MODELING PROTOCOL AND RISK ASSESSMENT WORK PLAN
Cleaner Air Oregon

Amazon Data Services – PDX-4

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1. EXECUTIVE SUMMARY

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. ADS is required to submit a Modeling Protocol no later than 30 days from the date of approval letter, by March 2, 2025. The Risk Assessment Work Plan (RAWP) must be submitted to DEQ no later than sixty (60) days from the date of approval letter, by April 1, 2025. PDX-4 ADS is submitting this Modeling Protocol and RAWP for a Level 3 Risk Assessment in accordance with OAR 340-245-0210 for Oregon DEQ approval.

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 includes the risk determination methodology for the CAO RAWP.

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, is 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 is 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 km). UTM coordinates for this analysis are based on UTM Zone 11. The location of the proposed facility is approximately 5,079,843 meters Northing and 293,805 meters 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 18081, is 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 is 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 B. 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)

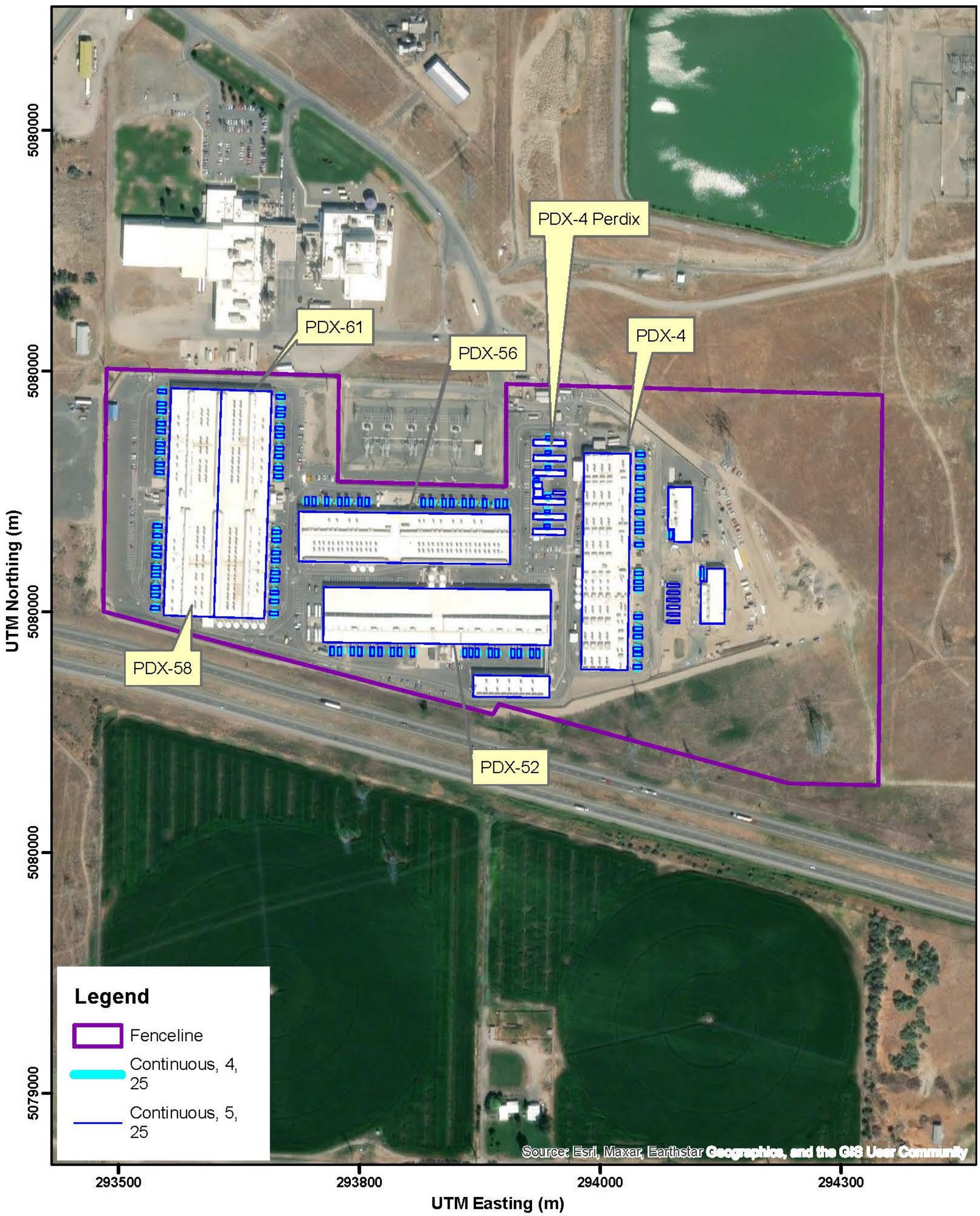
Each of the five data centers installed on the campus will have the following engine configurations:

- 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 will be 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 easting and 5,079,707.67 m northing.

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

Figure 2-1. Modeled Objects



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

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 E.

Table 2-1. Summary of Exhaust Stack Physical Configuration

Sources [a]		Stack Configuration	Model Source Type	Stack Height (m)	Stack Diameter (m)
PDX-4 (3)	C27 750 kW	Horizontal/ No Obstruction	POINTHOR	2.74	0.25
PDX-4 (3)	C27 800 kW	Horizontal/ No Obstruction	POINTHOR	3.35	0.25
PDX-4 (1)	Catcher - C32 1,000 kW	Horizontal/ No Obstruction	POINTHOR	3.05	0.25
PDX-4 (9)	Main - 3516C 2,500 kW	Horizontal/ No Obstruction	POINTHOR	5.16	0.51
PDX-4 (6)	3516C 2,000 kW	Horizontal/ No Obstruction	POINTHOR	5.16	0.51
PDX-4 (3)	MTU2250 2,250 kW	Vertical/No Obstruction	POINT	5.91	0.51
PDX52 (18)	Main - 3516C 2,500 kW	Horizontal/ No Obstruction	POINTHOR	5.16	0.51
PDX55 (16)	Main - 3516C 2,500 kW	Horizontal/ No Obstruction	POINTHOR	5.16	0.51
PDX58 (18)	Main - 3516C 2,500 kW	Horizontal/ No Obstruction	POINTHOR	5.16	0.51
PDX61 (18)	Main - 3516C 2,500 kW	Horizontal/ No Obstruction	POINTHOR	5.16	0.51
Portable Gen (1)	Portable – 3516C Trans	Horizontal/ No Obstruction	POINTHOR	4.27	0.45
Ski Lodge Gen (1)	Ski Lodge - C18 750 kW	Vertical/No Obstruction	POINT	1.91	0.25
Ski Lodge Gen (1)	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)
PDX-4 (3)	C27 750 kW	780.76	5,523	51.444
PDX-4 (3)	C27 800 kW	784.54	6,012	55.993
PDX-4 (1)	Catcher - C32 1,000 kW	749.55	8,065	38.329
PDX-4 (9)	Main - 3516C 2,500 kW	763.82	19,579	45.589
PDX-4 (6)	3516C 2,000 kW	682.93	15,235	35.474
PDX-4 (3)	MTU2250 2,250 kW	778.15	17,799	41.445
PDX52 (18)	Main - 3516C 2,500 kW	763.82	19,579	45.589
PDX55 (16)	Main - 3516C 2,500 kW	763.82	19,579	45.589
PDX58 (18)	Main - 3516C 2,500 kW	763.82	19,579	45.589
PDX61 (18)	Main - 3516C 2,500 kW	763.82	19,579	45.589
Portable Gen (1)	Portable – 3516C Trans	660.82	14,338	43.161
Ski Lodge Gen (1)	Ski Lodge - C18 750 kW	726.09	6,028	56.149
Ski Lodge Gen (1)	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 Stack Height (Technical Support Document for the Stack Height Regulations)[3] and other related documents are applied to all structures at the proposed PDX-4 facility. The Building Profile Input Program (BPIP) Version 04274 is used to calculate the downwash values for each point source.

Buildings located within the facility property boundary are included in this evaluation. There are no nearby structures outside of the ambient air boundary that are expected to impact emissions. The building parameters are provided in Appendix E and are shown in Figure 2-1.

[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

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.[4] 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.

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 is 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 demonstrates 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 C. AERMOD's urban option will not be selected.

2.3 Meteorological Data

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

2.3.1 Meteorological Data Overview

Five years of surface meteorological data, from 2018 to 2022, are taken from the nearest airport, Hermiston Municipal Airport (Station ID: KHRI; WBAN ID: 04113). The upper air data is taken from the most representative upper air station in Spokane, Washington (Station ID: KGEG; WBAN: 4106) for the corresponding period. The meteorological data is 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.

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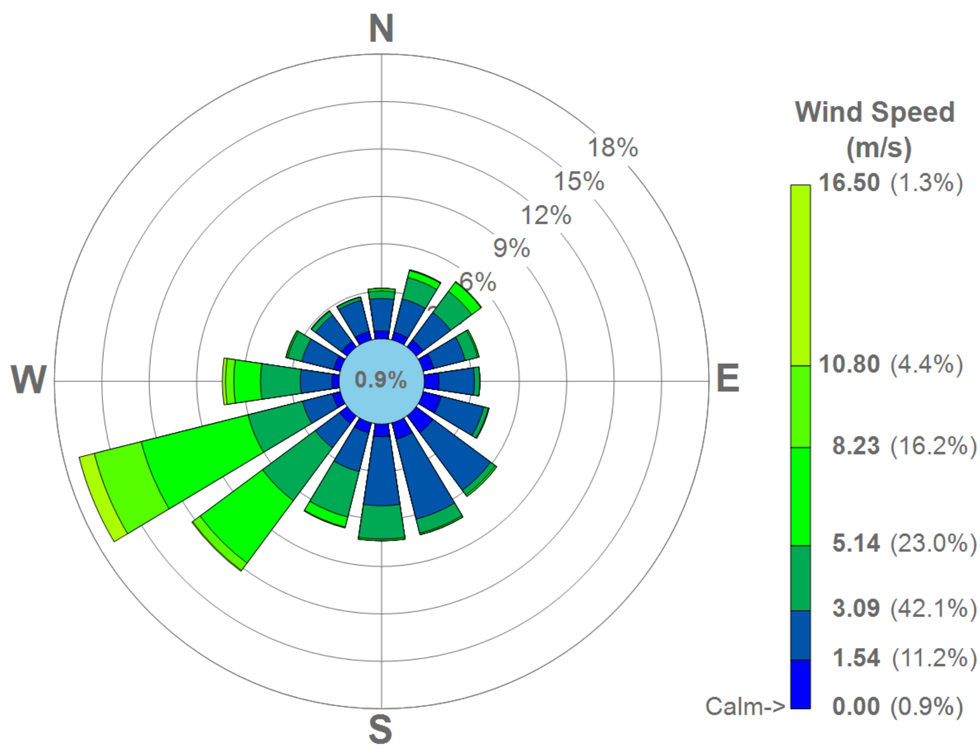
[4] 40 CFR 60, Subpart IIII; 40 CFR 63 Subpart ZZZZ

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) is applied for the 1-minute ASOS data according to EPA guidance.[5] The wind rose for the modeled period (2018-2022) is provided in Figure 2-2.

Figure 2-2. 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.[6] 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".

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

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

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

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 proposed 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 2-2.

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 (OTX) station is approximately 256 kilometers away from the site, and the elevation is approximately 730 meters. The Salem, Oregon (SLE) station is approximately 282 kilometers away from the site, and the elevation is approximately 60 meters. The Boise, ID (BOI) station is approximately 374 kilometers away from the site, and the elevation is approximately 870 meters. The OTX 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 OTX station is used for this assessment.

2.4 Modeling Domain and Receptors

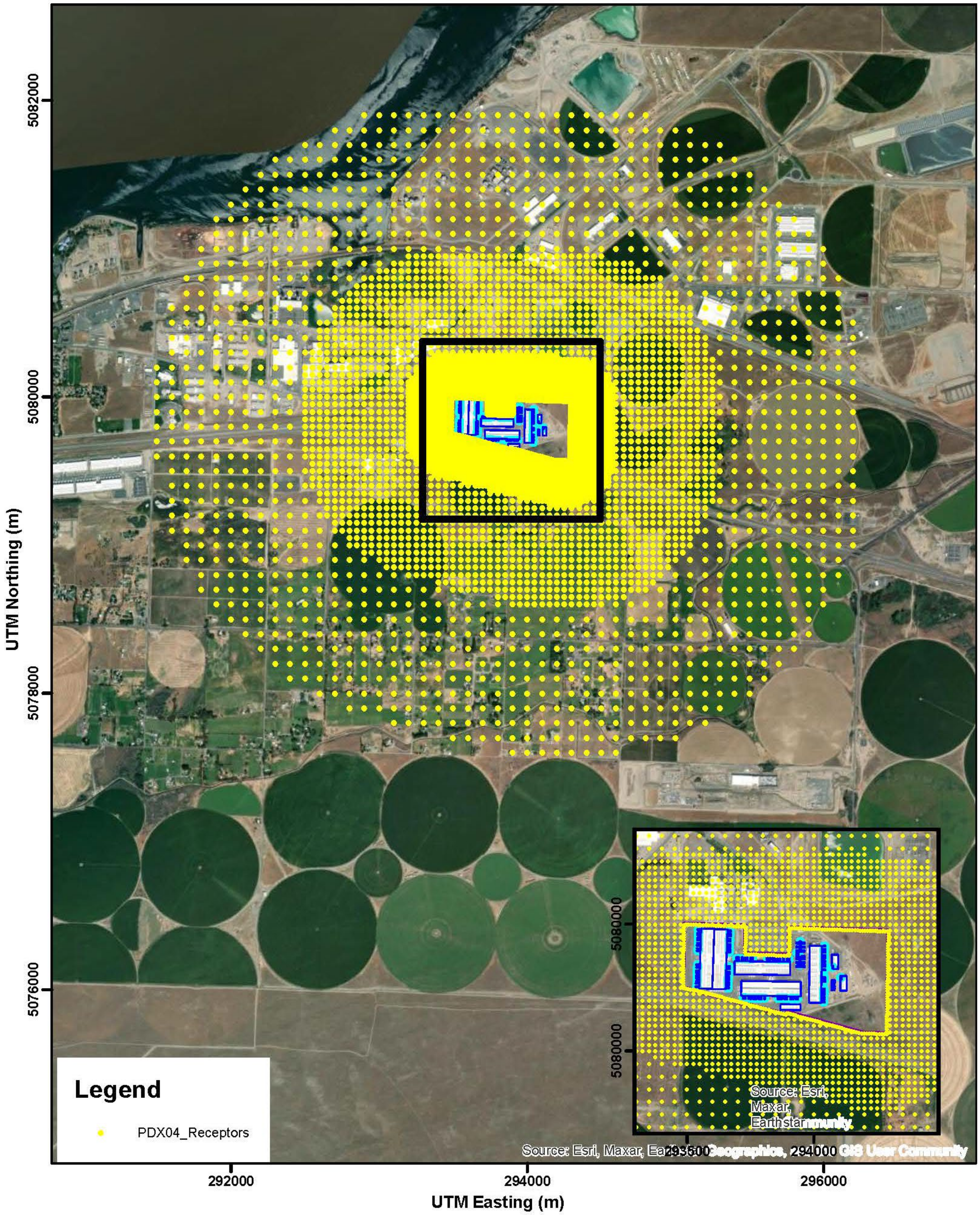
Four circular Cartesian receptor grids are used in the analysis that are either as or more fine than the recommended receptor density in Section 2.4 of Oregon DEQ Recommended Modeling Procedures.[7]

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

In addition, 10-meter spaced receptors are 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 18081. All modeled receptors are shown in Figure 2-3.

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

Figure 2-3. Modeled Receptors



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

3. RISK ASSESSMENT WORK PLAN

3.1 Conceptual Site Model

Risk will be evaluated using all toxic emission units at the proposed PDX-4 site. The following list of TACs will be included in the Risk Assessment: [8]

- 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

[8] 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 will be 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) Exclusive Farm Use (EFU). The following locations are identified for the purpose of this risk assessment:

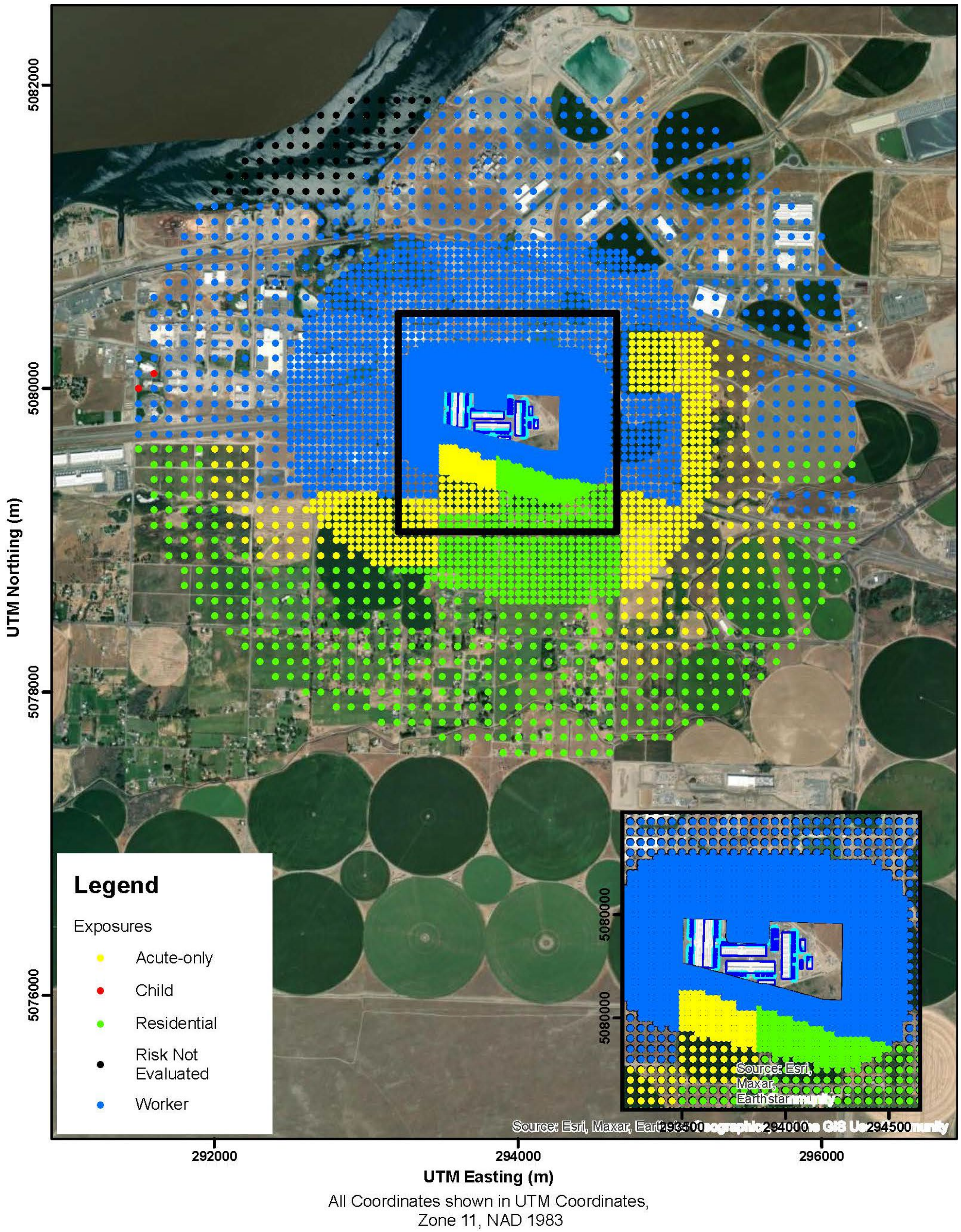
- The closest residential area to the facility is located approximately 400 meters to the south and is zoned as farm residential.
- Receptors located in the EFU zoning within 1.5 km from the facility are categorized as acute-only receptors. There are no residences or farm working areas (such as warehouses or barns) identified within this area.
- EFU land located more than 1.5 km from the facility will be conservatively assessed for residential risks.
- All land zoned as some classification of "industrial" is assessed for worker risk.
- The closest area that is assessed for the child exposure scenario is Neal Early Learning Center 1890 meters 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 will be 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 will not be calculated at these receptors.

An Exposure Classification Crosswalk can be found in Appendix I.

Figure 3-1. Receptor by Type



3.2 Toxic Emission Unit Modeled Stack Parameters

All emission units will have the stack parameters as identified in Table 2-1 and Table 2-2. ADS has 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 is used in the modeling demonstration.

Appendix E includes the modeled CAO source parameters for individual units. All sources will be modeled at a unit emission rate of 1 gram per second (g/s) for modeling chronic risk. For the acute risk models, calculated risk-equivalent emission rates (REERs) will be modeled for the worst-case modeled generators.

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 are modeled with a unit emission rate of 1 g/s. ADS proposes to use Approach D: Unit Emission Rate with REER provided in *Recommended Procedures for Toxic Air Contaminant Health Risk Assessments*.[9] 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 F. 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

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

3.3.1 Chronic Risks

Chronic risks will be 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. These auxiliary generators and the highest individual 2,500 kW generator will be used in the risk evaluation.

Steps 3 through 5 will be completed in R studio using an R script provided by Oregon DEQ[10] and is included in Appendix I.

Using this screening approach and ranking method will allow 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 G) demonstrate that the Ski Lodge 1 generator has the highest contribution overall to the residential risk, worker risk, and child risk.

To determine potential chronic risk in the specified categories, the REER calculation is completed for each individual generator that ranks higher than the highest 2,500 kW generator. The REER calculation assumes a fuel throughput as shown below in Table 3-2 through Table 3-4, which is then divided by the specified category RBCs.

[10] 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	Screening Model Rank	Potential Annual Hours of Operation	Potential Hourly Fuel Throughput (gallons)	Fuel Throughput (gallons)
C18 750 kW – Ski Lodge 1	1	100	53.6	5,360
MTU 2250 2,250kW - _B04_G17C	2	100	163.0	16,300
MTU 2250 2,250kW - _B04_G17B	3	100	163.0	16,300
3516C 2,500 kW - B52_G08A	4	-	173.5	264,144
			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	Screening Model Rank	Potential Annual Hours of Operation	Potential Hourly Fuel Throughput (gallons)	Fuel Throughput (gallons)
C18 750 kW – Ski Lodge 1	1	100	53.6	5,360
CAT C32 1,000 kW - P04_GENC	2	100	71.9	7,190
3516C 2,500 kW – B55_G02A	3	-	173.5	264,144
			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	Screening Model Rank	Potential Annual Hours of Operation	Potential Hourly Fuel Throughput (gallons)	Fuel Throughput (gallons)
C18 750 kW – SKILODG1	1	100	53.6	5,360
3516C Trans 1,825 kW – PORTABLE	2	100	128.4	12,840
C27 800 kW – P04_GEN2	3	100	57.3	5,730
C27 750 kW – P04_GEN4	4	100	53.6	5,360
C27 750 kW – P04_GEN6	5	100	53.6	5,360
C27 800 kW – P04_GEN5	6	100	57.3	5,730
C27 800 kW – P04_GEN3	7	100	57.3	5,730
C27 750 kW – P04_GEN1	8	100	53.6	5,360
C32 1,000 kW – P04_GENC	9	100	71.9	7,190
3516C 2,000 kW – B04_G15A	10	100	138.9	13,890
3516C 2,000 kW – B04_G15B	11	100	138.9	13,890
3516C 2,000 kW – B04_G14B	12	100	138.9	13,890
3516C 2,000 kW – B04_G14A	13	100	138.9	13,890
3516C 2,000 kW – B04_G13B	14	100	138.9	13,890
3516C 2,000 kW – B04_G13A	15	100	138.9	13,890
MTU 2250 2,250 kW – B04_G17C	16	100	163	16,300
MTU 2250 2,250 kW – B04_G17B	17	100	163	16,300
MTU 2250 2,250 kW – B04_G17A	18	100	163	16,300
CAT3152C 1500kW – SKILODG2	19	100	103.2	10,320
3516C 2,500 kW – B52_G08A	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 generator rankings from the cancer risk calculations will be used to calculate the non-cancer risks as well. The overall noncancer REERs for each generator type can be ranked in the same order that the Cancer REER's are with the exception of child noncancer. It follows, that using a unit dispersion factor for the generator emissions, as explained above, the noncancer generator ranking will be ranked in the same order. For child noncancer, every auxiliary generator is included in the assessment, meaning risk from every type of generator is accounted for. The modeled dispersion factor for each generator in Table 3-1 and the non-cancer REER are multiplied and summed to determine the total non-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 Acute Risks

As with the chronic risk assessment, the screening model will be 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 G. 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_G02A 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	Screening Model Rank	Potential Hourly Fuel Throughput (gallons)	Fuel Throughput (gallons)
C32 1,000 kW - P04_GENC	1	71.90	1,726
3516C 2,500 kW - B55_G01A	2	173.50	4,164
3516C 2,500 kW - B55_G02B	3	173.50	4,164
3516C 2,500 kW – B52_G07A	4	173.50	4,164
3516C 2,500 kW - B55_G02A	5	173.50	4,164
3516C 2,500 kW - B52_G06A	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 are modeled.

3.4 Uncertainty Evaluation

This section discusses the assumptions made to this risk assessment work plan 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 is 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.

APPENDIX A. APPLICATION FORMS

Oregon DEQ Form AQ521 is included herein and AQ522 for exposure location change request is submitted in a separate electronic copy using a Microsoft Excel file.

State of Oregon
DEQ Department of Environmental Quality

Form AQ521

Exposure Location Change Request

Facility Name: PDX04 **Source Number:** 25-0008

Instructions:
A facility may request to model an exposure location in a manner that differs from underlying zoning for that exposure location based on the current land use [OAR 340-245-0210(1)(a)(F)]. In order to request a change to exposure location designation, please submit this form with the following documents when you submit your Cleaner Air Oregon Modeling Protocol:

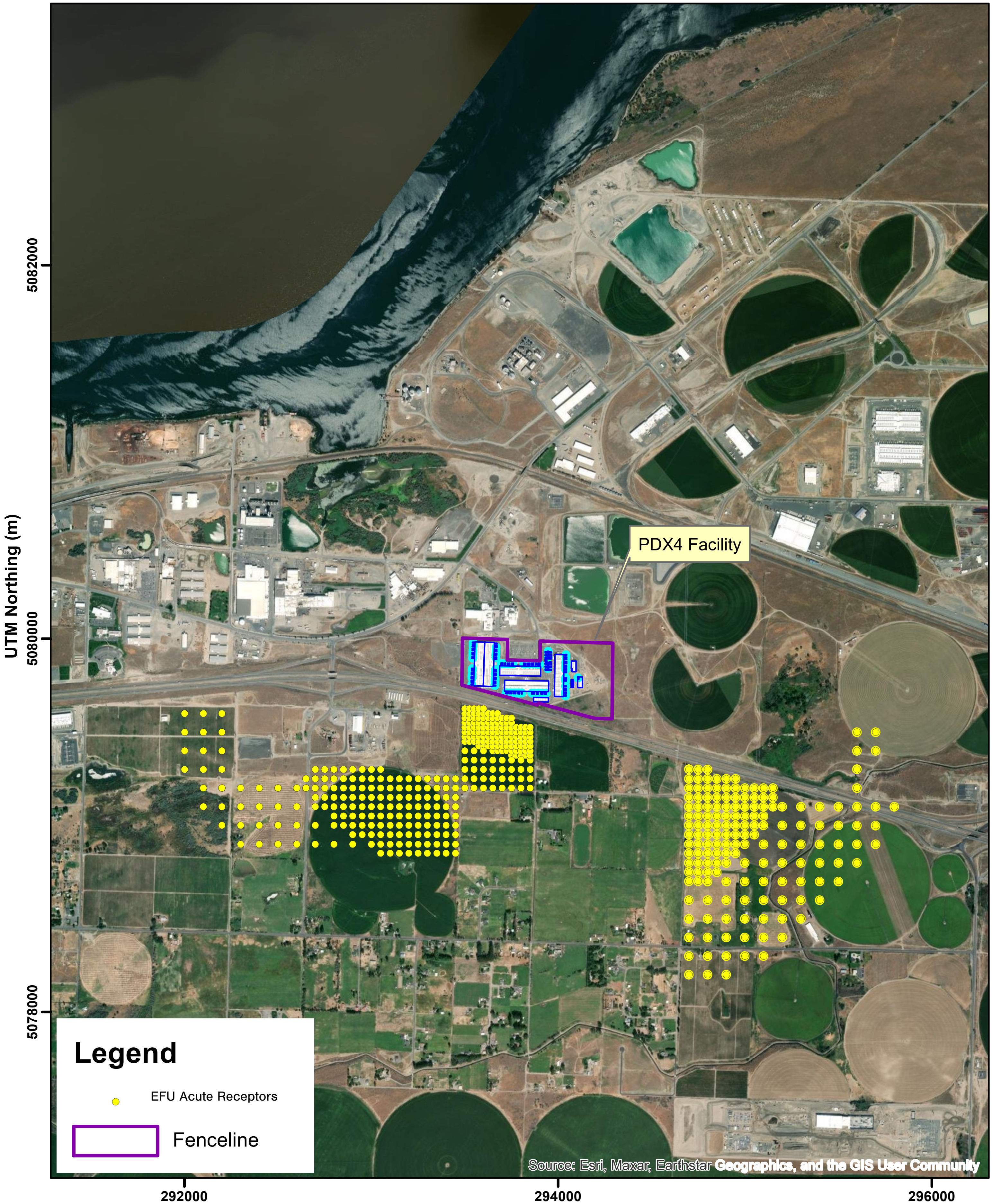
1. An **aerial photo** indicating the proposed exposure locations for which you are requesting a change to exposure location(s) (for more information on zoning and exposure locations, please see our FAQ webpage).
2. Complete the **AQ522 Form** (Excel format) – listing exposure locations, their corresponding land use zoning designations (State or local zoning), and an explanation of each location for which you are requesting a change to exposure location.

   Note: You do not need to submit this form if you have received instruction from DEQ to revise an exposure location to a more conservative exposure type in your risk assessment – e.g., Nonresidential, adult (worker) location to Residential.

If DEQ approves the change to exposure location and a risk assessment is completed, DEQ will issue a permit with annual reporting requirements. Annual verification that the current land use has not changed, and the exposure location change should continue, will be determined using form AQ540, submitted as part of the annual report.

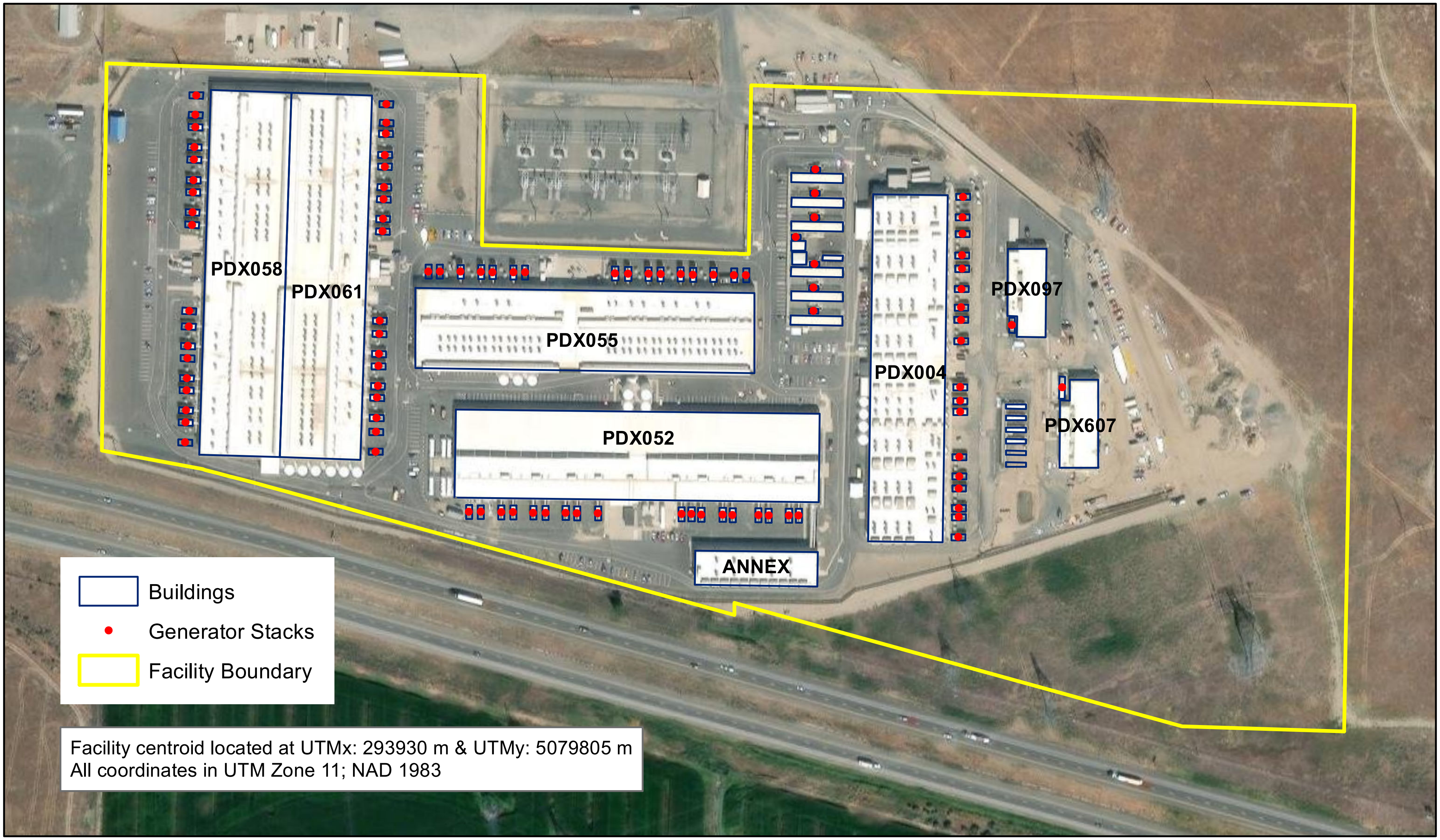
Statement of Certification:
By signing this document, I hereby certify that based on information and belief formed after reasonable inquiry, the statements and information in this document are true, accurate, and complete.

Jason Bowker	Responsible Official
Name of Certifying or Responsible Official	**Title of Certifying or Responsible Official**
	2/17/2025
Signature of Certifying or Responsible Official	**Date**

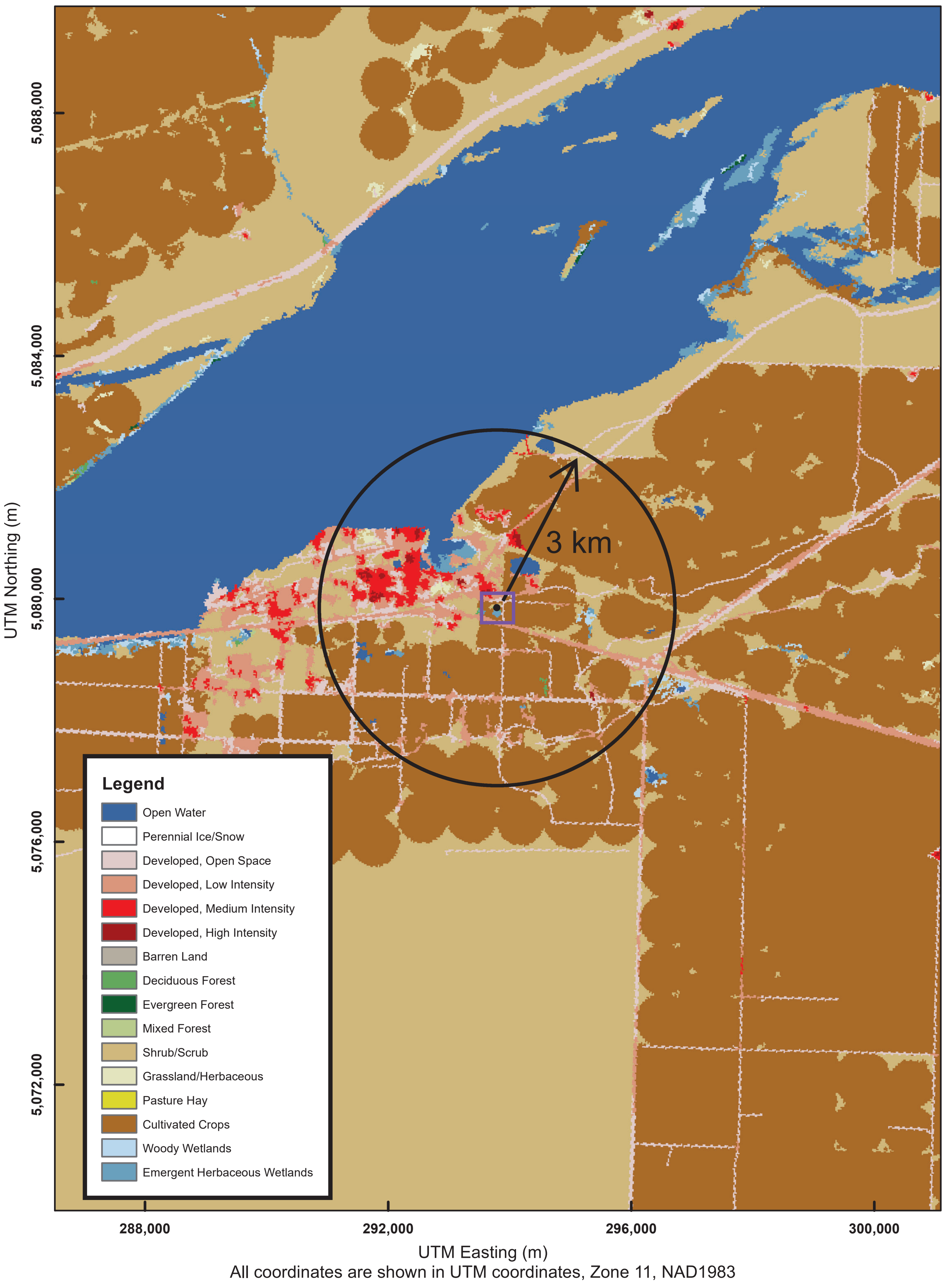


All Coordinates shown in UTM Coordinates,
Zone 11, NAD 1983

APPENDIX B. 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 C. 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 D. EMISSION CALCULATIONS

Files submitted electronically only.

APPENDIX E. MODELED BUILDING AND SOURCE PARAMETERS

Appendix Table E-1. Building Parameters

Building ID	X Coordinate (m)	Y Coordinate (m)	Elevation (m)	Height (m)
B20211AE	277821.91	5076949.39	91.04	4.24
B20211AS	277821.77	5076945.58	91.04	4.24
B20211BE	277821.68	5076942.99	91.04	4.24
B20211BS	277821.55	5076939.18	91.04	4.24
B20212AE	277822.62	5076969.50	91.04	4.24
B20212AS	277822.48	5076965.69	91.04	4.24
B20212BE	277822.39	5076963.09	91.04	4.24
B20212BS	277822.26	5076959.29	91.04	4.24
B20213AE	277823.33	5076989.61	91.04	4.24
B20213AS	277823.19	5076985.80	91.04	4.24
B20213BE	277823.10	5076983.21	91.04	4.24
B20213BS	277822.97	5076979.39	91.04	4.24
B20214AE	277824.10	5077011.60	91.04	4.24
B20214AS	277823.97	5077007.79	91.04	4.24
B20214BE	277823.88	5077005.20	91.04	4.24
B20214BS	277823.74	5077001.39	91.04	4.24
B20215AE	277824.81	5077031.70	91.04	4.24
B20215AS	277824.68	5077027.90	91.04	4.24
B20215BE	277824.59	5077025.31	91.04	8.69
B20215BS	277824.45	5077021.50	92.27	9.22
B20216AE	277825.52	5077051.81	91.5	4.24
B20216AS	277825.39	5077048.00	91.5	4.24
B20216BE	277825.30	5077045.41	91.5	4.24
B20216BS	277825.16	5077041.61	91.5	4.24
B20221AE	277819.32	5076876.21	91.5	4.24
B20221AS	277819.19	5076872.41	91.5	4.24
B20221BE	277819.10	5076869.82	91.5	4.24
B20221BS	277818.96	5076866.01	91.5	4.24
B20222AE	277818.62	5076856.11	91.5	4.24
B20222AS	277818.48	5076852.30	91.5	4.24
B20222BE	277818.39	5076849.71	91.5	4.24
B20222BS	277818.25	5076845.90	91.5	4.24
B20223AE	277817.91	5076836.00	91.5	4.24
B20223AS	277817.77	5076832.19	91.5	4.24
B20223BE	277817.68	5076829.60	91.5	4.24
B20223BS	277817.54	5076825.79	91.5	4.24
B20224AE	277817.13	5076814.01	91.5	4.24
B20224AS	277816.99	5076810.20	91.5	4.24
B20224BE	277816.90	5076807.61	91.5	8.18
B20224BS	277816.77	5076803.80	90.59	4.24
B20225AE	277816.42	5076793.90	90.59	4.24
B20225AS	277816.28	5076790.09	90.59	4.24
B20225BE	277816.19	5076787.50	90.59	4.24
B20225BS	277816.06	5076783.69	90.59	4.24
B20226AE	277815.71	5076773.79	90.59	4.24
B20226AS	277815.58	5076769.98	90.59	4.24

Building ID	X Coordinate (m)	Y Coordinate (m)	Elevation (m)	Height (m)
B04_E13A	277815.49	5079915.29	90.59	4.24
B04_E13B	277815.35	5079902.00	90.59	4.24
B04_E14A	277821.26	5079891.18	90.59	4.24
B04_E14B	277821.12	5079877.39	90.59	4.24
B04_E15A	277819.66	5079843.56	90.59	4.24
B04_E15B	277819.53	5079855.46	90.59	4.24
B04_E15C	277850.96	5079868.69	90.59	4.24
B04_E16A	277917.15	5079835.65	90.59	4.24
B04_E16B	277784.09	5079821.84	90.59	4.24
B04_E17A	277784.23	5079791.96	90.59	8.62
B04_E17B	277784.32	5079782.97	89.58	4.24
B04_E17C	277784.46	5079776.09	89.58	4.24
B04_E18A	277783.36	5079746.72	89.58	4.24
B04_E18B	277783.50	5079734.28	89.58	4.24
B04_E19A	277783.60	5079726.35	89.58	4.24
B04_E19B	277783.73	5079713.65	89.58	4.24
B04_E20A	277782.64	5079707.83	89.58	4.24
B04_E20B	277782.77	5079694.86	89.58	4.24
B04_MAIN	277782.87	5079914.94	89.58	4.24
B52_ANNX	277783.01	5079684.28	89.58	4.24
B52_E01A	277781.84	5079713.61	89.58	4.24
B52_E01B	277781.98	5079713.71	89.58	4.24
B52_E02A	277782.07	5079713.39	89.58	4.24
B52_E02B	277782.21	5079713.49	89.58	4.24
B52_E03A	277781.11	5079713.27	89.58	4.24
B52_E03B	277781.25	5079713.15	89.58	4.24
B52_E04A	277781.34	5079712.89	89.58	4.24
B52_E04B	277781.48	5079713.03	89.58	4.24
B52_E04C	277780.38	5079712.73	89.58	8.62
B52_E05A	277780.52	5079712.10	89.58	4.24
B52_E05B	277780.62	5079712.00	89.58	4.24
B52_E05C	277780.75	5079712.17	89.58	4.24
B52_E06A	277786.74	5079711.73	89.58	4.24
B52_E06B	277786.88	5079711.82	89.58	4.24
B52_E07A	277786.97	5079711.52	89.58	4.24
B52_E07B	277787.11	5079711.41	89.58	4.24
B52_E08A	277787.47	5079711.28	89.58	4.24
B52_E08B	277787.61	5079711.37	89.58	4.24
B52_MAIN	277787.70	5079775.74	89.58	4.24
B55_E01A	277787.84	5079867.10	89.58	4.24
B55_E01B	277788.20	5079867.04	89.58	4.24
B55_E02A	277788.34	5079867.39	89.58	4.24
B55_E02B	277788.43	5079867.27	89.58	4.24
B55_E03A	277788.57	5079867.68	89.58	4.24
B55_E03B	277788.99	5079867.50	89.58	4.24
B55_E04A	277789.13	5079867.94	89.58	4.24
B55_E04B	277789.22	5079867.75	89.58	4.24
B55_E04C	277789.36	5079868.08	89.58	8.62
B55_E05A	277789.72	5079868.94	91.5	2.87
B55_E05B	277789.86	5079868.82	91.5	2.87
B55_E05C	277789.95	5079868.73	91.5	2.87

Building ID	X Coordinate (m)	Y Coordinate (m)	Elevation (m)	Height (m)
B55_E06A	294037.30	5079869.26	91.5	2.87
B55_E06B	294037.12	5079869.02	91.5	2.87
B55_E07A	294036.97	5079869.42	91.5	2.87
B55_E07B	294036.80	5079869.35	90.52	3.35
B55_MAIN	294036.27	5079854.26	90.52	2.74
B58_E01A	294036.51	5079964.04	90.52	3.35
B58_E01B	294036.65	5079976.94	90.52	2.74
B58_E02A	294036.22	5079943.35	90.52	3.35
B58_E02B	294036.04	5079956.36	90.52	2.74
B58_E03A	294035.65	5079922.06	90.52	3.05
B58_E03B	294035.49	5079935.27	90.52	3.17
B58_E04A	294035.41	5079901.12	90.52	3.17
B58_E04B	294035.01	5079914.19	90.52	3.17
B58_E04C	294034.83	5079893.01	90.52	3.17
B58_E05A	294034.77	5079814.41	90.52	3.17
B58_E05B	294034.56	5079827.11	90.52	3.17
B58_E05C	294034.53	5079837.23	90.52	3.05
B58_E06A	294034.27	5079793.56	90.52	3.05
B58_E06B	293983.49	5079806.50	90.52	3.05
B58_E07A	293868.46	5079772.93	91.12	1.91
B58_E07B	293731.53	5079785.95	91.74	3.48
B58_E08A	293723.78	5079751.98	91.12	6.78
B58_E08B	293752.50	5079765.01	91.74	7.95
B58_MAIN	293744.75	5079982.46	91.04	4.24
B61_E01A	293765.42	5079758.98	91.04	4.24
B61_E01B	293773.48	5079746.20	91.04	4.24
B61_E02A	293793.85	5079781.03	91.04	4.24
B61_E02B	293786.48	5079768.02	91.04	4.24
B61_E03A	293807.36	5079801.44	91.04	4.24
B61_E03B	293867.95	5079788.53	91.04	4.24
B61_E04A	293874.28	5079822.36	91.04	4.24
B61_E04B	293861.48	5079809.40	91.04	4.24
B61_E04C	293894.58	5079830.93	91.04	4.24
B61_E05A	293888.15	5079909.64	91.04	4.24
B61_E05B	293911.33	5079896.85	91.04	4.24
B61_E05C	293917.99	5079888.72	91.04	4.24
B61_E06A	293937.42	5079930.81	91.04	4.24
B61_E06B	293930.99	5079917.52	91.04	4.24
B61_E07A	293713.19	5079952.03	91.04	4.24
B61_E07B	293895.43	5079938.39	91.04	4.24
B61_E08A	293903.38	5079971.22	91.04	4.24
B61_E08B	293868.89	5079959.08	91.04	8.69
B61_MAIN	293882.12	5079980.76	92.27	9.22
IGLOO_07	293847.97	5079746.22	91.5	4.24
IGLOO_08	293860.96	5079753.66	91.5	4.24
IGLOO_09	293826.89	5079738.59	91.5	4.24
IGLOO_10	293840.04	5079761.10	91.5	4.24
IGLOO_11	293818.47	5079768.73	91.5	4.24
IGLOO_12	293739.12	5079776.17	91.5	4.24
P04_ENC1	293752.66	5079871.37	91.5	4.24
P04_ENC2	293760.09	5079901.43	91.5	4.24

Building ID	X Coordinate (m)	Y Coordinate (m)	Elevation (m)	Height (m)
P04_ENC3	293718.32	5079855.75	91.5	4.24
P04_ENC4	293731.69	5079917.17	91.5	4.24
P04_ENC5	293697.53	5079840.83	91.5	4.24
P04_ENC6	293704.95	5079932.39	91.5	4.24
P04_ENCC	293687.12	5079888.73	91.5	4.24
PERDIX_1	293549.23	5079867.89	91.5	4.24
PERDIX_2	293549.63	5079897.57	91.5	4.24
PERDIX_3	293548.58	5079852.17	91.5	4.24
PERDIX_4	293549.04	5079912.93	91.5	4.24
PERDIX_5	293547.85	5079836.55	91.5	4.24
PERDIX_6	293548.29	5079928.96	91.5	8.18
PERDIX_B	293547.21	5079877.68	90.59	4.24
PERDIX_C	293547.53	5079884.93	90.59	4.24
PERDIX_M	293546.87	5079872.07	90.59	4.24
SKIENCL1	293544.24	5079835.10	90.59	4.24
SKIENCL2	293544.73	5079796.89	90.59	4.24
SKILODG1	293545.03	5079879.54	90.59	4.24
SKILODG2	293543.56	5079737.80	90.59	4.24

Amazon Data Services - PDX04 Data Center

AERMOD Input Data

Table E-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 E-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 F. SCREENING REER CALCULATIONS

Files submitted electronically only.

APPENDIX G. SCREENING RESULTS

Files submitted electronically only.

APPENDIX H. METEOROLOGICAL DATA

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APPENDIX I. CAO MODEL FILES AND CROSSWALK

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