AIR QUALITY ASSESSMENT REPORT

Ontario Northland

Northlander Passenger Rail

Timmins-Porcupine Station Transit and Rail Project Assessment Process

March 22, 2025

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This submission was completed and reviewed in accordance with the Quality Assurance Process for this project.

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INTRODUCTION

The Ontario Northland Transportation Commission (Ontario Northland) is an agency of the Province of Ontario responsible for providing efficient, safe, and reliable transportation services in Northern Ontario. Current services include inter-community bus passenger and bus parcel delivery services, freight rail services that connect Northeastern Ontario to other markets across Canada and around the world, and passenger rail service on the Polar Bear Express. The Polar Bear Express provides rail service connecting Cochrane to Moosonee and the Communities of the James Bay Coast since 1932. Previously, Ontario Northland operated the Northlander passenger rail service between Toronto and Cochrane, however, this service was discontinued in 2012.

The Government of Ontario has issued direction to Ontario Northland to reinstate passenger rail service between Toronto (Union Station) and Northeastern Ontario via the Northlander Passenger Rail (NPR) (the Project).

O. REG. 231/08: TRANSIT AND RAIL PROJECT ASSESSMENT PROCESS (TRPAP)

The proposed Timmins-Porcupine Station is subject to an environmental assessment study under *Ontario Regulation 231/08: Transit and Rail Projects Assessment Process* (February 16, 2024). The scope of the TRPAP examines the potential environmental effects associated with the new Timmins-Porcupine Station. In addition, the environmental impact assessment studies also consider the area of land adjacent to the proposed station where a future bus maintenance and storage facility may be built. At the time of preparing this EPR, the decision to build the bus facility was not yet definitive, and therefore an engineering design was not completed. Should the bus facility go forward in the future, the environmental impact assessment studies undertaken as part of the TRPAP will need to be revisited and updated, as required. These updated/additional impact assessment studies will be carried out as part of completing an Environmental Project Report (EPR) Addendum process (as per O. Reg. 231/08), which would also entail Ontario Northland carrying out additional public, stakeholder, and Indigenous Communities consultation. It should be noted that this Air Quality Report will be updated and augmented to include a full air quality modelling assessment of the bus maintenance and storage facility as part of the EPR Addendum process, if this component of the project moves forward in the future.

STUDY AREA

The boundaries of the TRPAP study area are depicted in **Figure 1.** The proposed station site is located on the southeast side of Falcon Street, to the east of Gervais Street North, and to the north of King Street (TransCanada Highway 101). Highway 101 veers to the north while Falcon Street curves to the east, and as such, these roads intersect and bound the site farther to the northeast. Vehicular access is from Falcon Street.

SCOPE OF AIR QUALITY ASSESSMENT

An Air Quality Impact Assessment was completed to characterize existing conditions and determine the impact of the Project on air quality. The scope of this Air Quality Assessment Report includes the following:

- Potential operational air quality effects of the project;
- Potential construction phase air quality effects of the project.

OVERVIEW OF BACKGROUND AIR QUALITY

A review of ambient background air pollutant levels was conducted to determine existing air quality at the subject site. **Figure 3** provides the location of the nearest Monitoring Stations. The nearest stations that measure NO_2 and $PM_{2.5}$ are Sault Ste. Marie, Sudbury, and North Bay, with Sudbury as the closest, while the nearest station

that measures Benzene is Newmarket. As such, data from Sudbury was used for NO_2 and $PM_{2.5}$ while data from Newmarket was used for Benzene. Note: both MECP and NAPS monitoring stations were considered.

Additionally, it is important to note that Timmins, Sudbury, and Newmarket have similar land uses, which further supports the applicability and representativeness of this data for the air quality study. All three locations have a variety of housing options, including single-family homes, townhouses, and apartments. Each city has commercial areas with retail stores, offices, and service businesses. Timmins and Sudbury have significant industrial activities, particularly in mining and manufacturing, while Newmarket has light industrial activities and business parks. All three locations prioritize recreational spaces, with parks, trails, and recreational facilities available for residents.

SENSITIVE RECEPTORS

Two sensitive receptors were located at Pete Landers Park, one in the baseball infield and one in the baseball outfield. Further, a sensitive receptor was located at the Frank P. Whitney Public School. Six sensitive receptors were selected as representative of the residences around the proposed location of the station, as depicted in **Figure 4.** The residential receptors were identified by locating residences that are within 500 m of the proposed station. Contaminant concentrations are similar when in the same vicinity. The nine receptors selected represent the most sensitive and closest locations, providing a conservative basis for the analysis. Receptors located farther from the station will experience a diminished impact from the "build" scenario.

POTENTIAL OPERATIONAL AIR QUALTY EFFECTS

Emissions from Roads

The roads within influence distance of the site, Falcon Street (adjacent to the subject site), King Street / TransCanada Highway 101 (adjacent to the subject site), Gervais Street North (adjacent to the subject site), and Queen Street (approximately 25*m* from the nearest part of the subject site), are the most significant roads with potential to impact air quality. The emissions from these roads were calculated using U.S. EPA's Motor Vehicle Emission Simulator (MOVES4) and modelled using AERMOD. The MOVES4 inputs are used by these models to predict the concentrations of NO_2, Benzene, and $PM_{2.5}$ at the subject site and in the surrounding areas. The NPR TRPAP Traffic Assessment Report, from June 2024 was used for an estimate of the traffic flows in 2026 and 2046. The road emissions associated with the train service are represented by the predicted increase in vehicular traffic from 2026 to 2046. MOVES4 was used to estimate vehicle emission rates from 2026, which is conservative as emissions per vehicle are predicted to decrease over time. NO_2, Benzene, and $PM_{2.5}$ were modelled without background levels.

Note: Key Pollutants to air quality impact assessments are; CO, NO_2, $PM_{2.5}$, Benzene, 1-3 butadiene, formaldehyde, acetaldehyde, acrolein, and benzo(a)pyrene. Oxides of Nitrogen, $PM_{2.5}$, and Benzene have the potential to be the controlling contaminants (**Appendix A.3**).

Emissions from Train Station

The train will arrive/depart the station at low throttle position. The train throttle position is described by idle and 8 notches. The 1st notch being the slow position and the 8th notch full throttle. The train is expected to idle at the station for one hour in the southbound direction and 2hrs 20min in the northbound direction. In this report, the analysis of the train will be carried out at notch setting 2, which is understood to be the maximum setting for departing due to speed restrictions and will provide a conservative estimate of the maximum concentration of exhaust emissions from the train station. The station will only accommodate one train at a time. The train emissions are modelled as stationary sources.

It should be noted:

- The train station building will have an emergency natural gas fired generator and comfort heating equipment, the emissions of which have been included in the NO_X, $PM_{2.5}$, and Benzene emissions.
- The new trains will be built by Siemens Mobility Limited and will meet the latest EPA Tier 4 emission standards.

The predicted concentrations are compared to the Ontario Ambient Air Quality Criteria and the Canadian Ambient Air Quality Standards. For criteria based on hourly limits, the hourly results are reported. Similarly, for criteria based on 24-hour limits, the 24-hour average results are presented, and for annual criteria, the annual average results are provided. The results are organized by contaminant and displayed in **Table 5**.

The results of the dispersion modeling show that the addition of a train and train station in Timmins does not significantly alter the ambient air quality conditions near the proposed station.

Passenger trains are not currently operating on the rail lines at the proposed location. As a result, background conditions based on the 90th percentile of the monitoring station data have been conservatively used to represent the "no build" scenario. The "build" scenario, on the other hand, incorporates the 90th percentile concentrations, modeled emissions from the proposed train station (including idling Tier 4 trains, the emergency natural gas-fired generator, and the air handling units (AHUs)), as well as road emissions associated with the train service to predict the final concentration level

When considering the impact of NO_2, $PM_{2.5}$, and Benzene on the selected sensitive receptors, the difference between the "No Build" and "Build" scenarios is small and fall within the criteria and standards outlined by the Ontario Ambient Air Quality Criteria (AAQC) and the Environment Canada has the Canadian Ambient Air Quality Standard (CAAQS) in both the “no build” and “build” circumstances.

POTENTAL CONSTRUCTION PHASE AIR QUAILTY EFFECTS

Potential air quality impacts associated with the construction stage of the proposed Timmins station are expected to be temporary and localized to the surrounding area. Periodic on-site inspections will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Visual inspection for dusty conditions in areas of emission sources shall occur daily to ensure mitigation measures are in place and functioning properly. Mitigation measures are outlined in **Table 6** and within **Appendix C**.

GREEN HOUSE GAS EMISSIONS

An estimate of the greenhouse gas emissions created as part of constructing the proposed Timmins-Porcupine Station was completed. The estimate is based on scaling the floor area of the proposed station to the emissions from constructing the COP26 House, a “business as usual” building, and a building in Thornbury, Ontario, which was analyzed using the building transparency (EC3) model. The proposed Timmins-Porcupine Station greenhouse gas emissions are expected to fall withing the range bound by the above-mentioned buildings, resulting in greenhouse gas emissions of 349.5$MgCO_2$ to 936.9$MgCO_2$. Note: The Timmins-Porcupine Station is in early design development, and as such only a high-level estimate of greenhouse gas emissions is practical.

The cultural meadow on the existing site has carbon stored in the soil, roots, and plants themselves. A very conservative assumption is that all this stored carbon will be lost. Employing the 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories (in particular default factors from table 6.2 and a baseline Soil Organic Carbon value (SOC ref) from table 2.3 and applying these values to equation 2.25) in concert with a 0.8 hectare cultural meadow as currently occupying the site, results in a one-time loss of 68.04 tonnes of carbon.

Regarding greenhouse gas emissions created as part of operating the proposed Timmins-Porcupine Station, anticipated fuel consumption was used to estimate the CO_2 emissions from the reciprocating engines (conservatively, notch 2 for the locomotive engine and rated capacity for the emergency generator) and CO_2 emission factors for natural gas (by volume of natural gas expected to be consumed). The locomotive engine was conservatively operated 200 minutes per day, the station's emergency generator was conservatively operated 64 hours per year (1h per week testing and 1h per month in an actual emergency), and the comfort heating was conservatively assumed to operate one-half of the year at rated capacity. With these assumptions the idling train produces 458 tonnes of CO_2, the comfort heat 125 tonnes of CO_2, and the emergency generator 12 tonnes of CO_2. This is roughly 5.9% of the threshold of being required to report CO_2 emissions in Ontario (https://www.ontario.ca/page/report-greenhouse-gas-ghg-emissions) and 0.00030% of CO_2 emissions from transport in Canada in 2022 (https://publications.gc.ca/collections/collection_2024/eccc/En81-4-2022-1-eng.pdf).

RESULTS & CONCLUSIONS

An Air Quality Impact Assessment was completed to characterize existing conditions and determine the impact of the Project on air quality. Key pollutants for air quality impact assessments include CO, NO_2, $PM_{2.5}$, Benzene, 1,3-butadiene, formaldehyde, acetaldehyde, acrolein, and benzo(a)pyrene. Among these, oxides of nitrogen, $PM_{2.5}$, and Benzene have the potential to be the controlling contaminants (Appendix A.3). Oxides of nitrogen have the highest emission rate-to-concentration limit ratio, while $PM_{2.5}$ and Benzene are characterized by relatively high background concentrations. The air quality impact assessment took into consideration the introduction of Tier 4 technology for the Northlander locomotive fleet.

Background conditions for the 90th percentile concentration data were conservatively used to represent the "no build" scenario, as passenger trains are not currently operating on the rail lines at the proposed location. The "build" scenario was assessed by combining the 90^{th} percentile concentrations, the modeled emissions from the proposed train station (including idling Tier 4 trains, the emergency natural gas-fired generator, and the AHUs), and the road emissions associated with the train service. These factors were summed to predict the final concentration levels.

The results of the dispersion modelling demonstrates that the addition of a train, and train station, at the proposed project site in Timmins does not significantly change the ambient air quality conditions in the vicinity of the proposed station. The nine receptors were chosen as representing the most sensitive, closest and hence most conservative points to assess for the analysis. Receptors farther from the station will experience reduced impact from the "build" scenario. When assessing the impact of NO_2, $PM_{2.5}$, and Benzene on the selected sensitive receptors, the difference between the "No Build" and "Build" scenarios is minimal, with both scenarios falling within the criteria and standards set by the Ontario Ambient Air Quality Criteria (AAQC). Similarly, the Canadian Ambient Air Quality Standard (CAAQS) set by Environment Canada is met under both the "No Build" and "Build" scenarios. Therefore, mitigation is not required and hence this report does not recommend any local air quality impact mitigation.

The GHG emission implications of the project were also assessed by conservatively quantifying the air contaminant and GHG emissions associated with the project for the "build" and "no build" scenarios. Comparison of its results with provincial emission inventories suggests that the project's contribution to these inventories will be very small.

Potential air quality impacts associated with the construction stage of the proposed Timmins station are expected to be temporary and localized to the surrounding area. Periodic on-site inspections will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Visual inspection for

dusty conditions in areas of emission sources shall occur daily to ensure mitigation measures are in place and functioning properly. A summary of potential effects and mitigation measures are outlined in **Table 6**.

1.0 INTRODUCTION

The Ontario Northland Transportation Commission (Ontario Northland) is an agency of the Province of Ontario responsible for providing efficient, safe, and reliable transportation services in Northern Ontario. Current services include inter-community bus passenger and bus parcel delivery services, freight rail services that connect Northeastern Ontario to other markets across Canada and around the world, and passenger rail service on the Polar Bear Express. The Polar Bear Express provides rail service connecting Cochrane to Moosonee and the Communities of the James Bay Coast since 1932. Previously, Ontario Northland operated the Northlander passenger rail service between Toronto and Cochrane, however, this service was discontinued in 2012.

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1.1 O. Reg. 231/08: Transit and Rail Project Assessment Process (TRPAP)

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Refer to **Table 1** for a summary of the project components.

Table 1: Project Components

Project Component	Approximate Location	Description
Train Station Platform	The train platform is to be located on the east side of the station building.	Train platform material will consist of concrete. Platform features will include tactile warning strips, platform edge, and areas for Accessibility Vehicles to park at the north and south ends of the platform.
Station Building	The station building is surrounded by various station elements, and includes access to Ontario Northland bus bays, municipal bus stop on the street, the train platform, and the parking lot.	Features in the station building may include: • Wicket for Travel Tickets and information; • Wicket for parcel drop-off/pick-up; • Station waiting area; • Station washroom; • Breakroom for crews and station staff; and, • Staff washroom and utility spaces.
Station Parking Facilities	Parking facilities will be located on lands adjacent to the proposed Timmins-Porcupine Station. Station building, bus stops, and train platform are in proximity to the parking spaces.	Parking facilities at the station will contain a variety of features designated to accommodate accessibility, taxi stalls, drop off /pick up, general parking, employee parking, etc.
Station Pedestrian Walkway	The station pedestrian walkway is proposed on all sides of the station building. There is access to areas for accessibility, bus stops, and train platform.	Pedestrian walkway is to be built around the station building, providing access to various station elements.
Track Works	Minimal track work to occur near the train station platform. New bumping post will be located east of King Street on the existing tracks.	Minimal track work will be required. Ontario Northland will install new bumping post at the end of the alignment.
Ontario Northland Bus Bays	Bus bays will be situated adjacent to the station building with accessible walkway from station building/platform.	Bus bays to be provided for a seamless connection to Ontario Northland motor coach services.
Bus Storage & Maintenance Facility	A potential Bus Storage & Maintenance Facility would be located east of the station building and platform. The precise location and configuration of facility components will be subject to an engineering design process in the future, if applicable.	The TRPAP has considered the approximate area of land that may be required for the potential future construction of a Bus Storage & Maintenance Facility as part of the technical studies undertaken. Additional impact assessment studies and consultation will be carried out by Ontario Northland in the future and an EPR Addendum prepared, should the facility move forward.

1.2 Study Area

The boundaries of the TRPAP study area is depicted in **Figure 1**.

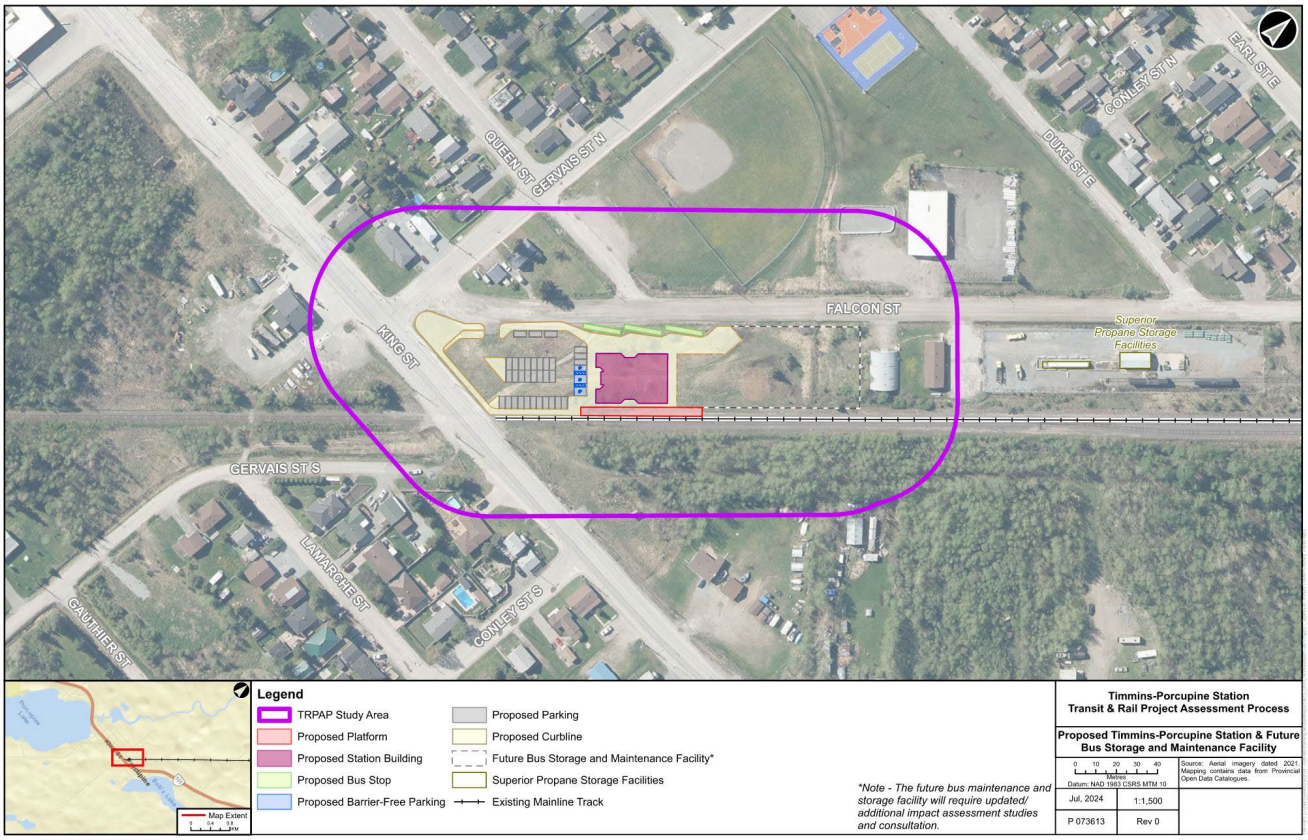


Figure 1: Study Area

1.2.1 Timmins-Porcupine Station Site Description

The proposed Timmins-Porcupine Station site in Timmins, Ontario, is located on the southeast side of Falcon Street, to the east of Gervais Street North, and to the north of King Street (TransCanada Highway 101). Highway 101 veers to the north while Falcon Street curves to the east, and as such, these roads intersect and bound the site farther to the northeast. Vehicular access is from Falcon Street.

A mix of forest and low-rise industrial bound the site to all directions with more low-rise residential closer to the site and more forest farther from the site. King Street, Gervais Street North, and Falcon Street are immediately adjacent to the site with Queen Street approximately 25m from the nearest part of the subject site to the nearest section of Queen Street.

Figure 2: Timmins – Porcupine Station Site, Looking South

1.3 Study Objectives

These objectives of the study are as follows:

i) Assess the operational air quality effects of the Project (i.e., the idling train, the station's emergency generator, and the station's comfort heating, as well as road emissions associated with the train service represented by the predicted increase in traffic from 2026 to 2046); identify mitigation measures, as applicable.

ii) Assess the construction phase air quality effects of the Project; identify mitigation measures, as applicable.

1.4 Applicable Legislation / Guidance Documents

A review of applicable legislation and guidance documents was undertaken and included the following:

- Ontario MECP Guideline A-11: Air Dispersion Modelling Guideline for Ontario,
- Ontario MECP Ambient Air Quality Criteria (AAQC)
- Canada's Air https://ccme.ca/en/air-quality-report, Canadian Ambient Air Quality Standards (CAAQS)

- Ontario MECP D-6 Compatibility between Industrial Facilities
- Ontario MINISTRY OF TRANSPORTATION ENVIRONMENTAL GUIDE FOR ASSESSING AND MITIGATING THE AIR QUALITY IMPACTS AND GREENHOUSE GAS EMISSIONS OF PROVINCIAL TRANSPORTATION PROJECTS

1.5 Ontario Ambient Air Quality Criteria (AAQC) and Canadian Ambient Air Quality Standards (CAAQS)

Ambient air quality is assessed through the Ontario Ambient Air Quality Criteria (AAQC) and Environment Canada which has the Canadian Ambient Air Quality Standards (CAAQS). **Table 5**, below, lists concentration standards for chemicals commonly associated with contribution to air pollution in a northern urban / suburban environment.

Table 2: Summary of Ambient Air Quality Criteria / Standards

Pollutant	Canadian Ambient Air Quality Standards (CAAQS)				Ontario Ambient Air Quality Criteria (AAQC)			
	Annual	24 Hour	8 Hour	1 Hour	Annual	24 Hour	8 Hour	1 Hour
Nitrogen Dioxide (NO_2)	24$\mu g/m^3$			* 84$\mu g/m^3$		200$\mu g/m^3$		400$\mu g/m^3$
Sulphur Dioxide (SO_2)	4*ppb* (10.64$\mu g/m^3$)			*65ppb (172.9$\mu g/m^3$)	4*ppb* (10.64$\mu g/m^3$)			40*ppb* (106.4$\mu g/m^3$) + *[67ppb (178.22$\mu g/m^3$) (10min)]*
Carbon Monoxide (CO)							13*ppm*	30*ppm*
Suspended Particulate Matter < 44*um* diameter					60$\mu g/m^3$	120$\mu g/m^3$		
Particulate Matter smaller than 10 micron (PM_{10})						50$\mu g/m^3$		
Particulate Matter smaller than 2.5 micron ($PM_{2.5}$)	8.8$\mu g/m^3$	*27$\mu g/m^3$				27$\mu g/m^3$		
Benzene					0.45$\mu g/m^3$	2.3$\mu g/m^3$		
1-3 Butadiene					2.0$\mu g/m^3$	10$\mu g/m^3$		
Formaldehyde						65$\mu g/m^3$		
Acetaldehyde						500$\mu g/m^3$		
Acrolein						0.4$\mu g/m^3$		4.5$\mu g/m^3$
Benzo(a)pyrene					0.00001$\mu g/m^3$	0.00005$\mu g/m^3$		

Concentration (*ppm*) = Concentration (mg/m^3) x (0.08205 x T (K)) / Molecular Weigh

**3-year average of the 98th percentile. It should be noted that the U.S. National Ambient Air Quality Standard (NAAQS) was used for 1-hour NO_2, and PM2.5 NAAQS was used in the AERMOD modeling for this analysis. NAAAQS was selected to ensure alignment with the Canadian Ambient Air Quality Standards' 3-year average of the 98th percentile. Due to Ontario's AAQC'sPM2.5 limit, the highest concentrations (rather than the 98th percentile) are presented in the results.*

1.6 General Assessment Methodology

The following steps were undertaken as part of this assessment:

- Establish background exhaust contaminant levels typical of the subject site based on air quality monitoring station data. This represents the "no build" scenario as there currently no train station or passenger train traffic.
- Carry out air quality modelling (using AERMOD) for all stationary sources, as well as road emissions associated with the train service (e.g., buses, passenger vehicles, on adjacent roads resulting from train service), i.e., assess the "build" scenario.

In order to assess the operational air quality effects associate with the proposed Timmins Station, the key pollutants are CO, NO_2, PM_{44}, PM_{10}, $PM_{2.5}$, Benzene, 1,3-butadiene, formaldehyde, acetaldehyde, acrolein, and benzo(a)pyrene. Among these, nitrogen oxides (NO_x), $PM_{2.5}$, and Benzene have the potential to be the controlling contaminants (see Appendices A.3). Nitrogen oxides have the highest emission rate relative to the concentration limit, while $PM_{2.5}$ and Benzene are characterized by relatively high background concentrations.

The AERMOD model was employed to evaluate the impact of emissions from the proposed train idling at the station, the proposed train station's comfort heating equipment, emergency natural gas generator, and road emissions associated with the train service. Further, for NO_2 modelling, the Ozone Limiting Method (OLM) was used (discussed further in **Section 3.1** and **Appendix A.2**).

As described further in **Section 3.3**, the roads within influence distance of the site, Falcon Street (adjacent to the subject site), King Street / TransCanada Highway 101 (adjacent to the subject site), Gervais Street North (adjacent to the subject site), and Queen Street (approximately 25*m* from the nearest part of the subject site), are the most significant roads with potential to impact air quality.

2.0 BACKGROUND CONDITIONS AND AIR QUALITY

2.1 Climate

Historical wind data collected at Sudbury Airport and Timmins Airport, comprised of hourly observations of wind speed and direction, was used to determine the wind climate expected at the subject site (**Figure 3**). It should be noted that the Sudbury Airport weather station data is included since the MECP requires Regional Meteorological Data for use with AERMOD.

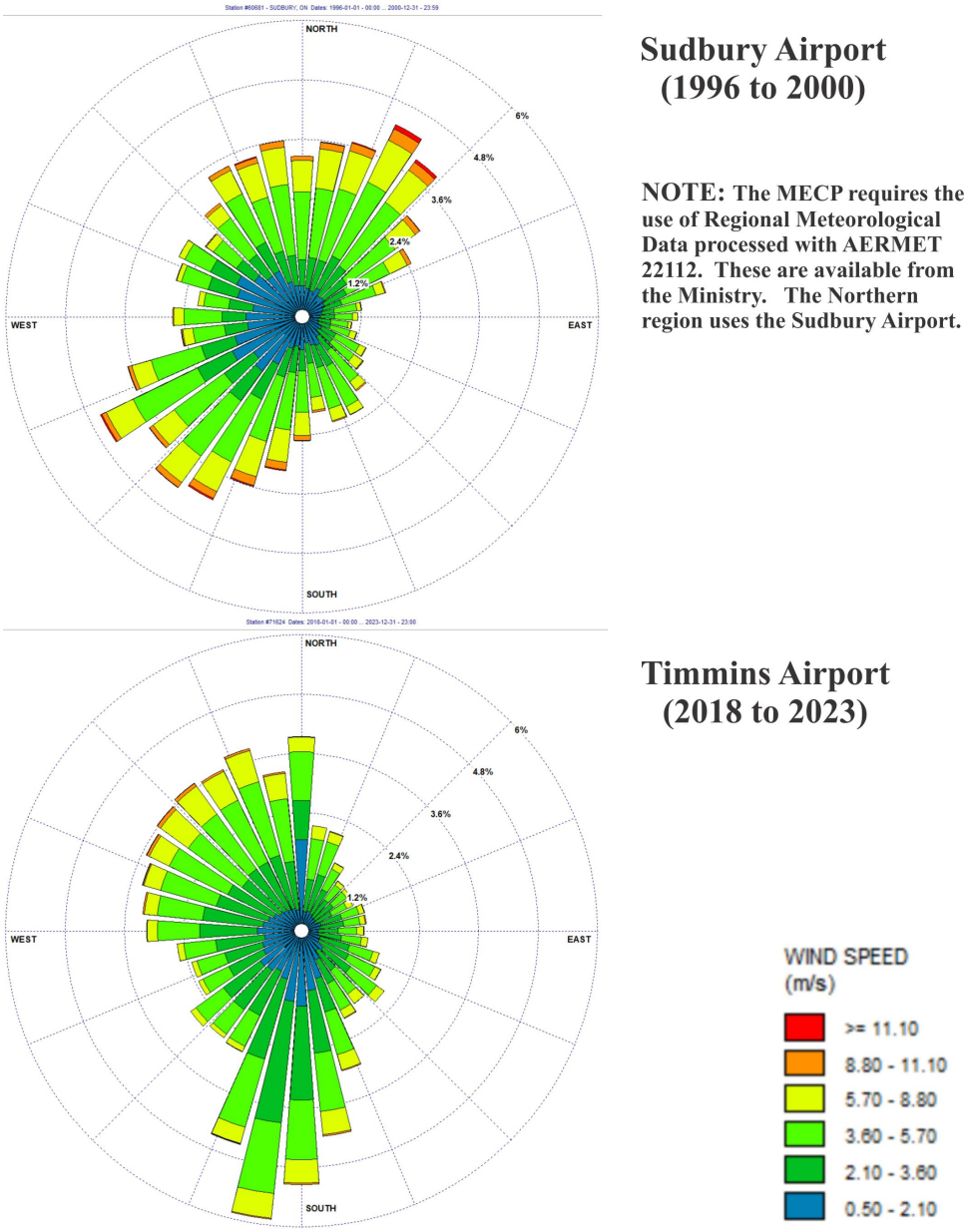


Figure 3: Historical Wind Data

Meteorological climate information is presented below from the MECP for Station ID 6078285, 48°34'11.000" N, 81°22'36.000" W (Timmins/Victor Power), located approximately 18km to the northwest of the proposed development. According to Canadian Climate Normals for 1991-2020 for this station, the mean annual temperature is estimated at 1.9°C. The warmest month of the year is July with an average temperature of 17.7°C and the coldest month is January with an average -16.4°C temperature. The Timmins Station site recorded an average total annual rainfall of 543.1 mm and an average total annual snowfall of 543.1 mm. Precipitation is distributed throughout the year, with most of the rain occurring between April and October, and with most of the snow occurring between November and March. The maximum average monthly rainfall is 84.8 mm and occurs in September and the maximum average monthly snowfall is 63.8 mm and occurs in December. The Climate Normals are summarized below.

Meteorological Parameters	Jan	Feb	March	April	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Daily Average (°C)	-16.4	-14.4	-7.5	0.9	9.7	15.3	17.7	16.2	11.7	4.5	-3.2	-11.2	1.9
Daily Maximum (°C)	-10.4	-7.6	-0.7	7.2	16.8	22.4	24.4	22.8	17.8	9.1	0.8	-6.5	8.0
Daily Minimum (°C)	-22.3	-21.0	-14.4	-5.3	2.5	8.1	10.9	9.6	5.5	-0.1	-7.1	-15.9	-4.1
Rainfall (mm)	4.0	1.1	14.3	35.3	63.5	77.9	84.8	77.0	81.7	66.8	28.1	8.7	543.1
Snowfall (cm)	59.2	47.9	43.2	25.3	3.1	0.2	0.0	0.0	0.5	13.7	50.8	63.8	307.6
Average Wind Speed (km/h)	11.5	12.5	12.9	13.0	12.4	11.1	10.2	10.0	10.8	11.9	12.4	11.7	11.7
Most Frequent Direction	NW	S	NW	N	N	S	W	S	S	S	S	S	S
Days with Winds >= 52 km/h	0.17	0.55	0.50	0.58	0.46	0.40	0.05	0.36	0.54	0.42	0.48	0.25	4.8

2.2 Air Quality - Atmospheric Chemistry

Nitrogen Monoxide, Nitrogen Dioxide and Ozone

Nitrogen Dioxide (NO_2) and Ozone (O_3) are secondary pollutants, which mean they are formed from other pollutants by chemical processes taking place in the atmosphere after emission from their source. Nitrogen dioxide is formed from nitrogen monoxide (NO), which is emitted from combustion processes, such as road vehicles and power plants. This reaction takes place relatively quickly and as such, high nitrogen dioxide concentrations can be found fairly close to the original combustion source. For this reason, nitrogen monoxide and nitrogen dioxide are sometimes grouped together as Nitrogen Oxide (NO_x) and treated as a primary pollutant.

Ozone forms much more slowly, following complex reactions involving nitrogen oxides, hydrocarbons and oxygen, in the presence of sunlight. Ozone is rapidly destroyed upon contact with nitric oxide, and thus, the ozone concentrations in urban areas tend to be low during the night (no production, only destruction) and highest during the early afternoon (rapid production).

Particulate

Particulate matter (PM) includes aerosols, smoke, fumes, dust, fly ash and pollen. Its composition varies with origin, monitoring location, time of year, and atmospheric conditions. Fine particulate matter is primarily formed from chemical reactions in the atmosphere and through fuel combustion (e.g. motor vehicles, power generation, industrial facilities, residential fireplaces and wood stoves, agricultural burning and forest fires). Fine particulate matter can also be formed in the atmosphere through a series of complex chemical reactions and therefore, it is also considered to be a secondary pollutant. During periods of widespread elevated levels of fine particulate, it is estimated that more than 50 per cent of the fine particulate in Ontario comes from the U.S.

Carbon Monoxide

There is a direct relationship between traffic and CO impact since exhaust fumes from vehicular traffic are the primary source of CO. Carbon monoxide is a localized gas that dissipates very quickly under normal meteorological conditions. Therefore, CO concentrations decrease substantially as distance from the source increases. The highest CO concentrations are typically found along sidewalk locations directly adjacent to congested roadway intersections.

Benzene

Benzene is a volatile organic compound (VOC) that can be found in urban areas due to its use in industrial processes, transportation, and consumer products. It is also a component of gasoline and can be released into the air through fuel combustion. Benzene concentrations can vary depending on several factors such as traffic volume, weather conditions, and proximity to certain industrial facilities.

Since oxides of nitrogen (NO_x), $PM_{2.5}$, and Benzene have the potential to be the controlling contaminants (as detailed in **Appendix A.3**), the following background concentrations are relevant. Additionally, because the Ozone Limiting Method (OLM) has been used to convert NO_x concentrations to NO_2 concentrations, background ozone (O_3) concentrations have also been included.

	Pollutant	**Ozone (Ozone O3)**				
	Unit	parts per billion (ppb)				
2021 from MECP Summary Report	23.9	36	56	45.17		
	mean	**1h 90th**	**1h max**	**24h max**	**90th of 24h av**	**year**
Calculated from hourly data	23.9	35.0	56.0	45.17	32.9	2021
	25.6	38	64	49.3	34.5	2022
	27.0	**41.0**	71	48.3	38.3	2023
3 year averages (ppb)	25.5	38.0	63.7	47.6	35.2	
3 year averages (ug/m3)	51.1	76.0	127.3	95.2	70.5	

	Nitrogen Dioxide (Nitrogen Dioxide NO2)					
	Unit	parts per billion (ppb)				
2021 from MECP Summary Report	5.6	12	56.2	24.3		
	mean	**1h 90th**	**1h max**	**24h max**	**24h 90th**	**year**
Calculated from hourly data	5.6	12.0	56.2	24.25	11.0	2021
	6.1	13.8	50.8	29.1	12.8	2022
	5.5	**11.9**	50.6	23.3	10.2	2023
3 year averages (ppb)	5.7	12.6	52.5	25.5	11.3	
3 year averages (ug/m3)	11.5	25.1	105.1	51.1	22.7	

	Fine Particulate Matter (Fine Particulate Matter PM2.5)					
	Unit	micrograms per cubic metre				
2021 from MECP Summary Report	5.8	11	163	48.8		
	mean	**1h 90th**	**1h max**	**24h max**	**90th of 24h av**	**year**
Calculated from hourly data	5.8	11	163	48.8	9.9	2021
	5.2	11	45	19.0	8.4	2022
	8.8	**14**	422	276.2	13.6	2023
3 year averages (ug/m3)	6.6	12.0	210.0	114.6	10.6	

Max concentrations in 2023 came from forest fires (https://www.sudbury.com/local-news/special-air-quality-advisory-continues-from-environment-canada-7192990).

Benzene

Newmarket Federal and Provincial Ambient Air Quality Monitoring Data (unit = ug/m^3).

Averaging Period	2016	2017	2018	2019	2020	2021
Annual	0.328	0.385	INS	0.323	N/A	N/A
24 hour 90th percentile	0.549	0.587	0.556	0.424	0.419	N/A

The closest site to Timmins with data available within the past 10 years is Newmarket. The provincial Newmarket site has only annual data and the federal Newmarket site has only 24 hour data. These values are tabulated above.

The latest 3-year average (available) of the annual average is **0.34*ug/m^3***, and the latest 3 year average (available) of the 90th percentile 24h background Benzene concentration is **0.47 *ug/m^3***.

2.3 Selection of Monitoring Stations

MECP and National Air Pollution Surveillance (NAPS) monitoring stations in the general vicinity of Timmins Station were reviewed to ensure the most representative background concentrations were selected for the Study Area. **Figure 4** provides the location of the nearest Monitoring Stations. The nearest stations that measure NO_2 and particulate are Sault Ste. Marie, Sudbury, and North Bay, with Sudbury as the closest, while the nearest station that measures Benzene is Newmarket. As such, data from Sudbury was used for NO_2 and particulate while data from Newmarket was used for Benzene. Refer to **Figure 4.**

Additionally, it is important to note that Timmins, Sudbury, and Newmarket have similar land uses, which further supports the applicability and representativeness of this data for the air quality study. All three locations have a variety of housing options, including single-family homes, townhouses, and apartments. Each city has commercial areas with retail stores, offices, and service businesses. Timmins and Sudbury have significant industrial activities, particularly in mining and manufacturing, while Newmarket has light industrial activities and business parks. All three locations prioritize recreational spaces, with parks, trails, and recreational facilities available for residents.

Maximum background concentrations for NO_2, $PM_{2.5}$, and Benzene exceed either federal or provincial limits, on occasion. The ninetieth percentile concentrations were employed as background concentrations in the estimate of the maximum concentrations at or around the proposed development.

Figure 4: Monitoring Station Locations for Background Concentrations

3.0 LOCAL AIR QUALITY ASSESSMENT

3.1 Overview - Train Station Operations

The Northlander service will provide one trip per direction, 4-7 days per week. Southbound, the train will depart Timmins Station at approximately 12:00am (midnight). Northbound service will see the train arrive in Timmins by 05:30am.

The train will arrive/depart the station at low throttle position due to speed restrictions. The trains will idle at the station for one hour in the southbound direction and 2hrs 20min in the northbound direction. In this report, the analysis of the train emissions was at a notch setting of 2 even when stationary at the station, which is conservative. For the 24-hour and annual averaging periods, the emissions for the expected idling time per day of 3 hours and 20 minutes was averaged over a 24-hour period.

The US EPA testing of Tier 4 engines require that they perform at the g/hp-h criteria, or better, for a duty cycle that represents normal in-use speeds, loads, and degree of transient activity. https://www.ecfr.gov/current/title-40/chapter-I/subchapter-U/part-1065/subpart-J. Operating from idle to notch 8 is a normal duty cycle with idle the lowest horsepower and notch 8 the highest. As such, the emissions in grams over time at the higher horsepower setting of notch 2 must be greater than the emissions at idle.

For example, notch 2 is estimated as 438 horsepower, neglecting hotelling power requirements. Idle, for the locomotive is approximately 24 horsepower. Heating at maximum, on the coldest days, defines the maximum hotelling energy requirement. Each of the three coach cars has a maximum energy usage of 44kW, and the cab has a maximum energy requirement of 9.1kW, for a total of 141kW (189 horsepower). Idle plus the maximum hotelling power would total 213 horsepower. So, say for $PM_{2.5}$, notch 2 operating at 438 horsepower x 0.03g/hp-h = 13.14g/h, while idle plus the maximum hotelling power would be 213 horsepower x 0.03g/hp-h = 6.39g/h. Therefore notch 2 emissions are conservative for a train idling in the station.

The modelling approach for the emissions from the proposed Timmins-Porcupine Station focusses on NO_X emissions from heating, comfort, and emergency equipment and emissions from the train's diesel engine. This assumption with respect to heating, comfort, and emergency equipment is based on *section 7.1.1* in Ontario MECP Guideline A-10. AERMOD was used to model these emissions, and the $PM_{2.5}$ U.S. National Ambient Air Quality Standard (NAAQS) option was used for particulate behaviour, as it allows for both the highest and the 3-year average of the annual 98th percentile of the hourly and 24-hour average concentrations (**Appendix A.2**). Further, for NO_2 modelling, the Ozone Limiting Method (OLM) was used. The OLM method requires values for the "In Stack NO2/NOX Ratio". The following values were used: Diesel Locomotive = 0.083, Unit Heaters and AHU = 0.100, Generac Generator = 0.187, and Vehicles (All) = 0.156.

These values are from GUIDANCE FOR NO2 DISPERSION MODELLING IN BRITISH COLUMBIA, (Guidance for NO2 Dispersion Modelling (gov.bc.ca)) was used for the in-stack ratios, page 30. These values are from GUIDANCE FOR NO2 DISPERSION MODELLING IN BRITISH COLUMBIA, (Guidance for NO2 Dispersion Modelling (gov.bc.ca)) were used for the in-stack ratios, page 30.

The new trains/rail cars will meet the latest EPA Tier 4 emission standards. The train diesel engine (Cummins QSK95, 4,400hp) exhaust includes NO_X, Particulate and Benzene.

Table 3: Locomotive Emission Standards

Table 1 to § 1033.101—Line-Haul Locomotive Emission Standards

Year of original manufacture	Tier of standards	Standards (g/bhp-hr)			
		NO_X	PM	HC	CO
1973-1992[a]	Tier 0[b]	8.0	0.22	1.00	5.0
1993[a]-2004	Tier 1[b]	7.4	0.22	0.55	2.2
2005-2011	Tier 2[b]	5.5	* 0.10	0.30	1.5
2012-2014	Tier 3[c]	5.5	0.10	0.30	1.5
2015 or later	Tier 4[d]	1.3	0.03	0.14	1.5

Above are the documented emission rates used in modelling the effect of the proposed Timmins-Porcupine Station on the environment.

Approximately 97% of the Tier 4 locomotive particulate emissions are PM2.5 or smaller, and as such, all of the 0.03 g/hp-hr particulate emissions are considered PM2.5 or smaller.

Benzene emissions from the locomotive were estimated from emission factors from US EPA AP-42 Table 3.3-2.

The train station building will have an emergency natural gas fired generator and comfort heating equipment. The emissions of NO_X, PM2.5, and Benzene, have been included as station emissions.

Benzo[a]pyrene

With regard to benzo[a]pyrene (B(a)P), the following supporting information provides rationale for why levels at the station are considered negligible.

The train will be operating at notch 2, which consumes fuel at approximately 140L/h. We've looked at two scenarios: one with Uncontrolled B(a)P emissions and one with 95% reduction with the Diesel Oxidation Catalyst (DOC) and Diesel Particulate Filter (DPF) that come with Tier 4 engines (note the literature describes this 95% reduction.) Since the idling engine is the station's primary source of PM2.5 and B(a)P, a reasonable estimate of B(a)P concentration at the most affected receptor can be scaled based on the PM2.5 and B(a)P emission rates.

The results are summarized below:

	Max Receptor (#9) 0.554	PM2.5 (24-h) ug/m3 from Station			
B(a)P emission rate % of PM2.5 emission rate	**Estimated 24-h B(a)P Conc (ug/m3)**	**24-h B(a)P Limit (ug/m3)**	**Fraction of B(a)P Limit (ug/m3)**	**% of 24-h B(a)P Limit**	
0.0042732%	2.36737E-05	0.00005	0.47347	47.347%	B(a)P (Uncontrolled)
0.00021362%	1.18345E-06	0.00005	0.02367	2.367%	B(a)P (Tier 4)

	Max Receptor (#9) 0.079	PM2.5 (annual) ug/m3 from Station			
B(a)P emission rate % of PM2.5 emission rate	**Estimated Annual B(a)P Conc (ug/m3)**	**Annual B(a)P Limit (ug/m3)**	**Fraction of B(a)P Limit (ug/m3)**	**% annual of B(a)P Limit**	
0.00427324%	0.000003375857	0.00001	0.33759	33.759%	B(a)P (Uncontrolled)
0.00021362%	0.000000168759	0.00001	0.01688	1.688%	B(a)P (Tier 4)

Therefore, it can reasonably be concluded that the B(a)P emissions from the idling train are insignificant.

3.2 Sensitive Receptors in the Study Area

Two sensitive receptors were located at Pete Landers Park, one in the baseball infield and one in the baseball outfield. Further, a sensitive receptor was located at the Frank P. Whitney Public School. Six sensitive receptors were selected as representative of the residences around the proposed location of the station, as depicted in **Figure 5**. The residential receptors were identified by locating residences that are within 500 m of the proposed station. Contaminant concentrations are similar when in the same vicinity. The nine receptors selected represent the most sensitive and closest locations, providing a conservative basis for the analysis. Receptors located farther from the station will experience a diminished impact from the "build" scenario.

Figure 5: Sensitive Receptors

3.3 Road Traffic Data

The roads within influence distance of the site, Falcon Street (adjacent to the subject site), King Street / TransCanada Highway 101 (adjacent to the subject site), Gervais Street North (adjacent to the subject site), and Queen Street (approximately 25*m* from the nearest part of the subject site), are the most significant roads with potential to impact air quality. The NPR TRPAP Traffic Assessment Report, from June 2024 was used for an estimate of the traffic flows in 2026 and 2046.

According to the 2023 NPR TRPAP Traffic Assessment Report, King Street/(TransCanada Highway 101) has an annual average daily traffic (AADT) of 7,020. The report assumes an increase of 1.5% per year, so the predicted AADT in 2026 would be 7,341 and the predicted AADT in 2046 would be 9,887, an increase of 2,546 vehicles per day. This report also stated that Gervais Street North has an annual average daily traffic (AADT) of 960. Gervais Street North has more traffic than Falcon Street and Queen Street. The traffic flows from Gervais Street North were therefore conservatively used to represent the traffic flows from Falcon Street and Queen Street as well. As the report assumes an increase of 1.5% per year, the predicted AADT in 2026 for Gervais Street would be 1004 and the predicted AADT in 2046 would be 1,352, an increase of 348 vehicles per day.

3.4 Motor Vehicle Emissions Rates

The U.S. EPA's Motor Vehicle Emission Simulator (MOVES) model provides estimates of emission rates from motor vehicles based on a variety of factors such as local meteorology and vehicle fleet composition.

The emissions from the subject roads (as described in **Section 4.0**) were calculated using U.S. EPA's Motor Vehicle Emission Simulator (MOVES4) and modelled using AERMOD. The MOVES4 inputs are used by these models to predict the concentrations of NO_2, Benzene, and $PM_{2.5}$ at the subject site and in the surrounding areas.

The road emissions associated with the train service is represented by the predicted increase in vehicular traffic from 2026 to 2046. In addition, MOVES4 was used to estimate vehicle emission rates from 2026, which is conservative as emissions per vehicle are predicted to decrease over time.

3.5 Air Dispersion Modelling Using AERMOD

Dispersion modelling was completed in accordance with the MECP's "Air Dispersion Modelling Guideline for Ontario" Ver. 3.0 (Guideline A-11), and the US EPA's AERMOD model was employed.

The modelled impact of contaminant emissions is assessed as one-hour, 24-hour, and annual sensitive receptor concentrations. The following dispersion model and pre-processors were used in the assessment:

- AERMOD dispersion model (version 22112); and
- AERMAP surface pre-processor (version 22112).

Climate data is available for Ontario at https://www.ontario.ca/environment-and-energy/map-regional-meteorological-and-terrain-data-air-dispersion-modelling. The data for Ontario is split into 5 regions, with Timmins in the "northern region". This region uses surface station weather data from Sudbury (ID 6068150) and upper air data from White Lake (ID 726320). The data covers a five-year period from 1996 to 2000 and is suitable for AERMET stage 3 processing which allows the wind's approach flow to be customized to suit land use in the vicinity of the subject property. In this report, the forest data set "Sudbury_forest _22112" was used and it has been preprocessed by the Ministry with AERMET v22112, thus no stage 3 processing was required.

AERMOD, includes two source types called LINE VOLUME, and RLINE, which are used for modeling roadways. The LINE VOLUME source was used to model the roads.

The parameters for the LINE VOLUME Source were set to:

- Configuration = Adjacent
- Plume Height = 1.7 x Vehicle Height = 2.55m
- Release Height = 0.5 x Plume Height = 1.27m
- Plume Width = 21.0m for highways (four lanes) and 16m for two lane side streets
- Emission Rate (g/s) = Specific for each pollutant (NO_2, $PM_{2.5}$, and Benzene).

The idling trains were modeled as POINT Sources, located at each end of the train. This allows the maximum concentration to be captured. The train was assumed to be at Notch 2 during idle at the station.

For the site and surrounds, forest makes up most of the surrounds, and as such, rural was chosen for the dispersion coefficients.

From the perspective of the MTO's and the Canadian Transportation Agency's description, sensitive receptors may include outdoor areas and/or indoor spaces in permanent residences, schools, hospitals, daycare centers, and seniors' residences. As such, the railway station itself was not considered for the same structure contamination.

The emission rates from the various stationary sources are summarized below in **Table 4.**

Table 4: Source Summary Table

			Source Data							Emission Data
Source Identifier	Description	Release Height (m)	Stack Gas Exit Temp (K)	Stack Inside Diameter (m)	Stack Gas Exit Velocity (m/s)	Stack Gas Flow (m^3/s)	Contaminant	Ontario AAQC (ug/m^3)	Canadian Ambient Air Quality Standards CAAQS (ug/m^3)	Emission Rate (See Appendix A.4) (g/s)
Source 1 a	Tier 4 Locomotive Charger using Cummins QSK95	4.40	618.75	0.508	14.82	3.004	NO_2	400 (1h)	* 84 (1h)	0.158
Source 1 b	Tier 4 Locomotive Charger using Cummins QSK95	4.40	618.75	0.508	14.82	3.004	NO_2	200 (24h)		0.022
Source 1 c	Tier 4 Locomotive Charger using Cummins QSK95	4.40	618.75	0.508	14.82	3.004	NO_2		12 (annual)	0.022
Source 1 e	Tier 4 Locomotive Charger using Cummins QSK95	4.40	618.75	0.508	14.82	3.004	*particulate <2.5*	27 (24h)	* 27 (24h)	0.00051
Source 1 d	Tier 4 Locomotive Charger using Cummins QSK95	4.40	618.75	0.508	14.82	3.004	*particulate <2.5*		8.8 (annual)	0.00051
Source 1 g	Tier 4 Locomotive Charger using Cummins QSK95	4.40	618.75	0.508	14.82	3.004	*benzene*	2.3 (24h)		0.00005
Source 1 f	Tier 4 Locomotive Charger using Cummins QSK95	4.40	618.75	0.508	14.82	3.004	*benzene*	0.45 (annual)		0.00005
Source 2 a	Unit Heaters	4.50	333	0.100	0.78	0.006	NO_2	400 (1h)	* 84 (1h)	0.000321
Source 2 b	Unit Heaters	4.50	333	0.100	0.78	0.006	NO_2	200 (24h)		0.000321
Source 2 c	Unit Heaters	4.50	333	0.100	0.78	0.006	NO_2		12 (annual)	0.000321
Source 2 d	Unit Heaters	4.50	333	0.100	0.78	0.006	*particulate <2.5*	27 (24h)	* 27 (24h)	0.000056
Source 2 e	Unit Heaters	4.50	333	0.100	0.78	0.006	*particulate <2.5*		8.8 (annual)	0.000056
Source 2 f	Unit Heaters	4.50	333	0.100	0.78	0.006	*benzene*	2.3 (24h)		1.5E-11
Source 2 g	Unit Heaters	4.50	333	0.100	0.78	0.006	*benzene*	0.45 (annual)		1.5E-11
Source 3 a	Hot Water Heater	4.50	333	0.100	2.02	0.016	NO_2	400 (24h)	* 84 (1h)	0.000803
Source 3 b	Hot Water Heater	4.50	333	0.100	2.02	0.016	NO_2	200 (24h)		0.000803
Source 3 c	Hot Water Heater	4.50	333	0.100	2.02	0.016	NO_2		12 (annual)	0.000803
Source 3 d	Hot Water Heater	4.50	333	0.100	2.02	0.016	*particulate <2.5*	27 (24h)	* 27 (24h)	0.000141
Source 3 e	Hot Water Heater	4.50	333	0.100	2.02	0.016	*particulate <2.5*		8.8 (annual)	0.000141
Source 3 f	Hot Water Heater	4.50	333	0.100	2.02	0.016	*benzene*	2.3 (24h)		3.7E-11
Source 3 g	Hot Water Heater	4.50	333	0.100	2.02	0.016	*benzene*	0.45 (annual)		3.7E-11
Source 4 a	Air Handling Units	2.00	333	0.150	1.20	0.021	NO_2	400 (1h)	* 84 (1h)	0.00107
Source 4 b	Air Handling Units	2.00	333	0.150	1.20	0.021	NO_2	200 (24h)		0.00107
Source 4 c	Air Handling Units	2.00	333	0.150	1.20	0.021	NO_2		12 (annual)	0.00107
Source 4 d	Air Handling Units	2.00	333	0.150	1.20	0.021	*particulate <2.5*	27 (24h)	* 27 (24h)	0.000188
Source 4 e	Air Handling Units	2.00	333	0.150	1.20	0.021	*particulate <2.5*		8.8 (annual)	0.000188
Source 4 f	Air Handling Units	2.00	333	0.150	1.20	0.021	*benzene*	2.3 (24h)		4.9E-11
Source 4 g	Air Handling Units	2.00	333	0.150	1.20	0.021	*benzene*	0.45 (annual)		4.9E-11
Source 5 a	Natural Gas Emergency Generac SG150*kW* Generator	3.00	323	0.203	18.71	0.606	NO_2	400 (1h)	* 84 (1h)	0.00838
Source 5 b	Natural Gas Emergency Generac SG150*kW* Generator	3.00	323	0.203	18.71	0.606	NO_2	200 (24h)		**0.000349**
Source 5 c	Natural Gas Emergency Generac SG150*kW* Generator	3.00	323	0.203	18.71	0.606	NO_2		12 (annual)	**0.000349**
Source 5 d	Natural Gas Emergency Generac SG150*kW* Generator	3.00	323	0.203	18.71	0.606	*particulate <2.5*	27 (24h)	* 27 (24h)	0.000134
Source 5 e	Natural Gas Emergency Generac SG150*kW* Generator	3.00	323	0.203	18.71	0.606	*particulate <2.5*		8.8 (annual)	0.000134
Source 5 f	Natural Gas Emergency Generac SG150*kW* Generator	3.00	323	0.203	18.71	0.606	*benzene*	2.3 (24h)		0.0000223
Source 5 g	Natural Gas Emergency Generac SG150*kW* Generator	3.00	323	0.203	18.71	0.606	*benzene*	0.45 (annual)		0.0000223

* The 3 year average of the annual 98th percentile of the daily 24-hour, or hourly, average concentrations.

4.0 GREENHOUSE GAS EMISSIONS

At the time of preparing the TRPAP and this study, Timmins-Porcupine Station was in the conceptual design stage, and as such, only a high-level estimate of greenhouse gas emissions is practical at this time. An estimate of the greenhouse gas emissions created to construct the proposed Timmins-Porcupine Station was completed. The estimate is based on scaling the floor area of the proposed station to the emissions from constructing the COP26 House (https://circularecology.com/news/low-embodied-carbon-house-designed-with-circular-economy-principles), a "business as usual" building and a building in Thornbury, Ontario, which was analysed using the building transparency (EC3) model (https://buildingtransparency.org/ec3/buildings/a2bac17d3aa44a7dbb2048a58b875b93?view=uniformat2&stage=A5). The "business as usual" building was estimated to produce 1,114 kg CO_2/m^2, while the COP26 house was estimated to produce 457 kg CO_2/m^2. Similarly, the building in Thornbury was estimated to produce 415.6 kg CO_2/m^2. The proposed Timmins-Porcupine Station is approximately 841m^2. As such, the emissions produced in the construction are likely to fall in the range of 349.5$MgCO_2$ to 936.9$MgCO_2$.

The grass and shrubs on the existing site may be sequestering more carbon dioxide than is emitted from mowing and maintaining the area. Conservatively, B. Jason West and Danelle Haake (https://www.litzsinger.org/research/west-haake.pdf) measured 11.7$MgCO_2$ per year sequestered by 7.2 acres by a restored tallgrass prairie. The result at this site, is sequestering carbon dioxide at a rate of 3.5$MgCO_2$ per year, if sequestering is at the rate of a restored Missouri tallgrass prairie.

The cultural meadow on the existing site has carbon stored in the soil, roots, and plants themselves. A very conservative assumption is that all this stored carbon will be lost. Employing the 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories (in particular default factors from table 6.2 and a baseline Soil Organic Carbon value (SOC ref) from table 2.3 and applying these values to equation 2.25) in concert with a 0.8 hectare cultural meadow as currently occupying the site, results in a one time loss of 68.04 tonnes of carbon.

In regard to greenhouse gas emissions created as part of operating the proposed Timmins-Porcupine Station, expected fuel consumption was used to estimate the CO_2 emissions from the reciprocating engines (conservatively, notch 2 for the locomotive engine and full capacity for the emergency generator) and CO_2 emission factors for natural gas (by volume of natural gas expected to be consumed). The locomotive engine was conservatively operated 200 minutes per day, the emergency generator conservatively operated 64 hours per year (1h per week testing and 1h per month in an actual emergency), and the comfort heating was conservatively operated to operate half the year at full capacity. With these assumptions the idling train produces 458 tonnes of CO_2, the comfort heat 125 tonnes of CO_2, and the emergency generator 12 tonnes of CO_2. This is roughly 5.9% of the threshold of being required to report CO_2 emissions in Ontario (https://www.ontario.ca/page/report-greenhouse-gas-ghg-emissions) and 0.00030% of CO_2 emissions from transport in Canada in 2022 (https://publications.gc.ca/collections/collection_2024/eccc/En81-4-2022-1-eng.pdf).

5.0 MODELLING RESULTS

Results in this assessment are presented in a worst-case analysis presented in **Table 5** with the observations related to the results presented in **Section 5.1**.

5.1 Worst-Case Analysis

5.1.1 Methodology

Worst-case analysis provides pollutant concentrations predicted under a worst-case condition. The AERMOD dispersion model (version 22112) uses five years of actual meteorological data, running simulations for each hour within that period. The model then identifies the worst-case concentration for each contaminant based on these runs. This approach ensures that the model captures a wide range of meteorological conditions, providing a comprehensive assessment of the air quality impacts. Further, AERMOD processes hourly meteorological data to calculate 24-hour average concentrations. It runs simulations for each hour and then averages the results over a 24-hour period to determine the daily average concentration. For annual averages, AERMOD uses hourly data over the five years to calculate the average concentration. This involves running the model for each hour of each year and then averaging the results to get the annual mean concentration. These methodologies ensure that AERMOD provides accurate and reliable long-term average concentrations for worst-case analysis. Refer to **Appendix A.5** for additional details on the AERMOD modeling utilized in this report.

Sections 3.1, 3.3, and 3.4 describe conservative emissions from the train station and the road emissions associated with the train service represented by the predicted increase in vehicular traffic from 2026 to 2046, respectively.

The background conditions for the 90th percentile data (**Section 2.2**) have been conservatively used to represent the "no build" scenario, as passenger trains are not currently operating on the rail lines at the proposed location. The "build" scenario, on the other hand, includes the 90th percentile concentrations, modeled emissions from the proposed train station (such as idling Tier 4 trains, the emergency natural gas-fired generator, and the AHUs), and road emissions associated with the train service. These factors are combined to predict the final cumulative concentration levels.

5.1.2 Results

Predicted concentrations are compared to the Ontario Ambient Air Quality Criteria and the Canadian Ambient Air Quality Standards. For criteria based on hourly limits, the hourly results are reported. Similarly, for criteria based on 24-hour limits, the 24-hour average results are provided, and for annual criteria, the annual average results are presented. The results are organized by contaminant and displayed in **Table 5**.

5.1.2.1 Nitrogen Dioxide

Nitrogen dioxide (NO_2) has a 1-hour, 24-hour and annual criterion. The background data are the average values from 2021, 2022, and 2023. The 90th percentile 1-hour background value is 25.1ug/m^3 measured at the Sudbury MECP station. The 90th percentile 24-hour background value is 22.7ug/m^3 also measured at the Sudbury MECP station. The annual background value is 11.5ug/m^3.

The 24-hour emission rate for the idling train and emergency generator were based on their expected operating time for a 24-hour period. The result of changing the train traffic from no passenger trains per day to a maximum of one train per day, per direction, increases NO_2 concentrations for the three averaging periods. The cumulative

NO_2 concentrations ranged from 11.5% to 14.3% of the strictest criteria / standard at the sensitive receptors for the 24-hour averaging time. It is important to note, background concentration alone is 11.4% of the strictest criteria / standard.

In assessing 1-hour averaging time, the cumulative concentrations (the background, plus the additional concentrations from the station, plus the additional concentrations from the predicted increase in vehicular traffic emissions from 2026 to 2046) ranged from 33.1% to 83.8% of the strictest criteria/standard at the selected sensitive receptors for the strictest 1-hour NO_2 averaging time standard/criteria, while the background concentration alone is 29.9% of the strictest NO_2 criteria/standard. Therefore, the maximum 1-hour NO_2 increases from 29.9% to 83.8% of the strictest criteria/standard for the 1-hour averaging time.

Note: The 1-hour CAAQS limit for NO_2 is based on the 98th percentile of the 3-year average of the hourly NO_2 concentrations. As such, the AERMOD result presented represents the 98th percentile of the 3-year average.

5.1.2.2 PM2.5

$PM_{2.5}$ has criteria for both 24-hour and annual limits. The background data used consists of average values from 2021, 2022, and 2023. The 90th percentile 24-hour background value is 12.0 µg/m^3, measured at the Sudbury MECP station, while the 90th percentile annual background value is 6.6 µg/m^3, also measured at the Sudbury MECP station.

The result of changing the train traffic from no passenger trains per day to a maximum of one train per day, per direction, is to increase $PM_{2.5}$ concentrations for both averaging periods. The cumulative $PM_{2.5}$ concentrations (the background, plus the additional concentrations from the station, plus the additional concentrations from the predicted increase in vehicular traffic emissions from 2026 to 2046) ranged from 44.5% to 46.5% at the selected sensitive receptors for the 24-hour averaging time, while the background concentration alone is 44.4% of the strictest criteria/standard. Therefore, the maximum 24-hour $PM_{2.5}$ increases from 44.4% to 46.5% of the strictest criteria/standard for the 24-hour averaging time.

The cumulative $PM_{2.5}$ concentrations ranged from 75.0% to 75.9% at the selected sensitive receptors for the annual averaging time, while the background concentration alone is 75.0% of the strictest criteria/standard. Therefore, the maximum annual $PM_{2.5}$ increases from 75.0% to 75.9% of the strictest criteria/standard for the annual averaging time.

Note: Due to Ontario's AAQC'sPM2.5 limit, the highest 3-year average concentrations (rather than the 98th percentile) are presented in the results.

5.1.2.3 Benzene

Benzene has a 24-hour and annual criterion. The background data are the average values from 2021, 2022, and 2023. The 90th percentile 24-hour background value is 0.47*ug/m^3* measured at the Newmarket NAPS station. The 90th percentile annual background value is 0.34*ug/m^3* also measured at the Newmarket MECP station.

The result of changing the train traffic from no passenger trains per day to a maximum of one train per day, per direction, is to increase Benzene concentrations for both averaging periods. The cumulative Benzene concentrations (the background, plus the additional concentrations from the station, plus the additional concentrations from the predicted increase in vehicular traffic emissions from 2026 to 2046) ranged from 20.5% to 21.1% of the strictest criteria/standard at the selected sensitive receptors for the 24-hour averaging time, while the background concentration alone is 20.4% of the strictest criteria/standard. Therefore, the maximum 24-hour Benzene increases from 20.4% to 21.1% of the strictest criteria/standard for the 24-hour averaging time.

The cumulative Benzene concentrations ranged from 75.6% to 76.1% of the strictest criteria/standard at the selected sensitive receptors for the annual averaging time, while the background concentration alone is 75.6%

of the strictest criteria/standard. Therefore, the maximum annual Benzene increases from 75.6% to 76.1% of the strictest criteria/standard for the annual averaging time at the worst-case sensitive receptor in “build” scenario.

Table 5: Summary of Modelling Results[1]

Averaging Period	Receptor	Contaminant	Ontario AAQC (ug/m^3)	Canadian Ambient Air Quality Standards CAAQS (ug/m^3)	90th percentile Background Concentration (ug/m^3)	Background Concentration % of strictest Criteria/Standard	Max Predicted Concentration from Proposed Station (ug/m^3)	Max Predicted Concentration from Average Daily Traffic Increase from 2026 to 2046 (ug/m^3)	Cumulative Concentration (ug/m^3)	Cumulative Concentration % of most strict Criteria/Standard
1-h	1. Frank P. Krznaric Whitney Public School	NO_2	400	84	25.1	29.9%	2.53	0.137	27.77	33.1%
1-h	2. 524 Queen Street	NO_2	400	84	25.1	29.9%	16.23	0.837	42.17	50.2%
1-h	3. Pete Landers Park - infield	NO_2	400	84	25.1	29.9%	23.09	0.493	48.68	58.0%
1-h	4. Pete Landers Park - outfield	NO_2	400	84	25.1	29.9%	19.46	0.449	45.01	53.6%
1-h	5. 6164 King Street	NO_2	400	84	25.1	29.9%	17.38	1.369	43.85	52.2%
1-h	6. 101 Gervais Street North	NO_2	400	84	25.1	29.9%	29.86	1.083	56.04	66.7%
1-h	7. 6420 King Street	NO_2	400	84	25.1	29.9%	16.34	0.438	41.88	49.9%
1-h	8. 6235 King Street	NO_2	400	84	25.1	29.9%	29.84	0.856	55.80	66.4%
1-h	9. 6258 King Street	NO_2	400	84	25.1	29.9%	44.48	0.835	70.42	**83.8%**
24-h	1. Frank P. Krznaric Whitney Public School	NO_2	200		22.7	11.4%	0.22	0.116	23.04	11.5%
24-h	2. 524 Queen Street	NO_2	200		22.7	11.4%	3.58	0.731	27.01	13.5%
24-h	3. Pete Landers Park - infield	NO_2	200		22.7	11.4%	2.18	0.424	25.30	12.7%
24-h	4. Pete Landers Park - outfield	NO_2	200		22.7	11.4%	2.93	0.388	26.02	13.0%
24-h	5. 6164 King Street	NO_2	200		22.7	11.4%	1.97	1.193	25.86	12.9%
24-h	6. 101 Gervais Street North	NO_2	200		22.7	11.4%	3.41	0.944	27.05	13.5%
24-h	7. 6420 King Street	NO_2	200		22.7	11.4%	2.73	0.378	25.81	12.9%
24-h	8. 6235 King Street	NO_2	200		22.7	11.4%	4.55	0.732	27.98	14.0%
24-h	9. 6258 King Street	NO_2	200		22.7	11.4%	5.11	0.720	28.53	**14.3%**
annual	1. Frank P. Krznaric Whitney Public School	NO_2		24	11.5	47.9%	0.034	0.026	11.56	48.2%
annual	2. 524 Queen Street	NO_2		24	11.5	47.9%	0.211	0.200	11.91	49.6%
annual	3. Pete Landers Park - infield	NO_2		24	11.5	47.9%	0.367	0.107	11.97	49.9%
annual	4. Pete Landers Park - outfield	NO_2		24	11.5	47.9%	0.507	0.097	12.10	50.4%
annual	5. 6164 King Street	NO_2		24	11.5	47.9%	0.215	0.337	12.05	50.2%
annual	6. 101 Gervais Street North	NO_2		24	11.5	47.9%	0.428	0.260	12.19	50.8%
annual	7. 6420 King Street	NO_2		24	11.5	47.9%	0.504	0.092	12.10	50.4%
annual	8. 6235 King Street	NO_2		24	11.5	47.9%	0.641	0.203	12.34	51.4%
annual	9. 6258 King Street	NO_2		24	11.5	47.9%	0.841	0.194	12.54	**52.2%**
24-h	1. Frank P. Krznaric Whitney Public School	particulate <2.5	27	27	12.0	44.4%	0.021	0.002	12.023	44.5%
24-h	2. 524 Queen Street	particulate <2.5	27	27	12.0	44.4%	0.323	0.013	12.336	45.7%
24-h	3. Pete Landers Park - infield	particulate <2.5	27	27	12.0	44.4%	0.265	0.008	12.273	45.5%
24-h	4. Pete Landers Park - outfield	particulate <2.5	27	27	12.0	44.4%	0.445	0.007	12.452	46.1%
24-h	5. 6164 King Street	particulate <2.5	27	27	12.0	44.4%	0.242	0.021	12.263	45.4%
24-h	6. 101 Gervais Street North	particulate <2.5	27	27	12.0	44.4%	0.496	0.017	12.513	46.3%
24-h	7. 6420 King Street	particulate <2.5	27	27	12.0	44.4%	0.346	0.006	12.352	45.7%
24-h	8. 6235 King Street	particulate <2.5	27	27	12.0	44.4%	0.458	0.012	12.470	46.2%
24-h	9. 6258 King Street	particulate <2.5	27	27	12.0	44.4%	0.554	0.012	12.566	**46.5%**
annual	1. Frank P. Krznaric Whitney Public School	particulate <2.5		8.8	6.6	75.0%	0.003	0.001	6.603	75.0%
annual	2. 524 Queen Street	particulate <2.5		8.8	6.6	75.0%	0.025	0.004	6.629	75.3%
annual	3. Pete Landers Park - infield	particulate <2.5		8.8	6.6	75.0%	0.045	0.002	6.647	75.5%
annual	4. Pete Landers Park - outfield	particulate <2.5		8.8	6.6	75.0%	0.066	0.002	6.668	75.8%
annual	5. 6164 King Street	particulate <2.5		8.8	6.6	75.0%	0.027	0.007	6.633	75.4%
annual	6. 101 Gervais Street North	particulate <2.5		8.8	6.6	75.0%	0.058	0.005	6.663	75.7%
annual	7. 6420 King Street	particulate <2.5		8.8	6.6	75.0%	0.057	0.002	6.658	75.7%
annual	8. 6235 King Street	particulate <2.5		8.8	6.6	75.0%	0.072	0.004	6.676	**75.9%**
annual	9. 6258 King Street	particulate <2.5		8.8	6.6	75.0%	0.079	0.004	6.683	**75.9%**
24-h	1. Frank P. Krznaric Whitney Public School	benzene	2.3		0.47	20.4%	0.001	0.0002	0.4707	20.5%
24-h	2. 524 Queen Street	benzene	2.3		0.47	20.4%	0.004	0.0014	0.4749	20.6%
24-h	3. Pete Landers Park - infield	benzene	2.3		0.47	20.4%	0.005	0.0008	0.4755	20.7%
24-h	4. Pete Landers Park - outfield	benzene	2.3		0.47	20.4%	0.006	0.0007	0.4766	20.7%
24-h	5. 6164 King Street	benzene	2.3		0.47	20.4%	0.007	0.0022	0.4796	20.9%
24-h	6. 101 Gervais Street North	benzene	2.3		0.47	20.4%	0.012	0.0018	0.4840	21.0%
24-h	7. 6420 King Street	benzene	2.3		0.47	20.4%	0.006	0.0007	0.4763	20.7%
24-h	8. 6235 King Street	benzene	2.3		0.47	20.4%	0.015	0.0014	0.4860	**21.1%**
24-h	9. 6258 King Street	benzene	2.3		0.47	20.4%	0.010	0.0014	0.4814	20.9%
annual	1. Frank P. Krznaric Whitney Public School	benzene	0.45		0.34	75.6%	0.0001	0.00005	0.3402	75.6%
annual	2. 524 Queen Street	benzene	0.45		0.34	75.6%	0.00056	0.00037	0.3409	75.8%
annual	3. Pete Landers Park - infield	benzene	0.45		0.34	75.6%	0.001	0.00020	0.3412	75.8%
annual	4. Pete Landers Park - outfield	benzene	0.45		0.34	75.6%	0.00133	0.00018	0.3415	75.9%
annual	5. 6164 King Street	benzene	0.45		0.34	75.6%	0.00079	0.00062	0.3414	75.9%
annual	6. 101 Gervais Street North	benzene	0.45		0.34	75.6%	0.00153	0.00048	0.3420	76.0%
annual	7. 6420 King Street	benzene	0.45		0.34	75.6%	0.00125	0.00017	0.3414	75.9%
annual	8. 6235 King Street	benzene	0.45		0.34	75.6%	0.00213	0.00037	0.3425	**76.1%**
annual	9. 6258 King Street	benzene	0.45		0.34	75.6%	0.00182	0.00036	0.3422	76.0%

[1] *Note: The 1-hour CAAQS limit for NO2 is based on the 98th percentile of the 3-year average of the hourly NO2 concentrations. As such, the AERMOD result presented represents the 98th percentile of the 3-year average.*

6.0 CONCLUSIONS

An Air Quality Impact Assessment was completed to characterize existing conditions and determine the impact of the Project on air quality. Key pollutants for air quality impact assessments include CO, NO_2, $PM_{2.5}$, Benzene, 1,3-butadiene, formaldehyde, acetaldehyde, acrolein, and benzo(a)pyrene. Among these, oxides of nitrogen, $PM_{2.5}$, and Benzene have the potential to be the controlling contaminants (**Appendix A.3**). Oxides of nitrogen have the highest emission rate-to-concentration limit ratio, while $PM_{2.5}$ and Benzene are characterized by relatively high background concentrations. The air quality impact assessment took into consideration the introduction of Tier 4 technology for the Northlander locomotive fleet.

Background conditions for the 90th percentile concentration data were conservatively used to represent the "no build" scenario, as passenger trains are not currently operating on the rail lines at the proposed location. The "build" scenario was assessed by combining the 90^{th} percentile concentrations, the modeled emissions from the proposed train station (including idling Tier 4 trains, the emergency natural gas-fired generator, and the AHUs), and the road emissions associated with the train service. These factors were summed to predict the final concentration levels.

The results of the dispersion modelling demonstrates that the addition of a train, and train station, at the proposed project site in Timmins does not significantly change the ambient air quality conditions in the vicinity of the proposed station. The nine receptors were chosen as representing the most sensitive, closest and hence most conservative points to assess for the analysis. Receptors farther from the station will experience reduced impact from the “build” scenario. When assessing the impact of NO_2, $PM_{2.5}$, and Benzene on the selected sensitive receptors, the difference between the "No Build" and "Build" scenarios is minimal, with both scenarios falling within the criteria and standards set by the Ontario Ambient Air Quality Criteria (AAQC). Similarly, the Canadian Ambient Air Quality Standard (CAAQS) set by Environment Canada is met under both the "No Build" and "Build" scenarios. Therefore, mitigation is not required and hence this report does not recommend any local air quality impact mitigation.

The GHG emission implications of the project were also assessed by conservatively quantifying the air contaminant and GHG emissions associated with the project for the “build” and “no build” scenarios. Comparison of its results with provincial emission inventories suggests that the project’s contribution to these inventories will be very small.

Potential air quality impacts associated with the construction stage of the proposed Timmins station are expected to be temporary and localized to the surrounding area. Periodic on-site inspections will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Visual inspection for dusty conditions in areas of emission sources shall occur daily to ensure mitigation measures are in place and functioning properly. A summary of potential effects and mitigation/monitoring measures are included in **Table 6**.

7.0 SUMMARY OF POTENTIAL EFFECTS, MITIGATION AND MONITORING

This section contains the following information:

- **Table 6** summarizes the potential air quality effects, as well as the associated mitigation and monitoring/commitments (as applicable) for the project.

Appendix C contains a Fugitive Dust Best Management Plan.

Table 6. Summary of Air Quality Mitigation Measures, Monitoring & Commitments

Environmental Component	Potential Effect	Mitigation Measures	Monitoring and/or Commitments
Air Quality - Construction Phase	Construction related air quality effects may pose risks to human health and wellbeing	• Prior to commencement of construction, develop and implement a Construction Air Quality Management Plan (AQMP). The AQMP will: ○ Define the Project's air quality impact zone and identify all sensitive receptors within this area. ○ Include explicit commitment to the implementation of all applicable best practices identified in the Environment Canada document, *Best Practices for the Reduction of Air Emissions from Construction and Demolition Activities (2005)*. • Develop a Communications Protocol and a Complaints Protocol to respond to issues that may develop during construction.	• Periodic on-site inspections will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required.
	Fugitive dust may be generated during construction activities that may generate complaints	• Paved/ Unpaved Roads ○ Haul routes shall be maintained during operations, to ensure that loose fine material on the haul route surface is minimized. ○ Ensure trucks hauling excavated materials are tarped. ○ Establish efficient traffic patterns to minimize dust generation. ○ A water truck and water supply shall be available to cover the internal haul routes. ○ The truck shall be equipped with a spray bar to deliver the water evenly over the haul route surfaces required to thoroughly wet the surface. ○ The actual watering rate and frequency shall vary, depending on surface moisture conditions and traffic conditions, and shall be triggered whenever the site construction manager observes trucks producing a trailing cloud of dust greater than about 7m. Note: observation by the construction manager is the primary means of dust monitoring. ○ Wet or vacuum-sweeper cleans paved surfaces. ○ Priority should be given to routes that are most susceptible to the above noted causes of high emissions. • Material Handling ○ Loading areas shall be maintained during operations, to ensure that loose fine material on the surface is minimized. ○ Ensure trucks hauling excavated materials are tarped when possible. ○ A water truck and water supply shall be available to cover the material handling areas with an adequate water supply. ○ The truck shall be equipped with a spray bar to deliver the water evenly over the ground surface as required to wet the surface. ○ The actual watering rate and frequency shall vary, depending on surface moisture conditions and traffic conditions, and shall be triggered whenever the site manager observes a plume of dust extending 7m beyond operating equipment.	• Visual inspection for dusty conditions in areas of emission sources shall occur daily to ensure mitigation measures are in place and functioning properly. • Response to complaints Received: ○ The Site Manager will: ○ Investigate the site and the circumstances leading to said emissions of dust driving the complaint, and ○ Determine if the source of the dust complaint was indeed the result of operations ○ If required, adjust or modify fugitive dust mitigation systems as required to prevent a reoccurrence ○ If necessary, apply additional control measures ○ Respond to the complainant(s) in a timely manner ○ Document the resulting information in an on-site log

Environmental Component	Potential Effect	Mitigation Measures	Monitoring and/or Commitments
		○ Priority should be given to work areas that are most susceptible to the above noted causes of high emissions. • Material (Excavation) ○ The excavation area shall be equipped with a water spray system capable of supplying water as required to suppress dust emissions. The actual water application rate shall vary, being adjusted as needed to reduce visible dust emission. ○ The spray bars will be triggered whenever the construction manager observes visible dust emissions above the height of the equipment being used or a trail of dust approximately 7m. ○ Masonry and other elements of construction will also be monitored. • Stockpiles ○ Disturbance of storage piles shall be minimized where feasible. For active storage piles, the disturbed area shall be minimized to the extent possible. ○ Dry and fine material should be located in areas that minimize their exposure to the prevailing winds. ○ Water may be sprayed onto stockpiles if the site supervisor deems it necessary in order to prevent visible emissions from extending 7m. ○ Wind forecasts shall be monitored regularly during operation to anticipate the need for these measures and allow for next day planning. • General Work Areas ○ Water or a suitable wetting agent may be required when material is especially dusty, or when dictated by wind conditions. ○ Good housekeeping practices should be maintained at all times. ○ Haul routes shall be maintained during operations, to ensure that loose fine material on the haul route surface is minimized. ○ A water truck and water supply shall be available to cover the work areas. ○ The truck shall be equipped with a spray bar to deliver the water evenly over the haul route surface as required. ○ The actual watering rate and frequency shall vary, depending on surface moisture conditions and traffic conditions, and shall be triggered whenever the construction manager observes trucks or wind producing a cloud of dust greater than approximately 7m.	
Air Quality – Operational	Exhaust emissions associated with diesel-powered trains may contribute to local	• When considering the impact of NO_2, $PM_{2.5}$, and Benzene on the selected sensitive receptors, the difference between the "No Build" and "Build" scenarios is small and falls within the criteria and standards outlined by the Ontario Ambient Air Quality Criteria (AAQC) while Environment Canada has the Canadian Ambient Air Quality Standard (CAAQS) in both the “no build” and “build” circumstances. • No mitigation is required to meet criteria.	• Train engines and their emission control equipment will be maintained to manufacturers’ specifications. • Unnecessary train / engine / propulsion system idling will be minimized through technical and operational measures. • Unnecessary non-revenue equipment runs will be minimized through design and planning, wherever possible and reasonable.

Environmental Component	Potential Effect	Mitigation Measures	Monitoring and/or Commitments
	and regional air quality impacts		• Annually, test train propulsion and auxiliary power units, which produces exhaust emissions and ensure that they remain in compliance with applicable Transport Canada heavy-duty diesel engine exhaust emission standards.
Air Quality – Future Bus Maintenance and Storage Facility	Construction and operational air quality effects associated with the Future Bus Maintenance and Storage Facility	• N/A (refer to Commitments column)	• If the bus maintenance and storage facility proceeds to implementation in the future (post TRPAP), undertake an Air Quality Assessment to evaluate the potential construction related and operational air quality effects of this facility and any ancillary components. • The AQ Assessment for the future bus maintenance and storage facility will be carried out as part of an EPR Addendum to be undertaken by Ontario Northland and will include public, stakeholder and Indigenous Communities & Organizations consultation.

8.0 References

1. Ontario Ministry of the Environment, Conservation and Parks (March 2018). Procedure for Preparing an Emission Summary and Dispersion Modelling Report Ver, 4.1 (Guideline A-10).
2. Ontario Ministry of the Environment, Conservation and Parks (March 2017). Air Dispersion Modelling Guideline for Ontario Ver. 3,0 (Guideline A-11).
3. Ontario Ministry of the Environment, Conservation and Parks (May 2018). Air Contaminants Benchmark List: standards, guidelines, and screening levels for assessing point of impingement concentrations of air contaminants.
4. Ontario Ministry of the Environment, Conservation and Parks (November 2020). Ontario's Ambient Air Quality Criteria, https://www.ontario.ca/page/ontarios-ambient-air-quality-criteria.
5. Ontario Ministry of the Environment, Conservation and Parks (December 2021). Air Quality in Ontario 2020 Report, https://www.ontario.ca/document/air-quality-ontario-2020-report#.
6. City of Toronto. Avoiding the TRAP: Traffic-Related Air Pollution in Toronto and Options for Reducing Exposure. Technical Report. October 2017.

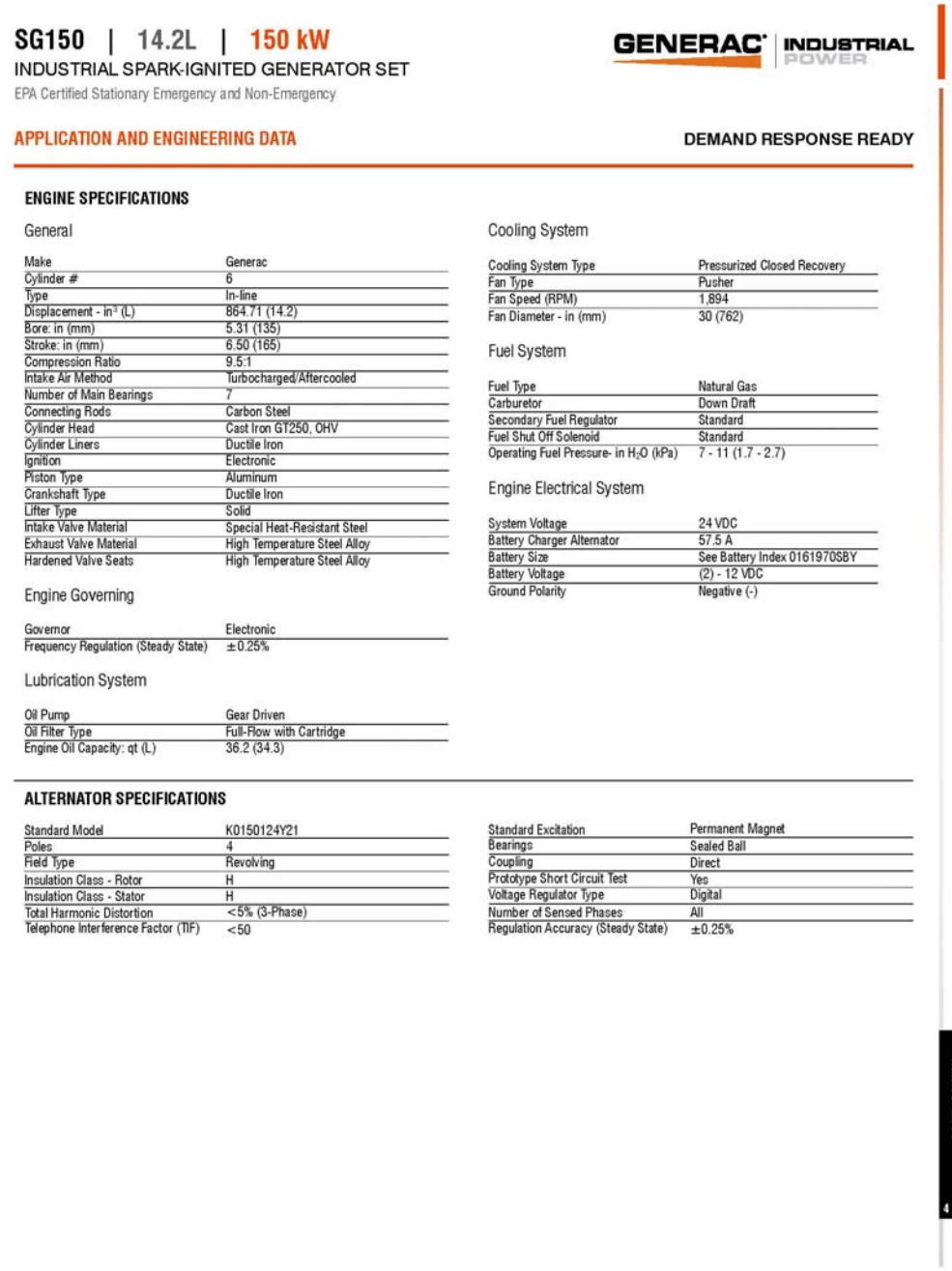
APPENDIX A

AERMOD Information

GANNETT FLEMING

Appendix A – AERMOD Appendix

A.1 Spec Sheets



SG150 | 14.2L | 150 kW

INDUSTRIAL SPARK-IGNITED GENERATOR SET

EPA Certified Stationary Emergency and Non-Emergency

GENERAC | INDUSTRIAL POWER

APPLICATION AND ENGINEERING DATA

DEMAND RESPONSE READY

ENGINE SPECIFICATIONS

General

Make	Generac
Cylinder #	6
Type	In-line
Displacement - in³ (L)	864.71 (14.2)
Bore: in (mm)	5.31 (135)
Stroke: in (mm)	6.50 (165)
Compression Ratio	9.5:1
Intake Air Method	Turbocharged/Aftercooled
Number of Main Bearings	7
Connecting Rods	Carbon Steel
Cylinder Head	Cast Iron GT250, OHV
Cylinder Liners	Ductile Iron
Ignition	Electronic
Piston Type	Aluminum
Crankshaft Type	Ductile Iron
Lifter Type	Solid
Intake Valve Material	Special Heat-Resistant Steel
Exhaust Valve Material	High Temperature Steel Alloy
Hardened Valve Seats	High Temperature Steel Alloy

Engine Governing

Governor	Electronic
Frequency Regulation (Steady State)	±0.25%

Lubrication System

Oil Pump	Gear Driven
Oil Filter Type	Full-Flow with Cartridge
Engine Oil Capacity: qt (L)	36.2 (34.3)

Cooling System

Cooling System Type	Pressurized Closed Recovery
Fan Type	Pusher
Fan Speed (RPM)	1,894
Fan Diameter - in (mm)	30 (762)

Fuel System

Fuel Type	Natural Gas
Carburetor	Down Draft
Secondary Fuel Regulator	Standard
Fuel Shut Off Solenoid	Standard
Operating Fuel Pressure- in H_2O (kPa)	7 - 11 (1.7 - 2.7)

Engine Electrical System

System Voltage	24 VDC
Battery Charger Alternator	57.5 A
Battery Size	See Battery Index 0161970SBY
Battery Voltage	(2) - 12 VDC
Ground Polarity	Negative (-)

ALTERNATOR SPECIFICATIONS

Standard Model	K0150124Y21
Poles	4
Field Type	Revolving
Insulation Class - Rotor	H
Insulation Class - Stator	H
Total Harmonic Distortion	<5% (3-Phase)
Telephone Interference Factor (TIF)	<50
Standard Excitation	Permanent Magnet
Bearings	Sealed Ball
Coupling	Direct
Prototype Short Circuit Test	Yes
Voltage Regulator Type	Digital
Number of Sensed Phases	All
Regulation Accuracy (Steady State)	±0.25%

SPEC SHEET

4 of 6

SG150 | 14.2L | 150 kW

INDUSTRIAL SPARK-IGNITED GENERATOR SET

EPA Certified Stationary Emergency and Non-Emergency

GENERAC | INDUSTRIAL POWER

OPERATING DATA

DEMAND RESPONSE READY

POWER RATINGS - NATURAL GAS

	Standby/Demand Response		Prime	
Single-Phase 120/240 VAC @1.0pf	150 kW/150 kVA	Amps: 625	135 kW/135 kVA	Amps: 563
Three-Phase 120/208 VAC @0.8pf	150 kW/188 kVA	Amps: 521	135 kW/169 kVA	Amps: 469
Three-Phase 120/240 VAC @0.8pf	150 kW/188 kVA	Amps: 452	135 kW/169 kVA	Amps: 406
Three-Phase 277/480 VAC @0.8pf	150 kW/188 kVA	Amps: 226	135 kW/169 kVA	Amps: 203
Three-Phase 346/600 VAC @0.8pf	150 kW/188 kVA	Amps: 181	135 kW/169 kVA	Amps: 163

MOTOR STARTING CAPABILITIES (skVA)

skVA vs. Voltage Dip

277/480 VAC	30%	208/240 VAC	30%
K0150124Y21	326	K0150124Y21	244
K0200124Y21	478	K0200124Y21	361
K0250124Y21	630	K0250124Y21	506
K0300124Y21	790	K0300124Y21	609

FUEL CONSUMPTION RATES*

Natural Gas – scfh (m^3/hr)

Percent Load	Standby/Demand Response	Prime
25%	840 (23.8)	780 (22.1)
50%	1,380 (39.1)	1,260 (35.7)
75%	1,800 (51.0)	1,680 (47.6)
100%	2,220 (62.9)	2,040 (57.8)

*Fuel supply installation must accommodate fuel consumption rates at 100% load.

COOLING

		Standby/Demand Response	Prime
Air Flow (Fan Air Flow Across Radiator)	scfm (m^3/min)	9,162 (259.4)	9,162 (259.4)
Coolant Flow	gpm (Lpm)	90 (340.7)	90 (340.7)
Coolant System Capacity	gal (L)	10.5 (39.7)	10.5 (39.7)
Maximum Operating Ambient Temperature	°F (°C)	122 (50)	122 (50)
Maximum Operating Ambient Temperature (Before Derate)		See Bulletin No. 0199270SSD	See Bulletin No. 0199270SSD
Maximum Additional Radiator Backpressure	in H_2O (kPa)	0.5 (0.12)	0.5 (0.12)

COMBUSTION AIR REQUIREMENTS

	Standby/Demand Response	Prime
Flow at rated power scfm - (m^3/min)	354 (10.0)	320 (9.1)

ENGINE

		Standby/Demand Response	Prime
Rated Engine Speed	RPM	1,800	1,800
Horsepower at Rated kW**	hp	232	209
Piston Speed	ft/min (m/min)	1,950 (594)	1,950 (594)
BMEP	psi (kPa)	118 (814)	106 (732)

** Refer to "Emissions Data Sheet" for maximum bHP for EPA and SCAQMD permitting purposes.

EXHAUST

		Standby/Demand Response	Prime
Exhaust Flow (Rated Output)	scfm (m^3/min)	1,166 (33.0)	1,043 (29.5)
Max. Backpressure (Post Silencer)	inHG (kPa)	0.75 (2.54)	0.75 (2.54)
Exhaust Temp (Rated Output - Post Silencer)	°F (°C)	1,318 (714.4)	1,300 (704.4)

Deration – Operational characteristics consider maximum ambient conditions. Derate factors may apply under atypical site conditions.
Please contact a Generac Power Systems Industrial Dealer for additional details. All performance ratings in accordance with BS5514 and DIN6271 standards.
Standby - See Bulletin 0187500SSB • Demand Response - See Bulletin 10000018250 • Prime - See Bulletin 0187510SSB

GENERAC | INDUSTRIAL POWER

STATEMENT OF EXHAUST EMISSIONS
2016 SPARK-IGNITED, NON-SCAQMD

	Model	Engine	EPA Engine Family	Fuel	CAT Req'd*	Comb Cat or Separate Cat	EPA Cert #	Grams/bhp-hr.			Rated RPM	BHP	Fuel Flow (lb/hr)
								THC	NOx	CO			
Small Spark Ignited Engines - SSIE (SORE)	QTA25	2.4	GGNXB02.42NN	NG	No	NR	GGNXB02.42NN-005	2.14	2.37	93.95	1800	38.39	16.52
	QTA25	2.4	GGNXB02.42NL	LPG	No	NR	GGNXB02.42NL-006	1.43	4.38	86.18	1800	43.29	17.59
	SG035	5.4	GGNXB05.42NN	NG	No	NR	GGNXB05.42NN-049	1.60	2.52	95.32	1800	82.10	36.91
	SG035	5.4	GGNXB05.42NL	LPG	No	NR	GGNXB05.42NL-048	1.24	3.45	112.01	1800	82.30	34.60
	SG040	5.4	GGNXB05.42NN	NG	No	NR	GGNXB05.42NN-049	1.60	2.52	95.32	1800	82.10	36.91
	SG040	5.4	GGNXB05.42NL	LPG	No	NR	GGNXB05.42NL-048	1.24	3.45	112.01	1800	82.30	34.60
	SG045	5.4	GGNXB05.42NN	NG	No	NR	GGNXB05.42NN-049	1.60	2.52	95.32	1800	82.10	36.91
	SG045	5.4	GGNXB05.42NL	LPG	No	NR	GGNXB05.42NL-048	1.24	3.45	112.01	1800	82.30	34.60
	SG050	5.4	GGNXB05.42NN	NG	No	NR	GGNXB05.42NN-049	1.60	2.52	95.32	1800	82.10	36.91
	SG050	5.4	GGNXB05.42NL	LPG	No	NR	GGNXB05.42NL-048	1.24	3.45	112.01	1800	82.30	34.60
	SG050	6.8	GGNXB06.82NN	NG	No	NR	GGNXB06.82NN-009	1.46	6.57	30.88	1800	84.90	37.17
	SG050	6.8	GGNXB06.82NL	LPG	No	NR	GGNXB06.82NL-010	1.86	2.67	172.30	1800	84.66	46.55
	SG060	6.8	GGNXB06.82NN	NG	No	NR	GGNXB06.82NN-009	1.47	2.94	75.88	1800	96.67	38.76
	SG060	6.8	GGNXB06.82NL	LPG	No	NR	GGNXB06.82NL-010	1.26	4.23	99.05	1800	96.60	41.20
	SG070	6.8	GGNXB06.82NN	NG	No	NR	GGNXB06.82NN-009	1.46	3.55	68.40	1800	109.72	42.37
	SG070	6.8	GGNXB06.82NL	LPG	No	NR	GGNXB06.82NL-010	1.26	3.28	111.49	1800	118.41	51.86
	SG080	8.0	GGNXB08.02NN	NG	No	NR	GGNXB08.02NN-011	1.16	2.86	49.60	1800	127.61	44.02
	SG080 (DF)	8.0	GGNXB08.02NN	NG/LPV	No	NR	GGNXB08.02NN-011	0.85	4.24	27.29	1800	128.06	42.50
	SG080 (DF)	8.0	GGNXB08.02NN	NG/LPL	No	NR	GGNXB08.02NN-011	1.23	4.09	37.06	1800	127.90	42.60
	SG080	8.0	GGNXB08.02NL	LPV	No	NR	GGNXB08.02NL-012	0.95	2.24	86.43	1800	127.46	50.13
	SG080	8.0	GGNXB08.02NL	LPL	No	NR	GGNXB08.02NL-012	1.00	2.77	71.36	1800	128.09	46.61
Large Spark Ignited Engines (LSIE)	SG100	9.0	GGNXB08.92C1	NG	Yes	Cat Muff	GGNXB08.92C1-047	0.17	0.003	0.06	1800	148.90	46.86
	SG100 (DF)	9.0	GGNXB08.92C1	NG/LPV	Yes	Cat Muff	GGNXB08.92C1-047	0.30	0.400	0.79	1800	133.16	45.36
	SG100 (DF)	9.0	GGNXB08.92C1	NG/LPL	Yes	Cat Muff	GGNXB08.92C1-047	0.34	0.006	1.10	1800	135.75	45.47
	SG100	9.0	GGNXB08.92C2	LPG	Yes	Cat Muff	GGNXB08.92C2-029	0.03	0.08	0.13	1800	157.67	53.08
	SG100	9.0	GGNXB08.92C2	LPL	Yes	Cat Muff	GGNXB08.92C2-029	0.07	0.04	0.30	1800	156.15	54.47
	SG130,150	9.0	GGNXB08.92C3	NG	Yes	Cat Muff	GGNXB08.92C3-050	0.10	0.03	0.02	1800	230.30	71.97
	SG130,150 (DF)	9.0	GGNXB08.92C3	NG/LPV	Yes	Cat Muff	GGNXB08.92C3-050	0.10	0.03	0.02	1800	230.30	71.97
	SG130,150 (DF)	9.0	GGNXB08.92C3	NG/LPL	Yes	Cat Muff	GGNXB08.92C3-050	0.10	0.03	0.02	1800	230.30	71.97
	MG130,150	9.0	GGNXB08.92C3	NG	Yes	Cat Muff	GGNXB08.92C3-050	0.10	0.03	0.02	1800	230.30	71.97
	MG130,150 (DF)	9.0	GGNXB08.92C3	NG/LPV	Yes	Cat Muff	GGNXB08.92C3-050	0.10	0.03	0.02	1800	230.30	71.97
	MG130,150 (DF)	9.0	GGNXB08.92C3	NG/LPL	Yes	Cat Muff	GGNXB08.92C3-050	0.10	0.03	0.02	1800	230.30	71.97
	SG130, 150	9.0	GGNXB08.92C4	LPG	Yes	Cat Muff	GGNXB08.92C4-030	0.02	0.57	1.30	1800	230.30	75.43
	SG130, 150	9.0	GGNXB08.92C4	LPL	Yes	Cat Muff	GGNXB08.92C4-030	0.02	0.57	1.30	1800	230.30	75.43
	MG130,150	9.0	GGNXB08.92C4	LPG	Yes	Cat Muff	GGNXB08.92C4-030	0.02	0.57	1.30	1800	230.30	75.43
	MG130,150	9.0	GGNXB08.92C4	LPL	Yes	Cat Muff	GGNXB08.92C4-030	0.02	0.57	1.30	1800	230.30	75.43
	SG150	12.9	GGNXB12.92C2	NG	Yes	Cat Muff	GGNXB12.92C2-031	0.53	0.13	0.53	1800	307.87	107.99
	MG150	12.9	GGNXB12.92C2	NG	Yes	Cat Muff	GGNXB12.92C2-031	0.53	0.13	0.53	1800	307.87	107.99
	SG175	12.9	GGNXB12.92C2	NG	Yes	Cat Muff	GGNXB12.92C2-031	0.53	0.13	0.53	1800	307.87	107.99
	SG200	12.9	GGNXB12.92C2	NG	Yes	Cat Muff	GGNXB12.92C2-031	0.53	0.13	0.53	1800	307.87	107.99
	MG200	12.9	GGNXB12.92C2	NG	Yes	Cat Muff	GGNXB12.92C2-031	0.53	0.13	0.53	1800	307.87	107.99
	SG230	12.9	GGNXB12.92C2	NG	Yes	Cat Muff	GGNXB12.92C2-031	0.38	0.03	0.53	1800	379.10	125.30
	SG250	12.9	GGNXB12.92C2	NG	Yes	Cat Muff	GGNXB12.92C2-031	0.38	0.03	0.53	1800	379.10	125.30
	MG250	12.9	GGNXB12.92C2	NG	Yes	Cat Muff	GGNXB12.92C2-031	0.38	0.03	0.53	1800	379.10	125.30
	SG275	12.9	GGNXB12.92C3	NG	Yes	Cat Muff	GGNXB12.92C3-032	0.06	0.06	0.81	2150	477.00	164.20
	SG300	12.9	GGNXB12.92C3	NG	Yes	Cat Muff	GGNXB12.92C3-032	0.06	0.06	0.81	2150	477.00	164.20
	MG300	12.9	GGNXB12.92C3	NG	Yes	Cat Muff	GGNXB12.92C3-032	0.06	0.06	0.81	2150	477.00	164.20
	SG150, 175, 200	14.2	GGNXB14.22C1	NG	Yes	Cat Muff	GGNXB14.22C1-033	0.06	0.05	0.39	1800	304.00	98.54
	MG150	14.2	GGNXB14.22C1	NG	Yes	Cat Muff	GGNXB14.22C1-033	0.06	0.05	0.39	1800	304.00	98.54
	MG200	14.2	GGNXB14.22C1	NG	Yes	Cat Muff	GGNXB14.22C1-033	0.06	0.05	0.39	1800	304.00	98.54
	SG230, 250	14.2	GGNXB14.22C1	NG	Yes	Cat Muff	GGNXB14.22C1-033	0.04	0.02	0.23	1800	374.00	120.84
	MG250	14.2	GGNXB14.22C1	NG	Yes	Cat Muff	GGNXB14.22C1-033	0.04	0.02	0.23	1800	374.00	120.84
	SG275, 300	14.2	GGNXB14.22C1	NG	Yes	Cat Muff	GGNXB14.22C1-033	0.03	0.03	0.17	1800	460.00	142.87
	MG300	14.2	GGNXB14.22C1	NG	Yes	Cat Muff	GGNXB14.22C1-033	0.03	0.03	0.17	1800	460.00	142.87
	SG350	21.9	GGNXB21.92C1	NG	Yes	Cat Muff	GGNXB21.92C1-034	0.18	0.14	0.82	1800	636.00	201.17
	MG350	21.9	GGNXB21.92C1	NG	Yes	Cat Muff	GGNXB21.92C1-034	0.18	0.14	0.82	1800	636.00	201.17
	SG400	21.9	GGNXB21.92C1	NG	Yes	Cat Muff	GGNXB21.92C1-034	0.18	0.14	0.82	1800	636.00	201.17
	MG400	21.9	GGNXB21.92C1	NG	Yes	Cat Muff	GGNXB21.92C1-034	0.18	0.14	0.82	1800	636.00	201.17
	SG500	25.8	GGNXB25.82C1	NG	Yes	Cat Muff	GGNXB25.82C1-057	0.07	0.07	0.05	1800	777.00	244.49
	MG500	25.8	GGNXB25.82C1	NG	Yes	Cat Muff	GGNXB25.82C1-057	0.07	0.07	0.05	1800	777.00	244.49

* Three-Way Catalyst (TWC)
NR: Not Required
DF: Dual Fuel
Refer to page 2 for definitions and advisory notes.

Job Information	*Technical Data Sheet*
Job Name	22307581 Ontario Northland Timmins
Date	5/10/2024
Submitted By	Charlotte Paton
Software Version	12.51
Unit Tag	AHU-01 Option 2 WW May 10 24

Unit Overview

Model Number	Voltage V/Hz/Phase	Design Cooling Capacity Btu/hr	AHRI360 Standard Efficiency		ASHRAE 90.1-2022 Compliant
			EER	IEER	
DPSH12B	575/60/3	160952	11.9	21.0	ASHRAE 90.1-2022 compliant

Unit

Model Number:	DPSH12B
Model Type:	Heat Pump
Heat Type:	Gas
Energy Recovery:	None
Application:	Variable Air Volume, Single Zone (Mixed Air or 100% OA)
Controls:	Microtech
Outside Air:	0-100% Economizer with Comparative Enthalpy Control
Altitude:	0 ft
Approval	cETLus

Physical

Dimensions and Weight			
Length	Height*	Width	Weight*
101.6 in	85.9 in	73.4 in	2382 lb

Construction			
Exterior	Insulation and Liners	Air Opening Location	
		Return	Supply
Painted Galvanized Steel	1" Injected Foam, R-7, Galvanized Steel Liner	Horizontal	Bottom

Electrical

Unit FLA	MCA	MROPD	SCCR
30.3 A	35.5 A	50 A	10 kAIC

Note:	Use only copper supply wires with ampacity based on 75° C conductor rating. Connections to terminals must be made with copper lugs and copper wire.

Return/Outside/Exhaust Air

Outside Air Option		
Type	Damper Pressure Drop	Exhaust Air Type
90.1 and California Title 24 Compliant Economizer	0.35 inH_2O	Barometric Relief

Filter Section

Physical

Type	Quantity / Size	Face Area	Face Velocity	Air Pressure Drop
COMBO RACK-2" MERV8 & 4" MERV14 from factory	6 / 18 in x 24 in x 2 in & 6 / 18 in x 24 in x 4 in	18.0 ft²	366.7 ft/min	0.52

DX Cooling Coil

Physical

Coil Type	Refrigerant Type	Fins per Inch	Rows	Face Area	Face Velocity	Air Pressure drop	Drain Pan Material
Cu Tube/ Al Fin	R32	15	4	15.4 ft²	427.7 ft/min	1.08 inH_2O	Stainless Steel

Cooling Performance

Capacity			Indoor Air Temperature					Ambient air Temperature
			Entering		Leaving			
Total Btu/hr	Sensible Btu/hr	Moisture Removal lb/h	Dry Bulb °F	Wet Bulb °F	Dry Bulb °F	Wet Bulb °F	Dewpoint °F	°F
160952	160952	0.0	77.7	62.8	54.4	54.2	54.0	85.0

Condensate Connection Size: 3/4 in. Male NPT

Heating Performance

Total Capacity Btu/hr	Refrigerant Type	Indoor Air Temperature Dry Bulb		Ambient Air Temperature
		Entering °F	Leaving °F	°F
86129	R32	64.0	76.1	5.0

Fan Section

Fan

Type	Fan Wheel Diameter	Fan Series	Fan Isolation
SWSI AF	14 in	Series II	None

Performance

Airflow	Total Static Pressure	Fan Speed	Brake Horsepower	Altitude
6600 CFM	3.9 inH_2O	1719 rpm	5.73 HP	0 ft

Motor

Type	Horsepower	Efficiency	FLA	Drive Type
ECM Motor	6.1	Premium	6.2 A	Direct Drive

Gas Heat Section

Physical

Airflow	Max Allowable Burner Temp Rise	Size	Connection (Qty) Size	Heat Exchanger Material
6600 CFM	60.0 °F	200 MBH	(1) 0.75 in. Female NPT	Stainless Steel

Performance

Capacity Btu/hr	Air Temperature Dry Bulb		Air Pressure Drop inH_2O	Gas Pressure		Modulation
	Entering °F	Leaving °F		Minimum inH_2O	Maximum inH_2O	
160000	58.4	80.7	0.09	5	14	Modulating 10:1 Turndown

REZNOR®

Revision: UBXC-TSL (04-24) REV-A

Supersedes: UBXC-TSL (02-24) REV-0

TECHNICAL SPECIFICATIONS FOR MODEL UBXC

COMMERCIAL/INDUSTRIAL POWER-VENTED HIGH-STATIC BLOWER FAN CONVERTABLE GAS-FIRED UNIT HEATER

TABLE OF CONTENTS

In keeping with our policy of continuous product improvement, we reserve the right to alter, at any time, the design, construction, dimensions, weights, etc., of equipment information shown here.

TECHNICAL SPECIFICATIONS—CONTINUED

Certification

These unit heaters are listed by Intertek for use in industrial and commercial installations in the United States and Canada.

Installation Codes

- These units must be installed in accordance with local building codes. In the absence of local codes, in the United States, the unit must be installed in accordance with the *National Fuel Gas Code* (ANSI Z223.1, latest edition). A Canadian installation must be in accordance with the *Natural Gas and Propane Installation Code* (CSA B149, latest edition). This code is available from CSA Information Services, 1-800-463-6727. Local authorities having jurisdiction should be consulted before installation is made to verify local codes and installation procedure requirements.
- Installations in aircraft hangars should be in accordance with the *Standard for Aircraft Hangars* (ANSI/NFPA No. 409, latest edition). Installations in public garages should be in accordance with the *Standard for Parking Structures* (ANSI/NFPA No. 88A, latest edition). Installations in repair garages should be in accordance with the *Standard for Repair Garages* (ANSI/NFPA No. 88B, latest edition). In Canada, installations in aircraft hangars should be in accordance with the requirements of the enforcing authorities, and in public garages, in accordance with the CSA B149 code.
- If the heater is being installed in the Commonwealth of Massachusetts, installation must be performed by a licensed plumber or licensed gas fitter.

Technical Data

Parameter	Unit of Measure	Unit Size (MBTUh)					
		30	45	60	75	100	125
Thermal efficiency	%	82		82		83	
Input heating capacity	BTUh	30,000	45,000	60,000	75,000	105,000	120,000
	kW	8.8	13.2	17.6	22.0	30.8	35.2
Output heating capacity, low fire*	BTUh	17,220	25,830	34,440	43,050	61,005	69,720
	kW	5.0	7.6	10.1	12.6	17.9	20.4
Output heating capacity, high fire*	BTUh	24,600	36,900	49,200	61,500	87,150	99,600
	kW	7.2	10.8	14.4	18.0	25.6	29.2
Gas connection**	inch	1/2					
Vent connection diameter***		4					
Control, 24V	amp	1.0					
Full load amps, 115V		3.7		7.1		13.0	
Maximum overcurrent protection, 115V†		15		15		30	
Normal power consumption	watt	215		447		537	
Discharge air temperature rise	°F	45–75					
	°C	7–24					
Minimum air volume	CFM	304	456	607	759	1076	1230
	meter^3/minute	8.6	12.9	17.2	21.5	30.5	34.8
Maximum air volume	CFM	506	759	1012	1265	1793	2049
	meter^3/minute	14.3	21.5	28.7	35.8	50.8	58.0
Discharge air opening area	foot^2	0.96		1.25		2.01	
	meter^2	0.09		0.12		0.19	
Minimum output velocity	FPM	316	475	486	607	535	612
	meter/minute	96	143	143	179	160	183
Maximum output velocity	FPM	527	791	810	1012	892	1020
	meter/minute	159	239	239	299	267	305
Standard blower motor horsepower	HP	1/6		1/3		1/3	
Blower fan size	inch	9 x 6		9 x 6		10 x 10	
Sound level @ 15 feet	dBa	40		40	49	54	55

*ETL ratings for elevations up to 2,000 feet.

**Size shown is for natural gas or propane gas connection to a single-stage gas valve—not supply line size.

***Smaller and/or larger vent and combustion air pipe diameters may be permissible.

†MOCP = 2.25 x (largest motor FLA) + smallest motor FLA. Answer is rounded to the next lower standard circuit breaker size.

Parameter	Unit of Measure	Unit Size (MBTUh)							
		150	175	200	225	250	300	350	400
Thermal efficiency	%	83				83			82
Input heating capacity	BTUh	150,000	175,000	200,000	225,000	250,000	300,000	350,000	400,000
	kW	43.9	51.2	58.6	65.9	73.2	87.8	102.5	117.1
Output heating capacity, low fire*	BTUh	87,150	101,675	116,200	130,725	145,250	174,300	203,350	229,600
	kW	25.5	29.8	34.0	38.3	42.6	51.0	59.6	67.2
Output heating capacity, high fire*	BTUh	124,500	145,250	166,000	186,750	207,500	249,000	290,500	328,000
	kW	36.4	42.5	48.6	54.7	60.8	72.9	85.1	96.0
Gas connection**	inch	1/2			3/4	3/4			
Vent connection diameter***		5				5	6		
Control, 24V	amp	1.0							
Full load amps, 115V		5.9	9.6	10.5	12.7	12.7	17.7	27.3	
Maximum overcurrent protection, 115V†		15	20	25	30	30	40	60	
Normal power consumption	watt	230	415	485	675	675	1260	1635	
Discharge air temperature rise	°F	45–75				45–75			50–80
	°C	7–24				7–24			10–27
Minimum air volume	CFM	1537	1793	2049	2306	2562	3074	3586	4100
	meter^3/minute	43.5	50.8	58.0	65.3	72.5	87.0	101.5	116.1
Maximum air volume	CFM	2562	2989	3416	3843	4270	5123	5977	6185
	meter^3/minute	72.5	84.6	96.7	108.8	120.9	145.1	169.2	175.1
Discharge air opening area	foot^2	2.56			3.51	3.51	4.79	4.79	
	meter^2	0.24			0.33	0.33	0.45	0.45	
Minimum output velocity	FPM	600	700	800	657	730	642	749	856
	meter/minute	183	213	244	200	223	196	228	261
Maximum output velocity	FPM	1001	1168	1334	1095	1217	1070	1248	1291
	meter/minute	305	356	407	334	371	326	380	393
Standard blower motor horsepower	HP	1/4	1/2	1/2	3/4	3/4	1-1/2	2	
Blower fan size	inch	12 x 12			15 x 11	15 x 11		15 x 15	
Sound level @ 15 feet	dBa	51	52	53	56	56	59	61	62
*ETL ratings for elevations up to 2,000 feet.									
**Size shown is for natural gas or propane gas connection to a single-stage gas valve—not supply line size.									
***Smaller and/or larger vent and combustion air pipe diameters may be permissible.									
†MOCP = 2.25 x (largest motor FLA) + smallest motor FLA. Answer is rounded to the next lower standard circuit breaker size.									

Clearances

Units must be located so that clearances are provided for with regards to combustion air space, inspection, and service and for proper spacing from combustible construction. Clearance to combustibles is defined as the minimum distance from the heater to a surface or object for which it is necessary to ensure that a surface temperature of 90°F (50°C) above the surrounding ambient temperature is not exceeded.

Heater Surface	Unit Size (MBTUh)	
	30–125	150–400
	Minimum Clearance (Inches (mm))	
Top	1 (25)	4 (102)
Flue connector	6 (152)	6 (152)
Access panel	18 (457)	18 (457)
Non-access side	1 (25)	2 (51)
Bottom*	1 (25)	1 (25)
Rear**	18 (457)	18 (457)
Front	Refer to values for variable X (distance from heater to start of floor coverage) in **Heater Throw Distances with Standard Horizontal Louvers** section	
*Suspend the heater so that the bottom is a minimum of 5 feet (1.5 meters) above the floor.		
**Measure rear clearance from the fan motor.		

Dimension (See Graphic Above)	Unit Size (MBTUh)								
	30, 45	60	75	100	125	150, 175	200	225, 250	300, 350, 400
	Inches (mm)								
A	27 (686)					38-3/16 (970)			41 (1041)
B	13-3/4 (349)	16-3/4 (425)		24-3/4 (629)		20-1/8 (511)		26-1/8 (664)	34-1/8 (867)
C	13-13/16 (351)					23 (584)			
D	10 (254)	13 (330)		21 (533)		16 (406)		22 (559)	30 (762)
E*	17-3/16 (437)	18-11/16 (475)		24-1/16 (611)		30-31/32 (786)		37-1/32 (941)	41-7/32 (1047)
F	40-3/32 (1018)			48-1/8 (1222)	47-5/8 (1210)	64-3/4 (1645)		68-1/8 (1730)	
G	25-17/32 (649)					40 (1016)			
H**	17-3/8 (441)					25-11/16 (653)			27-11/16 (703)
J	1-9/16 (40)					1-13/32 (36)			
K**	22-1/2 (572)					24-1/2 (622)			23-1/2 (597)
L	6-15/32 (164)		5-15/32 (139)	8-15/32 (215)	7-15/32 (190)	3-29/32 (99)		5-29/32 (150)	1-13/32 (36)
M	10 (254)	12-11/16 (322)		19-5/16 (491)		13-1/2 (343)	14-9/16 (370)	18-1/16 (459)	22-9/16 (573)
N	6 (152)	8-11/16 (221)		15-5/16 (389)		8-1/2 (216)	9-9/16 (243)	13-1/16 (332)	17-1/16 (433)
P	3-1/2 (89)	6-5/16 (160)		9-9/16 (243)		5-7/16 (138)		9 (229)	11-13/16 (300)
Q	2-21/32 (74)					4-3/16 (106)			4-1/2 (114)
R	5-31/32 (152)	3-5/16 (84)				6-1/2 (165)			7-5/16 (186)
S	3-5/16 (84)	5-29/32 (150)				8-3/16 (208)			8-1/2 (216)
T	31 (787)					42 (1067)			
*Varies with motor selection and belt adjustment for unit sizes 150–400.									
**Heater suspension points (3/8-16 FEM).									

Weights

Type	Unit Size (MBTUh)												
	30	45	60	75	100	125	150	175, 200	225	250	300	350	400
	Pounds (kg)												
Unit	84 (38)	89 (40)	102 (46)	108 (49)	168 (76)	171 (78)	300 (136)	320 (145)	385 (175)	400 (181)	458 (208)	494 (224)	506 (230)
Shipping	94 (43)	99 (45)	114 (52)	120 (54)	182 (83)	187 (85)	322 (146)	342 (155)	409 (186)	424 (192)	484 (220)	520 (236)	536 (243)

Hazards of Chlorine

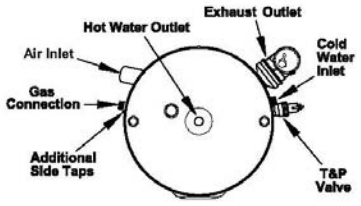
The presence of chlorine vapors in the combustion air of gas-fired heating equipment presents a potential corrosion hazard for separated-combustion heaters with regard to the combustion air inlet. Chlorine is usually found in the form of freon or degreaser vapors. When chlorine is exposed to flame, it will precipitate from the compound and go into solution with any condensation that is present in the heat exchanger or associated parts. The result is hydrochloric acid, which readily attacks all metals including 300 grade stainless steel. Care should be taken to separate these vapors from the combustion process. This may be done by wise location of the unit vent and combustion air terminals with regard to exhausters or prevailing wind directions. Chlorine is heavier than air. Keep these facts in mind when determining installation location of the heater in relation to building exhaust systems.

A.O. Smith | Commercial Gas Water Heater

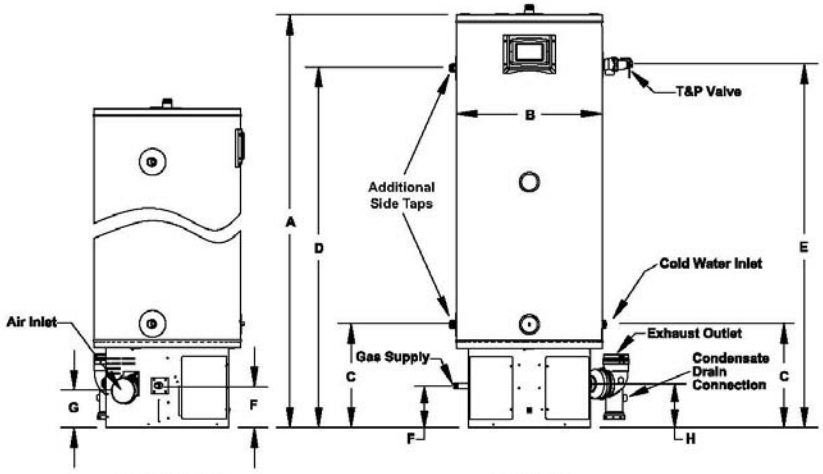
Model Number	Gallon Capacity	BTU/h Input Gallon Per Hour	Thermal Efficiency	Recovery @ 90° Rise Gallon Per Hour	Dimensions in Inches		Vent Connection	1" Water Connections		T&P	Gas Supply*	Approx. Shipping Weight (lbs)
					A	B		C	D	E	F	
BSS 130	34	130,000	96%	165	48-1/2	22	2 or 3	15-3/4	40-1/2	41	6-3/8	150
BSS 150	34	150,000	94%	190	48-1/2	22	2 or 3	15-3/4	40-1/2	41	6-3/8	150
BTS 130	50	130,000	95%	165	62-3/8	22	2 or 3	15-3/4	54-1/2	55	6-3/8	176
BTS 150	50	150,000	95%	190	63-3/4	22	2 or 3	15-3/4	55-3/4	56-1/4	6-3/8	180
BTS 175	50	175,000	96%	222	63-3/4	22	3	15-3/4	55-3/4	56-1/4	6-3/8	180
BTS 199	50	199,000	96%	253	63-3/4	22	3	15-3/4	55-3/4	56-1/4	6-3/8	180

Available in Propane (LP) gas. Specify when ordering Propane (LP) gas.
Models certified for sea level to 7,700 ft. elevation.

TOP



Top Outlet: 1" NPT
Side Inlet: 1" NPT
Side Taps: 1" NPT
Condensate Drain Outlet: 1/2" NPT



LEFT SIDE **FRONT**

SUGGESTED SPECIFICATION

(Natural or Propane) gas water heater(s) shall be A. O. Smith Polaris model with storage capacity _____ and input rating of _____ BTUs per hour. Water heater(s) shall have: 1: Tank constructed of 444 stainless steel with submerged combustion chamber. 2: Advanced electronic control w/ LCD display and actual diagnostics. 3: A 3-year limited warranty against tank leaks. Water heater(s) shall meet the thermal efficiency and standby loss requirements of the U.S. Department of Energy and current edition of ASHRAE/IES 90.1 and be design certified by CSA International according to ANSI Z21.10.3-CSA 4.3 standards governing storage tank water heaters.

For Technical Information, call 800-527-1953. A. O. Smith Corporation reserves the right to make product changes or improvements without prior notice.

www.hotwater.com | 800-527-1953 Toll-Free USA | A. O. Smith Corporation | 500 Tennessee Waltz Parkway | Ashland City, TN 37015

A.2 Dispersion Modelling

Meteorological Conditions

Climate data is available for Ontario at https://www.ontario.ca/environment-and-energy/map-regional-meteorological-and-terrain-data-air-dispersion-modelling. The data for Ontario is split into 5 regions, with Timmins in the "northern region". This region uses surface station weather data from Sudbury (ID 6068150) and upper air data from White Lake (ID 726320). The data covers a five-year period from 1996 to 2000 and is suitable for AERMET stage 3 processing which allows the wind's approach flow to be customized to suit land use in the vicinity of the subject property. In this report, the forest data set "Sudbury_forest _22112" was used and it has been preprocessed by the Ministry with AERMET v22112, thus no stage 3 processing was required.

Figure 1 shows the study area (obtained from Google Earth). Also, a 300*m* and a 100*m* radius are shown. For the site and surrounds, mostly forest makes up the surrounds. Rural was chosen for dispersion coefficients.

Sudbury and Timmins Airports wind roses are depicted in Figure 3.

Area of Modelling Coverage

According to the information from the Ministry of Transportations' Environmental Guide for Assessing and Mitigating the Air Quality Impacts and Greenhouse Gas Emissions of Provincial Transportation Projects the local air quality impacts are assumed to be limited to approximately 500*m* from the transportation facility, in each direction.

Each selected sensitive POI was analysed to determine anticipated concentration levels resulting from the facility's exhaust systems and traffic increases that could be considered due to the proposed station.

Particulate:

The AERMOD model has 5 options for modeling particulate; TSP, $PM_{2.5}$, PM_{10}, $PM_{2.5}$ U.S. National Ambient Air Quality Standard (NAAQS), and PM_{10} NAAQS. The $PM_{2.5}$ NAAQS option was used. This allows for both the highest and the 3-year average of the annual 98th percentile of the daily 24-hour average concentrations. The deposition is based on option 2 (Less than 10% of the particles have a diameter >= 10 microns). For a Tier 4 locomotive, approximately 97% of the particles in the engine exhaust are sub $PM_{2.5}$. Method 2 above, requires values for "Fine Particle Fraction", set to 1 in this case, and "Mass Mean Particle Diameter" as input. The particle diameter was tested at 0.5, 1.0, 1.5, 2.0, 2.5 microns and the predicted concentrations were the same to 3 decimal places. The values presented in the report represent 2.5 microns. Further, AERMOD does not require input of settling velocity or deposition velocity calculating them internally for the various particle sizes.

Non-default options within AERMOD modelling:

Non-default options were used for modelling as follows: for Flat Terrain and Method 2 for PM2.5.

NO_X to NO_2 Conversion

Currently, AERMOD has three Tiers, with varying degrees of complexity to estimate the NO_X to NO_2 conversion:

- Tier 1 – Total Conversion Method. The simplest method assumes all NO_X is converted to NO_2 in the atmosphere. This method provides the most conservative estimate of NO_2 concentrations.
- Tier 2 – Ambient Ratio Method. This method uses a ratio of NO_2 to NO_X in the atmosphere to calculate the NO_2 concentrations, based on NO_X.
- Tier 3 – Ozone Limiting Method (OLM) and Plume Volume Molar Ratio Method (PVMRM). These are the most advanced methods, incorporating the ambient ozone (O_3) concentrations when calculating the resulting concentrations.

Tier 3 OLM was used. This method requires background concentrations for ozone (O_3) and NO_2. Typically, this is hourly concentration data for the complete weather data period (5 years), when available. For Timmins this data is not available.

The 90th percentile values for Sudbury were used as representative. These values are shown in Section 2.2 of the report. The 3-year averages from 2021, 2022, and 2023 were used.

The OLM method also requires values for the "In Stack NO_2/NO_X Ratio". The following values were used:

- Diesel Locomotive = 0.083,
- Unit Heaters and AHU = 0.100,
- Generac Generator = 0.187,
- Vehicles (All) = 0.156

These values are from GUIDANCE FOR NO_2 DISPERSION MODELLING IN BRITISH COLUMBIA, (Guidance for NO_2 Dispersion Modelling (gov.bc.ca)) was used for the in-stack ratios, page 30.

A.3 Controlling Contaminants

Key Pollutants to transportation air quality impact assessments are:
CO, NO_2, PM_{44}, PM_{10}, $PM_{2.5}$, Benzene, 1-3 butadiene, formaldehyde, acetaldehyde, acrolein, and benzo(a)pyrene.

The AERMOD model was used to evaluate the effects of the emissions from the proposed train, the proposed train station's comfort heating equipment, and the proposed train station's emergency natural gas generator.

Oxides of Nitrogen, PM2.5, and Benzene have the potential to be the controlling contaminants as demonstrated below. Oxides of nitrogen have the highest emission rate to concentration limit of these contaminants, while PM2.5 and Benzene have relatively high background concentrations. The emergency generator and comfort heating equipment are fuelled by natural gas (of small capacity and emitting only a fraction of the emissions coming from the train's engine). Further, the emergency natural gas engine is expected to be tested for 1 hour once per week and conservatively operated in an emergency for 1 hour per month for a total of 64 hours/year. As such, the emissions from the train's engine are the dominant emissions.

A high emission rate and a low limit results in a large number and identifies the controlling pollutant.

Pollutant	E-rate (g/hp-h)	Limit (1h)	Limit (24h)	Limit (annual)	E-rate / 24 h limit	E-rate / Annual limit
NO_2	Conservatively 1.3	84	200	24	0.0065	0.054
PM_{44} (documented)	0.03		120	60	0.00025 **	
PM_{10}	Conservatively 0.03		50		0.0006 **	
$PM_{2.5}$	Conservatively 0.03		27	8.8	0.0011 **	
CO (documented)	1.5	36,000	14,785.7 *		0.000010	
Benzene (AP 42 - 3.3)	0.00296		2.3		0.0013	
1-3 Butadiene (AP 42 - 3.3)	0.00012		10		0.000012	
Formaldehyde (AP 42 - 3.3)	0.00572		65		0.000088	
Acetaldehyde (AP 42 - 3.3)	0.00244		500		0.0000048	
Acrolein (AP 42 - 3.3)	0.00029		0.4		0.0000725	
Benzo(a)pyrene (AP 42 - 3.3)	0.000000116 ***		0.00005	0.00001	0.0023	0.012

* calculated based on the 36,000 (1h) limit and the method of averaging period conversion outlined in MECP GUIDELINE A-11 (2017). This calculation, because it is based on the 1-h limit, assumes that the engine is emitting 8760 hours per year.

** Since background concentrations in Ontario are high, combined concentrations are high.

*** The B(a)P limits are 24h and annual, which allows the emission rate to be averaged over the emission period. For this emission rate, the train was conservatively assumed to emit for 140 minutes,

twice per day (280 minutes), accounting for when the train may be in the station. The train will actually idle at the station for one hour in the southbound direction and 2hrs 20min (summing to 200 minutes) in the northbound direction. The emission rate during the 280-minute period was 0.000000597 g/hp-h and was averaged out over the day.

A.4 Emission Rate Sample Calculations

Table 1 to § 1033.101—Line-Haul Locomotive Emission Standards

Year of original manufacture	Tier of standards	Standards (g/bhp-hr)			
		NO_X	PM	HC	CO
1973-1992[a]	Tier 0[b]	8.0	0.22	1.00	5.0
1993[a]-2004	Tier 1[b]	7.4	0.22	0.55	2.2
2005-2011	Tier 2[b]	5.5	[e] 0.10	0.30	1.5
2012-2014	Tier 3[c]	5.5	0.10	0.30	1.5
2015 or later	Tier 4[d]	1.3	0.03	0.14	1.5

CURVE FITTING RESULTED IN THE FOLLOWING TABLE:

Approximate Notch	Load (%)	BHP
1.9	10	438
2.9	20	875
3.3	25	1094
3.7	30	1313
4.5	40	1750
5.2	50	2188
5.8	60	2626
6.4	70	3063
6.6	75	3282
6.9	80	3501
7.3	90	3938
7.6	100	4376

The train will arrive/depart the station at low throttle position due to speed restrictions. In this report, the analysis of the train's emissions was at a notch setting of 2 even when stationary at the station, which is conservative.

The US EPA testing of Tier 4 engines require that they perform at the g/hp-h criteria, or better, for a duty cycle that represents normal in-use speeds, loads, and degree of transient activity. https://www.ecfr.gov/current/title-40/chapter-I/subchapter-U/part-1065/subpart-J. Operating from idle to notch 8 is a normal duty cycle with idle the lowest horsepower and notch 8 the highest. As such, the emissions in grams over time at the higher horsepower setting of notch 2 must be greater than the emissions at idle.

For example, notch 2 is estimated as 438 horsepower, neglecting hotel power requirements. Idle, for the locomotive is approximately 24 horsepower. Heating at maximum, on the coldest days, defines the maximum hotelling energy requirement. Each of the three coach cars has a maximum energy usage of 44kW, and the cab has a maximum energy requirement of 9.1kW, for a total of 141kW (189 horsepower). Idle plus the maximum hotelling power would total 213 horsepower. So, say for particulate, notch 2 operating at 438 horsepower x 0.03g/hp-h = 13.14g/h, while idle plus the maximum hotelling power would be 213 horsepower x 0.03g/hp-h = 6.39g/h. Therefore notch 2 emissions are conservative for a train idling in the station.

There is empirical data that NOx emissions from the perspective of g/bhp-h, decreases at lower hp. Our empirical data suggests that at 438hp the emission rate would be 0.1042 g/bhp-h, but to be conservative we have uses 0.158 g/bhp-h, as this is the Tier 4 requirement.

Contaminant	(g/hp-h)	g/h	1-h g/s	24-h g/s *	
NOx (Tier 4 Requirement)	1.3	569.40	0.158	0.022	Used for the NOx emission rates
NOx (Tier 4 reduction at lower HP)	0.8561	374.95	0.1042	0.0145	Not Used for the NOx emission rates
PM2.5 (97% of T4 emissions is expected to be smaller than 2.5*um*	0.03	13.14	0.00365	0.00051	
Benzene AP-42 3.3	0.00296	1.30	0.00036	0.00005	

* The Northlander service will provide one trip per direction, 4-7 days per week, travelling overnight in the northern section to allow passengers to maximize daytime at the destination. The train departs Timmins (Porcupine) around midnight, heading south. The train arrives in Timmins (Porcupine) very early next morning, heading north. The train will be idle at the station for one hour in the southbound direction and 2hrs 20min in the northbound direction. The train is therefore expected to idle at the proposed Timmins station for 3 hours and 20 minutes per day. For the 24-hour and annual averaging times, the emission rate is therefore averaged over 24 hours.

Proposed Generac SG150 Generator

Portions of the data sheets in the Appendix are shown below:

SG150 | 14.2L | 150 kW

INDUSTRIAL SPARK-IGNITED GENERATOR SET

EPA Certified Stationary Emergency and Non-Emergency

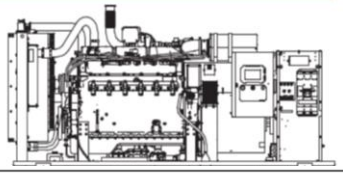
GENERAC | INDUSTRIAL POWER

DEMAND RESPONSE READY

Standby Power Rating
150 kW, 188 kVA, 60 Hz

Demand Response Rating
150 kW, 188 kVA, 60 Hz

Prime Power Rating
135 kW, 169 kVA, 60 Hz



ENGINE

		Standby/Demand Response	Prime
Rated Engine Speed	RPM	1,800	1,800
Horsepower at Rated kW**	hp	232	209
Piston Speed	ft/min (m/min)	1,950 (594)	1,950 (594)
BMEP	psi (kPa)	118 (814)	106 (732)

** Refer to "Emissions Data Sheet" for maximum bHP for EPA and SCAQMD

EXHAUST

		Standby/Demand Response	Prime
Exhaust Flow (Rated Output)	scfm (m³/min)	1,166 (33.0)	1,043 (29.5)
Max. Backpressure (Post Silencer)	inHG (kPa)	0.75 (2.54)	0.75 (2.54)
Exhaust Temp (Rated Output - Post Silencer)	°F (°C)	1,318 (714.4)	1,300 (704.4)

Model	Engine	EPA Engine Family	Fuel	CAT Req'd*	Comb Cat or Separate Cat	EPA Cert #	Grams/bhp-hr. THC	NOx	CO	Rated RPM	BHP	Fuel Flow (lb/hr)
SG150	12.9	GGNXB12.92C2	NG	Yes	Cat Muff	GGNXB12.92C2-031	0.53	0.13	0.53	1800	307.87	107.99

The appropriate numbers from the above spec sheet are entered into the cells below.
The remaining values are calculated automatically.

Load	Rated power	Engine	NO_x	CO	Flow	Temp	Flow	Temp	STP flow
	EkW	*BHP*	*g/HP.hr*	*g/HP.hr*	*cfm*	*deg F*	*m3/s*	*deg C*	*m3/s*
100%	150	232	0.130	0.530	3930	1318	1.85	714.44	0.55

									POI Elevation Relative to Stack Exit **
							stack dia. (in)	8	
							stack dia. (m)	0.203	
Load	**BHP**	**CAT Req'd**	**NO_x** *g/s*	**CO** *g/s*	**Temp** *deg C*	**Flow** *m3/s*	**Velocity** *m/s*	**Above** *m*	**Below** *m*
100%	**232**	**yes**	**0.00838**	**0.034**	**50.0**	**0.61**	**18.71**	**3.2**	**2.0**

** Distance from source, to pass NO_x limit of 500 (based on stretched string distance)

NOx Emission during Max Hour = 0.00838 g/s
Max planned operation in 24 h is 1h for testing, therefore for 24h and annual averaging times, max NOx emission i 0.000349 g/s

Proposed Generac SG150 Generator PM2.5 & Benzene

Emission factors for natural gas reciprocating engines are in lb/MMBtu from AP-42 3.2

Max fuel flow = 107.99 lb/h

According to AP-42 3.2, there are 1,020 Btu/ft3 in natural gas and the fuel has a density of 0.041 lb/ft3.

So,	1020	Btu / ft3	x	1 / 0.041	ft3 / lb	=	24,878	Btu / lb	
&	107.99	lb / h x	24,878	Btu / lb	x	1 / 1,000,000	=	MMBtu / Btu	2.69 MMBtu / h

	AP-42 3.2 Lean Burn Engines [lb/MMBtu]	USE AP-42 3.2 Rich Burn Engines [lb/MMBtu]	MMBtu / h	lb / h	During Max hour g / s	Max planned operation is from testing for 1h in 24 g / s	
PM2.5	0.0000771	0.0095	2.69	0.0255	0.0032	0.000134	PM2.5
Benzene	0.00044	0.00158	2.69	0.0042	0.00053	2.23E-05	Benzene

Theakston Environmental

Proposed natural gas Boiler Emission Rate Calculations

These Equations are used to calculate Flue gas exit properties.
They represent a linear best fit to the boilers that Theakston has been involved with. The equations fit most boilers within 5% when compared to significantly more elaborate methods.

Volume Flow Rate *(acfm)* ***= 11680 * Input Capacity*** *(MMBtu/hr)*

Mass Flow Rate *(lb/hr)* ***= 852.12 * Input Capacity*** *(MMBtu/hr)*

To calculate Gas Flow from Mass Flow, Use the Ideal Gas Law

PV = nRT, where n = mass/MW ***So, P x V = (mass/MW) x R x T***

OR

V = mass x R x T / (MW x P)

Introducing time

V/t = (mass/time) x R x T / (MW x P) = Q

$$Q(m^3/s) = MassFlowRate(kg/s) \times \left(\frac{8314.4 \times (T(C) + 273.15)}{MW \times 101325} \right)$$

	Fuel Gas	***Fuel Oil***	***Coal***
MW of Exhaust Gas (wet)	27.7	29.0	29.0
MW of Exhaust Gas (dry)	29.9	30.4	30.8
MW of AIR (dry)	28.97		

Note that Specific Volume = R x T / (MW x P)

Description	**Percent Load**	**Input** *MMBtu/hr*	**Output** *MMBtu/hr*	**Eff**	33480 **BHP**	**Specific Volume** *m3/kg*	**Flue Gas Mass Flow** *lb/hr*	**Flue Gas Mass Flow** *kg/s*	**Q Volume Flow** *m3/s*	**NO_X** *ppmv*	**NO_X** *g/s*	**Temp** *C*	**Dia** *m*	**Velocity** *m/s*	**Temp** *K*
UNIT Heater - Reznor UBXC 60	**100%**	0.060	0.0492	82%	1	0.987	51.127	0.006	0.006	30	0.000321	60	0.10	0.78	333
Water Heater - AO Smith BTS 150	**100%**	0.150	0.1425	95%	4	0.987	127.818	0.016	0.016	30	0.000803	60	0.10	2.02	333
AHU - DPSH12B	**100%**	0.200	0.180	90%	5	0.987	170.424	0.021	0.021	30	0.001070	60	0.15	1.20	333

Description	**Percent Load**	**Input** *MMBtu/hr*	***PM2.5*** *lb/MMBtu Input*	***PM2.5*** *lb/h*	***PM2.5*** *g/s*	***Benzene*** *lb/MMBtu Input*	***Benzene*** *lb/h*	***Benzene*** *g/s*
UNIT Heater - Reznor UBXC 60	**100%**	0.060	0.0075	0.000447	0.000056	0.0000021	0.00000000012	0.000000000015
Water Heater - AO Smith BTS 150	**100%**	0.150	0.0075	0.001118	0.000141	0.0000021	0.00000000029	0.000000000037
AHU - DPSH12B	**100%**	0.200	0.0075	0.001490	0.000188	0.0000021	0.00000000039	0.000000000049

A.5 AERMOD Summary Report

Control Pathway - NO2 (1hr)

AERMOD

Dispersion Options

Titles

D:\Projects\2024\24120 Timmins\AERMOD\NO2NAAQS1h.isc

Dispersion Options

☐ Regulatory Default ☒ Non-Default Options

☒ Flat Terrain
☐ No Stack-Tip Downwash (NOSTD)
☐ Run in Screening Mode
☐ Conversion of NOx to NO2 (OLM or PVMRM)
☐ No Checks for Non-Sequential Met Data
☐ Fast All Sources (FASTALL)
☐ Fast Area Sources (FASTAREA)
☐ Optimized Area Source Plume Depletion
☐ Gas Deposition

BETA Options:
☐ Capped and Horizontal Stack Releases
☐ Adjusted Friction Velocity (u*) in AERMET (ADJ_U*)
☐ Low Wind Options

☐ SCIM (Sampled Chronological Input Model)
☐ Ignore Urban Night / Daytime Transition (NOURBTRAN)

Dispersion Coefficient

Rural

Output Type

☒ Concentration
☐ Total Deposition (Dry & Wet)
☐ Dry Deposition
☐ Wet Deposition

Plume Depletion

☐ Dry Removal
☐ Wet Removal

Output Warnings

☐ No Output Warnings
☐ Non-fatal Warnings for Non-sequential Met Data

Pollutant / Averaging Time / Terrain Options

Pollutant Type

NO2

Averaging Time Options

Hours ☒ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 6 ☐ 8 ☐ 12 ☐ 24

☐ Month ☐ Period ☐ Annual

☐ 1-Hour NO2 Non-NAAQS
☒ 1-Hour NO2 NAAQS

Flagpole Receptors

☒ Yes ☐ No

Default Height = 0.00 m

Exponential Decay

☐ Yes ☒ No

Terrain Height Options

☒ Flat ☐ Elevated

Control Pathway - NO2 (24hr)

AERMOD

Dispersion Options

Titles

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Dispersion Options

- [ ] Regulatory Default
- [x] Non-Default Options

- [x] Flat Terrain
- [ ] No Stack-Tip Downwash (NOSTD)
- [ ] Run in Screening Mode
- [ ] Conversion of NOx to NO2 (OLM or PVMRM)
- [ ] No Checks for Non-Sequential Met Data
- [ ] Fast All Sources (FASTALL)
- [ ] Fast Area Sources (FASTAREA)
- [ ] Optimized Area Source Plume Depletion
- [ ] Gas Deposition

BETA Options:

- [ ] Capped and Horizontal Stack Releases
- [ ] Adjusted Friction Velocity (u*) in AERMET (ADJ_U*)
- [ ] Low Wind Options

- [ ] SCIM (Sampled Chronological Input Model)
- [ ] Ignore Urban Night / Daytime Transition (NOURBTRAN)

Dispersion Coefficient

Rural

Output Type

- [x] Concentration
- [ ] Total Deposition (Dry & Wet)
- [ ] Dry Deposition
- [ ] Wet Deposition

Plume Depletion

- [ ] Dry Removal
- [ ] Wet Removal

Output Warnings

- [ ] No Output Warnings
- [ ] Non-fatal Warnings for Non-sequential Met Data

Pollutant / Averaging Time / Terrain Options

Pollutant Type

NO2

Averaging Time Options

Hours

1	2	3	4	6	8	12	24
☐	☐	☐	☐	☐	☐	☐	☑

- [ ] Month
- [ ] Period
- [x] Annual

Exponential Decay

- [ ] Yes
- [x] No

Terrain Height Options

- [x] Flat
- [ ] Elevated

Flagpole Receptors

- [x] Yes
- [ ] No

Default Height = 0.00 m

Control Pathway - PM2.5 (24hr)

AERMOD

Dispersion Options

Titles

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Dispersion Options

- [ ] Regulatory Default
- [x] Non-Default Options

- [x] Flat Terrain
- [ ] No Stack-Tip Downwash (NOSTD)
- [ ] Run in Screening Mode
- [ ] Conversion of NOx to NO2 (OLM or PVMRM)
- [ ] No Checks for Non-Sequential Met Data
- [ ] Fast All Sources (FASTALL)
- [ ] Fast Area Sources (FASTAREA)
- [ ] Optimized Area Source Plume Depletion
- [ ] Gas Deposition

BETA Options:

- [ ] Capped and Horizontal Stack Releases
- [ ] Adjusted Friction Velocity (u*) in AERMET (ADJ_U*)
- [ ] Low Wind Options

- [ ] SCIM (Sampled Chronological Input Model)
- [ ] Ignore Urban Night / Daytime Transition (NOURBTRAN)

Dispersion Coefficient

Rural

Output Type

- [x] Concentration
- [ ] Total Deposition (Dry & Wet)
- [ ] Dry Deposition
- [ ] Wet Deposition

Plume Depletion

- [ ] Dry Removal
- [ ] Wet Removal

Output Warnings

- [ ] No Output Warnings
- [ ] Non-fatal Warnings for Non-sequential Met Data

Pollutant / Averaging Time / Terrain Options

Pollutant Type

PM2.5

Averaging Time Options

Hours

1	2	3	4	6	8	12	24
☐	☐	☐	☐	☐	☐	☐	☑

- [ ] Month
- [ ] Period
- [x] Annual

- [ ] 24-Hour PM-2.5 Non-NAAQS
- [x] 24-Hour PM-2.5 NAAQS

Flagpole Receptors

- [x] Yes
- [ ] No

Default Height = 0.00 m

Exponential Decay

- [ ] Yes
- [x] No

Terrain Height Options

- [x] Flat
- [ ] Elevated

Control Pathway - Benzene (24hr)

AERMOD

Dispersion Options

Titles

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Dispersion Options

- [ ] Regulatory Default
- [x] Non-Default Options

- [x] Flat Terrain
- [ ] No Stack-Tip Downwash (NOSTD)
- [ ] Run in Screening Mode
- [ ] Conversion of NOx to NO2 (OLM or PVMRM)
- [ ] No Checks for Non-Sequential Met Data
- [ ] Fast All Sources (FASTALL)
- [ ] Fast Area Sources (FASTAREA)
- [ ] Optimized Area Source Plume Depletion
- [ ] Gas Deposition

BETA Options:

- [ ] Capped and Horizontal Stack Releases
- [ ] Adjusted Friction Velocity (u*) in AERMET (ADJ_U*)
- [ ] Low Wind Options

- [ ] SCIM (Sampled Chronological Input Model)
- [ ] Ignore Urban Night / Daytime Transition (NOURBTRAN)

Dispersion Coefficient

Rural

Output Type

- [x] Concentration
- [ ] Total Deposition (Dry & Wet)
- [ ] Dry Deposition
- [ ] Wet Deposition

Plume Depletion

- [ ] Dry Removal
- [ ] Wet Removal

Output Warnings

- [ ] No Output Warnings
- [ ] Non-fatal Warnings for Non-sequential Met Data

Pollutant / Averaging Time / Terrain Options

Pollutant Type

OTHER - BENZENE

Averaging Time Options

Hours

1	2	3	4	6	8	12	24
☐	☐	☐	☐	☐	☐	☐	☑

- [ ] Month
- [ ] Period
- [x] Annual

Exponential Decay

- [ ] Yes
- [x] No

Terrain Height Options

- [x] Flat
- [ ] Elevated

Flagpole Receptors

- [x] Yes
- [ ] No

Default Height = 0.00 m

Source Pathway - Source Inputs - NO2 (1hr)

AERMOD

Point Sources

Source Type	Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation (Optional)	Release Height [m]	Emission Rate [g/s]	Gas Exit Temp. [K]	Gas Exit Velocity [m/s]	Stack Inside Diameter [m]
POINT	STCK1	488178.53	5371354.82	281.00	4.50	0.00032	333.00	0.78	0.10
		UNIT Heater							
POINT	1STCK2	488180.66	5371353.01	281.00	4.50	0.00032	333.00	0.78	0.10
		UNIT Heater							
POINT	STCK3	488186.92	5371347.82	281.00	4.50	0.00080	333.00	2.02	0.10
		Hot Water Heater							
POINT	STCK4	488194.30	5371350.44	281.00	2.00	0.00107	333.00	1.20	0.15
		AHU							
POINT	STCK5	488191.80	5371353.01	281.00	2.00	0.00107	333.00	1.20	0.15
		AHU							
POINT	STCK6	488187.79	5371360.70	281.00	3.00	0.00838	323.00	18.71	0.20
		Generac SG150							
POINT	NETRAIN	488222.33	5371358.38	281.00	4.40	0.15800	618.75	14.82	0.51
		Train (Cummins QSK95) NE bound							
POINT	SWTRAIN	488163.01	5371287.60	281.00	4.40	0.15800	618.85	14.82	0.51
		Train (Cummins QSK95) SW bound							

Source Pathway - Source Inputs

Line Volume Sources

Source Type: LINE VOLUME
Source: SLINE1

Length of Side [m]	Emission Rate [g/ s]	Building Height [m]	X Coordinate for Points [m]	Y Coordinate for points [m]	Base Elevation [m]	Release Height [m]
21.00	0.01135		487682.82	5371245.81	0.00	1.28
			488209.40	5371260.07	0.00	1.28
			488285.16	5371263.82	0.00	1.28
			488333.17	5371269.82	0.00	1.28
			488385.68	5371286.32	0.00	1.28
			488438.19	5371308.82	0.00	1.28
			488487.69	5371338.08	0.00	1.28
			488537.95	5371374.83	0.00	1.28
			488644.47	5371490.35	0.00	1.28

Source Type: LINE VOLUME
Source: SLINE2

Length of Side [m]	Emission Rate [g/ s]	Building Height [m]	X Coordinate for Points [m]	Y Coordinate for points [m]	Base Elevation [m]	Release Height [m]
16.00	0.00118		488076.72	5371257.50	0.00	1.28
			488072.77	5371821.62	0.00	1.28

Source Type: LINE VOLUME
Source: SLINE3

Length of Side [m]	Emission Rate [g/ s]	Building Height [m]	X Coordinate for Points [m]	Y Coordinate for points [m]	Base Elevation [m]	Release Height [m]
16.00	0.00118		488400.62	5371663.72	0.00	1.28
			488074.16	5371258.79	0.00	1.28

Source Pathway - Source Inputs

AERMOD

Source Type: LINE VOLUME
Source: SLINE4

Length of Side [m]	Emission Rate [g/s]	Building Height [m]	X Coordinate for Points [m]	Y Coordinate for points [m]	Base Elevation [m]	Release Height [m]
16.00	0.00118		487675.50	5371347.47	0.00	1.28
			488155.77	5371360.02	0.00	1.28

Source Pathway - Source Inputs

Volume Sources Generated from Line Sources

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
SLINE2	L0001315	488076.67	5371265.50	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001316	488076.56	5371281.50	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001317	488076.44	5371297.50	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001318	488076.33	5371313.50	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001319	488076.22	5371329.50	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001320	488076.11	5371345.50	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001321	488076.00	5371361.50	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001322	488075.88	5371377.50	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001323	488075.77	5371393.50	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001324	488075.66	5371409.50	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001325	488075.55	5371425.50	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001326	488075.44	5371441.49	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001327	488075.32	5371457.49	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001328	488075.21	5371473.49	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001329	488075.10	5371489.49	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001330	488074.99	5371505.49	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001331	488074.88	5371521.49	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001332	488074.76	5371537.49	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001333	488074.65	5371553.49	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001334	488074.54	5371569.49	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001335	488074.43	5371585.49	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001336	488074.32	5371601.49	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001337	488074.20	5371617.49	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001338	488074.09	5371633.49	0.00	1.28	0.00003	16.00		7.44	1.19

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
SLINE2	L0001339	488073.98	5371649.49	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001340	488073.87	5371665.49	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001341	488073.76	5371681.49	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001342	488073.64	5371697.49	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001343	488073.53	5371713.49	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001344	488073.42	5371729.49	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001345	488073.31	5371745.49	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001346	488073.20	5371761.49	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001347	488073.08	5371777.49	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001348	488072.97	5371793.49	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001349	488072.86	5371809.49	0.00	1.28	0.00003	16.00		7.44	1.19

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
SLINE3	L0001350	488395.60	5371657.49	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001351	488385.56	5371645.04	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001352	488375.51	5371632.58	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001353	488365.47	5371620.13	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001354	488355.43	5371607.67	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001355	488345.39	5371595.21	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001356	488335.34	5371582.76	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001357	488325.30	5371570.30	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001358	488315.26	5371557.85	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001359	488305.22	5371545.39	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001360	488295.18	5371532.93	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001361	488285.13	5371520.48	0.00	1.28	0.00004	16.00		7.44	1.19

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
SLINE3	L0001362	488275.09	5371508.02	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001363	488265.05	5371495.56	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001364	488255.01	5371483.11	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001365	488244.97	5371470.65	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001366	488234.92	5371458.20	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001367	488224.88	5371445.74	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001368	488214.84	5371433.28	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001369	488204.80	5371420.83	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001370	488194.75	5371408.37	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001371	488184.71	5371395.92	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001372	488174.67	5371383.46	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001373	488164.63	5371371.00	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001374	488154.59	5371358.55	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001375	488144.54	5371346.09	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001376	488134.50	5371333.63	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001377	488124.46	5371321.18	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001378	488114.42	5371308.72	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001379	488104.37	5371296.27	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001380	488094.33	5371283.81	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001381	488084.29	5371271.35	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001382	488074.25	5371258.90	0.00	1.28	0.00004	16.00		7.44	1.19

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
SLINE4	L0001383	487683.50	5371347.67	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001384	487699.49	5371348.09	0.00	1.28	0.00004	16.00		7.44	1.19

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
SLINE4	L0001385	487715.49	5371348.51	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001386	487731.48	5371348.93	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001387	487747.48	5371349.35	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001388	487763.47	5371349.76	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001389	487779.47	5371350.18	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001390	487795.46	5371350.60	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001391	487811.46	5371351.02	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001392	487827.45	5371351.44	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001393	487843.45	5371351.86	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001394	487859.44	5371352.27	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001395	487875.43	5371352.69	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001396	487891.43	5371353.11	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001397	487907.42	5371353.53	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001398	487923.42	5371353.95	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001399	487939.41	5371354.36	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001400	487955.41	5371354.78	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001401	487971.40	5371355.20	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001402	487987.40	5371355.62	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001403	488003.39	5371356.04	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001404	488019.38	5371356.46	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001405	488035.38	5371356.87	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001406	488051.37	5371357.29	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001407	488067.37	5371357.71	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001408	488083.36	5371358.13	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001409	488099.36	5371358.55	0.00	1.28	0.00004	16.00		7.44	1.19

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
SLINE4	L0001410	488115.35	5371358.96	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001411	488131.35	5371359.38	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001412	488147.34	5371359.80	0.00	1.28	0.00004	16.00		7.44	1.19

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
SLINE1	L0001413	487693.32	5371246.10	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001414	487714.31	5371246.67	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001415	487735.30	5371247.24	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001416	487756.29	5371247.80	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001417	487777.29	5371248.37	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001418	487798.28	5371248.94	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001419	487819.27	5371249.51	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001420	487840.26	5371250.08	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001421	487861.26	5371250.64	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001422	487882.25	5371251.21	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001423	487903.24	5371251.78	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001424	487924.23	5371252.35	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001425	487945.22	5371252.92	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001426	487966.22	5371253.48	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001427	487987.21	5371254.05	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001428	488008.20	5371254.62	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001429	488029.19	5371255.19	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001430	488050.19	5371255.76	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001431	488071.18	5371256.33	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001432	488092.17	5371256.89	0.00	1.28	0.00023	21.00		9.77	1.19

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
SLINE1	L0001433	488113.16	5371257.46	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001434	488134.16	5371258.03	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001435	488155.15	5371258.60	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001436	488176.14	5371259.17	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001437	488197.13	5371259.73	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001438	488218.12	5371260.50	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001439	488239.09	5371261.54	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001440	488260.07	5371262.57	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001441	488281.04	5371263.61	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001442	488301.91	5371265.91	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001443	488322.74	5371268.51	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001444	488343.18	5371272.96	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001445	488363.21	5371279.26	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001446	488383.25	5371285.56	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001447	488402.64	5371293.59	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001448	488421.94	5371301.86	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001449	488441.05	5371310.51	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001450	488459.13	5371321.20	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001451	488477.21	5371331.88	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001452	488494.81	5371343.28	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001453	488511.76	5371355.68	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001454	488528.71	5371368.08	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001455	488544.43	5371381.86	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001456	488558.66	5371397.30	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001457	488572.90	5371412.74	0.00	1.28	0.00023	21.00		9.77	1.19

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
SLINE1	L0001458	488587.14	5371428.17	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001459	488601.37	5371443.61	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001460	488615.61	5371459.05	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001461	488629.84	5371474.49	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001462	488644.08	5371489.93	0.00	1.28	0.00023	21.00		9.77	1.19

Source Pathway - Source Inputs NO2 (24hr & Annual)

AERMOD

Point Sources

Source Type	Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation (Optional)	Release Height [m]	Emission Rate [g/s]	Gas Exit Temp. [K]	Gas Exit Velocity [m/s]	Stack Inside Diameter [m]
POINT	STCK1	488178.53	5371354.82	281.00	4.50	0.00032	333.00	0.78	0.10
		UNIT Heater							
POINT	1STCK2	488180.66	5371353.01	281.00	4.50	0.00032	333.00	0.78	0.10
		UNIT Heater							
POINT	STCK3	488186.92	5371347.82	281.00	4.50	0.00080	333.00	2.02	0.10
		Hot Water Heater							
POINT	STCK4	488194.30	5371350.44	281.00	2.00	0.00107	333.00	1.20	0.15
		AHU							
POINT	STCK5	488191.80	5371353.01	281.00	2.00	0.00107	333.00	1.20	0.15
		AHU							
POINT	STCK6	488187.79	5371360.70	281.00	3.00	0.00035	323.00	18.71	0.20
		Generac SG150							
POINT	NETRAIN	488222.33	5371358.38	281.00	4.40	0.02197	618.75	14.82	0.51
		Train (Cummins QSK95) NE bound							
POINT	SWTRAIN	488163.01	5371287.60	281.00	4.40	0.02197	618.85	14.82	0.51
		Train (Cummins QSK95) SW bound							

Source Pathway - Source Inputs

Line Volume Sources

Source Type: LINE VOLUME
Source: SLINE1

Length of Side [m]	Emission Rate [g/ s]	Building Height [m]	X Coordinate for Points [m]	Y Coordinate for points [m]	Base Elevation [m]	Release Height [m]
21.00	0.01135		487682.82	5371245.81	0.00	1.28
			488209.40	5371260.07	0.00	1.28
			488285.16	5371263.82	0.00	1.28
			488333.17	5371269.82	0.00	1.28
			488385.68	5371286.32	0.00	1.28
			488438.19	5371308.82	0.00	1.28
			488487.69	5371338.08	0.00	1.28
			488537.95	5371374.83	0.00	1.28
			488644.47	5371490.35	0.00	1.28

Source Type: LINE VOLUME
Source: SLINE2

Length of Side [m]	Emission Rate [g/ s]	Building Height [m]	X Coordinate for Points [m]	Y Coordinate for points [m]	Base Elevation [m]	Release Height [m]
16.00	0.00118		488076.72	5371257.50	0.00	1.28
			488072.77	5371821.62	0.00	1.28

Source Type: LINE VOLUME
Source: SLINE3

Length of Side [m]	Emission Rate [g/ s]	Building Height [m]	X Coordinate for Points [m]	Y Coordinate for points [m]	Base Elevation [m]	Release Height [m]
16.00	0.00118		488400.62	5371663.72	0.00	1.28
			488074.16	5371258.79	0.00	1.28

Source Pathway - Source Inputs

AERMOD

Source Type: LINE VOLUME
Source: SLINE4

Length of Side [m]	Emission Rate [g/s]	Building Height [m]	X Coordinate for Points [m]	Y Coordinate for points [m]	Base Elevation [m]	Release Height [m]
16.00	0.00118		487675.50	5371347.47	0.00	1.28
			488155.77	5371360.02	0.00	1.28

Source Pathway - Source Inputs

Volume Sources Generated from Line Sources

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
SLINE2	L0001315	488076.67	5371265.50	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001316	488076.56	5371281.50	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001317	488076.44	5371297.50	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001318	488076.33	5371313.50	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001319	488076.22	5371329.50	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001320	488076.11	5371345.50	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001321	488076.00	5371361.50	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001322	488075.88	5371377.50	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001323	488075.77	5371393.50	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001324	488075.66	5371409.50	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001325	488075.55	5371425.50	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001326	488075.44	5371441.49	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001327	488075.32	5371457.49	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001328	488075.21	5371473.49	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001329	488075.10	5371489.49	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001330	488074.99	5371505.49	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001331	488074.88	5371521.49	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001332	488074.76	5371537.49	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001333	488074.65	5371553.49	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001334	488074.54	5371569.49	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001335	488074.43	5371585.49	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001336	488074.32	5371601.49	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001337	488074.20	5371617.49	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001338	488074.09	5371633.49	0.00	1.28	0.00003	16.00		7.44	1.19

Source Pathway - Source Inputs

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
SLINE2	L0001339	488073.98	5371649.49	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001340	488073.87	5371665.49	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001341	488073.76	5371681.49	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001342	488073.64	5371697.49	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001343	488073.53	5371713.49	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001344	488073.42	5371729.49	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001345	488073.31	5371745.49	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001346	488073.20	5371761.49	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001347	488073.08	5371777.49	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001348	488072.97	5371793.49	0.00	1.28	0.00003	16.00		7.44	1.19
	L0001349	488072.86	5371809.49	0.00	1.28	0.00003	16.00		7.44	1.19

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
SLINE3	L0001350	488395.60	5371657.49	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001351	488385.56	5371645.04	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001352	488375.51	5371632.58	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001353	488365.47	5371620.13	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001354	488355.43	5371607.67	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001355	488345.39	5371595.21	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001356	488335.34	5371582.76	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001357	488325.30	5371570.30	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001358	488315.26	5371557.85	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001359	488305.22	5371545.39	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001360	488295.18	5371532.93	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001361	488285.13	5371520.48	0.00	1.28	0.00004	16.00		7.44	1.19

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
SLINE3	L0001362	488275.09	5371508.02	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001363	488265.05	5371495.56	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001364	488255.01	5371483.11	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001365	488244.97	5371470.65	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001366	488234.92	5371458.20	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001367	488224.88	5371445.74	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001368	488214.84	5371433.28	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001369	488204.80	5371420.83	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001370	488194.75	5371408.37	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001371	488184.71	5371395.92	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001372	488174.67	5371383.46	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001373	488164.63	5371371.00	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001374	488154.59	5371358.55	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001375	488144.54	5371346.09	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001376	488134.50	5371333.63	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001377	488124.46	5371321.18	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001378	488114.42	5371308.72	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001379	488104.37	5371296.27	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001380	488094.33	5371283.81	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001381	488084.29	5371271.35	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001382	488074.25	5371258.90	0.00	1.28	0.00004	16.00		7.44	1.19

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
SLINE4	L0001383	487683.50	5371347.67	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001384	487699.49	5371348.09	0.00	1.28	0.00004	16.00		7.44	1.19

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
SLINE4	L0001385	487715.49	5371348.51	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001386	487731.48	5371348.93	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001387	487747.48	5371349.35	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001388	487763.47	5371349.76	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001389	487779.47	5371350.18	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001390	487795.46	5371350.60	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001391	487811.46	5371351.02	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001392	487827.45	5371351.44	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001393	487843.45	5371351.86	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001394	487859.44	5371352.27	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001395	487875.43	5371352.69	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001396	487891.43	5371353.11	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001397	487907.42	5371353.53	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001398	487923.42	5371353.95	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001399	487939.41	5371354.36	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001400	487955.41	5371354.78	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001401	487971.40	5371355.20	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001402	487987.40	5371355.62	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001403	488003.39	5371356.04	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001404	488019.38	5371356.46	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001405	488035.38	5371356.87	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001406	488051.37	5371357.29	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001407	488067.37	5371357.71	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001408	488083.36	5371358.13	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001409	488099.36	5371358.55	0.00	1.28	0.00004	16.00		7.44	1.19

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
SLINE4	L0001410	488115.35	5371358.96	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001411	488131.35	5371359.38	0.00	1.28	0.00004	16.00		7.44	1.19
	L0001412	488147.34	5371359.80	0.00	1.28	0.00004	16.00		7.44	1.19

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
SLINE1	L0001413	487693.32	5371246.10	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001414	487714.31	5371246.67	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001415	487735.30	5371247.24	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001416	487756.29	5371247.80	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001417	487777.29	5371248.37	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001418	487798.28	5371248.94	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001419	487819.27	5371249.51	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001420	487840.26	5371250.08	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001421	487861.26	5371250.64	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001422	487882.25	5371251.21	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001423	487903.24	5371251.78	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001424	487924.23	5371252.35	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001425	487945.22	5371252.92	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001426	487966.22	5371253.48	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001427	487987.21	5371254.05	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001428	488008.20	5371254.62	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001429	488029.19	5371255.19	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001430	488050.19	5371255.76	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001431	488071.18	5371256.33	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001432	488092.17	5371256.89	0.00	1.28	0.00023	21.00		9.77	1.19

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
SLINE1	L0001433	488113.16	5371257.46	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001434	488134.16	5371258.03	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001435	488155.15	5371258.60	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001436	488176.14	5371259.17	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001437	488197.13	5371259.73	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001438	488218.12	5371260.50	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001439	488239.09	5371261.54	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001440	488260.07	5371262.57	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001441	488281.04	5371263.61	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001442	488301.91	5371265.91	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001443	488322.74	5371268.51	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001444	488343.18	5371272.96	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001445	488363.21	5371279.26	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001446	488383.25	5371285.56	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001447	488402.64	5371293.59	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001448	488421.94	5371301.86	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001449	488441.05	5371310.51	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001450	488459.13	5371321.20	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001451	488477.21	5371331.88	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001452	488494.81	5371343.28	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001453	488511.76	5371355.68	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001454	488528.71	5371368.08	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001455	488544.43	5371381.86	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001456	488558.66	5371397.30	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001457	488572.90	5371412.74	0.00	1.28	0.00023	21.00		9.77	1.19

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
SLINE1	L0001458	488587.14	5371428.17	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001459	488601.37	5371443.61	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001460	488615.61	5371459.05	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001461	488629.84	5371474.49	0.00	1.28	0.00023	21.00		9.77	1.19
	L0001462	488644.08	5371489.93	0.00	1.28	0.00023	21.00		9.77	1.19

Source Pathway - Source Inputs - PM2.5 (1hr & Annual)

AERMOD

Point Sources

Source Type	Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation (Optional)	Release Height [m]	Emission Rate [g/s]	Gas Exit Temp. [K]	Gas Exit Velocity [m/s]	Stack Inside Diameter [m]
POINT	STCK1	488178.53	5371354.82	281.00	4.50	0.00006	333.00	0.78	0.10
		UNIT Heater							
POINT	1STCK2	488180.66	5371353.01	281.00	4.50	0.00006	333.00	0.78	0.10
		UNIT Heater							
POINT	STCK3	488186.92	5371347.82	281.00	4.50	0.00014	333.00	2.02	0.10
		Hot Water Heater							
POINT	STCK4	488194.30	5371350.44	281.00	2.00	0.00019	333.00	1.20	0.15
		AHU							
POINT	STCK5	488191.80	5371353.01	281.00	2.00	0.00019	333.00	1.20	0.15
		AHU							
POINT	STCK6	488187.79	5371360.70	281.00	3.00	0.00013	323.00	18.71	0.20
		Generac SG150							
POINT	NETRAIN	488222.33	5371358.38	281.00	4.40	0.00051	618.75	14.82	0.51
		Train (Cummins QSK95) NE bound							
POINT	SWTRAIN	488163.01	5371287.60	281.00	4.40	0.00051	618.85	14.82	0.51
		Train (Cummins QSK95) SW bound							

Source Pathway - Source Inputs

Line Volume Sources

Source Type: LINE VOLUME
Source: SLINE1

Length of Side [m]	Emission Rate [g/ s]	Building Height [m]	X Coordinate for Points [m]	Y Coordinate for points [m]	Base Elevation [m]	Release Height [m]
21.00	0.00019		487682.82	5371245.81	0.00	1.28
			488209.40	5371260.07	0.00	1.28
			488285.16	5371263.82	0.00	1.28
			488333.17	5371269.82	0.00	1.28
			488385.68	5371286.32	0.00	1.28
			488438.19	5371308.82	0.00	1.28
			488487.69	5371338.08	0.00	1.28
			488537.95	5371374.83	0.00	1.28
			488644.47	5371490.35	0.00	1.28

Source Type: LINE VOLUME
Source: SLINE2

Length of Side [m]	Emission Rate [g/ s]	Building Height [m]	X Coordinate for Points [m]	Y Coordinate for points [m]	Base Elevation [m]	Release Height [m]
16.00	0.00002		488076.72	5371257.50	0.00	1.28
			488072.77	5371821.62	0.00	1.28

Source Type: LINE VOLUME
Source: SLINE3

Length of Side [m]	Emission Rate [g/ s]	Building Height [m]	X Coordinate for Points [m]	Y Coordinate for points [m]	Base Elevation [m]	Release Height [m]
16.00	0.00002		488400.62	5371663.72	0.00	1.28
			488074.16	5371258.79	0.00	1.28

Source Pathway - Source Inputs

AERMOD

Source Type: LINE VOLUME
Source: SLINE4

Length of Side [m]	Emission Rate [g/ s]	Building Height [m]	X Coordinate for Points [m]	Y Coordinate for points [m]	Base Elevation [m]	Release Height [m]
16.00	0.00002		487675.50	5371347.47	0.00	1.28
			488155.77	5371360.02	0.00	1.28

Source Pathway - Source Inputs

AERMOD

Volume Sources Generated from Line Sources

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
SLINE1	L0001561	487693.32	5371246.10	0.00	1.28	3.82E-6	21.00		9.77	1.19
	L0001562	487714.31	5371246.67	0.00	1.28	3.82E-6	21.00		9.77	1.19
	L0001563	487735.30	5371247.24	0.00	1.28	3.82E-6	21.00		9.77	1.19
	L0001564	487756.29	5371247.80	0.00	1.28	3.82E-6	21.00		9.77	1.19
	L0001565	487777.29	5371248.37	0.00	1.28	3.82E-6	21.00		9.77	1.19
	L0001566	487798.28	5371248.94	0.00	1.28	3.82E-6	21.00		9.77	1.19
	L0001567	487819.27	5371249.51	0.00	1.28	3.82E-6	21.00		9.77	1.19
	L0001568	487840.26	5371250.08	0.00	1.28	3.82E-6	21.00		9.77	1.19
	L0001569	487861.26	5371250.64	0.00	1.28	3.82E-6	21.00		9.77	1.19
	L0001570	487882.25	5371251.21	0.00	1.28	3.82E-6	21.00		9.77	1.19
	L0001571	487903.24	5371251.78	0.00	1.28	3.82E-6	21.00		9.77	1.19
	L0001572	487924.23	5371252.35	0.00	1.28	3.82E-6	21.00		9.77	1.19
	L0001573	487945.22	5371252.92	0.00	1.28	3.82E-6	21.00		9.77	1.19
	L0001574	487966.22	5371253.48	0.00	1.28	3.82E-6	21.00		9.77	1.19
	L0001575	487987.21	5371254.05	0.00	1.28	3.82E-6	21.00		9.77	1.19
	L0001576	488008.20	5371254.62	0.00	1.28	3.82E-6	21.00		9.77	1.19
	L0001577	488029.19	5371255.19	0.00	1.28	3.82E-6	21.00		9.77	1.19
	L0001578	488050.19	5371255.76	0.00	1.28	3.82E-6	21.00		9.77	1.19
	L0001579	488071.18	5371256.33	0.00	1.28	3.82E-6	21.00		9.77	1.19
	L0001580	488092.17	5371256.89	0.00	1.28	3.82E-6	21.00		9.77	1.19
	L0001581	488113.16	5371257.46	0.00	1.28	3.82E-6	21.00		9.77	1.19
	L0001582	488134.16	5371258.03	0.00	1.28	3.82E-6	21.00		9.77	1.19
	L0001583	488155.15	5371258.60	0.00	1.28	3.82E-6	21.00		9.77	1.19
	L0001584	488176.14	5371259.17	0.00	1.28	3.82E-6	21.00		9.77	1.19

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
SLINE1	L0001585	488197.13	5371259.73	0.00	1.28	3.82E-6	21.00		9.77	1.19
	L0001586	488218.12	5371260.50	0.00	1.28	3.82E-6	21.00		9.77	1.19
	L0001587	488239.09	5371261.54	0.00	1.28	3.82E-6	21.00		9.77	1.19
	L0001588	488260.07	5371262.57	0.00	1.28	3.82E-6	21.00		9.77	1.19
	L0001589	488281.04	5371263.61	0.00	1.28	3.82E-6	21.00		9.77	1.19
	L0001590	488301.91	5371265.91	0.00	1.28	3.82E-6	21.00		9.77	1.19
	L0001591	488322.74	5371268.51	0.00	1.28	3.82E-6	21.00		9.77	1.19
	L0001592	488343.18	5371272.96	0.00	1.28	3.82E-6	21.00		9.77	1.19
	L0001593	488363.21	5371279.26	0.00	1.28	3.82E-6	21.00		9.77	1.19
	L0001594	488383.25	5371285.56	0.00	1.28	3.82E-6	21.00		9.77	1.19
	L0001595	488402.64	5371293.59	0.00	1.28	3.82E-6	21.00		9.77	1.19
	L0001596	488421.94	5371301.86	0.00	1.28	3.82E-6	21.00		9.77	1.19
	L0001597	488441.05	5371310.51	0.00	1.28	3.82E-6	21.00		9.77	1.19
	L0001598	488459.13	5371321.20	0.00	1.28	3.82E-6	21.00		9.77	1.19
	L0001599	488477.21	5371331.88	0.00	1.28	3.82E-6	21.00		9.77	1.19
	L0001600	488494.81	5371343.28	0.00	1.28	3.82E-6	21.00		9.77	1.19
	L0001601	488511.76	5371355.68	0.00	1.28	3.82E-6	21.00		9.77	1.19
	L0001602	488528.71	5371368.08	0.00	1.28	3.82E-6	21.00		9.77	1.19
	L0001603	488544.43	5371381.86	0.00	1.28	3.82E-6	21.00		9.77	1.19
	L0001604	488558.66	5371397.30	0.00	1.28	3.82E-6	21.00		9.77	1.19
	L0001605	488572.90	5371412.74	0.00	1.28	3.82E-6	21.00		9.77	1.19
	L0001606	488587.14	5371428.17	0.00	1.28	3.82E-6	21.00		9.77	1.19
	L0001607	488601.37	5371443.61	0.00	1.28	3.82E-6	21.00		9.77	1.19
	L0001608	488615.61	5371459.05	0.00	1.28	3.82E-6	21.00		9.77	1.19
	L0001609	488629.84	5371474.49	0.00	1.28	3.82E-6	21.00		9.77	1.19

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
SLINE1	L0001610	488644.08	5371489.93	0.00	1.28	3.82E-6	21.00		9.77	1.19

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
SLINE2	L0001611	488076.67	5371265.50	0.00	1.28	6.65E-7	16.00		7.44	1.19
	L0001612	488076.56	5371281.50	0.00	1.28	6.65E-7	16.00		7.44	1.19
	L0001613	488076.44	5371297.50	0.00	1.28	6.65E-7	16.00		7.44	1.19
	L0001614	488076.33	5371313.50	0.00	1.28	6.65E-7	16.00		7.44	1.19
	L0001615	488076.22	5371329.50	0.00	1.28	6.65E-7	16.00		7.44	1.19
	L0001616	488076.11	5371345.50	0.00	1.28	6.65E-7	16.00		7.44	1.19
	L0001617	488076.00	5371361.50	0.00	1.28	6.65E-7	16.00		7.44	1.19
	L0001618	488075.88	5371377.50	0.00	1.28	6.65E-7	16.00		7.44	1.19
	L0001619	488075.77	5371393.50	0.00	1.28	6.65E-7	16.00		7.44	1.19
	L0001620	488075.66	5371409.50	0.00	1.28	6.65E-7	16.00		7.44	1.19
	L0001621	488075.55	5371425.50	0.00	1.28	6.65E-7	16.00		7.44	1.19
	L0001622	488075.44	5371441.49	0.00	1.28	6.65E-7	16.00		7.44	1.19
	L0001623	488075.32	5371457.49	0.00	1.28	6.65E-7	16.00		7.44	1.19
	L0001624	488075.21	5371473.49	0.00	1.28	6.65E-7	16.00		7.44	1.19
	L0001625	488075.10	5371489.49	0.00	1.28	6.65E-7	16.00		7.44	1.19
	L0001626	488074.99	5371505.49	0.00	1.28	6.65E-7	16.00		7.44	1.19
	L0001627	488074.88	5371521.49	0.00	1.28	6.65E-7	16.00		7.44	1.19
	L0001628	488074.76	5371537.49	0.00	1.28	6.65E-7	16.00		7.44	1.19
	L0001629	488074.65	5371553.49	0.00	1.28	6.65E-7	16.00		7.44	1.19
	L0001630	488074.54	5371569.49	0.00	1.28	6.65E-7	16.00		7.44	1.19
	L0001631	488074.43	5371585.49	0.00	1.28	6.65E-7	16.00		7.44	1.19
	L0001632	488074.32	5371601.49	0.00	1.28	6.65E-7	16.00		7.44	1.19

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
SLINE2	L0001633	488074.20	5371617.49	0.00	1.28	6.65E-7	16.00		7.44	1.19
	L0001634	488074.09	5371633.49	0.00	1.28	6.65E-7	16.00		7.44	1.19
	L0001635	488073.98	5371649.49	0.00	1.28	6.65E-7	16.00		7.44	1.19
	L0001636	488073.87	5371665.49	0.00	1.28	6.65E-7	16.00		7.44	1.19
	L0001637	488073.76	5371681.49	0.00	1.28	6.65E-7	16.00		7.44	1.19
	L0001638	488073.64	5371697.49	0.00	1.28	6.65E-7	16.00		7.44	1.19
	L0001639	488073.53	5371713.49	0.00	1.28	6.65E-7	16.00		7.44	1.19
	L0001640	488073.42	5371729.49	0.00	1.28	6.65E-7	16.00		7.44	1.19
	L0001641	488073.31	5371745.49	0.00	1.28	6.65E-7	16.00		7.44	1.19
	L0001642	488073.20	5371761.49	0.00	1.28	6.65E-7	16.00		7.44	1.19
	L0001643	488073.08	5371777.49	0.00	1.28	6.65E-7	16.00		7.44	1.19
	L0001644	488072.97	5371793.49	0.00	1.28	6.65E-7	16.00		7.44	1.19
	L0001645	488072.86	5371809.49	0.00	1.28	6.65E-7	16.00		7.44	1.19

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
SLINE3	L0001646	488395.60	5371657.49	0.00	1.28	7.05E-7	16.00		7.44	1.19
	L0001647	488385.56	5371645.04	0.00	1.28	7.05E-7	16.00		7.44	1.19
	L0001648	488375.51	5371632.58	0.00	1.28	7.05E-7	16.00		7.44	1.19
	L0001649	488365.47	5371620.13	0.00	1.28	7.05E-7	16.00		7.44	1.19
	L0001650	488355.43	5371607.67	0.00	1.28	7.05E-7	16.00		7.44	1.19
	L0001651	488345.39	5371595.21	0.00	1.28	7.05E-7	16.00		7.44	1.19
	L0001652	488335.34	5371582.76	0.00	1.28	7.05E-7	16.00		7.44	1.19
	L0001653	488325.30	5371570.30	0.00	1.28	7.05E-7	16.00		7.44	1.19
	L0001654	488315.26	5371557.85	0.00	1.28	7.05E-7	16.00		7.44	1.19
	L0001655	488305.22	5371545.39	0.00	1.28	7.05E-7	16.00		7.44	1.19

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
SLINE3	L0001656	488295.18	5371532.93	0.00	1.28	7.05E-7	16.00		7.44	1.19
	L0001657	488285.13	5371520.48	0.00	1.28	7.05E-7	16.00		7.44	1.19
	L0001658	488275.09	5371508.02	0.00	1.28	7.05E-7	16.00		7.44	1.19
	L0001659	488265.05	5371495.56	0.00	1.28	7.05E-7	16.00		7.44	1.19
	L0001660	488255.01	5371483.11	0.00	1.28	7.05E-7	16.00		7.44	1.19
	L0001661	488244.97	5371470.65	0.00	1.28	7.05E-7	16.00		7.44	1.19
	L0001662	488234.92	5371458.20	0.00	1.28	7.05E-7	16.00		7.44	1.19
	L0001663	488224.88	5371445.74	0.00	1.28	7.05E-7	16.00		7.44	1.19
	L0001664	488214.84	5371433.28	0.00	1.28	7.05E-7	16.00		7.44	1.19
	L0001665	488204.80	5371420.83	0.00	1.28	7.05E-7	16.00		7.44	1.19
	L0001666	488194.75	5371408.37	0.00	1.28	7.05E-7	16.00		7.44	1.19
	L0001667	488184.71	5371395.92	0.00	1.28	7.05E-7	16.00		7.44	1.19
	L0001668	488174.67	5371383.46	0.00	1.28	7.05E-7	16.00		7.44	1.19
	L0001669	488164.63	5371371.00	0.00	1.28	7.05E-7	16.00		7.44	1.19
	L0001670	488154.59	5371358.55	0.00	1.28	7.05E-7	16.00		7.44	1.19
	L0001671	488144.54	5371346.09	0.00	1.28	7.05E-7	16.00		7.44	1.19
	L0001672	488134.50	5371333.63	0.00	1.28	7.05E-7	16.00		7.44	1.19
	L0001673	488124.46	5371321.18	0.00	1.28	7.05E-7	16.00		7.44	1.19
	L0001674	488114.42	5371308.72	0.00	1.28	7.05E-7	16.00		7.44	1.19
	L0001675	488104.37	5371296.27	0.00	1.28	7.05E-7	16.00		7.44	1.19
	L0001676	488094.33	5371283.81	0.00	1.28	7.05E-7	16.00		7.44	1.19
	L0001677	488084.29	5371271.35	0.00	1.28	7.05E-7	16.00		7.44	1.19
	L0001678	488074.25	5371258.90	0.00	1.28	7.05E-7	16.00		7.44	1.19

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
SLINE4	L0001679	487683.50	5371347.67	0.00	1.28	7.75E-7	16.00		7.44	1.19
	L0001680	487699.49	5371348.09	0.00	1.28	7.75E-7	16.00		7.44	1.19
	L0001681	487715.49	5371348.51	0.00	1.28	7.75E-7	16.00		7.44	1.19
	L0001682	487731.48	5371348.93	0.00	1.28	7.75E-7	16.00		7.44	1.19
	L0001683	487747.48	5371349.35	0.00	1.28	7.75E-7	16.00		7.44	1.19
	L0001684	487763.47	5371349.76	0.00	1.28	7.75E-7	16.00		7.44	1.19
	L0001685	487779.47	5371350.18	0.00	1.28	7.75E-7	16.00		7.44	1.19
	L0001686	487795.46	5371350.60	0.00	1.28	7.75E-7	16.00		7.44	1.19
	L0001687	487811.46	5371351.02	0.00	1.28	7.75E-7	16.00		7.44	1.19
	L0001688	487827.45	5371351.44	0.00	1.28	7.75E-7	16.00		7.44	1.19
	L0001689	487843.45	5371351.86	0.00	1.28	7.75E-7	16.00		7.44	1.19
	L0001690	487859.44	5371352.27	0.00	1.28	7.75E-7	16.00		7.44	1.19
	L0001691	487875.43	5371352.69	0.00	1.28	7.75E-7	16.00		7.44	1.19
	L0001692	487891.43	5371353.11	0.00	1.28	7.75E-7	16.00		7.44	1.19
	L0001693	487907.42	5371353.53	0.00	1.28	7.75E-7	16.00		7.44	1.19
	L0001694	487923.42	5371353.95	0.00	1.28	7.75E-7	16.00		7.44	1.19
	L0001695	487939.41	5371354.36	0.00	1.28	7.75E-7	16.00		7.44	1.19
	L0001696	487955.41	5371354.78	0.00	1.28	7.75E-7	16.00		7.44	1.19
	L0001697	487971.40	5371355.20	0.00	1.28	7.75E-7	16.00		7.44	1.19
	L0001698	487987.40	5371355.62	0.00	1.28	7.75E-7	16.00		7.44	1.19
	L0001699	488003.39	5371356.04	0.00	1.28	7.75E-7	16.00		7.44	1.19
	L0001700	488019.38	5371356.46	0.00	1.28	7.75E-7	16.00		7.44	1.19
	L0001701	488035.38	5371356.87	0.00	1.28	7.75E-7	16.00		7.44	1.19
	L0001702	488051.37	5371357.29	0.00	1.28	7.75E-7	16.00		7.44	1.19
	L0001703	488067.37	5371357.71	0.00	1.28	7.75E-7	16.00		7.44	1.19

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
SLINE4	L0001704	488083.36	5371358.13	0.00	1.28	7.75E-7	16.00		7.44	1.19
	L0001705	488099.36	5371358.55	0.00	1.28	7.75E-7	16.00		7.44	1.19
	L0001706	488115.35	5371358.96	0.00	1.28	7.75E-7	16.00		7.44	1.19
	L0001707	488131.35	5371359.38	0.00	1.28	7.75E-7	16.00		7.44	1.19
	L0001708	488147.34	5371359.80	0.00	1.28	7.75E-7	16.00		7.44	1.19

Source Pathway - Source Inputs Benzene (24hr & Annual)

AERMOD

Point Sources

Source Type	Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation (Optional)	Release Height [m]	Emission Rate [g/s]	Gas Exit Temp. [K]	Gas Exit Velocity [m/s]	Stack Inside Diameter [m]
POINT	STCK1	488178.53	5371354.82	281.00	4.50	1.50E-11	333.00	0.78	0.10
		UNIT Heater							
POINT	1STCK2	488180.66	5371353.01	281.00	4.50	1.50E-11	333.00	0.78	0.10
		UNIT Heater							
POINT	STCK3	488186.92	5371347.82	281.00	4.50	3.70E-11	333.00	2.02	0.10
		Hot Water Heater							
POINT	STCK4	488194.30	5371350.44	281.00	2.00	4.90E-11	333.00	1.20	0.15
		AHU							
POINT	STCK5	488191.80	5371353.01	281.00	2.00	4.90E-11	333.00	1.20	0.15
		AHU							
POINT	STCK6	488187.79	5371360.70	281.00	3.00	0.00002	323.00	18.71	0.20
		Generac SG150							
POINT	NETRAIN	488222.33	5371358.38	281.00	4.40	0.00005	618.75	14.82	0.51
		Train (Cummins QSK95) NE bound							
POINT	SWTRAIN	488163.01	5371287.60	281.00	4.40	0.00005	618.85	14.82	0.51
		Train (Cummins QSK95) SW bound							

Source Pathway - Source Inputs

Line Volume Sources

Source Type: LINE VOLUME
Source: SLINE1

Length of Side [m]	Emission Rate [g/ s]	Building Height [m]	X Coordinate for Points [m]	Y Coordinate for points [m]	Base Elevation [m]	Release Height [m]
21.00	0.00002		487682.82	5371245.81	0.00	1.28
			488209.40	5371260.07	0.00	1.28
			488285.16	5371263.82	0.00	1.28
			488333.17	5371269.82	0.00	1.28
			488385.68	5371286.32	0.00	1.28
			488438.19	5371308.82	0.00	1.28
			488487.69	5371338.08	0.00	1.28
			488537.95	5371374.83	0.00	1.28
			488644.47	5371490.35	0.00	1.28

Source Type: LINE VOLUME
Source: SLINE2

Length of Side [m]	Emission Rate [g/ s]	Building Height [m]	X Coordinate for Points [m]	Y Coordinate for points [m]	Base Elevation [m]	Release Height [m]
16.00	1.98E-6		488076.72	5371257.50	0.00	1.28
			488072.77	5371821.62	0.00	1.28

Source Type: LINE VOLUME
Source: SLINE3

Length of Side [m]	Emission Rate [g/ s]	Building Height [m]	X Coordinate for Points [m]	Y Coordinate for points [m]	Base Elevation [m]	Release Height [m]
16.00	1.98E-6		488400.62	5371663.72	0.00	1.28
			488074.16	5371258.79	0.00	1.28

Source Pathway - Source Inputs

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Source Type: LINE VOLUME
Source: SLINE4

Length of Side [m]	Emission Rate [g/ s]	Building Height [m]	X Coordinate for Points [m]	Y Coordinate for points [m]	Base Elevation [m]	Release Height [m]
16.00	1.98E-6		487675.50	5371347.47	0.00	1.28
			488155.77	5371360.02	0.00	1.28

Source Pathway - Source Inputs

AERMOD

Volume Sources Generated from Line Sources

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
SLINE1	L0001709	487693.32	5371246.10	0.00	1.28	3.75E-7	21.00		9.77	1.19
	L0001710	487714.31	5371246.67	0.00	1.28	3.75E-7	21.00		9.77	1.19
	L0001711	487735.30	5371247.24	0.00	1.28	3.75E-7	21.00		9.77	1.19
	L0001712	487756.29	5371247.80	0.00	1.28	3.75E-7	21.00		9.77	1.19
	L0001713	487777.29	5371248.37	0.00	1.28	3.75E-7	21.00		9.77	1.19
	L0001714	487798.28	5371248.94	0.00	1.28	3.75E-7	21.00		9.77	1.19
	L0001715	487819.27	5371249.51	0.00	1.28	3.75E-7	21.00		9.77	1.19
	L0001716	487840.26	5371250.08	0.00	1.28	3.75E-7	21.00		9.77	1.19
	L0001717	487861.26	5371250.64	0.00	1.28	3.75E-7	21.00		9.77	1.19
	L0001718	487882.25	5371251.21	0.00	1.28	3.75E-7	21.00		9.77	1.19
	L0001719	487903.24	5371251.78	0.00	1.28	3.75E-7	21.00		9.77	1.19
	L0001720	487924.23	5371252.35	0.00	1.28	3.75E-7	21.00		9.77	1.19
	L0001721	487945.22	5371252.92	0.00	1.28	3.75E-7	21.00		9.77	1.19
	L0001722	487966.22	5371253.48	0.00	1.28	3.75E-7	21.00		9.77	1.19
	L0001723	487987.21	5371254.05	0.00	1.28	3.75E-7	21.00		9.77	1.19
	L0001724	488008.20	5371254.62	0.00	1.28	3.75E-7	21.00		9.77	1.19
	L0001725	488029.19	5371255.19	0.00	1.28	3.75E-7	21.00		9.77	1.19
	L0001726	488050.19	5371255.76	0.00	1.28	3.75E-7	21.00		9.77	1.19
	L0001727	488071.18	5371256.33	0.00	1.28	3.75E-7	21.00		9.77	1.19
	L0001728	488092.17	5371256.89	0.00	1.28	3.75E-7	21.00		9.77	1.19
	L0001729	488113.16	5371257.46	0.00	1.28	3.75E-7	21.00		9.77	1.19
	L0001730	488134.16	5371258.03	0.00	1.28	3.75E-7	21.00		9.77	1.19
	L0001731	488155.15	5371258.60	0.00	1.28	3.75E-7	21.00		9.77	1.19
	L0001732	488176.14	5371259.17	0.00	1.28	3.75E-7	21.00		9.77	1.19

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
SLINE1	L0001733	488197.13	5371259.73	0.00	1.28	3.75E-7	21.00		9.77	1.19
	L0001734	488218.12	5371260.50	0.00	1.28	3.75E-7	21.00		9.77	1.19
	L0001735	488239.09	5371261.54	0.00	1.28	3.75E-7	21.00		9.77	1.19
	L0001736	488260.07	5371262.57	0.00	1.28	3.75E-7	21.00		9.77	1.19
	L0001737	488281.04	5371263.61	0.00	1.28	3.75E-7	21.00		9.77	1.19
	L0001738	488301.91	5371265.91	0.00	1.28	3.75E-7	21.00		9.77	1.19
	L0001739	488322.74	5371268.51	0.00	1.28	3.75E-7	21.00		9.77	1.19
	L0001740	488343.18	5371272.96	0.00	1.28	3.75E-7	21.00		9.77	1.19
	L0001741	488363.21	5371279.26	0.00	1.28	3.75E-7	21.00		9.77	1.19
	L0001742	488383.25	5371285.56	0.00	1.28	3.75E-7	21.00		9.77	1.19
	L0001743	488402.64	5371293.59	0.00	1.28	3.75E-7	21.00		9.77	1.19
	L0001744	488421.94	5371301.86	0.00	1.28	3.75E-7	21.00		9.77	1.19
	L0001745	488441.05	5371310.51	0.00	1.28	3.75E-7	21.00		9.77	1.19
	L0001746	488459.13	5371321.20	0.00	1.28	3.75E-7	21.00		9.77	1.19
	L0001747	488477.21	5371331.88	0.00	1.28	3.75E-7	21.00		9.77	1.19
	L0001748	488494.81	5371343.28	0.00	1.28	3.75E-7	21.00		9.77	1.19
	L0001749	488511.76	5371355.68	0.00	1.28	3.75E-7	21.00		9.77	1.19
	L0001750	488528.71	5371368.08	0.00	1.28	3.75E-7	21.00		9.77	1.19
	L0001751	488544.43	5371381.86	0.00	1.28	3.75E-7	21.00		9.77	1.19
	L0001752	488558.66	5371397.30	0.00	1.28	3.75E-7	21.00		9.77	1.19
	L0001753	488572.90	5371412.74	0.00	1.28	3.75E-7	21.00		9.77	1.19
	L0001754	488587.14	5371428.17	0.00	1.28	3.75E-7	21.00		9.77	1.19
	L0001755	488601.37	5371443.61	0.00	1.28	3.75E-7	21.00		9.77	1.19
	L0001756	488615.61	5371459.05	0.00	1.28	3.75E-7	21.00		9.77	1.19
	L0001757	488629.84	5371474.49	0.00	1.28	3.75E-7	21.00		9.77	1.19

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
SLINE1	L0001758	488644.08	5371489.93	0.00	1.28	3.75E-7	21.00		9.77	1.19

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
SLINE2	L0001759	488076.67	5371265.50	0.00	1.28	5.65E-8	16.00		7.44	1.19
	L0001760	488076.56	5371281.50	0.00	1.28	5.65E-8	16.00		7.44	1.19
	L0001761	488076.44	5371297.50	0.00	1.28	5.65E-8	16.00		7.44	1.19
	L0001762	488076.33	5371313.50	0.00	1.28	5.65E-8	16.00		7.44	1.19
	L0001763	488076.22	5371329.50	0.00	1.28	5.65E-8	16.00		7.44	1.19
	L0001764	488076.11	5371345.50	0.00	1.28	5.65E-8	16.00		7.44	1.19
	L0001765	488076.00	5371361.50	0.00	1.28	5.65E-8	16.00		7.44	1.19
	L0001766	488075.88	5371377.50	0.00	1.28	5.65E-8	16.00		7.44	1.19
	L0001767	488075.77	5371393.50	0.00	1.28	5.65E-8	16.00		7.44	1.19
	L0001768	488075.66	5371409.50	0.00	1.28	5.65E-8	16.00		7.44	1.19
	L0001769	488075.55	5371425.50	0.00	1.28	5.65E-8	16.00		7.44	1.19
	L0001770	488075.44	5371441.49	0.00	1.28	5.65E-8	16.00		7.44	1.19
	L0001771	488075.32	5371457.49	0.00	1.28	5.65E-8	16.00		7.44	1.19
	L0001772	488075.21	5371473.49	0.00	1.28	5.65E-8	16.00		7.44	1.19
	L0001773	488075.10	5371489.49	0.00	1.28	5.65E-8	16.00		7.44	1.19
	L0001774	488074.99	5371505.49	0.00	1.28	5.65E-8	16.00		7.44	1.19
	L0001775	488074.88	5371521.49	0.00	1.28	5.65E-8	16.00		7.44	1.19
	L0001776	488074.76	5371537.49	0.00	1.28	5.65E-8	16.00		7.44	1.19
	L0001777	488074.65	5371553.49	0.00	1.28	5.65E-8	16.00		7.44	1.19
	L0001778	488074.54	5371569.49	0.00	1.28	5.65E-8	16.00		7.44	1.19
	L0001779	488074.43	5371585.49	0.00	1.28	5.65E-8	16.00		7.44	1.19
	L0001780	488074.32	5371601.49	0.00	1.28	5.65E-8	16.00		7.44	1.19

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
SLINE2	L0001781	488074.20	5371617.49	0.00	1.28	5.65E-8	16.00		7.44	1.19
	L0001782	488074.09	5371633.49	0.00	1.28	5.65E-8	16.00		7.44	1.19
	L0001783	488073.98	5371649.49	0.00	1.28	5.65E-8	16.00		7.44	1.19
	L0001784	488073.87	5371665.49	0.00	1.28	5.65E-8	16.00		7.44	1.19
	L0001785	488073.76	5371681.49	0.00	1.28	5.65E-8	16.00		7.44	1.19
	L0001786	488073.64	5371697.49	0.00	1.28	5.65E-8	16.00		7.44	1.19
	L0001787	488073.53	5371713.49	0.00	1.28	5.65E-8	16.00		7.44	1.19
	L0001788	488073.42	5371729.49	0.00	1.28	5.65E-8	16.00		7.44	1.19
	L0001789	488073.31	5371745.49	0.00	1.28	5.65E-8	16.00		7.44	1.19
	L0001790	488073.20	5371761.49	0.00	1.28	5.65E-8	16.00		7.44	1.19
	L0001791	488073.08	5371777.49	0.00	1.28	5.65E-8	16.00		7.44	1.19
	L0001792	488072.97	5371793.49	0.00	1.28	5.65E-8	16.00		7.44	1.19
	L0001793	488072.86	5371809.49	0.00	1.28	5.65E-8	16.00		7.44	1.19

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
SLINE3	L0001794	488395.60	5371657.49	0.00	1.28	5.99E-8	16.00		7.44	1.19
	L0001795	488385.56	5371645.04	0.00	1.28	5.99E-8	16.00		7.44	1.19
	L0001796	488375.51	5371632.58	0.00	1.28	5.99E-8	16.00		7.44	1.19
	L0001797	488365.47	5371620.13	0.00	1.28	5.99E-8	16.00		7.44	1.19
	L0001798	488355.43	5371607.67	0.00	1.28	5.99E-8	16.00		7.44	1.19
	L0001799	488345.39	5371595.21	0.00	1.28	5.99E-8	16.00		7.44	1.19
	L0001800	488335.34	5371582.76	0.00	1.28	5.99E-8	16.00		7.44	1.19
	L0001801	488325.30	5371570.30	0.00	1.28	5.99E-8	16.00		7.44	1.19
	L0001802	488315.26	5371557.85	0.00	1.28	5.99E-8	16.00		7.44	1.19
	L0001803	488305.22	5371545.39	0.00	1.28	5.99E-8	16.00		7.44	1.19

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
SLINE3	L0001804	488295.18	5371532.93	0.00	1.28	5.99E-8	16.00		7.44	1.19
	L0001805	488285.13	5371520.48	0.00	1.28	5.99E-8	16.00		7.44	1.19
	L0001806	488275.09	5371508.02	0.00	1.28	5.99E-8	16.00		7.44	1.19
	L0001807	488265.05	5371495.56	0.00	1.28	5.99E-8	16.00		7.44	1.19
	L0001808	488255.01	5371483.11	0.00	1.28	5.99E-8	16.00		7.44	1.19
	L0001809	488244.97	5371470.65	0.00	1.28	5.99E-8	16.00		7.44	1.19
	L0001810	488234.92	5371458.20	0.00	1.28	5.99E-8	16.00		7.44	1.19
	L0001811	488224.88	5371445.74	0.00	1.28	5.99E-8	16.00		7.44	1.19
	L0001812	488214.84	5371433.28	0.00	1.28	5.99E-8	16.00		7.44	1.19
	L0001813	488204.80	5371420.83	0.00	1.28	5.99E-8	16.00		7.44	1.19
	L0001814	488194.75	5371408.37	0.00	1.28	5.99E-8	16.00		7.44	1.19
	L0001815	488184.71	5371395.92	0.00	1.28	5.99E-8	16.00		7.44	1.19
	L0001816	488174.67	5371383.46	0.00	1.28	5.99E-8	16.00		7.44	1.19
	L0001817	488164.63	5371371.00	0.00	1.28	5.99E-8	16.00		7.44	1.19
	L0001818	488154.59	5371358.55	0.00	1.28	5.99E-8	16.00		7.44	1.19
	L0001819	488144.54	5371346.09	0.00	1.28	5.99E-8	16.00		7.44	1.19
	L0001820	488134.50	5371333.63	0.00	1.28	5.99E-8	16.00		7.44	1.19
	L0001821	488124.46	5371321.18	0.00	1.28	5.99E-8	16.00		7.44	1.19
	L0001822	488114.42	5371308.72	0.00	1.28	5.99E-8	16.00		7.44	1.19
	L0001823	488104.37	5371296.27	0.00	1.28	5.99E-8	16.00		7.44	1.19
	L0001824	488094.33	5371283.81	0.00	1.28	5.99E-8	16.00		7.44	1.19
	L0001825	488084.29	5371271.35	0.00	1.28	5.99E-8	16.00		7.44	1.19
	L0001826	488074.25	5371258.90	0.00	1.28	5.99E-8	16.00		7.44	1.19

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
SLINE4	L0001827	487683.50	5371347.67	0.00	1.28	6.59E-8	16.00		7.44	1.19
	L0001828	487699.49	5371348.09	0.00	1.28	6.59E-8	16.00		7.44	1.19
	L0001829	487715.49	5371348.51	0.00	1.28	6.59E-8	16.00		7.44	1.19
	L0001830	487731.48	5371348.93	0.00	1.28	6.59E-8	16.00		7.44	1.19
	L0001831	487747.48	5371349.35	0.00	1.28	6.59E-8	16.00		7.44	1.19
	L0001832	487763.47	5371349.76	0.00	1.28	6.59E-8	16.00		7.44	1.19
	L0001833	487779.47	5371350.18	0.00	1.28	6.59E-8	16.00		7.44	1.19
	L0001834	487795.46	5371350.60	0.00	1.28	6.59E-8	16.00		7.44	1.19
	L0001835	487811.46	5371351.02	0.00	1.28	6.59E-8	16.00		7.44	1.19
	L0001836	487827.45	5371351.44	0.00	1.28	6.59E-8	16.00		7.44	1.19
	L0001837	487843.45	5371351.86	0.00	1.28	6.59E-8	16.00		7.44	1.19
	L0001838	487859.44	5371352.27	0.00	1.28	6.59E-8	16.00		7.44	1.19
	L0001839	487875.43	5371352.69	0.00	1.28	6.59E-8	16.00		7.44	1.19
	L0001840	487891.43	5371353.11	0.00	1.28	6.59E-8	16.00		7.44	1.19
	L0001841	487907.42	5371353.53	0.00	1.28	6.59E-8	16.00		7.44	1.19
	L0001842	487923.42	5371353.95	0.00	1.28	6.59E-8	16.00		7.44	1.19
	L0001843	487939.41	5371354.36	0.00	1.28	6.59E-8	16.00		7.44	1.19
	L0001844	487955.41	5371354.78	0.00	1.28	6.59E-8	16.00		7.44	1.19
	L0001845	487971.40	5371355.20	0.00	1.28	6.59E-8	16.00		7.44	1.19
	L0001846	487987.40	5371355.62	0.00	1.28	6.59E-8	16.00		7.44	1.19
	L0001847	488003.39	5371356.04	0.00	1.28	6.59E-8	16.00		7.44	1.19
	L0001848	488019.38	5371356.46	0.00	1.28	6.59E-8	16.00		7.44	1.19
	L0001849	488035.38	5371356.87	0.00	1.28	6.59E-8	16.00		7.44	1.19
	L0001850	488051.37	5371357.29	0.00	1.28	6.59E-8	16.00		7.44	1.19
	L0001851	488067.37	5371357.71	0.00	1.28	6.59E-8	16.00		7.44	1.19

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
SLINE4	L0001852	488083.36	5371358.13	0.00	1.28	6.59E-8	16.00		7.44	1.19
	L0001853	488099.36	5371358.55	0.00	1.28	6.59E-8	16.00		7.44	1.19
	L0001854	488115.35	5371358.96	0.00	1.28	6.59E-8	16.00		7.44	1.19
	L0001855	488131.35	5371359.38	0.00	1.28	6.59E-8	16.00		7.44	1.19
	L0001856	488147.34	5371359.80	0.00	1.28	6.59E-8	16.00		7.44	1.19

Source Pathway - NO2, PM2.5, Benzene

Building Downwash Information

Source ID: STCK1

Heights [m] (10 to 360 deg)						
10-60 deg	7.50	7.50	7.50	7.50	7.50	7.50
70-120 deg	7.50	7.50	7.50	7.50	7.50	7.50
130-180 deg	7.50	7.50	7.50	7.50	7.50	7.50
190-240 deg	7.50	7.50	7.50	7.50	7.50	7.50
250-300 deg	7.50	7.50	7.50	7.50	7.50	7.50
310-360 deg	7.50	7.50	7.50	7.50	7.50	7.50
Widths [m] (10 to 360 deg)						
10-60 deg	39.43	35.49	30.48	27.54	30.43	35.48
70-120 deg	39.46	42.24	43.73	43.90	42.73	41.08
130-180 deg	40.14	41.17	42.57	43.76	43.63	42.17
190-240 deg	39.43	35.49	30.48	27.54	30.43	35.48
250-300 deg	39.46	42.24	43.73	43.90	42.73	41.08
310-360 deg	40.14	41.17	42.57	43.76	43.63	42.17
Lengths [m] (10 to 360 deg)						
10-60 deg	43.90	42.73	41.08	40.14	41.17	42.57
70-120 deg	43.76	43.63	42.17	39.43	35.49	30.48
130-180 deg	27.54	30.43	35.48	39.46	42.24	43.73
190-240 deg	43.90	42.73	41.08	40.14	41.17	42.57
250-300 deg	43.76	43.63	42.17	39.43	35.49	30.48
310-360 deg	27.54	30.43	35.48	39.46	42.24	43.73
Along Flow [m] (10 to 360 deg)						
10-60 deg	-42.90	-41.87	-40.38	-38.08	-36.49	-34.18
70-120 deg	-31.71	-28.28	-23.99	-18.97	-13.37	-7.37
130-180 deg	-2.67	-1.20	-1.23	-1.23	-1.19	-1.11
190-240 deg	-1.00	-0.86	-0.69	-2.07	-4.68	-8.38
250-300 deg	-12.05	-15.35	-18.18	-20.46	-22.12	-23.10
310-360 deg	-24.87	-29.23	-34.25	-38.23	-41.05	-42.62
Across Flow [m] (10 to 360 deg)						
10-60 deg	-0.74	-4.37	-7.87	-11.10	-14.02	-16.51
70-120 deg	-18.50	-19.93	-20.75	-20.95	-20.51	-19.85
130-180 deg	-18.01	-15.90	-12.90	-9.83	-6.47	-2.90
190-240 deg	0.74	4.37	7.87	11.10	14.02	16.51
250-300 deg	18.50	19.93	20.76	20.95	20.51	19.85
310-360 deg	18.01	15.90	12.90	9.83	6.47	2.90

Source ID: 1STCK2

Heights [m] (10 to 360 deg)						
10-60 deg	7.50	7.50	7.50	7.50	7.50	7.50

Source Pathway

70-120 deg	7.50	7.50	7.50	7.50	7.50	7.50
130-180 deg	7.50	7.50	7.50	7.50	7.50	7.50
190-240 deg	7.50	7.50	7.50	7.50	7.50	7.50
250-300 deg	7.50	7.50	7.50	7.50	7.50	7.50
310-360 deg	7.50	7.50	7.50	7.50	7.50	7.50
Widths [m] (10 to 360 deg)						
10-60 deg	39.43	35.49	30.48	27.54	30.43	35.48
70-120 deg	39.46	42.24	43.73	43.90	42.73	41.08
130-180 deg	40.14	41.17	42.57	43.76	43.63	42.17
190-240 deg	39.43	35.49	30.48	27.54	30.43	35.48
250-300 deg	39.46	42.24	43.73	43.90	42.73	41.08
310-360 deg	40.14	41.17	42.57	43.76	43.63	42.17
Lengths [m] (10 to 360 deg)						
10-60 deg	43.90	42.73	41.08	40.14	41.17	42.57
70-120 deg	43.76	43.63	42.17	39.43	35.49	30.48
130-180 deg	27.54	30.43	35.48	39.46	42.24	43.73
190-240 deg	43.90	42.73	41.08	40.14	41.17	42.57
250-300 deg	43.76	43.63	42.17	39.43	35.49	30.48
310-360 deg	27.54	30.43	35.48	39.46	42.24	43.73
Along Flow [m] (10 to 360 deg)						
10-60 deg	-41.48	-40.90	-39.88	-38.06	-36.96	-35.12
70-120 deg	-33.10	-30.06	-26.12	-21.38	-15.99	-10.12
130-180 deg	-5.47	-3.95	-3.86	-3.66	-3.34	-2.92
190-240 deg	-2.41	-1.83	-1.19	-2.08	-4.21	-7.44
250-300 deg	-10.67	-13.56	-16.05	-18.05	-19.50	-20.35
310-360 deg	-22.07	-26.47	-31.62	-35.80	-38.90	-40.81
Across Flow [m] (10 to 360 deg)						
10-60 deg	1.67	-1.75	-5.12	-8.30	-11.26	-13.88
70-120 deg	-16.07	-17.78	-18.95	-19.54	-19.53	-19.34
130-180 deg	-17.99	-16.37	-13.84	-11.21	-8.25	-5.03
190-240 deg	-1.67	1.75	5.12	8.30	11.26	13.88
250-300 deg	16.07	17.78	18.95	19.54	19.53	19.34
310-360 deg	17.99	16.37	13.84	11.21	8.25	5.03

Source ID: STCK3

Heights [m] (10 to 360 deg)						
10-60 deg	7.50	7.50	7.50	7.50	7.50	7.50
70-120 deg	7.50	7.50	7.50	7.50	7.50	7.50
130-180 deg	7.50	7.50	7.50	7.50	7.50	7.50
190-240 deg	7.50	7.50	7.50	7.50	7.50	7.50
250-300 deg	7.50	7.50	7.50	7.50	7.50	7.50
310-360 deg	7.50	7.50	7.50	7.50	7.50	7.50

Source Pathway

AERMOD

Widths [m] (10 to 360 deg)						
10-60 deg	39.43	35.49	30.48	27.54	30.43	35.48
70-120 deg	39.46	42.24	43.73	43.90	42.73	41.08
130-180 deg	40.14	41.17	42.57	43.76	43.63	42.17
190-240 deg	39.43	35.49	30.48	27.54	30.43	35.48
250-300 deg	39.46	42.24	43.73	43.90	42.73	41.08
310-360 deg	40.14	41.17	42.57	43.76	43.63	42.17
Lengths [m] (10 to 360 deg)						
10-60 deg	43.90	42.73	41.08	40.14	41.17	42.57
70-120 deg	43.76	43.63	42.17	39.43	35.49	30.48
130-180 deg	27.54	30.43	35.48	39.46	42.24	43.73
190-240 deg	43.90	42.73	41.08	40.14	41.17	42.57
250-300 deg	43.76	43.63	42.17	39.43	35.49	30.48
310-360 deg	27.54	30.43	35.48	39.46	42.24	43.73
Along Flow [m] (10 to 360 deg)						
10-60 deg	-37.46	-38.16	-38.52	-38.11	-38.42	-37.95
70-120 deg	-37.20	-35.33	-32.38	-28.45	-23.65	-18.14
130-180 deg	-13.60	-11.95	-11.49	-10.68	-9.54	-8.11
190-240 deg	-6.44	-4.57	-2.56	-2.03	-2.75	-4.62
250-300 deg	-6.56	-8.30	-9.79	-10.98	-11.84	-12.34
310-360 deg	-13.94	-18.47	-23.99	-28.78	-32.70	-35.62
Across Flow [m] (10 to 360 deg)						
10-60 deg	8.73	5.91	2.90	-0.17	-3.26	-6.25
70-120 deg	-9.05	-11.58	-13.76	-15.51	-16.80	-17.98
130-180 deg	-18.04	-17.83	-16.66	-15.32	-13.51	-11.29
190-240 deg	-8.73	-5.91	-2.90	0.17	3.26	6.25
250-300 deg	9.05	11.58	13.76	15.51	16.80	17.98
310-360 deg	18.04	17.83	16.66	15.32	13.51	11.29

Source ID: STCK4

Heights [m] (10 to 360 deg)						
10-60 deg	7.50	7.50	7.50	7.50	7.50	7.50
70-120 deg	7.50	7.50	7.50	7.50	7.50	7.50
130-180 deg	0.00	0.00	7.50	7.50	7.50	7.50
190-240 deg	7.50	7.50	7.50	7.50	7.50	7.50
250-300 deg	7.50	7.50	7.50	7.50	7.50	7.50
310-360 deg	4.39	4.39	7.50	7.50	7.50	7.50
Widths [m] (10 to 360 deg)						
10-60 deg	39.43	35.49	30.48	27.54	30.43	35.48
70-120 deg	39.46	42.24	43.73	43.90	42.73	41.08
130-180 deg	0.00	0.00	42.57	43.76	43.63	42.17
190-240 deg	39.43	35.49	30.48	27.54	30.43	35.48

Source Pathway

250-300 deg	39.46	42.24	43.73	43.90	42.73	41.08
310-360 deg	103.40	102.35	42.57	43.76	43.63	42.17
Lengths [m] (10 to 360 deg)						
10-60 deg	43.90	42.73	41.08	40.14	41.17	42.57
70-120 deg	43.76	43.63	42.17	39.43	35.49	30.48
130-180 deg	0.00	0.00	35.48	39.46	42.24	43.73
190-240 deg	43.90	42.73	41.08	40.14	41.17	42.57
250-300 deg	43.76	43.63	42.17	39.43	35.49	30.48
310-360 deg	3.01	20.92	35.48	39.46	42.24	43.73
Along Flow [m] (10 to 360 deg)						
10-60 deg	-41.32	-43.15	-44.48	-44.86	-45.76	-45.65
70-120 deg	-45.03	-43.05	-39.76	-35.26	-29.69	-23.22
130-180 deg	0.00	0.00	-12.91	-10.74	-8.24	-5.49
190-240 deg	-2.57	0.42	3.40	4.72	4.58	3.08
250-300 deg	1.27	-0.58	-2.41	-4.17	-5.80	-7.26
310-360 deg	-17.96	-30.50	-22.57	-28.72	-34.00	-38.24
Across Flow [m] (10 to 360 deg)						
10-60 deg	15.55	11.94	7.98	3.80	-0.52	-4.83
70-120 deg	-8.99	-12.88	-16.38	-19.37	-21.78	-23.94
130-180 deg	0.00	0.00	-24.37	-23.15	-21.24	-18.67
190-240 deg	-15.55	-11.94	-7.98	-3.80	0.52	4.83
250-300 deg	8.99	12.88	16.38	19.37	21.78	23.94
310-360 deg	22.10	18.91	24.37	23.15	21.24	18.67

Source ID: **STCK5**

Heights [m] (10 to 360 deg)						
10-60 deg	7.50	7.50	7.50	7.50	7.50	7.50
70-120 deg	7.50	7.50	7.50	7.50	7.50	4.39
130-180 deg	0.00	0.00	7.50	7.50	7.50	7.50
190-240 deg	7.50	7.50	7.50	7.50	7.50	7.50
250-300 deg	7.50	7.50	7.50	7.50	7.50	4.39
310-360 deg	4.39	4.39	7.50	7.50	7.50	7.50
Widths [m] (10 to 360 deg)						
10-60 deg	39.43	35.49	30.48	27.54	30.43	35.48
70-120 deg	39.46	42.24	43.73	43.90	42.73	102.35
130-180 deg	0.00	0.00	42.57	43.76	43.63	42.17
190-240 deg	39.43	35.49	30.48	27.54	30.43	35.48
250-300 deg	39.46	42.24	43.73	43.90	42.73	102.35
310-360 deg	103.40	102.35	42.57	43.76	43.63	42.17
Lengths [m] (10 to 360 deg)						
10-60 deg	43.90	42.73	41.08	40.14	41.17	42.57
70-120 deg	43.76	43.63	42.17	39.43	35.49	20.91

Source Pathway

AERMOD

130-180 deg	0.00	0.00	35.48	39.46	42.24	43.73
190-240 deg	43.90	42.73	41.08	40.14	41.17	42.57
250-300 deg	43.76	43.63	42.17	39.43	35.49	20.91
310-360 deg	3.01	20.92	35.48	39.46	42.24	43.73
Along Flow [m] (10 to 360 deg)						
10-60 deg	-43.42	-44.71	-45.45	-45.22	-45.49	-44.77
70-120 deg	-43.56	-41.04	-37.26	-32.35	-26.46	5.37
130-180 deg	0.00	0.00	-9.43	-7.47	-5.27	-2.92
190-240 deg	-0.48	1.98	4.38	5.08	4.32	2.20
250-300 deg	-0.20	-2.59	-4.91	-7.08	-9.03	-26.27
310-360 deg	-21.53	-34.08	-26.05	-31.99	-36.96	-40.81
Across Flow [m] (10 to 360 deg)						
10-60 deg	12.64	8.72	4.53	0.23	-4.10	-8.31
70-120 deg	-12.26	-15.84	-18.95	-21.47	-23.34	-25.60
130-180 deg	0.00	0.00	-23.49	-21.68	-19.22	-16.17
190-240 deg	-12.64	-8.72	-4.53	-0.23	4.10	8.31
250-300 deg	12.26	15.84	18.95	21.47	23.34	25.60
310-360 deg	22.46	18.65	23.49	21.68	19.22	16.17

Source ID: STCK6

Heights [m] (10 to 360 deg)						
10-60 deg	7.50	7.50	7.50	7.50	7.50	7.50
70-120 deg	7.50	7.50	0.00	0.00	0.00	0.00
130-180 deg	0.00	0.00	7.50	7.50	7.50	7.50
190-240 deg	7.50	7.50	7.50	7.50	7.50	7.50
250-300 deg	7.50	7.50	0.00	0.00	0.00	0.00
310-360 deg	0.00	0.00	7.50	7.50	7.50	7.50
Widths [m] (10 to 360 deg)						
10-60 deg	39.43	35.49	30.48	27.54	30.43	35.48
70-120 deg	39.46	42.24	0.00	0.00	0.00	0.00
130-180 deg	0.00	0.00	42.57	43.76	43.63	42.17
190-240 deg	39.43	35.49	30.48	27.54	30.43	35.48
250-300 deg	39.46	42.24	0.00	0.00	0.00	0.00
310-360 deg	0.00	0.00	42.57	43.76	43.63	42.17
Lengths [m] (10 to 360 deg)						
10-60 deg	43.90	42.73	41.08	40.14	41.17	42.57
70-120 deg	43.76	43.63	0.00	0.00	0.00	0.00
130-180 deg	0.00	0.00	35.48	39.46	42.24	43.73
190-240 deg	43.90	42.73	41.08	40.14	41.17	42.57
250-300 deg	43.76	43.63	0.00	0.00	0.00	0.00
310-360 deg	0.00	0.00	35.48	39.46	42.24	43.73

Source Pathway

Along Flow [m] (10 to 360 deg)						
10-60 deg	-50.29	-50.56	-50.11	-48.53	-47.36	-45.14
70-120 deg	-42.43	-38.42	0.00	0.00	0.00	0.00
130-180 deg	0.00	0.00	-0.77	1.13	3.00	4.77
190-240 deg	6.40	7.83	9.03	8.39	6.19	2.58
250-300 deg	-1.34	-5.21	0.00	0.00	0.00	0.00
310-360 deg	0.00	0.00	-34.71	-40.59	-45.23	-48.50
Across Flow [m] (10 to 360 deg)						
10-60 deg	7.35	2.32	-2.79	-7.78	-12.57	-16.97
70-120 deg	-20.86	-24.11	0.00	0.00	0.00	0.00
130-180 deg	0.00	0.00	-23.86	-20.54	-16.61	-12.16
190-240 deg	-7.35	-2.32	2.79	7.78	12.57	16.97
250-300 deg	20.86	24.11	0.00	0.00	0.00	0.00
310-360 deg	0.00	0.00	23.86	20.54	16.61	12.16

Source ID: NETRAIN

Heights [m] (10 to 360 deg)						
10-60 deg	4.39	4.39	4.39	4.39	7.50	7.50
70-120 deg	7.50	7.50	7.50	4.39	4.39	4.39
130-180 deg	4.39	4.39	4.39	4.39	4.39	4.39
190-240 deg	4.39	4.39	4.39	4.39	4.39	4.39
250-300 deg	4.39	4.39	4.39	4.39	4.39	4.39
310-360 deg	4.39	4.39	4.39	4.39	4.39	4.39
Widths [m] (10 to 360 deg)						
10-60 deg	54.30	38.18	20.91	3.01	30.43	35.48
70-120 deg	39.46	42.24	43.73	91.05	98.19	102.35
130-180 deg	103.40	102.35	98.19	91.04	81.13	68.76
190-240 deg	54.30	38.18	20.91	3.01	20.92	38.19
250-300 deg	54.30	68.77	81.14	91.05	98.19	102.35
310-360 deg	103.40	102.35	98.19	91.04	81.13	68.76
Lengths [m] (10 to 360 deg)						
10-60 deg	91.05	98.19	102.35	103.40	41.17	42.57
70-120 deg	43.76	43.63	42.17	54.30	38.18	20.91
130-180 deg	3.01	20.92	38.19	54.30	68.77	81.14
190-240 deg	91.05	98.19	102.35	103.40	102.35	98.19
250-300 deg	91.04	81.13	68.76	54.30	38.18	20.91
310-360 deg	3.01	20.92	38.19	54.30	68.77	81.14
Along Flow [m] (10 to 360 deg)						
10-60 deg	-85.58	-92.54	-96.69	-97.90	-72.33	-73.89
70-120 deg	-74.09	-72.03	-67.79	-50.17	-34.81	-18.39
130-180 deg	-1.41	-2.35	-3.21	-3.97	-4.62	-5.12
190-240 deg	-5.47	-5.65	-5.66	-5.50	-5.69	-5.71

Source Pathway

250-300 deg	-5.55	-5.23	-4.75	-4.12	-3.37	-2.52
310-360 deg	-1.59	-18.57	-34.98	-50.33	-64.15	-76.02
Across Flow [m] (10 to 360 deg)						
10-60 deg	23.02	15.72	7.94	-0.09	11.41	2.31
70-120 deg	-6.87	-15.83	-24.32	-40.06	-43.45	-45.52
130-180 deg	-46.20	-45.48	-43.39	-39.97	-35.34	-29.63
190-240 deg	-23.02	-15.72	-7.94	0.09	8.11	15.89
250-300 deg	23.18	29.77	35.45	40.06	43.45	45.52
310-360 deg	46.20	45.48	43.39	39.97	35.34	29.63

Source ID: SWTRAIN

Heights [m] (10 to 360 deg)						
10-60 deg	4.39	4.39	4.39	4.39	4.39	4.39
70-120 deg	4.39	4.39	4.39	4.39	4.39	4.39
130-180 deg	4.39	4.39	4.39	4.39	7.50	7.50
190-240 deg	7.50	7.50	7.50	4.39	4.39	4.39
250-300 deg	4.39	4.39	4.39	4.39	4.39	4.39
310-360 deg	4.39	4.39	4.39	4.39	4.39	4.39
Widths [m] (10 to 360 deg)						
10-60 deg	54.30	38.18	20.91	3.01	20.92	38.19
70-120 deg	54.30	68.77	81.14	91.05	98.19	102.35
130-180 deg	103.40	102.35	98.19	91.04	43.63	42.17
190-240 deg	39.43	35.49	30.48	3.01	20.92	38.19
250-300 deg	54.30	68.77	81.14	91.05	98.19	102.35
310-360 deg	103.40	102.35	98.19	91.04	81.13	68.76
Lengths [m] (10 to 360 deg)						
10-60 deg	91.05	98.19	102.35	103.40	102.35	98.19
70-120 deg	91.04	81.13	68.76	54.30	38.18	20.91
130-180 deg	3.01	20.92	38.19	54.30	42.24	43.73
190-240 deg	43.90	42.73	41.08	103.40	102.35	98.19
250-300 deg	91.04	81.13	68.76	54.30	38.18	20.91
310-360 deg	3.01	20.92	38.19	54.30	68.77	81.14
Along Flow [m] (10 to 360 deg)						
10-60 deg	-5.58	-5.74	-5.73	-5.55	-5.72	-5.72
70-120 deg	-5.54	-5.19	-4.69	-4.04	-3.28	-2.41
130-180 deg	-1.47	-18.44	-34.85	-50.20	-64.69	-68.33
190-240 deg	-69.89	-69.33	-66.67	-97.85	-96.63	-92.47
250-300 deg	-85.51	-75.94	-64.07	-50.25	-34.91	-18.50
310-360 deg	-1.54	-2.48	-3.34	-4.11	-4.75	-5.24
Across Flow [m] (10 to 360 deg)						
10-60 deg	-23.10	-15.82	-8.05	-0.03	7.98	15.75
70-120 deg	23.04	29.64	35.33	39.95	43.35	45.44

Source Pathway

						AERMOD
130-180 deg	46.15	45.45	43.38	39.98	20.49	12.61
190-240 deg	4.36	-4.03	-12.30	0.03	-7.98	-15.75
250-300 deg	-23.04	-29.64	-35.33	-39.95	-43.35	-45.44
310-360 deg	-46.15	-45.45	-43.38	-39.98	-35.37	-29.69

Emission Rate Units for Output

For Concentration

Unit Factor:	1E6
Emission Unit Label:	GRAMS/SEC
Concentration Unit Label:	MICROGRAMS/M**3

Source Groups

Source Group ID:	SWtrain	List of Sources in Group (Source Range or Single Sources)
		STCK1
		1STCK2
		STCK3
		STCK4
		STCK5
		STCK6
		SWTRAIN

Source Group ID:	Roads	List of Sources in Group (Source Range or Single Sources)
		SLINE1
		SLINE2
		SLINE3
		SLINE4

Source Group ID:	NEtrain	List of Sources in Group (Source Range or Single Sources)
		STCK1
		1STCK2
		STCK3
		STCK4
		STCK5
		STCK6
		NETRAIN

Source Group ID:	BACKGRND	List of Sources in Group (Source Range or Single Sources)

Source Pathway

Data for Particulates

0.00 True True

Source ID: 1STCK2

Fine Particle Fraction:	1.00
Mass Mean Particle Diameter:	2.50 [microns]

Source ID: NETRAIN

Fine Particle Fraction:	1.00
Mass Mean Particle Diameter:	2.50 [microns]

Source ID: SLINE1

Fine Particle Fraction:	1.00
Mass Mean Particle Diameter:	2.50 [microns]

Source ID: SLINE2

Fine Particle Fraction:	1.00
Mass Mean Particle Diameter:	2.50 [microns]

Source ID: SLINE3

Fine Particle Fraction:	1.00
Mass Mean Particle Diameter:	2.50 [microns]

Source ID: SLINE4

Fine Particle Fraction:	1.00
Mass Mean Particle Diameter:	2.50 [microns]

Source ID: STCK1

Fine Particle Fraction:	1.00
Mass Mean Particle Diameter:	2.50 [microns]

Source ID: STCK3

Fine Particle Fraction:	1.00
Mass Mean Particle Diameter:	2.50 [microns]

Source ID: STCK4

Fine Particle Fraction:	1.00
Mass Mean Particle Diameter:	2.50 [microns]

Source ID: STCK5

Fine Particle Fraction:	1.00
Mass Mean Particle Diameter:	2.50 [microns]

Source Pathway

AERMOD

Source ID: STCK6

Fine Particle Fraction:	1.00
Mass Mean Particle Diameter:	2.50 [microns]

Source ID: SWTRAIN

Fine Particle Fraction:	1.00
Mass Mean Particle Diameter:	2.50 [microns]

Data for Gases 0.00

Source Groups

Source Group ID:	List of Sources in Group (Source Range or Single Sources)
SWtrain	STCK1
	1STCK2
	STCK3
	STCK4
	STCK5
	STCK6
	SWTRAIN
Source Group ID:	**List of Sources in Group (Source Range or Single Sources)**
Roads	SLINE1
	SLINE2
	SLINE3
	SLINE4
Source Group ID:	**List of Sources in Group (Source Range or Single Sources)**
NEtrain	STCK1
	1STCK2
	STCK3
	STCK4
	STCK5
	STCK6
	NETRAIN
Source Group ID:	**List of Sources in Group (Source Range or Single Sources)**
BACKGRND	

Meteorology - NO2, PM2.5, Benzene

AERMOD

Met Input Data

Surface Met Data

Filename: Data\Met\Sudbury_forest_22112.SFC
Format Type: Default AERMET format

Profile Met Data

Filename: Data\Met\Sudbury_forest_22112.PFL
Format Type: Default AERMET format

Wind Speed

☐ Wind Speeds are Vector Mean (Not Scalar Means)

Wind Direction

Rotation Adjustment [deg]:

Potential Temperature Profile

Base Elevation above MSL (for Primary Met Tower): 348.00 [m]

Meteorological Station Data

Stations	Station No.	Year	X Coordinate [m]	Y Coordinate [m]	Station Name
Surface		1996			SUDBURY
Upper Air		1996			WHITE LAKE

Data Period

Data Period to Process

Start Date: 1996-01-01 Start Hour: 1 End Date: 2000-12-31 End Hour: 24

Wind Speed Categories

Stability Category	Wind Speed [m/s]	Stability Category	Wind Speed [m/s]
A	1.54	D	8.23
B	3.09	E	10.8
C	5.14	F	No Upper Bound

Results Summary - NO2 (1hr)

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NO2 - Concentration - Source Group: BACKGRND

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
1-HR	1ST	25.10000	ug/m^3	488294.31	5371363.28	348.00	1.80	348.00	
1-HR	8TH	25.10000	ug/m^3	488294.31	5371363.28	348.00	1.80	348.00	

NO2 - Concentration - Source Group: NETRAIN

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
1-HR	1ST	48.90890	ug/m^3	488266.82	5371302.96	348.00	1.80	348.00	
1-HR	8TH	44.48384	ug/m^3	488266.82	5371302.96	348.00	1.80	348.00	

NO2 - Concentration - Source Group: ROADS

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
1-HR	1ST	1.37054	ug/m^3	488059.75	5371288.11	348.00	1.80	348.00	
1-HR	8TH	1.36859	ug/m^3	488059.75	5371288.11	348.00	1.80	348.00	

NO2 - Concentration - Source Group: SWTRAIN

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
1-HR	1ST	50.64791	ug/m^3	488202.59	5371246.31	348.00	1.80	348.00	
1-HR	8TH	44.42121	ug/m^3	488202.59	5371246.31	348.00	1.80	348.00	

Results Summary - NO2 (24hr & Annual)

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NO2 - Concentration - Source Group: BACKGRND

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
24-HR	1ST	22.70000	ug/m^3	488294.31	5371363.28	348.00	1.80	348.00	1996-01-05, 24
ANNUAL		22.70000	ug/m^3	488294.31	5371363.28	348.00	1.80	348.00	

NO2 - Concentration - Source Group: NETRAIN

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
24-HR	1ST	5.11073	ug/m^3	488266.82	5371302.96	348.00	1.80	348.00	1998-12-30, 24
ANNUAL		0.84080	ug/m^3	488266.82	5371302.96	348.00	1.80	348.00	

NO2 - Concentration - Source Group: ROADS

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
24-HR	1ST	1.19314	ug/m^3	488059.75	5371288.11	348.00	1.80	348.00	
ANNUAL		0.33686	ug/m^3	488059.75	5371288.11	348.00	1.80	348.00	

NO2 - Concentration - Source Group: SWTRAIN

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
24-HR	1ST	4.03115	ug/m^3	488266.82	5371302.96	348.00	1.80	348.00	1997-01-06, 24
ANNUAL		0.79037	ug/m^3	488202.59	5371246.31	348.00	1.80	348.00	

Results Summary - PM2.5 (24hr & Annual)

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PM-2.5 NAAQS - Concentration - Source Group: NETRAIN

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
24-HR	1ST	0.55375	ug/m^3	488266.82	5371302.96	348.00	1.80	348.00	
24-HR	8TH	0.28448	ug/m^3	488266.82	5371302.96	348.00	1.80	348.00	
ANNUAL		0.07916	ug/m^3	488266.82	5371302.96	348.00	1.80	348.00	

PM-2.5 NAAQS - Deposition - Source Group: NETRAIN

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
ANNUAL		0.00417	g/m^2	488202.59	5371246.31	348.00	1.80	348.00	

PM-2.5 NAAQS - Concentration - Source Group: ROADS

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
24-HR	1ST	0.02079	ug/m^3	488059.75	5371288.11	348.00	1.80	348.00	
24-HR	8TH	0.01657	ug/m^3	488059.75	5371288.11	348.00	1.80	348.00	
ANNUAL		0.00663	ug/m^3	488059.75	5371288.11	348.00	1.80	348.00	

PM-2.5 NAAQS - Deposition - Source Group: ROADS

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
ANNUAL		0.00037	g/m^2	488059.75	5371288.11	348.00	1.80	348.00	

Results Summary

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PM-2.5 NAAQS - Concentration - Source Group: SWTRAIN

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
24-HR	1ST	0.54145	ug/m^3	488266.82	5371302.96	348.00	1.80	348.00	
24-HR	8TH	0.27730	ug/m^3	488266.82	5371302.96	348.00	1.80	348.00	
ANNUAL		0.07562	ug/m^3	488202.59	5371246.31	348.00	1.80	348.00	

PM-2.5 NAAQS - Deposition - Source Group: SWTRAIN

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
ANNUAL		0.00445	g/m^2	488202.59	5371246.31	348.00	1.80	348.00	

Results Summary Benzene (24hr & Annual)

D:\Projects\2024\24120 Timmins\AERMOD\NO2NAAQS1h.isc

BENZENE - Concentration - Source Group: NETRAIN

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
24-HR	1ST	0.01453	ug/m^3	488202.59	5371246.31	348.00	1.80	348.00	1998-02-19, 24
24-HR	8TH	0.00999	ug/m^3	488202.59	5371246.31	348.00	1.80	348.00	1996-01-07, 24
ANNUAL		0.00213	ug/m^3	488202.59	5371246.31	348.00	1.80	348.00	

BENZENE - Concentration - Source Group: ROADS

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
24-HR	1ST	0.00220	ug/m^3	488059.75	5371288.11	348.00	1.80	348.00	
24-HR	8TH	0.00189	ug/m^3	488059.75	5371288.11	348.00	1.80	348.00	1997-01-02, 24
ANNUAL		0.00062	ug/m^3	488059.75	5371288.11	348.00	1.80	348.00	

BENZENE - Concentration - Source Group: SWTRAIN

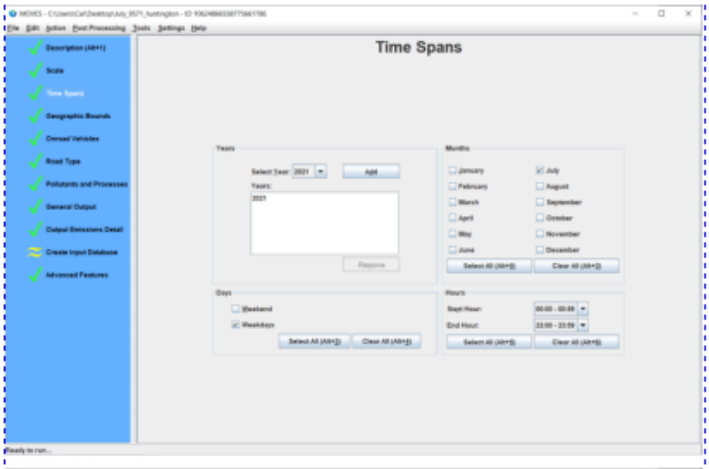
Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
24-HR	1ST	0.01061	ug/m^3	488101.40	5371322.27	348.00	1.80	348.00	1996-01-03, 24
24-HR	8TH	0.00827	ug/m^3	488202.59	5371246.31	348.00	1.80	348.00	1997-09-12, 24
ANNUAL		0.00250	ug/m^3	488202.59	5371246.31	348.00	1.80	348.00	

APPENDIX B

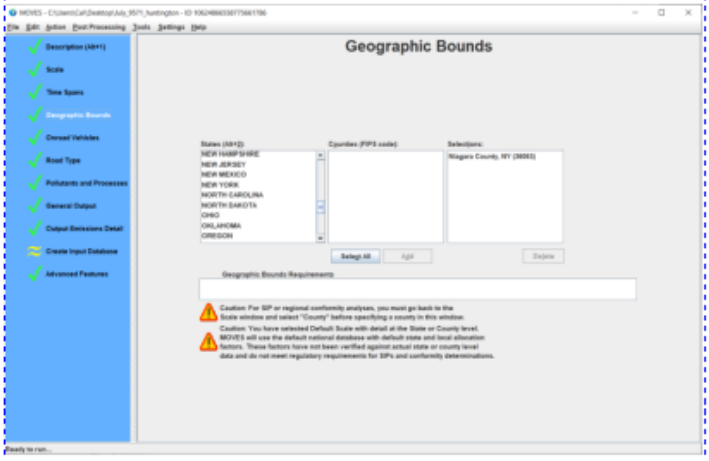
MOVES4 Emissions Rates

Appendix B – MOVES4 Emission Rates

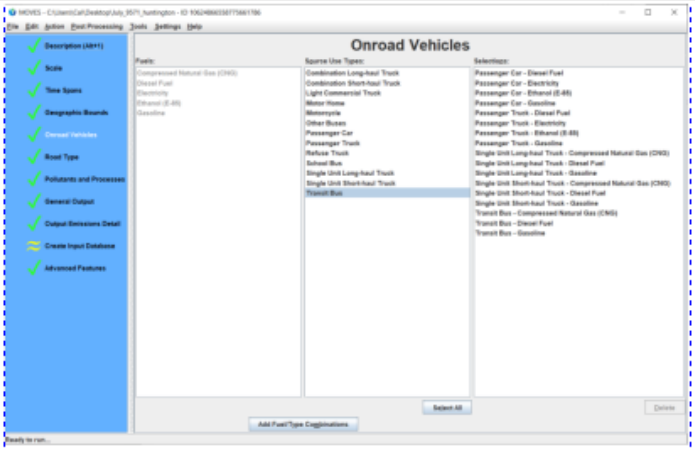
1. Make Choices in MOVES program.



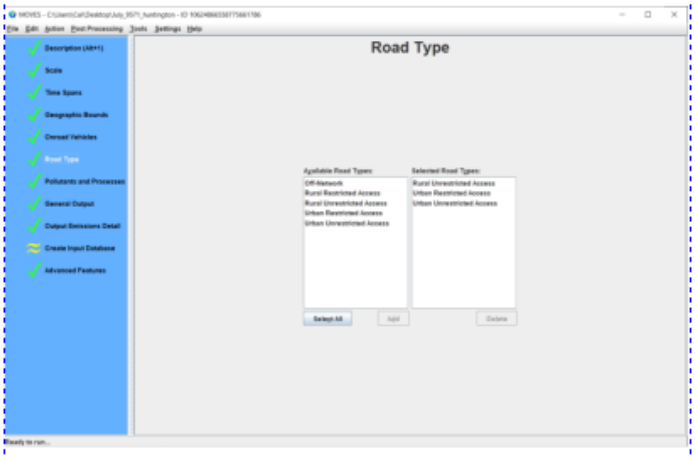
Choose a weekday in January and another in July.



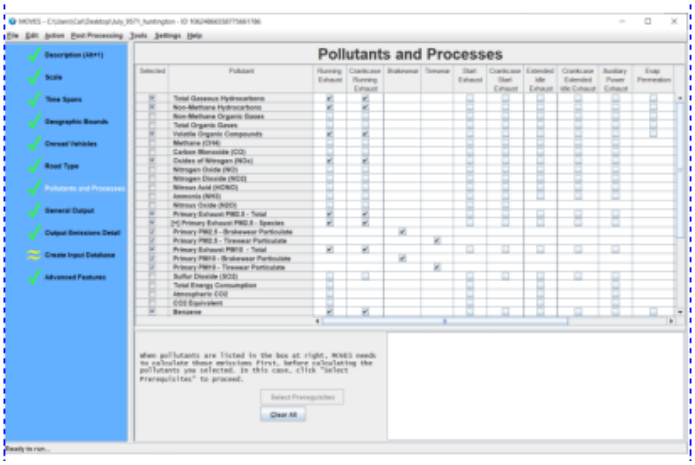
Chippewa County MI. is the closest US to Timmins.



Choose Passenger Car, Passenger Truck, Single Unit Short Haul Truck, Single Unit Long Haul Truck, and Transit Busses.

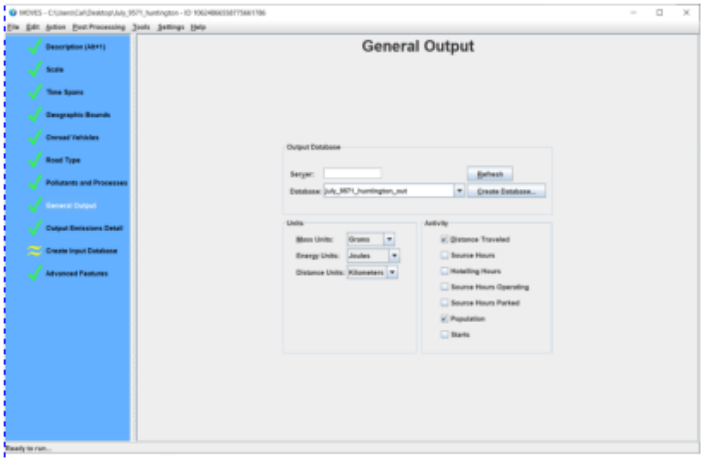


Choose the types of roads.
Urban (Town) roads are Urban unrestricted (5).
101 / King are Rural unrestricted (3).

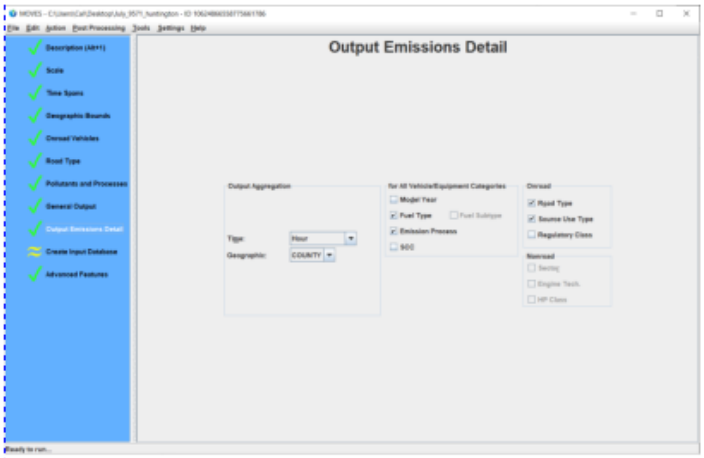


Choose the pollutants, generally Benzene (20), NOX (3), and PM2.5 (110, 116 & 117) for Running, Crankcase, Brakewear, and Tirewear.

Prerequisites are needed for Benzene - the model flags them and let's you choose them with a click.



Name the output file and click "create database".



Recommended Output Options.

Can ignore Input Database - have chosen defaults. Can ignore Advanced Features.

With all checkmarks, can choose Execute from Action tab.

When run is done, go to Post Processing Run Sql Script - choose EmissionRates.sql.

Then run Post Summary Report. Choose your run, then source 1st, fuel 2nd, then the contaminant of interest, either Benzene, NOX or PM2.5. For each source, proportion the emission per vehicle by fuel in each of the three (Benzene, NOX and PM2.5) spreadsheets.

Use Ontario Fleet information for Passenger Car, Passenger Truck & SUV, Short and Long-Haul Trucks, and Busses.

APPENDIX C

Fugitive Dust Best Management Plan

Appendix C – Fugitive Dust Best Management Plan

Fugitive Dust "Best Management" Plan for Timmins-Porcupine Station Construction Phase, Timmins Ontario

US EPA AP-42 13.2.3 (Heavy Construction Operations) estimates construction emissions as primarily fugitive dust emitted at a rate of 2,690,000 g/hectare/month. The site is approximately 0.8 hectares, resulting in an average emission of 0.91 g/s. The following describes the dominant sources of fugitive dust and dust management strategies.

1. Potential Sources of fugitive dust at this site:

- Demolition and debris removal,
- Site Preparation,
- General Construction,

2. Composition and size range of fugitive dust:

Dust generated from the potential sources at this site will likely generally lack contaminants other than particulate. Further, a significant portion of the fugitive dust from these sources is coarse and only a small fraction is dust in the respirable range.

According to USEPA AP-42 13.2.4-4, 74% of the fugitive dust particles are smaller than 30*um*, 48% are smaller than 15*um*, 35% are smaller than 5*um*, and 0.53% are smaller than 2.5*um*, the ultimate size fraction considered respirable. According to regulation 419/05 the suspended particulate limit is 120ug/m^3 (24h - Schedule 3) and is based on visibility, however, respirable particles (2.5*um* and less) can penetrate deep into the respiratory system and as a result pose concerns with regard to health.

3. Fugitive Dust Control Actions:

Depending on the source, there are a variety of measures used to reduce the impact of fugitive dust emissions. These are discussed for each source in the following.

3.1 Truck transport

To achieve a good level of control the following actions should be followed:

- Roads should be sprayed with water and/or treated with appropriate chemical agents, at frequencies as required to control fugitive dust emissions resulting from vehicular travel, and
- Vehicle speeds on internal haul roads should be limited

- Ensure trucks hauling aggregates are tarped, and
- Establish efficient traffic patterns to minimize dust generation.

3.2 Debris Handling

Fugitive dust is controlled when loading trucks with water sprays and strategically located wind barriers to speed reduce the wind speed.

3.3 Bulldozers

Wet suppression is recommended for areas to be bulldozed. Excavated materials may already be moist and not require additional wetting.

3.4 Pan Scrapers

Wet suppression of travel routes is recommended for areas to be scraped.

3.5 Cut / Fill Material

Fugitive dust is controlled with water sprays and strategically located wind barriers to reduce the wind speed.

3.6 Cut / Fill Haulage

To achieve a good level of control the following actions (similar to debris handling) should be followed:

- Roads should be sprayed with water and/or treated with appropriate chemical agents, at frequencies as required to control fugitive dust emissions resulting from vehicular travel, and
- Vehicle speeds on internal haul roads should be limited
- Ensure trucks hauling aggregates are tarped, and

Establish efficient traffic patterns to minimize dust generation.

3.7 General Construction

Fugitive dust can be controlled with strategically located wind barriers to reduce the wind speed, wet suppression, and early paving of permanent roads.

4. Record Keeping

A daily log of water and other dust control procedures and observations should be kept at the site to demonstrate, if necessary, that dust control actions are being taken.

5. Response to Complaints

Complainants are to be requested to provide information as required to complete a record of environmental complaint response that upon completion will be sent to the Site Manager. The Site Manager will:

1. Investigate the site and circumstances leading to said emissions of dust driving the complaint, and
2. Determine if the source of the dust complaint was indeed the result of operations, and if so
3. Adjust or modify fugitive dust mitigation systems as required to prevent a reoccurrence, and if necessary
4. Review the Dust Management Plan and implement additional control measures as necessary,
5. Respond to the Complainants in a timely manner, and
6. Document the resulting information in an on-site log that will be made available to the MECP upon request.

A sample form is included below.

6. Conclusion

The monitoring and control measures of this Dust Management Plan are intended to meet or exceed industry standards for controlling fugitive dust emissions resulting from the construction phase. The measures will be implemented as required to control emissions from construction.

RECORD OF ENVIRONMENTAL COMPLAINT RESPONSE

1. Location: _____

2. Date and Time Complaint Received: _____

3. Name of Complainant: _____

Address: _____

Telephone Number: _____

4. Form of Complaint: Visit:[ ] Telephone Call:[ ] Letter:[ ] Attach Copy
Other _____

5. Complaint Referred to Technical Services: No:[ ] Yes:[ ] and provide details:
_____

6. Complaint Made with Government Official(s): No:[ ] Yes:[ ]
If Yes, Attach Record of MECP Letter

7. Details Concerning Investigation Made by Company Concerning Complaint:
_____
_____

8. Response to Complaint:
Letter:[ ] Date _____ Attach copy of letter to form.
Telephone Call:[ ] Date_____ Time_____
Summary of Telephone Call:_____
_____
_____

9. Follow-up Action Taken by Company: None:[ ] Details:
_____
_____

10. Filed a copy of this Form in Plant Environmental Manual: Yes:[ ]

Date: _____ _____
Employee Signature, Name & Position