October 29, 2025

RE: (PDX04) Cleaner Air Oregon Call In

If I am claiming any information in this submission is a trade secret, I hereby swear or affirm that the trade secret request meets the requirements of Oregon Revised Statutes (ORS) 646 and that the justification submitted with the trade secret request sets the basis for claiming that the information should be considered a trade secret as defined in ORS 646.475.

a) I am a responsible official as defined in OAR 340-200-0020 and based on information and belief formed after reasonable inquiry, I hereby affirm that all statements and information transmittal are true, accurate and complete; OR

b) I am a designated representative as defined in OAR 340-200-0020, I certify under penalty of law that I have personally examined, and am familiar with, the statements and information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false statements and information or omitting required statements and information, including the possibility of fine or imprisonment. I am authorized to make this submission on behalf of the owners and operators of the source or units for which the submission is made.

Signee Name (please print): _Robb Truedinger________________ Title:_Authorized Representative_

Signee Signature: Signed by: Robb Truedinger 83B51630A138463... Date: October 31, 2025

RISK ASSESSMENT
Cleaner Air Oregon

Amazon Data Services – PDX-4

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Project 243801.0062

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1. INTRODUCTION

Amazon Data Services, Inc.'s (ADS) PDX-4 facility was called in to the Cleaner Air Oregon (CAO) program and has received approval from the Oregon Department of Environmental Quality (DEQ) on the Toxic Emission Inventory on January 31, 2025; and for the Modeling Protocol and Risk Assessment Work Plan (RAWP) on July 9 2025. ADS is submitting this Risk Assessment in accordance with OAR 340-245-0050.

A summary of the contents in this document is provided as follows:

- Section 2 of this document describes the modeling methodology, including model selection, source characterization and selection of meteorological data.
- Section 3 details toxic emission calculation methodology.
- Section 4 includes the risk determination methodology for the CAO risk assessment work plan.

The contents of the appendices include:

- Appendix A: Facility Layout
- Appendix B: Landuse Map
- Appendix C: Emission Calculations
- Appendix D: Modeled Building and Source Parameters
- Appendix E: Screening REER Calculations
- Appendix F: Screening Results
- Appendix G: Final Risk Calculations
- Appendix H: Electronic Modeling Files

2. MODELING METHODOLOGY

2.1 Model Overview

2.1.1 Dispersion Model Selection

The American Meteorological Society/Environmental Protection Agency Regulatory Model Improvement Committee modeling system, AERMOD version 24142 with Plume Rise Model Enhancements (PRIME) advanced downwash algorithms, was used as the dispersion model in the air quality analysis.

2.1.2 Coordinate System

The location of the emission sources, structures, and receptors for this modeling analysis are represented in the Universal Transverse Mercator (UTM) coordinate system using the North American Datum (NAD) 1983 projection. The UTM grid divides the world into coordinates that are measured in north meters (measured from the equator) and east meters (measured from the central meridian of a particular zone, which is set at 500 kilometers (km)). UTM coordinates for this analysis are based on UTM Zone 11. The location of the proposed facility is approximately 5,079,843 meters (m) Northing and 293,805 m Easting in UTM Zone 11.

2.1.3 Terrain Elevations

Terrain elevations for receptors are determined using the National Elevation Dataset (NED) supplied by the United States Geological Survey (USGS), where facility grading does not apply.[1] The NED is a seamless dataset with the best available raster elevation data of the contiguous United States. NED data retrieved for this model have a grid spacing of 1/3 arc-second or 10 m. The AERMOD preprocessor, AERMAP version 24142, was used to compute model object elevations from the NED grid spacing. AERMAP also calculates hill height data for all receptors. The base elevation for buildings and sources was determined based on facility grading.

2.2 Source Characterization

2.2.1 Facility Description

The PDX-4 data center campus houses computer systems and associated components, such as telecommunications and data storage systems. The facility includes data communications equipment, security systems, environmental controls, and diesel-fueled backup power generators. A copy of the facility site layout is provided in Appendix A. The principal use of the facility is storage, management, and dissemination of electronic data.

PDX-4 is permitted to operate 98 emergency generators to provide backup electrical power to the facility during unexpected power outages.[2] Emergency backup power is the only purpose of the generators. ADS periodically operates the generators for testing and maintenance to ensure adequate availability of the generators during these potential emergencies. In addition, a portable generator will be used to backup

[1] NED data retrieved from the National Map website at https://viewer.nationalmap.gov/basic/.

[2] Not all permitted generators are currently installed onsite; however, all permitted generators are included in this CAO evaluation.

other emergency generators during maintenance, testing, commissioning, or other needs to support operations onsite.

The generator engines fire diesel fuel and are subject to the federal New Source Performance Standards (NSPS) for Compression Ignition Internal Combustion Engines (40 CFR 60 Subpart IIII). These engines are certified to Tier 2 standards and limited to 100 hours per year of operation for non-emergency usage, inclusive of testing and maintenance.

2.2.2 Source Location Maps and Plots

The emission units at the facility are:

- 3 Caterpillar C27 750 kW generators,
- 3 Caterpillar C27 800 kW generators,
- 1 Caterpillar C32 1,000 kW generator,
- 1 Caterpillar 3516C Trans 1,825 kW generator (portable),
- 6 Caterpillar 3516C 2,000 kW generators,
- 79 Caterpillar 3516C 2,500 kW generators (Main),
- 3 Mitsubishi MTU2250 2,250 kW generators,
- 1 Caterpillar C18 750 kW generator (Ski Lodge),
- 1 Caterpillar C3512C 1,500 kW generator (Ski Lodge)

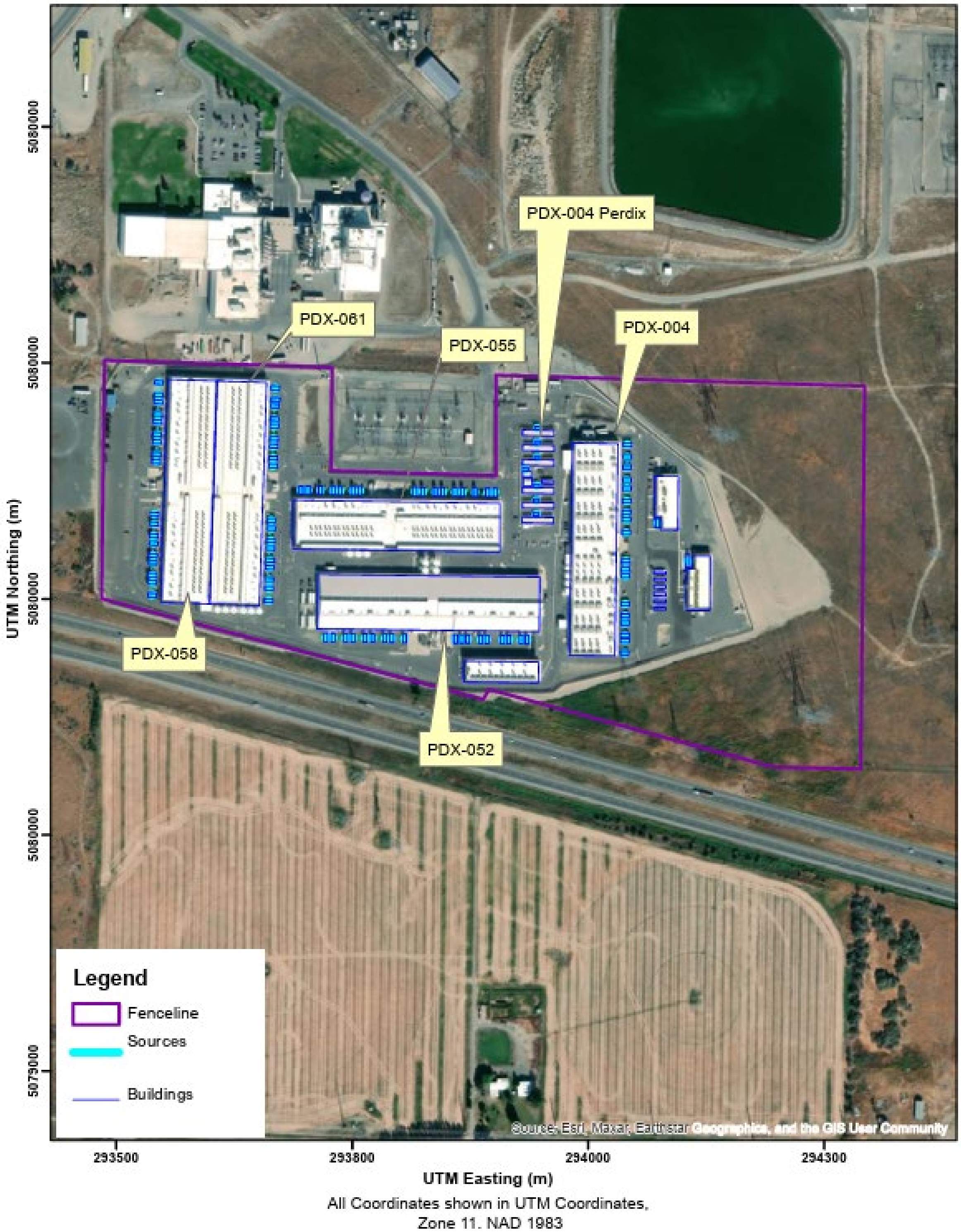
Each of the five data centers installed on the campus has the following engine configurations:

- Perdix Area: 1 C32 1,000 kW catcher generators, 3 C27 750 kW generators, 3 C27 800 kW generators,
- PDX-4: 9-3516C 2,500 kW Main generators, 6-3516C 2,000 kW generators and 3-MTU2250 2,250 kW generators.
- PDX52: 18-3516C 2,500 kW Main generators.
- PDX55: 16-3516C 2,500 kW Main generators.
- PDX58: 18-3516C 2,500 kW Main generators.
- PDX61: 18-3516C 2,500 kW Main generators.

The 2 ski lodge generators are located in the ski lodge buildings located to the east of the PDX-4 building. The portable generator can be located throughout the site as it is mobile and has been set to 293,859.49 m easting and 5,079,707.67 m northing.

A facility layout is provided in Appendix A. A map showing the location of the emission sources is included in Figure 2-1.

Figure 2-1 Modeled Objects



2.2.3 Stack Dispersion Parameters

The stack parameters used to model emissions are obtained from manufacturer specifications and engineering judgement. Stack orientation, diameter, and height are provided in Table 2-1. The stack parameters for each operating load are provided in Table 2-2. Detailed model parameters are included in Appendix D.

Table 2-1. Summary of Exhaust Stack Physical Configuration

Sources [a]			Stack Configuration	Model Source Type	Stack Height (m)	Stack Diameter (m)
Building	TEU ID	Description				
PDX-004 (3)	Type A	C27 750 kW	Horizontal/ No Obstruction	POINTHOR	2.74	0.25
PDX-004 (3)	Type B	C27 800 kW	Horizontal/ No Obstruction	POINTHOR	3.35	0.25
PDX-004 (1)	Type C	Catcher - C32 1,000 kW	Horizontal/ No Obstruction	POINTHOR	3.05	0.25
PDX-004 (9)	Type F	Main - 3516C 2,500 kW	Horizontal/ No Obstruction	POINTHOR	5.16	0.51
PDX-004 (6)	Type E	3516C 2,000 kW	Horizontal/ No Obstruction	POINTHOR	5.16	0.51
PDX-004 (3)	Type G	MTU2250 2,250 kW	Vertical/No Obstruction	POINT	5.91	0.51
PDX-052 (18)	Type F	Main - 3516C 2,500 kW	Horizontal/ No Obstruction	POINTHOR	5.16	0.51
PDX-055 (16)	Type F	Main - 3516C 2,500 kW	Horizontal/ No Obstruction	POINTHOR	5.16	0.51
PDX-058 (18)	Type F	Main - 3516C 2,500 kW	Horizontal/ No Obstruction	POINTHOR	5.16	0.51
PDX-061 (18)	Type F	Main - 3516C 2,500 kW	Horizontal/ No Obstruction	POINTHOR	5.16	0.51
Portable Gen (1)	Type D	Portable – 3516C Trans 1,825 kW	Horizontal/ No Obstruction	POINTHOR	4.27	0.45
Ski Lodge 1 Building (1)	Type H	Ski Lodge - C18 750 kW	Vertical/No Obstruction	POINT	1.91	0.25
Ski Lodge 2 Building (1)	Type I	Ski Lodge - C3512C 1,500 kW	Vertical/No Obstruction	POINT	6.71	0.36

a. The portable generator exhaust is divided into two outlets. For the purposes of the model, this is represented as a single point source. The equivalent diameter calculated using the area of both vents is used along with the full exhaust flowrate to calculate the velocity.

Table 2-2. Summary of Stack Exhaust Parameters

Sources [a]			Temperature (K)	Flow Rate (acfm)	Velocity (m/s)
Building	TEU ID	Description			
PDX-004 (3)	Type A	C27 750 kW	780.76	5,523	51.444
PDX-004 (3)	Type B	C27 800 kW	784.54	6,012	55.993
PDX-004 (1)	Type C	Catcher - C32 1,000 kW	749.55	8,065	38.329
PDX-004 (9)	Type F	Main - 3516C 2,500 kW	763.82	19,579	45.589
PDX-004 (6)	Type E	3516C 2,000 kW	682.93	15,235	35.474
PDX-004 (3)	Type G	MTU2250 2,250 kW	778.15	17,799	41.445
PDX-052 (18)	Type F	Main - 3516C 2,500 kW	763.82	19,579	45.589
PDX-055 (16)	Type F	Main - 3516C 2,500 kW	763.82	19,579	45.589
PDX-058 (18)	Type F	Main - 3516C 2,500 kW	763.82	19,579	45.589
PDX-061 (18)	Type F	Main - 3516C 2,500 kW	763.82	19,579	45.589
Portable Gen (1)	Type D	Portable – 3516C Trans 1,825kW	660.82	14,338	43.161
Ski Lodge 1 Building (1)	Type H	Ski Lodge - C18 750 kW	726.09	6,028	56.149
Ski Lodge 2 Building (1)	Type I	Ski Lodge - C3512C 1,500 kW	675.7	11,734	43.161

a. The stack parameters are based on 100% load for each engine.

2.2.4 Downwash

Emissions from each source are evaluated in terms of their proximity to nearby structures. The purpose of this evaluation is to determine if stack discharges might become caught in the turbulent wakes of these structures. Wind blowing around a building creates zones of turbulence that are greater than if the buildings were absent. The concepts and procedures expressed in the Guideline for Determination of Good Engineering Practice (GEP) Stack Height (Technical Support Document for the Stack Height Regulations)[3] and other related documents were applied to all structures at the proposed PDX-4 facility. The Building Profile Input Program (BPIP) Version 04274 was used to calculate the downwash values for each point source.

Buildings located within the facility property boundary are included in this evaluation. There is another facility, Columbia River Processing (CRP), located immediately north of the PDX-4 facility. According to EPA's

[3] EPA-450/4-80-023R; Guideline for Determination of Good Engineering Practice Stack Height (Technical Support Document for the Stack Height Regulations); June 1985; https://www.epa.gov/sites/default/files/2020-09/documents/gep.pdf

GEP methodology[4], "the downwind area in which a nearby structure is presumed to have significant influence on a source should be limited to five times the height or width of the structure, whichever is less", expressed by the equation 5L, where L is the lesser of the height or projected width of the nearby structure.[5] If a building is at a distance larger than 5L, it would be presumed to have no effect on the downwash from a source.

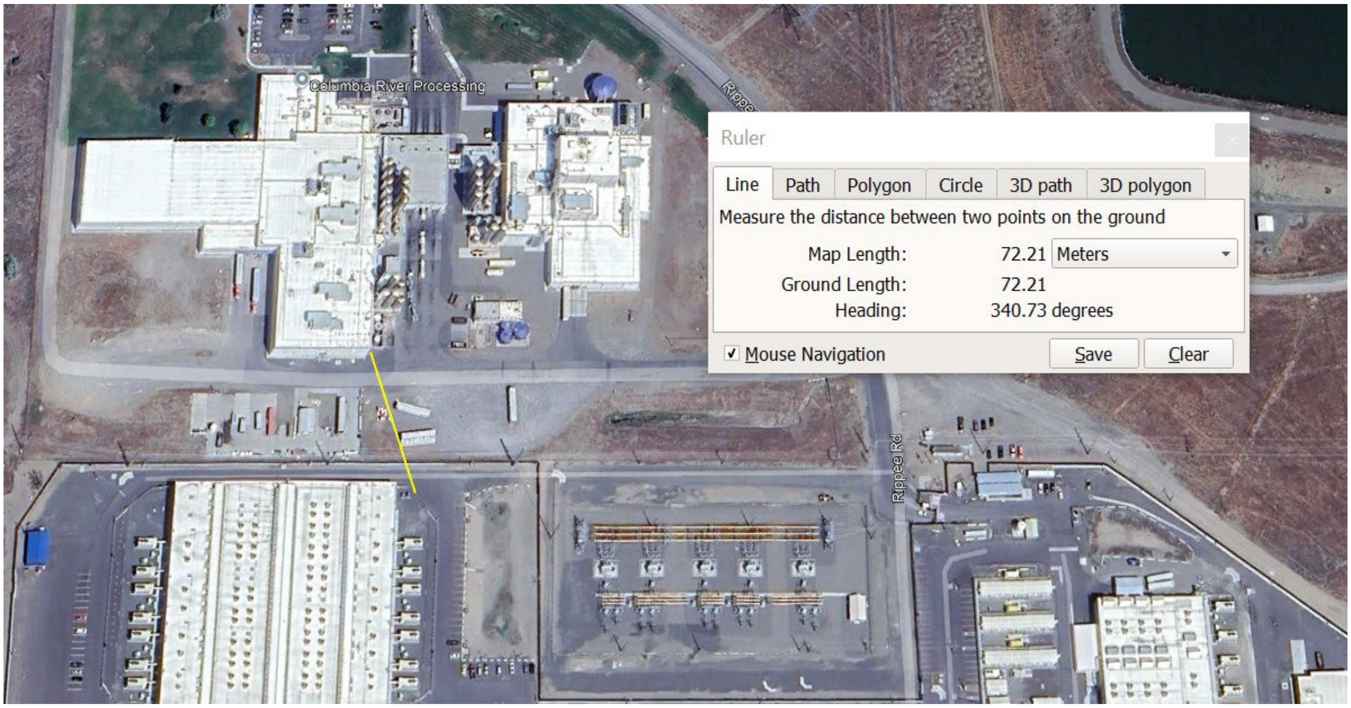
Measurements were taken in Google Earth to determine the building height and distance of the nearest point on a CRP building to a stack at PDX-4, shown in Figure 2-2 and Figure 2-3, respectively. The height of the building is estimated to be 6.46m. The projected width is larger than the height. Using a conservative estimate of L = 7m, the calculated value of 5L is 35m. The estimated distance between the nearest point on a CRP building to the nearest stack at building PDX-058 is 72.21m, which equates to a distance of around 10L.

Figure 2-2. Columbia River Processing Building Height

[4] Building downwash GEP methodology informed by both San Joaquin Valley Air Pollution Control District (SJVAPCD) Guidance for Air Dispersion Modeling, Section 3.7.1: https://www.valleyair.org/media/zlbhrg22/modeling_guidance.pdf and EPA-450/4-80-023R; Guideline for Determination of Good Engineering Practice Stack Height (Technical Support Document for the Stack Height Regulations); June 1985; https://www.epa.gov/sites/default/files/2020-09/documents/gep.pdf

[5] EPA specifies this methodology is most applicable when the building width is less than ten times the building height, or 10L. Due to the CRP building's shape the most prominent wall close to the nearest stack is about 47 m long and would be classified as the projected width of the building. This projected width is smaller than 10L, so the 5L downwash anlaysis is applicable.

Figure 2-3. Distance from Columbia River Processing to Nearest Stack



The building parameters for buildings within the fenceline are provided in Appendix E and are shown in Figure 2-1.

2.2.5 Operating Scenarios

Testing and maintenance on the emergency generators is necessary to ensure reliable availability of backup power in the event of loss of power. Non-emergency operation of the emergency generators is limited by federal regulations to 100 hours/year/generator.[6] While this is a limit for all emergency generators in the nation, most emergency generators operate far less on an annual basis. Oregon DEQ has specified non-emergency operations and commissioning must be included in compliance demonstration with CAO modeling requirements.

Typically, backup generators will complete biweekly testing at low or no load. These tests last 6 minutes each. Additionally, loaded testing is completed a couple times per year to ensure the generators will automatically start and support loads up to full capacity. These loaded tests are generally scheduled for an hour or less. All operations are expected to occur without any daily restriction. The portable generator will be used on an as-needed basis for backup power generation and will undergo routine maintenance and testing. The primary use of this generator is to temporarily stand in place of a main generator that is unavailable for backup power due to maintenance or repair.

The modeled scenarios for CAO compliance are intended to align with ADS typical operations while including a high level of conservatism to retain fuel usage flexibility and reduce recordkeeping burdens.

[6] 40 CFR 60, Subpart IIII; 40 CFR 63 Subpart ZZZZ

2.2.6 Urban/Rural Determination

The Multi-Resolution Land Characteristics Consortium National 2016 Land Cover Database (NLCD) was consulted to determine whether the site location should be classified as urban or rural.

In accordance with 40 CFR Part 51 Appendix W, Section 7.2.1.1(b)(i), the land use was classified based on a 3-kilometer radius circle around the facility center. Developed, high intensity and developed, medium intensity areas are considered urban, and all other areas are considered rural.

The NLCD2016 data map demonstrated that more than 50% of the land use within a 3-kilometer radius of the facility is rural. A land use map with this graphical interpretation is included in Appendix B. AERMOD's urban option was not selected.

2.3 Meteorological Data

This section discusses the selection of representative meteorological data that is used for this risk assessment. A copy of the AERMOD-ready data is provided in this submittal within the modeling files provided in Appendix H.

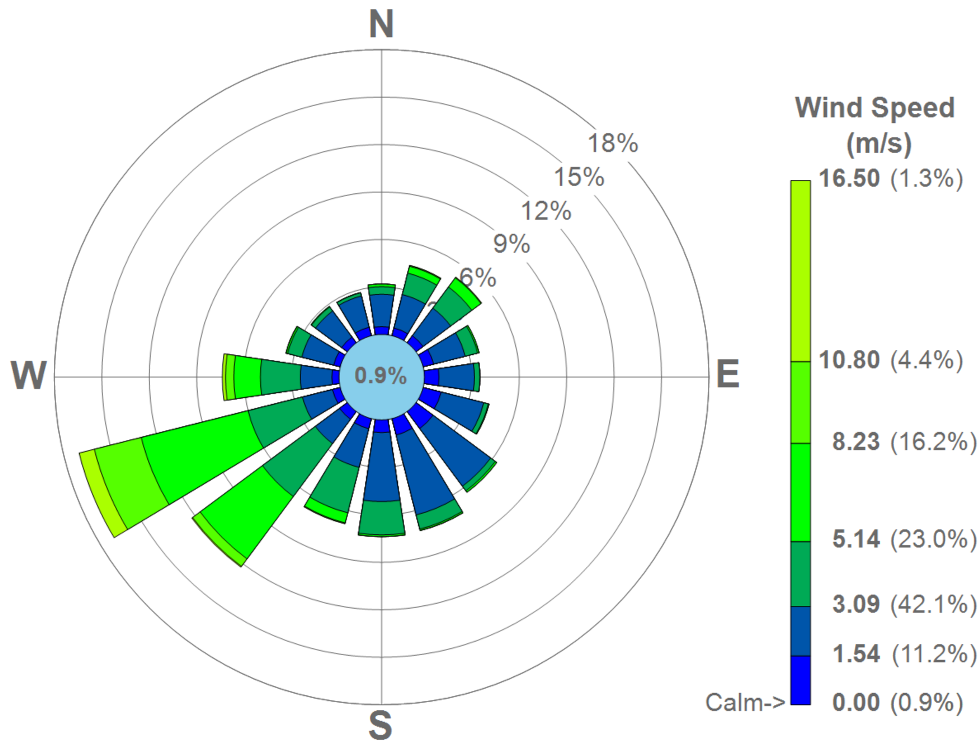
2.3.1 Meteorological Data Overview

Five years of surface meteorological data, from 2018 to 2022, were taken from the nearest airport, Hermiston Municipal Airport (Station ID: KHRI; WBAN ID: 04113). The upper air data was taken from the most representative upper air station in Spokane, Washington (Station ID: KOTX; WBAN: 4106) for the corresponding period. The meteorological data was processed using AERMET version 24142 using regulatory default options following EPA's guidance on AERSURFACE and AERMET. The ADJ_U* option is used to account for low wind speed and stable atmosphere conditions more accurately.

One-minute automated surface observing system (ASOS) data was processed using the latest version of AERMINUTE pre-processing tool (version 15272). The 1-minute wind speed threshold of 0.5 meter per second (m/s) was applied for the 1-minute ASOS data according to EPA guidance.[7] The wind rose for the modeled period (2018-2022) is provided in Figure 2-4.

[7] EPA Memo *Use of ASOS meteorological data in AERMOD dispersion modeling*, March 8, 2013.

Figure 2-4. 2018-2022 Wind Rose at Hermiston Municipal Airport (KHRI)



The total percentage of calm wind data is 0.9% for the modeled period. AERSURFACE (version 24142) was used to process land cover data to determine surface characteristics for use in AERMET.

The surface characteristic for moisture were all assigned an "average" rating. Although this is not the most conservative option, this feature of the meteorological data processing has a very small impact on the modeled concentrations.[8] Additionally, the methodology for assigning the moisture rating was developed in the Southeastern U.S. and creates issues for assigning moisture conditions in the typically very dry summers of the U.S. Western States.

2.3.2 Meteorological Data Representativeness

Per 40 CFR Part 51 Appendix W, Section 8.4.1(b), the representativeness of meteorological data is dependent on factors including "(1) The proximity of the meteorological monitoring site to the area under consideration; (2) the complexity of the terrain; (3) the exposure of the meteorological monitoring site; and (4) the period of time during which data are collected".

The Hermiston Municipal Airport meteorological station is located 30 km to the east of the facility. The terrain of the facility and of the Hermiston Municipal Airport is flat. The facility's elevation is approximately 91 m, while the Hermiston Municipal Airport's elevation is 194 m. The land cover for the facility is generally agricultural, which is similar to the land cover around Hermiston Municipal Airport.

[8] Approved by Kristen Martin, Oregon Department of Environmental Quality.

The meteorological dataset includes five years of data, from 2018 to 2022. The total percentage of missing data is 2.29% for the modeled period. The winds at the Hermiston Municipal Airport are primarily west-southwesterly and southwesterly. The dominant surface wind directions are expected to be comparable at the facility because of its proximity to the Hermiston Municipal Airport and the area's relatively flat terrain. A wind rose for the dataset is provided in Figure 2-4.

Because of the site's proximity to the Hermiston Municipal Airport, the similar terrain between the two sites, and the recency of the meteorological dataset, the selected surface station dataset is considered representative for the proposed facility.

Three National Weather Service upper-air balloon stations are available in this area. The Spokane, WA (KOTX) station is approximately 256 km away from the site, and the elevation is approximately 730 m. The Salem, Oregon (SLE) station is approximately 282 km away from the site, and the elevation is approximately 60 m. The Boise, ID (BOI) station is approximately 374 km away from the site, and the elevation is approximately 870 m. The KOTX station is located in the closest proximity and located in similar terrain and in a location with moisture characteristics that are closely aligned with those found in the Boardman area. Therefore, meteorological data processed with the upper air data from the KOTX station is used for this assessment.

2.4 Modeling Domain and Receptors

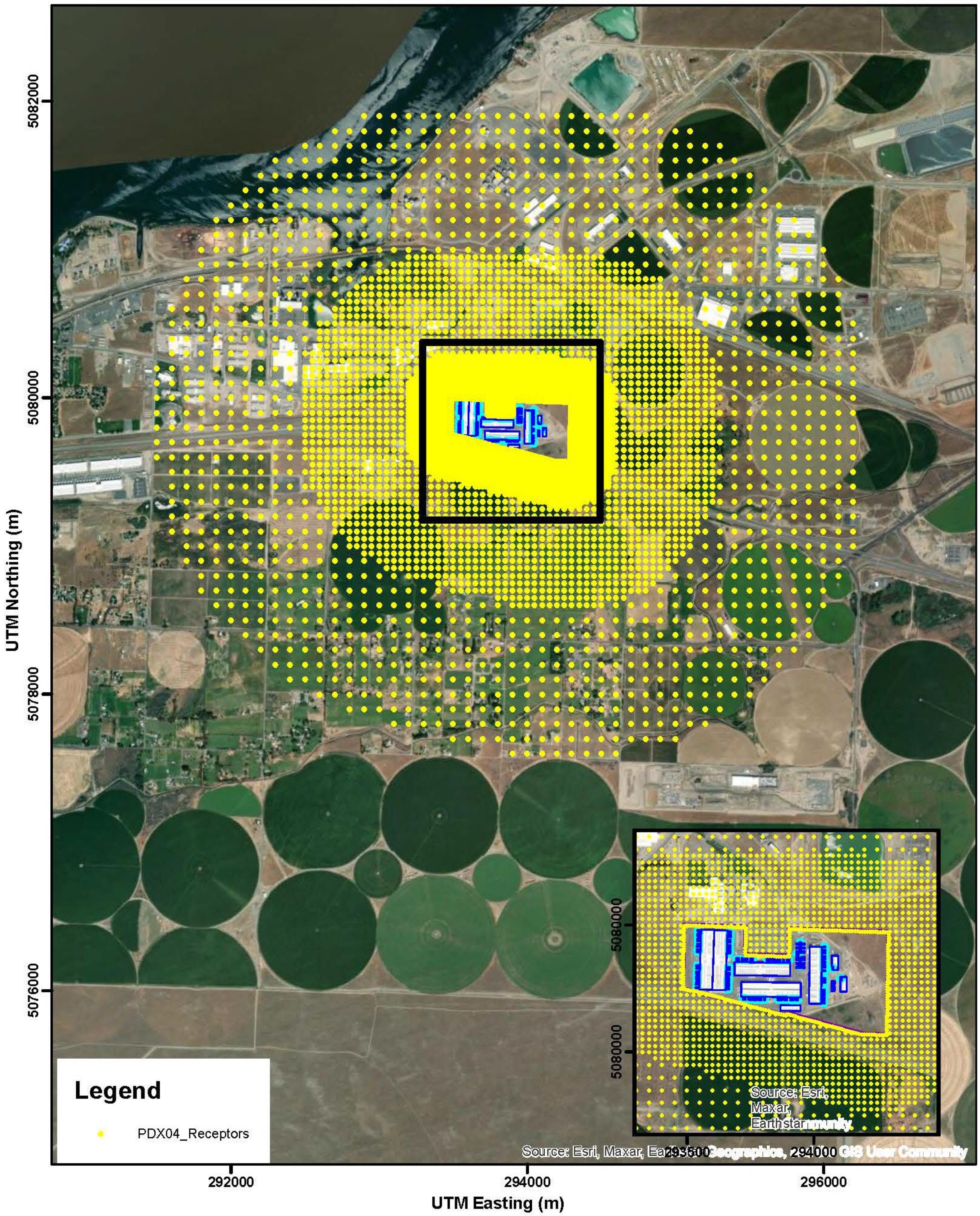
Four circular Cartesian receptor grids were used in the analysis that are either as or more fine than the recommended receptor density in Section 2.4 of Oregon DEQ Recommended Modeling Procedures. [9]

- A grid containing 25-meter spaced receptors and extending 300 m from the facility fenceline.
- A grid containing 50-meter spaced receptors extending from 300 m to 1,000 m from the facility fenceline.
- A grid containing 100-meter spaced receptors extending from 1,000 m to 2,000 m from the facility fenceline.

In addition, 10-meter spaced receptors were included along the property boundary. ADS facilities have surveillance cameras that can view every part of the property outside the physical fenceline and facility staff complete hourly patrols. Any member of the public who comes onto the property is monitored and removed within one hour if they should not be present. As such, the public does not reasonably have access to the property, and the property boundary is the appropriate starting point for ambient air assessment and receptor placement at this facility. All receptors are placed at ground level elevation, as calculated using the AERMOD preprocessor, AERMAP version 24142. All modeled receptors are shown in Figure 2-5.

[9] Oregon DEQ's Recommended Procedures for Air Quality Dispersion Modeling, March 2022.

Figure 2-5. Modeled Receptors



All Coordinates shown in UTM Coordinates,
Zone 11, NAD 1983

3. RISK ASSESSMENT WORK PLAN

3.1 Conceptual Site Model

Risk was evaluated using all toxic emission units at the proposed PDX-4 site. The following list of Toxic Air Contaminants (TACs) are included in the Risk Assessment: [10]

- 1,3-Butadiene
- Acenaphthene
- Acenaphthylene
- Acetaldehyde
- Acrolein
- Ammonia
- Anthracene
- Antimony
- Arsenic
- Barium
- Benz[a]anthracene
- Benzene
- Benzo[a]pyrene
- Benzo[b]fluoranthene
- Benzo[e]pyrene
- Benzo[g,h,i]perylene
- Benzo[k]fluoranthene
- Beryllium
- Cadmium
- Chlorobenzene
- Chrysene
- Cobalt
- Copper
- Dibenz[a,h]anthracene
- DPM
- Ethyl Benzene
- Fluoranthene
- Fluorene
- Formaldehyde
- Hexane
- Chromium VI
- Hydrogen Chloride
- Indeno[1,2,3-cd]pyrene
- Lead
- Manganese
- Mercury
- 2-Methyl naphthalene
- Naphthalene
- Nickel
- Perylene
- Phenanthrene
- Phosphorus
- Propylene
- Pyrene
- PAHs (excluding Naphthalene)
- Selenium
- Silver
- Thallium
- Toluene
- Xylenes
- Zinc

[10] The TACs that do not have Risk-Based Concentrations (RBCs) identified in OAR 340-245-8010 Table 2 are not included in risk calculations, however their emissions are quantified.

3.1.1 Exposure Locations

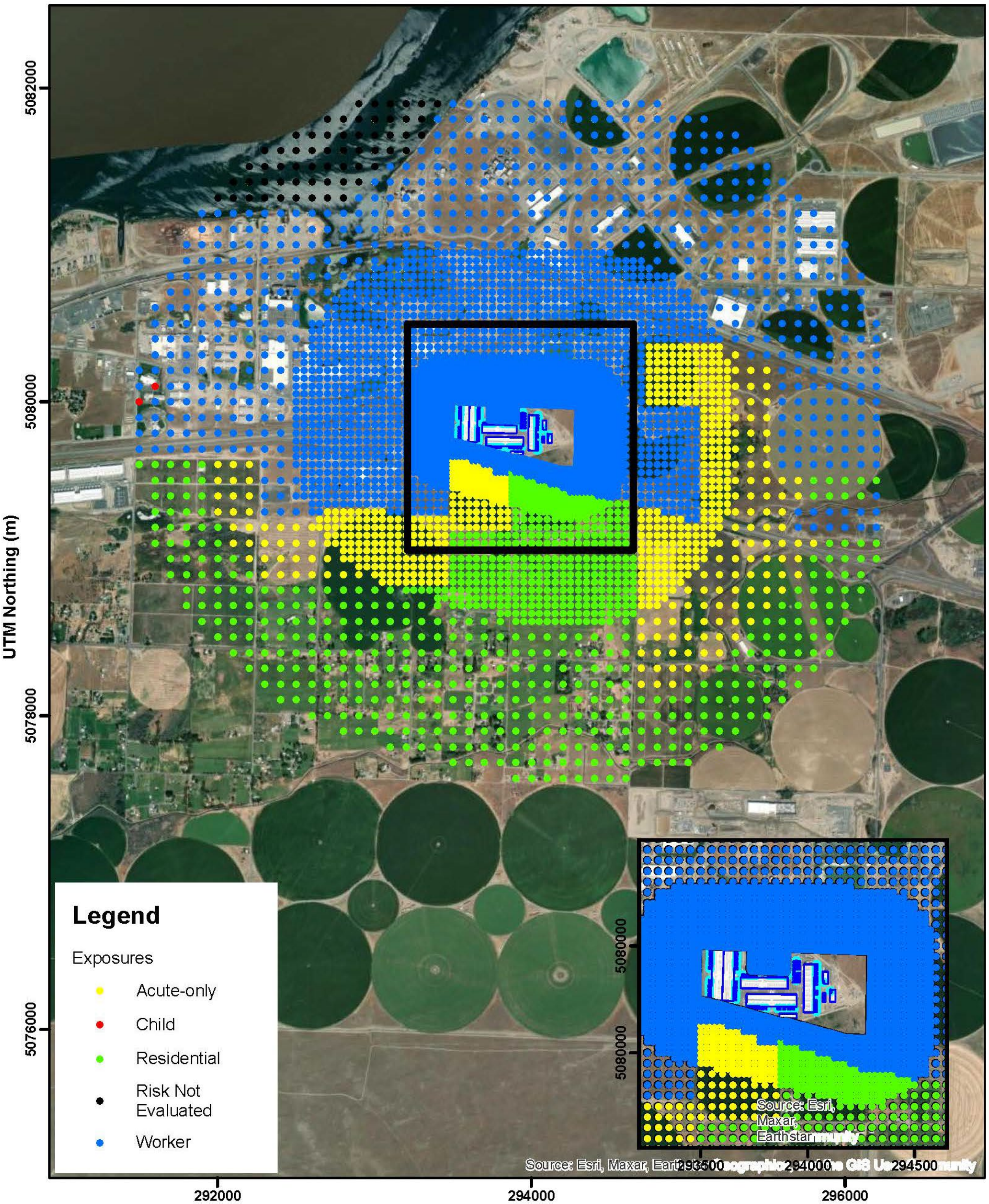
The receptor type for exposure was determined using the zoning maps from Morrow County and the City of Boardman. The facility is located in an area with a mix of zoning and is immediately surrounded by areas that are zoned Port Industrial (PI), General Industrial (GI), Farm Residential (FR2), and Exclusive Farm Use (EFU). The following locations are identified for the purpose of this risk assessment:

- The closest residential area to the facility is located approximately 400 m to the south and is zoned as farm residential.
- Receptors located in the EFU zoning within 1.5 km from the facility were categorized as acute-only receptors. There are no residences or farm working areas (such as warehouses or barns) identified within this area.
- EFU land located more than 1.5 km from the facility was conservatively assessed for residential risks.
- All land zoned as some classification of "industrial" was assessed for worker risk.
- The closest area that is assessed for the child exposure scenario is Neal Early Learning Center 1,890 m west of the facility.

Acute risks should be evaluated everywhere that people may spend several hours in a day per OAR 340-245-0020(4). All receptors assessed for chronic risks were also assessed for acute risks.

Note that the model domain provided in Section 2.4 covers receptors located in the Columbia River. For this risk assessment, risk was not calculated at these receptors.

Figure 3-1. Exposure Receptor by Type



All Coordinates shown in UTM Coordinates,
Zone 11, NAD 1983

3.2 Toxic Emission Unit Modeled Stack Parameters

All emission units have stack parameters as identified in Table 2-1 and Table 2-2. ADS assumed dispersion parameters at 100% load based on manufacturers' specifications for all modeled units. Details of different operating scenarios are provided in Section 2.2.5. The portable generator has two exhaust vents. To conservatively model the impact from the portable generator, an equivalent diameter of both vents combined was used in the modeling demonstration.

Appendix D includes the modeled CAO source parameters for individual units. All sources were modeled at a unit emission rate of 1 gram per second (g/s) for modeling chronic and acute risk.

3.3 Calculation Methodology for Risk

There are up to seven risk-based concentrations (RBCs) that have been developed for each TAC to evaluate potential chronic cancer, chronic noncancer, and acute risks associated with the potential emissions at the facility, which are provided in OAR 340-245-8010 Table 2. All emission sources were modeled with a unit emission rate of 1 g/s. ADS used Approach D: Unit Emission Rate with risk equivalent emission rate (REER) provided in *Recommended Procedures for Toxic Air Contaminant Health Risk Assessments*.[11] This method produces dispersion factors out of AERMOD that are used in conjunction with the REER to determine potential risk. The REER tables that will be used for calculating risks are provided in Appendix E. A summary of final REER values for each unit is provided in Table 3-1.

Table 3-1. REER Summary

Generator	Residential Cancer	Residential Non-Cancer	Child Cancer	Child Non-Cancer	Worker Cancer	Worker Non-Cancer	Acute Non-Cancer
CAT 27 - 750 kW	2.17E-02	5.42E-04	8.18E-04	1.03E-04	1.75E-03	1.03E-04	5.86E-04
CAT 27 - 800 kW	2.32E-02	5.79E-04	8.74E-04	1.11E-04	1.87E-03	1.11E-04	6.27E-04
CAT 32 - 1,000 kW	2.91E-02	7.27E-04	1.10E-03	1.39E-04	2.34E-03	1.39E-04	7.86E-04
CAT 3516C - 1,825 kW	5.19E-02	1.30E-03	1.96E-03	2.48E-04	4.18E-03	2.48E-04	1.40E-03
CAT 3516C - 2,000 kW	5.62E-02	1.40E-03	2.12E-03	2.68E-04	4.52E-03	2.68E-04	1.52E-03
CAT 3516C - 2,500 kW	5.18E-02	1.25E-03	2.01E-03	2.39E-04	4.06E-03	2.39E-04	1.41E-03
MTU 2250 - 2,250 kW	6.59E-02	1.65E-03	2.49E-03	3.15E-04	5.31E-03	3.15E-04	1.78E-03
CAT C18 - 750 kW	1.87E-01	3.85E-03	7.19E-03	8.56E-04	1.55E-02	8.56E-04	5.86E-04
CAT 3512C - 1,500 kW	4.17E-02	1.04E-03	1.57E-03	1.99E-04	3.36E-03	1.99E-04	1.13E-03

[11] Section 3.1.3, Recommended Procedures for Toxic Air Contaminant Health Risk Assessments, Oregon DEQ (July 2020).

3.3.1 Chronic Cancer Risks

Chronic Cancer risks are evaluated based on the annual modeled dispersion factors for the highest contributing individual generators to the receptor with the highest modeled risk. This method is used to obtain a site wide fuel limitation for non-emergency fuel use across any and all generators at the facility. Potential annual emissions are determined by:

- Manufacturer's specifications for potential hourly fuel usage at maximum operating power;
- Restrictions associated with NSPS Subpart IIII of 100 hours of non-emergency operation; and
- Synthetic minor annual permit limitation of 39 tpy of NO_X corresponding to a site-wide annual throughput of 269,504 gallons.

The highest contributing individual generators were determined using the following steps:

1. Model all generators using the parameters specified in Appendix E at an emission rate of 1 g/s.
2. Calculate child chronic cancer, worker chronic cancer and residential chronic cancer REERs (See Appendix F Screening REERS for each unit). The REER is calculated for each emission unit type based on 100 hours of operation at 100% load and the RBCs for each respective exposure category.
3. Scale the modeled result at each receptor in the given exposure type (child, worker, or residential) for each unit across all 5 model years by the REER determined in Step 2 to calculate cancer risk at each receptor for each exposure type.
4. Determine the receptor with the highest modeled cancer risk across all generators for each exposure scenario; this will be the determined maximum exposure location for each exposure type.
5. Rank the individual emission units by the cancer risk contribution to the overall maximum exposure location for each risk type obtained in Step 4. Determine all auxiliary generators with a greater contribution to risk than the highest 2,500 kW generator. Auxiliary generators are all generators that are not type F, CAT 3516C, 2,500kW generators. These include type A, type B, type C, type D, type E, type G, type H, and type I generators listed in Table 2-1.These auxiliary generators and the highest individual 2,500 kW generator will be used in the risk evaluation.

Steps 3 through 5 were completed in R studio using an R script provided by Oregon DEQ[12] and is included in Appendix I.

Using this screening approach and ranking method allows for differences in fuel consumption, emission factors, receptor designations, and modeled dispersion characteristics to be considered when determining the highest contributing individual generators in each category. The screening results (shown in Appendix F) demonstrate that the Ski Lodge 1 generator has the highest contribution overall to the residential, worker, and child chronic cancer risk.

[12] The R script was developed by Kristen Martin (Oregon DEQ) and provided to Trinity in February 2024.

Table 3-2. Summary of Fuel Throughput for Chronic Residential Risk Assessment

Emission Unit	TEU ID	Screening Model Rank	Potential Annual Hours of Operation	Potential Hourly Fuel Throughput (gallons)	Fuel Throughput (gallons)
C18 750 kW – Ski Lodge 1	Type H	1	100	53.6	5,360
MTU 2250 2,250kW - B04_G17C	Type G	2	100	163.0	16,300
MTU 2250 2,250kW - B04_G17B	Type G	3	100	163.0	16,300
3516C 2,500 kW - B52_G08A	Type F	4	-	173.5	231,544
				Total	**269,504**

a. The fuel throughput for B52-G08A is assumed to be the difference between the total facility-wide proposed fuel throughput limit and the higher-ranked individual generators based on the results of the model. All remaining throughput is determined based on 100 hours of operation and the fuel throughput capacity of the individual units when operating at 100% load.

Table 3-3. Summary of Fuel Throughput for Chronic Worker Risk Assessment

Emission Unit	TEU ID	Screening Model Rank	Potential Annual Hours of Operation	Potential Hourly Fuel Throughput (gallons)	Fuel Throughput (gallons)
C18 750 kW – Ski Lodge 1	Type H	1	100	53.6	5,360
CAT C32 1,000 kW - P04_GENC	Type C	2	100	71.9	7,190
3516C 2,500 kW – B55_G02A	Type F	3	-	173.5	256,954
				Total	**269,504**

a. The fuel throughput for B55_G02A is assumed to be the difference between the total facility-wide proposed fuel throughput limit and the higher-ranked individual generators based on the results of the model. All remaining throughput is determined based on 100 hours of operation and the fuel throughput capacity of the individual units when operating at 100% load.

Table 3-4. Summary of Fuel Throughput for Chronic Child Risk Assessment

Emission Unit	TEU ID	Screening Model Rank	Potential Annual Hours of Operation	Potential Hourly Fuel Throughput (gallons)	Fuel Throughput (gallons)
C18 750 kW – Ski Lodge 1	Type H	1	100	53.6	5,360
3516C Trans 1,825 kW – PORTABLE	Type D	2	100	128.4	12,840
C27 800 kW – P04_GEN2	Type B	3	100	57.3	5,730
C27 750 kW – P04_GEN4	Type A	4	100	53.6	5,360
C27 750 kW – P04_GEN6	Type A	5	100	53.6	5,360
C27 800 kW – P04_GEN5	Type B	6	100	57.3	5,730
C27 800 kW – P04_GEN3	Type B	7	100	57.3	5,730
C27 750 kW – P04_GEN1	Type A	8	100	53.6	5,360
C32 1,000 kW – P04_GENC	Type C	9	100	71.9	7,190
3516C 2,000 kW – B04_G15A	Type E	10	100	138.9	13,890
3516C 2,000 kW – B04_G15B	Type E	11	100	138.9	13,890
3516C 2,000 kW – B04_G14B	Type E	12	100	138.9	13,890
3516C 2,000 kW – B04_G14A	Type E	13	100	138.9	13,890
3516C 2,000 kW – B04_G13B	Type E	14	100	138.9	13,890
3516C 2,000 kW – B04_G13A	Type E	15	100	138.9	13,890
MTU 2250 2,250 kW – B04_G17C	Type G	16	100	163	16,300
MTU 2250 2,250 kW – B04_G17B	Type G	17	100	163	16,300
MTU 2250 2,250 kW – B04_G17A	Type G	18	100	163	16,300
CAT3152C 1500kW – Ski Lodge 2	Type I	19	100	103.2	10,320
3516C 2,500 kW – B52_G08A	Type F	20	-	173.5	68,284
				Total	**269,504**

a. The fuel throughput for B52_G08A is assumed to be the difference between the total facility-wide proposed fuel throughput limit and the higher-ranked individual generators based on the results of the model. All remaining throughput is determined based on 100 hours of operation and the fuel throughput capacity of the individual units when operating at 100% load.

For the chronic residential calculation, the ski lodge generator (C18 750 kW) and the B04 generators (MTU2250 2,250 kW) are included because the other auxiliary generators do not have a higher contribution to risk at the worst-case receptor than the highest risk 2,500 kW based on the screening results. For the worker risk calculation, the ski lodge generator (C18 750 kW) and the PO4 GENC generator (C32 1,000 kW) are included because the other auxiliary generators do not have a higher contribution to risk at the worst-case receptor than the highest risk 2,500 kW based on the screening results. All auxiliary generators are included in the chronic child risk calculation because they each have a higher contribution to risk at the worst-case receptor than the highest-ranked 2,500 kW based on the screening results.

An individual 2,500 kW generator operating for 100 hours per year at 100% load would only use 17,350 gallons of fuel per year. The use of the highest-risk 2,500 kW generator for the facility-wide fuel usage is therefore conservative, as each individual unit ranked lower in the screening model results would provide a less conservative modeled risk. This also means risks for each toxic emission unit (TEU) will not be reported, because not all TEUs will be calculated based on the results of the screening model. For example, the lowest ranking 2,500 kW generator in the screening model is not included in the final calculation. This does not indicate that this generator would not contribute to risk; rather, that its contribution to facility-wide risk would be lower than the calculated risks from the higher-ranked generators. The higher-ranked generators based on the screening model are conservatively used to estimate the potential maximum risk resulting from the proposed facility-wide fuel usage.

The final chronic risk for each exposure category will be determined based on the following:

- The fuel throughputs in Table 3-2 through Table 3-4 are used to calculate the REERs for each generator except for the 2,500 kW unit. Therefore, the risk determined for each auxiliary unit in the screening approach is the final risk associated with that unit.
- A fuel ratio is determined by dividing the allocated fuel throughput for the 2,500 kW unit by the maximum annual fuel throughput for one generator (hourly throughput for 2,500 kW gen x 100 hrs) to determine the total number of 2,500 kW units that could be operated with this amount of fuel.
- The fuel ratio is then multiplied by the risk associated with the 2,500 kW generator and is summed with the risk of all other auxiliary generators ranked above it to determine the total cancer risk at the maximum exposure location.

The calculated risks represent the assessed facility risk and will be compared against the corresponding Risk Action Levels (RALs).

3.3.2 Chronic Noncancer Risk

Chronic noncancer risk was calculated using the same method for chronic cancer risk described above in Section 3.3.1. The same modeled concentration from the unit risk model was ranked and multiplied by the individual noncancer REER's developed for the generators to determine a maximum noncancer risk produced by any one generator.

The generator rankings from the cancer risk calculations are used to calculate the non-cancer risks as well. The overall modeled concentrations for each generator can be ranked in the same order that the Cancer Risks are with the exception of child noncancer. For child noncancer, every auxiliary generator was included in the assessment, meaning risk from every type of generator is accounted for in the table. The rest of the fuel will be applied to the worst case result 2,500 kW type F generator. As described above, lower ranked generators would not have as large of an impact on risk as the worst-case generator so were excluded from the analysis. The modeled concentration for each generator in Table 3-4 and the non-cancer REER are multiplied and summed to determine the total non-cancer risk attributed to the operation of this facility.

3.3.3 Acute Risks

As with the chronic risk assessment, the screening model is used in combination with the calculated REER as part of the screening step. The difference between the acute and chronic risk screening is that the REER for acute non-cancer risk is calculated based on 24 hours of operation at 100% load for each generator for ranking purposes.

The screening results for acute analysis are included in Appendix F. The top 6 generators will be included for the acute risk determination, using the REER calculated based on fuel use for 24 hours of operation at 100% load. B52_G06A will be calculated using 1,618 gallons so that the daily fuel limit of 20,000 gallons is reached. Table 3-5 summarizes the fuel throughput used in emission calculations to determine the acute risk.

Table 3-5. Summary of Fuel Throughput for Acute Risk Assessment

Emission Unit	TEU ID	Screening Model Rank	Potential Hourly Fuel Throughput (gallons)	Fuel Throughput (gallons)
C32 1,000 kW - P04_GENC	Type C	1	71.90	1,726
3516C 2,500 kW - B55_G01A	Type F	2	173.50	4,164
3516C 2,500 kW - B55_G02B	Type F	3	173.50	4,164
3516C 2,500 kW – B52_G07A	Type F	4	173.50	4,164
3516C 2,500 kW - B55_G02A	Type F	5	173.50	4,164
3516C 2,500 kW - B52_G06A	Type F	6	173.50	1,618
	Facility Wide Daily Limit			**20,000**

As with the chronic risk assessment, the acute risks for each TEU will not be reported because not all generators were modeled.

3.4 Uncertainty Evaluation

This section discusses the assumptions made to this risk assessment and a qualitative discussion on the uncertainty in the potential risks.

3.4.1 Selection of TACs for Evaluation

The list of TACs used for this risk assessment is presented in Section 3.1. The original list of TACs that could potentially be emitted by diesel combustion from internal combustion engines was provided by DEQ, which includes TACs that do not have RBCs established in OAR Chapter 340-245 (e.g., zinc). Therefore, not counting the emissions of TACs that do not have an RBC may result in an underestimate of the potential risks.

3.4.2 Emission Rate Calculations

Conservative assumptions made in the emission calculations which may result in an overestimate in the calculated risks include:

- DPM emissions are the sum of particulate matter and hydrocarbon emissions from manufacturer's data. The toxicity of DPM typically comes from the portion of particulate matter measured using Method 1065, and the toxicity from the hydrocarbon portion is already accounted for in the volatile or nonvolatile organic TACs.
- Default emission factors from SCAQMD and EPA are used for small units and pollutants when stack testing data in Oregon is not yet available. These emission factors were derived in 1995 and are expected to be conservative compared to newer and Tier 2 or Tier 3 certified engines.
- The daily emissions are estimated assuming each unit fires at the maximum fuel rate on an hourly basis. Actual operation is expected to use less fuel on an hourly basis.

3.4.3 Exposure Assessment Assumptions

The risks calculated are based on AERMOD outputs, which are expected to overestimate the predicted dispersion factors at receptor locations, for the following reasons:

- AERMOD is an EPA-approved steady-state plume model and is periodically updated to refine the dispersion calculations and provide more accurate results with the intention to avoid underestimating the impacts.
- The modeled dispersion factors are based on the maximum results over the 5-year meteorological period, to cover the weather conditions that can result in high dispersion factors in the model domain.
- The modeling parameters and emissions used for the units are based on the 100% load. Actual operations are expected to operate at lower load levels resulting in lower emission rates and decreased dispersion.
- The modeled dispersion factors based on maximum 24-hour model outputs for each receptor location, assumes that the worst-case daily meteorological condition overlaps with the highest daily emissions. Due to the nature of emergency generator operations, the chance of high emissions and poor meteorological condition occurring on the same day is extremely small.

3.4.4 Derivation of Toxicity Values

The calculated risks are determined based on the model results and the RBCs for each TAC evaluated in this risk assessment. The RBCs in OAR Chapter 340-245 are determined from the Toxicity Reference Values (TRVs) and then are adjusted with expected exposure duration and target organs for each TAC.

Firstly, the TRVs are obtained from various sources, including but not limited to EPA's Integrated Risk Information System (IRIS) database, Agency for Toxic Substances and Disease Registry (ATSDR) Toxicological Profiles, California's Office of Environmental Health Hazard Assessment (OEHHA). The TRVs are selected from the reference concentrations (RfCs) for noncancer effects and unit risk factors (URFs) for cancer effects. When EPA and other agencies developed the RfCs or URFs, uncertainty factors (UFs) are applied to derive the doses or concentrations from various studies. The UFs usually include interspecies extrapolation, possible human variability in sensitivity etc. which are intended to result in protective doses or concentrations.

Secondly, the exposure duration is also based on conservative assumptions, e.g., a worker stays in the area with highest ambient concentration (in this case a fence boundary location) for 8 hours per day, 250 days per year over a period of 25 years. These assumptions overestimate the reported risks.

Lastly, not all TACs have the same target organ for the same type of exposure type. For example, arsenic compounds target nervous system while DPM target respiratory system for the chronic effects. However, when calculating the risks reported in this risk assessment, it is assumed that both arsenic compounds and DPM target the same organ by summing the calculated risks directly. Therefore, the reported risks are likely overestimated in this risk assessment.

4. RISK CHARACTERIZATION

There are up to seven RBCs that have been developed for each TAC to evaluate potential chronic cancer, chronic non-cancer, and acute risks around the facility, which are provided in OAR 340-245-8010, Table 2. Table 4-1 below summarizes the calculated facility risks by exposure type and compares to the selected RALs under OAR 340-245-8010, Table 1. An electronic evaluation of these results is also provided along with this report. Table 4-1 includes the risk results and associated maximum exposure locations. Maximum exposure locations are determined based on the methods provided in Section 3.1.1. As shown in Table 4-1, a permit with toxics attachment is required for the annual averaging period. As shown in Table 4-1, a permit with toxics attachment is required.

Table 4-1 Risk Summary and Comparison to RALs

	Residential Chronic Risks		Non-residential Chronic Risks				Acute Non-cancer Risks
Type	Chronic Cancer	Chronic Non-cancer	Child Cancer	Child Non-cancer	Worker Cancer	Worker Non-cancer	
Total Excess Cancer Risk / Hazard Index	3	<0.1	<0.1	<0.1	2	<0.1	1
Existing Facility Permit Level	5	0.5	5	0.5	5	0.5	0.5
Permit Required?	No	No	No	No	No	No	**Yes**
Existing Facility Community Engagement Level	25	1	25	1	25	1	1
Community Engagement Required?	No	No	No	No	No	No	No
Existing Facility TBACT Level	50	3	50	3	50	3	3
TBACT Required?	No	No	No	No	No	No	No

1. Risk Action Levels (RALs) from OAR 340-245-8010 Table 1.
2. Calculated risk is rounded to one decimal place for comparison to the source permit level for non-cancer risk and to the nearest whole number when comparing to other thresholds as per OAR 340-245-0200(4).
3. Pollutants included in this evaluation have a non-cancer class of either HI3 or HI5. For conservatism, all pollutants are treated as HI3 and compared to the non-cancer TBACT RAL of 3 as per OAR 340-245-0200(3).

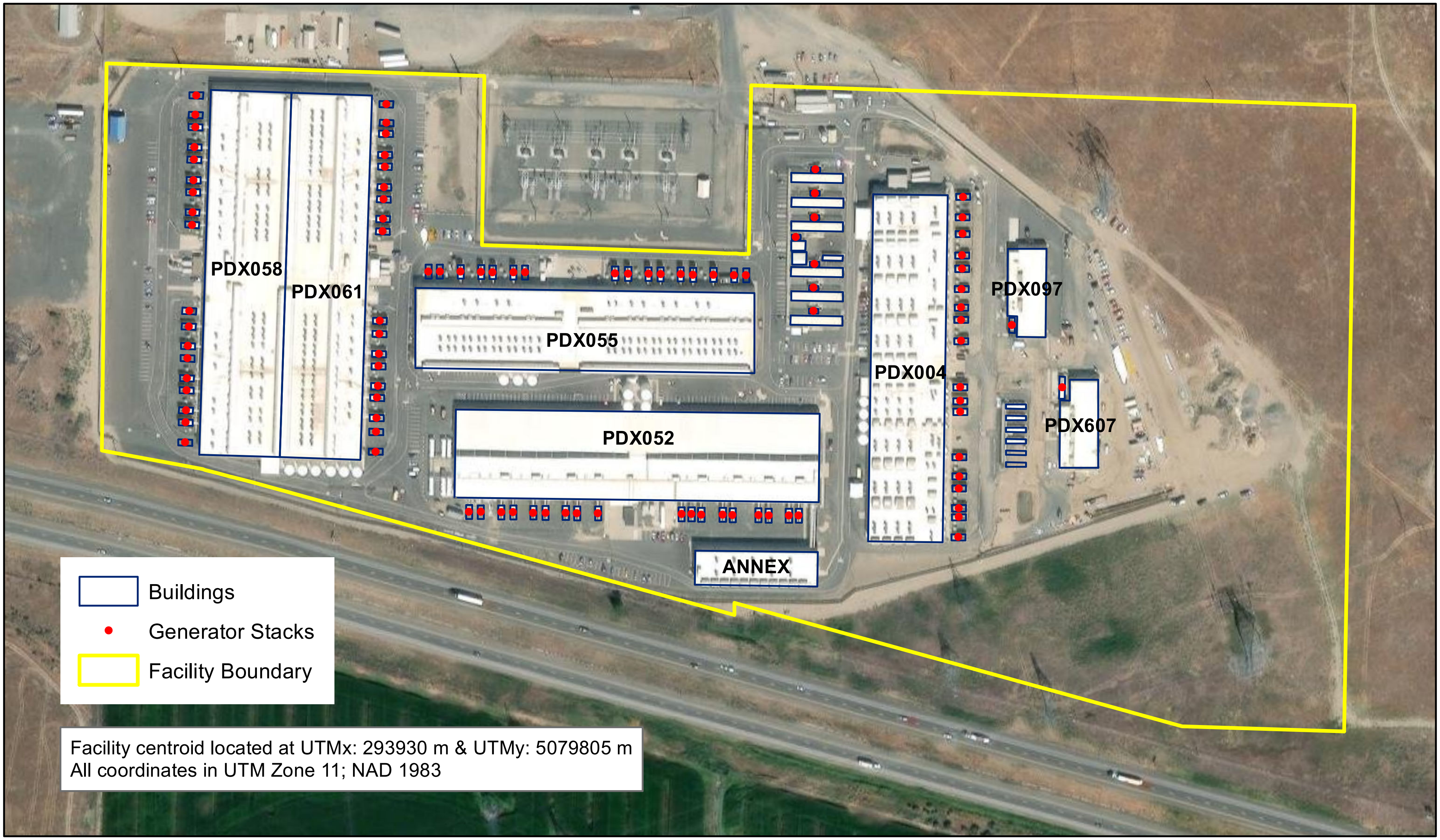
Risk Action Levels, established by Oregon DEQ, define the requirements and actions facilities must take to reduce risks associated with TACs. Because this facility is an existing source, the pollutants in this evaluation are assigned adjusted RALs. Most pollutants fall under non-cancer risk action classes HI3 or HI5; however, for conservatism, all pollutants were evaluated using HI3 and compared against the non-cancer TBACT RAL of 3 (OAR 340-245-0200(3)). As shown in the table above, all risk levels are below the HI3 TBACT threshold, and therefore no further actions are required.

4.1 Requested CAO Permit Conditions

Based on the modeling information and analysis provided, the total Acute non-cancer risk exceeds the existing source permit levels. Therefore, the PDX04 facility requires a permit addendum, and the following permit conditions are requested.

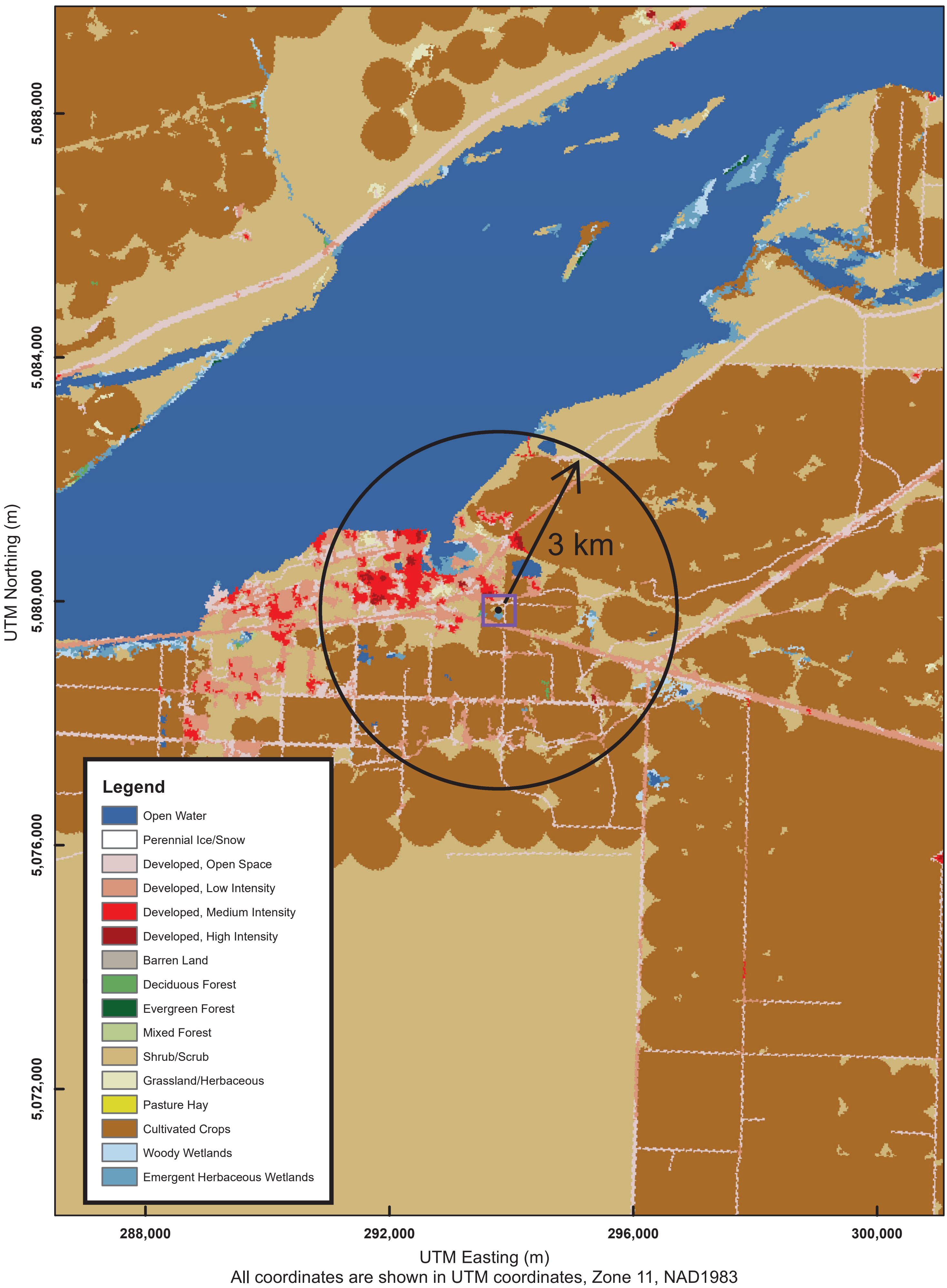
- Acute Source Risk Limit (SRL)
  - If the facility exceeds 20,000 gallons of fuel used in all emergency engines for the purposes of non-emergency operation, including commissioning, in any 24-hr period, the permittee must demonstrate that the acute risk does not exceed the Community Engagement Risk Action Level.
- Recordkeeping
  - Monthly total fuel consumption for non-emergencies for all gensets; and
  - For any month in which the total monthly non-emergency fuel use in all engines exceeds the daily Acute SRL, the permittee shall calculate the 24-hour rolling fuel use and keep records of the maximum 24-hour fuel use and any 24-hour fuel use exceeding the daily Acute SRL.
- Reporting
  - Total monthly fuel in gallons for non-emergency operations; and
  - Exceedances of the daily SRL, including date, 24-hour period start time, and fuel use.

APPENDIX A. FACILITY LAYOUT



PDX058
PDX061
PDX055
PDX052
PDX004
PDX097
PDX607
ANNEX
Buildings
Generator Stacks
Facility Boundary
Facility centroid located at UTMx: 293930 m & UTMy: 5079805 m
All coordinates in UTM Zone 11; NAD 1983

APPENDIX B. LANDUSE MAP


3 km
Legend
Open Water
Perennial Ice/Snow
Developed, Open Space
Developed, Low Intensity
Developed, Medium Intensity
Developed, High Intensity
Barren Land
Deciduous Forest
Evergreen Forest
Mixed Forest
Shrub/Scrub
Grassland/Herbaceous
Pasture Hay
Cultivated Crops
Woody Wetlands
Emergent Herbaceous Wetlands
UTM Northing (m)
5,088,000
5,084,000
5,080,000
5,076,000
5,072,000
288,000
292,000
296,000
300,000
UTM Easting (m)
All coordinates are shown in UTM coordinates, Zone 11, NAD1983

APPENDIX C. EMISSION CALCULATIONS

Files submitted electronically only.

APPENDIX D. MODEDED BUILDING AND SOURCE PARAMETERS

Appendix Table D-1. Building Parameters

Building ID	X Coordinate (m)	Y Coordinate (m)	Elevation (m)	Height (m)
B20211AE	277,821.91	5,076,949.39	91.04	4.24
B20211AS	277,821.77	5,076,945.58	91.04	4.24
B20211BE	277,821.68	5,076,942.99	91.04	4.24
B20211BS	277,821.55	5,076,939.18	91.04	4.24
B20212AE	277,822.62	5,076,969.50	91.04	4.24
B20212AS	277,822.48	5,076,965.69	91.04	4.24
B20212BE	277,822.39	5,076,963.09	91.04	4.24
B20212BS	277,822.26	5,076,959.29	91.04	4.24
B20213AE	277,823.33	5,076,989.61	91.04	4.24
B20213AS	277,823.19	5,076,985.80	91.04	4.24
B20213BE	277,823.10	5,076,983.21	91.04	4.24
B20213BS	277,822.97	5,076,979.39	91.04	4.24
B20214AE	277,824.10	5,077,011.60	91.04	4.24
B20214AS	277,823.97	5,077,007.79	91.04	4.24
B20214BE	277,823.88	5,077,005.20	91.04	4.24
B20214BS	277,823.74	5,077,001.39	91.04	4.24
B20215AE	277,824.81	5,077,031.70	91.04	4.24
B20215AS	277,824.68	5,077,027.90	91.04	4.24
B20215BE	277,824.59	5,077,025.31	91.04	8.69
B20215BS	277,824.45	5,077,021.50	92.27	9.22
B20216AE	277,825.52	5,077,051.81	91.5	4.24
B20216AS	277,825.39	5,077,048.00	91.5	4.24
B20216BE	277,825.30	5,077,045.41	91.5	4.24
B20216BS	277,825.16	5,077,041.61	91.5	4.24
B20221AE	277,819.32	5,076,876.21	91.5	4.24
B20221AS	277,819.19	5,076,872.41	91.5	4.24
B20221BE	277,819.10	5,076,869.82	91.5	4.24
B20221BS	277,818.96	5,076,866.01	91.5	4.24
B20222AE	277,818.62	5,076,856.11	91.5	4.24
B20222AS	277,818.48	5,076,852.30	91.5	4.24
B20222BE	277,818.39	5,076,849.71	91.5	4.24
B20222BS	277,818.25	5,076,845.90	91.5	4.24
B20223AE	277,817.91	5,076,836.00	91.5	4.24
B20223AS	277,817.77	5,076,832.19	91.5	4.24
B20223BE	277,817.68	5,076,829.60	91.5	4.24
B20223BS	277,817.54	5,076,825.79	91.5	4.24
B20224AE	277,817.13	5,076,814.01	91.5	4.24
B20224AS	277,816.99	5,076,810.20	91.5	4.24
B20224BE	277,816.90	5,076,807.61	91.5	8.18
B20224BS	277,816.77	5,076,803.80	90.59	4.24
B20225AE	277,816.42	5,076,793.90	90.59	4.24
B20225AS	277,816.28	5,076,790.09	90.59	4.24
B20225BE	277,816.19	5,076,787.50	90.59	4.24
B20225BS	277,816.06	5,076,783.69	90.59	4.24
B20226AE	277,815.71	5,076,773.79	90.59	4.24
B20226AS	277,815.58	5,076,769.98	90.59	4.24

Building ID	X Coordinate (m)	Y Coordinate (m)	Elevation (m)	Height (m)
B04_E13A	277,815.49	5,079,915.29	90.59	4.24
B04_E13B	277,815.35	5,079,902.00	90.59	4.24
B04_E14A	277,821.26	5,079,891.18	90.59	4.24
B04_E14B	277,821.12	5,079,877.39	90.59	4.24
B04_E15A	277,819.66	5,079,843.56	90.59	4.24
B04_E15B	277,819.53	5,079,855.46	90.59	4.24
B04_E15C	277,850.96	5,079,868.69	90.59	4.24
B04_E16A	277,917.15	5,079,835.65	90.59	4.24
B04_E16B	277,784.09	5,079,821.84	90.59	4.24
B04_E17A	277,784.23	5,079,791.96	90.59	8.62
B04_E17B	277,784.32	5,079,782.97	89.58	4.24
B04_E17C	277,784.46	5,079,776.09	89.58	4.24
B04_E18A	277,783.36	5,079,746.72	89.58	4.24
B04_E18B	277,783.50	5,079,734.28	89.58	4.24
B04_E19A	277,783.60	5,079,726.35	89.58	4.24
B04_E19B	277,783.73	5,079,713.65	89.58	4.24
B04_E20A	277,782.64	5,079,707.83	89.58	4.24
B04_E20B	277,782.77	5,079,694.86	89.58	4.24
B04_MAIN	277,782.87	5,079,914.94	89.58	4.24
B52_ANNX	277,783.01	5,079,684.28	89.58	4.24
B52_E01A	277,781.84	5,079,713.61	89.58	4.24
B52_E01B	277,781.98	5,079,713.71	89.58	4.24
B52_E02A	277,782.07	5,079,713.39	89.58	4.24
B52_E02B	277,782.21	5,079,713.49	89.58	4.24
B52_E03A	277,781.11	5,079,713.27	89.58	4.24
B52_E03B	277,781.25	5,079,713.15	89.58	4.24
B52_E04A	277,781.34	5,079,712.89	89.58	4.24
B52_E04B	277,781.48	5,079,713.03	89.58	4.24
B52_E04C	277,780.38	5,079,712.73	89.58	8.62
B52_E05A	277,780.52	5,079,712.10	89.58	4.24
B52_E05B	277,780.62	5,079,712.00	89.58	4.24
B52_E05C	277,780.75	5,079,712.17	89.58	4.24
B52_E06A	277,786.74	5,079,711.73	89.58	4.24
B52_E06B	277,786.88	5,079,711.82	89.58	4.24
B52_E07A	277,786.97	5,079,711.52	89.58	4.24
B52_E07B	277,787.11	5,079,711.41	89.58	4.24
B52_E08A	277,787.47	5,079,711.28	89.58	4.24
B52_E08B	277,787.61	5,079,711.37	89.58	4.24
B52_MAIN	277,787.70	5,079,775.74	89.58	4.24
B55_E01A	277,787.84	5,079,867.10	89.58	4.24
B55_E01B	277,788.20	5,079,867.04	89.58	4.24
B55_E02A	277,788.34	5,079,867.39	89.58	4.24
B55_E02B	277,788.43	5,079,867.27	89.58	4.24
B55_E03A	277,788.57	5,079,867.68	89.58	4.24
B55_E03B	277,788.99	5,079,867.50	89.58	4.24
B55_E04A	277,789.13	5,079,867.94	89.58	4.24
B55_E04B	277,789.22	5,079,867.75	89.58	4.24
B55_E04C	277,789.36	5,079,868.08	89.58	8.62
B55_E05A	277,789.72	5,079,868.94	91.5	2.87
B55_E05B	277,789.86	5,079,868.82	91.5	2.87
B55_E05C	277,789.95	5,079,868.73	91.5	2.87

Building ID	X Coordinate (m)	Y Coordinate (m)	Elevation (m)	Height (m)
B55_E06A	294,037.30	5,079,869.26	91.5	2.87
B55_E06B	294,037.12	5,079,869.02	91.5	2.87
B55_E07A	294,036.97	5,079,869.42	91.5	2.87
B55_E07B	294,036.80	5,079,869.35	90.52	3.35
B55_MAIN	294,036.27	5,079,854.26	90.52	2.74
B58_E01A	294,036.51	5,079,964.04	90.52	3.35
B58_E01B	294,036.65	5,079,976.94	90.52	2.74
B58_E02A	294,036.22	5,079,943.35	90.52	3.35
B58_E02B	294,036.04	5,079,956.36	90.52	2.74
B58_E03A	294,035.65	5,079,922.06	90.52	3.05
B58_E03B	294,035.49	5,079,935.27	90.52	3.17
B58_E04A	294,035.41	5,079,901.12	90.52	3.17
B58_E04B	294,035.01	5,079,914.19	90.52	3.17
B58_E04C	294,034.83	5,079,893.01	90.52	3.17
B58_E05A	294,034.77	5,079,814.41	90.52	3.17
B58_E05B	294,034.56	5,079,827.11	90.52	3.17
B58_E05C	294,034.53	5,079,837.23	90.52	3.05
B58_E06A	294,034.27	5,079,793.56	90.52	3.05
B58_E06B	293,983.49	5,079,806.50	90.52	3.05
B58_E07A	293,868.46	5,079,772.93	91.12	1.91
B58_E07B	293,731.53	5,079,785.95	91.74	3.48
B58_E08A	293,723.78	5,079,751.98	91.12	6.78
B58_E08B	293,752.50	5,079,765.01	91.74	7.95
B58_MAIN	293,744.75	5,079,982.46	91.04	4.24
B61_E01A	293,765.42	5,079,758.98	91.04	4.24
B61_E01B	293,773.48	5,079,746.20	91.04	4.24
B61_E02A	293,793.85	5,079,781.03	91.04	4.24
B61_E02B	293,786.48	5,079,768.02	91.04	4.24
B61_E03A	293,807.36	5,079,801.44	91.04	4.24
B61_E03B	293,867.95	5,079,788.53	91.04	4.24
B61_E04A	293,874.28	5,079,822.36	91.04	4.24
B61_E04B	293,861.48	5,079,809.40	91.04	4.24
B61_E04C	293,894.58	5,079,830.93	91.04	4.24
B61_E05A	293,888.15	5,079,909.64	91.04	4.24
B61_E05B	293,911.33	5,079,896.85	91.04	4.24
B61_E05C	293,917.99	5,079,888.72	91.04	4.24
B61_E06A	293,937.42	5,079,930.81	91.04	4.24
B61_E06B	293,930.99	5,079,917.52	91.04	4.24
B61_E07A	293,713.19	5,079,952.03	91.04	4.24
B61_E07B	293,895.43	5,079,938.39	91.04	4.24
B61_E08A	293,903.38	5,079,971.22	91.04	4.24
B61_E08B	293,868.89	5,079,959.08	91.04	8.69
B61_MAIN	293,882.12	5,079,980.76	92.27	9.22
IGLOO_07	293,847.97	5,079,746.22	91.5	4.24
IGLOO_08	293,860.96	5,079,753.66	91.5	4.24
IGLOO_09	293,826.89	5,079,738.59	91.5	4.24
IGLOO_10	293,840.04	5,079,761.10	91.5	4.24
IGLOO_11	293,818.47	5,079,768.73	91.5	4.24
IGLOO_12	293,739.12	5,079,776.17	91.5	4.24
P04_ENC1	293,752.66	5,079,871.37	91.5	4.24
P04_ENC2	293,760.09	5,079,901.43	91.5	4.24

Building ID	X Coordinate (m)	Y Coordinate (m)	Elevation (m)	Height (m)
P04_ENC3	293,718.32	5,079,855.75	91.5	4.24
P04_ENC4	293,731.69	5,079,917.17	91.5	4.24
P04_ENC5	293,697.53	5,079,840.83	91.5	4.24
P04_ENC6	293,704.95	5,079,932.39	91.5	4.24
P04_ENCC	293,687.12	5,079,888.73	91.5	4.24
PERDIX_1	293,549.23	5,079,867.89	91.5	4.24
PERDIX_2	293,549.63	5,079,897.57	91.5	4.24
PERDIX_3	293,548.58	5,079,852.17	91.5	4.24
PERDIX_4	293,549.04	5,079,912.93	91.5	4.24
PERDIX_5	293,547.85	5,079,836.55	91.5	4.24
PERDIX_6	293,548.29	5,079,928.96	91.5	8.18
PERDIX_B	293,547.21	5,079,877.68	90.59	4.24
PERDIX_C	293,547.53	5,079,884.93	90.59	4.24
PERDIX_M	293,546.87	5,079,872.07	90.59	4.24
SKIENCL1	293,544.24	5,079,835.10	90.59	4.24
SKIENCL2	293,544.73	5,079,796.89	90.59	4.24
SKILODG1	293,545.03	5,079,879.54	90.59	4.24
SKILODG2	293,543.56	5,079,737.80	90.59	4.24

Table D-2. Modeled Source Parameters

Gen Type	Source Type *SCRTP*	Source ID	UTM Easting	UTM Northing (m)	Elevation (m)	Stack Height *HGT* (m)	Temperature *TMP_1* (K)	Velocity *EXH_1* (m/s)	Exhaust Diameter *DIA* (m)
Type E	POINTHOR	B04_G13A	294041.8	5079913.31	91.04	5.16	682.93	35.474	0.51
Type E	POINTHOR	B04_G13B	294041.62	5079900.02	91.04	5.16	682.93	35.474	0.51
Type E	POINTHOR	B04_G14A	294041.47	5079889.2	91.04	5.16	682.93	35.474	0.51
Type E	POINTHOR	B04_G14B	294041.3	5079875.41	91.04	5.16	682.93	35.474	0.51
Type E	POINTHOR	B04_G15A	294040.77	5079841.57	91.04	5.16	682.93	35.474	0.51
Type E	POINTHOR	B04_G15B	294041	5079853.48	91.04	5.16	682.93	35.474	0.51
Type F	POINTHOR	B04_G15C	294041.15	5079866.71	91.04	5.16	763.82	45.589	0.51
Type F	POINTHOR	B04_G16A	294040.72	5079833.67	91.04	5.16	763.82	45.589	0.51
Type F	POINTHOR	B04_G16B	294040.54	5079819.85	91.04	5.16	763.82	45.589	0.51
Type G	POINT	B04_G17A	294040.14	5079789.98	91.04	5.91	778.15	41.445	0.51
Type G	POINT	B04_G17B	294039.99	5079780.98	91.04	5.91	778.15	41.445	0.51
Type G	POINT	B04_G17C	294039.91	5079774.1	91.04	5.91	778.15	41.445	0.51
Type F	POINTHOR	B04_G18A	294039.51	5079744.74	91.04	5.16	763.82	45.589	0.51
Type F	POINTHOR	B04_G18B	294039.32	5079732.3	91.04	5.16	763.82	45.589	0.51
Type F	POINTHOR	B04_G19A	294039.27	5079724.36	91.04	5.16	763.82	45.589	0.51
Type F	POINTHOR	B04_G19B	294039.06	5079711.66	91.04	5.16	763.82	45.589	0.51
Type F	POINTHOR	B04_G20A	294039.03	5079705.84	91.04	5.16	763.82	45.589	0.51
Type F	POINTHOR	B04_G20B	294038.77	5079692.88	91.04	5.16	763.82	45.589	0.51
Type F	POINTHOR	B52_G01A	293729.55	5079709.11	91.5	5.16	763.82	45.589	0.51
Type F	POINTHOR	B52_G01B	293721.79	5079709.21	91.5	5.16	763.82	45.589	0.51
Type F	POINTHOR	B52_G02A	293750.52	5079708.89	91.5	5.16	763.82	45.589	0.51
Type F	POINTHOR	B52_G02B	293742.77	5079708.99	91.5	5.16	763.82	45.589	0.51
Type F	POINTHOR	B52_G03A	293763.43	5079708.77	91.5	5.16	763.82	45.589	0.51
Type F	POINTHOR	B52_G03B	293771.49	5079708.65	91.5	5.16	763.82	45.589	0.51
Type F	POINTHOR	B52_G04A	293791.86	5079708.39	91.5	5.16	763.82	45.589	0.51
Type F	POINTHOR	B52_G04B	293784.5	5079708.53	91.5	5.16	763.82	45.589	0.51
Type F	POINTHOR	B52_G04C	293805.37	5079708.23	91.5	5.16	763.82	45.589	0.51
Type F	POINTHOR	B52_G05A	293865.97	5079707.61	91.5	5.16	763.82	45.589	0.51
Type F	POINTHOR	B52_G05B	293872.3	5079707.5	91.5	5.16	763.82	45.589	0.51
Type F	POINTHOR	B52_G05C	293859.49	5079707.67	91.5	5.16	763.82	45.589	0.51
Type F	POINTHOR	B52_G06A	293892.59	5079707.23	91.5	5.16	763.82	45.589	0.51
Type F	POINTHOR	B52_G06B	293886.16	5079707.32	91.5	5.16	763.82	45.589	0.51
Type F	POINTHOR	B52_G07A	293909.34	5079707.03	91.5	5.16	763.82	45.589	0.51
Type F	POINTHOR	B52_G07B	293916.01	5079706.91	91.5	5.16	763.82	45.589	0.51
Type F	POINTHOR	B52_G08A	293935.44	5079706.79	91.5	5.16	763.82	45.589	0.51
Type F	POINTHOR	B52_G08B	293929	5079706.87	91.5	5.16	763.82	45.589	0.51
Type F	POINTHOR	B55_G01A	293893.45	5079862.6	90.59	5.16	763.82	45.589	0.51
Type F	POINTHOR	B55_G01B	293901.4	5079862.54	90.59	5.16	763.82	45.589	0.51
Type F	POINTHOR	B55_G02A	293866.9	5079862.89	90.59	5.16	763.82	45.589	0.51
Type F	POINTHOR	B55_G02B	293880.14	5079862.77	90.59	5.16	763.82	45.589	0.51
Type F	POINTHOR	B55_G03A	293845.99	5079863.19	90.59	5.16	763.82	45.589	0.51
Type F	POINTHOR	B55_G03B	293858.97	5079863	90.59	5.16	763.82	45.589	0.51
Type F	POINTHOR	B55_G04A	293824.91	5079863.44	90.59	5.16	763.82	45.589	0.51
Type F	POINTHOR	B55_G04B	293838.06	5079863.26	90.59	5.16	763.82	45.589	0.51
Type F	POINTHOR	B55_G04C	293816.48	5079863.58	90.59	5.16	763.82	45.589	0.51
Type F	POINTHOR	B55_G05A	293737.13	5079864.44	90.59	5.16	763.82	45.589	0.51
Type F	POINTHOR	B55_G05B	293750.68	5079864.32	90.59	5.16	763.82	45.589	0.51
Type F	POINTHOR	B55_G05C	293758.1	5079864.23	90.59	5.16	763.82	45.589	0.51
Type F	POINTHOR	B55_G06A	293716.34	5079864.76	90.59	5.16	763.82	45.589	0.51
Type F	POINTHOR	B55_G06B	293729.71	5079864.52	90.59	5.16	763.82	45.589	0.51
Type F	POINTHOR	B55_G07A	293695.54	5079864.93	90.59	5.16	763.82	45.589	0.51

Table D-2. Modeled Source Parameters

Gen Type	Source Type *SCRTP*	Source ID	UTM Easting	UTM Northing (m)	Elevation (m)	Stack Height *HGT* (m)	Temperature *TMP_1* (K)	Velocity *EXH_1* (m/s)	Exhaust Diameter *DIA* (m)
Type F	POINTHOR	B55_G07B	293702.97	5079864.85	90.59	5.16	763.82	45.589	0.51
Type F	POINTHOR	B58_G01A	293544.8	5079966.17	89.58	5.16	763.82	45.589	0.51
Type F	POINTHOR	B58_G01B	293545.19	5079979.06	89.58	5.16	763.82	45.589	0.51
Type F	POINTHOR	B58_G02A	293544.14	5079945.46	89.58	5.16	763.82	45.589	0.51
Type F	POINTHOR	B58_G02B	293544.6	5079958.47	89.58	5.16	763.82	45.589	0.51
Type F	POINTHOR	B58_G03A	293543.41	5079924.18	89.58	5.16	763.82	45.589	0.51
Type F	POINTHOR	B58_G03B	293543.86	5079937.42	89.58	5.16	763.82	45.589	0.51
Type F	POINTHOR	B58_G04A	293542.77	5079903.23	89.58	5.16	763.82	45.589	0.51
Type F	POINTHOR	B58_G04B	293543.08	5079916.28	89.58	5.16	763.82	45.589	0.51
Type F	POINTHOR	B58_G04C	293542.46	5079895.2	89.58	5.16	763.82	45.589	0.51
Type F	POINTHOR	B58_G05A	293539.83	5079816.58	89.58	5.16	763.82	45.589	0.51
Type F	POINTHOR	B58_G05B	293540.32	5079829.28	89.58	5.16	763.82	45.589	0.51
Type F	POINTHOR	B58_G05C	293540.62	5079839.4	89.58	5.16	763.82	45.589	0.51
Type F	POINTHOR	B58_G06A	293539.14	5079795.71	89.58	5.16	763.82	45.589	0.51
Type F	POINTHOR	B58_G06B	293539.54	5079808.65	89.58	5.16	763.82	45.589	0.51
Type F	POINTHOR	B58_G07A	293538.47	5079775.07	89.58	5.16	763.82	45.589	0.51
Type F	POINTHOR	B58_G07B	293538.87	5079788	89.58	5.16	763.82	45.589	0.51
Type F	POINTHOR	B58_G08A	293538.02	5079754.1	89.58	5.16	763.82	45.589	0.51
Type F	POINTHOR	B58_G08B	293538.34	5079767.13	89.58	5.16	763.82	45.589	0.51
Type F	POINTHOR	B61_G01A	293661.76	5079761.05	89.58	5.16	763.82	45.589	0.51
Type F	POINTHOR	B61_G01B	293661.34	5079748.27	89.58	5.16	763.82	45.589	0.51
Type F	POINTHOR	B61_G02A	293662.32	5079783.1	89.58	5.16	763.82	45.589	0.51
Type F	POINTHOR	B61_G02B	293662.03	5079770.09	89.58	5.16	763.82	45.589	0.51
Type F	POINTHOR	B61_G03A	293663.15	5079803.51	89.58	5.16	763.82	45.589	0.51
Type F	POINTHOR	B61_G03B	293662.8	5079790.6	89.58	5.16	763.82	45.589	0.51
Type F	POINTHOR	B61_G04A	293663.83	5079824.43	89.58	5.16	763.82	45.589	0.51
Type F	POINTHOR	B61_G04B	293663.47	5079811.47	89.58	5.16	763.82	45.589	0.51
Type F	POINTHOR	B61_G04C	293664.01	5079833	89.58	5.16	763.82	45.589	0.51
Type F	POINTHOR	B61_G05A	293666.65	5079911.71	89.58	5.16	763.82	45.589	0.51
Type F	POINTHOR	B61_G05B	293666.13	5079898.92	89.58	5.16	763.82	45.589	0.51
Type F	POINTHOR	B61_G05C	293666.06	5079890.79	89.58	5.16	763.82	45.589	0.51
Type F	POINTHOR	B61_G06A	293667.31	5079932.88	89.58	5.16	763.82	45.589	0.51
Type F	POINTHOR	B61_G06B	293666.93	5079919.59	89.58	5.16	763.82	45.589	0.51
Type F	POINTHOR	B61_G07A	293667.99	5079954.1	89.58	5.16	763.82	45.589	0.51
Type F	POINTHOR	B61_G07B	293667.41	5079940.46	89.58	5.16	763.82	45.589	0.51
Type F	POINTHOR	B61_G08A	293668.26	5079973.29	89.58	5.16	763.82	45.589	0.51
Type F	POINTHOR	B61_G08B	293668.47	5079961.15	89.58	5.16	763.82	45.589	0.51
Type A	POINTHOR	P04_GEN1	293945.63	5079869.84	90.52	3.35	780.76	51.444	0.25
Type B	POINTHOR	P04_GEN2	293945.73	5079899.9	90.52	2.74	784.54	55.993	0.25
Type B	POINTHOR	P04_GEN3	293945.08	5079854.22	90.52	3.35	784.54	55.993	0.25
Type A	POINTHOR	P04_GEN4	293945.88	5079915.64	90.52	2.74	780.76	51.444	0.25
Type B	POINTHOR	P04_GEN5	293944.95	5079839.3	90.52	3.35	784.54	55.993	0.25
Type A	POINTHOR	P04_GEN6	293946.29	5079930.86	90.52	2.74	780.76	51.444	0.25
Type C	POINTHOR	P04_GENC	293933.64	5079887.2	90.52	3.35	749.55	38.329	0.36
Type H	POINT	SKILODG1	294073.48	5079830.16	91.12	1.91	726.09	56.149	0.25
Type I	POINT	SKILODG2	294105.99	5079789.67	91.74	6.71	675.71	55.761	0.36
Type D	POINTHOR	PORTABLE	293859.49	5079707.67	91.5	4.27	660.82	43.161	0.45

APPENDIX E. SCREENING REER CALCULATIONS

Files submitted electronically only.

APPENDIX F. SCREENING RESULTS

Files submitted electronically only.

APPENDIX G. FINAL RISK CALCULATIONS

Files submitted electronically only.

APPENDIX H. ELECTRONIC MODELING FILES

Files submitted electronically only. A file directory is included below.

Folder Name	File Name	File Contents
aermod.20250812.cao.stage1	cao.srcs	File including source locations, elevations, emission rates, and dispersion parameters
	bldg	Building parameters and aermap run
	out.files.zip	Output files from model
	pdx202.cao.5Y.in	CAO model input file
	plot.files.zip	Model output plot files
	srcgrp.lst	Source Groups
BPIP	Bpip.in Bpip.out Bpip.sum	Building profile input data, output data, and summary file
MET Data	KHRI.5Y.pfl KHRI.5Y.sfc	Meteorological surface and profile data
Receptors	XXXXmXYYYYm boundary Terrain_domain.tif Config.aermap.yaml bldg	Discrete and boundary receptor information where XXXXm represents receptor spacing and YYYYm represents receptor extent Building AERMAP run
R Script Post Processing	AcuteF.csv ChiCanF.csv ResCanF.csv WorCanF.csv	R Script output files with cancer and noncancer risk values
	CAO_Screening_PDX202.R read_plt.R	R script file
	PDX04_Crosswalk.csv PDX04_REER.csv PDX04_plt.csv	R script input files with REER calculation and modeling information