard's (ANG's) 109th Airlift Wing (109 AW) located at the Schenectady Air National Guard Base (ANGB), Scotia, New York (NY). The Draft EA evaluates potential impacts to the human and natural environment as a result of the implementation of the proposed infrastructure improvement projects at the 109 AW. The environmental analysis for the Proposed Action is being conducted by the NGB in accordance with the Council on Environmental Quality guidelines pursuant to the National Environmental Policy Act of 1969, as amended. The Draft EA and Draft FONSI are available at https://www.109aw.ang.af.mil/About/Environmental for your review and comment.

As a follow up to our scoping letter regarding the infrastructure projects proposed at the 109 AW, we now request your participation by reviewing the Draft EA and soliciting your comments concerning the proposal and any potential environmental consequences of the action. If, upon completion of the environmental impact analysis process it is determined that a FONSI is appropriate, a FONSI will be signed. Please indicate in writing if you wish to receive the Final EA and/or signed FONSI and provide an e-mail address if you prefer to receive the document electronically.

Please provide any comments you may have within thirty (30) days of receipt of this letter to Ms. Johnna Scepansky, ATTN: 109 AW Construction EA, 3501 Fetchet Avenue, Joint Base Andrews MD 20762-5157 or by email at NGB.A4.A4A.NEPA.COMMENTS.Org@us.af.mil with the subject titled as ATTN: 109 AW Construction EA. Thank you for your assistance.

Sincerely

JOHNNA T. SCEPANSKY, GS-13, DAF
NEPA/EBS Program Manager

NATIONAL GUARD BUREAU
3501 FETCHET AVENUE
JOINT BASE ANDREWS 20762-5157

23 July 2024

Ms. Johnna T. Scepansky
NEPA/EBS Program Manager
Air National Guard Readiness Center,
NGB/A4AM
3501 Fetchet Ave
Joint Base Andrews MD 20762-5157

Capital Dist. Regional Planning Commission
Transportation Committee
1 Park Place, #102
Albany, NY 12205-1606

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Sincerely

JOHNNA T. SCEPANSKY, GS-13, DAF
NEPA/EBS Program Manager

C

Public Involvement

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Appendix C – Public Involvement

[[Preparer's Note: Appendix to include materials related to the public review period for the Draft Environmental Assessment]]

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D

Site Photos for the Proposed Short-term Construction Projects

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Appendix D – Site Photos for the Proposed Short-Term Construction Projects

The following photos present the existing condition at the time of the April 19, 2023, site visit for the real estate action and each of the proposed short-term construction projects.

Photo 1. Project 1 – TDY lot, which will be paved along with other degraded surfaces on the installation.

Photo 2. View at current locker room in Building 12. Project 2 (VBDZ152016), Renovate AGE Facility, proposes to renovate this portion of the building.

Photo 3. View of the east side of Building 12, where Project 2 (VBDZ152016), Renovate AGE Facility, would remove the chimney.

Photo 4. View of some of the Troop Camps on installation. Project 3 (LTUY230001), Demolish Troop Camps (Building 40 Series).

Photo 1. Former location of outdoor Small Arms Range. Future location of Project 4 (VBDZ199076), Construct new indoor Small Arms Range.

Photo 6. View of current location of AGE. Project 5 (VBDZ152020), Construct AGE Covered Storage, would protect AGE from exposure to the elements.

Photo 7. View of Building 31. Project 7 (VBDZ232202), Repair Fire Station.

Photo 8. Project 9, Construct POL Delivery Transport Bypass Road by improving existing gravel road along the northern perimeter of the installation.

Photo 9. View of Building 19. Project 10, Demolition and Reconstruction of the Maintenance Control Complex.

Photo 10. Project 11 (VBDZ152011), Repair Fuel Cell (Hangar 7). View of the interior of the building with current paint booth insert; operations would be relocated as part of Project 10.

Photo 11. Location of underground tanks for removal as part of Project 12, Removal of Hangar Foam Recovery Tanks.

Photo 12. Proposed location of Project 14, Construct Vehicle Search Pit.

Photo 13. Vehicle Maintenance Yard, which is the proposed location for Project 15 (VBDZ162010), Construct Vehicle Operations Covered Parking.

Photo 14. Future site of Project 16 (VBDZ149008), Construct Logistics Complex north of Building 15.

Photo 15. View of Project 17, Building 1, Reconstruct the Operations and Training Facility.

Photo 16. View of Project 19, Expand Deicing Containment on Apron.

Photo 17. View of Building 3. Project 18 (VBDZ070417), Demolish Buildings 3 and 15.

Photo 18. View of Building 15. Project 18 (VBDZ070417), Demolish Buildings 3 and 15.

E

Air Quality Analysis Supporting Documentation and Record of Non-Applicability

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Appendix E – Air Quality Analysis Supporting Documentation and Record of Non-Applicability

The Air Conformity Applicability Model (ACAM) version 5.0.18a was used to perform an analysis to assess the potential air quality impacts associated with the Proposed Action and alternatives in accordance with Air Force Manual 32-7002, *Environmental Compliance and Pollution Prevention;* the *Environmental Impact Analysis Process* (EIAP, 32 Code of Federal Regulations [CFR] Part 989) and the General Conformity Rule (40 Code of Federal Regulations Part 93, Subpart B). This appendix provides the ACAM Report and ACAM Detail Report for the Proposed Action. Because Schenectady County is in attainment for all criteria pollutants, the General Conformity Rule is not applicable to the Proposed Action and a general conformity determination is not required. The ACAM Report serves as the Record of Non-Applicability.

This appendix also includes detailed social cost of carbon calculations.

AIR CONFORMITY APPLICABILITY MODEL REPORT
RECORD OF AIR ANALYSIS (ROAA)

ACAM Report

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: STRATTON ANGB
State: New York
County(s): Schenectady
Regulatory Area(s): NOT IN A REGULATORY AREA

b. Action Title: Schenectady ANGB Short-term Construction EA

c. Project Number/s (if applicable):

d. Projected Action Start Date: 1 / 2025

e. Action Description:

The Proposed Action includes acquisition through lease of two land parcels and 19 infrastructure improvement projects including eight new construction, seven renovation, and four demolition projects.
The analysis assumes construction for each of the infrastructure and improvement projects would occur over a 1-year period. Construction years used for each project are listed in Section 2, Table 2-1 of the EA. A 1-year construction/renovation/demolition period was used to equate a worse-case emissions scenario in which all activity for a single project occurs in the same year. The actual construction/renovation/demolition period may be different than what was assumed for the analysis.

f. Point of Contact:
Name: Carolyn Hein
Title: Contractor
Organization: HDR
Email:
Phone Number:

2. Air Impact Analysis: Based on the attainment status at the action location, the requirements of the General Conformity Rule are:

_____ applicable
__X__ not applicable

Total net direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the start of the action through achieving "steady state" (i.e., net gain/loss upon action fully implemented) emissions. The ACAM analysis used the latest and most accurate emission estimation techniques available; all algorithms, emission factors, and methodologies used are described in detail in the USAF Air Emissions Guide for Air Force Stationary Sources, the USAF Air Emissions Guide for Air Force Mobile Sources, and the USAF Air Emissions Guide for Air Force Transitory Sources.

"Insignificance Indicators" were used in the analysis to provide an indication of the significance of potential impacts to air quality based on current ambient air quality relative to the National Ambient Air Quality Standards (NAAQSs). These insignificance indicators are the 250 ton/yr Prevention of Significant

Deterioration (PSD) major source threshold for actions occurring in areas that are "Clearly Attainment" (i.e., not within 5% of any NAAQS) and the GCR de minimis values (25 ton/yr for lead and 100 ton/yr for all other criteria pollutants) for actions occurring in areas that are "Near Nonattainment" (i.e., within 5% of any NAAQS). These indicators do not define a significant impact; however, they do provide a threshold to identify actions that are insignificant. Any action with net emissions below the insignificance indicators for all criteria pollutant is considered so insignificant that the action will not cause or contribute to an exceedance on one or more NAAQSs. For further detail on insignificance indicators see chapter 4 of the Air Force Air Quality Environmental Impact Analysis Process (EIAP) Guide, Volume II - Advanced Assessments.

The action's net emissions for every year through achieving steady state were compared against the Insignificance Indicator and are summarized below.

Analysis Summary:

2025

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	2.193	250	
NOx	5.790	250	
CO	9.232	250	
SOx	0.020	250	
PM 10	0.825	250	
PM 2.5	0.215	250	
Pb	0.000	25	No
NH3	0.007	250	
CO2e	1977.2		

2026

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.248	250	
NOx	1.385	250	
CO	1.830	250	
SOx	0.008	250	
PM 10	2.008	250	
PM 2.5	0.068	250	
Pb	0.000	25	No
NH3	0.001	250	
CO2e	395.2		

2027

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.607	250	
NOx	1.237	250	
CO	1.742	250	
SOx	0.009	250	

PM 10	0.554	250	
PM 2.5	0.048	250	
Pb	0.000	25	No
NH3	0.002	250	
CO2e	426.6		

2028

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.642	250	
NOx	1.782	250	
CO	2.677	250	
SOx	0.011	250	
PM 10	0.261	250	
PM 2.5	0.072	250	
Pb	0.000	25	No
NH3	0.002	250	
CO2e	709.7		

2029

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.011	250	
NOx	0.103	250	
CO	0.070	250	
SOx	0.005	250	
PM 10	0.010	250	
PM 2.5	0.010	250	
Pb	0.000	25	No
NH3	0.000	250	
CO2e	88.2		

2030

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	3.118	250	
NOx	6.627	250	
CO	10.217	250	
SOx	0.029	250	
PM 10	16.345	250	
PM 2.5	0.239	250	
Pb	0.000	25	No
NH3	0.009	250	
CO2e	2413.7		

2031

Pollutant		INSIGNIFICANCE INDICATOR	

AIR CONFORMITY APPLICABILITY MODEL REPORT
RECORD OF AIR ANALYSIS (ROAA)

	Action Emissions (ton/yr)	Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.016	250	
NOx	0.196	250	
CO	0.148	250	
SOx	0.006	250	
PM 10	0.017	250	
PM 2.5	0.017	250	
Pb	0.000	25	No
NH3	0.000	250	
CO2e	199.7		

2032 - (Steady State)

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.016	250	
NOx	0.196	250	
CO	0.148	250	
SOx	0.006	250	
PM 10	0.017	250	
PM 2.5	0.017	250	
Pb	0.000	25	No
NH3	0.000	250	
CO2e	199.7		

None of estimated annual net emissions associated with this action are above the insignificance indicators, indicating no significant impact to air quality. Therefore, the action will not cause or contribute to an exceedance on one or more NAAQSs. No further air assessment is needed.

Carolyn Hein, Contractor

04/29/2024
DATE

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

ACAM Detail Report

1. General Information

- Action Location
Base: STRATTON ANGB
State: New York
County(s): Schenectady
Regulatory Area(s): NOT IN A REGULATORY AREA

- Action Title: Schenectady ANGB Short-term Construction EA

- Project Number/s (if applicable):

- Projected Action Start Date: 1 / 2025

- Action Purpose and Need:

The purpose of the Proposed Action is to provide the 109 AW with new and properly upgraded, sized, and configured facilities that are required to effectively accomplish its mission at Schenectady ANGB and meet DoD AT/FP standards.

The Proposed Action is needed to rectify space deficiencies, lack of adequate facilities and infrastructure, and because some facilities do not meet AT/FP standards. The proposed construction and renovation projects and real estate action would enhance missions efficiency by improving base access and utilities, consolidating mission functions, providing adequate training facilities for regional training, and upgrading facilities to meet current safety and security standards. The proposed demolition projects would remove excess, obsolete, deteriorating, and underused facilities. The Proposed Action is also necessary to replace outdated facilities and to secure installation assets.

- Action Description:

The Proposed Action includes acquisition through lease of two land parcels and 19 infrastructure improvement projects including eight new construction, seven renovation, and four demolition projects.

The analysis assumes construction for each of the infrastructure and improvement projects would occur over a 1-year period. Construction years used for each project are listed in Section 2, Table 2-1 of the EA. A 1-year construction/renovation/demolition period was used to equate a worse-case emissions scenario in which all activity for a single project occurs in the same year. The actual construction/renovation/demolition period may be different than what was assumed for the analysis.

- Point of Contact
Name: Carolyn Hein
Title: Contractor
Organization: HDR
Email:
Phone Number:

- Activity List:

	Activity Type	Activity Title
2.	Construction / Demolition	Project 4: Construction – Construct Small Arms Range
3.	Heating	Heating (Project 4: Add Heating for Small Arms Range)
4.	Construction / Demolition	Project 5: Construction – Construct Aerospace Ground Equipment (AGE) Covered Storage

5.	Construction / Demolition	Project 9: Construction – Construct POL Delivery Transport and Bypass Road
6.	Construction / Demolition	Project 10: Construction – Maintenance Control Complex (Building 19)
7.	Heating	Heating (Project 10: Add Heating for Maintenance Control Complex)
8.	Construction / Demolition	Project 14: Construction – Construct Vehicle Search Pit
9.	Construction / Demolition	Project 15: Construction – Construct Vehicle Operations Covered Parking
10.	Construction / Demolition	Project 16: Construction – Construct Logistics Complex
11.	Heating	Heating (Project 16: Add heating for Logistics Complex)
12.	Construction / Demolition	Project 17: Construction – Construct Operations and Training Facility
13.	Heating	Heating (Project 17: Add Heating for Operations and Training Facility)
14.	Construction / Demolition	Project 1: Renovation – Pave Temporary Duty Assignment (TDY) Lot and Other Degraded Surfaces
15.	Construction / Demolition	Project 2: Renovation – Renovate Aerospace Ground Equipment (AGE) Facility (Building 12)
16.	Construction / Demolition	Project 6: Renovation – Renovate Intel Facility (Building 2A)
17.	Construction / Demolition	Project 7: Renovation – Repair Fire Station (Building 31)
18.	Emergency Generator	Emergency Generator (Project 7: Repair Fire Station)
19.	Construction / Demolition	Project 11: Renovation – Repair Fuel Cell (Building 7)
20.	Construction / Demolition	Project 13: Renovation – Renovate Fire Suppression Systems in Hangars 1, 7, 8
21.	Construction / Demolition	Project 19: Renovation – Expand Deicing Containment on Apron
22.	Construction / Demolition	Project 3: Demolition – Demolish Troop Camps (Building 40 Series)
23.	Construction / Demolition	Project 8: Demolition – Demolish Building 39
24.	Heating	Heating (Project 8: Remove Heating for Building 39)
25.	Construction / Demolition	Project 12: Demolition – Removal of Hangar Foam Recovery Tanks
26.	Construction / Demolition	Project 18: Demolition – Demolish Buildings 3 and 15
27.	Heating	Heating (Project 18: Remove Heating for Buildings 3 and 15)

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

2. Construction / Demolition

2.1 General Information & Timeline Assumptions

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

- Activity Title: Project 4: Construction – Construct Small Arms Range

- Activity Description:
It was assumed the small arms range would be constructed over a 1-year period from January 2025 through December 2025.

Demolition would be required to remove the collapsed baffles, estimated at 10,000 SF. Demolition would begin in January 2025 and last approximately 1 month. Debris would be hauled off-site.

Site grading would occur on the entire site of the facility (0.2 acres or 7,600 SF) and the area needed for additional pavements (estimated at 10,000 SF). Site grading would begin in February 2025 and last approximately 1 month.

Trenching would be required for utility installation and/or extension. It was assumed the entire site (7,600 SF) would be trenched. Trenching would begin in March 2025 and last approximately 1 month.

Construction would include the enclosed small arms range (7,600 SF). Building height was assumed to be 15 feet. Construction would begin in April 2025 and last approximately 8 months.

Architectural coatings would be applied to the new facility for a total of 7,600 SF. Architectural coating application would begin in November 2025 and last approximately 1 month.

It was assumed some paving would be required for access roads, parking, and pads for external equipment and storage tanks. Paving was estimated to be 10,000 SF. Paving would begin in December 2025 and last approximately 1 month.

- Activity Start Date
Start Month: 1
Start Month: 2025

- Activity End Date
Indefinite: False
End Month: 2
End Month: 2026

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.219796
SO_x	0.002638
NO_x	0.676892
CO	1.096014
PM 10	0.285002

Pollutant	Total Emissions (TONs)
PM 2.5	0.023776
Pb	0.000000
NH_3	0.000803
CO_2e	256.9

2.1 Demolition Phase

2.1.1 Demolition Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2025

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

2.1.2 Demolition Phase Assumptions

- General Demolition Information
Area of Building to be demolished (ft^2): 10000
Height of Building to be demolished (ft): 5

- Default Settings Used: Yes

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

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

- Vehicle Exhaust Vehicle Mixture (%)

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

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

- Worker Trips Vehicle Mixture (%)

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

2.1.3 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	0.0336	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	000.188	000.002	000.095	002.742	000.005	000.004	0.000	000.024	00302.739
LDGT	000.201	000.003	000.166	003.063	000.007	000.006	0.000	000.026	00394.529
HDGV	000.828	000.006	000.861	013.328	000.026	000.023	0.000	000.051	00910.516
LDDV	000.081	000.001	000.080	002.979	000.003	000.002	0.000	000.008	00305.173
LDDT	000.087	000.001	000.120	002.049	000.003	000.003	0.000	000.009	00356.221
HDDV	000.123	000.004	002.451	001.540	000.042	000.039	0.000	000.032	01239.307
MC	002.311	000.003	000.684	012.373	000.023	000.020	0.000	000.054	00390.036

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/ft^3)
BA: Area of Building to be demolished (ft^2)

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 (ft^2)
BH: Height of Building being demolish (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
0.25: Volume reduction factor (material reduced by 75% to account for air space)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

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

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

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

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

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

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

2.2 Site Grading Phase

2.2.1 Site Grading Phase Timeline Assumptions

- **Phase Start Date**
  Start Month: 2
  Start Quarter: 1
  Start Year: 2025

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

2.2.2 Site Grading Phase Assumptions

- **General Site Grading Information**
  Area of Site to be Graded (ft^2): 17600
  Amount of Material to be Hauled On-Site (yd^3): 0
  Amount of Material to be Hauled Off-Site (yd^3): 500

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

- **Construction Exhaust (default)**

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

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

- **Vehicle Exhaust Vehicle Mixture (%)**

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

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

- **Worker Trips Vehicle Mixture (%)**

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

2.2.3 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	000.188	000.002	000.095	002.742	000.005	000.004	0.000	000.024	00302.739
LDGT	000.201	000.003	000.166	003.063	000.007	000.006	0.000	000.026	00394.529
HDGV	000.828	000.006	000.861	013.328	000.026	000.023	0.000	000.051	00910.516
LDDV	000.081	000.001	000.080	002.979	000.003	000.002	0.000	000.008	00305.173
LDDT	000.087	000.001	000.120	002.049	000.003	000.003	0.000	000.009	00356.221
HDDV	000.123	000.004	002.451	001.540	000.042	000.039	0.000	000.032	01239.307
MC	002.311	000.003	000.684	012.373	000.023	000.020	0.000	000.054	00390.036

2.2.4 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 (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

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

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

- Worker Trips Emissions per Phase

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

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

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

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

2.3 Trenching/Excavating Phase

2.3.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date
Start Month: 3
Start Quarter: 1
Start Year: 2025

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

2.3.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information
Area of Site to be Trenched/Excavated (ft^2): 7600
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 0

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

- Construction Exhaust (default)

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

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

- Vehicle Exhaust Vehicle Mixture (%)

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

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

- Worker Trips Vehicle Mixture (%)

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

2.3.3 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)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.188	000.002	000.095	002.742	000.005	000.004	0.000	000.024	00302.739
LDGT	000.201	000.003	000.166	003.063	000.007	000.006	0.000	000.026	00394.529
HDGV	000.828	000.006	000.861	013.328	000.026	000.023	0.000	000.051	00910.516
LDDV	000.081	000.001	000.080	002.979	000.003	000.002	0.000	000.008	00305.173
LDDT	000.087	000.001	000.120	002.049	000.003	000.003	0.000	000.009	00356.221
HDDV	000.123	000.004	002.451	001.540	000.042	000.039	0.000	000.032	01239.307
MC	002.311	000.003	000.684	012.373	000.023	000.020	0.000	000.054	00390.036

2.3.4 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 (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

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

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

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

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

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

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

2.4 Building Construction Phase

2.4.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 4
Start Quarter: 1
Start Year: 2025

- Phase Duration
Number of Month: 7
Number of Days: 0

2.4.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 7600
Height of Building (ft): 15

Number of Units: N/A

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

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	8

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

- Vehicle Exhaust Vehicle Mixture (%)

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

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

- Worker Trips Vehicle Mixture (%)

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

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

- Vendor Trips Vehicle Mixture (%)

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

2.4.3 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	000.188	000.002	000.095	002.742	000.005	000.004	0.000	000.024	00302.739
LDGT	000.201	000.003	000.166	003.063	000.007	000.006	0.000	000.026	00394.529
HDGV	000.828	000.006	000.861	013.328	000.026	000.023	0.000	000.051	00910.516
LDDV	000.081	000.001	000.080	002.979	000.003	000.002	0.000	000.008	00305.173
LDDT	000.087	000.001	000.120	002.049	000.003	000.003	0.000	000.009	00356.221
HDDV	000.123	000.004	002.451	001.540	000.042	000.039	0.000	000.032	01239.307

MC	002.311	000.003	000.684	012.373	000.023	000.020	0.000	000.054	00390.036

2.4.4 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 (ft^2)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft^3 to trips (0.42 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

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

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

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

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

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

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

- Vender Trips Emissions per Phase
$VMT_{VT} = BA * BH * (0.38 / 1000) * HT$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)

(0.38 / 1000): Conversion Factor ft^3 to trips (0.38 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

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

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

2.5 Architectural Coatings Phase

2.5.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date
Start Month: 11
Start Quarter: 1
Start Year: 2025

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

2.5.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information
Building Category: Non-Residential
Total Square Footage (ft^2): 7600
Number of Units: N/A

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

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

- Worker Trips Vehicle Mixture (%)

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

2.5.3 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	000.188	000.002	000.095	002.742	000.005	000.004	0.000	000.024	00302.739
LDGT	000.201	000.003	000.166	003.063	000.007	000.006	0.000	000.026	00394.529
HDGV	000.828	000.006	000.861	013.328	000.026	000.023	0.000	000.051	00910.516
LDDV	000.081	000.001	000.080	002.979	000.003	000.002	0.000	000.008	00305.173
LDDT	000.087	000.001	000.120	002.049	000.003	000.003	0.000	000.009	00356.221
HDDV	000.123	000.004	002.451	001.540	000.042	000.039	0.000	000.032	01239.307
MC	002.311	000.003	000.684	012.373	000.023	000.020	0.000	000.054	00390.036

2.5.4 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 (ft^2)
800: Conversion Factor square feet to man days (1 ft^2 / 1 man * day)

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

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

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

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

2.6 Paving Phase

2.6.1 Paving Phase Timeline Assumptions

- Phase Start Date
Start Month: 12
Start Quarter: 1
Start Year: 2025

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

2.6.2 Paving Phase Assumptions

- General Paving Information
Paving Area (ft^2): 10000

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

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cement and Mortar Mixers Composite	4	6

Pavers Composite	1	7
Rollers Composite	1	7
Tractors/Loaders/Backhoes Composite	1	7

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

- Vehicle Exhaust Vehicle Mixture (%)

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

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

- Worker Trips Vehicle Mixture (%)

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

2.6.3 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	0.0676	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	000.188	000.002	000.095	002.742	000.005	000.004	0.000	000.024	00302.739
LDGT	000.201	000.003	000.166	003.063	000.007	000.006	0.000	000.026	00394.529
HDGV	000.828	000.006	000.861	013.328	000.026	000.023	0.000	000.051	00910.516
LDDV	000.081	000.001	000.080	002.979	000.003	000.002	0.000	000.008	00305.173
LDDT	000.087	000.001	000.120	002.049	000.003	000.003	0.000	000.009	00356.221
HDDV	000.123	000.004	002.451	001.540	000.042	000.039	0.000	000.032	01239.307
MC	002.311	000.003	000.684	012.373	000.023	000.020	0.000	000.054	00390.036

2.6.4 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 (ft^2)
0.25: Thickness of Paving Area (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

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

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

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

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

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

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

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

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

3. Heating

3.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

County: Schenectady
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Heating (Project 4: Add Heating for Small Arms Range)

- Activity Description:
Heating/cooling for the Small Arms Range (7,600 SF) would be required following construction. It was assumed the Small Arms Range would be heated using a propane-fired boiler. Heating would begin following construction, or January 2026, and would continue indefinitely.

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

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

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.003667
SO_x	0.000066
NO_x	0.047666
CO	0.027499
PM 10	0.002567

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.002567
Pb	0.000000
NH_3	0.000000
CO_2e	46.4

3.2 Heating Assumptions

- Heating
Heating Calculation Type: Heat Energy Requirement Method

- Heat Energy Requirement Method
Area of floorspace to be heated (ft^2): 7600
Type of fuel: LPG (Propane)
Type of boiler/furnace: Commercial/Institutional (0.3 - 9.9 MMBtu/hr)
Heat Value (MMBtu/gal): 0.094
Energy Intensity (MMBtu/ft^2): 0.0907

- Default Settings Used: Yes

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

3.3 Heating Emission Factor(s)

- Heating Emission Factors (lb/1000 gal)

VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
1	0.018	13	7.5	0.7	0.7	0.000	0.000	12664

3.4 Heating Formula(s)

- Heating Fuel Consumption gallons per Year
FC_{HER}= HA * EI / HV / 1000

FC_{HER}: Fuel Consumption for Heat Energy Requirement Method
HA: Area of floorspace to be heated (ft^2)
EI: Energy Intensity Requirement ($MMBtu/ft^2$)
HV: Heat Value (MMBtu/gal)
1000: 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

4. Construction / Demolition

4.1 General Information & Timeline Assumptions

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

- Activity Title: Project 5: Construction – Construct Aerospace Ground Equipment (AGE) Covered Storage

- Activity Description:
It was assumed the AGE covered storage would be constructed over a 1-year period from January 2025 through December 2025.

Construction would include the overhang (approximately 2,800 SF). Building height was assumed to be 15 feet. Construction would begin in January 2025 and last approximately 11 months.

Architectural coatings would be applied to the overhang for a total of approximately 2,800 SF. Architectural coating application would begin in December 2025 and last approximately 1 month.

- Activity Start Date
Start Month: 1
Start Month: 2025

- Activity End Date
Indefinite: False
End Month: 12
End Month: 2025

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.135780
SO_x	0.002214
NO_x	0.506365
CO	0.904424
PM 10	0.016109

Pollutant	Total Emissions (TONs)
PM 2.5	0.016081
Pb	0.000000
NH_3	0.000681
CO_2e	213.1

4.1 Building Construction Phase

4.1.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2025

- Phase Duration
Number of Month: 11
Number of Days: 0

4.1.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 2800
Height of Building (ft): 15
Number of Units: N/A

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

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	8

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

- Vehicle Exhaust Vehicle Mixture (%)

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

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

- Worker Trips Vehicle Mixture (%)

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

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

- Vendor Trips Vehicle Mixture (%)

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

4.1.3 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	000.188	000.002	000.095	002.742	000.005	000.004	0.000	000.024	00302.739
LDGT	000.201	000.003	000.166	003.063	000.007	000.006	0.000	000.026	00394.529
HDGV	000.828	000.006	000.861	013.328	000.026	000.023	0.000	000.051	00910.516
LDDV	000.081	000.001	000.080	002.979	000.003	000.002	0.000	000.008	00305.173
LDDT	000.087	000.001	000.120	002.049	000.003	000.003	0.000	000.009	00356.221
HDDV	000.123	000.004	002.451	001.540	000.042	000.039	0.000	000.032	01239.307
MC	002.311	000.003	000.684	012.373	000.023	000.020	0.000	000.054	00390.036

4.1.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

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

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

- Vehicle Exhaust Emissions per Phase

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

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

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

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

- Worker Trips Emissions per Phase

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

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

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

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

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

- Vender Trips Emissions per Phase
$VMT_{VT} = BA * BH * (0.38 / 1000) * HT$

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

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

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

4.2 Architectural Coatings Phase

4.2.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date
Start Month: 12
Start Quarter: 1
Start Year: 2025

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

4.2.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information
Building Category: Non-Residential
Total Square Footage (ft^2): 2800
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

4.2.3 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	000.188	000.002	000.095	002.742	000.005	000.004	0.000	000.024	00302.739
LDGT	000.201	000.003	000.166	003.063	000.007	000.006	0.000	000.026	00394.529
HDGV	000.828	000.006	000.861	013.328	000.026	000.023	0.000	000.051	00910.516
LDDV	000.081	000.001	000.080	002.979	000.003	000.002	0.000	000.008	00305.173
LDDT	000.087	000.001	000.120	002.049	000.003	000.003	0.000	000.009	00356.221
HDDV	000.123	000.004	002.451	001.540	000.042	000.039	0.000	000.032	01239.307
MC	002.311	000.003	000.684	012.373	000.023	000.020	0.000	000.054	00390.036

4.2.4 Architectural Coatings Phase Formula(s)

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

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

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

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

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

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

5. Construction / Demolition

5.1 General Information & Timeline Assumptions

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

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Activity Title: Project 9: Construction – Construct POL Delivery Transport and Bypass Road

- Activity Description:

It was assumed the POL delivery transport and bypass road would be constructed over a 1-year period from January 2026 through December 2026.

Site grading would occur on the entire site of POL delivery transport road (approximately 65,000 SF). Site grading would begin in January 2026 and last approximately 3 months.

Paving would occur on approximately 65,000 SF. Paving would begin in April 2026 and last approximately 9 months.

- Activity Start Date

Start Month: 1
Start Month: 2026

- Activity End Date

Indefinite: False
End Month: 12
End Month: 2026

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.238942
SO_x	0.003622
NO_x	1.319892
CO	1.791941
PM 10	2.000941

Pollutant	Total Emissions (TONs)
PM 2.5	0.061035
Pb	0.000000
NH_3	0.001275
CO_2e	353.6

5.1 Site Grading Phase

5.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date

Start Month: 1
Start Quarter: 1
Start Year: 2026

- Phase Duration

Number of Month: 3
Number of Days: 0

5.1.2 Site Grading Phase Assumptions

- General Site Grading Information

Area of Site to be Graded (ft^2): 65000
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 0

- Site Grading Default Settings

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

- Construction Exhaust (default)

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

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

- Vehicle Exhaust Vehicle Mixture (%)

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

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

- Worker Trips Vehicle Mixture (%)

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

5.1.3 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	000.188	000.002	000.095	002.742	000.005	000.004	0.000	000.024	00302.739
LDGT	000.201	000.003	000.166	003.063	000.007	000.006	0.000	000.026	00394.529
HDGV	000.828	000.006	000.861	013.328	000.026	000.023	0.000	000.051	00910.516
LDDV	000.081	000.001	000.080	002.979	000.003	000.002	0.000	000.008	00305.173
LDDT	000.087	000.001	000.120	002.049	000.003	000.003	0.000	000.009	00356.221
HDDV	000.123	000.004	002.451	001.540	000.042	000.039	0.000	000.032	01239.307
MC	002.311	000.003	000.684	012.373	000.023	000.020	0.000	000.054	00390.036

5.1.4 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 (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

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

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

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

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

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

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

5.2 Paving Phase

5.2.1 Paving Phase Timeline Assumptions

- Phase Start Date

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Start Month: 4
Start Quarter: 1
Start Year: 2026

- Phase Duration
Number of Month: 9
Number of Days: 0

5.2.2 Paving Phase Assumptions

- General Paving Information
Paving Area (ft^2): 65000

- 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	1	8
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

5.2.3 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	0.0676	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	000.188	000.002	000.095	002.742	000.005	000.004	0.000	000.024	00302.739
LDGT	000.201	000.003	000.166	003.063	000.007	000.006	0.000	000.026	00394.529
HDGV	000.828	000.006	000.861	013.328	000.026	000.023	0.000	000.051	00910.516
LDDV	000.081	000.001	000.080	002.979	000.003	000.002	0.000	000.008	00305.173
LDDT	000.087	000.001	000.120	002.049	000.003	000.003	0.000	000.009	00356.221
HDDV	000.123	000.004	002.451	001.540	000.042	000.039	0.000	000.032	01239.307
MC	002.311	000.003	000.684	012.373	000.023	000.020	0.000	000.054	00390.036

5.2.4 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 (ft^2)
0.25: Thickness of Paving Area (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

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

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

- Worker Trips Emissions per Phase

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

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

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

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

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

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

6. Construction / Demolition

6.1 General Information & Timeline Assumptions

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

- Activity Title: Project 10: Construction – Maintenance Control Complex (Building 19)

- Activity Description:
It was assumed the maintenance control complex would be constructed over a 1-year period from January 2027 through December 2027.

Demolition of Building 19 (25,024 SF) and approximately 3,000 SF of existing pavements would be required. Demolition would begin in January 2027 and last approximately 1 month.

Site grading would occur on the entire site of the new building (34,000 SF) and the area needed for additional pavements (estimated at 6,000 SF). Site grading would begin in February 2027 and last approximately 1 month.

Trenching would be required for utility installation and/or extension, estimated at 5,000 SF. Trenching would begin in March 2027 and last approximately 1 month.

Construction would include the maintenance control complex (34,000 SF). Building height was assumed to be 20 feet. Construction would begin in April 2027 and last approximately 7 months.

Architectural coatings would be applied to the new building for a total of 34,000 SF. Architectural coating application would begin in November 2027 and last approximately 1 month.

Paving would be required for either a turnaround in the back of the building or a new wrap-around roadway. Paving was estimated to be 6,000 SF. Paving would begin in December 2027 and last approximately 1 month

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

- Activity End Date
Indefinite: False
End Month: 12

End Month: 2027

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.597739
SO_x	0.003849
NO_x	1.172106
CO	1.704315
PM 10	0.546537

Pollutant	Total Emissions (TONs)
PM 2.5	0.040765
Pb	0.000000
NH_3	0.001715
CO_2e	385.1

6.1 Demolition Phase

6.1.1 Demolition Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2027

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

6.1.2 Demolition Phase Assumptions

- General Demolition Information
Area of Building to be demolished (ft^2): 28024
Height of Building to be demolished (ft): 20

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

- Vehicle Exhaust Vehicle Mixture (%)

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

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

- Worker Trips Vehicle Mixture (%)

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

6.1.3 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	0.0336	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	000.188	000.002	000.095	002.742	000.005	000.004	0.000	000.024	00302.739
LDGT	000.201	000.003	000.166	003.063	000.007	000.006	0.000	000.026	00394.529
HDGV	000.828	000.006	000.861	013.328	000.026	000.023	0.000	000.051	00910.516
LDDV	000.081	000.001	000.080	002.979	000.003	000.002	0.000	000.008	00305.173
LDDT	000.087	000.001	000.120	002.049	000.003	000.003	0.000	000.009	00356.221
HDDV	000.123	000.004	002.451	001.540	000.042	000.039	0.000	000.032	01239.307
MC	002.311	000.003	000.684	012.373	000.023	000.020	0.000	000.054	00390.036

6.1.4 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/ft^3)
BA: Area of Building to be demolished (ft^2)
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 (ft^2)
BH: Height of Building being demolish (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
0.25: Volume reduction factor (material reduced by 75% to account for air space)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

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

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

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

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

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

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

6.2 Site Grading Phase

6.2.1 Site Grading Phase Timeline Assumptions

- Phase Start Date
Start Month: 2
Start Quarter: 1
Start Year: 2027

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

6.2.2 Site Grading Phase Assumptions

- General Site Grading Information
Area of Site to be Graded (ft^2): 34000
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 750

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

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day

Graders Composite	1	6
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	6
Tractors/Loaders/Backhoes Composite	1	7

- Vehicle Exhaust

Average Hauling Truck Capacity (yd^3): 20 (default)

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

- Vehicle Exhaust Vehicle Mixture (%)

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

- Worker Trips

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

- Worker Trips Vehicle Mixture (%)

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

6.2.3 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	000.188	000.002	000.095	002.742	000.005	000.004	0.000	000.024	00302.739
LDGT	000.201	000.003	000.166	003.063	000.007	000.006	0.000	000.026	00394.529
HDGV	000.828	000.006	000.861	013.328	000.026	000.023	0.000	000.051	00910.516
LDDV	000.081	000.001	000.080	002.979	000.003	000.002	0.000	000.008	00305.173
LDDT	000.087	000.001	000.120	002.049	000.003	000.003	0.000	000.009	00356.221
HDDV	000.123	000.004	002.451	001.540	000.042	000.039	0.000	000.032	01239.307
MC	002.311	000.003	000.684	012.373	000.023	000.020	0.000	000.054	00390.036

6.2.4 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 (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

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

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

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

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

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

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

6.3 Trenching/Excavating Phase

6.3.1 Trenching / Excavating Phase Timeline Assumptions

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

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Start Year: 2027

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

6.3.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information
Area of Site to be Trenched/Excavated (ft^2): 5000
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 0

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

- Construction Exhaust (default)

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

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

- Vehicle Exhaust Vehicle Mixture (%)

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

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

- Worker Trips Vehicle Mixture (%)

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

6.3.3 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)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.188	000.002	000.095	002.742	000.005	000.004	0.000	000.024	00302.739
LDGT	000.201	000.003	000.166	003.063	000.007	000.006	0.000	000.026	00394.529
HDGV	000.828	000.006	000.861	013.328	000.026	000.023	0.000	000.051	00910.516
LDDV	000.081	000.001	000.080	002.979	000.003	000.002	0.000	000.008	00305.173
LDDT	000.087	000.001	000.120	002.049	000.003	000.003	0.000	000.009	00356.221
HDDV	000.123	000.004	002.451	001.540	000.042	000.039	0.000	000.032	01239.307
MC	002.311	000.003	000.684	012.373	000.023	000.020	0.000	000.054	00390.036

6.3.4 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 (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

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

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

- Worker Trips Emissions per Phase

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

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

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

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

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

6.4 Building Construction Phase

6.4.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 4
Start Quarter: 1
Start Year: 2027

- Phase Duration
Number of Month: 7
Number of Days: 0

6.4.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 34000
Height of Building (ft): 20
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

6.4.3 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
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	000.188	000.002	000.095	002.742	000.005	000.004	0.000	000.024	00302.739
LDGT	000.201	000.003	000.166	003.063	000.007	000.006	0.000	000.026	00394.529
HDGV	000.828	000.006	000.861	013.328	000.026	000.023	0.000	000.051	00910.516
LDDV	000.081	000.001	000.080	002.979	000.003	000.002	0.000	000.008	00305.173
LDDT	000.087	000.001	000.120	002.049	000.003	000.003	0.000	000.009	00356.221
HDDV	000.123	000.004	002.451	001.540	000.042	000.039	0.000	000.032	01239.307
MC	002.311	000.003	000.684	012.373	000.023	000.020	0.000	000.054	00390.036

6.4.4 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 (ft^2)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft^3 to trips (0.42 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

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

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

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

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

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

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

- Vender Trips Emissions per Phase
$VMT_{VT} = BA * BH * (0.38 / 1000) * HT$

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

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

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

6.5 Architectural Coatings Phase

6.5.1 Architectural Coatings Phase Timeline Assumptions

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Phase Start Date
Start Month: 11
Start Quarter: 1
Start Year: 2027

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

6.5.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information
Building Category: Non-Residential
Total Square Footage (ft^2): 34000
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

6.5.3 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	000.188	000.002	000.095	002.742	000.005	000.004	0.000	000.024	00302.739
LDGT	000.201	000.003	000.166	003.063	000.007	000.006	0.000	000.026	00394.529
HDGV	000.828	000.006	000.861	013.328	000.026	000.023	0.000	000.051	00910.516
LDDV	000.081	000.001	000.080	002.979	000.003	000.002	0.000	000.008	00305.173
LDDT	000.087	000.001	000.120	002.049	000.003	000.003	0.000	000.009	00356.221
HDDV	000.123	000.004	002.451	001.540	000.042	000.039	0.000	000.032	01239.307
MC	002.311	000.003	000.684	012.373	000.023	000.020	0.000	000.054	00390.036

6.5.4 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 (ft^2)
800: Conversion Factor square feet to man days (1 ft^2 / 1 man * day)

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

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

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

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

6.6 Paving Phase

6.6.1 Paving Phase Timeline Assumptions

- Phase Start Date
Start Month: 12
Start Quarter: 1
Start Year: 2027

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

6.6.2 Paving Phase Assumptions

- General Paving Information
Paving Area (ft^2): 6000

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

- Construction Exhaust (default)

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

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

- Vehicle Exhaust Vehicle Mixture (%)

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

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

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC

POVs	50.00	50.00	0	0	0	0	0

6.6.3 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	0.0676	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	000.188	000.002	000.095	002.742	000.005	000.004	0.000	000.024	00302.739
LDGT	000.201	000.003	000.166	003.063	000.007	000.006	0.000	000.026	00394.529
HDGV	000.828	000.006	000.861	013.328	000.026	000.023	0.000	000.051	00910.516
LDDV	000.081	000.001	000.080	002.979	000.003	000.002	0.000	000.008	00305.173
LDDT	000.087	000.001	000.120	002.049	000.003	000.003	0.000	000.009	00356.221
HDDV	000.123	000.004	002.451	001.540	000.042	000.039	0.000	000.032	01239.307
MC	002.311	000.003	000.684	012.373	000.023	000.020	0.000	000.054	00390.036

6.6.4 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 (ft^2)
0.25: Thickness of Paving Area (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

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

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

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

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

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

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

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

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

7. Heating

7.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

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

- Activity Title: Heating (Project 10: Add Heating for Maintenance Control Complex)

- Activity Description:
Heating/cooling for an additional 8,976 SF of building space (25,024 SF existing Building 19 space subtracted from 34,000 SF new maintenance control complex would be required following construction. It was assumed the building would be heated using a natural gas-fired boiler. Heating would begin following construction, or January 2028, and would continue indefinitely.

- Activity Start Date
Start Month: 1
Start Year: 2028

- Activity End Date

Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.002132
SO_x	0.000233
NO_x	0.038768
CO	0.032565
PM 10	0.002946

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.002946
Pb	0.000000
NH_3	0.000000
CO_2e	46.7

7.2 Heating Assumptions

- Heating
Heating Calculation Type: Heat Energy Requirement Method

- Heat Energy Requirement Method
Area of floorspace to be heated (ft^2): 8976
Type of fuel: Natural Gas
Type of boiler/furnace: Industrial (10 - 250 MMBtu/hr)
Heat Value (MMBtu/ft^3): 0.00105
Energy Intensity (MMBtu/ft^2): 0.0907

- Default Settings Used: Yes

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

7.3 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	0.000	0.000	120390

7.4 Heating Formula(s)

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

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

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

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

8. Construction / Demolition

8.1 General Information & Timeline Assumptions

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

- Activity Title: Project 14: Construction – Construct Vehicle Search Pit

- Activity Description:
It was assumed the vehicle search pit would be constructed over a 1-year period from January 2030 through December 2030.

Site grading would occur on the entire site (1,800 SF or 0.04 acre). Site grading would begin in January 2030 and last approximately 3 months.

It was assumed the entire site (1,800 SF) would be trenched to accommodate the vehicle search pit. Trenching would begin in April 2030 and last approximately 3 months.

Construction would include the vehicle search pit and metal framed cover (1,800 SF). Height of the facility was assumed to be 15 feet. Construction would begin in July 2030 and last approximately 3 months.

Paving would be required on an estimated 3,000 SF. Paving would begin in October 2030 and last approximately 3 months.

- Activity Start Date
Start Month: 1
Start Month: 2030

- Activity End Date
Indefinite: False
End Month: 12
End Month: 2030

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.195543
SO_x	0.003739
NO_x	1.011546
CO	1.518405
PM 10	0.146131

Pollutant	Total Emissions (TONs)
PM 2.5	0.038656
Pb	0.000000
NH_3	0.000885
CO_2e	361.4

8.1 Site Grading Phase

8.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2030

- Phase Duration

Number of Month: 3
Number of Days: 0

8.1.2 Site Grading Phase Assumptions

- General Site Grading Information
Area of Site to be Graded (ft²): 1800
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

8.1.3 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	000.188	000.002	000.095	002.742	000.005	000.004	0.000	000.024	00302.739
LDGT	000.201	000.003	000.166	003.063	000.007	000.006	0.000	000.026	00394.529
HDGV	000.828	000.006	000.861	013.328	000.026	000.023	0.000	000.051	00910.516
LDDV	000.081	000.001	000.080	002.979	000.003	000.002	0.000	000.008	00305.173
LDDT	000.087	000.001	000.120	002.049	000.003	000.003	0.000	000.009	00356.221
HDDV	000.123	000.004	002.451	001.540	000.042	000.039	0.000	000.032	01239.307
MC	002.311	000.003	000.684	012.373	000.023	000.020	0.000	000.054	00390.036

8.1.4 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 (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

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

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

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

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

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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

8.2 Trenching/Excavating Phase

8.2.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date
Start Month: 4
Start Quarter: 1
Start Year: 2030

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

8.2.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information
Area of Site to be Trenched/Excavated (ft^2): 1800
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 500

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

- Vehicle Exhaust Vehicle Mixture (%)

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

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

- Worker Trips Vehicle Mixture (%)

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

8.2.3 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	000.188	000.002	000.095	002.742	000.005	000.004	0.000	000.024	00302.739
LDGT	000.201	000.003	000.166	003.063	000.007	000.006	0.000	000.026	00394.529
HDGV	000.828	000.006	000.861	013.328	000.026	000.023	0.000	000.051	00910.516
LDDV	000.081	000.001	000.080	002.979	000.003	000.002	0.000	000.008	00305.173
LDDT	000.087	000.001	000.120	002.049	000.003	000.003	0.000	000.009	00356.221
HDDV	000.123	000.004	002.451	001.540	000.042	000.039	0.000	000.032	01239.307
MC	002.311	000.003	000.684	012.373	000.023	000.020	0.000	000.054	00390.036

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 (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

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

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

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

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

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

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

8.3 Building Construction Phase

8.3.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 7
Start Quarter: 1
Start Year: 2030

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

8.3.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 1800
Height of Building (ft): 15
Number of Units: N/A

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

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	8

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

- Vehicle Exhaust Vehicle Mixture (%)

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

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

- Worker Trips Vehicle Mixture (%)

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

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

- Vendor Trips Vehicle Mixture (%)

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

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
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	000.188	000.002	000.095	002.742	000.005	000.004	0.000	000.024	00302.739
LDGT	000.201	000.003	000.166	003.063	000.007	000.006	0.000	000.026	00394.529
HDGV	000.828	000.006	000.861	013.328	000.026	000.023	0.000	000.051	00910.516
LDDV	000.081	000.001	000.080	002.979	000.003	000.002	0.000	000.008	00305.173
LDDT	000.087	000.001	000.120	002.049	000.003	000.003	0.000	000.009	00356.221
HDDV	000.123	000.004	002.451	001.540	000.042	000.039	0.000	000.032	01239.307
MC	002.311	000.003	000.684	012.373	000.023	000.020	0.000	000.054	00390.036

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 (ft^2)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft^3 to trips (0.42 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

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

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

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

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

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

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

- Vender Trips Emissions per Phase
$VMT_{VT} = BA * BH * (0.38 / 1000) * HT$

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

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

V_{POL}: Vehicle Emissions (TONs)
VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

8.4 Paving Phase

8.4.1 Paving Phase Timeline Assumptions

- Phase Start Date
Start Month: 10
Start Quarter: 1
Start Year: 2030

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

8.4.2 Paving Phase Assumptions

- General Paving Information
Paving Area (ft^2): 3000

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

- Construction Exhaust (default)

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

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

- Vehicle Exhaust Vehicle Mixture (%)

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

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

- Worker Trips Vehicle Mixture (%)

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

8.4.3 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	0.0676	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	000.188	000.002	000.095	002.742	000.005	000.004	0.000	000.024	00302.739
LDGT	000.201	000.003	000.166	003.063	000.007	000.006	0.000	000.026	00394.529
HDGV	000.828	000.006	000.861	013.328	000.026	000.023	0.000	000.051	00910.516
LDDV	000.081	000.001	000.080	002.979	000.003	000.002	0.000	000.008	00305.173
LDDT	000.087	000.001	000.120	002.049	000.003	000.003	0.000	000.009	00356.221
HDDV	000.123	000.004	002.451	001.540	000.042	000.039	0.000	000.032	01239.307
MC	002.311	000.003	000.684	012.373	000.023	000.020	0.000	000.054	00390.036

8.4.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

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

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

- Vehicle Exhaust Emissions per Phase

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

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

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

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

- Worker Trips Emissions per Phase

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

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

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

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

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

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

9. Construction / Demolition

9.1 General Information & Timeline Assumptions

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

- Activity Title: Project 15: Construction – Construct Vehicle Operations Covered Parking

- Activity Description:
It was assumed the vehicle operations covered parking would be constructed over a 1-year period from January 2030 through December 2030.

Construction would include a 4-sided covered parking facility (3,420 SF). Height of the facility was assumed to be 15 feet. Construction would begin in January 2030 and last approximately 11 months.

Architectural coatings would be applied to the facility for a total of 3,420 SF. Architectural coating application would begin in December 2030 and last approximately 1 month.

- Activity Start Date
Start Month: 1
Start Month: 2030

- Activity End Date
Indefinite: False
End Month: 12
End Month: 2030

- Activity Emissions:

Pollutant	Total Emissions (TONs)

Pollutant	Total Emissions (TONs)

VOC	0.143078
SO_x	0.002215
NO_x	0.506824
CO	0.905957
PM 10	0.016119

PM 2.5	0.016090
Pb	0.000000
NH_3	0.000697
CO_2e	213.4

9.1 Building Construction Phase

9.1.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2030

- Phase Duration
Number of Month: 11
Number of Days: 0

9.1.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 3420
Height of Building (ft): 15
Number of Units: N/A

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

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	8

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

- Vehicle Exhaust Vehicle Mixture (%)

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

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

- Worker Trips Vehicle Mixture (%)

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

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

- Vendor Trips Vehicle Mixture (%)

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

9.1.3 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	000.188	000.002	000.095	002.742	000.005	000.004	0.000	000.024	00302.739
LDGT	000.201	000.003	000.166	003.063	000.007	000.006	0.000	000.026	00394.529
HDGV	000.828	000.006	000.861	013.328	000.026	000.023	0.000	000.051	00910.516
LDDV	000.081	000.001	000.080	002.979	000.003	000.002	0.000	000.008	00305.173
LDDT	000.087	000.001	000.120	002.049	000.003	000.003	0.000	000.009	00356.221
HDDV	000.123	000.004	002.451	001.540	000.042	000.039	0.000	000.032	01239.307
MC	002.311	000.003	000.684	012.373	000.023	000.020	0.000	000.054	00390.036

9.1.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

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

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

- Vehicle Exhaust Emissions per Phase

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

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

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

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

2000: Conversion Factor pounds to tons

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

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

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

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

- Vender Trips Emissions per Phase
$VMT_{VT} = BA * BH * (0.38 / 1000) * HT$

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

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

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

9.2 Architectural Coatings Phase

9.2.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date
Start Month: 12
Start Quarter: 1
Start Year: 2030

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

9.2.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information
Building Category: Non-Residential
Total Square Footage (ft^2): 3420

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

9.2.3 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	000.188	000.002	000.095	002.742	000.005	000.004	0.000	000.024	00302.739
LDGT	000.201	000.003	000.166	003.063	000.007	000.006	0.000	000.026	00394.529
HDGV	000.828	000.006	000.861	013.328	000.026	000.023	0.000	000.051	00910.516
LDDV	000.081	000.001	000.080	002.979	000.003	000.002	0.000	000.008	00305.173
LDDT	000.087	000.001	000.120	002.049	000.003	000.003	0.000	000.009	00356.221
HDDV	000.123	000.004	002.451	001.540	000.042	000.039	0.000	000.032	01239.307
MC	002.311	000.003	000.684	012.373	000.023	000.020	0.000	000.054	00390.036

9.2.4 Architectural Coatings Phase Formula(s)

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

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

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

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

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

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

10. Construction / Demolition

10.1 General Information & Timeline Assumptions

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

- Activity Title: Project 16: Construction – Construct Logistics Complex

- Activity Description:
It was assumed the logistics complex would be constructed over a 1-year period from January 2030 through December 2030.

Site grading would occur on the entire site (20,400 SF or 0.47 acre) and the area needed for additional pavements (estimated at 10,000 SF). Site grading would begin in January 2030 and last approximately 1 month.

Trenching would be required for utility installation and/or extension. It was assumed the entire site of the complex (20,400 SF) would be trenched. Trenching would begin in February 2030 and last approximately 1 month.

Construction would include the logistics complex (20,400 SF). Building height was assumed to be 30 feet. Construction would begin in March 2030 and last approximately 8 months.

Architectural coatings would be applied to the complex for a total of 20,400 SF. Architectural coating application would begin in November 2030 and last approximately 1 month.

It was assumed some paving would be required for access roads and was estimated to be 10,000 SF. Paving would begin in December 2030 and last approximately 1 month.

- Activity Start Date
Start Month: 1
Start Month: 2030

- Activity End Date
Indefinite: False
End Month: 12
End Month: 2030

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.369067
SO_x	0.002695
NO_x	0.684104
CO	1.097191
PM 10	0.528929

Pollutant	Total Emissions (TONs)
PM 2.5	0.023511
Pb	0.000000
NH_3	0.001050
CO_2e	268.5

10.1 Site Grading Phase

10.1.1 Site Grading Phase Timeline Assumptions

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

Start Year: 2030

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

10.1.2 Site Grading Phase Assumptions

- General Site Grading Information
Area of Site to be Graded (ft^2): 30400
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 0

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

- Construction Exhaust (default)

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

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

- Vehicle Exhaust Vehicle Mixture (%)

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

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

- Worker Trips Vehicle Mixture (%)

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

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	0.0676	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	000.188	000.002	000.095	002.742	000.005	000.004	0.000	000.024	00302.739
LDGT	000.201	000.003	000.166	003.063	000.007	000.006	0.000	000.026	00394.529
HDGV	000.828	000.006	000.861	013.328	000.026	000.023	0.000	000.051	00910.516
LDDV	000.081	000.001	000.080	002.979	000.003	000.002	0.000	000.008	00305.173
LDDT	000.087	000.001	000.120	002.049	000.003	000.003	0.000	000.009	00356.221
HDDV	000.123	000.004	002.451	001.540	000.042	000.039	0.000	000.032	01239.307
MC	002.311	000.003	000.684	012.373	000.023	000.020	0.000	000.054	00390.036

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

- Vehicle Exhaust Emissions per Phase

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

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

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

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

- Worker Trips Emissions per Phase

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

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

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

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

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

10.2 Trenching/Excavating Phase

10.2.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date
Start Month: 2
Start Quarter: 1
Start Year: 2030

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

10.2.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information
Area of Site to be Trenched/Excavated (ft^2): 20400
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 0

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

- Construction Exhaust (default)

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

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

- Vehicle Exhaust Vehicle Mixture (%)

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

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

- Worker Trips Vehicle Mixture (%)

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

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	0.0676	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	000.188	000.002	000.095	002.742	000.005	000.004	0.000	000.024	00302.739
LDGT	000.201	000.003	000.166	003.063	000.007	000.006	0.000	000.026	00394.529
HDGV	000.828	000.006	000.861	013.328	000.026	000.023	0.000	000.051	00910.516
LDDV	000.081	000.001	000.080	002.979	000.003	000.002	0.000	000.008	00305.173
LDDT	000.087	000.001	000.120	002.049	000.003	000.003	0.000	000.009	00356.221
HDDV	000.123	000.004	002.451	001.540	000.042	000.039	0.000	000.032	01239.307
MC	002.311	000.003	000.684	012.373	000.023	000.020	0.000	000.054	00390.036

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

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

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

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

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

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

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

10.3 Building Construction Phase

10.3.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 3
Start Quarter: 1
Start Year: 2030

- Phase Duration
Number of Month: 8
Number of Days: 0

10.3.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 20400
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	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

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	0.0680	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	000.188	000.002	000.095	002.742	000.005	000.004	0.000	000.024	00302.739
LDGT	000.201	000.003	000.166	003.063	000.007	000.006	0.000	000.026	00394.529
HDGV	000.828	000.006	000.861	013.328	000.026	000.023	0.000	000.051	00910.516
LDDV	000.081	000.001	000.080	002.979	000.003	000.002	0.000	000.008	00305.173
LDDT	000.087	000.001	000.120	002.049	000.003	000.003	0.000	000.009	00356.221
HDDV	000.123	000.004	002.451	001.540	000.042	000.039	0.000	000.032	01239.307
MC	002.311	000.003	000.684	012.373	000.023	000.020	0.000	000.054	00390.036

10.3.4 Building Construction Phase Formula(s)

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- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

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

- Vehicle Exhaust Emissions per Phase
$VMT_{VE} = BA * BH * (0.42 / 1000) * HT$

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

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

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

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

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

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

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

- Vender Trips Emissions per Phase
$VMT_{VT} = BA * BH * (0.38 / 1000) * HT$

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

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

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

10.4 Architectural Coatings Phase

10.4.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date
Start Month: 11
Start Quarter: 1
Start Year: 2030

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

10.4.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information
Building Category: Non-Residential
Total Square Footage (ft^2): 20400
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_2e
LDGV	000.188	000.002	000.095	002.742	000.005	000.004	0.000	000.024	00302.739
LDGT	000.201	000.003	000.166	003.063	000.007	000.006	0.000	000.026	00394.529
HDGV	000.828	000.006	000.861	013.328	000.026	000.023	0.000	000.051	00910.516
LDDV	000.081	000.001	000.080	002.979	000.003	000.002	0.000	000.008	00305.173
LDDT	000.087	000.001	000.120	002.049	000.003	000.003	0.000	000.009	00356.221
HDDV	000.123	000.004	002.451	001.540	000.042	000.039	0.000	000.032	01239.307
MC	002.311	000.003	000.684	012.373	000.023	000.020	0.000	000.054	00390.036

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 (ft^2)
800: Conversion Factor square feet to man days (1 ft^2 / 1 man * day)

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

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

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

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

10.5 Paving Phase

10.5.1 Paving Phase Timeline Assumptions

- Phase Start Date
Start Month: 12
Start Quarter: 1
Start Year: 2030

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

10.5.2 Paving Phase Assumptions

- General Paving Information
Paving Area (ft^2): 10000

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

- Construction Exhaust (default)

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

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

- Vehicle Exhaust Vehicle Mixture (%)

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

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

- Worker Trips Vehicle Mixture (%)

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

10.5.3 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	0.0676	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	000.188	000.002	000.095	002.742	000.005	000.004	0.000	000.024	00302.739
LDGT	000.201	000.003	000.166	003.063	000.007	000.006	0.000	000.026	00394.529
HDGV	000.828	000.006	000.861	013.328	000.026	000.023	0.000	000.051	00910.516
LDDV	000.081	000.001	000.080	002.979	000.003	000.002	0.000	000.008	00305.173
LDDT	000.087	000.001	000.120	002.049	000.003	000.003	0.000	000.009	00356.221
HDDV	000.123	000.004	002.451	001.540	000.042	000.039	0.000	000.032	01239.307
MC	002.311	000.003	000.684	012.373	000.023	000.020	0.000	000.054	00390.036

10.5.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

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

- Vehicle Exhaust Emissions per Phase
$VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$

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

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

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

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

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

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

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

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

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

11. Heating

11.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

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

- Activity Title: Heating (Project 16: Add heating for Logistics Complex)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Activity Description:
Heating/cooling for the logistics complex (20,400 SF) would be required following construction. It was assumed the complex would be heated using a natural gas-fired boiler. Heating would begin following construction, or January 2031, and would continue indefinitely.

- Activity Start Date
Start Month: 1
Start Year: 2031

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

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.004023
SO_x	0.000439
NO_x	0.073149
CO	0.061445
PM 10	0.005559

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.005559
Pb	0.000000
NH_3	0.000000
CO_2e	88.1

11.2 Heating Assumptions

- Heating
Heating Calculation Type: Heat Energy Requirement Method

- Heat Energy Requirement Method
Area of floorspace to be heated (ft^2): 20400
Type of fuel: Natural Gas
Type of boiler/furnace: Industrial (10 - 250 MMBtu/hr)
Heat Value (MMBtu/ft^3): 0.00105
Energy Intensity (MMBtu/ft^2): 0.0753

- Default Settings Used: Yes

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

11.3 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	0.000	0.000	120390

11.4 Heating Formula(s)

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

FC_{HER}: Fuel Consumption for Heat Energy Requirement Method
HA: Area of floorspace to be heated (ft^2)
EI: Energy Intensity Requirement (MMBtu/ft^2)

HV: Heat Value (MMBTU/ft^3)
1000000: Conversion Factor

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

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

12. Construction / Demolition

12.1 General Information & Timeline Assumptions

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

- Activity Title: Project 17: Construction – Construct Operations and Training Facility

- Activity Description:
It was assumed the operations and training facility would be constructed over a 1-year period from January 2030 through December 2030.

Demolition would include the existing Building 1 (32,760 SF or 0.75 acre). Demolition would begin in January 2030 and last approximately 3 months.

Construction would include the proposed operations and training facility (32,760 SF). Construction would begin in April 2030 and last approximately 8 months.

Architectural coatings would be applied to the facility for a total of 32,760 SF. Architectural coating application would begin in December 2030 and last approximately 1 month.

- Activity Start Date
Start Month: 1
Start Month: 2030

- Activity End Date
Indefinite: False
End Month: 12
End Month: 2030

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.566983
SO_x	0.003555
NO_x	1.129519
CO	1.645625
PM 10	0.244060

Pollutant	Total Emissions (TONs)
PM 2.5	0.037545
Pb	0.000000
NH_3	0.002010
CO_2e	364.5

12.1 Demolition Phase

12.1.1 Demolition Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2030

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

12.1.2 Demolition Phase Assumptions

- General Demolition Information
Area of Building to be demolished (ft^2): 32760
Height of Building to be demolished (ft): 30

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

- Vehicle Exhaust Vehicle Mixture (%)

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

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

- Worker Trips Vehicle Mixture (%)

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

12.1.3 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	0.0336	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	000.188	000.002	000.095	002.742	000.005	000.004	0.000	000.024	00302.739
LDGT	000.201	000.003	000.166	003.063	000.007	000.006	0.000	000.026	00394.529
HDGV	000.828	000.006	000.861	013.328	000.026	000.023	0.000	000.051	00910.516
LDDV	000.081	000.001	000.080	002.979	000.003	000.002	0.000	000.008	00305.173
LDDT	000.087	000.001	000.120	002.049	000.003	000.003	0.000	000.009	00356.221
HDDV	000.123	000.004	002.451	001.540	000.042	000.039	0.000	000.032	01239.307
MC	002.311	000.003	000.684	012.373	000.023	000.020	0.000	000.054	00390.036

12.1.4 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/ft^3)
BA: Area of Building to be demolished (ft^2)
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 (ft^2)
BH: Height of Building being demolish (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
0.25: Volume reduction factor (material reduced by 75% to account for air space)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

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

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

- Worker Trips Emissions per Phase

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

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

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

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

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

12.2 Building Construction Phase

12.2.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 4
Start Quarter: 1
Start Year: 2030

- Phase Duration
Number of Month: 8
Number of Days: 0

12.2.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 32760
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

12.2.3 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	000.188	000.002	000.095	002.742	000.005	000.004	0.000	000.024	00302.739
LDGT	000.201	000.003	000.166	003.063	000.007	000.006	0.000	000.026	00394.529
HDGV	000.828	000.006	000.861	013.328	000.026	000.023	0.000	000.051	00910.516
LDDV	000.081	000.001	000.080	002.979	000.003	000.002	0.000	000.008	00305.173
LDDT	000.087	000.001	000.120	002.049	000.003	000.003	0.000	000.009	00356.221
HDDV	000.123	000.004	002.451	001.540	000.042	000.039	0.000	000.032	01239.307
MC	002.311	000.003	000.684	012.373	000.023	000.020	0.000	000.054	00390.036

12.2.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

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

- Vehicle Exhaust Emissions per Phase
$VMT_{VE} = BA * BH * (0.42 / 1000) * HT$

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

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

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

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

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

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

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

- Vender Trips Emissions per Phase
$VMT_{VT} = BA * BH * (0.38 / 1000) * HT$

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

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

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

12.3 Architectural Coatings Phase

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12.3.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date
Start Month: 12
Start Quarter: 1
Start Year: 2030

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

12.3.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information
Building Category: Non-Residential
Total Square Footage (ft^2): 32760
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

12.3.3 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	000.188	000.002	000.095	002.742	000.005	000.004	0.000	000.024	00302.739
LDGT	000.201	000.003	000.166	003.063	000.007	000.006	0.000	000.026	00394.529
HDGV	000.828	000.006	000.861	013.328	000.026	000.023	0.000	000.051	00910.516
LDDV	000.081	000.001	000.080	002.979	000.003	000.002	0.000	000.008	00305.173
LDDT	000.087	000.001	000.120	002.049	000.003	000.003	0.000	000.009	00356.221
HDDV	000.123	000.004	002.451	001.540	000.042	000.039	0.000	000.032	01239.307
MC	002.311	000.003	000.684	012.373	000.023	000.020	0.000	000.054	00390.036

12.3.4 Architectural Coatings Phase Formula(s)

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

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

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

V_{POL}: Vehicle Emissions (TONs)

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

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

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

13. Heating

13.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

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

- Activity Title: Heating (Project 17: Add Heating for Operations and Training Facility)

- Activity Description:
Heating/cooling for the operations and training facility (32,760 SF) would be required following construction. It was assumed the facility would be heated using a natural gas-fired boiler. Heating would begin following construction, or January 2031, and would continue indefinitely.

- Activity Start Date
Start Month: 1
Start Year: 2031

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

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.007070
SO_x	0.000771
NO_x	0.128544
CO	0.107977
PM 10	0.009769

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.009769
Pb	0.000000
NH_3	0.000000
CO_2e	154.8

13.2 Heating Assumptions

- Heating
Heating Calculation Type: Heat Energy Requirement Method

- Heat Energy Requirement Method
Area of floorspace to be heated (ft^2): 32760
Type of fuel: Natural Gas
Type of boiler/furnace: Industrial (10 - 250 MMBtu/hr)
Heat Value (MMBtu/ft^3): 0.00105
Energy Intensity (MMBtu/ft^2): 0.0824

- Default Settings Used: Yes

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

13.3 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	0.000	0.000	120390

13.4 Heating Formula(s)

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

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

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

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

14. Construction / Demolition

14.1 General Information & Timeline Assumptions

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

- Activity Title: Project 1: Renovation – Pave Temporary Duty Assignment (TDY) Lot and Other Degraded Surfaces

- Activity Description:
It was assumed the TDY lot and other degraded surfaces would be renovated over a 1-year period from January 2025 through December 2025.

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Demolition of existing pavements would be required for approximately 243,522 SF. Demolition would begin in January 2025 and last approximately 3 months.

Site grading would occur on areas for new pavements (i.e., the TDY parking lot) totaling 16,200 SF. Site grading would begin in April 2025 and last approximately 1 month.

Paving would be required for areas that would be repaved (243,522 SF) and the new TDY parking lot (16,200 SF), totaling 259,722 SF. Paving would begin in May 2025 and last approximately 8 months.

- Activity Start Date
Start Month: 1
Start Month: 2025

- Activity End Date
Indefinite: False
End Month: 12
End Month: 2025

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.273268
SO_x	0.003835
NO_x	1.517182
CO	2.068113
PM 10	0.286556

Pollutant	Total Emissions (TONs)
PM 2.5	0.074182
Pb	0.000000
NH_3	0.001598
CO_2e	378.3

14.1 Demolition Phase

14.1.1 Demolition Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2025

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

14.1.2 Demolition Phase Assumptions

- General Demolition Information
Area of Building to be demolished (ft^2): 243522
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
Rubber Tired Dozers Composite	1	1
Tractors/Loaders/Backhoes Composite	3	8

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- Vehicle Exhaust

Average Hauling Truck Capacity (yd^3): 20 (default)

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

- Vehicle Exhaust Vehicle Mixture (%)

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

- Worker Trips

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

- Worker Trips Vehicle Mixture (%)

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

14.1.3 Demolition Phase Emission Factor(s)

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

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	000.196	000.002	000.108	002.885	000.005	000.004	0.000	000.024	00310.160
LDGT	000.211	000.003	000.187	003.231	000.007	000.006	0.000	000.026	00402.643
HDGV	000.851	000.006	000.941	014.061	000.027	000.024	0.000	000.052	00905.341
LDDV	000.084	000.001	000.086	003.033	000.003	000.002	0.000	000.008	00316.462
LDDT	000.091	000.001	000.130	002.117	000.003	000.003	0.000	000.009	00362.088
HDDV	000.137	000.004	002.629	001.597	000.051	000.047	0.000	000.032	01267.458
MC	002.312	000.003	000.686	012.522	000.023	000.020	0.000	000.053	00389.912

14.1.4 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/ft^3)
BA: Area of Building to be demolished (ft^2)
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 (ft^2)
BH: Height of Building being demolish (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
0.25: Volume reduction factor (material reduced by 75% to account for air space)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

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

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

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

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

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

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

14.2 Site Grading Phase

14.2.1 Site Grading Phase Timeline Assumptions

- Phase Start Date
Start Month: 4
Start Quarter: 1
Start Year: 2025

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

14.2.2 Site Grading Phase Assumptions

- General Site Grading Information

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Area of Site to be Graded (ft^2): 16200
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 0

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

- Construction Exhaust (default)

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

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

- Vehicle Exhaust Vehicle Mixture (%)

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

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

- Worker Trips Vehicle Mixture (%)

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

14.2.3 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	0.0714	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	000.196	000.002	000.108	002.885	000.005	000.004	0.000	000.024	00310.160
LDGT	000.211	000.003	000.187	003.231	000.007	000.006	0.000	000.026	00402.643
HDGV	000.851	000.006	000.941	014.061	000.027	000.024	0.000	000.052	00905.341
LDDV	000.084	000.001	000.086	003.033	000.003	000.002	0.000	000.008	00316.462
LDDT	000.091	000.001	000.130	002.117	000.003	000.003	0.000	000.009	00362.088
HDDV	000.137	000.004	002.629	001.597	000.051	000.047	0.000	000.032	01267.458

MC	002.312	000.003	000.686	012.522	000.023	000.020	0.000	000.053	00389.912

14.2.4 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 (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

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

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

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

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

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

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

14.3 Paving Phase

14.3.1 Paving Phase Timeline Assumptions

- Phase Start Date
Start Month: 5
Start Quarter: 1
Start Year: 2025

- Phase Duration
Number of Month: 8
Number of Days: 0

14.3.2 Paving Phase Assumptions

- General Paving Information
Paving Area (ft^2): 259722

- 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	8
Paving Equipment Composite	2	6
Rollers Composite	2	6
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

14.3.3 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	0.0714	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	000.196	000.002	000.108	002.885	000.005	000.004	0.000	000.024	00310.160
LDGT	000.211	000.003	000.187	003.231	000.007	000.006	0.000	000.026	00402.643
HDGV	000.851	000.006	000.941	014.061	000.027	000.024	0.000	000.052	00905.341
LDDV	000.084	000.001	000.086	003.033	000.003	000.002	0.000	000.008	00316.462
LDDT	000.091	000.001	000.130	002.117	000.003	000.003	0.000	000.009	00362.088
HDDV	000.137	000.004	002.629	001.597	000.051	000.047	0.000	000.032	01267.458
MC	002.312	000.003	000.686	012.522	000.023	000.020	0.000	000.053	00389.912

14.3.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

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

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

- Vehicle Exhaust Emissions per Phase

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

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

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

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

- Worker Trips Emissions per Phase

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

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

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

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

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

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

15. Construction / Demolition

15.1 General Information & Timeline Assumptions

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

- Activity Title: Project 2: Renovation – Renovate Aerospace Ground Equipment (AGE) Facility (Building 12)

- Activity Description:
It was assumed the AGE facility would be renovated over a 1-year period from January 2025 through December 2025.

It was assumed 25 percent of the total square footage of the AGE facility (Building 12 = 6,186 SF) would be construction to equate the renovations (6,186 SF * 0.25 = 1,546.5 SF). The height of the building was assumed to be 20 feet. Renovations would begin in January 2025 and last approximately 11 months.

Architectural coatings would be applied to the entire facility (6,186 SF) following the renovations. Architectural coating application would begin in December 2025 and last approximately 1 month.

- Activity Start Date
Start Month: 1
Start Month: 2025

- Activity End Date
Indefinite: False
End Month: 12
End Month: 2025

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.179732
SO_x	0.002214
NO_x	0.552560
CO	0.911138
PM 10	0.018493

Pollutant	Total Emissions (TONs)
PM 2.5	0.018464
Pb	0.000000
NH_3	0.000689
CO_2e	213.3

15.1 Building Construction Phase

15.1.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2025

- Phase Duration
Number of Month: 11
Number of Days: 0

15.1.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 1546.5
Height of Building (ft): 20
Number of Units: N/A

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

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	8

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

- Vehicle Exhaust Vehicle Mixture (%)

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

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

- Worker Trips Vehicle Mixture (%)

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

- Vendor Trips

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

- Vendor Trips Vehicle Mixture (%)

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

15.1.3 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
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	000.196	000.002	000.108	002.885	000.005	000.004	0.000	000.024	00310.160
LDGT	000.211	000.003	000.187	003.231	000.007	000.006	0.000	000.026	00402.643
HDGV	000.851	000.006	000.941	014.061	000.027	000.024	0.000	000.052	00905.341
LDDV	000.084	000.001	000.086	003.033	000.003	000.002	0.000	000.008	00316.462
LDDT	000.091	000.001	000.130	002.117	000.003	000.003	0.000	000.009	00362.088
HDDV	000.137	000.004	002.629	001.597	000.051	000.047	0.000	000.032	01267.458
MC	002.312	000.003	000.686	012.522	000.023	000.020	0.000	000.053	00389.912

15.1.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

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

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

- Vehicle Exhaust Emissions per Phase

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

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

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

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

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

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

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

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

- Vender Trips Emissions per Phase
$VMT_{VT} = BA * BH * (0.38 / 1000) * HT$

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

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

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

15.2 Architectural Coatings Phase

15.2.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date
Start Month: 12
Start Quarter: 1
Start Year: 2025

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

15.2.2 Architectural Coatings Phase Assumptions

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- General Architectural Coatings Information
Building Category: Non-Residential
Total Square Footage (ft^2): 6186
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

15.2.3 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	000.196	000.002	000.108	002.885	000.005	000.004	0.000	000.024	00310.160
LDGT	000.211	000.003	000.187	003.231	000.007	000.006	0.000	000.026	00402.643
HDGV	000.851	000.006	000.941	014.061	000.027	000.024	0.000	000.052	00905.341
LDDV	000.084	000.001	000.086	003.033	000.003	000.002	0.000	000.008	00316.462
LDDT	000.091	000.001	000.130	002.117	000.003	000.003	0.000	000.009	00362.088
HDDV	000.137	000.004	002.629	001.597	000.051	000.047	0.000	000.032	01267.458
MC	002.312	000.003	000.686	012.522	000.023	000.020	0.000	000.053	00389.912

15.2.4 Architectural Coatings Phase Formula(s)

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

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

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

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

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

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

2000: Conversion Factor pounds to tons

16. Construction / Demolition

16.1 General Information & Timeline Assumptions

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

- Activity Title: Project 6: Renovation – Renovate Intel Facility (Building 2A)

- Activity Description:
It was assumed the intel facility would be renovated over a 1-year period from January 2025 through December 2025.

Demolition of 1,900 SF of interior space would be required to allow for renovation of the secure space. Demolition would begin in January 2025 and last approximately 1 month.

It was assumed 25 percent of the total square footage of the intel facility (Building 2 = 66,257 SF) would be construction to equate the renovations (66,257 SF * 0.25 = 16,564.25 SF). The height of the building was assumed to be 20 feet. Renovations would begin in February 2025 and last approximately 10 months.

Architectural coatings would be applied to the entire facility (66,257 SF) following the renovations. Architectural coating application would begin in December 2025 and last approximately 1 month.

- Activity Start Date
Start Month: 1
Start Month: 2025

- Activity End Date
Indefinite: False
End Month: 12
End Month: 2025

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.872777
SO_x	0.002210
NO_x	0.531351
CO	0.924535
PM 10	0.022889

Pollutant	Total Emissions (TONs)
PM 2.5	0.016859
Pb	0.000000
NH_3	0.000863
CO_2e	217.8

16.1 Demolition Phase

16.1.1 Demolition Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2025

- Phase Duration

Number of Month: 1
Number of Days: 0

16.1.2 Demolition Phase Assumptions

- General Demolition Information
Area of Building to be demolished (ft^2): 1900
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 (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

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

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

- Worker Trips Vehicle Mixture (%)

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

16.1.3 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	0.0336	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	000.188	000.002	000.095	002.742	000.005	000.004	0.000	000.024	00302.739
LDGT	000.201	000.003	000.166	003.063	000.007	000.006	0.000	000.026	00394.529
HDGV	000.828	000.006	000.861	013.328	000.026	000.023	0.000	000.051	00910.516
LDDV	000.081	000.001	000.080	002.979	000.003	000.002	0.000	000.008	00305.173
LDDT	000.087	000.001	000.120	002.049	000.003	000.003	0.000	000.009	00356.221

HDDV	000.123	000.004	002.451	001.540	000.042	000.039	0.000	000.032	01239.307
MC	002.311	000.003	000.684	012.373	000.023	000.020	0.000	000.054	00390.036

16.1.4 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/ft^3)
BA: Area of Building to be demolished (ft^2)
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 (ft^2)
BH: Height of Building being demolish (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
0.25: Volume reduction factor (material reduced by 75% to account for air space)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

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

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

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

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

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

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

16.2 Building Construction Phase

16.2.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 2
Start Quarter: 1
Start Year: 2025

- Phase Duration
Number of Month: 10
Number of Days: 0

16.2.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 16564.25
Height of Building (ft): 20
Number of Units: N/A

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

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	8

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

- Vehicle Exhaust Vehicle Mixture (%)

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

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

- Worker Trips Vehicle Mixture (%)

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

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

- Vendor Trips Vehicle Mixture (%)

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

16.2.3 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	000.188	000.002	000.095	002.742	000.005	000.004	0.000	000.024	00302.739
LDGT	000.201	000.003	000.166	003.063	000.007	000.006	0.000	000.026	00394.529
HDGV	000.828	000.006	000.861	013.328	000.026	000.023	0.000	000.051	00910.516
LDDV	000.081	000.001	000.080	002.979	000.003	000.002	0.000	000.008	00305.173
LDDT	000.087	000.001	000.120	002.049	000.003	000.003	0.000	000.009	00356.221
HDDV	000.123	000.004	002.451	001.540	000.042	000.039	0.000	000.032	01239.307
MC	002.311	000.003	000.684	012.373	000.023	000.020	0.000	000.054	00390.036

16.2.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

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

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

- Vehicle Exhaust Emissions per Phase

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

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

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

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

VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

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

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

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

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

- Vender Trips Emissions per Phase
$VMT_{VT} = BA * BH * (0.38 / 1000) * HT$

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

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

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

16.3 Architectural Coatings Phase

16.3.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date
Start Month: 12
Start Quarter: 1
Start Year: 2025

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

16.3.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information
Building Category: Non-Residential

Total Square Footage (ft^2): 66257
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

16.3.3 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	000.188	000.002	000.095	002.742	000.005	000.004	0.000	000.024	00302.739
LDGT	000.201	000.003	000.166	003.063	000.007	000.006	0.000	000.026	00394.529
HDGV	000.828	000.006	000.861	013.328	000.026	000.023	0.000	000.051	00910.516
LDDV	000.081	000.001	000.080	002.979	000.003	000.002	0.000	000.008	00305.173
LDDT	000.087	000.001	000.120	002.049	000.003	000.003	0.000	000.009	00356.221
HDDV	000.123	000.004	002.451	001.540	000.042	000.039	0.000	000.032	01239.307
MC	002.311	000.003	000.684	012.373	000.023	000.020	0.000	000.054	00390.036

16.3.4 Architectural Coatings Phase Formula(s)

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

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

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

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

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

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

17. Construction / Demolition

17.1 General Information & Timeline Assumptions

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

- Activity Title: Project 7: Renovation – Repair Fire Station (Building 31)

- Activity Description:

It was assumed the maintenance complex would be renovated over a 1-year period from January 2025 through December 2025.

Demolition of existing pavement would occur on 11,700 SF. Demolition would begin in January 2025 and last approximately 1 month.

Site grading would be required for additional paved areas (4,580 SF). Site grading would begin in February 2025 and last approximately 1 month.

It was assumed 25 percent of the total square footage of the fire station (Building 31 = 13,222 SF) would be construction to equate the renovations (13,222 SF * 0.25 = 3,305.5 SF). The height of the building was assumed to be 20 feet. Renovations would begin in March 2025 and last approximately 8 months.

Architectural coatings would be applied to the entire facility (13,222 SF) following the renovations. Architectural coating application would begin in November 2025 and last approximately 1 month.

Paving for additional parking areas (4,580 SF or 0.1 acre) and repaving for existing paved areas (11,700 SF) would total 16,280 SF. Paving would begin in December 2025 and last approximately 1 month.

- Activity Start Date
Start Month: 1
Start Month: 2025

- Activity End Date
Indefinite: False
End Month: 12
End Month: 2025

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.274903
SO_x	0.002403
NO_x	0.628634
CO	1.012238
PM 10	0.070089

Pollutant	Total Emissions (TONs)
PM 2.5	0.022038
Pb	0.000000
NH_3	0.000760
CO_2e	233.6

17.1 Demolition Phase

17.1.1 Demolition Phase Timeline Assumptions

- Phase Start Date

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Start Month: 1
Start Quarter: 1
Start Year: 2025

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

17.1.2 Demolition Phase Assumptions

- General Demolition Information
Area of Building to be demolished (ft^2): 11700
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	2	6

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

- Vehicle Exhaust Vehicle Mixture (%)

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

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

- Worker Trips Vehicle Mixture (%)

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

17.1.3 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	0.0336	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	000.188	000.002	000.095	002.742	000.005	000.004	0.000	000.024	00302.739
LDGT	000.201	000.003	000.166	003.063	000.007	000.006	0.000	000.026	00394.529
HDGV	000.828	000.006	000.861	013.328	000.026	000.023	0.000	000.051	00910.516
LDDV	000.081	000.001	000.080	002.979	000.003	000.002	0.000	000.008	00305.173
LDDT	000.087	000.001	000.120	002.049	000.003	000.003	0.000	000.009	00356.221
HDDV	000.123	000.004	002.451	001.540	000.042	000.039	0.000	000.032	01239.307
MC	002.311	000.003	000.684	012.373	000.023	000.020	0.000	000.054	00390.036

17.1.4 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/ft^3)
BA: Area of Building to be demolished (ft^2)
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 (ft^2)
BH: Height of Building being demolish (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
0.25: Volume reduction factor (material reduced by 75% to account for air space)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

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

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

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

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

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

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

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

17.2 Site Grading Phase

17.2.1 Site Grading Phase Timeline Assumptions

- Phase Start Date
Start Month: 2
Start Quarter: 1
Start Year: 2025

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

17.2.2 Site Grading Phase Assumptions

- General Site Grading Information
Area of Site to be Graded (ft^2): 4580
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 0

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

- Construction Exhaust (default)

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

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

- Vehicle Exhaust Vehicle Mixture (%)

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

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

- Worker Trips Vehicle Mixture (%)

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

17.2.3 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	000.188	000.002	000.095	002.742	000.005	000.004	0.000	000.024	00302.739
LDGT	000.201	000.003	000.166	003.063	000.007	000.006	0.000	000.026	00394.529
HDGV	000.828	000.006	000.861	013.328	000.026	000.023	0.000	000.051	00910.516
LDDV	000.081	000.001	000.080	002.979	000.003	000.002	0.000	000.008	00305.173
LDDT	000.087	000.001	000.120	002.049	000.003	000.003	0.000	000.009	00356.221
HDDV	000.123	000.004	002.451	001.540	000.042	000.039	0.000	000.032	01239.307
MC	002.311	000.003	000.684	012.373	000.023	000.020	0.000	000.054	00390.036

17.2.4 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 (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

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

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

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

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

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

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

17.3 Building Construction Phase

17.3.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 3
Start Quarter: 1
Start Year: 2025

- Phase Duration
Number of Month: 8
Number of Days: 0

17.3.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 3305.5
Height of Building (ft): 20
Number of Units: N/A

- Building Construction Default Settings
Default Settings Used: Yes

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

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust

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

- Vehicle Exhaust Vehicle Mixture (%)

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

- Worker Trips

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

- Worker Trips Vehicle Mixture (%)

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

- Vendor Trips

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

- Vendor Trips Vehicle Mixture (%)

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

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	0.0680	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	000.188	000.002	000.095	002.742	000.005	000.004	0.000	000.024	00302.739
LDGT	000.201	000.003	000.166	003.063	000.007	000.006	0.000	000.026	00394.529
HDGV	000.828	000.006	000.861	013.328	000.026	000.023	0.000	000.051	00910.516
LDDV	000.081	000.001	000.080	002.979	000.003	000.002	0.000	000.008	00305.173
LDDT	000.087	000.001	000.120	002.049	000.003	000.003	0.000	000.009	00356.221
HDDV	000.123	000.004	002.451	001.540	000.042	000.039	0.000	000.032	01239.307
MC	002.311	000.003	000.684	012.373	000.023	000.020	0.000	000.054	00390.036

17.3.4 Building Construction Phase Formula(s)

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- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

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

- Vehicle Exhaust Emissions per Phase
$VMT_{VE} = BA * BH * (0.42 / 1000) * HT$

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

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

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

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

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

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

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

- Vender Trips Emissions per Phase
$VMT_{VT} = BA * BH * (0.38 / 1000) * HT$

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

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

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

17.4 Architectural Coatings Phase

17.4.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date
Start Month: 11
Start Quarter: 1
Start Year: 2025

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

17.4.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information
Building Category: Non-Residential
Total Square Footage (ft^2): 13222
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

17.4.3 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	000.188	000.002	000.095	002.742	000.005	000.004	0.000	000.024	00302.739
LDGT	000.201	000.003	000.166	003.063	000.007	000.006	0.000	000.026	00394.529
HDGV	000.828	000.006	000.861	013.328	000.026	000.023	0.000	000.051	00910.516
LDDV	000.081	000.001	000.080	002.979	000.003	000.002	0.000	000.008	00305.173
LDDT	000.087	000.001	000.120	002.049	000.003	000.003	0.000	000.009	00356.221
HDDV	000.123	000.004	002.451	001.540	000.042	000.039	0.000	000.032	01239.307
MC	002.311	000.003	000.684	012.373	000.023	000.020	0.000	000.054	00390.036

17.4.4 Architectural Coatings Phase Formula(s)

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

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

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

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

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

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

17.5 Paving Phase

17.5.1 Paving Phase Timeline Assumptions

- Phase Start Date
Start Month: 12
Start Quarter: 1
Start Year: 2025

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

17.5.2 Paving Phase Assumptions

- General Paving Information
Paving Area (ft^2): 15280

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

- Construction Exhaust (default)

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

- Vehicle Exhaust

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

- Vehicle Exhaust Vehicle Mixture (%)

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

- Worker Trips

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

- Worker Trips Vehicle Mixture (%)

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

17.5.3 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	0.0676	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	000.188	000.002	000.095	002.742	000.005	000.004	0.000	000.024	00302.739
LDGT	000.201	000.003	000.166	003.063	000.007	000.006	0.000	000.026	00394.529
HDGV	000.828	000.006	000.861	013.328	000.026	000.023	0.000	000.051	00910.516
LDDV	000.081	000.001	000.080	002.979	000.003	000.002	0.000	000.008	00305.173
LDDT	000.087	000.001	000.120	002.049	000.003	000.003	0.000	000.009	00356.221
HDDV	000.123	000.004	002.451	001.540	000.042	000.039	0.000	000.032	01239.307
MC	002.311	000.003	000.684	012.373	000.023	000.020	0.000	000.054	00390.036

17.5.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

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

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

- Vehicle Exhaust Emissions per Phase

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

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

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

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

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

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

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

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

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

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

18. Emergency Generator

18.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

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

- Activity Title: Emergency Generator (Project 7: Repair Fire Station)

- Activity Description:
A 100% back-up generator would be installed at the fire station. It was assumed the generator would run on diesel. Operation of the generator would begin following renovations, or January 2026, and would continue indefinitely.

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

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

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.005650
SO_x	0.004759
NO_x	0.023288
CO	0.015552
PM 10	0.005083

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.005083
Pb	0.000000
NH_3	0.000000
CO_2e	2.7

18.2 Emergency Generator Assumptions

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

- Default Settings Used: Yes

- Emergency Generators Consumption
Emergency Generator's Horsepower: 135 (default)
Average Operating Hours Per Year (hours): 30 (default)

18.3 Emergency Generator Emission Factor(s)

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

VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
0.00279	0.00235	0.0115	0.00768	0.00251	0.00251	0.000	0.000	1.33

18.4 Emergency Generator Formula(s)

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

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

19. Construction / Demolition

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19.1 General Information & Timeline Assumptions

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

- Activity Title: Project 11: Renovation – Repair Fuel Cell (Building 7)

- Activity Description:
It was assumed the fuel cell would be renovated over a 1-year period from January 2028 through December 2028.

It was assumed 25 percent of the total square footage of the fuel cell (Building 7 = 26,186 SF) would be construction to equate the renovations (26,186 SF * 0.25 = 6,546.5 SF). The height of the building was assumed to be 40 feet. Renovations would begin in January 2028 and last approximately 11 months.

Architectural coatings would be applied to the entire facility (26,186 SF) following the renovations. Architectural coating application would begin in December 2028 and last approximately 1 month.

- Activity Start Date
Start Month: 1
Start Month: 2028

- Activity End Date
Indefinite: False
End Month: 12
End Month: 2028

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.407646
SO_x	0.002231
NO_x	0.515945
CO	0.912061
PM 10	0.016276

Pollutant	Total Emissions (TONs)
PM 2.5	0.016235
Pb	0.000000
NH_3	0.000819
CO_2e	218.1

19.1 Building Construction Phase

19.1.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2028

- Phase Duration
Number of Month: 11
Number of Days: 0

19.1.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Office or Industrial

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Area of Building (ft^2): 6546.5
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	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

19.1.3 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	000.188	000.002	000.095	002.742	000.005	000.004	0.000	000.024	00302.739
LDGT	000.201	000.003	000.166	003.063	000.007	000.006	0.000	000.026	00394.529
HDGV	000.828	000.006	000.861	013.328	000.026	000.023	0.000	000.051	00910.516
LDDV	000.081	000.001	000.080	002.979	000.003	000.002	0.000	000.008	00305.173

LDDT	000.087	000.001	000.120	002.049	000.003	000.003	0.000	000.009	00356.221
HDDV	000.123	000.004	002.451	001.540	000.042	000.039	0.000	000.032	01239.307
MC	002.311	000.003	000.684	012.373	000.023	000.020	0.000	000.054	00390.036

19.1.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

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

- Vehicle Exhaust Emissions per Phase
$VMT_{VE} = BA * BH * (0.42 / 1000) * HT$

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

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

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

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

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

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

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

- Vender Trips Emissions per Phase
$VMT_{VT} = BA * BH * (0.38 / 1000) * HT$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)

BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft^3 to trips (0.38 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

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

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

19.2 Architectural Coatings Phase

19.2.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date
Start Month: 12
Start Quarter: 1
Start Year: 2028

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

19.2.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information
Building Category: Non-Residential
Total Square Footage (ft^2): 26186
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

19.2.3 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	000.188	000.002	000.095	002.742	000.005	000.004	0.000	000.024	00302.739
LDGT	000.201	000.003	000.166	003.063	000.007	000.006	0.000	000.026	00394.529
HDGV	000.828	000.006	000.861	013.328	000.026	000.023	0.000	000.051	00910.516
LDDV	000.081	000.001	000.080	002.979	000.003	000.002	0.000	000.008	00305.173
LDDT	000.087	000.001	000.120	002.049	000.003	000.003	0.000	000.009	00356.221
HDDV	000.123	000.004	002.451	001.540	000.042	000.039	0.000	000.032	01239.307

MC	002.311	000.003	000.684	012.373	000.023	000.020	0.000	000.054	00390.036

19.2.4 Architectural Coatings Phase Formula(s)

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

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

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

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

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

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

20. Construction / Demolition

20.1 General Information & Timeline Assumptions

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

- Activity Title: Project 13: Renovation – Renovate Fire Suppression Systems in Hangars 1, 7, 8

- Activity Description:
It was assumed the fire suppression systems would be renovated over a 1-year period from January 2030 through December 2030.

It was assumed 25 percent of the total square footage of the hangars (Building 1 = 32,760 SF; Building 7 = 26,186 SF; Building 8 = 48,743 SF; total = 107,689 SF) would be construction to equate the renovations (107,689 SF SF * 0.25 = 26,922.25 SF). The height of the buildings was assumed to be 40 feet. Renovations would begin in January 2030 and last approximately 11 months.

Architectural coatings would be applied to the entire facilities (total = 107,689 SF) following the renovations. Architectural coating application would begin in December 2030 and last approximately 1 month.

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Activity Start Date
Start Month: 1
Start Month: 2030

- Activity End Date
Indefinite: False
End Month: 12
End Month: 2030

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	1.464658
SO_x	0.004093
NO_x	1.269897
CO	1.851674
PM 10	0.042656

Pollutant	Total Emissions (TONs)
PM 2.5	0.042546
Pb	0.000000
NH_3	0.001927
CO_2e	407.2

20.1 Building Construction Phase

20.1.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2030

- Phase Duration
Number of Month: 11
Number of Days: 0

20.1.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 26922.25
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
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

20.1.3 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	000.188	000.002	000.095	002.742	000.005	000.004	0.000	000.024	00302.739
LDGT	000.201	000.003	000.166	003.063	000.007	000.006	0.000	000.026	00394.529
HDGV	000.828	000.006	000.861	013.328	000.026	000.023	0.000	000.051	00910.516
LDDV	000.081	000.001	000.080	002.979	000.003	000.002	0.000	000.008	00305.173
LDDT	000.087	000.001	000.120	002.049	000.003	000.003	0.000	000.009	00356.221
HDDV	000.123	000.004	002.451	001.540	000.042	000.039	0.000	000.032	01239.307
MC	002.311	000.003	000.684	012.373	000.023	000.020	0.000	000.054	00390.036

20.1.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

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

EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase
VMT_{VE} = BA * BH * (0.42 / 1000) * HT

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

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

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

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

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

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

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

- Vender Trips Emissions per Phase
VMT_{VT} = BA * BH * (0.38 / 1000) * HT

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

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

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

20.2 Architectural Coatings Phase

20.2.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date
Start Month: 12
Start Quarter: 1
Start Year: 2030

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

20.2.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information
Building Category: Non-Residential
Total Square Footage (ft^2): 107689
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

20.2.3 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	000.188	000.002	000.095	002.742	000.005	000.004	0.000	000.024	00302.739
LDGT	000.201	000.003	000.166	003.063	000.007	000.006	0.000	000.026	00394.529
HDGV	000.828	000.006	000.861	013.328	000.026	000.023	0.000	000.051	00910.516
LDDV	000.081	000.001	000.080	002.979	000.003	000.002	0.000	000.008	00305.173
LDDT	000.087	000.001	000.120	002.049	000.003	000.003	0.000	000.009	00356.221
HDDV	000.123	000.004	002.451	001.540	000.042	000.039	0.000	000.032	01239.307
MC	002.311	000.003	000.684	012.373	000.023	000.020	0.000	000.054	00390.036

20.2.4 Architectural Coatings Phase Formula(s)

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

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

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

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

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

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

21. Construction / Demolition

21.1 General Information & Timeline Assumptions

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

- Activity Title: Project 19: Renovation – Expand Deicing Containment on Apron

- Activity Description:
It was assumed the deicing containment would be expanded over a 1-year period from January 2030 through December 2030.

Trenching would be required for the area needed to accommodate installation of the stormwater drainage system and expansion of the deicing containment, estimated at a total of 150,000 SF. Trenching would begin in January 2030 and last approximately 10 months.

The area would be repaved following completion of renovation, for a total of 150,000 SF. Paving would begin in November 2030 and last approximately 2 months.

- Activity Start Date
Start Month: 1
Start Month: 2030

- Activity End Date
Indefinite: False
End Month: 12
End Month: 2030

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.237590
SO_x	0.004798
NO_x	1.113850
CO	1.930687

Pollutant	Total Emissions (TONs)
PM 2.5	0.042553
Pb	0.000000
NH_3	0.000885
CO_2e	454.8

PM 10	14.964538			

21.1 Trenching/Excavating Phase

21.1.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2030

- Phase Duration
Number of Month: 10
Number of Days: 0

21.1.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information
Area of Site to be Trenched/Excavated (ft^2): 150000
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 0

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

- Construction Exhaust (default)

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

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

- Vehicle Exhaust Vehicle Mixture (%)

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

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

- Worker Trips Vehicle Mixture (%)

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

21.1.3 Trenching / Excavating Phase Emission Factor(s)

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

- 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	000.505	000.007	000.537	004.408	000.016	000.014	0.000	000.034	00372.100

LDGT	000.619	000.010	000.920	006.517	000.018	000.016	0.000	000.034	00497.387
HDGV	001.371	000.015	003.029	025.684	000.043	000.038	0.000	000.046	00769.407
LDDV	000.258	000.003	000.313	003.423	000.007	000.006	0.000	000.008	00377.653
LDDT	000.575	000.005	000.846	007.048	000.008	000.008	0.000	000.008	00588.925
HDDV	000.714	000.014	008.157	002.593	000.372	000.343	0.000	000.027	01531.606
MC	002.399	000.008	000.802	014.879	000.030	000.026	0.000	000.050	00397.842

21.1.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase
$PM10_{FD}$ = (20 * ACRE * WD) / 2000

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase
CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000

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

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

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

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

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

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

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

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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

21.2 Paving Phase

21.2.1 Paving Phase Timeline Assumptions

- Phase Start Date
Start Month: 11
Start Quarter: 1
Start Year: 2030

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

21.2.2 Paving Phase Assumptions

- General Paving Information
Paving Area (ft^2): 150000

- 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

21.2.3 Paving Phase Emission Factor(s)

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

- 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	000.505	000.007	000.537	004.408	000.016	000.014	0.000	000.034	00372.100
LDGT	000.619	000.010	000.920	006.517	000.018	000.016	0.000	000.034	00497.387
HDGV	001.371	000.015	003.029	025.684	000.043	000.038	0.000	000.046	00769.407
LDDV	000.258	000.003	000.313	003.423	000.007	000.006	0.000	000.008	00377.653
LDDT	000.575	000.005	000.846	007.048	000.008	000.008	0.000	000.008	00588.925
HDDV	000.714	000.014	008.157	002.593	000.372	000.343	0.000	000.027	01531.606
MC	002.399	000.008	000.802	014.879	000.030	000.026	0.000	000.050	00397.842

21.2.4 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 (ft^2)
0.25: Thickness of Paving Area (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

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

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

- Worker Trips Emissions per Phase

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

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

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

V_{POL}: Vehicle Emissions (TONs)

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

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

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

22. Construction / Demolition

22.1 General Information & Timeline Assumptions

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

- Activity Title: Project 3: Demolition – Demolish Troop Camps (Building 40 Series)

- Activity Description:
It was assumed the troop camps would be demolished over a 1-year period from January 2025 through December 2025.

Demolition of the troop camps would total 5,120 SF. The height of the buildings was assumed to be 15 feet. Demolition would begin in January 2025 and last approximately 11 months.

The entire site would be graded following demolition. Site grading would occur on 5,120 SF. Grading would begin in December 2025 and last approximately 1 month.

- Activity Start Date
Start Month: 1
Start Month: 2025

- Activity End Date
Indefinite: False
End Month: 12
End Month: 2025

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.133566
SO_x	0.002349
NO_x	0.819244
CO	1.181001
PM 10	0.098176

Pollutant	Total Emissions (TONs)
PM 2.5	0.031072
Pb	0.000000
NH_3	0.000830
CO_2e	234.6

22.1 Demolition Phase

22.1.1 Demolition Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2025

- Phase Duration
Number of Month: 11
Number of Days: 0

22.1.2 Demolition Phase Assumptions

- General Demolition Information
Area of Building to be demolished (ft^2): 5120
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 (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

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

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

- Worker Trips Vehicle Mixture (%)

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

22.1.3 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	0.0357	0.0006	0.2608	0.3715	0.0109	0.0109	0.0032	58.544
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	000.196	000.002	000.108	002.885	000.005	000.004	0.000	000.024	00310.160
LDGT	000.211	000.003	000.187	003.231	000.007	000.006	0.000	000.026	00402.643
HDGV	000.851	000.006	000.941	014.061	000.027	000.024	0.000	000.052	00905.341
LDDV	000.084	000.001	000.086	003.033	000.003	000.002	0.000	000.008	00316.462
LDDT	000.091	000.001	000.130	002.117	000.003	000.003	0.000	000.009	00362.088
HDDV	000.137	000.004	002.629	001.597	000.051	000.047	0.000	000.032	01267.458
MC	002.312	000.003	000.686	012.522	000.023	000.020	0.000	000.053	00389.912

22.1.4 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/ft^3)
BA: Area of Building to be demolished (ft^2)
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 (ft^2)
BH: Height of Building being demolish (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
0.25: Volume reduction factor (material reduced by 75% to account for air space)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

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

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

- Worker Trips Emissions per Phase

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

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

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

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

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

22.2 Site Grading Phase

22.2.1 Site Grading Phase Timeline Assumptions

- Phase Start Date
Start Month: 12
Start Quarter: 1
Start Year: 2025

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

22.2.2 Site Grading Phase Assumptions

- General Site Grading Information
Area of Site to be Graded (ft^2): 5120
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 2500

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

- Construction Exhaust (default)

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

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

- Vehicle Exhaust Vehicle Mixture (%)

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

- Worker Trips

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

- Worker Trips Vehicle Mixture (%)

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

22.2.3 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	0.0714	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	000.196	000.002	000.108	002.885	000.005	000.004	0.000	000.024	00310.160
LDGT	000.211	000.003	000.187	003.231	000.007	000.006	0.000	000.026	00402.643
HDGV	000.851	000.006	000.941	014.061	000.027	000.024	0.000	000.052	00905.341
LDDV	000.084	000.001	000.086	003.033	000.003	000.002	0.000	000.008	00316.462
LDDT	000.091	000.001	000.130	002.117	000.003	000.003	0.000	000.009	00362.088
HDDV	000.137	000.004	002.629	001.597	000.051	000.047	0.000	000.032	01267.458
MC	002.312	000.003	000.686	012.522	000.023	000.020	0.000	000.053	00389.912

22.2.4 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 (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

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

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

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

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

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

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

23. Construction / Demolition

23.1 General Information & Timeline Assumptions

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

- Activity Title: Project 8: Demolition – Demolish Building 39

- Activity Description:
It was assumed Building 39 would be demolished over a 1-year period from January 2025 through December 2025.

Demolition of the Building 39 would total 1,152 SF. The height of the building was assumed to be 15 feet. Demolition would begin in January 2025 and last approximately 11 months.

The site would be graded following demolition. Site grading would occur on 1,152 SF. Grading would begin in December 2025 and last approximately 1 month.

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Activity Start Date
Start Month: 1
Start Month: 2025

- Activity End Date
Indefinite: False
End Month: 12
End Month: 2025

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.127155
SO_x	0.002338
NO_x	0.759299
CO	1.166728
PM 10	0.042139

Pollutant	Total Emissions (TONs)
PM 2.5	0.027019
Pb	0.000000
NH_3	0.000743
CO_2e	230.9

23.1 Demolition Phase

23.1.1 Demolition Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2025

- Phase Duration
Number of Month: 11
Number of Days: 0

23.1.2 Demolition Phase Assumptions

- General Demolition Information
Area of Building to be demolished (ft^2): 1152
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 (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

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

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

- Worker Trips Vehicle Mixture (%)

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

23.1.3 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	0.0336	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	000.188	000.002	000.095	002.742	000.005	000.004	0.000	000.024	00302.739
LDGT	000.201	000.003	000.166	003.063	000.007	000.006	0.000	000.026	00394.529
HDGV	000.828	000.006	000.861	013.328	000.026	000.023	0.000	000.051	00910.516
LDDV	000.081	000.001	000.080	002.979	000.003	000.002	0.000	000.008	00305.173
LDDT	000.087	000.001	000.120	002.049	000.003	000.003	0.000	000.009	00356.221
HDDV	000.123	000.004	002.451	001.540	000.042	000.039	0.000	000.032	01239.307
MC	002.311	000.003	000.684	012.373	000.023	000.020	0.000	000.054	00390.036

23.1.4 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/ft^3)
BA: Area of Building to be demolished (ft^2)
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 (ft^2)
BH: Height of Building being demolish (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
0.25: Volume reduction factor (material reduced by 75% to account for air space)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

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

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

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

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

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

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

23.2 Site Grading Phase

23.2.1 Site Grading Phase Timeline Assumptions

- Phase Start Date
Start Month: 12
Start Quarter: 1
Start Year: 2025

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

23.2.2 Site Grading Phase Assumptions

- General Site Grading Information
Area of Site to be Graded (ft^2): 1152
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 600

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

- Construction Exhaust (default)

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

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

- Vehicle Exhaust Vehicle Mixture (%)

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

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

- Worker Trips Vehicle Mixture (%)

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

23.2.3 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	000.188	000.002	000.095	002.742	000.005	000.004	0.000	000.024	00302.739
LDGT	000.201	000.003	000.166	003.063	000.007	000.006	0.000	000.026	00394.529
HDGV	000.828	000.006	000.861	013.328	000.026	000.023	0.000	000.051	00910.516
LDDV	000.081	000.001	000.080	002.979	000.003	000.002	0.000	000.008	00305.173
LDDT	000.087	000.001	000.120	002.049	000.003	000.003	0.000	000.009	00356.221
HDDV	000.123	000.004	002.451	001.540	000.042	000.039	0.000	000.032	01239.307
MC	002.311	000.003	000.684	012.373	000.023	000.020	0.000	000.054	00390.036

23.2.4 Site Grading Phase Formula(s)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

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

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

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

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

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

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

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

24. Heating

24.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove

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

- Activity Title: Heating (Project 8: Remove Heating for Building 39)

- Activity Description:
Heating/cooling for Building 39 (1,152 SF) would no longer be required following demolition, or starting in January 2026.

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

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

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	-0.000347
SO_x	-0.000038
NO_x	-0.006314
CO	-0.005304
PM 10	-0.000480

Pollutant	Emissions Per Year (TONs)
PM 2.5	-0.000480
Pb	0.000000
NH_3	0.000000
CO_2e	-7.6

24.2 Heating Assumptions

- Heating
Heating Calculation Type: Heat Energy Requirement Method

- Heat Energy Requirement Method
Area of floorspace to be heated (ft^2): 1152
Type of fuel: Natural Gas
Type of boiler/furnace: Commercial/Institutional (0.3 - 9.9 MMBtu/hr)
Heat Value (MMBtu/ft^3): 0.00105
Energy Intensity (MMBtu/ft^2): 0.1151

- 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 ft^3 per Year

FC_{HER}= HA * EI / HV / 1000000

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

- Heating Emissions per Year

HE_{POL}= FC * EF_{POL} / 2000

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

25. Construction / Demolition

25.1 General Information & Timeline Assumptions

- Activity Location

County: Schenectady
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Project 12: Demolition – Removal of Hangar Foam Recovery Tanks

- Activity Description:

It was assumed tank removal would occur over a 1-year period from January 2028 through December 2028. Tanks that would be removed include a 7,000-gallon and a 1,000-gallon high expansion foam (HEF) recovery tank at Building 2; a 24,000-gallon HEF recovery tank at Building 8; and two 7,000-gallon stormwater recovery tanks at Building 11.

Removal would require trenching and disposal of the tanks. It was estimated that a total area of 2,369 SF would be trenched to access and remove the tanks. It was assumed excavated material would be reused on site while the removed tanks would be hauled off-site and 200 cubic yards of material would be hauled onsite and used as fill. Trenching would begin in January 2028 and last approximately 4 months.

Site grading would occur on the former tank sites, or 2,369 SF. Site grading would begin in May 2028 and last approximately 4 months.

The sites would be paved following tank removal for a total of 2,369 SF. Paving would begin in September 2028 and last approximately 4 months.

- Activity Start Date

Start Month: 1
Start Month: 2028

- Activity End Date
Indefinite: False
End Month: 12
End Month: 2028

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.223014
SO_x	0.004177
NO_x	1.162667
CO	1.694447
PM 10	0.234233

Pollutant	Total Emissions (TONs)
PM 2.5	0.045663
Pb	0.000000
NH_3	0.000907
CO_2e	403.4

25.1 Site Grading Phase

25.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date
Start Month: 5
Start Quarter: 1
Start Year: 2028

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

25.1.2 Site Grading Phase Assumptions

- General Site Grading Information
Area of Site to be Graded (ft^2): 2369
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 0

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

- Construction Exhaust (default)

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

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

- Vehicle Exhaust Vehicle Mixture (%)

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

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

- Worker Trips Vehicle Mixture (%)

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

25.1.3 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	000.188	000.002	000.095	002.742	000.005	000.004	0.000	000.024	00302.739
LDGT	000.201	000.003	000.166	003.063	000.007	000.006	0.000	000.026	00394.529
HDGV	000.828	000.006	000.861	013.328	000.026	000.023	0.000	000.051	00910.516
LDDV	000.081	000.001	000.080	002.979	000.003	000.002	0.000	000.008	00305.173
LDDT	000.087	000.001	000.120	002.049	000.003	000.003	0.000	000.009	00356.221
HDDV	000.123	000.004	002.451	001.540	000.042	000.039	0.000	000.032	01239.307
MC	002.311	000.003	000.684	012.373	000.023	000.020	0.000	000.054	00390.036

25.1.4 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 (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

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

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

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

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

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

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

25.2 Trenching/Excavating Phase

25.2.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2028

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

25.2.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information
Area of Site to be Trenched/Excavated (ft^2): 2369
Amount of Material to be Hauled On-Site (yd^3): 200
Amount of Material to be Hauled Off-Site (yd^3): 100

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

- Vehicle Exhaust Vehicle Mixture (%)

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

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

- Worker Trips Vehicle Mixture (%)

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

25.2.3 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	000.188	000.002	000.095	002.742	000.005	000.004	0.000	000.024	00302.739
LDGT	000.201	000.003	000.166	003.063	000.007	000.006	0.000	000.026	00394.529
HDGV	000.828	000.006	000.861	013.328	000.026	000.023	0.000	000.051	00910.516
LDDV	000.081	000.001	000.080	002.979	000.003	000.002	0.000	000.008	00305.173
LDDT	000.087	000.001	000.120	002.049	000.003	000.003	0.000	000.009	00356.221
HDDV	000.123	000.004	002.451	001.540	000.042	000.039	0.000	000.032	01239.307
MC	002.311	000.003	000.684	012.373	000.023	000.020	0.000	000.054	00390.036

25.2.4 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 (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

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

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

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

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

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

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

25.3 Paving Phase

25.3.1 Paving Phase Timeline Assumptions

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Phase Start Date
Start Month: 9
Start Quarter: 1
Start Year: 2028

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

25.3.2 Paving Phase Assumptions

- General Paving Information
Paving Area (ft^2): 2369

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

- Construction Exhaust (default)

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

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

- Vehicle Exhaust Vehicle Mixture (%)

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

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

- Worker Trips Vehicle Mixture (%)

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

25.3.3 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	0.0676	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	000.188	000.002	000.095	002.742	000.005	000.004	0.000	000.024	00302.739
LDGT	000.201	000.003	000.166	003.063	000.007	000.006	0.000	000.026	00394.529
HDGV	000.828	000.006	000.861	013.328	000.026	000.023	0.000	000.051	00910.516
LDDV	000.081	000.001	000.080	002.979	000.003	000.002	0.000	000.008	00305.173
LDDT	000.087	000.001	000.120	002.049	000.003	000.003	0.000	000.009	00356.221
HDDV	000.123	000.004	002.451	001.540	000.042	000.039	0.000	000.032	01239.307
MC	002.311	000.003	000.684	012.373	000.023	000.020	0.000	000.054	00390.036

25.3.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

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

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

- Vehicle Exhaust Emissions per Phase

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

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

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

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

- Worker Trips Emissions per Phase

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

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

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

V_{POL}: Vehicle Emissions (TONs)

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

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

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

26. Construction / Demolition

26.1 General Information & Timeline Assumptions

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

- Activity Title: Project 18: Demolition – Demolish Buildings 3 and 15

- Activity Description:
It was assumed Buildings 3 and 15 would be demolished over a 1-year period from January 2030 through December 2030.

Demolition of the Building 3 (21,798 SF) and Building 15 (5,000 SF) would total 27,798 SF. The height of the buildings was assumed to be 15 feet. Demolition would begin in January 2030 and last approximately 11 months.

The entire site would be graded following demolition. Site grading would occur on 27,798 SF. Grading would begin in December 2030 and last approximately 1 month.

- Activity Start Date
Start Month: 1
Start Month: 2030

- Activity End Date
Indefinite: False
End Month: 11
End Month: 2030

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.129609
SO_x	0.002418
NO_x	0.808212
CO	1.197460
PM 10	0.391985

Pollutant	Total Emissions (TONs)
PM 2.5	0.027797
Pb	0.000000
NH_3	0.001382
CO_2e	255.6

26.1 Demolition Phase

26.1.1 Demolition Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2030

- Phase Duration
Number of Month: 11
Number of Days: 0

26.1.2 Demolition Phase Assumptions

- General Demolition Information
Area of Building to be demolished (ft^2): 27798
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 (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

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

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

- Worker Trips Vehicle Mixture (%)

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

26.1.3 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	0.0336	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	000.188	000.002	000.095	002.742	000.005	000.004	0.000	000.024	00302.739
LDGT	000.201	000.003	000.166	003.063	000.007	000.006	0.000	000.026	00394.529
HDGV	000.828	000.006	000.861	013.328	000.026	000.023	0.000	000.051	00910.516
LDDV	000.081	000.001	000.080	002.979	000.003	000.002	0.000	000.008	00305.173
LDDT	000.087	000.001	000.120	002.049	000.003	000.003	0.000	000.009	00356.221
HDDV	000.123	000.004	002.451	001.540	000.042	000.039	0.000	000.032	01239.307
MC	002.311	000.003	000.684	012.373	000.023	000.020	0.000	000.054	00390.036

26.1.4 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/ft^3)
BA: Area of Building to be demolished (ft^2)
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 (ft^2)
BH: Height of Building being demolish (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
0.25: Volume reduction factor (material reduced by 75% to account for air space)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

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

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

- Worker Trips Emissions per Phase

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

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

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

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

26.2 Site Grading Phase

26.2.1 Site Grading Phase Timeline Assumptions

- Phase Start Date
Start Month: 11
Start Quarter: 1
Start Year: 2030

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

26.2.2 Site Grading Phase Assumptions

- General Site Grading Information
Area of Site to be Graded (ft^2): 27798
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 15000

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

- Construction Exhaust (default)

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

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

- Vehicle Exhaust Vehicle Mixture (%)

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

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

- Worker Trips Vehicle Mixture (%)

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

26.2.3 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	000.188	000.002	000.095	002.742	000.005	000.004	0.000	000.024	00302.739
LDGT	000.201	000.003	000.166	003.063	000.007	000.006	0.000	000.026	00394.529
HDGV	000.828	000.006	000.861	013.328	000.026	000.023	0.000	000.051	00910.516
LDDV	000.081	000.001	000.080	002.979	000.003	000.002	0.000	000.008	00305.173
LDDT	000.087	000.001	000.120	002.049	000.003	000.003	0.000	000.009	00356.221
HDDV	000.123	000.004	002.451	001.540	000.042	000.039	0.000	000.032	01239.307
MC	002.311	000.003	000.684	012.373	000.023	000.020	0.000	000.054	00390.036

26.2.4 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 (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

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

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

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

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

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

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

27. Heating

27.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove

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

- Activity Title: Heating (Project 18: Remove Heating for Buildings 3 and 15)

- Activity Description:
Heating/cooling for Buildings 3 and 15 (27,798 SF) would no longer be required following demolition, or starting in January 2031.

- Activity Start Date
Start Month: 1

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Start Year: 2031

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

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	-0.005999
SO_x	-0.000654
NO_x	-0.109074
CO	-0.091622
PM 10	-0.008290

Pollutant	Emissions Per Year (TONs)
PM 2.5	-0.008290
Pb	0.000000
NH_3	0.000000
CO_2e	-131.3

27.2 Heating Assumptions

- Heating
Heating Calculation Type: Heat Energy Requirement Method

- Heat Energy Requirement Method
Area of floorspace to be heated (ft^2): 27798
Type of fuel: Natural Gas
Type of boiler/furnace: Industrial (10 - 250 MMBtu/hr)
Heat Value (MMBtu/ft^3): 0.00105
Energy Intensity (MMBtu/ft^2): 0.0824

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

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

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

HE_{POL}: Heating Emission Emissions (TONs)
FC: Fuel Consumption

EF_{POL}: Emission Factor for Pollutant
2000: Conversion Factor pounds to tons

Social Cost of Greenhouse Gases Calculations

The social cost of greenhouse gases (GHGs) was calculated for each infrastructure improvement project under the Proposed Action. The "social cost of GHGs" is an estimate of the monetized damages associated with incremental increases in GHG emissions, such as reduced agricultural productivity, human health effects, property damage from increased flood risk, and the value of ecosystem services. The interim social cost of the three primary GHGs (i.e., carbon dioxide [CO_2], methane [CH_4], and nitrous oxide [N_2O]) established by the Interagency Working Group for the years in which construction and operation of the infrastructure improvement projects would occur are shown in **Table 1**. Estimated annual GHG emissions for the infrastructure improvement projects are shown in **Table 2**.

Table 1. Social Cost of GHGs (in 2020 dollars)

Year	Social Cost of CO_2 (per metric ton of CO_2)	Social Cost of CH_4 (per metric ton of CH_4)	Social Cost of N_2O (per metric ton of N_2O)
2025	$56	$1,700	$21,000
2026	$57	$1,800	$21,000
2027	$59	$1,800	$21,000
2028	$60	$1,900	$22,000
2029	$61	$1,900	$22,000
2030	$62	$2,000	$23,000
2031	$63	$2,000	$23,000

Note: Social cost shown uses a 3 percent average discount rate in 2020 dollars.
Source: IWG-SCGHG 2021

The annual social cost of GHGs was calculated for the construction period for each infrastructure improvement project. To calculate social cost of GHGs, CO_2e emissions were broken down using the following distribution assumption derived from the 2020 GHG emissions inventory for New York: 99.898 percent CO_2, 0.101 percent CH_4, and 0.001 percent N_2O (USEPA 2023). It was assumed construction for each alternative would occur over a 1-year period. Construction years are listed in **Table 2**.

CO_2e is a representation of GHG emissions relative to a reference gas, CO_2. It is calculated by adding GHGs which have been multiplied by their global warming potential (GWP). CO_2 has a GWP equal to 1, while the GWP of CH_4 is 25 and the GWP of N_2O is 298. Based on these assumptions, the following equation was used to calculate the social cost of GHGs. **Table 3** shows the social cost of GHGs that were calculated for construction of each installation development project under the Proposed Action. **Table 4** shows the social cost of GHGs that were calculated for operations under the Proposed Action.

$$\text{Social Cost} = SCCO_2((CO_2e*0.99898)/1) + SCCH_4((CO_2e*0.00101)/25) + SCN_2O((CO_2e*0.00001)/298)$$

Social Cost = social cost of GHGs ($)

$SCCO_2$ = social cost of CO_2 for the given year ($ per metric ton)
CO_2e = equivalent emissions of CO_2 (metric tons)
0.99898 = percent of CO_2e that is CO_2
1 = GWP of CO_2
$SCCH_4$ = social cost of CH_4 for the given year ($ per metric ton)
0.00101 = percent of CO_2e that is CH_4
25 = GWP of CH_4
SCN_2O = social cost of N_2O for the given year ($ per metric ton)
0.00001 = percent of CO_2e that is N_2O
298 = GWP of N_2O

Table 3. Social Cost of GHGs for Infrasrtucture Improvement Project Construction

Year	Project Number	Project Title	CO_2e (tons per year)	CO_2e (metric tons per year)[1]	Social Cost (in 2020 dollars)
2025	1	Pave TDY Lot and Other Degraded Surfaces	377.7	342.6	$19,192.26
2025	2	Renovate AGE Facility (Building 12)	213.0	193.2	$10,823.28
2025	3	Demolish Troop Camps (Building 40 Series)	234.2	212.5	$11,900.52
2025	4	Construct Small Arms Range	256.9	233.1	$13,054.00
2025	5	Construct AGE Covered Storage	213.1	193.3	$10,828.36
2025	6	Renovate Intel Facility (Building 2)	217.8	197.6	$11,067.19
2025	7	Repair Fire Station (Building 31)	233.6	211.9	$11,870.04
2025	8	Demolish Building 39	230.9	209.5	$11,732.84
2026	9	Construct POL Delivery Transport Bypass Road	353.6	320.8	$18,289.41
2027	10	Maintenance Control Complex (Building 19)	385.1	349.4	$20,616.71
2028	11	Repair Fuel Cell (Building 7)	218.1	197.9	$11,874.66
2028	12	Removal of Hangar Foam Recovery Tanks	403.4	366.0	$21,963.49
2030	13	Renovate Fire Suppression Systems in Hangars 1, 7, 8	407.2	369.4	$22,909.95
2030	14	Construct Vehicle Search Pit	361.4	327.9	$20,333.14
2030	15	Construct Vehicle Operations Covered Parking	213.4	193.6	$12,006.34
2030	16	Construct Logistics Complex	268.5	243.6	$15,106.39
2030	17	Construct Operations and Training Facility	364.5	330.7	$20,507.55
2030	18	Demolish Buildings 3 and 15	255.6	231.9	$14,380.61

2030	19	Expand Deicing Containment on Apron	454.8	412.6	$25,588.03

[1] 1 US short ton is equal to 0.907184 metric tons.

Table 4. Social Cost of GHGs for Operations

Year[1]	Project Number	Project Title	Operations Description	CO_2e (tons per year)	CO_2e (metric tons per year)[2]	Social Cost per year (in 2020 dollars)[3]
2026	4	Construct Small Arms Range	Add Heating	46.4	42.1	$2,399.97
2026	7	Repair Fire Station (Building 31)	Add Emergency Generator	2.7	2.4	$139.65
2026	8	Demolish Building 39	Remove Heating	-7.6	-6.9	-$393.10
2028	10	Maintenance Control Complex (Building 19)	Add Heating	46.7	42.4	$2,542.63
2031	16	Construct Logistics Complex	Add Heating	88.1	79.9	$5,036.54
2031	17	Construct Operations and Training Facility	Add Heating	154.8	140.4	$8,849.67
2031	18	Demolish Buildings 3 and 15	Remove Heating	-131.3	-119.1	-$7,506.21

[1] For operations calculations, operational CO_2e emissions are annual emissions and would not occur until the facility becomes operational, which typically occurs after construction is complete. The year following the year in which project construction would occur was used to calculate the social cost of GHGs.
[2] 1 US short ton is equal to 0.907184 metric tons.
[3] Represents the social cost from the first year of operations for each project. Social cost for subsequent years would be higher than what is shown, as social cost of GHGs increases over time.

References

Interagency Working Group on Social Cost of Greenhouse Gases, United States Government (IWG-SCGHG). 2021. *Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide Interim Estimates under Executive Order 13990*. February 26, 2021.

USEPA. 2023. *2020 National Emissions Inventory (NEI) Data for New York*. March 2023. Available online: <*https://www.epa.gov/air-emissions-inventories/2020-nei-supporting-data-and-summaries*>. Accessed June 2, 2023.

F

Resource Evaluation Surveys and Reports

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Appendix F – Resource Evaluation Surveys and Reports

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New York Ecological Services Field Office
3817 Luker Road
Cortland, NY 13045-9385
Phone: (607) 753-9334 Fax: (607) 753-9699
Email Address: fw5es_nyfo@fws.gov

In Reply Refer To: July 12, 2023
Project Code: 2023-0103498
Project Name: Air National Guard Base: Schenectady Baseline Flora/Fauna Surveys

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see https://www.fws.gov/birds/policies-and-regulations.php.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/birds/policies-and-regulations/executive-orders/e0-13186.php.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. **Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.**

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New York Ecological Services Field Office
3817 Luker Road
Cortland, NY 13045-9385
(607) 753-9334

PROJECT SUMMARY

Project Code:	2023-0103498
Project Name:	Air National Guard Base: Schenectady Baseline Flora/Fauna Surveys
Project Type:	Military Operations
Project Description:	The National Guard Bureau (NGB) is performing reconnaissance-level surveys for the flora and fauna located on the property of the Schenectady National Guard Base (SNGB). SNGB is located in the Town of Glenville, New York, across the Mohawk River from the City of Schenectady in Schenectady County.

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@42.851734,-73.92195668039074,14z

Counties: Schenectady County, New York

ENDANGERED SPECIES ACT SPECIES

There is a total of 2 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Endangered

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

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