Supporting Document 3-1

Air Quality Effects Assessment Report

Twin Creeks Environmental Centre Landfill Optimization Project Environmental Assessment

WM Canada

Watford, Ontario

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Executive Summary

RWDI AIR Inc., was contracted by HDR Corporation on behalf of WM Canada (WM) to prepare this Air Quality Effects Assessment Report as part of the Twin Creeks Environmental Centre (TCEC) Landfill Optimization Project Environmental Assessment (EA). The EA is being carried out in accordance with the requirements of the *Ontario Environmental Assessment Act* (*OEAA*) and the EA Terms of Reference (ToR), which was approved by the Ministry of Environment, Conservation and Parks (MECP) on December 13, 2022. The Air Quality discipline evaluates the releases to air from the Project and assesses the potential effects on surrounding areas by comparing to standards and guidelines published by government agencies. The Air Quality assessment considers the release of air quality related compounds of interest including: 1) particulate matter (dust), 2) landfill gas (LFG) and combustion byproducts, 3) odour, and 4) blowing litter. The Air Quality assessment also considered the potential impacts on climate change resulting from the release of greenhouse gas (GHG) emissions from landfill activities.

The purpose of this Effects Assessment Report is to present the:

- Potential environmental effects of the alternative methods on Air Quality;
- Comparison of the net effects of each alternative method;
- Selection of a Preferred Alternative;
- Assessment of the environmental effects of the Preferred Alternative; and
- Commitments and monitoring.

There are approximately 6 years of approved landfill airspace capacity remaining at the TCEC (i.e., capacity will be reached in approximately 2031). The proposed optimization would provide additional airspace of approximately 14.3 million cubic metres (m^3), which could extend the site life by approximately 12 years (from 2031 to 2043) and may be achieved through alternative landfill configurations (alternative methods) within the existing 301-hectare TCEC site area. No changes are proposed to the size of the TCEC site area, approved service area, or annual fill rate.

Three alternative methods for carrying out the optimization were developed to a preliminary conceptual design level in the Conceptual Design Report (CDR):

Alternative 1 – Utilizes the existing approved landfill area with a maximum annual waste filling rate of 1.4 million tonnes per year of waste and a total tonnage capacity of 14.3 million m^3. The landfill mound will have a side slope of 4:1 up to an elevation of 320 masl, with a maximum height of 324.5 masl.

Alternative 2 – Utilizes the existing approved landfill area with a maximum annual waste filling rate of 1.4 million tonnes per year of waste and a total tonnage capacity of 14.3 million cubic metres. The landfill mound will have a side slope of 2.5:1 up to an elevation of 313 masl, with a maximum height of 319 masl.

Alternative 3 – Utilizes the existing approved landfill area with a maximum annual waste filling rate of 1.4 million tonnes per year of waste and a total tonnage capacity of 14.3 million cubic metres. The landfill mound will have a side slope of 2.5:1 up to the maximum elevation of 360 masl.

The study areas for Air Quality are as follows:

- On-site Study Area: the existing TCEC;
- Off-site Study Area: the lands within the vicinity of the TCEC extending approximately 5 km out from the On-site Study Area..

Air Quality considered an off-site study area that extended a minimum of 5 km from each source of emissions from the landfill operations, which is consistent with the Ministry of the Environment, Conservation and Parks (MECP) modelling guidelines.

Key parameters related to assessment of the alternative methods are:

- Landfill waste filling rate;
- Total landfill tonnage;
- Landfill footprint;
- Location of the working face;
- Location of onsite haul routes;
- Quantity of construction and waste delivery traffic;
- LFG collection efficiency; and
- Elevation of the landfill.

Some or all of these parameters have the potential to influence the release for dust, LFG and combustion byproducts, odour, blowing litter, and GHG for climate change from landfill operations.

Evaluation of dust is dependent primarily on the location of the internal haul routes and the quantity of onsite traffic. Since the landfill waste filling rate will be maintained at its current maximum permitted tonnage of 1.4 million tonnes per year, the quantity of haul traffic is expected to remain consistent with baseline conditions. Based on the CDR the landfill footprint will remain the same as the existing approved area for all three alternative methods. Onsite haul routes on the waste mound will migrate as the working face progresses along the landfill but overall onsite haul routes are expected to align with existing baseline routes. Overall, all three alternative methods are expected to have similar impacts for dust that align with baseline conditions.

Similarly, the evaluation of LFG is highly dependent on the waste fill rate, total quantity of waste in place, and the location of the working face. In all three alternative methods, the waste fill rate, total landfill tonnage, and landfill footprint are the same. Combustion byproducts are primarily dependent on haul route locations.

In all alternative methods the landfill footprint remains the same. Impacts from all three of the alternative methods are expected to be similar for LFG and combustion byproducts.

The odour evaluation is driven by the landfill footprint, working face location and gas collection efficiency. These parameters are the same in all three alternative methods and therefore are expected to have similar impacts from the odour evaluation.

Blowing litter is a function of working face location and wind speed. Higher wind speeds are typically observed at higher elevations. Final elevation of Alternative Methods 1 and 2 are similar but Alternative Method 3 is substantially higher which could expose late stage working faces to higher windspeeds. Even if higher windspeeds are expected the overall impact from all three alternative methods are expected to be similar for blowing litter, since the current mitigation measures are expected to remain effective in controlling blowing litter impacts for all three Alternative Methods.

The evaluation of climate change through the release of GHG emissions is dependent on the total waste tonnage which is consistent in all three alternative methods. All three alternative methods are expected to be similar for the evaluation of climate change.

A qualitative net effects assessment was carried out for the three alternative methods following the methods outlined in the approved ToR, incorporating the information contained in the CDR and the Air Quality Air Quality Existing Conditions Report. The results of the net effects assessment were used in a comparative evaluation of the three alternative methods.

The net effects assessment for the three alternative methods focused on the potential effects on predicted off-site concentrations, frequency of exceedance of applicable criteria, and the number of affected receptors for dust, LFG, and odour; potential effects on the extend of impact zones and the number of affected receptors for blowing litter; and the effect on annual emissions of GHGs.

The three alternative methods generally have the same potential net effects, as the landfilling rate, total tonnage, landfill footprint, LFG collection efficiency, and onsite haul routes remain the same.

Alternative Methods 1, 2, and 3 are identified as having “No substantial Difference” for Air Quality criteria and indicators because the key parameters that impact the assessment of Air Quality criteria do not change between alternative methods. Alternative Method 2 has been chosen as the overall Preferred Alternative for the EA based on the results of the other discipline assessments. Consequently, the effects assessment of the Preferred Alternative presented below is based on Alternative Method 2.

The effects assessment of the Preferred Alternative indicates no net effects for LFG and combustion byproducts, odour, blowing litter, and climate change.

No net effects can be achieved for dust with the implementation of additional mitigation. Specified mitigation includes:

1. Replacement of the south haul ramp with a hard material equivalent to a paved surface; and,
2. Enhanced water protocols for paved roadway in order to achieve 95% control.

The net effects assessment indicates that predicted concentrations of dust, LFG and combustion byproducts, and odour at discrete receptors will vary over the lifecycle of the Preferred Alternative. In some instances, exceedances of applicable criteria for dust were identified. With the additional mitigation applied, the frequency of exceedance was reduced to align with the baseline conditions. In addition, exceedances of hydrogen sulphide (H2S) and total reduced sulphur compounds (TRS) criteria were identified however, these exceedances are dominated by elevated background concentrations not related to landfill activities with contributions from landfill operations accounting for an insignificant portion of the total concentration.

Comparison of the Preferred Alternative to the ‘Do Nothing’ Alternative found that the Preferred Alternative will result in elevated concentrations at discrete receptors, an increase in the frequency of exceedances, and an increase in the number of receptors affected by dust and odour. The Preferred Alternative will result in higher potential for blowing litter when compared to the ‘Do Nothing’ Alternative, which has no potential for blowing litter. The Preferred Alternative will result in higher overall release of GHGs when compared to the ‘Do Nothing’ Alternative. There will be no substantial change between the Preferred Alternative and the ‘Do Nothing’ Alternative for LFG and combustion byproducts.

Commitments to ensure the effectiveness of dust mitigation include updating the existing dust Best Management Practices Plan (BMPP) to include the newly proposed control measures.

Compliance monitoring required for Air Quality includes:

- Dust monitoring required by condition 13.8 of the existing waste environmental compliance approval (ECA) A032203 will continue for the Preferred Alternative.
- Hydrocarbon and VOC monitoring required by condition 13.8 of the existing waste environmental compliance approval (ECA) A032203 will continue for the Preferred Alternative.

In addition to EA approval, the Air and Waste ECAs will require amendment to address the updated landfill operations. This will require review and approval from the MECP.

Acronyms, Units and Glossary

Acronyms

Acronym	Definition
AAQC	Ambient Air Quality Criteria
CDR	Conceptual Design Report
CAAQS	Canadian Ambient Air Quality Standards
EA	Environmental Assessment
GHG	Greenhouse Gas
LFG	Landfill Gas
MECP	Ministry of Environment, Conservation and Parks
OEAA	Ontario Environmental Assessment Act
SOP	Standard Operation Procedure
TCEC	Twin Creeks Environmental Centre
THC	Total Hydrocarbons
ToR	Terms of Reference
TRS	Total Reduced Sulphur Compound
TSP	Total Suspended Particulate
U.S. EPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound

Units

Unit	Definition
Km	Kilometre
M	Metre
µg/m³	Microgram per cubic metre
g/s	Grams per second
OU	Odour Units
$g/m^2 – s$	Grams per metre squared per second
OU/m^2-s	Odour units per metre squared per second
CFM	Cubic feet per minute

Glossary

Term	Definition
Active cell	A landfill cell is a waste-holding unit within the landfill area. The “active cell” is the waste-holding unit where waste is currently being deposited.

Acronyms

Acronym	Definition
Active face	The working surface of a landfill within the active cell upon which waste is deposited each day before placement of daily cover. Often referred to as “working face” or “active working face”.
Approval	Permission granted by an authorized individual or organization for an undertaking to proceed. This may be in the form of program approval, certificate of approval or provisional certificate of approval.
Capacity (Disposal Volume)	The total volume of air space available for disposal of waste at a landfill site for a particular design (typically in m^3); includes both waste and daily cover materials, but excludes the final cover.
Composting	The controlled microbial decomposition of organic matter, such as food and yard wastes, in the presence of oxygen, into finished compost (humus), a soil-like material. Humus can be used in vegetable and flower gardens, hedges, etc.
Composting facility	A facility designed to compost organic matter either in the presence of oxygen (aerobic) or absence of oxygen (anaerobic).
Environment	As defined by the Environmental Assessment Act, environment means: • air, land or water; • plant and animal life, including human life; • the social, economic and cultural conditions that influence the life of humans or a community; • any building, structure, machine or other device or thing made by humans; • any solid, liquid, gas, odour, heat, sound, vibration or radiation resulting directly or indirectly from human activities; or • any part or combination of the foregoing and the interrelationships between any two or more of them (ecosystem approach).
Environmental Assessment (EA)	A systematic planning process that is conducted in accordance with applicable laws or regulations aimed at assessing the effects of a proposed undertaking on the environment.
Evaluation criteria	Evaluation criteria are considerations or factors taken into account in assessing the advantages and disadvantages of various alternatives being considered.
Flux Chamber	Is a stainless-steel vessel of volume 0.5 m^2. It is used to measure minute emissions from near passive sources that do not have any mechanical fans to discharge the contaminants of interest.
Greenhouse gas (GHG)	Any of the gases whose absorption of solar radiation is responsible for the greenhouse effect, including carbon dioxide, methane, ozone, and the fluorocarbons.
Indicators	Indicators are specific characteristics of the evaluation criteria that can be measured or determined in some way, as opposed to the actual criteria, which are fairly general.
Landfill gas (LFG)	The gases produced from the wastes disposed in a landfill; the main constituents are typically carbon dioxide and methane, with small amounts of other organic and odour-causing compounds.
Landfill site	An approved engineered site/facility used for the final disposal of waste. Landfills are waste disposal sites where waste is spread in layers, compacted to the smallest practical volume, and typically covered by soil.
Leachate	Liquid that drains from solid waste in a landfill and which contains dissolved, suspended and/or microbial contaminants from the breakdown of this waste.
Mitigation	Measures taken to reduce adverse impacts on the environment.
Proponent	A person who: • carries out or proposes to carry out an undertaking; or • is the owner or person having charge, management or control of an undertaking.

Acronyms

Acronym	Definition
Receptor	The person, plant or wildlife species that may be affected due to exposure to a contaminant.
Renewable Natural Gas (RNG)	Product of the decomposition of organic matter that is collected from the landfill site, as opposed to traditional natural gas, which is collected from deep wells.
Terms of Reference (ToR)	A terms of reference is a document that sets out detailed requirements for the preparation of an Environmental Assessment.
Undertaking	Is defined in the Environmental Assessment Act as follows: • An enterprise or activity or a proposal, plan or program in respect of an enterprise or activity by or on behalf of Her Majesty in right of Ontario, by a public body or public bodies or by a municipality or municipalities; • A major commercial or business enterprise or activity or a proposal, plan or program in respect of a major commercial or business enterprise or activity of a person or persons other than a person or persons referred to in clause (1) that is designated by the regulations; or • An enterprise or activity or a proposal, plan or program in respect of an enterprise or activity of a person or persons, other than a person or persons referred to in clause (a), if an agreement is entered into under section 3.0.1 in respect of the enterprise, activity, proposal, plan or program ("enterprise").
Waste	Refuse from places of human or animal habitation; unwanted materials left over from a manufacturing process.

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1 Introduction

RWDI AIR Inc. (RWDI) was contracted by HDR Corporation on behalf of WM Canada (WM) to prepare this Air Quality Effects Assessment Report as part of the Twin Creeks Environmental Centre (TCEC) Landfill Optimization Project Environmental Assessment (EA). The EA is being carried out in accordance with the requirements of the *Ontario Environmental Assessment Act* (*OEAA*) and the EA Terms of Reference (ToR), which was approved by the Ministry of Environment, Conservation and Parks (MECP) on December 13, 2022.

The *OEAA* defines the environment in a broad, general sense that comprises physical, biological, and human considerations. In this EA, the environment has been separated broadly into the natural, socio-economic, cultural, and built aspects, with environmental components and evaluation criteria identified within each aspect as listed in **Table 1-1**, consistent with the approved ToR. The organization of the Effects Assessment Reports is also provided in **Table 1-1**.

Table 1-1. Environmental Aspects, Components, and Evaluation Criteria

Environmental Aspect	Environmental Component	Evaluation Criteria	Effects Assessment Reports
Natural Environment	Atmospheric Environment	• Air Quality – Dust • Air Quality – Landfill Gas (LFG) and Combustion By-Products • Air Quality – Blowing Litter • Odour • Noise	• Air Quality
			• Odour
			• Noise
	Hydrogeology	• Groundwater Quality • Groundwater Quantity	• Hydrogeology
	Surface Water Environment	• Surface Water Quality • Surface Water Quantity	• Surface Water Quality
			• Surface Water Quantity
	Ecological Environment	• Terrestrial Ecosystems • Aquatic Ecosystems	• Ecological Environment
Socio-Economic Environment	Social Environment	• Human Health • Effects on Local Community	• Human Health
			• Socio-Economic Environment
	Economic Environment	• Economic Effects on Local Community	
	Visual Landscape	• Visual Impact of Facility	• Visual Landscape
Cultural Environment	Cultural Environment	• Cultural Heritage Resources • Archaeological Resources	• Cultural Heritage Resources
			• Archaeological Resources
Built Environment	Transportation	• Traffic Operations	• Transportation
	Current and Planned Future Land Use	• Effects on Current and Future Land Uses	• Land Use

The Air Quality discipline considers the release of air quality related compounds of interest including particulate matter (dust), landfill gas (LFG) and combustion byproducts, odour, blowing litter, and GHGs for climate change, as well as the potential impacts of global warming on the evaluation. The purpose of this Effects Assessment Report is to present the potential environmental effects of the alternative methods on Air Quality, a comparison of the net effects of each alternative method, the selection of a Preferred Alternative, the assessment of the environmental effects of the Preferred Alternative, and commitments and monitoring. This Air Quality Effects Assessment Report assesses the effects of the project on the air quality portion of the Atmospheric Environment. The effects of the project on noise are assessed in a separate Noise Effects Assessment report.

This Air Quality Effects Assessment Report is one component of the EA. The EA Study Report will incorporate the information presented herein as appropriate, and this report will be included with the EA Study Report as a supporting document.

1.1 Project and Alternative Methods

There are approximately 6 years of approved landfill airspace capacity remaining at the TCEC (i.e., capacity will be reached in approximately 2031). The proposed landfill optimization would provide additional airspace of approximately 14.3 million cubic metres (m^3), which could extend the site life by approximately 12 years (from 2031 to 2043) and may be achieved through alternative landfill configurations (alternative methods) within the existing 301-hectare TCEC site area. No changes are proposed to the size of the TCEC site area, approved service area, haul route, or annual fill rate.

Three alternative methods for carrying out the landfill optimization were developed to a preliminary conceptual design level in the Conceptual Design Report (CDR) and are described below as they are relevant to Air Quality.

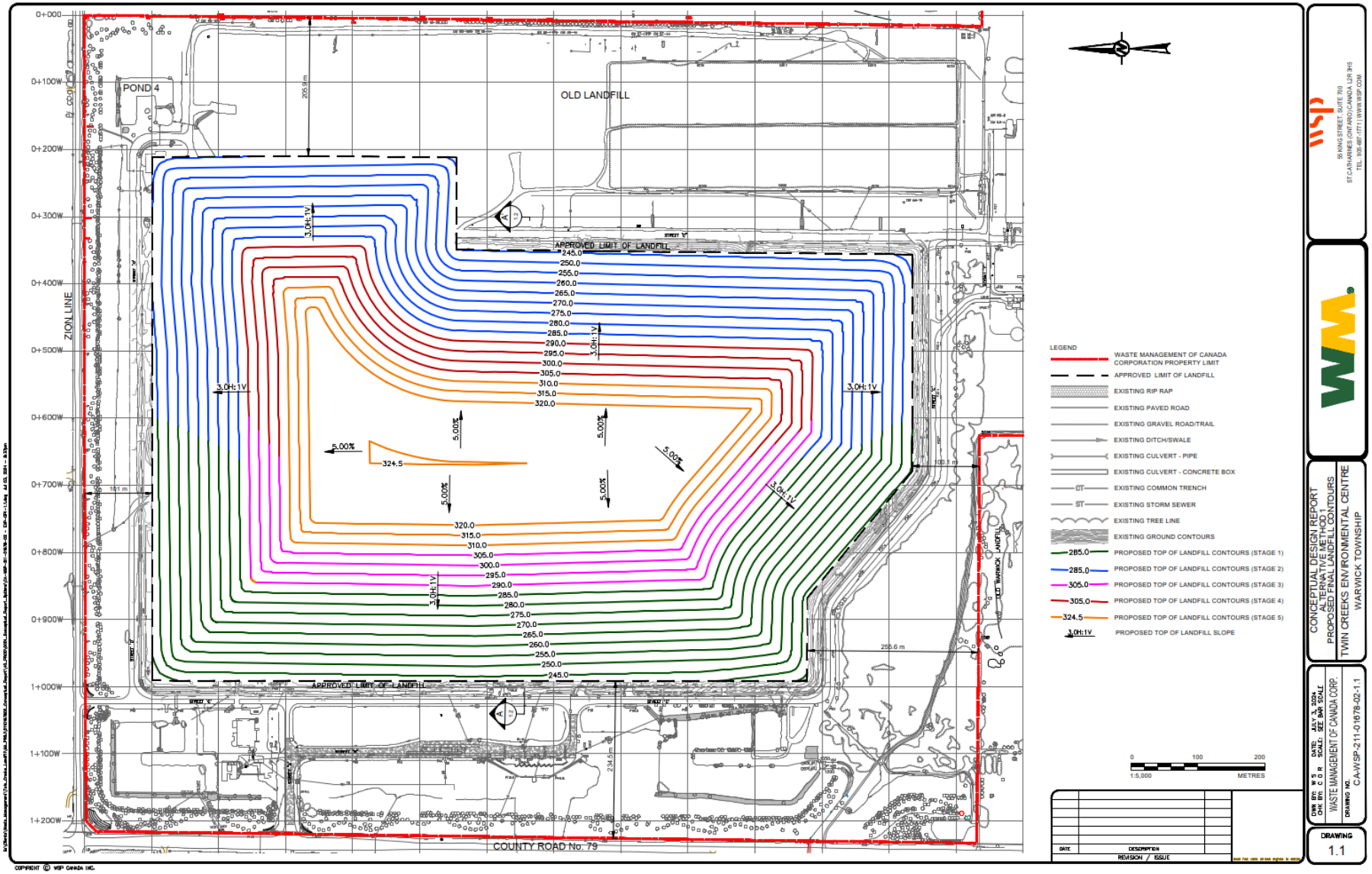
1.1.1 Alternative Method 1

A layout of Alternative Method 1 is shown in **Figure 1-1.** Alternative Method 1. For Alternative Method 1 the mound is divided into 5 filling stages, with a fill rate of 1,400,000 tonnes of waste per year which is consistent with the existing permitted waste filling rate. Haul route traffic is expected to remain consistent with existing conditions. Internal haul routes will remain the same as in existing conditions with the exception of the haul routes on the landfill mound itself. Haul roads on the landfill mound are expected to be similar to existing conditions but will vary slightly as the working face migrates across the mound. Alternative Method 1 requires additional side slope development which will bring the working face and waste/construction activity closer to the property boundary, decreasing the separation distance to discrete receptors (i.e., residences), which could affect off-site concentrations at discrete receptors related to fugitive dust, combustion byproducts, VOCs, and odour. Working face equipment, size, and operating practices will be consistent with the existing conditions.

Although the annual fill rate will remain consistent with existing conditions, the total waste in place at the end of the landfill life will increase by 14,300,000 m³ in Alternative Method 1, relative to the capacity of the Expansion Landfill. This increase in total waste will result in increased generation of LFG from the landfill mound. This increased LFG generation will result in increased emissions of VOCs through the landfill mound. However, Alternative Method 1 includes the installation of a vertical gas well system as well as a 1.85 m thick layer of clay in the final cover which is expected to improve the collection efficiency of the LFG compared to existing conditions.

Alternative Method 1 includes increasing the landfill mound height from 280 metres above sea level (masl) to a final height of 324.5 masl. This increase in mound elevation will expose wind-blown litter to higher wind speeds, increasing the potential for off-site migration. Changes in landfill mound elevation are not expected to influence other aspects of the air quality evaluation.

Figure 1-1. Alternative Method 1



1.1.2 Alternative Method 2

A layout of Alternative Method 2 is shown in **Figure 1-2**. For Alternative Method 2 the mound is divided into 4 filling stages, with a fill rate of 1,400,000 tonnes of waste per year which is consistent with the existing permitted waste filling rate. Haul route traffic is expected to remain consistent with existing conditions. Internal haul routes will remain the same as in existing conditions with the exception of the haul routes on the landfill mound itself.

Haul roads on the landfill mound are expected to be similar to existing conditions but will vary slightly as the working face migrates across the mound. Alternative Method 2 requires additional side slope development which will bring the working face and waste/construction activity closer to the property boundary, decreasing the separation distance to discrete receptors (i.e., residences), which could affect off-site concentrations at discrete receptors related to fugitive dust, combustion byproducts, VOCs, and odour. Working face equipment, size, and operating practices will be consistent with the existing conditions.

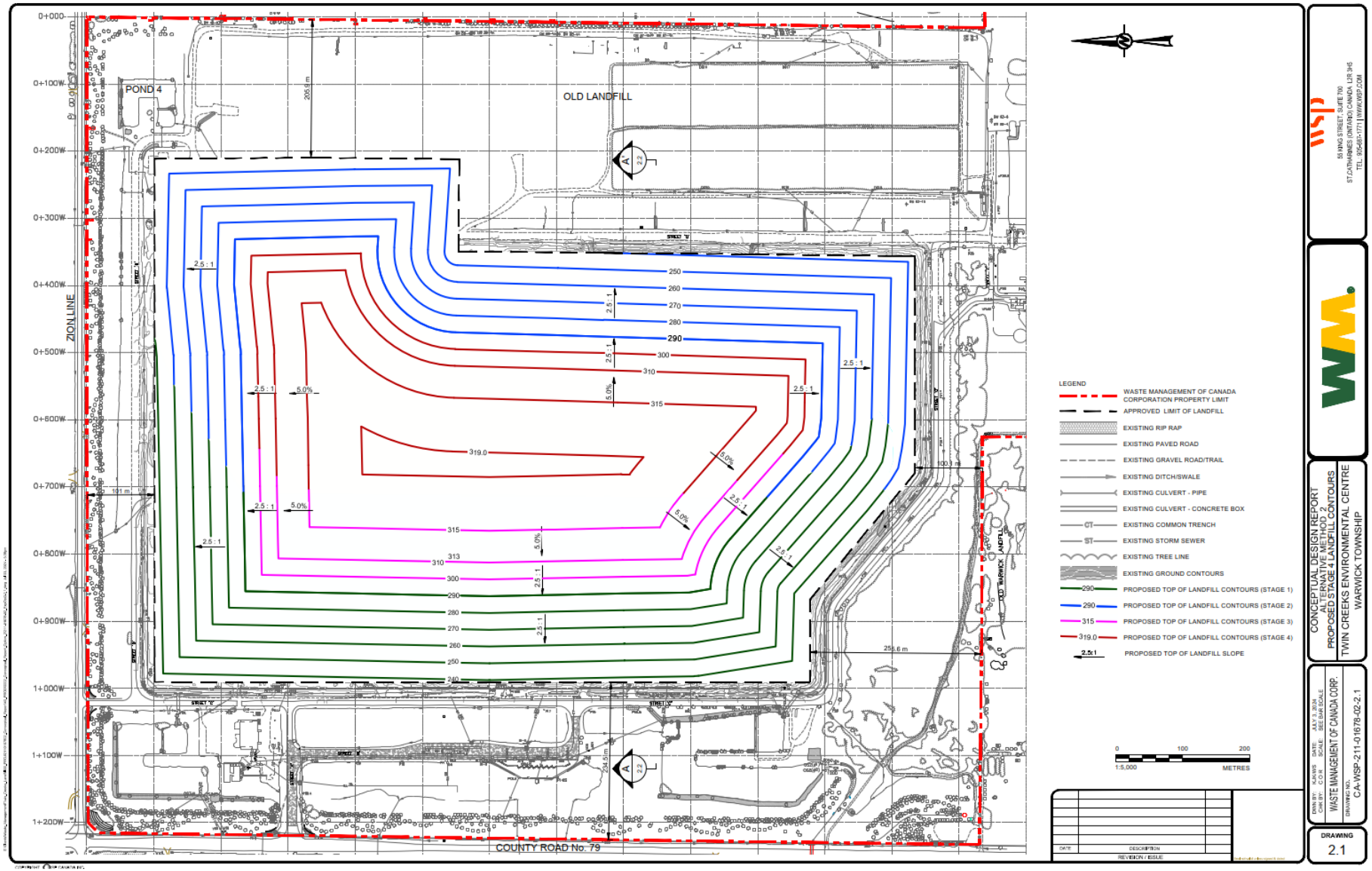
Although the annual fill rate will remain consistent with existing conditions, the total waste in place at the end of the landfill life will increase by 14,300,000 m³ in Alternative Method 2, relative to the capacity of the Expansion Landfill. This increase in total waste will result in increased generation of LFG from the landfill mound. This increased LFG generation will result in increased emissions of VOCs through the landfill mound. However, Alternative Method 2 includes the installation of a vertical gas well system as well as a 1.85 m thick layer of clay in the final cover which is expected to improve the collection efficiency of the LFG compared to existing conditions.

Alternative Method 2 includes increasing the landfill mound height from 280 masl to a final height of 319 masl. This increase in mound elevation will expose wind-blown litter to higher wind speeds, increasing the potential for off-site migration. Changes in landfill mound elevation are not expected to influence other aspects of the air quality evaluation.

In Alternative Method 2 the waste filling pattern for stages 1 – 4 varies slightly from Alternative Method 1 which could have minor influences on off-site concentrations of landfill related VOC emissions. However, the waste acceptance rate and final tonnage in place at the end of the landfill life remains the same and changes in fill pattern are not expected to significantly influence the evaluation. The final mound height will be 319 masl which is 5.5 m lower than Alternative Method 1. Minor changes in mound elevation are not expected to influence the air quality evaluation.

The landfill footprint, haul routes, haul traffic volumes, and equipment are consistent with those described in Alternative Method 1. No significant differences between alternative methods were identified from an Air Quality perspective.

Figure 1-2. Alternative Method 2



1.1.3 Alternative Method 3

A layout of Alternative Method 3 is shown in **Figure 1-3**. For Alternative Method 3 the mound is divided into 5 filling stages, with a fill rate of 1,400,000 tonnes of waste per year which is consistent with the existing permitted waste filling rate. Haul route traffic is expected to remain consistent with existing conditions. Internal haul routes will remain the same as in existing conditions with the exception of the haul routes on the landfill mound itself. Haul roads on the landfill mound are expected to be similar to existing conditions but will vary slightly as the working face migrates across the mound. Alternative Method 3 requires additional side slope development which will bring the working face and waste/construction activity closer to the property boundary, decreasing the separation distance to discrete receptors (i.e., residences), which could affect off-site concentrations at discrete receptors related to fugitive dust, combustion byproducts, VOCs, and odour. Working face equipment, size, and operating practices will be consistent with the existing conditions.

Although the annual fill rate will remain consistent with existing conditions, the total waste in place at the end of the landfill life will increase by 14,300,000 m³ in Alternative Method 3, relative to the capacity of the Expansion Landfill. This increase in total waste will result in increased generation of LFG from the landfill mound. This increased LFG generation will result in increased emissions of VOCs through the landfill mound.

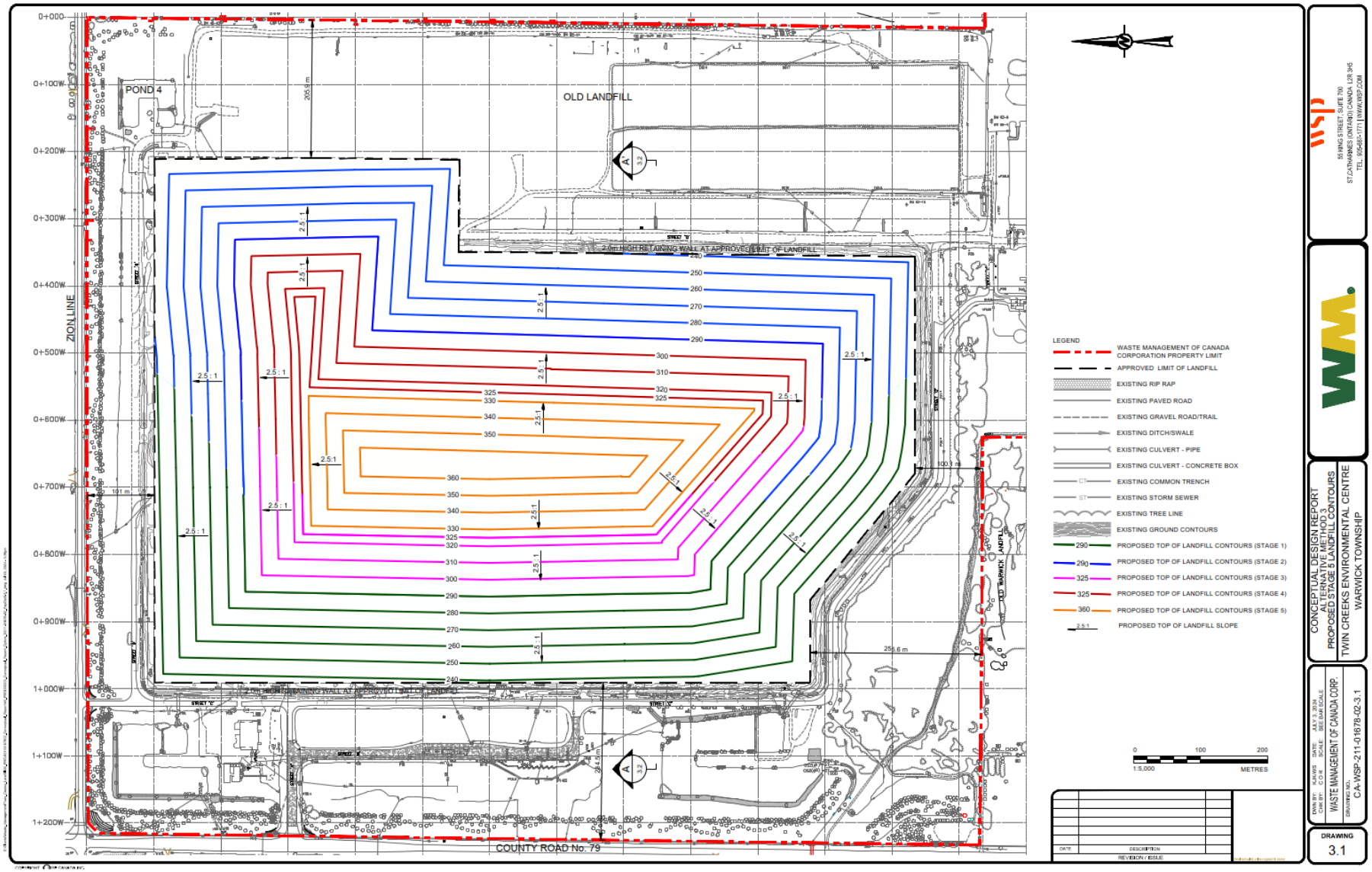
However, Alternative Method 3 includes the installation of a vertical gas well system as well as a 1.85 m thick layer of clay in the final cover which is expected to improve the collection efficiency of the LFG compared to existing conditions.

Alternative Method 3 includes increasing the landfill mound height from 280 masl to a final height of 360 masl. This increase in mound elevation will expose wind-blown litter to higher wind speeds, increasing the potential for off-site migration. Changes in landfill mound elevation are not expected to influence other aspects of the air quality evaluation.

In Alternative Method 3 the waste filling pattern for stages 1 – 5 varies slightly from Alternative Methods 1 and 2 which could have minor influences on off-site concentrations of landfill related VOC emissions. However, the waste acceptance rate and final tonnage in place at the end of the landfill life remains the same and changes in fill pattern are not expected to significantly influence the evaluation. In Alternative Method 3, the final mound height will be 360 masl which is 35.5 metres higher than Alternative Method 1 and 41 metres higher than Alternative Method 2. Increases in mound elevation have the potential to influence the migration of blowing litter but mound elevation is not expected to influence off-site concentrations of the other indicators.

The landfill footprint, haul routes, haul traffic volumes, and equipment are consistent with those described in Alternative Methods 1 and 2. No significant differences between alternative methods were identified from an Air Quality perspective.

Figure 1-3. Alternative Method 3



2 Effects Assessment Methods

Using the evaluation criteria, indicators, rationale and data sources from the approved ToR and the existing conditions from the Air Quality Air Quality Existing Conditions Report, the effects assessment is carried out as follows:

- Predict the potential environmental effects for each alternative method (**Section 2.1**);
- Identify the Preferred Alternative based on a comparative evaluation of the potential environmental effects of each alternative method (**Section 2.2**);
- Conduct an effects assessment on the Preferred Alternative, including the identification of mitigation measures and monitoring programs (**Section 2.3**); and
- Compare the effects of the Preferred Alternative to those of the 'Do Nothing' alternative (i.e., the Expansion Landfill as approved) (**Section 2.4**).

2.1 Predict Potential Environmental Effects for Alternative Methods

The potential environmental effects for each alternative method are identified within the study areas based on the application of the evaluation criteria, indicators and data sources in the approved ToR and based on the maximum allowable waste receipt level for the TCEC landfill. The potential effects can be positive or negative, direct or indirect, and short- or long-term. Mitigation measures are identified to minimize or mitigate the potential effects and then the net effects are evaluated taking into consideration the application of mitigation measures. The study areas, evaluation criteria, indicators, data source, and key design considerations and assumptions for Air Quality are provided below.

2.1.1 Study Areas

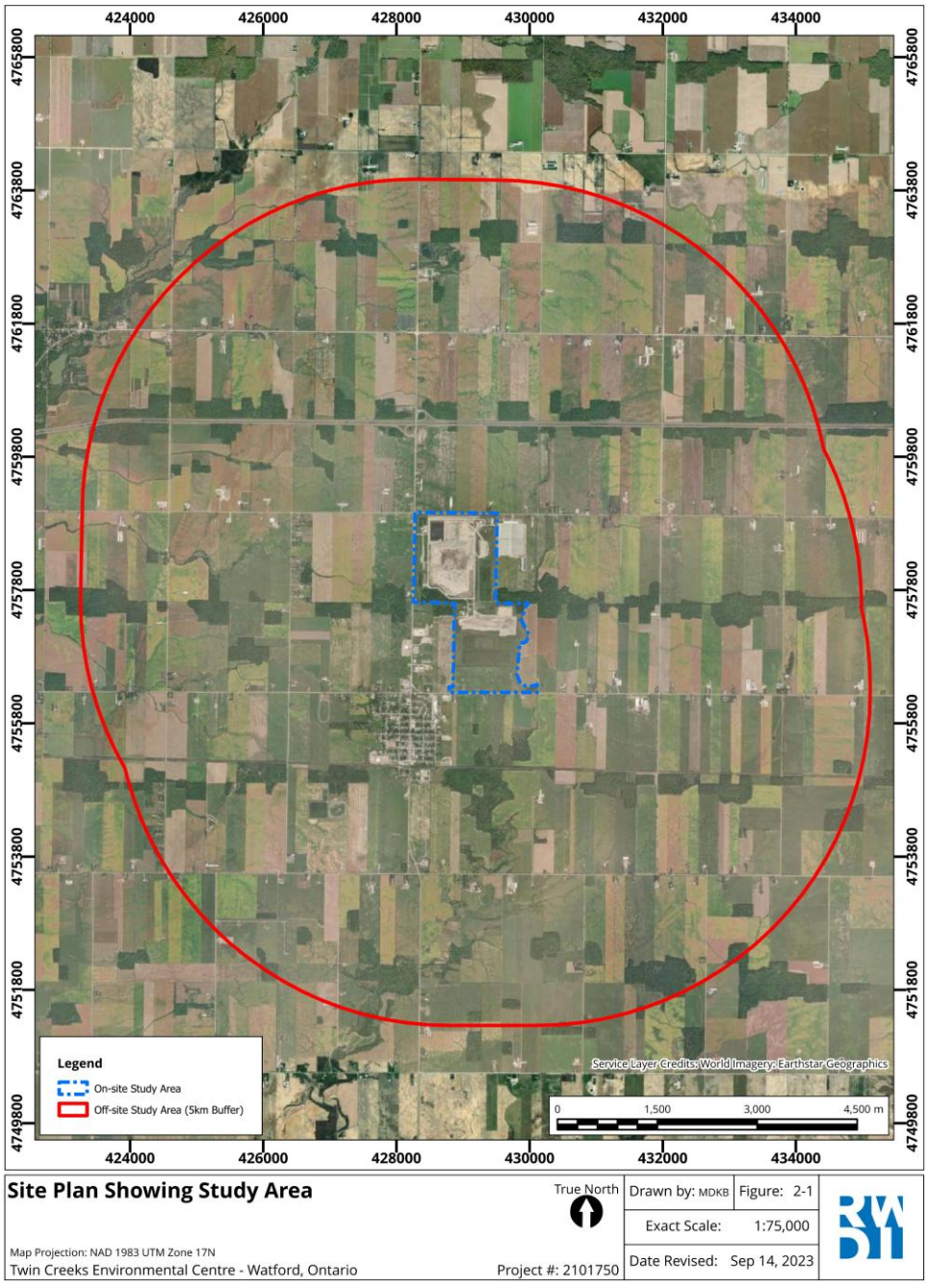
The TCEC landfill is located within the Township of Warwick, in the County of Lambton, approximately 1 km north of the Village of Watford. The TCEC is situated south of Highway 402 and southeast of the intersection of Nauvoo Road and Zion Line. The municipal street address of the TCEC is 5768 Nauvoo Road, Watford, Ontario. The area being considered for the landfill optimization is within the approved Expansion Landfill footprint located within the northern portion of the 301 ha TCEC site.

The study areas include the existing TCEC site as well as the potentially-affected surrounding areas. The general On-site and Off-site Study Areas identified for the EA in the approved ToR are as follows:

- On-site Study Area: the existing TCEC;
- Off-site Study Area: the lands within the vicinity of the TCEC extending approximately 1 km out from the On-site Study Area.

For the Air Quality effects assessment, the potentially-affected areas are defined based on the MECP modelling guidelines for air quality. The general Off-site Study Area has been modified for the purposes of the Air Quality effects assessment to include the area approximately 5 km from the TCEC. This 5 km Off-site Study Area is consistent with MECP modelling guidelines and will be used to establish predicted concentration isopleths for each contaminant within the wider area and ascertain there are no elevated concentration anomalies beyond the immediate vicinity represented by the 1 km study area. The modelled domain used in the Air Quality assessment encompassed the entire Off-site Study Area. **Figure 2-1** shows the study areas for Air Quality.

Figure 2-1. On-site and Off-site Study Areas for Air Quality



2.1.2 Evaluation Criteria, Indicators, and Data Sources

The evaluation criteria, rationale, indicators, and data sources used for Air Quality as per the approved ToR are provided in **Table 2-1**.

Table 2-1. Evaluation Criteria, Indicators, and Data Sources for Air Quality

Evaluation Criteria	Rationale	Indicators	Data Sources
Natural Environment			
Atmospheric Environment			
Air Quality - Dust	Construction and operation activities at a waste disposal site can lead to increased levels of particulates (dust) in the air.	• Off-site point of impingement (POI) air concentrations of particulate matter (dust) compounds at identified receptors in the immediate vicinity of the site, and community. • Frequency of any exceedance of applicable standards, limits, or guidelines at identified receptors. • Number of off-site identified receptors potentially affected (e.g., residential properties, public facilities, businesses/farms, institutions). • Both operational and construction activities occurring in each of the future operational stages of the landfill considered in the assessment will be independently identified, described, and assessed.	• MECP-provided meteorological data. • Applicable MECP guidelines, technical standards and accepted models. • Aerial photographic mapping and field reconnaissance. • Previously completed reports for the TCEC facility, including the 2016 Environmental Screening report, the 2005 EA, various ECA/ESDM reports, ambient monitoring reports, etc. • Off-site receptors identified in coordination with other disciplines. • Available background ambient air data. • Site specific ambient particulate monitoring data. • Proposed facility characteristics. • Landfill design and operation data. • Published terrain data. • Published air emission factors and predictive models. • Published particle size fractionation data. • Traffic data. • Applicable air quality standards, guidelines, and criteria from the MECP and the CCME.

Table 2-1. Evaluation Criteria, Indicators, and Data Sources for Air Quality

Evaluation Criteria	Rationale	Indicators	Data Sources
Air Quality - LFG and Combustion By-Products	Waste disposal site and associated operations can emit gaseous contaminants that can degrade air quality.	• Off-site POI air concentrations of indicator compounds at identified receptors in the immediate vicinity of the site, and community (within 5 km). • Frequency of any exceedance of applicable standards, limits, or guidelines at identified receptors. • Number of off-site receptors potentially affected (e.g., residential properties, public facilities, businesses/farms, institutions).	• MECP-provided meteorological data. • Applicable MECP guidelines, technical standards and accepted models. • Aerial photographic mapping and field reconnaissance. • Previously completed reports for the TCEC facility, including the 2016 Environmental Screening report, the 2005 EA, various ECA/ESDM reports, ambient monitoring reports, etc. • Off-site receptors identified in coordination with other disciplines. • Available background ambient air data. • Site specific ambient monitoring data. • Proposed facility characteristics. • Landfill design and operation data. • Published terrain data. • Published air emission factors and predictive models. • Established gas characteristics from the existing operation. • Applicable air quality standards, guidelines, and criteria from the MECP and the CCME.

Table 2-1. Evaluation Criteria, Indicators, and Data Sources for Air Quality

Evaluation Criteria	Rationale	Indicators	Data Sources
Air Quality - Odour	Waste disposal site and associated operations can emit contaminants that generate odorous emissions.	• Off-site odour concentrations (odour units) at identified odour sensitive receptors in the immediate vicinity of the site. • Frequency of any odour levels above defined odour benchmarks. • Number of off-site receptors potentially affected (e.g., residential properties, public facilities, businesses/farms odour sensitive area(s), institutions).	• MECP-provided meteorological data. • Applicable MECP guidelines, technical standards, and accepted models. • Aerial photographic mapping and field reconnaissance. • Previously completed reports for the TCEC facility, including the 2016 Environmental Screening report, the 2005 EA, various ECA/ESDM reports, ambient monitoring reports, etc. • Off-site odour-sensitive receptors defined as per the MECP Odour Technical Bulletin, identified in coordination with other disciplines. • Proposed facility characteristics. • Landfill design and operation data. • Published terrain data. • Published air emission factors. • Emission measurements from comparable landfills and/or on-site sampling. • Applicable air quality standards, guidelines, and criteria from the MECP and the CCME.
Air Quality - Blowing Litter	Waste disposal site and associated operations can release litter, which may be blown to the surrounding areas.	• Extent of zones potentially impacted by blowing litter. • Number of off-site receptors potentially affected (e.g., residential properties, public facilities, businesses/farms odour sensitive area(s), institutions).	• On-site meteorological data. • MECP-provided meteorological data. • MECP inspection records, WM inspection records, and complaint history. • Published literature related to the factors affecting the generation and mitigation of blowing litter. • Landfill design and operation data.

Table 2-1. Evaluation Criteria, Indicators, and Data Sources for Air Quality

Evaluation Criteria	Rationale	Indicators	Data Sources
Air Quality – Climate Change	Waste disposal site and associated operations can emit gaseous contaminants that can contribute to climate change. Projections of changes in local climate, such as temperature and precipitation, can affect operations at the waste disposal site.	• Annual emissions of greenhouse gases (carbon dioxide, methane, and nitrous oxide), reported in carbon dioxide equivalent (CO_2e) and compared to Ontario and Canadian total emissions.	• Published literature related to the quantification of greenhouse gas emissions. • Landfill design and operation data.

The evaluation criteria Air Quality – Climate Change and its associated rationale, indicators, and data sources were added to assist with the assessment of climate change for the Preferred Alternative as described in the approved ToR.

2.1.3 Key Considerations and Assumptions

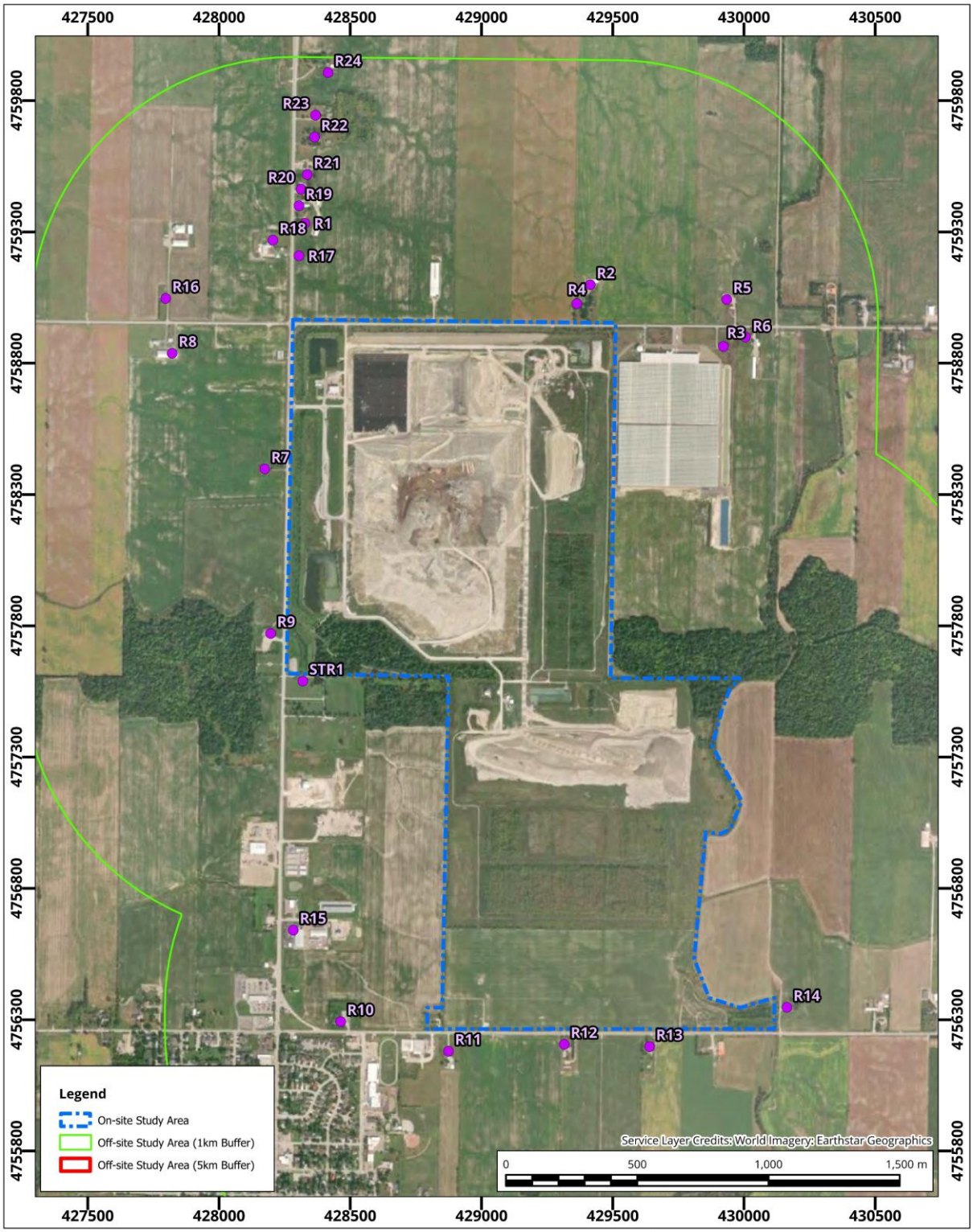
The key existing conditions elements, design considerations, and assumptions for the Air Quality effects assessment are described below.

2.1.3.1 Key Elements of Existing Conditions

The following key elements from the existing conditions are relevant for the assessment of effects.

- Dispersion modelling
  - Dispersion modelling was performed using the U.S. EPA's AERMOD dispersion model (AERMOD), version 22112, to predict concentrations of contaminants of interest emitted from the landfill operations at various receptors in the vicinity.
- Receptors
  - A total of 25 discrete receptors were identified consisting of 24 residential receptors and the cemetery located at 5606 Nauvoo Rd. All receptors were identified in the approved ToR. These discrete receptors are closest to the landfill area in each compass direction and are expected to provide the worst-case estimate for predicted contaminant concentrations in all directions from the landfill. The changes in predicted contaminant concentrations at each receptor are important indicators for assessment of effects. The receptor locations are shown in **Figure 2-2**. Receptors denoted by "R" represent residential receptors and the cemetery is represented by "STR" (Short Term Receptor).

Figure 2-2. Site Plan Showing Discrete Receptor Locations



- Receptor grid
  - In addition to discrete receptors, a multi-tier receptor grid was used in accordance with MECP Guideline A11: “Air Dispersion Modelling Guideline for Ontario”, February 2017, to determine model-predicted ground level

concentrations required for developing isopleths for each key indicator contaminant. This receptor grid extends a minimum of 5 km from each emission source on the landfill site.

- Key indicator contaminants
  - The TCEC has been well characterized through studies such as the Air Quality Impact Assessment: Warwick Landfill Expansion Environmental Assessment (2005 EA), the Twin Creeks Landfill Site Air Quality, Odour, and Dust Evaluation: Proposed Increase to Waste Tonnage Report (2016 Environmental Screening Report), and various Environmental Compliance Approval (ECA) applications. Based on the conclusions of these studies as well as an understanding of the contaminants typically emitted by landfill operations, key indicator contaminants were selected for use in the EA. In general, the contaminants with predicted concentrations greater than 15% of their current criteria in the previously completed 2016 Environmental Screening Report were determined to be the key indicator contaminants and are listed in the approved ToR.
- Assessment criteria
  - Modelled concentrations at receptors were assessed against criteria obtained from the MECP Air Contaminants Benchmark (ACB) List, MECP Ambient Air Quality Criteria (AAQC), and Canadian Council of Ministers of Environment (CCME) Canadian Ambient Air Quality Standards (CAAQS).
- Background data
  - Background data refers to concentrations of the contaminants of interest in the environment resulting from sources other than the Project. Background concentrations were added to model predicted concentrations at each receptor.
  - When available, background concentrations were obtained from site-specific ambient monitoring data. For contaminants that were not included in the ambient monitoring program, background concentrations were obtained from publicly available sources including the Ammonia Monitoring Network (AMoN) and the National Air Pollution Surveillance program (NAPS).
- On-site sampling
  - In addition to the ambient monitoring program, on-site source sampling was completed to aid in the development of the emission inventory for the TCEC facility. This included odour, hydrogen sulphide (H_2S), and total reduced sulphur (TRS) flux chamber sampling, LFG source sampling, and roadway and material stockpile sampling.
- Meteorological data
  - To ensure that a broad range of dispersion conditions are addressed, five years of local meteorological data (2011-2015) were used in the AERMOD model.

The meteorological data set was developed by the MECP's Environmental Monitoring and Reporting Branch (EMRB) specifically for the study site and provided on April 25, 2023.

- Terrain data
  - Terrain information for the area surrounding the facility was obtained from the MECP Regional Meteorological and Terrain Data for Air Dispersion Modelling website. These data were run through the AERMAP terrain pre-processor to estimate base elevations for sources and receptors to help the model account for changes in elevation.
- Best Management Practices Plan (BMPP)
  - Best Management Practices Plans for dust, BMPP (Dust), odour, BMPP (Odour), and blowing litter, BMPP (Litter), have been previously prepared and implemented at TCEC. The BMPPs outline current mitigation strategies for these emissions and were considered in adjusting control percentages for emission rates.
    - The Dust BMPP was designed to minimize dust emissions from landfill operations. The BMPP outlines details on standard operating procedures, mitigation measures, and training to control key operations typically associated with dust emissions. The BMPP (Dust) was previously provided to the MECP for review and comment. A copy of the Dust BMPP is provided in **Appendix 2A**. Key control measures outlined in the plan include:
      - Watering of frequently disturbed or erodible surfaces;
      - Watering of roadway surfaces;
      - Sweeping of roadways;
      - Posting and enforcing paved and unpaved road speed limits;
      - Inspection and maintenance of internal and external roadways;
      - Development and use of inclement weather areas;
      - Ambient monitoring of TSP; and
      - Training of relevant staff.
    - The Odour BMPP was designed to minimize odour emissions from landfill operations. The BMPP outlines details on standard operating procedures, mitigation measures, and training to control key operations typically associated with odour emissions. The BMPP was provided to the MECP for review and comment. A copy of the Odour BMPP is provided in **Appendix 2A**. Key control measures outlined in the plan include:
      - Screening of incoming loads to identify highly odourous loads and applying cover material immediately once placed in the active face;
      - Applying a minimum of 0.15 metres of daily cover or an alternative cover system to the active face on a daily basis;

- When required, applying tear resistant tarping capable of odour and vapour suppression to the active face (when daily cover is unavailable);
- Providing interim cover areas with 0.3 to 0.45 metres of cover, graded to promote precipitation run-off;
- Including 2.0 metres of material in the final cap;
- Installing and maintaining a landfill gas collection system;
- Destruction of landfill gas through landfill gas flares;
- Completion of “walkabouts” using total hydrocarbon (THC) analyzers by trained employees to identify odourous areas;
- Routine inspection of interim and final cap areas to ensure damage or erosion areas can be remediated as soon as possible; and
- Training of relevant staff.

- The Litter BMPP is used to manage the migration of litter off-property. The BMPP was previously provided to the MECP for review and comment. A copy of the Litter BMPP is provided in **Appendix 2A**. The plan implements mitigation controls such as:
  - Inspection of incoming trucks to ensure that loads are secure prior to arriving at the site;
  - Inspection of outbound trucks to ensure that the loads have been completely cleared of the material to avoid litter escaping from the vehicles when leaving;
  - Application of soil cover to the active tipping area at the end of each working day;
  - Continuous movement of the compactor over the new waste throughout the day;
  - Identification of loads of waste received at the active face with material noted as being a potential for litter, which are to be covered as soon as possible to reduce the potential for litter events;
  - Use of portable litter fences that are moved around the active face area to capture blowing litter on a day-to-day basis based on forecasted meteorological conditions;
  - Installation of permanent litter fences, downwind of the current phases to capture the blowing litter for the predominant wind directions;
  - Use of inclement weather fill areas, which are utilized during weather events consisting of sustained high winds speeds; and
  - Training of relevant staff on these policies.

2.1.3.2 Key Design Considerations

The following key design elements from the CDR are relevant for the Air Quality effects assessment.

- Annual waste filling rate / total additional tonnage
  - ECA A032203 approves disposal of 1.4 million tonnes per year of waste including contaminated soil at TCEC. The amount of waste disposed directly influences the scope of landfilling activity at the site, and air emissions associated with that activity, and also determines the quantity of LFG generated each year.
  - The proposed optimization would provide an additional airspace of approximately 14.3 million m³ or 14.3 million tonnes, assuming the density of compacted waste as 1 tonne per cubic metre, and extend the life of the landfill by approximately 12 years.
- Landfill footprint
  - The existing landfill footprint will not change from the currently approved footprint.
- Phasing and schedule of site development
  - Site development for the proposed landfill expansion consists of two initial stages which are developed from west to east to an interim height, followed by subsequent stages, also developed from west to east, to attain the final planned height. This phasing determines where activity may occur at the end of each stage, and the progressive installation of the LFG collection system and potential areas of final and interim cover. Landfilling operations and activity at the working face will move around the landfill site over the life of the landfill, and as a result the effects assessment considers three future operational scenarios which establish this activity in a temporary location within the existing landfill footprint but in closer proximity to off-site receptors. Details on each future operating scenario are provided in **Section 5**.
- Construction activities
  - Construction activities include removal of soil cover prior to waste placement, placement and compaction of waste at the working face, and placement of daily, interim, or final cover as per current landfill operations.

    These operations will move around the landfill site over the life of the landfill, and as a result the effects assessment considers three future operational scenarios.
- LFG generation
  - LFG is a by-product of the biological decomposition of degradable organic carbon content within the waste. LFG generation typically increases during the operational period of the landfill and peaks at site closure. The Air Quality

effects assessment considers later operational stages in the lifetime of the proposed landfill expansion to assess the potential impacts from these increased quantities of LFG. Methane concentration in LFG at TCEC is assumed to be 52% based on LFG quality data collected by WM.

- LFG collection and treatment
  - LFG is collected from the closed Old Landfill using conventional vertical wells, and from the current Expansion Landfill primarily using Early Vertical Gas System (EVGS) wells. These vertical wells are extended as waste filling progresses to minimize impacts from odour and reduce the amount of fugitive LFG escaping to the atmosphere. Currently, collected LFG is either transferred for beneficial use as renewable fuel in the boiler at the adjacent Twin Creeks Greenhouse, or it is flared. The new Renewable Natural Gas (RNG) Facility has a planned capacity of 8,000 standard cubic feet per minute (scfm) and will increase the beneficial use of LFG and reduce the amount flared. The LFG collection system has a collection efficiency of approximately 75% for areas without final cover and 90% for areas with final cover. Increased collection efficiency and reduced fugitive LFG loss directly impacts the assessment of effects for LFG contaminants and greenhouse gas (GHG) emissions.
- Site traffic
  - TCEC currently operates at approximately the maximum waste filling rate allowed by ECA A032203, and the landfill will continue to operate under similar current conditions based on the daily and annual tonnage limits. No changes are proposed for the vehicles travelling to and from the facility, and therefore traffic conditions are expected to remain consistent with current. A traffic analysis of current conditions (HDR, 2024) provided a peak traffic operating day for TCEC, and this was used as the basis for estimation of hourly traffic volumes on the internal road network.
- Operating hours
  - The ECA allows for waste acceptance from 7 AM to 7 PM, Monday to Saturday, and site preparation and closing activities between 6 AM to 8 PM, Monday to Saturday. The effects assessment assumes arrival of waste delivery vehicles and operation of on-site equipment during these times.
- Site equipment
  - The types of nonroad equipment and the location of its operation at TCEC have been included in the effects assessment. All equipment is expected to be the same as the equipment present under existing conditions.

2.1.3.3 Key Assumptions

The following key assumptions were made in the Air Quality effects assessment.

- Site traffic unchanged.

    - The existing traffic analysis (HDR, 2024) assumed no changes in future traffic patterns for waste delivery trucks accessing the site, and the same assumption was used for the Air Quality effects assessment.
- Site equipment unchanged.
    - Site equipment in regular use for landfilling or construction activity has been included in the effects assessment; smaller equipment used infrequently is assumed to be insignificant in comparison. Increasing the size, quantity, or frequency of use of site equipment may increase associated air emissions.
- LFG estimation parameters unchanged.
    - The percentage of degradable organic carbon in municipal solid waste directly impacts the quantity of LFG generated from each tonne of waste. Programs to divert organic waste from landfills are increasing in Ontario, and it is possible that the degradable organic carbon content will decrease. In addition, factors such as increased precipitation may alter the kinetics of the biodegradation reaction. However, it is assumed that the time constant, percent degradable organic carbon, and other parameters that define the rate of LFG generation will not change during the lifespan of the proposed expansion landfill.
- Operating hours will increase to the maximum permitted under the ECA.
    - Current operating hours allow for waste delivery between 7 AM and 5 PM. It is conservatively assumed that operating hours will increase to the maximum permitted during the lifespan of the proposed expansion landfill.
- Compost diversion area (CDA).
    - Waste processing or composting operations are permitted at TCEC under the current ECA, although this was not part of the 2016 Environmental Screening or the future baseline assessment. It is assumed that composting activity will occur during the lifespan of the proposed expansion landfill with increase in traffic accessing the CDA.
- Discrete receptors unchanged.
    - The land use in the vicinity of TCEC is assumed to remain the same with no change in the number or location of residential receptors.
- Background concentrations unchanged.
    - Emissions for five key air pollutants have decreased in Canada over the past 30 years (ECCC, 2024). This downward trend may decrease ambient background concentrations of key indicator contaminants used in this effects assessment, but background concentrations are assumed to remain the same during the projected lifespan of the proposed landfill expansion.
- Meteorological conditions unchanged.
    - The effects of climate change are expected to become more pronounced in the latter half of this century, with increased frequency of extreme weather events and changes in average temperature and precipitation patterns (MECP, 2023).

Therefore, it is assumed that the meteorological data set used in the Air Quality effects assessment will continue to be representative of weather conditions at TCEC.

2.2 Comparative Evaluation and Identification of the Preferred Alternative

The three alternative methods are comparatively assessed and evaluated using the criteria and indicators to determine the Preferred Alternative. The differences in the potential environmental effects remaining following the implementation of potential mitigation/management measures (i.e., net effects) are used to identify and compare each alternative method.

The net environmental effects are used to compare the three alternative methods to one another at the criteria and indicator level for each discipline. The following two step methodology was applied to carry out the comparative evaluation for Air Quality:

1. Identify the predicted net effect(s) associated with each alternative method for each indicator and assign a preference rating (i.e., Preferred, Not Preferred, No Substantial Difference); and
2. Rate each alternative method at the criteria level (i.e., Preferred, Not Preferred, No Substantial Difference) based on the identified preference rating for each indicator and provide a rationale.

2.3 Effects Assessment of the Preferred Alternative

An assessment of the environmental effects of the Preferred Alternative is carried out considering the same criteria, indicators, and data sources, considering potential mitigation/management measures and cumulative effects. The Preferred Alternative's contribution to reducing GHG emissions and climate change is also examined. The effects assessment of the Preferred Alternative will be compiled and presented in the EA Study Report.

2.4 Comparison of the Preferred Alternative against the 'Do Nothing' Alternative

The effects of the Preferred Alternative are compared against the predicted effects of the currently approved Expansion Landfill based on similar environmental criteria and indicators, with the understanding that the criteria and indicators used in the current effects assessment may differ from those used for the effects assessment of the Expansion Landfill. The effects are compared against each other in terms of magnitude, extent, and duration. The advantages and disadvantages of the Preferred Alternative compared to the 'Do Nothing' Alternative are identified. The comparison of the effects of the Preferred Alternative against the 'Do Nothing' Alternative will be compiled and presented in the EA Study Report.

3 Net Effects Assessment

To identify the potential effects of the Project on Air Quality, the conceptual design of each alternative method for the landfill optimization is examined to determine if it will have an effect on:

- Dust through changes in:
  - Off-site POI air concentrations of particulate matter (dust) compounds at identified receptors in the immediate vicinity of the site, and community;
  - Frequency of any exceedances of applicable standards, limits, or guidelines at identified receptors; and
  - Number of off-site identified receptors potentially affected.
- LFG and Combustion By-Products through changes in:
  - Off-site POI air concentrations of indicator compounds at identified receptors in the immediate vicinity of the site, and community;
  - Frequency of any exceedance of applicable standards, limits, or guidelines at identified receptors; and
  - Number of off-site identified receptors potentially affected.
- Odour through changes in:
  - Off-site odour concentrations (odour units) at identified odour sensitive receptors in the immediate vicinity of the site;
  - Frequency of any odour levels above defined odour benchmarks; and
  - Number of off-site identified receptors potentially affected.
- Blowing Litter through the changes in:
  - Extent of zones potentially impacted by blowing litter; and
  - Number of off-site identified receptors potentially affected.
- Climate Change through the changes in the quantity of greenhouse gas emissions released to atmosphere from landfill operations.

The results of the net effects assessment for each alternative method are provided in **Sections 3.2** through **3.4**, below.

3.1 Future Baseline

Characterization of the future baseline assumed that all currently approved landfill activities were in operation, including the RNG Facility and the leachate treatment facility. Future baseline considers landfill operations in the year 2031. Future baseline conditions were assessed for each of the environmental criteria using a mix of qualitative and quantitative analysis.

Quantitative assessment utilized dispersion modelling in order to predict concentrations of the key indicator contaminants at identified off-site discrete receptors. Dispersion modelling was completed using the US EPA program AERMOD version 22112. Modelling considered 5-years of site-specific meteorological data provided by the MECP as well as local terrain data. Further modelling details are outlined in Section 9 of the Air Quality Existing Conditions Report.

The key indicators contaminants assessed for each environmental criteria are summarized below:

- Dust:
  - Total Suspended Particulate (TSP);
  - Particulate Matter less than 10 µm in diameter (PM_{10}); and
  - Particulate Matter less than 2.5 µm in diameter ($PM_{2.5}$).
- LFG and Combustion Byproducts:
  - Vinyl Chloride (CAS# 75-01-4);
  - Benzene (CAS# 71-43-2);
  - 1,2-Dichloroethane (CAS# 107-06-2);
  - Total Reduced Sulphurs (TRS);
  - Hydrogen Sulphide (H_2S) (CAS# 7783-06-4);
  - Ammonia; (CAS# 7664-41-7)
  - Nitrogen Oxides (NO_x) / Nitrogen Dioxide (NO_2) (CAS# 10102-44-0);
  - Dioxins and Furans (D&F as toxic equivalency (TEQ)); and
  - Sulphur Dioxide (SO_2) (CAS# 7446-09-5).
- Odour
  - Expressed in odour units per cubic metre (OU/m^3)
- Blowing Litter:
  - Assessed qualitatively as there are no applicable criteria.
- Climate Change:
  - GHG emissions expressed as Carbon Dioxide equivalent (CO_2e).

Key indicator contaminants were compared against criteria from O.Reg. 419/05 and/or AAQC where available. In the absence of any MECP criteria, contaminants were compared to the CAAQs criteria. $PM_{2.5}$ does not have criteria under O.Reg.419/05 or AAQC, so the CAAQs criteria was used for comparison. CAAQs represent regional ambient air quality objectives and are not suitable for comparison for the purpose of facility level compliance. This criterion is only included to provide context for predicted concentrations of $PM_{2.5}$. CAAQs also provides criteria for nitrogen dioxide and sulphur

dioxide. These criteria were not considered in this assessment as criteria for these contaminants are available under O.Reg. 419/05 and AAQC. A summary of the contaminants and their applicable criteria are provided in **Table 3-1**.

Table 3-1. Assessment Criteria for Key Indicator Compounds

Contaminant	Applicable Sub-Assessment	Averaging Period	Air Quality Criteria (ug/m³)	Source
Total Suspended Particulate (TSP)	Dust	24-hour	120	AAQC & O.Reg. 419/05
		Annual	60	AAQC
Particulate Matter less than 10 µm in diameter (PM_{10})	Dust	24-Hour	50	AAQC
Particulate Matter less than 2.5 µm in diameter ($PM_{2.5}$)	Dust	24-Hour	27[1]	AAQC/CAAQs
		Annual	8.8[2]	CAAQs
Vinyl Chloride	LFG	24-hour	1.0	AAQC & O.Reg. 419/05
		Annual	0.2	AAQC
Benzene	LFG	24-hour	2.3	AAQC
		Annual	0.45	AAQC & O.Reg. 419/05
1,2-Dichloroethane	LFG	24-hour	2	AAQC & O.Reg. 419/05
		Annual	0.4	AAQC
Ammonia	LFG	24-hour	100	AAQC
Hydrogen Sulphide (H_2S)	LFG	10-minute	13	AAQC & O.Reg. 419/05
		24-hour	7	AAQC & O.Reg. 419/05
Total Reduced Sulphurs (TRS)	LFG	10-minute	13	AAQC & O.Reg. 419/05
		24-hour	7	AAQC & O.Reg. 419/05
Odour	Odour	10-minute	1 OU/m³	MECP Guidance
Dioxins and Furans (D&F)	Combustion	24-hour	0.1 pg TEQ/m³	AAQC
Nitrogen Oxides/Nitrogen Dioxides (NO_X/NO_2)	Combustion	1-hour	400	AAQC & O.Reg. 419/05
		24-hour	200	AAQC & O.Reg. 419/05
Sulphur Dioxide (SO_2)	Combustion	1-hour	100	AAQC & O.Reg. 419/05
		Annual	10	AAQC & O.Reg. 419/05

Notes:

[1] The 24-hour $PM_{2.5}$ CAAQs criteria is based on the 3-year average of the annual 98th percentile of the daily 24-hour average concentration.

[2] The annual $PM_{2.5}$ CAAQs criteria is based on the 3-year average of the annual average of the daily 24-hour average concentration.

In order to best characterize future baseline, a 1-year ambient monitoring program was completed to characterize existing background concentrations. Details on the ambient monitoring campaign can be found in Sections 6 and 8 of the Air Quality Existing Conditions Report.

Future baseline were evaluated using the releases to air from the Project and assesses the potential effects on surrounding areas by comparing to standards and guidelines published by government agencies. In addition to tabular results, concentration isopleths are provided for all contaminants with a maximum predicted concentration that is both greater than 10% of its applicable criteria at the worse-case discrete receptor without background applied and greater than criteria with background applied. Details on the future baseline for each environmental criteria are detailed in the sections below.

3.1.1 Dust

There are typically three contaminants of interest related to the dust emissions from landfills: total suspended particulate matter (TSP), particulate matter less than 10 microns (PM_{10}), and particulate matter less than 2.5 microns ($PM_{2.5}$). Sources of dust from landfill operations considered in the future baseline assessment are:

- On-site vehicle traffic (on both paved and unpaved roads);
- Idling vehicles;
- Wind erosion of exposed areas;
- Material handling, including waste soils and daily cover material;
- Bulldozing;
- Combustion sources;
- LFG flares;
- RNG facility flares and thermal oxidizers; and
- Emergency generators.

Detailed emission estimate methodologies for each of these sources is provided in the Air Quality Existing Conditions Report Section 13 and form the basis for dispersion modelling. In addition to the methodology described in Section 9 of the Air Quality Existing Conditions Report, dispersion modelling for dust contaminants considered the effects of dry particle deposition, details on the factors applied are provided in Section 13.5 of the Air Quality Existing Conditions Report.

Modelled concentrations for TSP, PM_{10}, and $PM_{2.5}$ at identified discrete receptors were compared against their applicable criteria as outlined in **Table 3-1**. Predicted concentrations for annual TSP and $PM_{2.5}$, and 24-hour TSP, PM_{10}, and $PM_{2.5}$ are provided in **Appendix 3A**. Where exceedances of indicator criteria occur, the frequency of exceedance is provided.

Overall, predicted concentrations were below their respective criteria for annual TSP, annual $PM_{2.5}$, and 24-hour $PM_{2.5}$ at all discrete receptor locations. Predicted concentrations of 24-hour TSP exceeded applicable criteria at receptors R2 - R7 and R9, with the maximum frequency of exceedance being 1.6%, or approximately 6 days per year at R4. Frequency analysis for 24-hour TSP is provided in **Appendix 3B**.

Similarly, predicted concentrations of 24-hour PM_{10} exceeded applicable criteria at receptors R2, R3, R4, R7, and R9, with the maximum frequency of exceedance being 0.9%, or approximately 3 days per year at R4. A frequency analysis for 24-hour PM_{10} is provided in **Appendix 3C**.

In order to illustrate the area of influence around the Project, concentration isopleths for contaminants and averaging periods with predicted concentrations greater than criteria are provided in **Appendix 3D**.

3.1.2 LFG and Combustion Byproducts

The LFG and combustion byproduct study assessed the potential impacts for a select list of key indicator contaminants, including:

- VOCs such as vinyl chloride, benzene, and 1,2-dichloroethane.
- Sulphur compounds such as hydrogen sulphide (H_2S) and total reduced sulphurs (TRS).
- Combustion by-products such as nitrogen oxides (NO_x), sulphur dioxide (SO_2), and dioxins and furans (D&F).
- Ammonia from the proposed leachate treatment facility.

VOCs and sulphur compounds are generated from the decomposition of the biodegradable waste within the landfill mound.

Combustion byproducts are generated by combustion equipment, such as flares and thermal oxidizers, and tailpipe emissions from onsite vehicles.

Sources of LFG and combustion byproducts considered in the future baseline assessment are:

- Fugitive emissions of LFG through the surface of the landfill, through both final cap and interim cover areas;
- VOCs and ammonia from the leachate collection and treatment system;
- VOCs from contaminated soils;
- Uncombusted LFG compounds emitted from the landfill flares;
- Uncombusted LFG compounds emitted from the RNG facility thermal oxidizers and flares; and,
- Tailpipe emissions from mobile equipment.

Detailed emission estimate methodologies for each of these sources is provided in the Air Quality Existing Conditions Report Section 12 and form the basis for dispersion modelling.

Benzene, vinyl chloride, 1,2-dichloroethane, ammonia, SO_2, NO_x, and D&F are predicted to be below their applicable criteria at all off-site locations with background included. Predicted concentrations of H_2S are below applicable criteria at all discrete receptors for its 24-hour averaging period criteria. Ten-minute averaging period H_2S, 10-minute TRS, and 24-hour TRS are predicted to exceed applicable criteria with background included. However, these elevated concentrations are the result of high background concentrations with very little contribution coming from landfill activities.

Predicted concentrations of H_2S for the 10-minute averaging period exceed the applicable criteria due to elevated background concentrations. However, cumulative concentrations are dominated by elevated background concentrations. The maximum landfill contribution to the predicted POI occurs at receptor STR1 with a predicted concentration of 0.8 µg/m³ or 5.9% of the criteria. This accounts for approximately 3.3% of the predicted cumulative concentration.

Predicted concentrations of TRS for the 10-minute averaging period exceed the applicable criteria. However, cumulative concentrations are dominated by elevated background concentrations. The maximum contribution to the predicted POI occurs at receptor R4 with a predicted concentration of 1.2 µg/m³ or 9.0% of the criteria. This accounts for approximately 2.6% of the predicted cumulative concentration.

Predicted concentrations of TRS for the 24-hour averaging period exceed the applicable criteria. However, cumulative concentrations are dominated by elevated background concentrations. The maximum contribution to predicted POI at a discrete receptor occurs at R9 with a concentration of 0.15 µg/m³ or 2.2% of the criteria. This accounts for approximately 1.4% of the predicted cumulative concentration.

Tabular results of predicted concentrations for all LFG and combustion byproducts contaminants at all discrete receptors are provided in **Appendix 3E.**

Since predicted concentrations without background for all LFG contaminants (benzene, vinyl chloride, 1,2-dichloroethane, H_2S and TRS) are below 10% of their criteria, isopleths for LFG contaminants are not provided.

3.1.3 Odour

Odour associated with landfill operations has the potential for nuisance effects at sensitive off-site receptors. Sources of odour from landfill operations considered in the future baseline assessment are:

- LFG and waste odours from the landfill and waste acceptance activities: active face, interim cover areas;
- Leachate odours from the leachate collection, storage, and treatment system; and,
- Hydrocarbon odours from contaminated soils.

Odour emissions from fugitive sources were determined through engineering calculations and site-specific measurements. Two separate approaches were utilized. Odour emissions from the active face, including freshly uncovered waste, the contaminated soil pile, and the leachate maintenance holes were developed based on odour flux measurements. Odour emissions from the interim and final cover areas were based on measurements of raw landfill gas coupled with calculated landfill gas generation rates.

Details on the flux chamber sampling campaign are provided in Section 7.1 of the Air Quality Existing Conditions Report. Odour was assessed at identified odour sensitive receptors using dispersion modelling in odour units per cubic metre (OU/m³). Odour does not have any applicable standards or guidelines, instead odour was compared to the MECP guidance document, "Methodology for Modelling Assessments of Contaminants with 10-Minute Average Standards and Guidelines under O.Reg. 419/05", dated September 2016. This guidance document indicates that odour concentrations that are greater than 1 OU/m³ are considered acceptable at sensitive receptor locations, as long as the frequency of exceedance is less than 0.5% of the time.

An odour unit is defined as the quantity of odourous substance that, when dispersed in 1 m³ of odour free air, becomes just detectable by a "normal" human observer whose sensitivity to the odorant represents the mean of the population. The average odour detection threshold is 1 OU/m³, although odours at this level are not necessarily a nuisance. Odour concentrations that may cause a complaint due to their ability to annoy typically range from 3 to 5 OU/m³. Through experience with other landfills in Southern Ontario, the objectionable level for odour was generally in the range of 3 to 5 OU/m³. These levels are more closely related to public complaints.

For the purposes of this assessment, the predicted site-wide odours from the TCEC operations were compared to both the 1 OU/m³ detection threshold and the 3 OU/m³ recognition and 5 OU/m³ annoyance thresholds.

A summary of the maximum predicted concentrations and frequency of exceedance for 1 OU, 3 OU, and 5 OU is provided in **Appendix 3F.** Frequency analysis for the cemetery (STR1) considers events between 6:00 a.m. and 6:00 p.m. only.

Maximum predicted concentrations at all receptors exceed the MECP odour guideline objective of 1 OU/m³. A frequency analysis was performed on the predicted concentrations. The 1 OU/m³ guideline shows exceedances at a frequency greater than 0.5% of the time at receptors R2 through R7. The highest overall frequency of exceedance of 1 OU/m³ is 1% or approximately 84 hours per year which is predicted at R4 and R7.

Exceedances of 3 OU/m³ were predicted at two receptors, R2 and R4,; the frequency analysis suggests that exceedance of 3 OU/m³ is less than 0.5% at these receptors. The highest overall frequency of exceedance of 3 OU/m³ is 0.01% or approximately 1 hour per year which is predicted at R4.

No exceedances of 5 OU/m³ were predicted at any of the receptors.

A concentration isopleth for odour is provided in **Appendix 3G**.

3.1.4 Blowing Litter

A potential nuisance created by the landfill is wind-blown litter. Litter typically consists of loose, lightweight materials that can be picked up by the wind such as paper products, empty plastic bags, and cardboard. These materials are commonly found at the active face where freshly deposited waste is exposed to the wind.

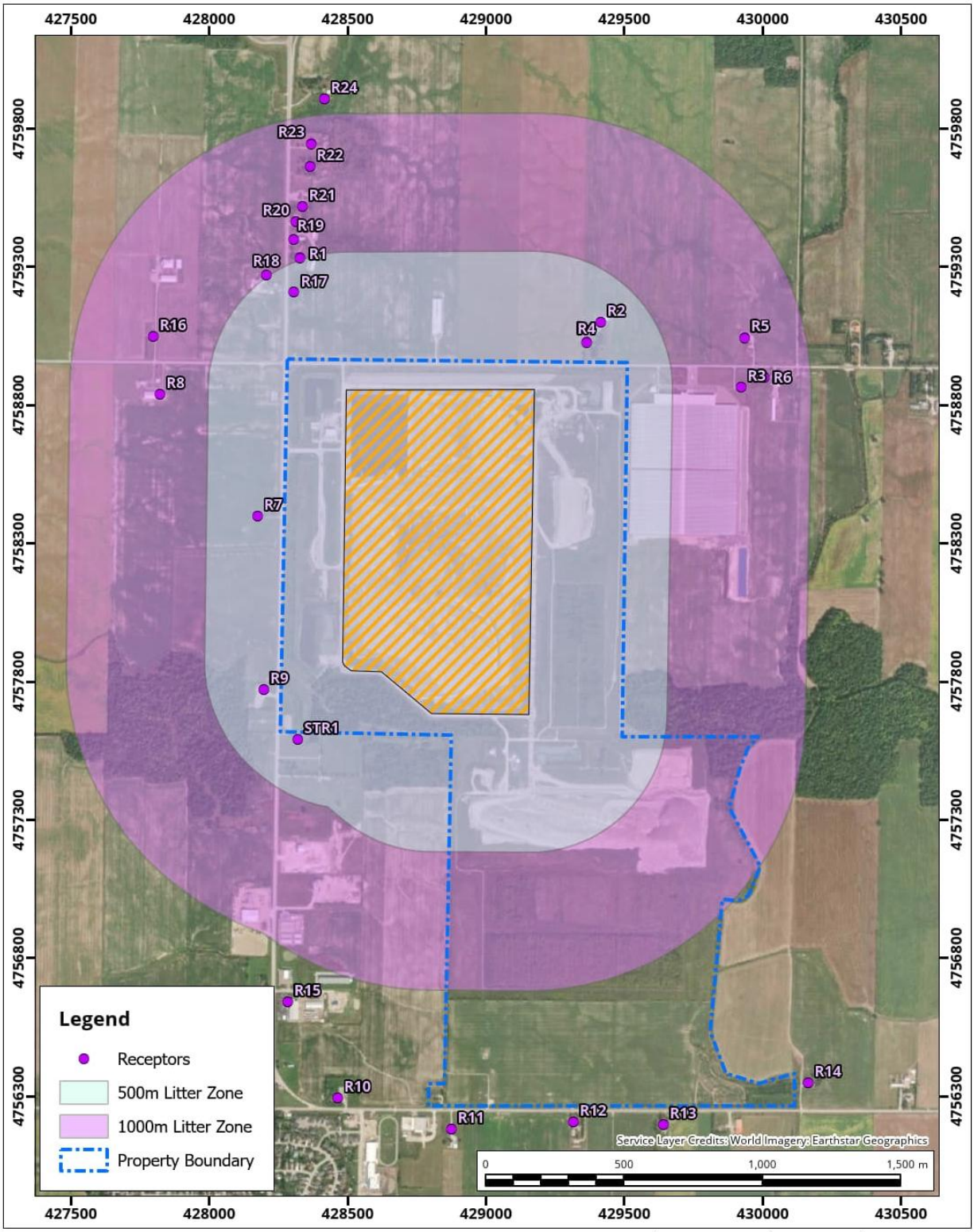
Litter may be transported off-site during events with above average wind speeds. Non-active waste filling areas are covered by daily, interim, or final cover to minimize the potential for windblown litter. Control of wind-blown litter at the working face is managed using the litter best management plan (BMPP). Details on blowing litter controls are provided in Section 10.1 of the Air Quality Existing Conditions Report. The Air Quality Existing Conditions Report developed zones of impact based on the 1990's, Ontario's Interim Waste Authority Limited (IWA) literature review of the potential for blowing litter impacts during high wind speed events. The findings of this literature review are presented in **Table 3-2**.

Table 3-2: Blowing Litter Potential Zones of Impact for Above-Grade Landfills (IWA, 1994)

Distance from Landfill Perimeter	Finding	Impact Category
0 to 500 m	50% of escaping litter retained in this area	Medium
500 to 1,000 m	Remaining 50% of escaping litter retained in this area	Low
Beyond 1,000 m	Very little litter escapes beyond this distance	None

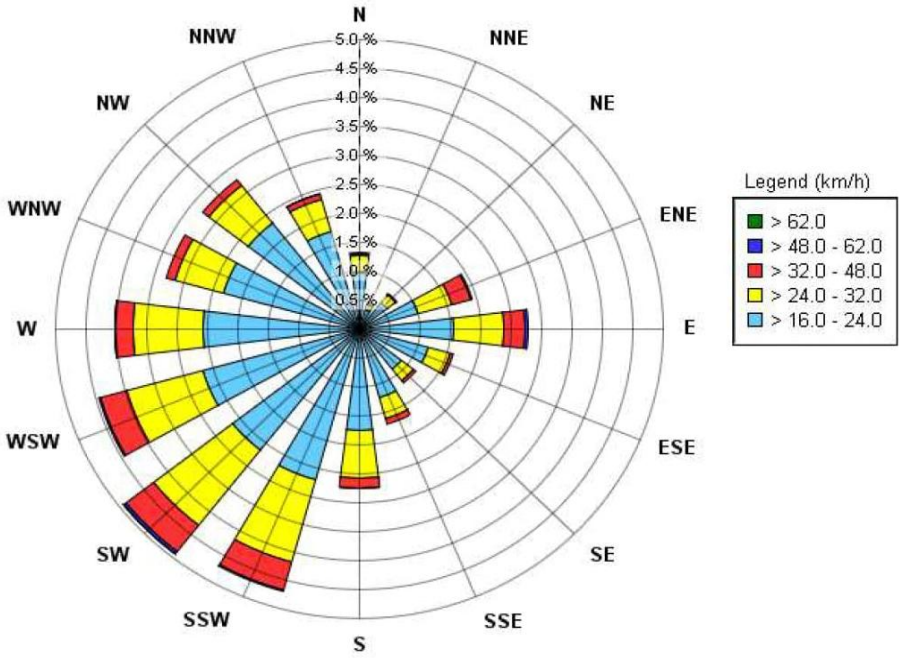
The background data presented previously in **Table 3-2** indicates that potential blowing litter impacts are expected to occur within 500 m of the landfill and to a lesser degree limited to within 1 km of the proposed landfill expansion. These litter zones and discrete receptors are provided in **Figure 3-1**.

Figure 3-1. Site Plan Showing Property Boundary, Sensitive Receptors, and Litter Zones



Site-specific meteorological data provided by the MECP was used in order to determine the zones for litter for the Future Baseline, a wind rose of the data is provided in **Figure 3-2**.

Figure 3-2. Wind Rose (Blowing From) for Watford, Ontario, 2011 - 2015



Five rural residences and the cemetery are located within 500 m of the landfill. Based on the wind rose presented in **Figure 3-2** and the wind speed thresholds presented in **Table 3-3**, high winds that could potentially cause litter to blow toward these residences are expected to occur infrequently, less than 2% of the time or approximately 7 days per year. Receptors R2 and R4 are located to the northeast of the landfill in the predominant wind direction. Despite being in the predominant wind direction, **Figure 3-2** indicates the probability for winds greater than the thresholds for litter are 5% of the time, or 18 days per year. WM has installed permanent litter fences along the northern property boundary which provide additional control, further reducing the potential impact. Portable wind fences are also utilized at the active face to assist in reducing the potential for wind-blown litter. Receptors R7, R9, and STR1 are located to the west/southwest of the landfill site. These receptors are not located in the predominant wind direction, the frequency of winds exceeding the litter thresholds are predicted to range from <1% - 3% of the time, or less than 11 days per year. Therefore, based on a combination of the frequency of winds and the litter controls in place, the potential for litter impacts at the receptors within 500 m of the landfill is low.

Table 3-3. Wind Speed and Wastes Blown (Lapp, 1983)

Wind Speed Range (km/h)	Type of Waste
16 - 24	Envelope, dry slightly crumpled paper
24 – 32	Empty plastic bag
32 – 48	Corrugated cardboard, crumpled paper towel
48 - 62	Plastic strips, tissue box, tightly crumpled paper
62 - 88	Milk carton, corrugated box
> 88	170cc metal can

Between a distance of 500 m and 1,000 m there are 12 discrete receptors, however only R3, R5 and R6 are located in the predominant wind direction. Given the separation distance, the impact in the area is expected to be low. Thus, the potential for litter impacts at these receptors is expected to be low.

Other residences in the area are farther than 1 km from the proposed landfill and have little or no potential for blowing litter impacts.

Even with litter controls in place, litter events do occur from time to time. In order to ensure a thorough and rapid response, the BMPP (Litter) includes a protocol to dispatch a site crew to the impacted zone for cleanup. This protocol extends to adjacent properties as well as main roadways and is expected to sufficiently manage the potential for blowing litter.

Wind speeds increase at higher elevations. However, it is important to note that current landfilling operations already occur above grade and are operating in higher wind speed conditions. Due to the nature of the near-surface wind gradient, wind speed increases with elevation are non-linear with the greatest magnitude of change occurring nearest to the surface. Therefore, although landfilling operations at higher elevations will be exposed to higher wind speeds, the magnitude of the change in frequency of potential litter events is not expected to be substantial. Overall, current litter control practices are expected to effectively handle the potential for wind-blown litter. As operations continue at higher elevations, the potential for wind-blown litter will continue to be evaluated by the operators, and the litter control practices adjusted as needed.

3.1.5 Climate Change

Climate change was evaluated through the quantification of GHG emissions. GHGs are a subset of gases that have the ability to absorb and emit infrared radiation which has the potential to contribute to climate change. The most common GHGs are carbon dioxide (CO_2), methane (CH_4), and nitrogen oxide (NO_2).

Emissions of GHG are typically reported in terms of carbon dioxide equivalence or CO_2e. GHGs such as CH_4 and NO_2 are related to CO_2e using what's called GHG global warming potentials. For this assessment the global warming potentials outlined in Ontario's Greenhouse Gas Emissions: Quantification, Reporting, and Verification

Regulation 390/18 Schedule 2 were used to convert emissions of CH_4 and NO_2 to CO_2e.

For the assessment of GHGs for the future baseline, the assessment focused on scope 1 emissions. Scope 1 emissions are defined in The Greenhouse Gas Protocol, A Corporate Accounting and Reporting Standard published by the World Resources Institute and World Business Council for Sustainable Development, March 2004. This protocol defines scope 1 as GHG emissions occurring from sources that are owned or controlled by the company. For this assessment GHG emissions from sources within the TCEC property boundary were considered.

A GHG inventory was developed considering the following sources:

- Release of fugitive emissions from the landfill mound;
- Combustion of LFG in the flares;
- Combustion of fossil fuels in generators and boilers; and
- Tailpipe emissions from onsite vehicle traffic.

In addition to GHG emissions, TCEC operates two GHG diversion programs which include:

- LFG diversion for heat production at an adjacent greenhouse; and
- LFG diversion into the RNG Facility as renewable natural gas for distribution to the local gas distribution network pipeline.

3.1.5.1 GHG Emission Sources

3.1.5.2 Fugitive Emissions from the Landfill Mound

Gas generated by decomposing waste in a landfill can migrate through the soil cover to the surface of the landfill. LFG consists mainly of CH_4 and CO_2 making it a potentially significant source of GHG emissions. TCEC operates a rigorous gas collection system consisting of vertical collection wells which diverts collected gas for destruction in the LFG flares or utilization through the RNG facility or heat generation at the greenhouse.

The quantity of CH_4 and CO_2 generated by the landfill was estimated using US EPA's LANDGEM. LANDGEM provides first-order emission rates of GHGs from the landfill mound and was also used to estimate emissions of VOCs for the LFG and combustion byproducts assessment. LANDGEM parameters including the methane generation rate (k), the methane generation potential of the waste (Lo), the concentration of methane in the LFG, and the waste deposition history of the landfill were based on the same methodology applied to the LFG and combustion byproducts study. Details on the LANDGEM methodology are provided in Section 12.3 of the Air Quality Existing Conditions Report.

For the future baseline, the closed Old Landfill was assumed to have a LFG collection efficiency of 70% and the Expansion Landfill was assumed to be under interim cover with a collection efficiency of 75%. LFG collected is sent to either the flare for

destruction or to the RNG Facility or greenhouse for heating. The remaining 30% of gas for the closed Old Landfill and 25% of gas for the Expansion Landfill are released through the mound as fugitive emissions. A portion of fugitive CH_4 undergoes microbial action as it passes through the landfill cap converting a portion of the CH_4 to CO_2. Based on guidance provided in Environment and Climate Change Canada (ECCC) National Inventory Report 1990-2022: Greenhouse Gas Sources and Sinks in Canada, Part 2. Section A3.6.1.2.1, 10% of CH_4 passing through the landfill mound was assumed to be converted to CO_2. CO_2 produced from the landfill is considered biomass and was not included in the quantification of GHG emissions.

Emission calculations for fugitive releases from the landfill mound are provided in **Appendix 3H**.

3.1.5.3 Flare Emissions

Gas collected from the landfill mound has three potential pathways:

- Combustion through the LFG flares;
- Diversion to the greenhouse as gas for heating; and
- Diversion to the RNG facility for utilization as natural gas equivalent.

In a previous assessment, the LFG flow rate to the greenhouse boiler was assumed to be the same as TCEC Flare 4 because it was understood the capacity of the two pieces of equipment are similar (RWDI, 2019). Assuming this transfer rate may be variable, the portion of collected gas diverted to the greenhouse for heating is assumed 50% of the maximum gas flow rate of Flare 4 which has a maximum flow rate of 0.94 m^3/s for the purpose of quantifying this beneficial use.

The portion of LFG diverted to the RNG facility was assumed to be 50% of the remaining collected gas. This was based on the conservative assumption that RNG gas would be on spec roughly 50% of the time. 100% of CO_2 diverted to the RNG facility was assumed to be lost during the scrubbing process and released to atmosphere. Methane was assumed to be 100% captured in the renewable natural gas (RNG).

The remaining gas is combusted through the LFG flares. Based on guidance from ECCC National Inventory Report 2022 Part 2, Section A3.6.1.2.1 a 99.7% combustion efficiency of methane into CO_2 was assumed, with the remaining 0.3% of methane being released to atmosphere.

3.1.5.4 Combustion Equipment Emissions

Stationary combustion equipment at TCEC includes:

- One (1) natural gas fired amine reboiler (AMINE) that is part of the RNG Facility; and,
- Four (4) standby diesel fired generators (Gen1 – Gen4).

Emissions for the amine reboiler were based on a maximum fuel consumption of 64 scfm of natural gas. As a conservative estimate the boiler was assumed to operate continuously 24/7. Emission factors for CO_2 and CH_4 were provided by the manufacturer. Emissions of NO_2 were calculated using equation 2-13 under Section 2.B of Canada's Greenhouse Gas Quantification Requirements (GGQR), December 2022.

Emissions from the diesel fired generators were based on an assumed maximum of 480 operating hours per year each at 100% load. Fuel consumption was based on specifications for a Cummins QST30-G5 NR2 1,000 kW genset.

Emission factors were obtained from Table 2-2 for CO_2 and Table 2-7 of Canada's GGQR, dated December 2022.

Emission calculations for stationary combustion equipment is provided in **Appendix 3H**.

3.1.5.5 Tailpipe Emissions

Estimates of tailpipe for CO_2, CH_4, and NO_2 emissions from on-road vehicles were obtained using the US EPA's Motor Vehicle Emission Simulator (MOVES), version MOVES3. Tailpipe emissions for landfill equipment were developed using the MOVES3 nonroad option. MOVES is a model that has been developed for the purpose of estimating vehicular emissions using computer simulation techniques based on extensive previous testing of a wide range of vehicles. MOVES provides emission rates in terms of gram per vehicle mile travelled. Details on the site traffic used to determine tailpipe emissions are detailed in Section 12.3.5 of the Air Quality Existing Conditions Report. Detailed calculations for CO_2, CH_4, and NO_2 using this methodology are provided in **Appendix 3H**.

3.1.5.6 GHG Sinks

As discussed in Section 3.1.5.3 a portion of the LFG collected is utilized as either:

- LFG diversion for heating of an adjacent greenhouse; and,
- LFG diversion into the RNG facility as renewable natural gas.

These diversion programs represent beneficial uses of GHG emissions and have been recognized as positive diversion from landfill operations.

3.1.5.7 Results

Total estimated emissions including carbon dioxide were determined to be 513,649 tonnes of CO_2e. GHG emissions from the future baseline are dominated by fugitive releases with 401,422 tonnes CO_2e. Benefits from LFG diversion were estimated to be 84,129 tonnes of CO_2e. A summary of the GHG inventory is provided in **Table 3-4**.

LFG is classified as biomass under Schedule 4 of Ontario Regulation (O.Reg.) 390/18. Carbon dioxide from the combustion of biomass is excluded from GHG verification and

reporting in O.Reg. 390/18 s.12(2). Carbon dioxide from the decomposition of biomass is excluded from GHG reporting under Ontario Regulation (O.Reg.) 390/18 as noted in ON.191 of the MECP Guideline for Quantification, Reporting and Verification of Greenhouse Gas Emissions, March 2024. Total estimated annual emissions excluding carbon dioxide derived from biomass were determined to be 374,147 tonnes CO_2e. A summary of the GHG inventory excluding carbon dioxide derived from biomass is provided in **Table 3-5**.

Table 3-4. Summary of Estimated Greenhouse Gas Emissions (2031)

Source	CO_2 Estimated Annual Emissions (tonnes/year) GWP [a] 1	CH_4 Estimated Annual Emissions (tonnes/year) GWP [a] 1	NO_2 Estimated Annual Emissions (tonnes/year) GWP [a] 1	CO_2e Annual Total (t CO_2e / year) [b] [c]	Percent of Total (%)
Fugitive LFG (Mound) [d]	40,242	12,900	0	401,422	78%
LFG Flare [e]	99,260	56.5	0	100,841	20%
Mobile Combustion [f]	6,780	0.0357	0.00704	6,782	1%
Stationary Combustion [g]	4,592	0.0619	0.0341	4,603	1%
Total	150,874	12,956	0.0411	513,649	100%
GHG Avoided by Displacing Pipeline Natural Gas Through Direct Use of LFG and Production of RNG [h]				-84,129	-16%

Notes:

[a] Global warming potential (GWP) or carbon dioxide equivalent (CO2e) of greenhouse gases based on 100-year time horizon, from Environment and Climate Change Canada (ECCC) (2024).
https://www.canada.ca/en/environment-climate-change/services/climate-change/greenhouse-gas-emissions/quantification-guidance/global-warming-potentials.html

[b] Total CO2e is the sum of annual emissions of each greenhouse gas times its global warming potential.

[c] Estimates assume 14,883,335 cubic metres of LFG transferred to the greenhouse, and on-spec production and distribution of renewable natural gas (RNG) 50% of the time at the maximum RNG facility LFG flow rate.

[d] LFG collection efficiency: 75% open landfills, and 90% closed landfills. Old landfill, 70%.

[e] Flare destruction efficiency: 99.7%.

[f] Based on maximum vehicle traffic in this modelled scenario and United States Environmental Protection Agency MOVES contaminant emission factors.

[g] Amine reboiler and emergency generators.

[h] Environment and Climate Change Canada. (2022). Greenhouse Gas Calculator for Organic Waste Management: Methodology Report. Table 20 and Section 7.

Table 3-5. Summary of Estimated Greenhouse Gas Emissions, Excluding Carbon Dioxide from Biomass (2031)

Source	CO_2 Estimated Annual Emissions (tonnes/year) GWP [a] 1	CH_4 Estimated Annual Emissions (tonnes/year) GWP [a] 1	NO_2 Estimated Annual Emissions (tonnes/year) GWP [a] 1	CO_2e Annual Total (t CO_2e / year) [b] [c]	Percent of Total (%)
Fugitive LFG (Mound) [d]	0	12,899	0	361,180	97%
LFG Flare [e]	0	56.5	0	1,581	0%
Mobile Combustion [f]	6,780	0.0357	0.00704	6,782	2%
Stationary Combustion [g]	4,592	0.0619	0.0341	4,603	1%
Total	11,372	12,956	0.0411	374,147	100%
GHG Avoided by Displacing Pipeline Natural Gas Through Direct Use of LFG and Production of RNG [h]				-84,129	-22%

Notes:

[a] Global warming potential (GWP) or carbon dioxide equivalent (CO2e) of greenhouse gases based on 100-year time horizon, from Environment and Climate Change Canada (ECCC) (2024).
https://www.canada.ca/en/environment-climate-change/services/climate-change/greenhouse-gas-emissions/quantification-guidance/global-warming-potentials.html

[b] Total CO2e is the sum of annual emissions of each greenhouse gas times its global warming potential.

[c] Estimates assume 14,883,335 cubic metres of LFG transferred to the greenhouse, and on-spec production and distribution of renewable natural gas (RNG) 50% of the time at the maximum RNG facility LFG flow rate.

[d] LFG collection efficiency: 75% open landfills, and 90% closed landfills. Old landfill, 70%.

[e] Flare destruction efficiency: 99.7%.

[f] Based on maximum vehicle traffic in this modelled scenario and United States Environmental Protection Agency MOVES contaminant emission factors.

[g] Amine reboiler and emergency generators.

[h] Environment and Climate Change Canada. (2022). Greenhouse Gas Calculator for Organic Waste Management: Methodology Report. Table 20 and Section 7.

3.2 Alternative Method 1

The assessment of effects for Alternative Method 1 is described below for the environmental criteria and indicators of Air Quality and is summarized in **Table 3-6**.

3.2.1 Dust

3.2.1.1 Predicted Off-site Concentrations

Alternative Method 1 will maintain the same maximum waste filling rate as the future baseline.

As such, waste-delivery vehicle traffic and most of the on-site traffic haul routes are expected to remain consistent with the future baseline. The future baseline placed the working face and the extension of the southern access haul route towards the

northeast corner of the approved landfill footprint as an approximation of where activity could occur toward the end of Expansion Landfill Phase 8 and 9. However, operations will move around the landfill site over the life of the landfill, and the effects assessment considered three future operational stages.

- Scenario 1: End of Stage 1, with the working face and extension of the southern access haul route in the northwest corner of the existing landfill footprint.
- Scenario 2: End of Stage 2, with the working face and extension of the southern access haul route in the northeast corner of the existing landfill footprint.
- Scenario 3: End of Stage 5, with the working face and extension of the southern access haul route toward the northeast corner but not as close to the extent of the existing landfill footprint.

Changing the location of the working face and the access haul route for each scenario is expected to change the predicted concentrations at receptors. In general, when the working face is located near the northeastern or northwestern border of the landfill footprint, there will be an increase in predicted off-site concentrations for receptors to the west and northwest and, to a lesser extent, the northeast. Although the working face area will remain the same size as the future baseline and the quantity of material handled for daily and final cover will remain consistent, increased predicted off-site concentrations will be driven by this change in proximity to receptors. Therefore, fugitive and tailpipe emissions associated with haul route traffic, handling emissions associated with daily cover activities, and wind erosion of exposed material at the working face and cap construction are expected to change in Alternative Method 1.

Modelled operation of LFG flares, boilers, and generators are not expected to change in Alternative Method 1, with this equipment assumed to be operating at capacity, and particulate matter emissions associated with combustion sources are expected to remain consistent with the future baseline.

Overall, Alternative Method 1 has the potential to increase off-site concentrations compared to future baseline at discrete receptors to the west and northwest and, to a lesser extent, the northeast as these receptors are brought into closer proximity to the working face and supporting infrastructure during the lifespan of the landfill.

3.2.1.2 Frequency of Exceedance of Applicable Criteria

As stated in **Section 3.2.1.1**, Alternative Method 1 has the potential to increase predicted concentrations of dust at discrete receptors at some points during site operation. Therefore, it is expected that the frequency of exceedance at discrete receptors may increase compared to the future baseline.

3.2.1.3 Number of Receptors Affected

As stated in **Section 3.2.1.1**, Alternative Method 1 has the potential to increase predicted concentrations of dust at discrete receptors. Therefore, it is expected that the number of affected discrete receptors may increase compared to future baseline.

3.2.2 LFG and Combustion By-Products

3.2.2.1 Predicted Off-site Concentrations

Alternative Method 1 will maintain the same maximum waste filling rate as the future baseline. However, the proposed expansion would extend the rate of 1.4 million tonnes per year over approximately 12 additional years. Estimation of the quantity of LFG produced per tonne of waste is based on a first-order decomposition rate equation. At a consistent fill rate, the quantity of LFG generated will increase until waste-filling ceases following landfill closure. Therefore, it is expected that LFG production will increase with Alternative Method 1 compared to future baseline.

The LFG collection system as described in the CDR has a collection efficiency of approximately 75% for areas without final cover and 90% for areas with final cover (WSP, 2024). This is higher than was assumed for the future baseline due to the implementation of early vertical gas wells and a 1.85 meter thick layer of clay in the final cover. Therefore, off-site concentrations of contaminants from LFG may decrease.

Modelled operation of LFG flares, boilers, and generators are not expected to change in Alternative Method 1, with this equipment assumed to be operating at capacity, and LFG and combustion product emissions associated with combustion sources expected to remain consistent with the future baseline.

Overall, Alternative Method 1 may increase off-site concentrations compared to future baseline at discrete receptors due to increased annual production of LFG over the lifespan of the landfill, although this may be offset by the increased LFG capture efficiency due to improvements in the LFG capture system as noted in the CDR. Overall, no impact from LFG and Combustion By-Products is expected.

3.2.2.2 Frequency of Exceedance of Applicable Criteria

As stated in **Section 3.2.1.1**, Alternative Method 1 has the potential to change predicted concentrations of LFG and combustion byproducts at discrete receptors. However, the model predicted concentrations were dominated by the ambient background concentrations in the future baseline, and that is expected to remain true for this effects assessment. Therefore, it is expected that the frequency of exceedance at discrete receptors will not change compared to future baseline.

3.2.2.3 Number of Receptors Affected

As stated in **Section 3.2.1.1**, Alternative Method 1 has the potential to change predicted concentrations of LFG and combustion byproducts at discrete receptors. However, the model predicted concentrations were dominated by the ambient background concentrations in the future baseline, and that is expected to remain true for this effects assessment. Therefore, it is expected that the number of discrete receptors affected will not change compared to future baseline.

3.2.3 Odour

3.2.3.1 Predicted Off-site Odour Concentrations

As noted in **Section 3.1.3**, odour emissions for the active face, freshly exposed waste, leachate maintenance holes, and the contaminated soil were determined through flux chamber sampling at TCEC in 2023. Odour emissions from the interim and final cover areas were based on measurements of raw landfill gas coupled with calculated landfill gas generation rates. Future baseline placed the working face and the extension of the southern access haul route towards the northeast corner of the approved landfill footprint as an approximation of where activity could occur toward the end of Expansion Landfill Phase 8 and 9.

However, operations will move around the landfill site over the life of the landfill, and the effects assessment considered three future operational stages as discussed in **Section 3.2.1.1**, with the working face moving in closer proximity to receptors in the west, northwest, and northeast at different times. The activities at the working face can be a source of odour; therefore, it is expected that off-site odour concentrations at discrete receptors may increase compared to the future baseline due to close proximity to receptors.

3.2.3.2 Frequency of Odour Levels Above Defined Odour Benchmarks

As stated in **Section 3.2.3.1**, Alternative Method 1 has the potential to increase predicted concentrations of odour at discrete receptors. Therefore, it is expected that the frequency of exceedance at discrete receptors may increase compared to future baseline.

3.2.3.3 Number of Receptors Affected

As stated in **Section 3.2.1.1**, Alternative Method 1 has the potential to increase predicted concentrations of odour at discrete receptors. Therefore, it is expected that the number of affected discrete receptors may increase compared to future baseline.

3.2.4 Blowing Litter

3.2.4.1 Extent of Zones Potentially Impacted

Potential blowing litter zones were established for the future baseline based on distance from the landfill perimeter. Since the landfill footprint remains the same between Alternative Method 1 and the future baseline, there is no change to the zones potentially impacted by blowing litter.

3.2.4.2 Number of Receptors Affected

The meteorological data used in the future baseline to determine the number and location of off-site receptors potentially affected by blowing litter is assumed to be unchanged for Alternative Method 1. The increase in height proposed for Alternative Method 1 may increase the potential for higher wind speeds at the landfill's working

face, and this may increase the frequency of potential litter events. However, continuation of the current litter management practices would continue to manage blowing litter effectively in Alternative Method 1. Therefore, it is expected that the number of receptors affected will not change compared to future baseline.

3.2.5 Greenhouse Gas

3.2.5.1 Annual Emissions of Greenhouse Gases

As discussed in **Section 3.2.1.1**, the LFG generated over the lifespan of Alternative Method 1 will increase compared to the future baseline, but the LFG collection efficiency is also expected to increase.

The transfer of LFG for beneficial use as a direct fuel source for Twin Creeks Greenhouse, or refinement at the RNG facility for general distribution as natural gas equivalent, would decrease the percentage of LFG sent for flaring and the GHG emissions associated with this process.

Overall, Alternative Method 1 is expected to increase the annual emissions of GHGs due to increased production of LFG, but a significant portion of this LFG will be collected and transferred for beneficial use, offsetting GHG emissions associated with extraction of natural gas as a fossil fuel.

3.2.6 Summary

A summary of the effects assessment of Alternative Method 1 is summarized below in **Table 3-6**.

Table 3-6. Net Effects Assessment – Alternative Method 1

Evaluation Criteria	Indicator	Key Design Considerations and Assumptions	Potential Effects	Mitigation Measures	Net Effects
Air Quality - Dust	Off-site POI air concentrations of particulate matter (dust) compounds at identified receptors in the immediate vicinity of the site, and community.	• Phasing and schedule of site development determines location of access roads, construction activities, and landfilling activities. • Construction activities include material handling that can generate fugitive dust. • Operating hours define the time of day during which on-site activities may contribute to fugitive dust. It is recognized that wind erosion may also generate dust outside of these hours. • Site traffic unchanged, so traffic volumes remain consistent although	• Predicted concentrations of dust contaminants may exceed criteria at discrete receptor locations	• Replace the existing unpaved south access ramp of the landfill area with a hard surface equivalent to a paved road. • Implementation of enhanced watering practices to achieve 95% control along paved haul routes.	• None. With the application of mitigation strategies, predicted concentrations at discrete receptors are expected to decrease to levels similar to Future Baseline.
	Frequency of any exceedance of applicable standards, limits, or guidelines at identified receptors.		• Frequency of predicted exceedances at discrete receptors may increase.		• None. With the application of mitigation strategies, the frequencies of predicted exceedance at discrete receptors are expected to decrease to levels similar to Future Baseline.

Table 3-6. Net Effects Assessment – Alternative Method 1

Evaluation Criteria	Indicator	Key Design Considerations and Assumptions	Potential Effects	Mitigation Measures	Net Effects
	Number of off-site identified receptors potentially affected (e.g., residential properties, public facilities, businesses/farms, institutions).	the distance travelled will vary depending on access routes. • Site equipment unchanged, so nonroad vehicle activity and locations expected to remain consistent. • Compost diversion area and associated material handling activities are considered as permitted in the current ECA. • Background concentrations which can represent a significant percentage of the cumulative concentration for some contaminants are assumed to remain unchanged over the lifespan of the proposed landfill expansion. It is noted that localized increases in wind speeds may occur due to the higher waste elevations at the site. • Meteorological conditions, including wind speeds and temperatures, which form the basis for dispersion modelling are assumed to remain unchanged over the lifespan of the proposed landfill expansion.	• The number of discrete receptors with predicted concentrations exceeding criteria may increase.		• None. With the application of mitigation strategies, the number of off-site receptors potentially affected are expected to decrease to quantities similar to Future Baseline.
Air Quality - LFG and Combustion By-Products	Off-site POI air concentrations of indicator compounds at identified receptors in the immediate vicinity of the site, and community (within 5 km).	• Annual waste filling rate / total additional tonnage determines the annual production of LFG. • Phasing and schedule of site development determines location of landfilling activity at the working face. • LFG generation is expected to increase during the operational life of the landfill and peak at closure.	• None	• None	• None

Table 3-6. Net Effects Assessment – Alternative Method 1

Evaluation Criteria	Indicator	Key Design Considerations and Assumptions	Potential Effects	Mitigation Measures	Net Effects
	Frequency of any exceedance of applicable standards, limits, or guidelines at identified receptors.	• LFG collection and treatment is expected to expand progressively as landfilling activity evolves. • LFG estimation parameters are based on the composition of municipal solid waste which is assumed to remain unchanged over the lifespan of the proposed landfill expansion. • Discrete receptors are assumed to be unchanged over the lifespan of the proposed landfill expansion. • Background concentrations which can represent a significant percentage of the cumulative concentration for some contaminants are assumed to remain unchanged over the lifespan of the proposed landfill expansion. • Meteorological conditions, including wind speeds and temperatures, which form the basis for dispersion modelling are assumed to remain unchanged over the lifespan of the proposed landfill expansion.	• None	• None	• None
	Number of off-site receptors potentially affected (e.g., residential properties, public facilities, businesses/farms, institutions).		• None	• None	• None
Air Quality - Odour	Off-site odour concentrations (odour units) at identified odour sensitive receptors in the immediate vicinity of the site.	• Phasing and schedule of site development determines location of landfilling activity at the working face, and the areas that may be under interim or final cover.	• Predicted odour concentrations may exceed criteria at discrete receptor locations	• None	• Predicted odour concentrations may exceed criteria at discrete receptor locations

Table 3-6. Net Effects Assessment – Alternative Method 1

Evaluation Criteria	Indicator	Key Design Considerations and Assumptions	Potential Effects	Mitigation Measures	Net Effects
	Frequency of any odour levels above defined odour benchmarks.	• LFG collection and treatment is expected to expand progressively as landfilling activity evolves. • LFG estimation parameters are based on the composition of municipal solid waste which is assumed to remain unchanged over the lifespan of the proposed landfill expansion. • Discrete receptors are assumed to be unchanged over the lifespan of the proposed landfill expansion. • Meteorological conditions, including wind speeds and temperatures, which form the basis for dispersion modelling are assumed to remain unchanged over the lifespan of the proposed landfill expansion.	• Frequency of odour levels above defined odour benchmarks may increase.	• None	• Frequency of odour levels above defined odour benchmarks may increase.
	Number of off-site receptors potentially affected (e.g., residential properties, public facilities, businesses/farms odour sensitive area(s), institutions).		• The number of discrete receptors with predicted odour concentrations exceeding criteria may increase.	• None	• Predicted odour concentrations are expected to be similar to or lower than Future Baseline
Air Quality – Blowing Litter	Extent of zones potentially impacted by blowing litter.	• Landfill footprint is unchanged, so the distance to receptors and the extent of each litter zone remain the same. • Existing Management using litter fencing • Positioning of mobile wind screens • Application of daily cover	• None	• None	• None
	Number of off-site receptors potentially affected (e.g., residential properties, public facilities, businesses/farms odour sensitive area(s), institutions).	• Discrete receptors unchanged so the number of receptors and their locations in the existing litter zones remain the same. • Meteorological conditions remain unchanged with no significant increase in wind speed over the lifespan of the proposed landfill expansion.	• None	• None	• None

Table 3-6. Net Effects Assessment – Alternative Method 1

Evaluation Criteria	Indicator	Key Design Considerations and Assumptions	Potential Effects	Mitigation Measures	Net Effects
Air Quality – Greenhouse Gas	Annual emissions of greenhouse gases (carbon dioxide, methane, and nitrous oxide), reported in carbon dioxide equivalent (CO_2e).	• LFG generation is expected to increase during the operational life of the landfill and peak at closure. • LFG collection and treatment is expected to expand progressively as landfilling activity evolves. • LFG estimation parameters are based on the composition of municipal solid waste which is assumed to remain unchanged over the lifespan of the proposed landfill expansion.	• Increased tonnage increases generation of LFG	• Where practical, increase transfer of collected LFG to beneficial use (Twin Creeks Greenhouse and RNG facility)	• Increase in overall GHG emissions • Reduced GHG through flare • Increased GHG offset through replacement of fossil fuel natural gas with renewable

3.3 Alternative Method 2

The assessment of effects for Alternative Method 2 is described below for the environmental criteria and indicators of Air Quality and is summarized in **Table 3-7**.

3.3.1 Dust

3.3.1.1 Predicted Off-site Concentrations

Alternative Method 2 will maintain the same maximum waste filling rate as the future baseline. As such, waste-delivery vehicle traffic and most of the on-site traffic haul routes are expected to remain consistent with the future baseline. The future baseline placed the working face and the extension of the southern access haul route towards the northeast corner of the approved landfill footprint as an approximation of where activity could occur toward the end of Expansion Landfill Phase 8 and 9. However, operations will move around the landfill site over the life of the landfill, and the effects assessment considered three future operational stages.

- Scenario 1: End of Stage 1, with the working face and extension of the southern access haul route in the northwest corner of the existing landfill footprint.
- Scenario 2: End of Stage 2, with the working face and extension of the southern access haul route in the northeast corner of the existing landfill footprint.
- Scenario 3: End of Stage 4, with the working face and extension of the southern access haul route toward the northeast corner but not as close to the extent of the existing landfill footprint.

Changing the location of the working face and the access haul route for each scenario is expected to change the predicted concentrations at receptors. In general, when the working face is located near the northeastern or northwestern border of the landfill footprint, there will be an increase in predicted off-site concentrations for receptors to the west and northwest and, to a lesser extent, the northeast. Although the working face area will remain the same size as the future baseline and the quantity of material handled for daily and final cover will remain consistent, increased predicted off-site concentrations will be driven by this change in proximity to receptors. Therefore, fugitive and tailpipe emissions associated with haul route traffic, handling emissions associated with daily cover activities, and wind erosion of exposed material at the working face and cap construction are expected to change in Alternative Method 2.

Modelled operation of LFG flares, boilers, and generators are not expected to change in Alternative Method 2, with this equipment assumed to be operating at capacity, and particulate matter emissions associated with combustion sources are expected to remain consistent with the future baseline.

Overall, Alternative Method 2 has the potential to increase off-site concentrations compared to future baseline at discrete receptors to the west and northwest and, to a lesser extent, the northeast as these receptors are brought into closer proximity to the working face and supporting infrastructure during the lifespan of the landfill.

3.3.1.2 Frequency of Exceedance of Applicable Criteria

As stated in **Section 3.2.1.1**, Alternative Method 2 has the potential to increase predicted concentrations of dust at discrete receptors at some points during site operation. Therefore, it is expected that the frequency of exceedance at discrete receptors may increase compared to the future baseline.

3.3.1.3 Number of Receptors Affected

As stated in **Section 3.2.1.1**, Alternative Method 2 has the potential to increase predicted concentrations of dust at discrete receptors. Therefore, it is expected that the number of affected discrete receptors may increase compared to Future Baseline.

3.3.2 LFG and Combustion By-Products

3.3.2.1 Predicted Off-site Concentrations

Alternative Method 2 will maintain the same maximum waste filling rate as the future baseline. However, the proposed expansion would extend the rate of 1.4 million tonnes per year over approximately 12 additional years. Estimation of the quantity of LFG produced per tonne of waste is based on a first-order decomposition rate equation. At a consistent fill rate, the quantity of LFG generated will increase until waste-filling ceases following landfill closure. Therefore, it is expected that LFG production will increase with Alternative Method 2 compared to Future Baseline.

The LFG collection system as described in the CDR has a collection efficiency of approximately 75% for areas without final cover and 90% for areas with final cover (WSP, 2024). This is higher than was assumed for the future baseline due to the implementation of early vertical gas wells and a 1.85 meter thick layer of clay in the final cover. Therefore, off-site concentrations of contaminants from LFG may decrease.

Modelled operation of LFG flares, boilers, and generators are not expected to change in Alternative Method 2, with this equipment assumed to be operating at capacity, and LFG and combustion product emissions associated with combustion sources expected to remain consistent with the future baseline.

Overall, Alternative Method 2 may increase off-site concentrations compared to future baseline at discrete receptors due to increased annual production of LFG over the lifespan of the landfill, although this may be offset by the increased LFG capture efficiency due to improvements in the LFG capture system as noted in the CDR. Overall, no impact from LFG and Combustion By-Products is expected.

3.3.2.2 Frequency of Exceedance of Applicable Criteria

As stated in **Section 3.2.1.1**, Alternative Method 2 has the potential to change predicted concentrations of LFG and combustion byproducts at discrete receptors. However, the model predicted concentrations were dominated by the ambient background concentrations in the future baseline, and that is expected to remain true for this effects assessment. Therefore, it is expected that the frequency of exceedance at discrete receptors will not change compared to future baseline.

3.3.2.3 Number of Receptors Affected

As stated in **Section 3.2.1.1**, Alternative Method 2 has the potential to change predicted concentrations of LFG and combustion byproducts at discrete receptors. However, the model predicted concentrations were dominated by the ambient background concentrations in the future baseline, and that is expected to remain true for this effects assessment. Therefore, it is expected that the number of discrete receptors affected will not change compared to future baseline.

3.3.3 Odour

3.3.3.1 Predicted Off-site Odour Concentrations

As noted in **Section 3.1.3**, odour emissions for the active face, freshly exposed waste, leachate maintenance holes, and the contaminated soil were determined through flux chamber sampling at TCEC in 2023. Emissions from the interim cover and final cover areas were determined using engineering calculations. Future baseline placed the working face and the extension of the southern access haul route towards the northeast corner of the approved landfill footprint as an approximation of where activity could occur toward the end of Expansion Landfill Phase 8 and 9.

However, operations will move around the landfill site over the life of the landfill, and the effects assessment considered three future operational stages as discussed in Section 3.2.1.1, with the working face moving in closer proximity to receptors in the west, northwest, and northeast at different times. The activities at the working face can be a source of odour; therefore, it is expected that off-site odour concentrations at discrete receptors may increase compared to the future baseline due to close proximity to receptors.

3.3.3.2 Frequency of Odour Levels Above Defined Odour Benchmarks

As stated in **Section 3.2.3.1**, Alternative Method 2 has the potential to increase predicted concentrations of odour at discrete receptors. Therefore, it is expected that the frequency of exceedance at discrete receptors may increase compared to future baseline.

3.3.3.3 Number of Receptors Affected

As stated in **Section 3.2.1.1**, Alternative Method 2 has the potential to increase predicted concentrations of odour at discrete receptors. Therefore, it is expected that the number of affected discrete receptors may increase compared to future baseline.

3.3.4 Blowing Litter

3.3.4.1 Extent of Zones Potentially Impacted

Potential blowing litter zones were established for the future baseline based on distance from the landfill perimeter. Since the landfill footprint remains the same

between Alternative Method 2 and the future baseline, there is no change to the zones potentially impacted by blowing litter.

3.3.4.2 Number of Receptors Affected

The meteorological data used in the future baseline to determine the number and location of off-site receptors potentially affected by blowing litter is assumed to be unchanged for Alternative Method 2. The increase in height proposed for Alternative Method 2 may increase the potential for higher wind speeds at the landfill's working face, and this may increase the frequency of potential litter events. However, continuation of the current litter management practices would continue to manage blowing litter effectively in Alternative Method 2. Therefore, it is expected that the number of receptors affected will not change compared to future baseline.

3.3.5 Greenhouse Gas

3.3.5.1 Annual Emissions of Greenhouse Gases

As discussed in **Section 3.2.1.1**, the LFG generated over the lifespan of Alternative Method 2 will increase compared to the future baseline, but the LFG collection efficiency is also expected to increase. The transfer of LFG for beneficial use as a direct fuel source for Twin Creeks Greenhouse, or refinement at the RNG facility for general distribution as natural gas equivalent, would decrease the percentage of LFG sent for flaring and the GHG emissions associated with this process.

Overall, Alternative Method 2 is expected to increase the annual emissions of GHGs due to increased production of LFG, but a significant portion of this LFG will be collected and transferred for beneficial use, offsetting GHG emissions associated with extraction of natural gas as a fossil fuel.

3.3.6 Summary

A summary of the effects assessment of Alternative Method 2 is summarized below in **Table 3-7**.

Table 3-7. Net Effects Assessment – Alternative Method 2

Evaluation Criteria	Indicator	Key Design Considerations and Assumptions	Potential Effects	Mitigation Measures	Net Effects
Air Quality - Dust	Frequency of any exceedance of applicable standards, limits, or guidelines at identified receptors.	• Phasing and schedule of site development determines location of access roads, construction activities, and landfilling activities. • Construction activities include material handling that can generate fugitive dust. • Operating hours define the time of day during which on-site activities may contribute to fugitive dust. It is recognized that wind erosion may also generate dust outside of these hours. • Site traffic unchanged, so traffic volumes remain consistent although the distance travelled will vary depending on access routes. • Site equipment unchanged, so nonroad vehicle activity and locations expected to remain consistent. • Compost diversion area and associated material handling activities are considered as permitted in the current ECA. • Background concentrations which can represent a significant percentage of the cumulative concentration for some contaminants are assumed to remain unchanged over the lifespan of the proposed landfill expansion. It is noted that localized increases in wind speeds may occur due to the higher waste elevations at the site. • Meteorological conditions, including wind speeds and temperatures, which form the basis for dispersion modelling are assumed to remain unchanged over the lifespan of the proposed landfill expansion.	• Predicted concentrations of dust contaminants may exceed criteria at discrete receptor locations	• Replace the existing unpaved south access ramp of the landfill area with a hard surface equivalent to a paved road. • Implementation of enhanced watering practices to achieve 95% control along paved haul routes.	• None. With the application of mitigation strategies, predicted concentrations at discrete receptors are expected to decrease to levels similar to Future Baseline.
	Frequency of any exceedance of applicable standards, limits, or guidelines at identified receptors.		• Frequency of predicted exceedances at discrete receptors may increase.		• None. With the application of mitigation strategies, the frequencies of predicted exceedance at discrete receptors are expected to decrease to levels similar to Future Baseline.
	Number of off-site identified receptors potentially affected (e.g., residential properties, public facilities, businesses/farms, institutions).		• The number of discrete receptors with predicted concentrations exceeding criteria may increase.		• None. With the application of mitigation strategies, the number of off-site receptors potentially affected are expected to decrease to quantities similar to

Table 3-7. Net Effects Assessment – Alternative Method 2

Evaluation Criteria	Indicator	Key Design Considerations and Assumptions	Potential Effects	Mitigation Measures	Net Effects
Air Quality - LFG and Combustion By-Products	Off-site POI air concentrations of indicator compounds at identified receptors in the immediate vicinity of the site, and community (within 5 km).	• Annual waste filling rate / total additional tonnage determines the annual production of LFG. • Phasing and schedule of site development determines location of landfilling activity at the working face. • LFG generation is expected to increase during the operational life of the landfill and peak at closure. • LFG collection and treatment is expected to expand progressively as landfilling activity evolves. • LFG estimation parameters are based on the composition of municipal solid waste which is assumed to remain unchanged over the lifespan of the proposed landfill expansion. • Discrete receptors are assumed to be unchanged over the lifespan of the proposed landfill expansion. • Background concentrations which can represent a significant percentage of the cumulative concentration for some contaminants are assumed to remain unchanged over the lifespan of the proposed landfill expansion. • Meteorological conditions, including wind speeds and temperatures, which form the basis for dispersion modelling are assumed to remain unchanged over the lifespan of the proposed landfill expansion.	• None	• None	• None
	Frequency of any exceedance of applicable standards, limits, or guidelines at identified receptors.		• None	• None	• None
	Number of off-site receptors potentially affected (e.g., residential properties, public facilities, businesses/farms, institutions).		• None	• None	• None

Table 3-7. Net Effects Assessment – Alternative Method 2

Evaluation Criteria	Indicator	Key Design Considerations and Assumptions	Potential Effects	Mitigation Measures	Net Effects
Air Quality - Odour	Off-site odour concentrations (odour units) at identified odour sensitive receptors in the immediate vicinity of the site.	• Phasing and schedule of site development determines location of landfilling activity at the working face, and the areas that may be under interim or final cover. • LFG collection and treatment is expected to expand progressively as landfilling activity evolves. • LFG estimation parameters are based on the composition of municipal solid waste which is assumed to remain unchanged over the lifespan of the proposed landfill expansion. • Discrete receptors are assumed to be unchanged over the lifespan of the proposed landfill expansion. • Meteorological conditions, including wind speeds and temperatures, which form the basis for dispersion modelling are assumed to remain unchanged over the lifespan of the proposed landfill expansion.	• Predicted odour concentrations may exceed criteria at discrete receptor locations	• None	• Predicted odour concentrations are expected to be similar to or lower than Future Baseline
	Frequency of any odour levels above defined odour benchmarks.		• Frequency of odour levels above defined odour benchmarks may increase.	• None	• Frequency of odour levels above defined odour benchmarks may increase.
	Number of off-site receptors potentially affected (e.g., residential properties, public facilities, businesses/farms odour sensitive area(s), institutions).		• The number of discrete receptors with predicted odour concentrations exceeding criteria may increase.	• None	• The number of discrete receptors with predicted odour concentrations exceeding criteria may increase.
Air Quality – Blowing Litter	Extent of zones potentially impacted by blowing litter.	• Landfill footprint is unchanged, so the distance to receptors and the extent of each litter zone remain the same. • Existing Management using litter fencing • Positioning of mobile wind screens • Application of daily cover	• None	• None	• None

Table 3-7. Net Effects Assessment – Alternative Method 2

Evaluation Criteria	Indicator	Key Design Considerations and Assumptions	Potential Effects	Mitigation Measures	Net Effects
	Number of off-site receptors potentially affected (e.g., residential properties, public facilities, businesses/farms odour sensitive area(s), institutions).	• Discrete receptors unchanged so the number of receptors and their locations in the existing litter zones remain the same. • Meteorological conditions remain unchanged with no significant increase in wind speed over the lifespan of the proposed landfill expansion.	• None	• None	• None
Air Quality – Greenhouse Gas	Annual emissions of greenhouse gases (carbon dioxide, methane, and nitrous oxide), reported in carbon dioxide equivalent (CO_2e).	• LFG generation is expected to increase during the operational life of the landfill and peak at closure. • LFG collection and treatment is expected to expand progressively as landfilling activity evolves. • LFG estimation parameters are based on the composition of municipal solid waste which is assumed to remain unchanged over the lifespan of the proposed landfill expansion.	• Increased tonnage increases generation of LFG	• Where practical, increase transfer of collected LFG to beneficial use (Twin Creeks Greenhouse and RNG facility)	• Increase in overall GHG emissions • Reduced GHG through flare • Increased GHG offset through replacement of fossil fuel natural gas with renewable

3.4 Alternative Method 3

The assessment of effects for Alternative Method 3 is described below for the environmental criteria and indicators of Air Quality and is summarized in **Table 3-8**.

3.4.1 Dust

3.4.1.1 Predicted Off-site Concentrations

Alternative Method 3 will maintain the same maximum waste filling rate as the future baseline. As such, waste-delivery vehicle traffic and most of the on-site traffic haul routes are expected to remain consistent with the future baseline. The future baseline placed the working face and the extension of the southern access haul route towards the northeast corner of the approved landfill footprint as an approximation of where activity could occur toward the end of Expansion Landfill Phase 8 and 9. However, operations will move around the landfill site over the life of the landfill, and the effects assessment considered three future operational stages.

- Scenario 1: End of Stage 1, with the working face and extension of the southern access haul route in the northwest corner of the existing landfill footprint.
- Scenario 2: End of Stage 2, with the working face and extension of the southern access haul route in the northeast corner of the existing landfill footprint.
- Scenario 3: End of Stage 5, with the working face and extension of the southern access haul route toward the northeast corner but not as close to the extent of the existing landfill footprint.

Changing the location of the working face and the access haul route for each scenario is expected to change the predicted concentrations at receptors. In general, when the working face is located near the northeastern or northwestern border of the landfill footprint, there will be an increase in predicted off-site concentrations for receptors to the west and northwest and, to a lesser extent, the northeast. Although the working face area will remain the same size as the future baseline and the quantity of material handled for daily and final cover will remain consistent, increased predicted off-site concentrations will be driven by this change in proximity to receptors. Therefore, fugitive and tailpipe emissions associated with haul route traffic, handling emissions associated with daily cover activities, and wind erosion of exposed material at the working face and cap construction are expected to change in Alternative Method 3.

Modelled operation of LFG flares, boilers, and generators are not expected to change in Alternative Method 3, with this equipment assumed to be operating at capacity, and particulate matter emissions associated with combustion sources are expected to remain consistent with the future baseline.

Overall, Alternative Method 3 has the potential to increase off-site concentrations compared to future baseline at discrete receptors to the west and northwest and, to a lesser extent, the northeast as these receptors are brought into closer proximity to the working face and supporting infrastructure during the lifespan of the landfill.

3.4.1.2 Frequency of Exceedance of Applicable Criteria

As stated in **Section 3.2.1.1**, Alternative Method 3 has the potential to increase predicted concentrations of dust at discrete receptors at some points during site operation. Therefore, it is expected that the frequency of exceedance at discrete receptors may increase compared to the future baseline.

3.4.1.3 Number of Receptors Affected

As stated in **Section 3.2.1.1**, Alternative Method 3 has the potential to increase predicted concentrations of dust at discrete receptors. Therefore, it is expected that the number of affected discrete receptors may increase compared to future baseline.

3.4.2 LFG and Combustion By-Products

3.4.2.1 Predicted Off-site Concentrations

Alternative Method 3 will maintain the same maximum waste filling rate as the future baseline. However, the proposed expansion would extend the rate of 1.4 million tonnes per year over approximately 12 additional years. Estimation of the quantity of LFG produced per tonne of waste is based on a first-order decomposition rate equation. At a consistent fill rate, the quantity of LFG generated will increase until waste-filling ceases following landfill closure. Therefore, it is expected that LFG production will increase with Alternative Method 3 compared to future baseline.

The LFG collection system as described in the CDR has a collection efficiency of approximately 75% for areas without final cover and 90% for areas with final cover (WSP, 2024). This is higher than was assumed for the future baseline due to the implementation of early vertical gas wells and a 1.85 meter thick layer of clay in the final cover. Therefore, off-site concentrations of contaminants from LFG may decrease.

Modelled operation of LFG flares, boilers, and generators are not expected to change in Alternative Method 3, with this equipment assumed to be operating at capacity, and LFG and combustion product emissions associated with combustion sources expected to remain consistent with the future baseline.

Overall, Alternative Method 3 may increase off-site concentrations compared to future baseline at discrete receptors due to increased annual production of LFG over the lifespan of the landfill, although this may be offset by the increased LFG capture efficiency due to improvements in the LFG capture system as noted in the CDR. Overall, no impact from LFG and Combustion By-Products is expected.

3.4.2.2 Frequency of Exceedance of Applicable Criteria

As stated in **Section 3.2.1.1**, Alternative Method 3 has the potential to change predicted concentrations of LFG and combustion byproducts at discrete receptors. However, the model predicted concentrations were dominated by the ambient background concentrations in the future baseline, and that is expected to remain true for this effects assessment. Therefore, it is expected that the frequency of exceedance at discrete receptors will not change compared to future baseline.

3.4.2.3 Number of Receptors Affected

As stated in **Section 3.2.1.1**, Alternative Method 3 has the potential to change predicted concentrations of LFG and combustion byproducts at discrete receptors. However, the model predicted concentrations were dominated by the ambient background concentrations in the future baseline, and that is expected to remain true for this effects assessment. Therefore, it is expected that the number of discrete receptors affected will not change compared to future baseline.

3.4.3 Odour

3.4.3.1 Predicted Off-site Odour Concentrations

As noted in **Section 3.1.3**, odour emissions for the active face, freshly exposed waste, leachate maintenance holes, and the contaminated soil were determined through flux chamber sampling at TCEC in 2023. Odour emissions from the interim and final cover areas were based on measurements of raw landfill gas coupled with calculated landfill gas generation rates. Future baseline placed the working face and the extension of the southern access haul route towards the northeast corner of the approved landfill footprint as an approximation of where activity could occur toward the end of Expansion Landfill Phase 8 and 9.

However, operations will move around the landfill site over the life of the landfill, and the effects assessment considered three future operational stages as discussed in **Section 3.2.1.1**, with the working face moving in closer proximity to receptors in the west, northwest, and northeast at different times. The activities at the working face can be a source of odour; therefore, it is expected that off-site odour concentrations at discrete receptors may increase compared to the future baseline due to close proximity to receptors.

3.4.3.2 Frequency of Odour Levels Above Defined Odour Benchmarks

As stated in **Section 3.2.3.1**, Alternative Method 3 has the potential to increase predicted concentrations of odour at discrete receptors. Therefore, it is expected that the frequency of exceedance at discrete receptors may increase compared to future baseline.

3.4.3.3 Number of Receptors Affected

As stated in **Section 3.2.1.1**, Alternative Method 3 has the potential to increase predicted concentrations of odour at discrete receptors. Therefore, it is expected that the number of affected discrete receptors may increase compared to future baseline.

3.4.4 Blowing Litter

3.4.4.1 Extent of Zones Potentially Impacted

Potential blowing litter zones were established for the future baseline based on distance from the landfill perimeter. Since the landfill footprint remains the same

between Alternative Method 3 and the future baseline, there is no change to the zones potentially impacted by blowing litter.

3.4.4.2 Number of Receptors Affected

The meteorological data used in the future baseline to determine the number and location of off-site receptors potentially affected by blowing litter is assumed to be unchanged for Alternative Method 3. The increase in height proposed for Alternative Method 3 may increase the potential for higher wind speeds at the landfill's working face, and this may increase the frequency of potential litter events. However, continuation of the current litter management practices would continue to manage blowing litter effectively in Alternative Method 3. Therefore, it is expected that the number of receptors affected will not change compared to future baseline.

3.4.5 Greenhouse Gas

3.4.5.1 Annual Emissions of Greenhouse Gases

As discussed in **Section 3.2.2.1**, the LFG generated over the lifespan of Alternative Method 3 will increase compared to the future baseline, but the LFG collection efficiency is also expected to increase. The transfer of LFG for beneficial use as a direct fuel source for Twin Creeks Greenhouse, or refinement at the RNG facility for general distribution as natural gas equivalent, would decrease the percentage of LFG sent for flaring and the GHG emissions associated with this process.

Overall, Alternative Method 3 is expected to increase the annual emissions of GHGs due to increased production of LFG, but a significant portion of this LFG will be collected and transferred for beneficial use, offsetting GHG emissions associated with extraction of natural gas as a fossil fuel.

3.4.6 Summary

A summary of the effects assessment of Alternative Method 3 is summarized below in **Table 3-8**.

Table 3-8. Net Effects Assessment – Alternative Method 3

Evaluation Criteria	Indicator	Key Design Considerations and Assumptions	Potential Effects	Mitigation Measures	Net Effects
Air Quality - Dust	Frequency of any exceedance of applicable standards, limits, or guidelines at identified receptors.	• Phasing and schedule of site development determines location of access roads, construction activities, and landfilling activities. • Construction activities include material handling that can generate fugitive dust. • Operating hours define the time of day during which on-site activities may contribute to fugitive dust. It is recognized that wind erosion may also generate dust outside of these hours. • Site traffic unchanged, so traffic c volumes remain consistent although the distance travelled will vary depending on access routes. • Site equipment unchanged, so nonroad vehicle activity and locations expected to remain consistent. • Compost diversion area and associated material handling activities are considered as permitted in the current ECA. • Background concentrations which can represent a significant percentage of the cumulative concentration for some contaminants are assumed to remain unchanged over the lifespan of the proposed landfill expansion. It is noted that localized increases in wind speeds may occur due to the higher waste elevations at the site. • Meteorological conditions, including wind speeds and temperatures, which form the basis for dispersion modelling are assumed to remain unchanged over the lifespan of the proposed landfill expansion.	• Predicted concentrations of dust contaminants may exceed criteria at discrete receptor locations	• Replace the existing unpaved south access ramp of the landfill area with a hard surface equivalent to a paved road. • Implementation of enhanced watering practices to achieve 95% control along paved haul routes.	• None. With the application of mitigation strategies, predicted concentrations at discrete receptors are expected to decrease to levels similar to Future Baseline.
	Frequency of any exceedance of applicable standards, limits, or guidelines at identified receptors.		• Frequency of predicted exceedances at discrete receptors may increase.		• None. With the application of mitigation strategies, the frequencies of predicted exceedance at discrete receptors are expected to decrease to levels similar to Future Baseline.
	Number of off-site identified receptors potentially affected (e.g., residential properties, public facilities, businesses/farms, institutions).		• The number of discrete receptors with predicted concentrations exceeding criteria may increase.		• None. With the application of mitigation strategies, the number of off-site receptors potentially affected are expected to decrease to quantities similar to Future Baseline.

Table 3-8. Net Effects Assessment – Alternative Method 3

Evaluation Criteria	Indicator	Key Design Considerations and Assumptions	Potential Effects	Mitigation Measures	Net Effects
Air Quality - LFG and Combustion By-Products	Off-site POI air concentrations of indicator compounds at identified receptors in the immediate vicinity of the site, and community (within 5 km).	• Annual waste filling rate / total additional tonnage determines the annual production of LFG. • Phasing and schedule of site development determines location of landfilling activity at the working face. • LFG generation is expected to increase during the operational life of the landfill and peak at closure. • LFG collection and treatment is expected to expand progressively as landfilling activity evolves. • LFG estimation parameters are based on the composition of municipal solid waste which is assumed to remain unchanged over the lifespan of the proposed landfill expansion. • Discrete receptors are assumed to be unchanged over the lifespan of the proposed landfill expansion. • Background concentrations which can represent a significant percentage of the cumulative concentration for some contaminants are assumed to remain unchanged over the lifespan of the proposed landfill expansion. • Meteorological conditions, including wind speeds and temperatures, which form the basis for dispersion modelling are assumed to remain unchanged over the lifespan of the proposed landfill expansion.	• None	• None	• None
	Frequency of any exceedance of applicable standards, limits, or guidelines at identified receptors.		• None	• None	• None
	Number of off-site receptors potentially affected (e.g., residential properties, public facilities, businesses/farms, institutions).		• None	• None	• None

Table 3-8. Net Effects Assessment – Alternative Method 3

Evaluation Criteria	Indicator	Key Design Considerations and Assumptions	Potential Effects	Mitigation Measures	Net Effects
Air Quality - Odour	Off-site odour concentrations (odour units) at identified odour sensitive receptors in the immediate vicinity of the site.	• Phasing and schedule of site development determines location of landfilling activity at the working face, and the areas that may be under interim or final cover. • LFG collection and treatment is expected to expand progressively as landfilling activity evolves. • LFG estimation parameters are based on the composition of municipal solid waste which is assumed to remain unchanged over the lifespan of the proposed landfill expansion. • Discrete receptors are assumed to be unchanged over the lifespan of the proposed landfill expansion. • Meteorological conditions, including wind speeds and temperatures, which form the basis for dispersion modelling are assumed to remain unchanged over the lifespan of the proposed landfill expansion.	• Predicted odour concentrations may exceed criteria at discrete receptor locations	• None	• Predicted odour concentrations may exceed criteria at discrete receptor locations
	Frequency of any odour levels above defined odour benchmarks.		• Frequency of odour levels above defined odour benchmarks may increase.	• None	• Frequency of odour levels above defined odour benchmarks may increase.
	Number of off-site receptors potentially affected (e.g., residential properties, public facilities, businesses/farms odour sensitive area(s), institutions).		• The number of discrete receptors with predicted odour concentrations exceeding criteria may increase.	• None	• The number of discrete receptors with predicted odour concentrations exceeding criteria may increase.
Air Quality – Blowing Litter	Extent of zones potentially impacted by blowing litter.	• Landfill footprint is unchanged, so the distance to receptors and the extent of each litter zone remain the same. • Existing Management using litter fencing • Positioning of mobile wind screens • Application of daily cover	• None	• None	• None

Table 3-8. Net Effects Assessment – Alternative Method 3

Evaluation Criteria	Indicator	Key Design Considerations and Assumptions	Potential Effects	Mitigation Measures	Net Effects
	Number of off-site receptors potentially affected (e.g., residential properties, public facilities, businesses/farms odour sensitive area(s), institutions).	• Discrete receptors unchanged so the number of receptors and their locations in the existing litter zones remain the same. • Meteorological conditions remain unchanged with no significant increase in wind speed over the lifespan of the proposed landfill expansion.	• None	• None	• None
Air Quality – Greenhouse Gas	Annual emissions of greenhouse gases (carbon dioxide, methane, and nitrous oxide), reported in carbon dioxide equivalent (CO_2e).	• LFG generation is expected to increase during the operational life of the landfill and peak at closure. • LFG collection and treatment is expected to expand progressively as landfilling activity evolves. • LFG estimation parameters are based on the composition of municipal solid waste which is assumed to remain unchanged over the lifespan of the proposed landfill expansion.	• Increased tonnage increases generation of LFG	• Where practical, increase transfer of collected LFG to beneficial use (Twin Creeks Greenhouse and RNG facility)	• Increase in overall GHG emissions • Reduced GHG through flare • Increased GHG offset through replacement of fossil fuel natural gas with renewable

4 Comparative Evaluation of Net Effects and Identification of the Preferred Alternative

The comparative evaluation of the net effects of each alternative method and the identification of a Preferred Alternative are carried out in accordance with the methods described in **Section 2.2**. The three alternative methods are comparatively assessed and evaluated using the criteria and indicators to determine the Preferred Alternative. The differences in the potential environmental effects remaining following the implementation of potential mitigation/management measures (i.e., net effects) are used to identify and compare each alternative method. The comparative evaluation of the alternative methods for Air Quality is provided in **Table 4-1**, below.

Table 4-1. Comparative Evaluation of the Net Effects of the Alternative Methods for Air Quality

Evaluation Criteria	Indicator	Net Effects of Alternative Methods		
		Alternative Method 1	Alternative Method 2	Alternative Method 3
Air Quality - Dust	Predicted Off-site Concentrations	None. **No Substantial Difference**	None. **No Substantial Difference**	None. **No Substantial Difference**
	Frequency of Exceedance of Applicable Criteria	None. **No Substantial Difference**	None. **No Substantial Difference**	None. **No Substantial Difference**
	Number of Receptors Affected	None. **No Substantial Difference**	None. **No Substantial Difference**	None. **No Substantial Difference**
	Criteria Rating & Rationale	***There is no substantial difference between the alternative methods for Dust.*** There would be no significant difference in the three alternative methods in terms of air quality dispersion modelling for sources of particulate matter. The interim and final landfill height does vary between the alternative methods, however as noted in the Air Quality Workplan (RWDI, 2022) and Air Quality Air Quality Existing Conditions Report (RWDI, 2024), modelling the landfill sources at grade was determined to provide the most conservative results and this approach was used. While no significant net effects are predicted for any of the Three Alternative Methods, additional mitigation measures beyond those outlined in the Dust Best Management Practices Plan (BMPP) are recommended to further minimize potential dust emissions. These include paving the south ramp and implementing enhanced road water, as summarized in **Table 3-6** to **Table 3-8**.		
Air Quality - LFG and Combustion By-Products	Predicted Off-site Concentrations	None. **No Substantial Difference**	None. **No Substantial Difference**	None. **No Substantial Difference**
	Frequency of Exceedance of Applicable Criteria	None. **No Substantial Difference**	None. **No Substantial Difference**	None. **No Substantial Difference**
	Number of Receptors Affected	None. **No Substantial Difference**	None. **No Substantial Difference**	None. **No Substantial Difference**

Table 4-1. Comparative Evaluation of the Net Effects of the Alternative Methods for Air Quality

Evaluation Criteria	Indicator	Net Effects of Alternative Methods		
		Alternative Method 1	Alternative Method 2	Alternative Method 3
	Criteria Rating & Rationale	***There is no substantial difference between the alternative methods for LFG and Combustion By-Products.*** There would be no significant difference in the three alternative methods in terms of air quality dispersion modelling for contaminants in LFG and combustion by-products. The interim and final landfill height does vary between the alternative methods, however as noted in the Air Quality Workplan (RWDI, 2022) and Air Quality Air Quality Existing Conditions Report (RWDI, 2025), modelling the landfill sources at grade was determined to provide the most conservative results and this approach was used.		
Air Quality - Odour	Predicted Off-site Concentrations	Predicted odour concentrations may exceed criteria at discrete receptor locations. **No Substantial Difference**	Predicted odour concentrations may exceed criteria at discrete receptor locations. **No Substantial Difference**	Predicted odour concentrations may exceed criteria at discrete receptor locations. **No Substantial Difference**
	Frequency of Exceedance of Applicable Criteria	Frequency of odour levels above defined odour benchmarks may increase. **No Substantial Difference**	Frequency of odour levels above defined odour benchmarks may increase. **No Substantial Difference**	Frequency of odour levels above defined odour benchmarks may increase. **No Substantial Difference**
	Number of Receptors Affected	The number of discrete receptors with predicted odour concentrations exceeding criteria may increase. **No Substantial Difference**	The number of discrete receptors with predicted odour concentrations exceeding criteria may increase. **No Substantial Difference**	The number of discrete receptors with predicted odour concentrations exceeding criteria may increase. **No Substantial Difference**
	Criteria Rating & Rationale	***There is no substantial difference between the alternative methods for Odour.*** There would be no significant difference in the three alternative methods in terms of air quality dispersion modelling for odour. The interim and final landfill height does vary between the alternative methods, however as noted in the Air Quality Workplan (RWDI, 2022) and Air Quality Air Quality Existing Conditions Report (RWDI, 2025), modelling the landfill sources at grade was determined to provide the most conservative results and this approach was used. Odour mitigation measures currently implemented through the Odour BMPP will continue to be applied under all Alternative Methods. While some residual odour effects are predicted, these are expected to be limited to the receptors identified in the nuisance impact payment framework, which provides compensation for potential nuisance impacts.		

Table 4-1. Comparative Evaluation of the Net Effects of the Alternative Methods for Air Quality

Evaluation Criteria	Indicator	Net Effects of Alternative Methods		
		Alternative Method 1	Alternative Method 2	Alternative Method 3
Air Quality – Blowing Litter	Extent of Zones Potentially Impacted	None. **No Substantial Difference**	None. **No Substantial Difference**	None. **No Substantial Difference**
	Number of Receptors Affected	None. **No Substantial Difference**	None. **No Substantial Difference**	None. **No Substantial Difference**
	Criteria Rating & Rationale	***There is no substantial difference between the alternative methods for Blowing Litter.*** There is no dispersion modelling for blowing litter and the assessment is qualitative with possible effects expected to be mitigated through procedures outlined in the BMPP (Litter).		
Air Quality – Greenhouse Gas	Annual emissions of greenhouse gases	None. **No Substantial Difference**	None. **No Substantial Difference**	None. **No Substantial Difference**
	Criteria Rating & Rationale	***There is no substantial difference between the alternative methods for Greenhouse Gas.*** The increase in greenhouse gas emissions compared to future baseline is estimated based on the annual filling rate and total waste placed in the landfill over the approximately 12-year lifespan of the proposed expansion. The increased total tonnage is the same for the three alternative methods as are the annual fill rates, so the estimation of LFG generated would be the same.		
Preferred Alternative: There is no substantial difference between the alternative methods for Air Quality. Modelled sources and modelling assumptions for each alternative method and evaluation criteria would be the same.				

There is no substantial difference between the alternative methods for Air Quality. Modelled sources and modelling assumptions for each alternative method and evaluation criteria would be the same.

5 Effects Assessment of the Preferred Alternative

As discussed in **Section 4**, Alternative Methods 1, 2, and 3 are identified as having "No Substantial Difference" for Air Quality criteria and indicators; however, Alternative Method 2 has been chosen as the overall Preferred Alternative for the EA based on the results of the other discipline assessments. Consequently, the effects assessment of the Preferred Alternative presented below is based on Alternative Method 2.

The Effects Assessment of the Preferred Alternative was conducted using a combination of qualitative and quantitative analysis. Qualitative analysis was used for the evaluation of blowing litter, and quantitative analysis using dispersion modelling was used for the evaluation of dust, LFG and combustion byproducts, odour, and climate change. Dispersion modelling was completed using the same methodology as Future Baseline outlined in **Section 3.1**.

The Preferred Alternative for the Project is divided into four operational stages as shown in **Figure 1-2.** Operations will move around the landfill site over the life of the landfill. The effects assessment of the Preferred Alternative and the 'Do Nothing' alternative considers three future operational scenarios representing significant milestones in the landfill lifecycle. The assessment of the three future operating scenarios is considered in this section, evaluation of the 'Do Nothing' alternative is addressed in **Section 6**.

The three assessment scenarios were selected in order to ensure the worse-case operating conditions for each environmental criterion were considered. A summary of each scenario is provided below:

- Scenario 1 – The study period for Scenario 1 evaluates anticipated operations in the year 2034 at the end of stage 1. This scenario was selected due to the close proximity to discrete receptors located northwest and west of the Project. Landfill operations during Scenario 1 are provided in **Figure 5-1 and Figure 5-2**. Working face operations were conservatively placed in the furthest northwestern corner of stage 1 which represents the shortest separation between landfill operations and northwestern and western discrete receptors. The year 2034 was selected because it represents the end of stage 1 operations when the maximum amount of waste will be in place, maximizing the potential for LFG and odour emissions.
- Scenario 2 - The study period for Scenario 2 evaluates anticipated operations in the year 2037 at the end of stage 2. This scenario was selected due to the close proximity to discrete receptors located northeast of the Project. Landfill operations during Scenario 2 are provided in **Figure 5-3 and Figure 5-4**. Working face

operations were conservatively placed in the furthest northeastern corner of stage 2 which represents the shortest separation between landfill operations and northeastern discrete receptors. The year 2037 was selected because it represents the end of stage 2 operations when the maximum amount of waste will be in place, maximizing the potential for LFG and odour emissions.

- Scenario 3 - The study period for Scenario 3 evaluates anticipated operations in the year 2042 at the end of stage 4. This scenario was selected because it represents the final year before closure where the maximum amount of waste is in place, representing the maximum LFG generation potential. Landfill operations during Scenario 3 are provided in **Figure 5-5 and Figure 5-6**. Working face operations were conservatively placed in the furthest northeastern corner of stage 4 which represents the shortest separation between landfill operations and northeastern discrete receptors.

For each scenario, site plans have been divided into two figures as follows:

Pair #1 = **Figure 5-1** and **Figure 5-2**

Pair #2 = **Figure 5-3** and **Figure 5-4**

Pair #3 = **Figure 5-5** and **Figure 5-6**

Each pair of figures provides the site plan for one future scenario. For example, **Figure 5-1** provides an overview of the point sources, volume sources, and roadways for Scenario 1. **Figure 5-2** provides the landfill area sources for Scenario 1. All sources shown in both versions of each Pair have been considered in the modelling.

Figure 5-1. Site Plan Showing Location of Significant Sources, Buildings, and Property Boundary for Scenario 1

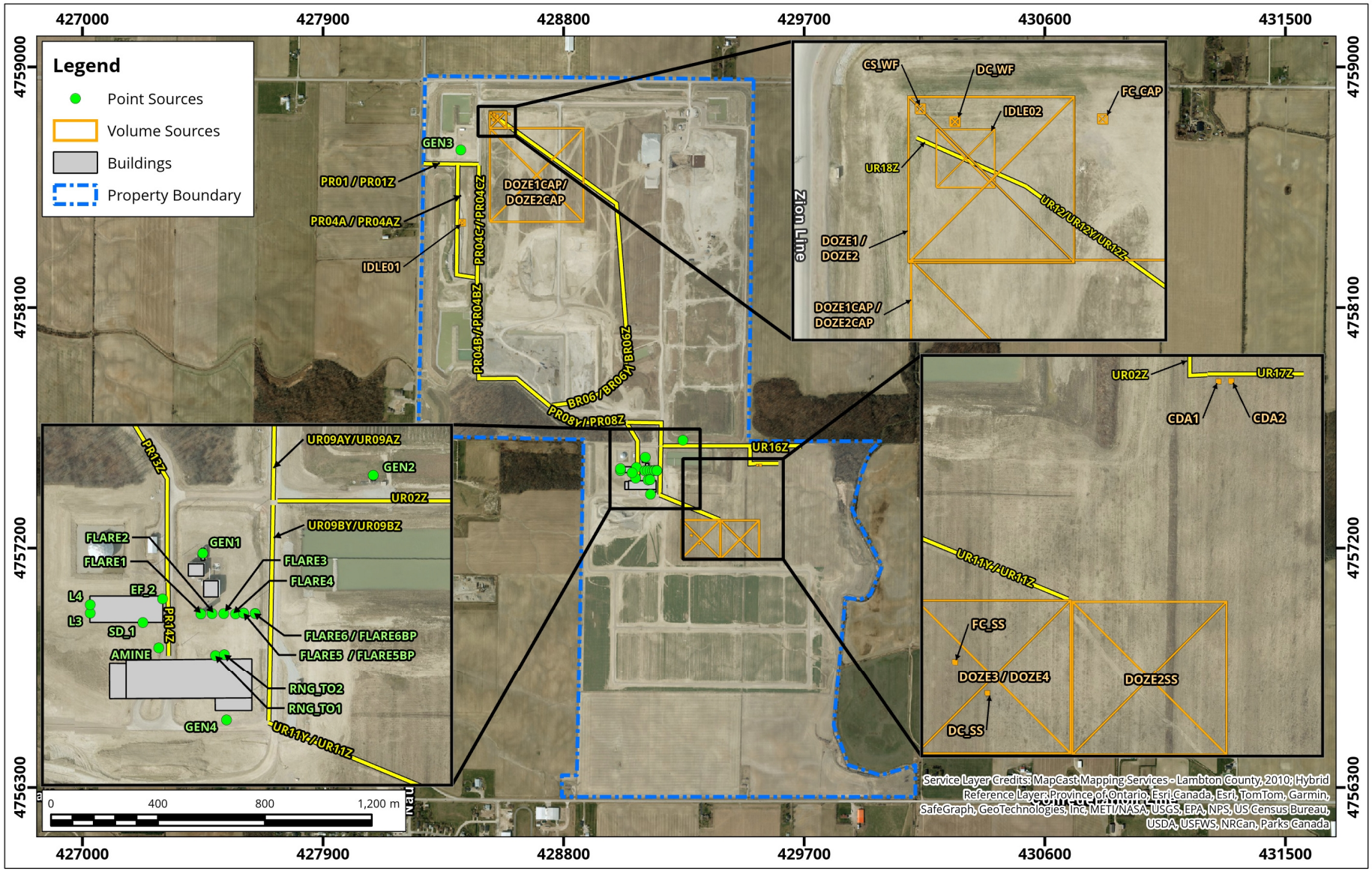


Figure 5-2. Site Plan Showing Location of Significant Sources, Buildings, and Property Boundary for Scenario 1

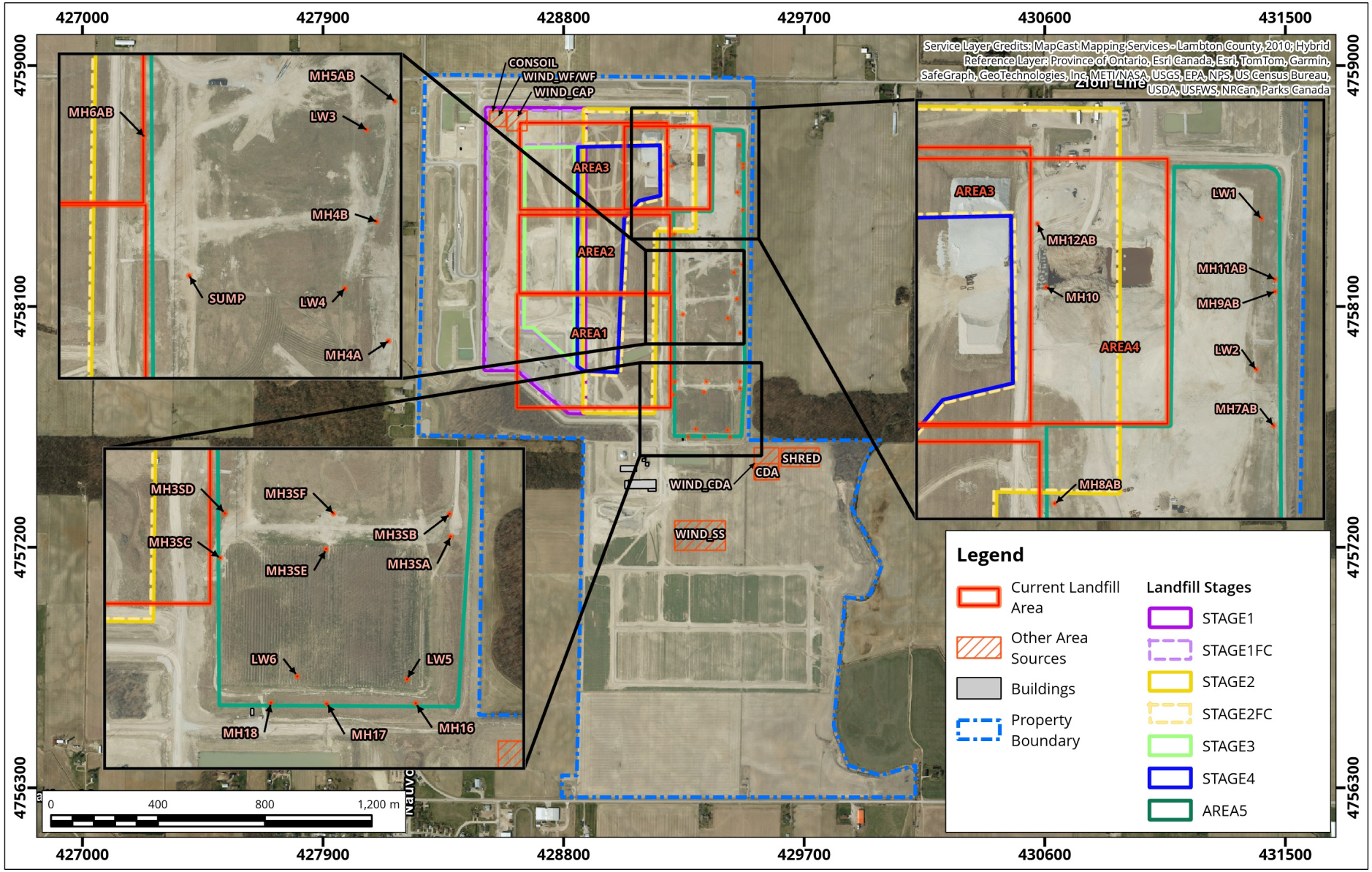


Figure 5-3. Site Plan Showing Location of Significant Sources, Buildings, and Property Boundary for Scenario 2

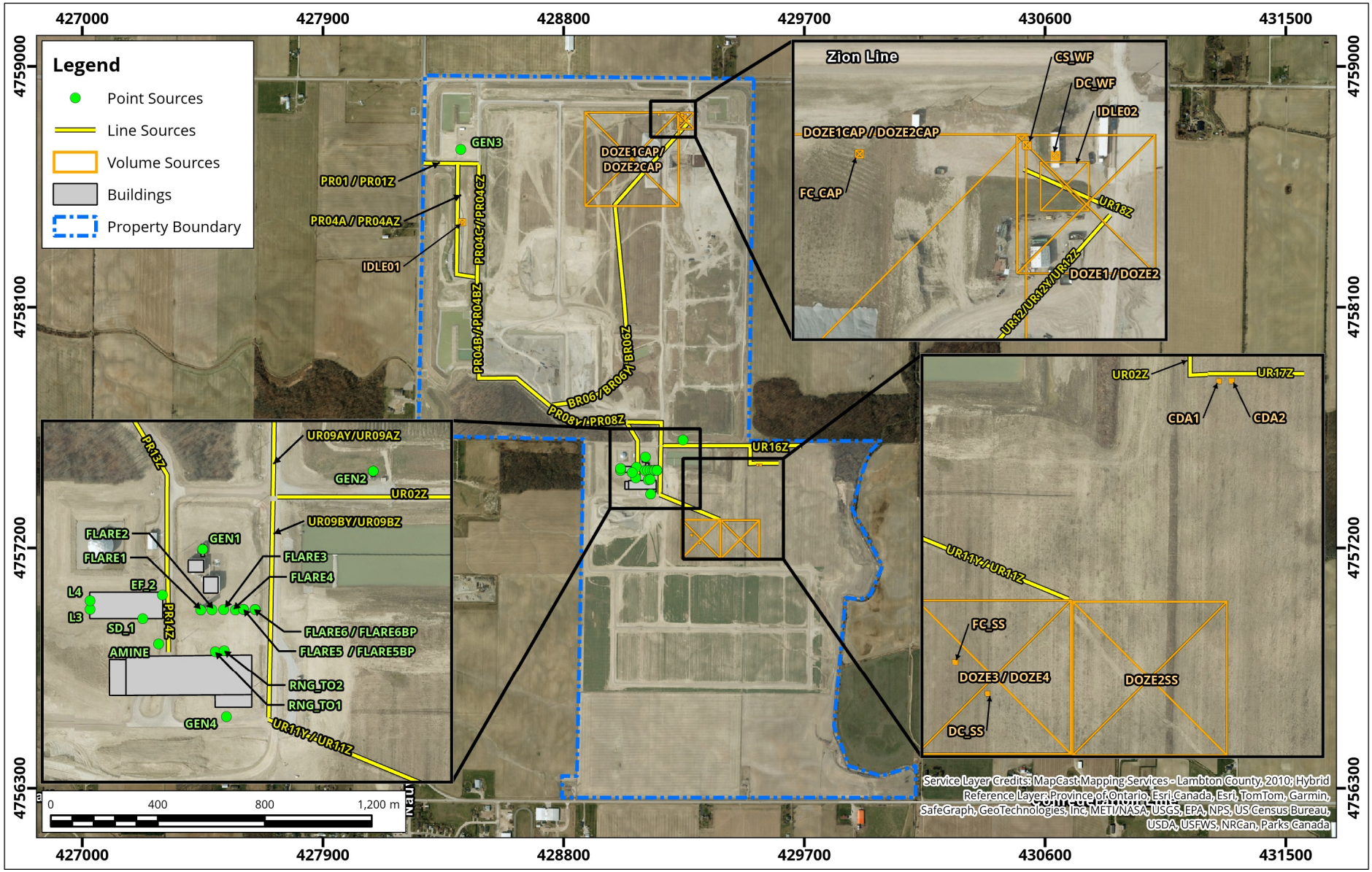


Figure 5-4. Site Plan Showing Location of Significant Sources, Buildings, and Property Boundary for Scenario 2

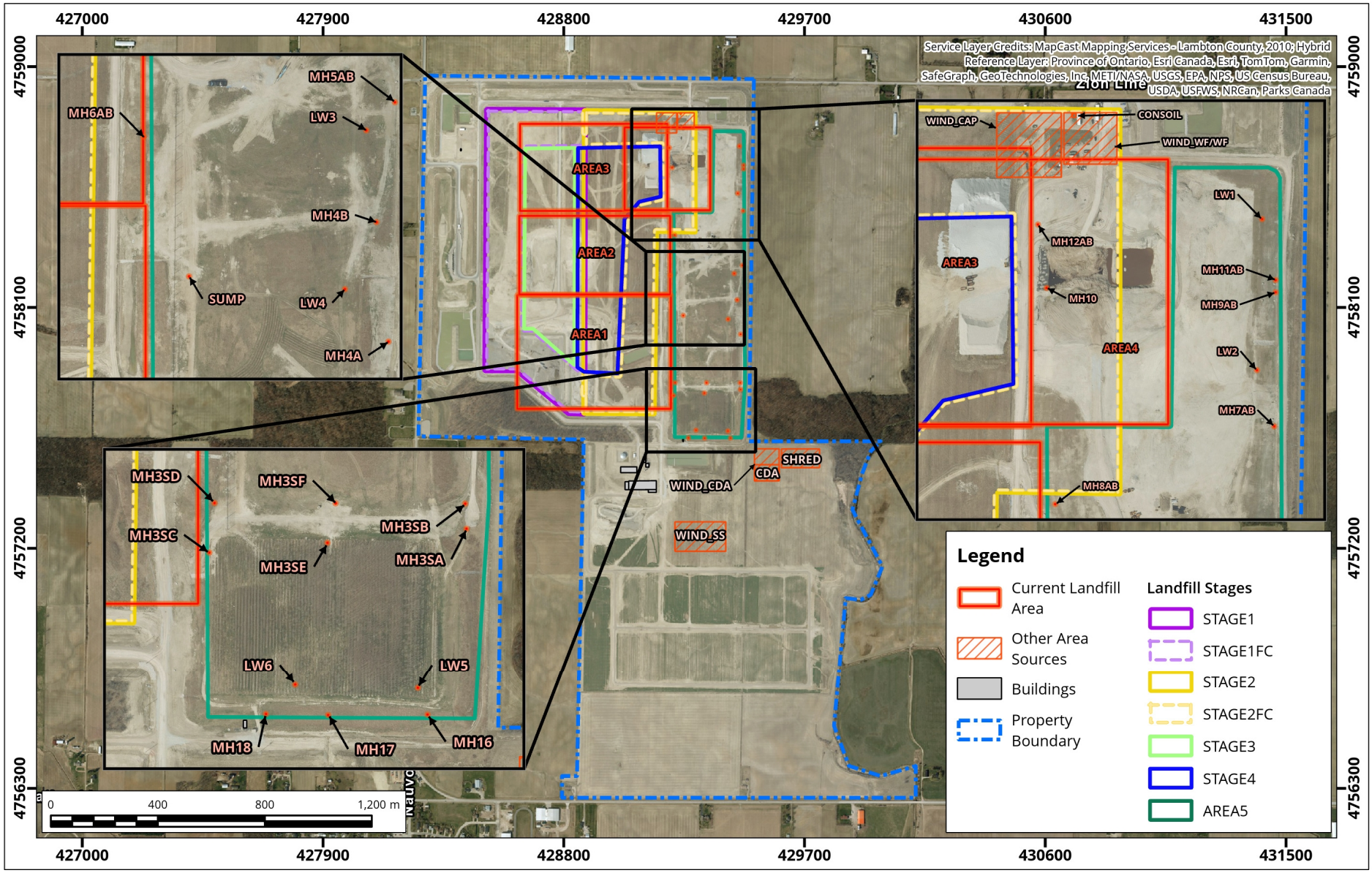


Figure 5-5. Site Plan Showing Location of Significant Sources, Buildings, and Property Boundary for Scenario 3

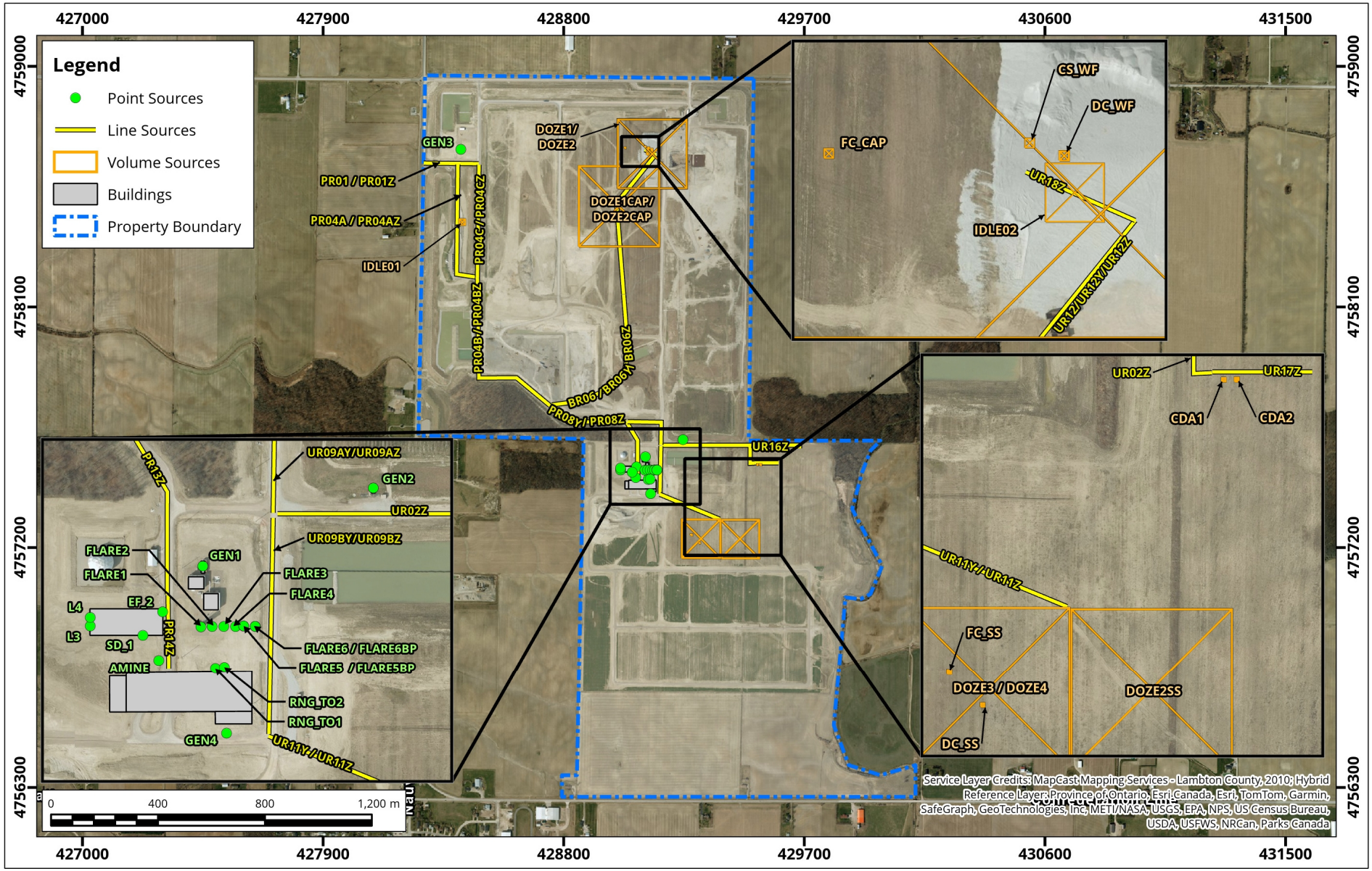
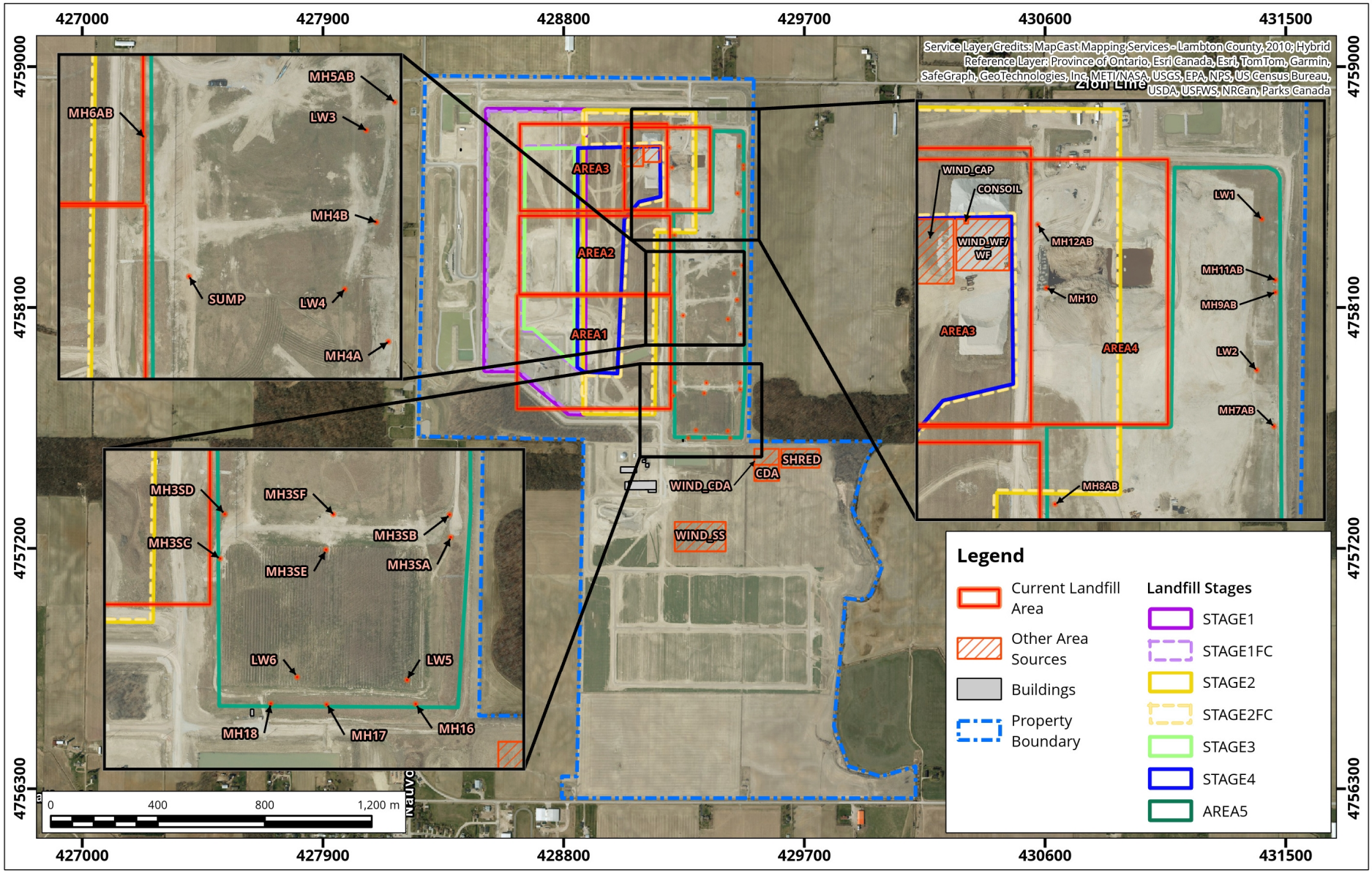


Figure 5-6. Site Plan Showing Location of Significant Sources, Buildings, and Property Boundary for Scenario 3



The evaluation of the Preferred Alternative followed the methodology outlined in **Section 3.1** for the Future Baseline assessment using the same evaluation criteria, indicators, and data sources outlined in **Table 2-1**. Detailed emission calculations for the Effects Assessment are provided in **Appendix 5A**.

5.1 Dust

Evaluation of the Preferred Alternative for dust was completed using dispersion modelling for TSP, PM_{10}, and $PM_{2.5}$. In general, the emission quantification and modelling methodology is consistent with the those presented in **Section 3.1** for the Future Baseline evaluation. TCEC has a BMPP for dust which outlines control measures taken to minimize dust emissions from site. Operation of the Preferred Alternative intends to maintain current dust control practices outlined in the BMPP. Details regarding the BMPP (Dust) are provided in **Section 2.1.3** and a copy of the BMPP is provided in **Appendix 2A**.

For the Preferred Alternative evaluation operation hours of the landfill were considered to be 7am – 7pm. For each of the future operating phases the on-site landfill haul routes were redrawn to consider the new working face locations. Working face locations were based on the worst-case location in order to capture the maximum potential effect on discrete receptors, as discussed above. On-site haul routes follow the same paths as the Future Baseline except for routes on the waste mound itself. All mound haul routes utilize the existing south entrance ramp but will vary based on working face location throughout the life of the landfill.

Overall predicted concentrations of TSP, PM_{10}, and $PM_{2.5}$ at discrete receptors are dominated by fugitive emissions from haul route traffic related to final cap construction and waste deliveries. Fugitive emissions from bulldozing at the construction cap is also a significant source of emissions. Due to the significant contribution of construction activities to predicted concentrations, separate predicted particulate (dust) impacts from landfill operations activities and construction activities as well as combined impacts of these two activities are presented.

Landfill sources include: Vehicles delivering waste to the site; material handling of daily cover and interim cover material, wind erosion of the active landfilling area and daily cover storage pile, and combustion from the flares, generators, and RNG Facility.

Construction sources include: Vehicles transferring final cover material from on-site stockpiles to the construction face; bulldozing of the final cover area, material handling of the final cover material, and wind erosion of the construction area.

5.1.1 Impacts of Construction Activities

Construction is an ongoing activity that operates in conjunction with regular landfilling activities. Construction activities primarily include cell construction or final cap construction depending on the stage of landfilling. For the Preferred Alternative Evaluation, only construction operations for landfill capping were considered, as all cell construction will have been completed in 2028, based on current schedules.

In order to assess the impacts of construction on predicted concentrations at discrete receptors, 24-hour TSP results were determined for operations including construction operations only, landfill operations only, and the combined contribution of both. Results of this analysis are presented in **Appendix 5B**.

The analysis shows that maximum predicted concentrations at the worst-case discrete receptor is primarily dominated by landfill activities. Although construction emissions do influence off site concentrations, they are not a major source when comparing the maximum POI at the worst-case receptor.

5.1.2 Results

Modelled concentrations for TSP, PM_{10}, and $PM_{2.5}$ at identified discrete receptors were compared against their applicable criteria as outlined in **Section 3**, **Table 3-1** . Predicted concentrations for annual TSP and $PM_{2.5}$, and 24-hour TSP, PM_{10}, and $PM_{2.5}$ are provided for each scenario. Where exceedances of indicator criteria occur, the frequency of exceedance is provided.

5.1.2.1 Scenario 1

Overall, predicted concentrations were below their respective criteria for annual TSP, annual $PM_{2.5}$, and 24-hour $PM_{2.5}$ at all discrete receptor locations. A results summary is provided in **Appendix 5C**.

Predicted concentrations of 24-hour TSP exceeded applicable criteria at all discrete receptors except for R3, R5, R6, R10, R11, R15, and R24, with the maximum frequency of exceedance being 1.1% or approximately 4 days per year at R7. A summary comparison is provided in **Table 5-1** and **Table 5-2** with a detailed frequency analysis for 24-hour TSP provided in **Appendix 5C**.

Similarly, predicted concentrations of 24-hour PM_{10} exceeded applicable criteria at receptors R1, R4, R7, R8, R9, R12, R13, R17, R18, R19, R21, R22, and R23, with the maximum frequency of exceedance being 0.9% or approximately 3 days per year at R7. A summary comparison is provided in **Table 5-3** and **Table 5-4** and a frequency analysis for all 24-hour PM_{10} exceedances is provided in **Appendix 5C**.

In order to illustrate the area of influence around the Project, concentration isopleths for contaminants that exceed their criteria for their respective averaging periods are provided in **Appendix 5D**.

5.1.2.2 Scenario 2

Overall, predicted concentrations were below their respective criteria for annual TSP, annual $PM_{2.5}$, and 24-hour $PM_{2.5}$ at all discrete receptor locations. A results summary is provided in **Appendix 5E**.

Predicted concentrations of 24-hour TSP exceeded applicable criteria at discrete receptors R2, R4, R5, R7, R9, R12, and R13, with the maximum frequency of exceedance being 2.6% or approximately 9 days per year at R4.

A summary comparison is provided in **Table 5-1** and **Table 5-2** with a detailed frequency analysis for 24-hour TSP provided in **Appendix 5E**.

Similarly, predicted concentrations of 24-hour PM_{10} exceeded applicable criteria at discrete receptors R2, R4, R7, R9, R12, and R13, with the maximum frequency of exceedance being 1.5% or approximately 5 days per year at R4. A summary comparison is provided in **Table 5-3** and **Table 5-4** and a frequency analysis for all 24-hour PM_{10} exceedances is provided in **Appendix 5E**.

In order to illustrate the area of influence around the Project, concentration isopleths for contaminants that exceed their criteria for their respective averaging periods are provided in **Appendix 5F**.

5.1.2.3 Scenario 3

Overall, predicted concentrations were below their respective criteria for annual TSP, annual $PM_{2.5}$, and 24-hour $PM_{2.5}$ at all discrete receptor locations. A results summary is provided in **Appendix 5G**.

Predicted concentrations of 24-hour TSP exceeded applicable criteria at discrete receptors R2, R4, R7, R9, R12, and R13, with the maximum frequency of exceedance being 0.8% or approximately 3 at R4. A summary comparison is provided in **Table 5-1** and **Table 5-2** with a detailed frequency analysis for 24-hour TSP provided in **Appendix 5G**.

Similarly, predicted concentrations of 24-hour PM_{10} exceeded applicable criteria at discrete receptors R2, R4, R7, R9, R12, and R13, with the maximum frequency of exceedance being 0.5% or approximately 2 days at R4. A summary comparison is provided in **Table 5-3** and **Table 5-4** and a frequency analysis for all 24-hour PM_{10} exceedances is provided in **Appendix 5G**.

In order to illustrate the area of influence around the Project, concentration isopleths for contaminants that exceed their criteria for their respective averaging periods are provided in **Appendix 5H**.

5.1.3 Conclusion

Predicted concentrations for annual TSP, annual $PM_{2.5}$, and 24-hour $PM_{2.5}$ are expected to comply at all discrete receptors for all Preferred Alternative Scenarios. Although predicted concentrations of 24-hour TSP and 24-hour PM_{10} are above the applicable criteria at some discrete receptors, the frequency of exceedance remains low.

In addition, the maximum predicted concentrations and frequencies for TSP, PM_{10}, and $PM_{2.5}$, are based on a conservative model, which assumes reasonable worst-case operations and dry conditions occurring in worst-case locations every day for the 5-year modelled period, which is not possible.

These conservatisms include, but are not limited to, the following:

- Sources that move throughout the site have been positioned in a single worst-case location based on operations in each scenario, closest to the property line and the nearest receptor;
- All operations were assumed to occur at their reasonable worst-case levels every day;
- When calculating emissions, conservative assumptions were made; and
- The assessment did not consider the effects of precipitation and snow cover, which would serve to reduce particulate emissions.

Overall, because of the conservatisms included in the assessment, the modelling likely over-predicts the impacts from the landfill and impacts from landfill operations are expected to be low.

5.1.4 Net Effects Assessment

Dispersion modelling results from each of the three landfilling scenarios evaluated under the Preferred Alternative were compared to the Future Baseline Conditions in order to quantify the net effect of the Preferred Alternative. **Table 5-1** provides a summary comparison for Future Baseline and each scenario of the Preferred Alternative. Additional details are provided in **Appendix 5I**.

Table 5-1. Exceedances of 24-hour TSP Criteria by Scenario, Without Mitigation

Receptor ID	Future Baseline			Scenario 1			Scenario 2			Scenario 3			"Do Nothing"		
	Freq (%)	Days per Year	Max Conc (µg/m³)	Freq (%)	Days per Year	Max Conc (µg/m³)	Freq (%)	Days per Year	Max Conc (µg/m³)	Freq (%)	Days per Year	Max Conc (µg/m³)	Freq (%)	Days per Year	Max Conc (µg/m³)
R1	0%	0	99	0.4%	1	143	0%	0	97	0%	0	94	--	--	47
R2	1%	3	196	0.1%	<1	123	1%	5	244	0.5%	2	182	--	--	47
R3	0.2%	<1	138	0%	0	104	0%	0	117	0%	0	119	--	--	47
R4	2%	6	266	0.2%	<1	134	3%	10	299	1%	3	216	--	--	47
R5	0.1%	<1	124	0%	0	106	0.1%	<1	121	0%	0	110	--	--	47
R6	0.1%	<1	123	0%	0	100	0%	0	113	0%	0	114	--	--	47
R7	0.2%	<1	149	1%	4	188	0.4%	1	185	0.3%	1	175	--	--	48
R8	0%	0	99	0.2%	<1	133	0%	0	114	0%	0	114	--	--	48
R9	0.2%	<1	153	1%	2	167	0.5%	2	170	1%	2	170	--	--	47
R10	0%	0	90	0%	0	102	0%	0	107	0%	0	105	--	--	47
R11	0%	0	81	0%	0	97	0%	0	92	0%	0	92	--	--	47
R12	0%	0	115	0.1%	<1	134	0.1%	<1	131	0.1%	<1	128	--	--	47
R13	0%	0	114	0.2%	<1	144	0.1%	<1	136	0.1%	<1	137	--	--	47
R14	0%	0	94	0.1%	<1	126	0%	0	109	0%	0	110	--	--	47
R15	0%	0	96	0%	0	115	0%	0	108	0%	0	107	--	--	47
R16	0%	0	106	0.2%	<1	130	0%	0	110	0%	0	109	--	--	47
R17	0%	0	91	1%	2	177	0%	0	96	0%	0	100	--	--	47
R18	0%	0	87	0.4%	1	176	0%	0	92	0%	0	93	--	--	47
R19	0%	0	95	0.2%	<1	134	0%	0	95	0%	0	97	--	--	47
R20	0%	0	84	0.2%	<1	124	0%	0	88	0%	0	103	--	--	47
R21	0%	0	81	0.1%	<1	125	0%	0	85	0%	0	101	--	--	47
R22	0%	0	90	0.1%	<1	130	0%	0	90	0%	0	84	--	--	47

Receptor ID	Future Baseline			Scenario 1			Scenario 2			Scenario 3			"Do Nothing"		
	Freq (%)	Days per Year	Max Conc (µg/m³)	Freq (%)	Days per Year	Max Conc (µg/m³)	Freq (%)	Days per Year	Max Conc (µg/m³)	Freq (%)	Days per Year	Max Conc (µg/m³)	Freq (%)	Days per Year	Max Conc (µg/m³)
R23	0%	0	93	0.1%	<1	127	0%	0	87	0%	0	88	--	--	47
R24	0%	0	101	0%	0	117	0%	0	94	0%	0	104	--	--	47
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 120 µg/m³.
[2] 90th Percentile Background Concentration = 46 µg/m³.
[3] Exceedances per year have been rounded to the nearest full day.
[4] Impacts at receptor STR1 were not assessed for long term averaging periods.
[5] Maximum concentration ("Max conc") in this table is the sum of model predicted concentration and background concentration.
[6] Mitigation was not considered for Scenario 4 ("Do Nothing") because there were no exceedances.

Table 5-2. Exceedances of 24-hour TSP Criteria by Scenario, With Mitigation

Receptor ID	Future Baseline			Scenario 1			Scenario 2			Scenario 3			"Do Nothing"		
	Freq (%)	Days per Year	Max Conc (µg/m³)	Freq (%)	Days per Year	Max Conc (µg/m³)	Freq (%)	Days per Year	Max Conc (µg/m³)	Freq (%)	Days per Year	Max Conc (µg/m³)	Freq (%)	Days per Year	Max Conc (µg/m³)
R1	0.0%	0.0	99	0.1%	<1	132	0.0%	0.0	90	0.0%	0.0	83	--	--	47
R2	0.9%	3.0	196	0.0%	0.0	118	1.0%	4.0	230	0.3%	1.0	169	--	--	47
R3	0.2%	<1	138	0.0%	0.0	95	0.0%	0.0	117	0.0%	0.0	100	--	--	47
R4	1.6%	6.0	266	0.1%	<1	131	2.2%	8.0	281	0.5%	2.0	197	--	--	47
R5	0.1%	<1	124	0.0%	0.0	86	0.0%	0.0	116	0.0%	0.0	106	--	--	47
R6	0.1%	<1	123	0.0%	0.0	92	0.0%	0.0	112	0.0%	0.0	96	--	--	47
R7	0.2%	<1	149	0.7%	3.0	160	0.1%	<1	150	0.1%	<1	140	--	--	48
R8	0.0%	0.0	99	0.1%	<1	124	0.0%	0.0	96	0.0%	0.0	96	--	--	48
R9	0.2%	<1	153	0.0%	0.0	109	0.0%	0.0	114	0.0%	0.0	110	--	--	47
R10	0.0%	0.0	90	0.0%	0.0	89	0.0%	0.0	93	0.0%	0.0	91	--	--	47

Receptor ID	Future Baseline			Scenario 1			Scenario 2			Scenario 3			"Do Nothing"		
	Freq (%)	Days per Year	Max Conc (µg/m³)	Freq (%)	Days per Year	Max Conc (µg/m³)	Freq (%)	Days per Year	Max Conc (µg/m³)	Freq (%)	Days per Year	Max Conc (µg/m³)	Freq (%)	Days per Year	Max Conc (µg/m³)
R11	0.0%	0.0	81	0.0%	0.0	92	0.0%	0.0	84	0.0%	0.0	84	--	--	47
R12	0.0%	0.0	115	0.0%	0.0	112	0.0%	0.0	109	0.0%	0.0	106	--	--	47
R13	0.0%	0.0	114	0.1%	<1	127	0.0%	0.0	119	0.1%	<1	120	--	--	47
R14	0.0%	0.0	94	0.0%	0.0	106	0.0%	0.0	94	0.0%	0.0	94	--	--	47
R15	0.0%	0.0	96	0.0%	0.0	91	0.0%	0.0	86	0.0%	0.0	86	--	--	47
R16	0.0%	0.0	106	0.1%	<1	125	0.0%	0.0	96	0.0%	0.0	93	--	--	47
R17	0.0%	0.0	91	0.4%	1.0	164	0.0%	0.0	92	0.0%	0.0	94	--	--	47
R18	0.0%	0.0	87	0.3%	1.0	172	0.0%	0.0	88	0.0%	0.0	89	--	--	47
R19	0.0%	0.0	95	0.1%	<1	125	0.0%	0.0	89	0.0%	0.0	88	--	--	47
R20	0.0%	0.0	84	0.0%	0.0	115	0.0%	0.0	81	0.0%	0.0	96	--	--	47
R21	0.0%	0.0	81	0.0%	0.0	112	0.0%	0.0	80	0.0%	0.0	98	--	--	47
R22	0.0%	0.0	90	0.0%	0.0	115	0.0%	0.0	89	0.0%	0.0	80	--	--	47
R23	0.0%	0.0	93	0.0%	0.0	113	0.0%	0.0	86	0.0%	0.0	77	--	--	47
R24	0.0%	0.0	101	0.0%	0.0	104	0.0%	0.0	81	0.0%	0.0	91	--	--	47
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 120 µg/m³.
[2] 90th Percentile Background Concentration = 46 µg/m³.
[3] Exceedances per year have been rounded to the nearest full day.
[4] Impacts at receptor STR1 were not assessed for long term averaging periods.
[5] Maximum concentration ("Max conc") in this table is the sum of model predicted concentration and background concentration.
[6] Mitigation was not considered for Scenario 4 ("Do Nothing") because there were no exceedances.

Table 5-3. Exceedances of 24-hour PM_{10} Criteria by Scenario, Without Mitigation

Receptor ID	Future Baseline			Scenario 1			Scenario 2			Scenario 3			"Do Nothing"		
	Freq (%)	Days per Year	Max Conc (µg/m³)	Freq (%)	Days per Year	Max Conc (µg/m³)	Freq (%)	Days per Year	Max Conc (µg/m³)	Freq (%)	Days per Year	Max Conc (µg/m³)	Freq (%)	Days per Year	Max Conc (µg/m³)
R1	0%	0	38	0.2%	<1	54	0%	0	38	0%	0	37	--	--	20
R2	1%	2	74	0%	0	46	1%	3	88	0.2%	<1	68	--	--	20
R3	0.1%	<1	52	0%	0	39	0%	0	45	0%	0	45	--	--	20
R4	1%	3	99	0.1%	<1	50	2%	6	107	1%	2	79	--	--	20
R5	0%	0	47	0%	0	40	0%	0	46	0%	0	42	--	--	20
R6	0%	0	46	0%	0	38	0%	0	43	0%	0	43	--	--	20
R7	0.1%	<1	56	1%	3	73	0.3%	<1	71	0.2%	<1	67	--	--	22
R8	0%	0	37	0.1%	<1	52	0%	0	45	0%	0	44	--	--	21
R9	0.1%	<1	55	0.3%	<1	62	0.2%	<1	63	0.2%	<1	63	--	--	21
R10	0%	0	35	0%	0	41	0%	0	42	0%	0	42	--	--	20
R11	0%	0	31	0%	0	39	0%	0	36	0%	0	36	--	--	20
R12	0%	0	45	0.1%	<1	52	0.1%	<1	51	0%	0	50	--	--	21
R13	0%	0	44	0.1%	<1	56	0.1%	<1	53	0.1%	<1	53	--	--	20
R14	0%	0	37	0%	0	49	0%	0	43	0%	0	43	--	--	20
R15	0%	0	38	0%	0	45	0%	0	42	0%	0	42	--	--	21
R16	0%	0	41	0%	0	49	0%	0	43	0%	0	42	--	--	21
R17	0%	0	36	0.4%	1	64	0%	0	38	0%	0	39	--	--	21
R18	0%	0	34	0.2%	<1	66	0%	0	36	0%	0	37	--	--	21
R19	0%	0	37	0.1%	<1	51	0%	0	38	0%	0	38	--	--	20
R20	0%	0	33	0%	0	49	0%	0	35	0%	0	40	--	--	20
R21	0%	0	32	0.1%	<1	51	0%	0	34	0%	0	40	--	--	20
R22	0%	0	36	0.1%	<1	52	0%	0	36	0%	0	34	--	--	20

Receptor ID	Future Baseline			Scenario 1			Scenario 2			Scenario 3			"Do Nothing"		
	Freq (%)	Days per Year	Max Conc (µg/m³)	Freq (%)	Days per Year	Max Conc (µg/m³)	Freq (%)	Days per Year	Max Conc (µg/m³)	Freq (%)	Days per Year	Max Conc (µg/m³)	Freq (%)	Days per Year	Max Conc (µg/m³)
R23	0%	0	37	0.1%	<1	51	0%	0	34	0%	0	35	--	--	20
R24	0%	0	40	0%	0	47	0%	0	38	0%	0	42	--	--	20
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 50 µg/m³.
[2] 90th Percentile Background Concentration = 19 µg/m³.
[3] Exceedances per year have been rounded to the nearest full day.
[4] Impacts at receptor STR1 were not assessed for long term averaging periods.
[5] Maximum concentration ("Max conc") in this table is the sum of model predicted concentration and background concentration.
[6] Mitigation was not considered for Scenario 4 ("Do Nothing") because there were no exceedances.

Table 5-4. Exceedances of 24-hour PM_{10} Criteria by Scenario, With Mitigation

Receptor ID	Future Baseline			Scenario 1			Scenario 2			Scenario 3			"Do Nothing"		
	Freq (%)	Days per Year	Max Conc (µg/m³)	Freq (%)	Days per Year	Max Conc (µg/m³)	Freq (%)	Days per Year	Max Conc (µg/m³)	Freq (%)	Days per Year	Max Conc (µg/m³)	Freq (%)	Days per Year	Max Conc (µg/m³)
R1	0%	0	38	0%	0	50	0%	0	35	0%	0	33	--	--	20
R2	1%	2	74	0%	0	45	1%	2	83	0.2%	<1	62	--	--	20
R3	0.1%	<1	52	0%	0	38	0%	0	44	0%	0	39	--	--	20
R4	1%	3	99	0%	0	49	1%	5	100	0.4%	2	72	--	--	20
R5	0%	0	47	0%	0	34	0%	0	44	0%	0	41	--	--	20
R6	0%	0	46	0%	0	36	0%	0	43	0%	0	37	--	--	20
R7	0.1%	<1	56	0.5%	2	67	0.1%	<1	59	0.1%	<1	55	--	--	22
R8	0%	0	37	0%	0	49	0%	0	39	0%	0	38	--	--	21
R9	0.1%	<1	55	0%	0	43	0%	0	45	0%	0	43	--	--	21
R10	0%	0	35	0%	0	36	0%	0	37	0%	0	37	--	--	20

Receptor ID	Future Baseline			Scenario 1			Scenario 2			Scenario 3			"Do Nothing"		
	Freq (%)	Days per Year	Max Conc (µg/m³)	Freq (%)	Days per Year	Max Conc (µg/m³)	Freq (%)	Days per Year	Max Conc (µg/m³)	Freq (%)	Days per Year	Max Conc (µg/m³)	Freq (%)	Days per Year	Max Conc (µg/m³)
R11	0%	0	31	0%	0	37	0%	0	33	0%	0	33	--	--	20
R12	0%	0	45	0%	0	44	0%	0	43	0%	0	42	--	--	21
R13	0%	0	44	0%	0	50	0%	0	47	0%	0	47	--	--	20
R14	0%	0	37	0%	0	43	0%	0	38	0%	0	38	--	--	20
R15	0%	0	38	0%	0	37	0%	0	34	0%	0	34	--	--	21
R16	0%	0	41	0%	0	47	0%	0	38	0%	0	37	--	--	21
R17	0%	0	36	0.3%	1	61	0%	0	36	0%	0	37	--	--	21
R18	0%	0	34	0.2%	<1	65	0%	0	34	0%	0	36	--	--	21
R19	0%	0	37	0%	0	47	0%	0	35	0%	0	35	--	--	20
R20	0%	0	33	0%	0	45	0%	0	32	0%	0	38	--	--	20
R21	0%	0	32	0%	0	46	0%	0	32	0%	0	38	--	--	20
R22	0%	0	36	0%	0	47	0%	0	35	0%	0	31	--	--	20
R23	0%	0	37	0%	0	46	0%	0	34	0%	0	30	--	--	20
R24	0%	0	40	0%	0	42	0%	0	33	0%	0	37	--	--	20
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 50 µg/m³.
[2] 90th Percentile Background Concentration = 19 µg/m³.
[3] Exceedances per year have been rounded to the nearest full day.
[4] Impacts at receptor STR1 were not assessed for long term averaging periods.
[5] Maximum concentration ("Max conc") in this table is the sum of model predicted concentration and background concentration.
[6] Mitigation was not considered for Scenario 4 ("Do Nothing") because there were no exceedances.

The analysis indicates that in both the Future Baseline and Preferred Alternative predicted concentrations at discrete receptors for annual TSP, annual $PM_{2.5}$ and 24-hour $PM_{2.5}$ remain below applicable criteria. Therefore, no net effect is expected for these contaminants.

Predicted concentrations of 24-hour TSP and 24-hour PM_{10} exceed their respective criteria in both scenarios. As shown in **Table 5-1** the frequency of exceedance on the Preferred Alternative is predicted to increase at some receptors for each operating Scenario assessed. However, these Scenarios represent worst-case locations of haul routes and the working face, which change between scenarios, and consider the lowest separation distance to discrete receptors.

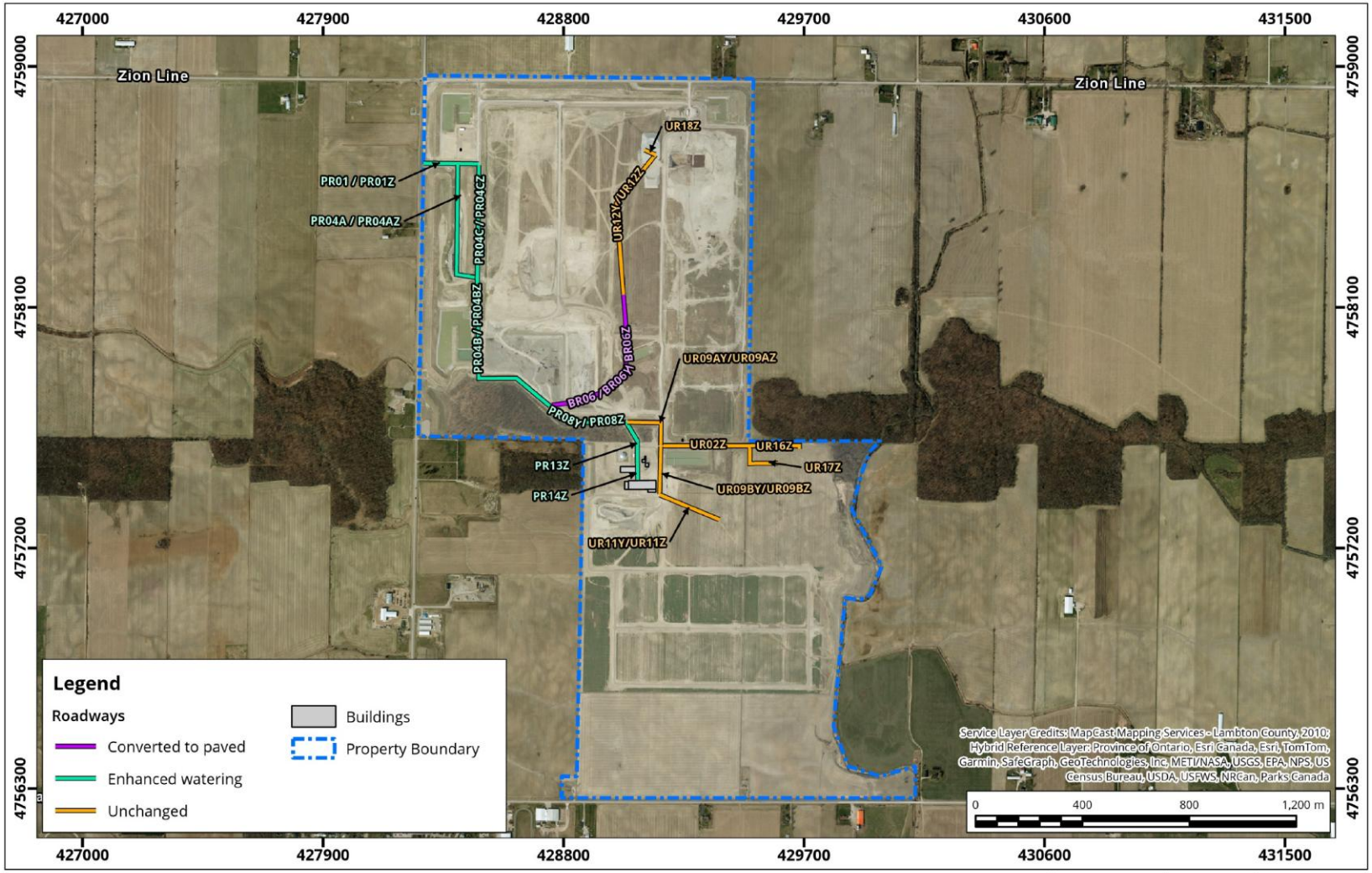
Scenarios 1 and 2, have haul routes and the working face at the perimeter of the landfill footprint. Operations in close proximity to the property boundary are expected to be relatively short term and are primarily for the development of the landfill side slope near the perimeter of the landfill footprint. For the majority of the landfill life, the working face will be located more interior to the site which is expected to reduce predicted concentrations at discrete receptors. As landfill operations progress inward, predicted concentrations are expected to decrease. This is illustrated in the evaluation of Scenario 3 which has a working face more central to the site and shows lower predicted concentrations at discrete receptors.

In efforts to further reduce predicted concentrations at discrete receptors further evaluation was completed to consider two mitigation measures:

- Replace the existing unpaved south access ramp of the landfill area with a hard surface equivalent to a paved road; and,
- Implementation of enhanced watering practices to achieve 95% control along paved haul routes.

Figure 5-7 shows the location of the south haul ramp that will be converted to a paved road and the haul routes subject to the enhanced watering program.

Figure 5-7. Site Plan Showing Roadways Subject to Mitigation



Site Plan Showing Roadways Subject to Mitigation

Map Projection: NAD 1983 UTM Zone 17N
Twin Creeks Environmental Centre - Watford, ON

True North

Project #: 2101750

Drawn by: RCL

Approx. Scale: 1:20,000

Date Revised: Nov 22, 2024

In addition to the proposed mitigation, WM will continue to manage the potential for dust emissions using the protocols developed in their Dust BMPP. In order to achieve 95% control on paved surfaces, one or a combination of the two following control systems will be adopted into the existing Dust BMPP:

1) Continuous Water of Paved Road Surfaces

    a. The paved roadway will be equipped with continuous water sprays that are active under dry conditions for the entire duration that traffic is present on the roadway.

    b. Water sprays will be designed to sufficiently wet the entire paved surface.

    c. The effectiveness of the continuous water system will be routinely assessed by site operators and contractors. In the event the water system becomes inoperative or is unable to provide full road coverage, operators will notify the site supervisor immediately so repairs can be made as quickly as possible.

    d. In the event the continuous spray system is inoperative, and visible dust is observed from the haul road, operations may continue as long as the enhanced water truck suppression protocol is followed or other suitable control is applied to effectively control visible dust.

2) Enhanced Water Truck Protocol

    - A water truck and sufficient water supply shall be available to provide water to the paved roadway area.
    - The watering system shall be able to deliver the water evenly over the haul route surface and shall have the capacity to deploy water at a rate of at least 1.5 L/m²/hour.
    - The application of chemical dust suppressants may be used in conjunction with the application of water, in accordance with O.Reg. 244/97. Watering rates may be adjusted based on the performance of the dust suppressant, subject to the condition that no visible fugitive dust shall migrate off-site.
    - If watering is not feasible (e.g., when temperatures drop below 4°C), chemical dust suppressants shall be applied, in accordance with O.Reg. 244/97, if required.

The actual watering rate shall vary, depending on surface moisture conditions and traffic conditions, and shall be triggered by the Operational Watering Forecasting guidance below:

- Operators will observe meteorological conditions and confirm the effective suppression of dust.
- Site operators will continue to monitor local weather conditions using local weather forecasts.

- Watering will be implemented immediately if dust is observed blowing towards the property boundary.

In addition to enhancing control practices on paved roads, contractor training and dust management enforcement will be added to the BMPP. This addition to the BMPP is intended to ensure consistent implementation and ongoing compliance by all contractors on site in order to better align with WM's dust management objectives.

The effectiveness of the proposed mitigation was evaluated through dispersion modelling for all three landfilling scenarios for the Preferred Alternative. A summary of the results with mitigation are provided in **Table 5-2 and Table 5-4** with additional detail provided in **Appendix 5J**. Results comparing the Mitigated Preferred Alternative, and the Future Baseline are provided in **Appendix 5J**. With mitigation applied the frequency of exceedance decrease significantly to better align with the baseline conditions. Therefore, the Preferred Alternative better align with Future Baseline and the net effect is low.

Table 5-5. Net Effects Assessment - Air Quality - Dust

Evaluation Criteria	Indicator	Key Design Considerations and Assumptions	Potential Effects	Mitigation Measures	Net Effects
Air Quality - Dust	Off-site POI air concentrations of particulate matter (dust) compounds at identified receptors in the immediate vicinity of the site, and community.	• Potential locations of landfill and construction activities near discrete receptors • Assessment of worse case working face location. • Assessment of dry conditions. • Assessment of maximum operating condition paired with worst case meteorological conditions.	• At discrete receptor locations R1-R23, the change in predicted concentrations of indicator contaminants; TSP, PM_{10}, and $PM_{2.5}$ • Predicted concentrations exceedances at discrete receptors R1-R23 may increase.	• Replace the existing unpaved south access ramp of the landfill area with a hard surface equivalent to a paved road. • Implementation of enhanced watering practices to achieve 95% control along paved haul routes. • Continued implementation of the dust BMPP.	• Changes in predicted concentration at each receptor vary depending on what stage of operations the Preferred Alternative landfill was assessed. • With the application of mitigation strategies predicted concentrations at discrete receptors are expected to decrease to levels similar to Future Baseline.
	Frequency of any exceedance of applicable standards, limits, or guidelines at identified receptors.		• Frequency of predicted exceedances at discrete receptors R1-R23 may increase.		• Changes in frequency of predicted exceedances at each receptor vary depending on what stage of operations the Preferred Alternative landfill was assessed. • The frequency of predicted exceedance at discrete receptors are expected to decrease to levels similar to Future Baseline when operations are in similar locations.
	Number of off-site identified receptors potentially affected (e.g., residential properties, public facilities, businesses/farms, institutions).		• The number of discrete receptors with predicted concentrations exceeding criteria may increase.		• Changes in the number of discrete receptors with predicted concentrations the exceed criteria vary depending on what stage of operations the Preferred Alternative landfill was assessed. • With the application of the mitigation measures the number of off-site receptors potentially affected are expected to decrease to quantities similar to Future Baseline when operations are in similar locations.

5.2 LFG and Combustion Byproducts

Evaluation of the Preferred Alternative for LFG and combustion byproducts was completed using dispersion modelling for:

- Vinyl Chloride (CAS# 75-01-4);
- Benzene (CAS# 71-43-2);
- 1,2-Dichloroethane (CAS# 107-06-2);
- Total Reduced Sulphurs (TRS);
- Hydrogen Sulphide (H_2S) (CAS# 7783-06-4);
- Ammonia; (CAS# 7664-41-7)
- Nitrogen Oxides (NO_x) / Nitrogen Dioxide (NO_2) (CAS# 10102-44-0);
- Dioxins and Furans (D&F as TEQ); and
- Sulphur Dioxide (SO_2) (CAS# 7446-09-5).

In general, the emission quantification and modelling methodology is consistent with those presented in **Section 3.1** for Future Baseline Conditions. However, landfilling patterns vary from scenario to scenario based on the progressive filling of the landfill. This impacts the assumptions on which areas of the landfill are under interim or final cover which can significantly affect emissions of VOCs from the landfill mound.

The same haul routes used in the dust evaluation were considered for the evaluation of VOCs and combustion byproducts associated with tailpipe emissions. Haul route changes have the potential to affect predicted concentrations of tailpipe emissions but are not expected to significantly change results from Future Baseline Conditions.

5.2.1 Scenario 1

In Scenario 1 landfill operations are located in the northwestern corner of the stage 1 landfill area. The evaluation assumes that all areas except for the working face are under interim cover. Although the eastern areas of the landfill will not be active during this period, it is not expected that final cap will be applied in anticipation of the vertical expansion of the landfill in future stages. Tailpipe emissions were updated to reflect the assessment year 2034 using updated emission factors generated using U.S EPA MOVES3 software. Emission factors were generated for on-road and off-road vehicles according to the methodology outlined in **Section 3.1**. Detailed emission calculations are provided in **Appendix 5A**.

5.2.1.1 Results

Benzene, vinyl chloride, 1,2-dichloroethane, ammonia, SO_2, NO_x, and D&F are predicted to be below their applicable criteria at all off-site locations with background included.

Predicted concentrations for 24-hour H_2S are below applicable criteria at all discrete receptors with background included. Ten-minute H_2S, 10-minute TRS, and 24-hour TRS are predicted to exceed applicable criteria with background included. However, these elevated concentrations are the result of high background concentrations generated from off-property sources not related to landfill operations with very little contribution coming from landfill activities.

Predicted concentrations of H_2S for the 10-minute averaging period exceed the applicable criteria due to elevated background concentrations with a maximum predicted concentration of 23.3 µg/m³ or 179% of the criteria at receptor STR1. However, cumulative concentrations are dominated by elevated background concentrations. The maximum landfill contribution to the predicted POI occurs at receptor STR1 with a predicted concentration of 0.8 µg/m³ or 5.9% of the criteria. This accounts for approximately 3.3% of the predicted cumulative concentration.

Predicted concentrations of TRS for the 10-minute averaging period exceed the applicable criteria due to elevated background concentrations. However, cumulative concentrations are dominated by elevated background concentrations. The maximum landfill contribution to the predicted POI occurs at receptor R4 with a predicted concentration of 1.2 µg/m³ or 9.0% of the criteria. This accounts for approximately 2.5% of the predicted cumulative concentration.

Predicted concentrations of TRS for the 24-hour averaging period exceed the applicable criteria due to elevated background concentrations. However, cumulative concentrations are dominated by elevated background concentrations. The maximum landfill contribution to predicted POI at a discrete receptor occurs at R9 with a concentration of 0.16 µg/m³ or 2.2% of the criteria. This accounts for approximately 1.4% of the predicted cumulative concentration.

A summary of results is provided in **Appendix 5K.** Since predicted concentrations for all LFG contaminants (benzene, vinyl chloride, 1,2-dichloroethane, H_2S and TRS) are below 10% of their criteria without background, concentration isopleths for LFG contaminants are not provided.

5.2.2 Scenario 2

In Scenario 2 landfill operations are located in the northeast corner of the stage 2 landfill area. In this stage landfilling of the stage 1 area has been completed and final cap has been installed on the stage 1 areas with the exception of the portion of stage 1 that will eventually be covered by stage 3 during future of landfill development. All other areas excluding the working face area are assumed to be under interim cover. Tailpipe emissions were updated to reflect the assessment year 2037 using updated emission factors generated using U.S EPA MOVES3 software. Emission factors were generated for on-road and off-road vehicles according to the methodology outlined in **Section 3.1**.

5.2.2.1 Results

Benzene, vinyl chloride, 1,2-dichloroethane, ammonia, SO_2, NO_x, and D&F are predicted to be below their applicable criteria at all off-site locations with background included. Predicted concentrations of 24-hour H_2S are below applicable criteria at all discrete receptors with background included. Ten-minute H_2S, 10-minute TRS, and 24-hour TRS are predicted to exceed applicable criteria with background included. However, these elevated concentrations are the result of high background concentrations generated from off-property sources not related to landfill operations with very little contribution coming from landfill activities.

Predicted concentrations of H_2S for the 10-minute averaging period exceed the applicable criteria due to elevated background concentrations with a maximum predicted concentration of 23.3 µg/m³ or 179% of the criteria at receptor STR1. However, cumulative concentrations are dominated by elevated background concentrations. The maximum landfill contribution to the predicted POI occurs at receptor STR1 with a predicted concentration of 0.8 µg/m³ or 5.9% of the criteria. This accounts for approximately 3.3% of the predicted cumulative concentration.

Predicted concentrations of TRS for the 10-minute averaging period exceed the applicable criteria due to elevated background concentrations. However, cumulative concentrations are dominated by elevated background concentrations. The maximum landfill contribution to the predicted POI occurs at receptor R4 with a predicted concentration of 1.2 µg/m³ or 9.0% of the criteria. This accounts for approximately 2.5% of the predicted cumulative concentration.

Predicted concentrations of TRS for the 24-hour averaging period exceed the applicable criteria due to elevated background concentrations. However, cumulative concentrations are dominated by elevated background concentrations. The maximum landfill contribution to predicted POI at a discrete receptor occurs at R9 with a concentration of 0.12 µg/m³ or 2% of the criteria. This accounts for approximately 1.1% of the predicted cumulative concentration.

A summary of results is provided in **Appendix 5L** Since predicted concentrations for all LFG contaminants (benzene, vinyl chloride, 1,2-dichloroethane, H_2S and TRS) are below 10% of their criteria without background, concentration isopleths for LFG contaminants are not provided.

5.2.3 Scenario 3

In scenario 3, landfill operations are located in the northeast corner of the stage 4 landfill area. In this stage landfilling of all other stages has been completed and final cap has been installed. All areas of stage 4, excluding the working face, are assumed to be under interim cover. Tailpipe emissions were updated to reflect the assessment year 2042 using updated emission factors generated using U.S EPA MOVES3 software. Emission factors were generated for on-road and off-road vehicles according to the methodology outlined in **Section 3.1**.

5.2.3.1 Results

Benzene, vinyl chloride, 1,2-dichloroethane, ammonia, SO_2, NO_x, and D&F are predicted to be below their applicable criteria at all off-site locations with background included. Predicted concentrations for of 24-hour H_2S are below applicable criteria at all discrete receptors with background included. Ten-minute H_2S, 10-minute TRS, and 24-hour TRS are predicted to exceed applicable criteria with background included. However, these elevated concentrations are the result of high background concentrations generated from off-property sources not related to landfill operations with very little contribution coming from landfill activities.

Predicted concentrations of H_2S for the 10-minute averaging period exceed the applicable criteria with a maximum predicted concentration of 23.3 µg/m³ or 179% of the criteria at receptor STR1. However, cumulative concentrations are dominated by elevated background concentrations. The maximum landfill contribution to the predicted POI occurs at receptor STR1 with a predicted concentration of 0.8 µg/m³ or 5.9% of the criteria. This accounts for approximately 3.3% of the predicted cumulative concentration.

Predicted concentrations of TRS for the 10-minute averaging period exceed the applicable criteria due to elevated background concentrations. However, cumulative concentrations are dominated by elevated background concentrations. The maximum landfill contribution to the predicted POI occurs at receptor R4 with a predicted concentration of 1.2 µg/m³ or 9.0% of the criteria. This accounts for approximately 2.5% of the predicted cumulative concentration.

Predicted concentrations of TRS for the 24-hour averaging period exceed the applicable criteria due to elevated background concentrations. However, cumulative concentrations are dominated by elevated background concentrations. The maximum landfill contribution to predicted POI at a discrete receptor occurs at R9 with a concentration of 0.11 µg/m³ or 2% of the criteria. This accounts for approximately 1.0% of the predicted cumulative concentration.

A summary of results is provided in **Appendix 5M.** Since predicted concentrations for all LFG contaminants (benzene, vinyl chloride, 1,2-dichloroethane, H_2S and TRS) are below 10% of their criteria without background, concentration isopleths for LFG contaminants are not provided.

Overall, LFG and combustion byproduct concentrations at discrete receptors remain consistent throughout scenarios 1 – 3. Slight variations do occur between scenarios as the landfill mound haul routes and working face migrate with filling operations.

5.2.4 Net Effects Assessment

Dispersion modelling results from each of the three landfilling scenarios evaluated under the Preferred Alternative were compared to the Future Baseline in order to quantify the net effect of the Preferred Alternative. Comparison tables for Future Baseline and each scenario of the Preferred Alternative are provided in **Appendix 5N**.

The analysis indicates that in both the Future Baseline and Preferred Alternative predicted concentrations at discrete receptors for all LFG and combustion byproduct remain below applicable criteria with the exception of H_2S and TRS. However, in both the Future Baseline and the Preferred Alternative predicted concentrations of H_2S and TRS are dominated by elevated background concentrations. There are no changes in predicted concentrations without background in scenario 1 and predicted concentrations in the Preferred Alternative for scenarios 2 and 3 decrease slightly as final cover is applied. Therefore, the Preferred Alternative net effect on LFG and combustion byproducts is expected to be low.

Table 5-6. Net Effects Assessment – Air Quality – LFG and Combustion Byproducts

Evaluation Criteria	Indicator	Key Design Considerations and Assumptions	Potential Effects	Mitigation Measures	Net Effects
Air Quality – LFG and Combustion Byproducts	• Off-site POI air concentrations of indicator compounds at identified receptors in the immediate vicinity of the site	• Potential locations of landfill working face relative to nearby discrete receptors • Landfill cover applied during different stages of landfill development • Conservative estimate of LFG generation rate. • Conservative estimates of maximum landfill activity.	• Change in predicted concentrations of indicator contaminants at discrete receptor locations. • At discrete receptor locations R1-R23 and STR1, the change in predicted concentrations of indicator contaminants; benzene, vinyl chloride, 1,2-dichloroethane, ammonia, hydrogen sulphide, total reduced sulphur, sulphur dioxide, nitrogen oxides, as well as dioxins and furans.	• No additional Mitigation is recommended for LFG and Combustion Byproducts.	• No significant net effect was identified.
	Frequency of any exceedance of applicable standards, limits, or guidelines at identified receptors.		• No receptors with predicted concentrations exceeding criteria due to landfill operations.		• No significant net effect was identified.
	Number of off-site identified receptors potentially affected (e.g., residential properties, public facilities, businesses/farms, institutions).		• No discrete receptors with predicted concentrations exceeding criteria due to landfill operations.		• No significant net effect was identified.

5.3 Odour

Evaluation of the Preferred Alternative for odour was completed using dispersion modelling to assess the potential for nuisance conditions at identified odour sensitive receptors. Odour was evaluated using the following odour thresholds:

- 1 OU – associated with detection of odour;
- 3 OU – recognition of odour; and,
- 5 OU – nuisance resulting from odour.

In general, the emission quantification and modelling methodology is consistent with those presented in **Section 3.1** for the Future Baseline. TCEC has a BMPP for odour which outlines control measures taken to minimize odour related emissions from the facility. Operation of the Preferred Alternative intends to maintain odour control practices outlined in the BMPP. Details regarding the odour BMPP are provided in **Section 2.1.3**.

No odour emissions are associated with the haul routes or onsite traffic and therefore changes in haul routes on the landfill mound do not impact the odour evaluation. The landfill working face location will change in the different stages of landfill operation. The working face has the potential to be a significant source of odour emissions and the change in location is likely to affect predicted concentrations. As a conservative assumption the evaluation of Scenarios 1 – 3 consider the working face in worst-case locations, as discussed in **Section 5**. In addition, odour levels are anticipated to decrease over time as more areas of the landfill are placed under final cover. Overall, odour concentrations at discrete receptors are not expected to change significantly from the Future Baseline.

5.3.1 Scenario 1

In Scenario 1 landfill operations are located in the northwestern corner of the stage 1 landfill area. The evaluation assumes that all areas except for the working face are under interim cover. Although the eastern areas of the landfill will not be active during this period, it is not expected that final cap will be applied in anticipation of the vertical expansion of the landfill in future stages.

5.3.1.1 Results

Maximum predicted concentrations at all receptors exceed the MECP odour guideline objective of 1 OU/m³. A frequency analysis was performed on the predicted concentrations. The 1 OU/m³ guideline shows exceedances at a frequency greater than 0.5% of the time at all receptors except R10, R11, R13, R14, R24, and STR1. The highest overall frequency of exceedance of 1 OU/m³ is 2.9% or approximately 252 hours per year predicted at R7, as shown in **Table 5-7**.

Exceedances of 3 OU/m³ were predicted at 8 receptors, R1, R2, R4, and R17 through R21; the frequency analysis suggests that exceedances of 3 OU/m³ are less than 0.5% at these receptors. The highest overall frequency of exceedance of 3 OU/m³ is 0.1% or approximately 10 hours per year predicted at R4 as shown in **Table 5-8**.

No exceedances of 5 OU/m³ were predicted at any of the receptors as shown in **Table 5-9**.

Frequency analysis for odour at all discrete receptors are provided in **Appendix 5O**. A concentration isopleth is provided in **Appendix 5P**.

5.3.2 Scenario 2

In Scenario 2 landfill operations are located in the northeast corner of the stage 2 landfill area. In this stage landfilling of the stage 1 area has been completed and final cap has been installed on the stage 1 areas with the exception of the portion of stage 1 that will eventually be covered by stage 3 during future landfill development. All other areas excluding the working face area are assumed to be under interim cover.

5.3.2.1 Results

Maximum predicted concentrations at all receptors exceed the MECP odour guideline objective of 1 OU/m³. A frequency analysis was performed on the predicted concentrations. The 1 OU/m³ guideline shows exceedances at a frequency greater than 0.5% of the time at receptors R1 through R5, R7 through R9, and R16 through R19. The highest overall frequency of exceedance of 1 OU/m³ is 1.6% or approximately 141 hours per year predicted at R7, as shown in **Table 5-7**.

Exceedances of 3 OU/m³ were predicted at two receptors, R2 and R4; the frequency analysis suggests that exceedance of 3 OU/m³ is less than 0.5% at these receptors. The highest overall frequency of exceedance of 3 OU/m³ is 0.01% or approximately 1 hour per year predicted at R4, as shown in **Table 5-8**.

No exceedances of 5 OU/m³ were predicted at any of the receptors.

Frequency analysis for odour at all discrete receptors are provided in **Appendix 5O**. A concentration isopleth is provided in **Appendix 5P**.

5.3.3 Scenario 3

In scenario 3, landfill operations are located in the northeast corner of the stage 4 landfill area. In this stage landfilling of all other stages has been completed and final cap has been installed. All areas of stage 4, excluding the working face, are assumed to be under interim cover.

5.3.3.1 Results

Maximum predicted concentrations at all receptors exceed the MECP odour guideline objective of 1 OU/m³. A frequency analysis was performed on the predicted concentrations.

No receptors show exceedances of the 1 OU/m³ guideline at a frequency greater than 0.5% of the time. The highest overall frequency of exceedance of 1 OU/m³ is 0.4% or approximately 38 hours per year predicted at R4, as shown in **Table 5-7**.

Exceedances of 3 OU/m³ were predicted only at receptor R4; the frequency analysis suggests that exceedances of 3 OU/m³ are less than 0.5% at this receptor. The highest overall frequency of exceedance of 3 OU/m³ is 0.002% or approximately 0.2 hours per year predicted at R4, as shown in **Table 5-8**.

No exceedances of 5 OU/m³ were predicted at any of the receptors.

Frequency analysis for odour at all discrete receptors are provided in **Appendix 5O**. A concentration isopleth is provided in **Appendix 5P**.

In general, as the landfill progresses inwards from the property boundary predicted odour concentrations decrease as more of the landfill receives final cover and the working face separation distance to discrete receptors increases.

5.3.4 Net Effects Assessment

Dispersion modelling results from each landfilling scenario evaluated under the Preferred Alternative were compared to the Future Baseline in order to quantify the net effect of the Preferred Alternative. Comparison tables for the worst-case odour impacts for Future Baseline and each scenario of the Preferred Alternative are provided in **Appendix 5Q**.

The analysis indicates that in both the Future Baseline and Preferred Alternative predicted concentrations at discrete receptors have odour events greater than 1 OU/m³. Frequency of events greater than 1 OU/m³ are expected to increase compared to Future Baseline in Scenario 1.

However, Scenario 1 has the working face located in the worst-case location directly along the northwestern boundary of the landfill footprint which represents the shortest separation distance to discrete receptors. Operations in this area are expected to be relatively short as landfilling operations here are primarily for the development of the side slope needed for the large mound area and waste capacity near the perimeter of the landfill footprint is limited. For the majority of the landfill life, the working face will be located more interior to the site which is expected to reduce the frequency and magnitude of elevated concentrations at discrete receptors. In addition, Scenario 1 represents the time period where the landfill has no final cover applied which represents the maximum potential for odour emissions.

This analysis is supported by the predicted concentration at discrete receptors for Scenarios 2 and 3 of the Preferred Alternative. Scenario 2 predicted lower concentrations and reduced frequencies of time greater than 1 odour unit compared to Scenario 1, which are closer in frequency to Future Baseline; and Scenario 3 predicted lower concentrations and frequencies at discrete receptors relative to Future Baseline. This reflects the improved odour control as final cap is applied to the waste mound.

In addition to the application of the final cap, WM will continue to manage the potential for odour emissions using the protocols developed in their Odour BMPP. Overall, the net effect of the Preferred Alternative is expected to be low and results align with the Future Baseline.

Table 5-7. Exceedances of 10-minute Odour Criteria by Scenario - 1 OU/m³

Receptor ID	Future Baseline			Scenario 1			Scenario 2			Scenario 3			"Do Nothing"		
	Freq (%)	Days per Year	Max Conc (OU/m³)	Freq (%)	Days per Year	Max Conc (OU/m³)	Freq (%)	Days per Year	Max Conc (OU/m³)	Freq (%)	Days per Year	Max Conc (OU/m³)	Freq (%)	Days per Year	Max Conc (OU/m³)
R1	0%	31	2.0	1%	85	3.7	1%	49	2.2	0%	17	1.5	0%	0	0.7
R2	1%	62	3.4	1%	94	3.3	1%	65	4.2	0%	31	2.9	0%	0	0.9
R3	1%	59	2.5	1%	85	2.2	1%	52	2.0	0%	17	1.8	0%	0	0.7
R4	1%	84	3.5	1%	121	3.5	1%	80	4.4	0%	38	3.0	0%	0	0.9
R5	1%	49	3.0	1%	65	2.4	1%	43	2.6	0%	17	1.7	0%	0	0.7
R6	1%	48	2.5	1%	61	2.2	0%	40	1.9	0%	14	1.8	0%	0	0.7
R7	1%	84	2.4	3%	252	2.2	2%	141	2.0	0%	33	1.7	0%	0	0.7
R8	0%	33	2.1	1%	106	2.7	1%	68	1.5	0%	4	1.3	0%	0	0.6
R9	0%	38	2.7	2%	175	2.6	1%	103	2.3	0%	31	1.8	0%	0	0.7
R10	0%	13	1.8	0%	30	2.5	0%	25	1.9	0%	12	1.6	0%	0	0.7
R11	0%	7	1.8	0%	28	2.4	0%	16	1.8	0%	2	1.5	0%	0	0.7
R12	0%	9	1.6	1%	44	2.6	0%	29	2.0	0%	15	1.6	0%	0	0.7
R13	0%	5	1.3	0%	31	2.5	0%	21	1.9	0%	10	1.4	0%	0	0.6
R14	0%	3	1.3	0%	27	2.2	0%	17	1.6	0%	4	1.2	0%	0	0.5
R15	0%	14	2.0	1%	43	2.5	0%	27	1.9	0%	15	1.5	0%	0	0.7
R16	0%	32	1.9	1%	85	2.7	1%	51	1.4	0%	2	1.2	0%	0	0.6
R17	0%	35	2.0	1%	93	4.0	1%	59	2.2	0%	21	1.4	0%	0	0.6
R18	0%	27	2.0	1%	82	3.8	1%	53	2.0	0%	20	1.3	0%	0	0.6

Receptor ID	Future Baseline			Scenario 1			Scenario 2			Scenario 3			"Do Nothing"		
	Freq (%)	Days per Year	Max Conc (OU/m³)	Freq (%)	Days per Year	Max Conc (OU/m³)	Freq (%)	Days per Year	Max Conc (OU/m³)	Freq (%)	Days per Year	Max Conc (OU/m³)	Freq (%)	Days per Year	Max Conc (OU/m³)
R19	0%	27	1.9	1%	76	3.5	1%	43	2.2	0%	14	1.4	0%	0	0.7
R20	0%	25	1.9	1%	71	3.8	0%	40	2.1	0%	14	1.4	0%	0	0.7
R21	0%	24	1.8	1%	67	3.4	0%	40	2.1	0%	14	1.4	0%	0	0.7
R22	0%	19	1.8	1%	55	2.8	0%	32	2.1	0%	11	1.5	0%	0	0.7
R23	0%	18	1.7	1%	50	2.8	0%	26	2.0	0%	11	1.4	0%	0	0.7
R24	0%	14	1.6	0%	40	2.6	0%	24	2.0	0%	11	1.4	0%	0	0.7
STR1	0%	4	2.5	0%	13	2.9	0%	6	2.5	0%	3	1.9	0%	0	0.8

Notes:
[1] Criteria = 1 OU/m³.
[2] Exceedances per year have been rounded to the nearest full hour.
[3] Exceedances at STR1 were assessed for daytime hours only (6:00 am to 6:00 pm).

Table 5-8. Exceedances of 10-minute Odour Criteria by Scenario - 3 OU/m³

Receptor ID	Future Baseline			Scenario 1			Scenario 2			Scenario 3			"Do Nothing"		
	Freq (%)	Days per Year	Max Conc (µg/m³)	Freq (%)	Days per Year	Max Conc (µg/m³)	Freq (%)	Days per Year	Max Conc (µg/m³)	Freq (%)	Days per Year	Max Conc (µg/m³)	Freq (%)	Days per Year	Max Conc (µg/m³)
R1	0%	0	2.0	0%	1	3.7	0%	0	2.2	0%	0	1.5	0%	0	0.7
R2	0%	<1	3.4	0%	8	3.3	0%	<1	4.2	0%	0	2.9	0%	0	0.9
R3	0%	0	2.5	0%	0	2.2	0%	0	2.0	0%	0	1.8	0%	0	0.7
R4	0%	<1	3.5	0%	10	3.5	0%	<1	4.4	0%	<1	3.0	0%	0	0.9
R5	0%	0	3.0	0%	0	2.4	0%	0	2.6	0%	0	1.7	0%	0	0.7

Receptor ID	Future Baseline			Scenario 1			Scenario 2			Scenario 3			"Do Nothing"		
	Freq (%)	Days per Year	Max Conc (µg/m³)	Freq (%)	Days per Year	Max Conc (µg/m³)	Freq (%)	Days per Year	Max Conc (µg/m³)	Freq (%)	Days per Year	Max Conc (µg/m³)	Freq (%)	Days per Year	Max Conc (µg/m³)
R6	0%	0	2.5	0%	0	2.2	0%	0	1.9	0%	0	1.8	0%	0	0.7
R7	0%	0	2.4	0%	0	2.2	0%	0	2.0	0%	0	1.7	0%	0	0.7
R8	0%	0	2.1	0%	0	2.7	0%	0	1.5	0%	0	1.3	0%	0	0.6
R9	0%	0	2.7	0%	0	2.6	0%	0	2.3	0%	0	1.8	0%	0	0.7
R10	0%	0	1.8	0%	0	2.5	0%	0	1.9	0%	0	1.6	0%	0	0.7
R11	0%	0	1.8	0%	0	2.4	0%	0	1.8	0%	0	1.5	0%	0	0.7
R12	0%	0	1.6	0%	0	2.6	0%	0	2.0	0%	0	1.6	0%	0	0.7
R13	0%	0	1.3	0%	0	2.5	0%	0	1.9	0%	0	1.4	0%	0	0.6
R14	0%	0	1.3	0%	0	2.2	0%	0	1.6	0%	0	1.2	0%	0	0.5
R15	0%	0	2.0	0%	0	2.5	0%	0	1.9	0%	0	1.5	0%	0	0.7
R16	0%	0	1.9	0%	0	2.7	0%	0	1.4	0%	0	1.2	0%	0	0.6
R17	0%	0	2.0	0%	2	4.0	0%	0	2.2	0%	0	1.4	0%	0	0.6
R18	0%	0	2.0	0%	<1	3.8	0%	0	2.0	0%	0	1.3	0%	0	0.6
R19	0%	0	1.9	0%	<1	3.5	0%	0	2.2	0%	0	1.4	0%	0	0.7
R20	0%	0	1.9	0%	<1	3.8	0%	0	2.1	0%	0	1.4	0%	0	0.7
R21	0%	0	1.8	0%	<1	3.4	0%	0	2.1	0%	0	1.4	0%	0	0.7
R22	0%	0	1.8	0%	0	2.8	0%	0	2.1	0%	0	1.5	0%	0	0.7
R23	0%	0	1.7	0%	0	2.8	0%	0	2.0	0%	0	1.4	0%	0	0.7
R24	0%	0	1.6	0%	0	2.6	0%	0	2.0	0%	0	1.4	0%	0	0.7

Receptor ID	Future Baseline			Scenario 1			Scenario 2			Scenario 3			"Do Nothing"		
	Freq (%)	Days per Year	Max Conc (µg/m³)	Freq (%)	Days per Year	Max Conc (µg/m³)	Freq (%)	Days per Year	Max Conc (µg/m³)	Freq (%)	Days per Year	Max Conc (µg/m³)	Freq (%)	Days per Year	Max Conc (µg/m³)
STR1	0%	0	2.5	0%	0	2.9	0%	0	2.5	0%	0	1.9	0%	0	0.8

Notes:
[1] Criteria = 3 OU/m³.
[2] Exceedances per year have been rounded to the nearest full hour.
[3] Exceedances at STR1 were assessed for daytime hours only (6:00 am to 6:00 pm).

Table 5-9. Exceedances of 10-minute Odour Criteria by Scenario - 5 OU/m³

Receptor ID	Future Baseline			Scenario 1			Scenario 2			Scenario 3			"Do Nothing"		
	Freq (%)	Days per Year	Max Conc (µg/m³)	Freq (%)	Days per Year	Max Conc (µg/m³)	Freq (%)	Days per Year	Max Conc (µg/m³)	Freq (%)	Days per Year	Max Conc (µg/m³)	Freq (%)	Days per Year	Max Conc (µg/m³)
R1	0%	0	2.0	0%	0	3.7	0%	0	2.2	0%	0	1.5	0%	0	0.7
R2	0%	0	3.4	0%	0	3.3	0%	0	4.2	0%	0	2.9	0%	0	0.9
R3	0%	0	2.5	0%	0	2.2	0%	0	2.0	0%	0	1.8	0%	0	0.7
R4	0%	0	3.5	0%	0	3.5	0%	0	4.4	0%	0	3.0	0%	0	0.9
R5	0%	0	3.0	0%	0	2.4	0%	0	2.6	0%	0	1.7	0%	0	0.7
R6	0%	0	2.5	0%	0	2.2	0%	0	1.9	0%	0	1.8	0%	0	0.7
R7	0%	0	2.4	0%	0	2.2	0%	0	2.0	0%	0	1.7	0%	0	0.7
R8	0%	0	2.1	0%	0	2.7	0%	0	1.5	0%	0	1.3	0%	0	0.6
R9	0%	0	2.7	0%	0	2.6	0%	0	2.3	0%	0	1.8	0%	0	0.7
R10	0%	0	1.8	0%	0	2.5	0%	0	1.9	0%	0	1.6	0%	0	0.7
R11	0%	0	1.8	0%	0	2.4	0%	0	1.8	0%	0	1.5	0%	0	0.7
R12	0%	0	1.6	0%	0	2.6	0%	0	2.0	0%	0	1.6	0%	0	0.7
R13	0%	0	1.3	0%	0	2.5	0%	0	1.9	0%	0	1.4	0%	0	0.6
R14	0%	0	1.3	0%	0	2.2	0%	0	1.6	0%	0	1.2	0%	0	0.5
R15	0%	0	2.0	0%	0	2.5	0%	0	1.9	0%	0	1.5	0%	0	0.7
R16	0%	0	1.9	0%	0	2.7	0%	0	1.4	0%	0	1.2	0%	0	0.6
R17	0%	0	2.0	0%	0	4.0	0%	0	2.2	0%	0	1.4	0%	0	0.6
R18	0%	0	2.0	0%	0	3.8	0%	0	2.0	0%	0	1.3	0%	0	0.6

Receptor ID	Future Baseline			Scenario 1			Scenario 2			Scenario 3			"Do Nothing"		
	Freq (%)	Days per Year	Max Conc (µg/m³)	Freq (%)	Days per Year	Max Conc (µg/m³)	Freq (%)	Days per Year	Max Conc (µg/m³)	Freq (%)	Days per Year	Max Conc (µg/m³)	Freq (%)	Days per Year	Max Conc (µg/m³)
R19	0%	0	1.9	0%	0	3.5	0%	0	2.2	0%	0	1.4	0%	0	0.7
R20	0%	0	1.9	0%	0	3.8	0%	0	2.1	0%	0	1.4	0%	0	0.7
R21	0%	0	1.8	0%	0	3.4	0%	0	2.1	0%	0	1.4	0%	0	0.7
R22	0%	0	1.8	0%	0	2.8	0%	0	2.1	0%	0	1.5	0%	0	0.7
R23	0%	0	1.7	0%	0	2.8	0%	0	2.0	0%	0	1.4	0%	0	0.7
R24	0%	0	1.6	0%	0	2.6	0%	0	2.0	0%	0	1.4	0%	0	0.7
STR1	0%	0	2.5	0%	0	2.9	0%	0	2.5	0%	0	1.9	0%	0	0.8

Notes:
[1] Criteria = 5 OU/m³.
[2] Exceedances per year have been rounded to the nearest full hour.
[3] Exceedances at STR1 were assessed for daytime hours only (6:00 am to 6:00 pm).

Table 5-10. Net Effects Assessment – Air Quality – Odour

Evaluation Criteria	Indicator	Key Design Considerations and Assumptions	Potential Effects	Mitigation Measures	Net Effects
Air Quality – Odour	Off-site odour concentrations (odour units) at identified odour sensitive receptors in the immediate vicinity of the site.	• Potential locations of landfill working face relative to nearby discrete receptors • Landfill cover applied during different stages of landfill development	• At discrete receptors locations R1-R24 and STR1, change in predicted odour concentrations.	• No additional Mitigation is recommended for odour. • Continued implementation of the odour BMPP.	• Changes in predicted concentration at each receptor vary depending on what stage of operations the Preferred Alternative landfill was assessed. • Predicted concentrations at discrete receptors are expected to be similar to Future Baseline and decrease over the life of the Project as final cover is applied. • No significant net effect was identified.
	Frequency of any odour levels above defined odour benchmarks.		• Frequency of predicted exceedances at discrete receptors R1-R24 and STR1 may increase.		• Changes in frequency of predicted exceedances at each receptor vary depending on what stage of operations the Preferred Alternative landfill was assessed. • The frequency of predicted exceedance at discrete receptors are expected to be similar to Future Baseline and decrease over the life of the Project as final cover is applied. • No significant net effect was identified.
	Number of off-site identified receptors potentially affected (e.g., residential properties, public facilities, businesses/farms, institutions).		• The number of discrete receptors with predicted concentrations exceeding criteria may increase.		• Changes in the number of discrete receptors with predicted concentrations the exceed criteria vary depending on what stage of operations the Preferred Alternative landfill was assessed. • The number of discrete receptors that exceed criteria are expected to be similar to Future Baseline and decrease over the life of the Project as final cover is applied. • No significant net effect was identified.

5.4 Blowing Litter

The Preferred Alternative shares the same footprint as the Expansion Landfill. For the assessment of the Preferred Alternative, the landfill was assessed as a whole (i.e., not looked at in terms of individual stages). This approach results in an assessment of the worst-case potential litter impacts over the life of the Preferred Alternative. The potential zones of influence remain the same as for Future Baseline, as shown in **Figure 3-1**.

For the Preferred Alternative, the final mound height will have increased to approximately 79 m above grade. As elevation increases, waste materials will be exposed to higher wind speeds which have the potential to increase the frequency of litter events. However, the procedures outlined in the TCEC's Litter BMPP are expected to continue be effective in controlling litter for the active face.

The residences within the vicinity of the landfill are assumed to remain unchanged for the Preferred Alternative. The current mitigation measures will continue to be implemented as part of the Preferred Alternative. Therefore, as outlined for the existing conditions above, the potential blowing litter impacts from the Preferred Alternative is low.

5.4.1 Net Effects Assessment

The landfill footprint in the Future Baseline and Preferred Alternative is the same and therefore the potential zones of influence are the same. The Preferred Alternative does introduce additional elevation potentially exposing litter to higher windspeeds. However, WM maintains a best management practices plan for Litter which will continue to be applied as part of the Preferred Alternative and is expected to effectively control off-site migration of litter.

Table 5-11. Net Effects Assessment – Air Quality – Blowing Litter

Evaluation Criteria	Indicator	Key Design Considerations and Assumptions	Potential Effects	Mitigation Measures	Net Effects
Air Quality – Blowing Litter	• Extent of zones potentially impacted by blowing litter.	• Potential locations of landfill working face relative to nearby discrete receptors • Elevation of the working face.	• No change in the extent of zones potentially impacted by blowing litter.	• No additional Mitigation is recommended for blowing litter. • Continued implementation of the litter BMPP.	• No significant net effect was identified.
	• Number of off-site receptors potentially affected.		• No change in the number off-site receptors potentially affected.		• No significant net effect was identified.

5.5 Climate Change

For the evaluation of the Preferred Alternative for climate change the landfill was assessed as a whole (i.e., not looked at in terms of individual stages). This approach results in an assessment of the worst-case potential GHG emissions in the worst-case year of landfill operations. In the Preferred Alternative assessment, the largest source of GHG emissions from landfilling activities is fugitive releases from the landfill mound. Fugitive emissions from the landfill mound are directly proportional to the quantity of waste in place. Therefore, GHG emissions in the year 2042 were evaluated as it represents the final year of landfill operations when the maximum waste capacity is achieved.

GHG emissions were quantified using the same methodology outlined in **Section 3.1.5** of the Future Baseline evaluation. LANDGEM gas generation estimates were updated to reflect the total tonnage in place in 2042. Updated tailpipe emission factors were generated using US EPA MOVES3 for 2042 and considered in the quantification.

Increases in collection efficiencies of LFG were considered in the assessment as most of the landfill will be under final cover in 2042. Final cover efficiency was assumed to be 90% based on the installation of vertical gas collection system as well as a 1.85 m thick clay landfill cap. The only stage not under final cover in 2042 is stage 4 which is under interim cover with a collection efficiency of 75%. Stage 4 is positioned on top of Stages 1 and 2, based on the percentage of Stages 1 and 2 covered by Stage 4, weighted average collection efficiencies were applied in the model. Detailed calculations are provided in the LFG and combustion byproducts assessment **Appendix 5A**. The closed Old Landfill remains at a collection efficiency of 70%.

Diversion of GHGs to the greenhouse and RNG facility are expected to continue in the Preferred Alternative. Due to the increase in collection efficiency, the quantity of gas diverted to the RNG facility is expected to increase.~~.~~ No additional diversion activities are currently being considered as part of the Preferred Alternative.

Detailed calculations of GHG emissions are provided in **Appendix 5R**.

Total estimated emissions including carbon dioxide were determined to be 584,777 tonnes of CO_2e. GHG emissions from the Project are dominated by fugitive releases with 353,020 tonnes CO_2e, followed closely by emissions from the LFG flares with 222,038 tonnes of CO_2e due to the increase in collection efficiency. The increased collection efficiency significantly reduces the quantity of GHG emissions due to the flare's high destruction efficiency of methane. Every additional tonne of methane combusted through the LFG flare represents a 28:1 reduction in GHG emissions. Benefits from LFG diversion were estimated to be 90,446 tonnes of CO_2e. A summary of the GHG inventory is provided in **Table 5-12**.

LFG is classified as biomass under Schedule 4 of Ontario Regulation (O.Reg.) 390/18. Carbon dioxide from the combustion of biomass is excluded from GHG verification and reporting in O.Reg. 390/18 s.12(2). Carbon dioxide from the decomposition of biomass

is excluded from GHG reporting under Ontario Regulation (O.Reg.) 390/18 as noted in ON.191 of the MECP Guideline for Quantification, Reporting and Verification of Greenhouse Gas Emissions, March 2024. Total estimated annual emissions excluding carbon dioxide derived from biomass were determined to be 374,147 tonnes CO_2e. This was dominated by fugitive release of methane at 361,180 tonnes CO_2e, or 97% of the total. A summary of the GHG inventory excluding carbon dioxide derived from biomass is provided in **Table 5-13**.

Table 5-12. Summary of Estimated Greenhouse Gas Emissions (2042)

Source	CO_2 Estimated Annual Emissions (tonnes/year) GWP [1] 1	CH_4 Estimated Annual Emissions (tonnes/year) GWP [1] 1	NO_2 Estimated Annual Emissions (tonnes/year) GWP [1] 1	CO_2e Annual Total (t CO_2e / year) [2] [3]	Percent of Total (%)
Fugitive LFG (Mound) [4]	35,389	11,344	0	353,020	60%
LFG Flare [5]	218,558	124	0	222,038	38%
Mobile Combustion [6]	5,355	0.0285	0.00592	5,357	1%
Stationary Combustion [7]	4,351	0.0549	0.0323	4,361	1%
Total	263,653	11,468	0.0382	584,777	100%
GHG Avoided by Displacing Pipeline Natural Gas Through Direct Use of LFG and Production of RNG [8]				-90,446	-15%

Notes:

[1] Global warming potential (GWP) or carbon dioxide equivalent (CO_2e) of greenhouse gases based on 100-year time horizon, from Environment and Climate Change Canada (ECCC) (2024). https://www.canada.ca/en/environment-climate-change/services/climate-change/greenhouse-gas-emissions/quantification-guidance/global-warming-potentials.html

[2] Total CO_2e is the sum of annual emissions of each greenhouse gas times its global warming potential.

[3] Estimates assume 14,883,335 cubic metres of LFG transferred to the greenhouse, and on-spec production and distribution of renewable natural gas (RNG) 50% of the time at the maximum RNG facility LFG flow rate.

[4] LFG collection efficiency: 75% open landfills, and 90% closed landfills. Emissions of carbon dioxide from decomposition of organic waste are not included in the total greenhouse gas emissions for Ontario and Canada.

[5] Flare destruction efficiency: 99.7%. Emissions of carbon dioxide from decomposition of organic waste are not included in the total greenhouse gas emissions for Ontario and Canada.

[6] Based on maximum vehicle traffic in this modelled scenario and United States Environmental Protection Agency MOVES contaminant emission factors.

[7] Amine reboiler and emergency generators.

Table 5-13. Summary of Estimated Greenhouse Gas Emissions, Excluding Carbon Dioxide from Biomass (2042)

Source	CO_2 Estimated Annual Emissions (tonnes/year) GWP [1] 1	CH_4 Estimated Annual Emissions (tonnes/year) GWP [1] 1	NO_2 Estimated Annual Emissions (tonnes/year) GWP [1] 1	CO_2e Annual Total (t CO_2e / year) [2] [3]	Percent of Total (%)
Fugitive LFG (Mound) [4]	0	11,344	0	317,631	96%
LFG Flare [5]	0	124	0	3,481	1%
Mobile Combustion [6]	5,355	0.0285	0.00592	5,357	2%
Stationary Combustion [7]	4,351	0.0549	0.0323	4,361	1%
Total	9,706	11,468	0.0382	330,830	100%
GHG Avoided by Displacing Pipeline Natural Gas Through Direct Use of LFG and Production of RNG [8]				-90,446	-27%

Notes:

[1] Global warming potential (GWP) or carbon dioxide equivalent (CO_2e) of greenhouse gases based on 100-year time horizon, from Environment and Climate Change Canada (ECCC) (2024). https://www.canada.ca/en/environment-climate-change/services/climate-change/greenhouse-gas-emissions/quantification-guidance/global-warming-potentials.html

[2] Total CO_2e is the sum of annual emissions of each greenhouse gas times its global warming potential.

[3] Estimates assume 14,883,335 cubic metres of LFG transferred to the greenhouse, and on-spec production and distribution of renewable natural gas (RNG) 50% of the time at the maximum RNG facility LFG flow rate.

[4] LFG collection efficiency: 75% open landfills, and 90% closed landfills. Emissions of carbon dioxide from decomposition of organic waste are not included in the total greenhouse gas emissions for Ontario and Canada.

[5] Flare destruction efficiency: 99.7%. Emissions of carbon dioxide from decomposition of organic waste are not included in the total greenhouse gas emissions for Ontario and Canada.

[6] Based on maximum vehicle traffic in this modelled scenario and United States Environmental Protection Agency MOVES contaminant emission factors.

[7] Amine reboiler and emergency generators.

[8] Environment and Climate Change Canada. (2022). Greenhouse Gas Calculator for Organic Waste Management: Methodology Report. Section 7.

A comparison of GHG emissions for the Future Baseline (2031) and Preferred Alternative (2042) to total annual GHG emissions for Ontario and Canada is shown in **Table 5-14**. The Ontario and Canadian totals do not include carbon dioxide from biomass decomposition and destruction; therefore, the annual emissions exclude carbon dioxide from these sources.

Table 5-14. Comparison of Greenhouse Gas Peak Year Emissions to Ontario and Canadian Emission Totals

Source	Future Baseline Peak Year Emissions (2031) (kt/year CO_2e)	Preferred Alternative Peak Year Emissions (2042) (kt/year CO_2e)	Change in Peak Year Emissions (kt/year CO_2e)
Greenhouse Gas Emissions [1]	374	331	-43.3
Percentage of Ontario Total GHG Emissions	0.24%	0.21%	-0.03%
Percentage of Canada Total GHG Emissions	0.05%	0.05%	-0.01%
Ontario GHG Emissions [2]	157,200	157,200	157,200
Canada GHG Emissions [3]	719,400	719,400	719,400

Notes:

[1] Estimates assume 14,883,335 cubic metres of LFG transferred to the greenhouse, and on-spec production and distribution of renewable natural gas (RNG) 50% of the time at the maximum RNG facility LFG flow rate.

[2] Environment and Climate Change Canada. (2024). "National Inventory Report 1990-2022: Greenhouse Gas Sources and Sinks in Canada, Part 3. Average of total greenhouse gas emissions for Ontario for 2018 - 2022 from Table A11-12. The Ontario total does not include carbon dioxide emissions from the decomposition of organic waste in a landfill.

[3] Environment and Climate Change Canada. (2024). "National Inventory Report 1990-2022: Greenhouse Gas Sources and Sinks in Canada, Part 3. Average of total greenhouse gas emissions for Canada for 2018 - 2022 from Table A9-2. The Canadian total does not include carbon dioxide emissions from the decomposition of organic waste in a landfill.

5.5.1 Net Effects Assessment

Climate Change was assessed through the quantification of greenhouse gas emissions. The primary driver behind greenhouse gas emissions from landfills are fugitive releases through the landfill mound. Since the Preferred Alternative introduces more total waste to the landfill mound when compared to the Future Baseline total release of GHGs are expected to increase. However, despite the significant increase in total waste tonnage in the Preferred Alternative the total predicted GHG emissions remain relatively similar to the Future Baseline, with 584,777 tonnes of CO_2e estimated for the Preferred Alternative compared to the 513,649 tonnes of CO_2e estimated for Future Baseline with a net difference of 71,128 tonnes of CO_2e. This relatively small increase is a result of increased collection efficiency which significantly reduces the quantity of GHG emissions due to the flare's high destruction efficiency of methane. Every additional tonne of methane combusted through the LFG flare represents a 28:1 reduction in GHG emissions. This represents a net decrease in GHG intensity from landfilling activities in the Preferred Alternative. In addition, LFG diversion activities are expected to continue in the Preferred Alternative, with a focus on improving GHG diversion as more financial and environmental incentives become available.

Table 5-15. Net Effects Assessment - Air Quality - Greenhouse Gas

Evaluation Criteria	Indicator	Key Design Considerations and Assumptions	Potential Effects	Mitigation Measures	Net Effects
Air Quality – Climate Change	• Annual emissions of greenhouse gases (carbon dioxide, methane, and nitrous oxide), reported in carbon dioxide equivalent (CO_2e).	• Quantity of waste in place. • Collection efficiency of LFG. • GHG diversion activities.	• Increase in GHG emissions by approximately 584,777 tonnes CO_{2e} per year • Increase in GHG emissions by approximately 330,830 tonnes CO_{2e} per year when biomass emissions are excluded.	• No Mitigation is required for climate change.	• No significant net effect was identified.

5.6 Climate Change Considerations

Climate change mitigation and adaptation is a significant challenge as increasing atmospheric concentrations change global weather patterns and long-term climate characteristics. Climate change mitigation seeks to reduce or eliminate greenhouse gas emissions from human activities. Climate change adaptation includes measures intended to reduce vulnerability to impacts of a changing climate. This Air Quality effects assessment considers both in the sections below.

5.6.1 Effect of the Preferred Alternative on Climate Change

Landfills are acknowledged as sources of GHGs, primarily through the production of methane during the anaerobic degradation of organic carbon content in the waste that is landfilled, and the fugitive escape of this methane to the atmosphere. Reducing the release of greenhouse gases requires proper management of the LFG that is generated.

Over the lifespan of the proposed landfill expansion, an additional 14.3 million cubic metres of waste will be added on top of the existing landfill footprint, and additional greenhouse gases will be generated from this waste.

As noted in **Section 2.1.3.2** and in the CDR, LFG from the current Expansion Landfill uses Early Vertical Gas System wells which are extended as waste filling progresses to minimize impacts from odour and reduce the amount of fugitive LFG escaping to the atmosphere.

LFG that is collected is either transferred to the adjacent greenhouse for direct use for heating, transferred to the RNG Facility for refinement and distribution through the natural gas pipeline, or combusted through the six LFG flares.

WM has invested in development of the RNG Facility to provide a long-term beneficial use of the LFG and reduce the amount of gas that is combusted in the flares as waste

fuel. As discussed in **Section 5.5**, this reduction of LFG sent to flare directly reduces the quantity of greenhouse gases released from the landfill and indirectly reduces the greenhouse gas that would have been generated to produce the same quantity of natural gas from fossil fuels.

5.6.2 Effect of Climate Change on the Preferred Alternative

It has been established that release of greenhouse gas from a wide range of human activity is causing climate change. Emissions scenarios are used to understand possible impacts of climate change many years into the future. Representative Concentration Pathways (RCPs) are a set of scenarios intended to provide reasonable projections of future climate impacts based on assumed emissions and degree of mitigation (ECCC, 2018). RCP8.5 is a high global emission scenario with limited mitigation, and this scenario represents a plausible "worst-case" for climate change impacts in the future.

An early study prepared for the Ministry of Natural Resources and Forestry, "Climate change projections for Ontario: An updated synthesis for policymakers and planners", projected regional changes in temperature and precipitation for Ontario. As shown in **Table 5-16**, summer and winter temperatures are projected to increase, and annual and winter precipitation increase while summer precipitation decreases.

Table 5-16. Climate Change Forecast

Year	Temperature (ºC)			Precipitation (mm)		
	Annual	Summer	Winter	Annual	Summer	Winter
2011 - 2040	+2.3	+2.0	+2.2	+52.0	-2.7	+28.3
2041 - 2070	+3.9	+3.2	+4.5	+87.0	-2.5	+34.9
2071 – 2100+	+4.8	+4.1	+5.5	+89.0	-4.4	+46.8

Source: McDermid, J., S. Fera and A. Hogg. 2015. Climate change projections for Ontario: An updated synthesis for policymakers and planners. Ontario Ministry of Natural Resources and Forestry, Science and Research Branch, Peterborough, Ontario. Climate Change Research Report CCRR-44.

A recent study prepared for the MECP by the Climate Risk Institute assessed the potential risks to Ontario's environment, infrastructure, and economy from direct and indirect climate change impacts (MECP, 2023). The current risk profile for the waste management sector in Ontario's Southwest Region has been characterized as "medium". Under RCP8.5, the projected risk profile for waste management in Southwest Ontario remains at "medium" mid-century, but increases to "high" toward the end of the century. Potential risks related to climate change which may impact air quality include:

- Extreme precipitation associated with more intense storms may cause slope instability or erosion of cover materials allowing increased emissions of fugitive LFG and odour;

- Increased precipitation and water infiltration into the landfill may change the rate of LFG generation and potential for odour from the site;
- Increased temperatures and heat events of longer duration may lead to increased odour generation;
- Increased temperatures and drier summers may lead to drier road surfaces requiring more frequent watering for dust suppression; and,
- Higher wind speeds may impact levels of blowing litter.

The current BMPPs for Dust, Odour, and Litter include processes for monitoring, maintenance, and response that can address these risks, and will continue to be valuable as extreme weather events become more common. Enhancements to the BMPPs that may be required to adapt to changing climatic conditions could be considered and implemented through regulatory approval.

The air quality modelling used in this effects assessment considered a five-year set of hourly meteorological data. Predicted impacts are based on the worst-case conditions within this data set. The future wind, climate, and meteorological conditions are not expected to change to a degree within the lifespan of the proposed landfill expansion that would affect the assessment.

6 Comparison of the Preferred Alternative against the ‘Do Nothing’ Alternative

The effects of the Preferred Alternative are compared against the predicted effects of the currently approved Expansion Landfill based on similar environmental criteria and indicators, with the understanding that the criteria and indicators used in the current effects assessment may differ from those used for the effects assessment of the Expansion Landfill. The effects are compared against each other in terms of magnitude, extent, and duration below. The advantages and disadvantages of the Preferred Alternative compared to the ‘Do Nothing’ Alternative are identified.

6.1 Effects of the ‘Do Nothing’ Alternative

The ‘Do Nothing’ alternative considered what conditions would be onsite in a scenario where the Preferred Alternative was not pursued. In this scenario, landfilling activities on site would cease in 2031 once the current approved landfill capacity is reached.

For the evaluation of the “Do Nothing’ Alternative it was assumed that all onsite traffic related to construction and landfilling activities will cease. Active landfilling activities including waste and material handling, wind erosion of exposed piles, and final cap construction will cease. The Expansion Landfill will be complete and under final cover and the LFG collection system will be fully installed.

Normal operations of the LFG flares, the RNG facility, emergency generators, and leachate management will continue.

As a result of the reduction in landfill activity, significant reductions in all indicators are expected for all Air Quality criteria.

Dust emissions are dominated by haul route traffic and final cap construction. With the removal of these sources, significant decrease in predicted concentrations are expected at all discrete receptor locations. Small quantities of fine particulates will be emitted from the LFG flare and other stationary combustion equipment, but these sources are not expected to significantly contribute to concentrations at discrete receptors.

LFG emissions of VOCs are expected to decrease with the application of the final cap increasing collection efficiency. Without the continued addition of waste to the landfill mound, overall gas generated by the landfill will decrease over time. Emissions of tailpipe contaminants will be reduced to infrequent maintenance vehicles and are considered insignificant. Overall, predicted concentrations of LFG and combustion byproducts are expected to decrease at all discrete receptors.

Odour emissions are expected to be reduced as a result of the completion of the final cap. Emissions of odour compounds like H_2S and VOCs generated by the decomposition of waste will decrease over time as the waste mound ages and produces less gas resulting in decreased odour emissions. Overall, odour concentrations at discrete receptor locations are expected to decrease.

With no active landfilling on site there will be no exposed waste and therefore no potential for the migration of wind-blown litter.

Finally, GHG emissions are expected to be reduced in the ‘Do Nothing’ Alternative. The total volume of waste in the landfill will be lower if the vertical expansion does not proceed. In the absence of new waste being added to the mound, generation of GHG emissions will gradually decrease. There will be no emissions of GHG associated with vehicle tailpipes. LFG diversion will continue to the RNG facility and neighbouring greenhouse. LFG flares will continue to operate releasing GHG emissions.

6.2 Comparison of the Preferred Alternative against the ‘Do Nothing’ Alternative

As described in **Section 6.1** in the ‘Do Nothing’ Alternative a significant portion of the landfill operations would cease. Therefore, when comparing the Preferred Alternative to the ‘Do Nothing’ Alternative it is understood that overall contributions to off-site receptors will increase significantly. A short summary of how each of the Air Quality Criteria compares to the ‘Do Nothing’ Alternative is provided below.

6.2.1 Dust

Comparison of the Preferred Alternative to the 'Do Nothing' Alternative for dust indicators are provided in **Appendix 6A**. Results indicate significant increases in predicted concentrations for all criteria at all discrete receptor locations in the Preferred Alternative. This is because in the 'Do Nothing' Alternative all landfill activities related to dust have ceased with the exception of the RNG facility and stationary combustion equipment (flares, generators, and boilers).

6.2.2 LFG and Combustion Byproducts

Comparison of the Preferred Alternative to the 'Do Nothing' Alternative for LFG and combustion byproduct indicators are provided in **Appendix 6B**. Results indicate significant increases in predicted concentrations for all criteria at all discrete receptor locations in the Preferred Alternative. Similarly to the Preferred Alternative, the 'Do Nothing' alternative predicts elevated concentrations of H_2S and TRS resulting from elevated background concentrations. As described in **Section 6.1** the evaluation of H_2S and TRS emissions in the 'Do Nothing' scenario use the same flux rates for final cover applied in the Preferred Alternative. These flux rates reflect emissions from an active landfill site and likely over predict as emissions of H_2S and TRS are expected to decrease as the waste ages.

6.2.3 Odour

Comparison of the Preferred Alternative to the 'Do Nothing' Alternative for Odour is provided in **Appendix 6C**. Results indicate significant increases in predicted odour concentrations at all discrete receptor locations resulting from the increased quantity of waste in the landfill, absence of final cap, and the addition of new waste to the mound. Frequency of exceedances of 1 OU/m³ are expected to increase at all receptors.

6.2.4 Blowing Litter

In the 'Do Nothing' Alternative the landfill is closed and there are no active waste filling areas or exposed waste subject to wind erosion. Therefore, when comparing the Preferred Alternative to the 'Do Nothing" Alternative the potential for blowing litter is increased.

6.2.5 Climate Change

For the 'Do Nothing' Alternative no quantification of GHG emissions was completed. GHG emissions are expected to be slightly higher in the Preferred Alternative because similar landfill operations are expected. Differences from the 'Do Nothing' Alternative include the addition of tailpipe emissions and an increase in total LFG generated due to the addition of new waste to the landfill mound. When compared to the 'Do Nothing' Alternative overall GHG emissions are expected to be higher due to the increase in total tonnage in place in the Preferred Alternative and addition of onsite traffic.

However, emission intensities related to landfill operations are expected to be similar

between the 'Do Nothing' and Preferred Alternative scenarios due to the increased collection efficiency resulting from final cap in both scenarios. GHG diversion practices continue in the Preferred Alternative and 'Do Nothing' Alternative.

6.3 Advantages and Disadvantages of the Preferred Alternative

The differences in net effects between the Preferred Alternative and the 'Do Nothing Alternative' are used to determine the advantages and disadvantages of the Preferred Alternative. The advantages and disadvantages of the Preferred Alternative are listed in **Table 6-1**.

Table 6-1. Advantages and Disadvantages of the Preferred Alternative

Evaluation Criteria	Advantages	Disadvantages
Air Quality – Dust	• There are no advantages of the Preferred Alternative over the 'Do Nothing' Alternative as they relate to dust.	• The Preferred Alternative results in elevated concentrations of dust contaminants at discrete receptors in excess of applicable criteria compared to no exceedances in the 'Do Nothing' Alternative. • The Preferred Alternative increases the frequency of exceedances of dust criteria at discrete receptors compared to the 'Do Nothing' Alternative. • The Preferred Alternative increases the number of effected receptors compared to the 'Do Nothing' Alternative.
Air Quality – LFG and Combustion Byproducts	• There are no advantages of the Preferred Alternative over the 'Do Nothing' Alternative as they relate to LFG and combustion byproducts.	• There are no disadvantages of the Preferred Alternative over the 'Do Nothing' Alternative as they relate to LFG and combustion byproducts.
Air Quality – Odour	• There are no advantages of the Preferred Alternative over the 'Do Nothing' Alternative as they relate to odour.	• The Preferred Alternative results in elevated concentrations of odour at discrete receptors in excess of applicable benchmarks compared to the 'Do Nothing' Alternative. • The Preferred Alternative increases the frequency of exceedances of odour benchmarks at discrete receptors compared to the 'Do Nothing' Alternative. • The Preferred Alternative increases the number of effected receptors compared to the 'Do Nothing' Alternative.

Table 6-1. Advantages and Disadvantages of the Preferred Alternative

Evaluation Criteria	Advantages	Disadvantages
Air Quality – Blowing Litter	• There are no advantages of the Preferred Alternative over the 'Do Nothing' Alternative as they relate to blowing litter.	• The Preferred Alternative results in potential migration of blowing litter to discrete receptors compared to the 'Do Nothing' Alternative which has not potential for migration of blowing litter.
Air Quality – Climate Change	• The Preferred Alternative increases the quantity of gas available for use as a source of Renewable Natural Gas as an alternative to fossil fuels.	• The Preferred Alternative results in overall higher releases of GHGs compared to the 'Do Nothing' Alternative.

The 'Do Nothing' Alternative has the advantage that for dust, LFG and combustion byproducts, odour, blowing litter, and climate change potential effects at discrete receptors will be lower than those of the Preferred Alternative. Although from an Air Quality perspective the disadvantage of operating the Preferred Alternative out weigh the advantages in comparison to the 'Do Nothing' Alternative, if TCEC continues to be operated in accordance with their BMPPs for Dust, Odour, and Blowing Litter and in accordance with the relevant conditions of the Air ECAs, then there are no predicted unacceptable effects to Air Quality over time.

7 Commitments and Monitoring

To confirm that the commitments related to Air Quality are carried out, and that the proposed mitigation measures will address the predicted effects for Air Quality, monitoring is proposed for construction and operation of the Project. Monitoring for compliance will be undertaken to confirm that the Project complies with the commitments and mitigation measures identified in the effects assessment.

The commitments associated with Air Quality are listed in **Section 7.1**. The proposed environmental effects monitoring is provided in **Section 7.2**. Compliance monitoring for Air Quality is described in **Section 7.3**.

7.1 Air Quality Commitments

7.1.1 Dust

As outlined in **Section 5.1**, the potential for dust related impacts at discrete receptors locations will be managed through the following mitigation:

1. Replacement of the south haul ramp with a hard material equivalent to a paved surface; and,
2. Enhanced water protocols for paved roadway in order to achieve 95% control.

As part of the commitment to dust mitigation the existing BMPP for dust will be updated and applied for the operation of the Preferred Alternative. Existing practices in addition to the enhanced mitigation will continue to be implemented for the Preferred Alternative.

7.1.2 Odour

Operation of the Preferred Alternative will continue to implement operational practices outlined in the existing odour BMPP. In addition, an early vertical well system and a 1.85 meter thick layer of clay in the final cover will be used on the Preferred Alternative to improve gas collection efficiency and reduce emissions of odour causing compounds such as VOCs and sulphur compounds.

As a surrogate for odour, H_2S monitoring will be added to the existing VOC monitoring program, following the same timeline and methodology for H_2S as used for VOC.

7.1.3 Blowing Litter

Operation of the Preferred Alternative will continue to implement operational practices outlined in the existing litter BMPP.

7.2 Environmental Effects Monitoring for Air Quality

Monitoring plans are developed as part of the detailed effects assessments carried out for the Preferred Alternative to confirm:

- The net effects are as predicted;
- Unanticipated negative effects are addressed; and
- The effectiveness of the proposed mitigation measures.

Table 7-1 contains the environmental effects monitoring for the Preferred Alternative.

7.3 Air Quality Compliance Monitoring

Compliance monitoring will be undertaken to confirm that the construction, operation, and maintenance of the Project are carried out in accordance with the mitigation measures and commitments identified in the effects assessment. Compliance monitoring is summarized in **Table 7-1**. The results of compliance monitoring, including details of the effectiveness of mitigation measures and fulfillment of commitments, will be provided to the MECP as per ECA conditions.

Table 7-1. Environmental Effects and Compliance Monitoring for the Preferred Alternative

Evaluation Criteria	Potential Effect	Commitment for Mitigation	Commitment for Monitoring	Compliance Monitoring
Air Quality - Dust	Concentrations of dust contaminants exceeding applicable criteria at discrete receptors.	• Replacement of the south haul ramp with a hard material equivalent to a paved surface. • Enhanced water protocols for paved roadways to achieve 95% control. • Updating and continued implementation of the dust BMPP.	• No additional monitoring required beyond what is included in the Environmental Compliance Approval (ECA).	• Dust monitoring will continue as per condition 13.8 of Waste ECA A032203.
Air Quality – LFG and Combustion Byproducts	No potential effects from LFG and combustion byproducts were identified.	• No mitigation required.	• No additional monitoring required beyond what is included in the ECA.	• Hydrocarbon and VOC monitoring will continue as per condition 13.8 of Waste ECA A032203.
Air Quality - Odour	Concentrations of odour contaminants exceeding benchmark thresholds at discrete receptors.	• Continued implementation of the odour BMPP. • Application of enhanced final cover.	• Adding H2S monitoring to the existing VOC monitoring program as a surrogate for odour.	• No compliance monitoring required.
Air Quality – Blowing Litter	No potential effects from blowing litter were identified.	• Continued implementation of the litter BMPP.	• No monitoring required.	• No compliance monitoring required.
Air Quality – Climate Change	No potential effects from climate change were identified.	• No mitigation required.	• No monitoring required.	• No compliance monitoring required.

8 Air Quality Approvals

In addition to EA approval, the following Air Quality approvals may be required:

- Application for an amendment to the existing Air ECA #6318-CX4NFX to incorporate changes to landfill operations to ensure compliance with requirements under Ontario Regulation 419/05.
- Updates to the dust best management practices plan will need to be made to account for new dust mitigation controls.

9 References

Environment and Climate Change Canada (ECCC)

2018 Scenarios and climate models. https://www.canada.ca/en/environment-climate-change/services/climate-change/canadian-centre-climate-services/basics/scenario-models.html

2024 Air pollutant emissions. https://www.canada.ca/en/environment-climate-change/services/environmental-indicators/air-pollutant-emissions.html

HDR Corporation (HDR)

2024 Transportation Air Quality Existing Conditions Report. Twin Creeks Environmental Centre Landfill Optimization Project Environmental Assessment.

Ontario Ministry of the Environment, Conservation and Parks (MECP)

2023 Ontario Provincial Climate Change Impact Assessment, Technical Report.

RWDI AIR Inc. (RWDI)

2005 Air Quality Impact Assessment. Warwick Landfill Expansion, Environmental Assessment.

2016 Final Report. Twin Creeks Landfill Stie, Air Quality, Odour, and Dust Evaluation. Proposed Increase to Waste Tonnage.

2019 Memorandum. Twin Creeks Landfill Site, Air Quality Assessment of Greenhouse Boiler Impacts.

2025 Air Quality Air Quality Existing Conditions Report. Twin Creeks Environmental Centre Landfill Optimization Project Environmental Assessment.

Waste Management (WM)

2022 Terms of Reference. Twin Creeks Environmental Centre Landfill Optimization Project Environmental Assessment.

WSP Canada Inc. (WSP)

2025 Conceptual Design Report, Twin Creeks Environmental Centre Landfill Optimization Project Environmental Assessment.

World Resources Institute and World Business Council for Sustainable Development

2004 The Greenhouse Gas Protocol, A Corporate Accounting and Reporting Standard

10 Statement of Limitations

This report entitled Air Quality Effects Assessment Report was prepared by RWDI AIR Inc. (“RWDI”) for WM Canada (“Client”). The findings and conclusions presented in this report have been prepared for the Client and are specific to the project described herein (“Project”). The conclusions contained in this report are based on the information available to RWDI when this report was prepared. Because the contents of this report may not reflect the final assumptions and information for the Project or subsequent changes made after the date of this report, RWDI recommends that it be retained by Client during the final stages of the project to verify that the results provided in this report have been correctly interpreted in the final design of the Project.

The conclusions contained in this report have also been made for the specific purpose(s) set out herein. Should the Client or any other third party utilize the report and/or implement the conclusions contained therein for any other purpose or project without the involvement of RWDI, the Client or such third party assumes any and all risk of any and all consequences arising from such use and RWDI accepts no responsibility for any liability, loss, or damage of any kind suffered by Client or any other third party arising therefrom.

Finally, it is imperative that the Client and/or any party relying on the conclusions in this report carefully review the stated assumptions contained herein to understand the different factors which may impact the conclusions provided.

2A

Best Management Practices Plans: Dust, Odour, Litter

REPORT

WASTE MANAGEMENT OF CANADA CORPORATION

WATFORD, ONTARIO

TWIN CREEKS LANDFILL SITE: BEST MANAGMENET PRACTICES PLAN (DUST) – VERSION 5

RWDI #1600984

April 3, 2017

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Attachment A: Example Of WM Dust Training Form
Attachment B: Example Of WM Dust Inspection And Dispatch Form
Attachment C: Example Of WM Dust Complaint Form

1 PURPOSE

In an effort to minimize the potential for off-site dust events for the existing and future operations of the Twin Creeks Landfill site, Waste Management of Canada Corporation (WM) has developed this Best Management Practices Plan that outlines measure that will be taken throughout the life of the landfill. Dusts from solid waste landfills can sometimes be difficult to manage, due to various fugitive sources on site. The most effective method of minimizing the potential is to develop this plan identifying the main sources at the site, outlining the intended target and listing the control methods, implementation times and record keeping procedures. The following sections outline the procedure that WM will implement to control the potential for dust emissions from the site.

2 RESPONSIBILITIES

WM is responsible for ensuring the requirements of this plan. To accomplish this, employees will be trained in this plan, including the deployment, maintenance, monitoring and inspections of equipment and operations are carried out and employee's responsibilities will be designated.

The Site Superintendent is responsible for:

- Providing training to staff
- Providing guidance on dust control measures
- Maintaining this plan
- Maintaining a Dust Control log

3 GENERAL INFORMATION

Potential dust sources were grouped into three general categories:

1) Travelled surfaces (dust generated by vehicles travelling on paved and unpaved haul routes located both on-site and off-site). The dust emissions from vehicles travelling on paved and unpaved surfaces includes emissions from tailpipes, brake wear, and tire wear as well as re-suspension of loose material on the road surfaces;
2) Material handling (dust generated during bulldozing, excavation of soil stockpiles and turning of compost, etc.)
3) Fugitive emissions from dusty loads/trucks entering and exiting the site; and
4) Exposed areas (dust generated by wind erosion of stockpiles, unvegetated areas, etc.).

A number of factors are critical to influencing the amount of dust that is generated from the site. Factors affecting dust emissions include:

- Silt loading on roadways – this refers to the amount of loose material on top of paved and unpaved surfaces
- Traffic volume and speed
- Soil characteristics
- Climatic conditions (wind and precipitation)
- Control measures in place (wind screen, stabilization, wet suppression)
- Frequency of mechanical disturbance

Further details are provided in the Design and Operations Plan for the site. [2]

4 TRAINING

The site superintendent will be responsible for identifying a list of personnel who are trained in dust suppression and control. These individuals will have the responsibility to evaluate dust conditions and implement control actions on an on-going basis. The control actions will include road sweeping, road watering, application of stabilizers to exposed surfaces and directing operations to the extreme weather area. The list of individuals identified will be listed in the Dust log as well as the date when they were trained. The list will be updated at annual intervals. **Attachment A** includes an example of the WM Dust Training Log.

As noted in the Design and Operations Plan, an inclement weather area should be defined and utilized under high and sustained moderate wind events. In general winds gusting to or exceeding 47 kilometres per hour (short term events) indicating a high litter event or sustained (hourly or daily) moderate litter events (33 to 47 kilometres per hour) should be considered as trigger for landfilling in the inclement weather area. WM employees will be trained in the procedure for reviewing and documenting the predicted weather (wind) forecast. At a minimum the Environment Canada Weather Office under the current website of www.weatheroffice.gc.ca. will be checked. If the wind events of heavy or sustained moderate levels are forecasted landfilling for the following day will be planned within the inclement weather area (air space permitting). If heavy wind events occur that are not forecasted the operations will be moved to the inclement weather area (air space permitting). The procedure and training may be updated based on actual working conditions as required.

WM representatives will be trained in determining the appropriate speeds for vehicles travelling within the site. Drivers not obeying the speed limit requirements will be warned. If following one warning, the driver continues non-compliance with speed limits, the driver's employer shall be advised and warned in writing. If the non-compliance continues, the driver shall be barred from the site.

WM representatives will also be trained in the recordkeeping and reporting procedures as required.

5 INSPECTION AND MAINTENANCE PROCEDURES

The site superintendent or individuals that have been identified by the site superintendent will be responsible for monitoring site dust conditions. An inspection log will be completed and entered into the dust log. The following items will be inspected and noted twice daily:

- Evaluating the cleanliness of internal and external paved roads. During particularly adverse conditions, wet sweeping and flushing should be dispatched as outlined in the Design and Operations Plan. [2] Under these conditions, wet sweeping is to be done on all internal paved roads and external main access routes. The external haul route sweeping will be limited to off-peak traffic hours for the safety of the operator. The times of sweeping and the operator should be noted in the log. An individual log can be filled out by the sweeper operator and transferred to the dust log on a weekly basis.
- Monitoring of wind conditions from the on-site weather station to see if a move to the heavy weather area is required.
- Ensure that heavy trucks respect the internal speed limits of 20 km/hr for paved roads, 15 km/hr for surface treated roads and 10 km/hr for on-site haul routes and gravel roads. Corrective action will be taken with drivers that disregard this limit including warnings, informing driver's employers and if necessary barring noncomplying driver's from the site.
- Evaluate dust plumes from passing vehicles. The visible plumes behind vehicles should not be greater than ¼ the vehicle length on any surface area on-site. Watering and/or sweeping of roadways should be ordered when this occurs and should continue until the condition abates. The amount of watering and the time of watering should be noted in the log. The inspections are to be completed twice daily and more frequently during dry periods or if plumes from the truck movements are becoming visible.
- General road maintenance inspections will occur on a weekly basis. These inspections will include the physical conditions of the roads and identify corrective actions where required.

The site superintendent and other identified individuals will routinely monitor the condition of stockpiles and exposed areas to ensure that excessive wind erosion is not taking place. If wind erosion from these sources is noted, additional cover treatment should be applied and noted in the log.

Monitoring for Total Suspended Particulate (TSP) will be done on an on-going basis at three locations around the landfill footprint. Total Suspended Particulate samples will be taken on a six-day interval during the months of October through May and samples will be taken on a three-day interval during the months of June through September. The sampling will be in concurrence with the North American-wide particulate monitoring schedule. The sampling will include the entire year (sampling during 12 months per year).

The monitoring method would comply with the methods specified by USEPA Method IO-2. The 24-hour samples would be collected on standard hi-volume air samplers.

The results will be presented in quarterly summary letters and an annual report. The report will include the data in tabular format with a description of the program, quality assurance documentation, details regarding data recovery, abnormal site conditions, etc. As well, any days when the ambient air quality criterion for TSP was exceeded would be reported to the District MOECC office within two (2) weeks of receiving results, as per the terms defined in Regulation 419. In order to enhance the notification of elevated TSP Levels, WM will copy the Township of Warwick on any future elevated TSP level reporting provided to the MOECC.

In addition, the analysis for airborne metals will be completed for 11 of the collected TSP samples per station (total of 33 metal samples per year). The list of metals that will be examined are Lead, Manganese, Chromium, Cadmium, Nickel.

Attachment B includes an example of the WM Dust Inspection and Dispatch Form.

6 CONTROL METHODS FOR IDENTIDIED SOURCES

For areas frequently disturbed or erodible surfaces (e.g., daily cover area, areas on the mound without vegetation and soil stockpiles), water or an encrusting agent should be applied in order to reduce the amount of fugitive dust emissions. If water is used, the exposed areas should only be moistened. Over watering will increase the leachate production on-site.

If visible plumes behind vehicles are greater than ¼ the vehicle length on any surface area on-site. Watering and/or sweeping of roadways should be ordered when this occurs and should continue until the condition abates. The amount of watering and the time of watering should be noted in the log. This can also be applied to the on-site construction haul routes, however, implemented land visible dust plume not greater than one vehicle length.

Constructing additional berms along the haul route. Placing a berm along the west side of the north/south internal haul route should act to block the wind and thus reduce the effects of the wind on vehicles travelling along the internal haul routes. These berms should be vegetated with trees and shrubs as defined in the Design and Operations plan. Additional uses of other berms and windscreens could prove useful and should be considered where problematic dust conditions persist.

The inclement weather area should be utilized under high and sustained moderate wind events. In general winds gusting to or exceeding 47 kilometres per hour (short term events) indicating a high litter event or sustained (hourly or daily) moderate litter events (33 to 47 kilometres per hour) should be considered as trigger for landfilling in the inclement weather area. At a minimum the Environment Canada Weather Office under the current website of www.weatheroffice.gc.ca. will be checked. If the wind events of heavy or sustained moderate levels are forecasted landfilling for the following day will be planned within the inclement weather area (air space permitting). If heavy wind events occur that are not forecasted the operations will be moved to the inclement weather area (air space permitting). Any grading and levelling activities should be minimized when sustained (hourly or daily) wind speeds are greater than 25 km/h.

Muddy areas identified at the active face will be minimized utilizing the application of "shredded fluff" or other appropriate material. This material minimizes the amount of mud that would normally adhere to the truck upon leaving and being tracked out of the site.

7 SCHEDULE OF IMPLEMENTATION

The following table provides the proposed schedule for implementation of the plan:

Table 7.1: Schedule for Control Methods

Task	Implementation Time Lines
Construction of roadway berms	During construction of the first cell excavation
Implementation of activities defined in Section 5	During Construction of First Cell and On-going until site completion
TSP ambient monitoring	During Construction of First Cell and On-going until site completion

8 RECORD KEEPING

Throughout this document there is reference to a Dust log that will be maintained on site. This log will include notation of the items listed previously as well as any other notes relevant to dust at the site. The log will be kept with the landfill annual report that will contain portioned sections for training, inspection, watering activities, road sweeping log, remediation activities, general notes and the complaint logs. The log will contain notations going back no less than 2 years – once implemented.

From time to time there may be complaints regarding dust from the local residents. There will be individual logs with standard forms for dust complaints (**Attachment C**). Sampling logs will include the following at a minimum:

- Name of complainant
- Time of complaint
- Time that the incident occurred
- Nature of complaint
- Operational details at the time of the complaint
- Wind conditions at the time of the complaint
- Details of any investigation

All complaints will be included in the dust log. On an annual basis, the logs will be reviewed and any unfavourable trends will be examined further to identify corrective actions. These corrective actions will be included in the site annual report.

9 ADDITIONAL DUST MONITORING PROVISIONS

As discussed with stakeholders during the consultation for the annual fill rate increase for the site, the following provisions were made for additional monitoring to be completed under specific conditions. The following notes the agreed to provisions for the additional monitoring. In the event that the provision is triggered, WM will prepare an updated Air Quality Monitoring Plan to layout the specific agreed to monitoring approach at the time the additional monitoring provision is required.

As agreed to with stakeholders, in the event that 2 measured exceedances (trigger), that can be attributed to WM operations, in any quarter (excluding periods when on-site cell construction is occurring) occurs, WM is committing to reviewing the data with the Township. Upon confirmation that the exceedances can be attributed to WM operations, and are not related to cell construction, WM will complete the installation of continuous dust monitors.

If continuous dust monitors are to be installed, WM will work with the Township to update the following documents:

- Air Quality Monitoring Plan – updated for equipment change as well as trigger for shorter duration alerts to be issued to WM as warnings for higher dust levels.
- Best Management Practices Plan (Dust) – to be updated to link dust alerts to dust control initiatives.

10REFERENCES

[1] Ontario Ministry of the Environment: Interim Guide to Estimate and Assess Landfill Air Impacts. Air Resources Branch, October 1992.

[2] Henderson Paddon & Associates Limited: Development and Operations Report Warwick Landfill Expansion Waste Management of Canada Corporation Project #105716. March, 2008.

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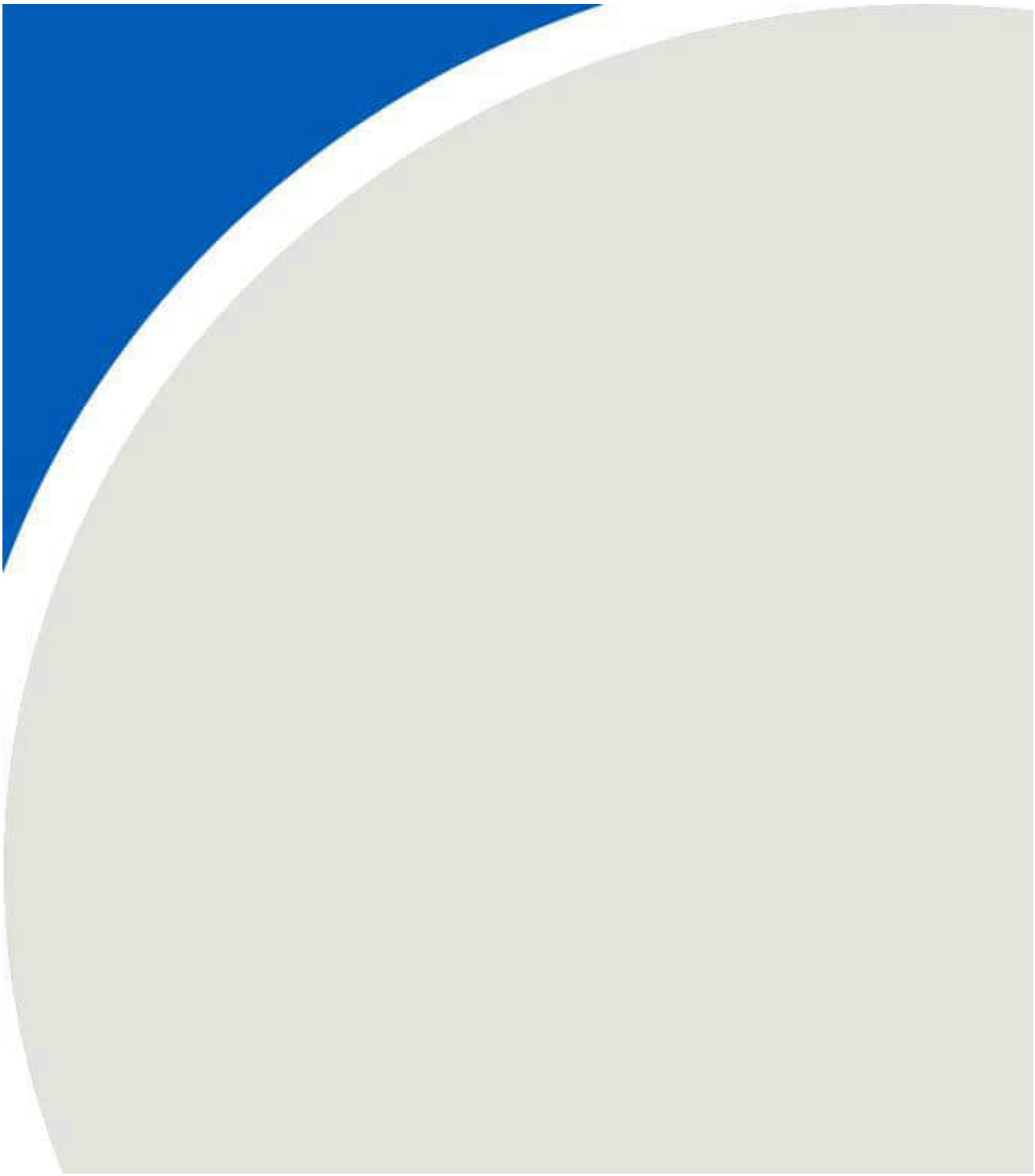
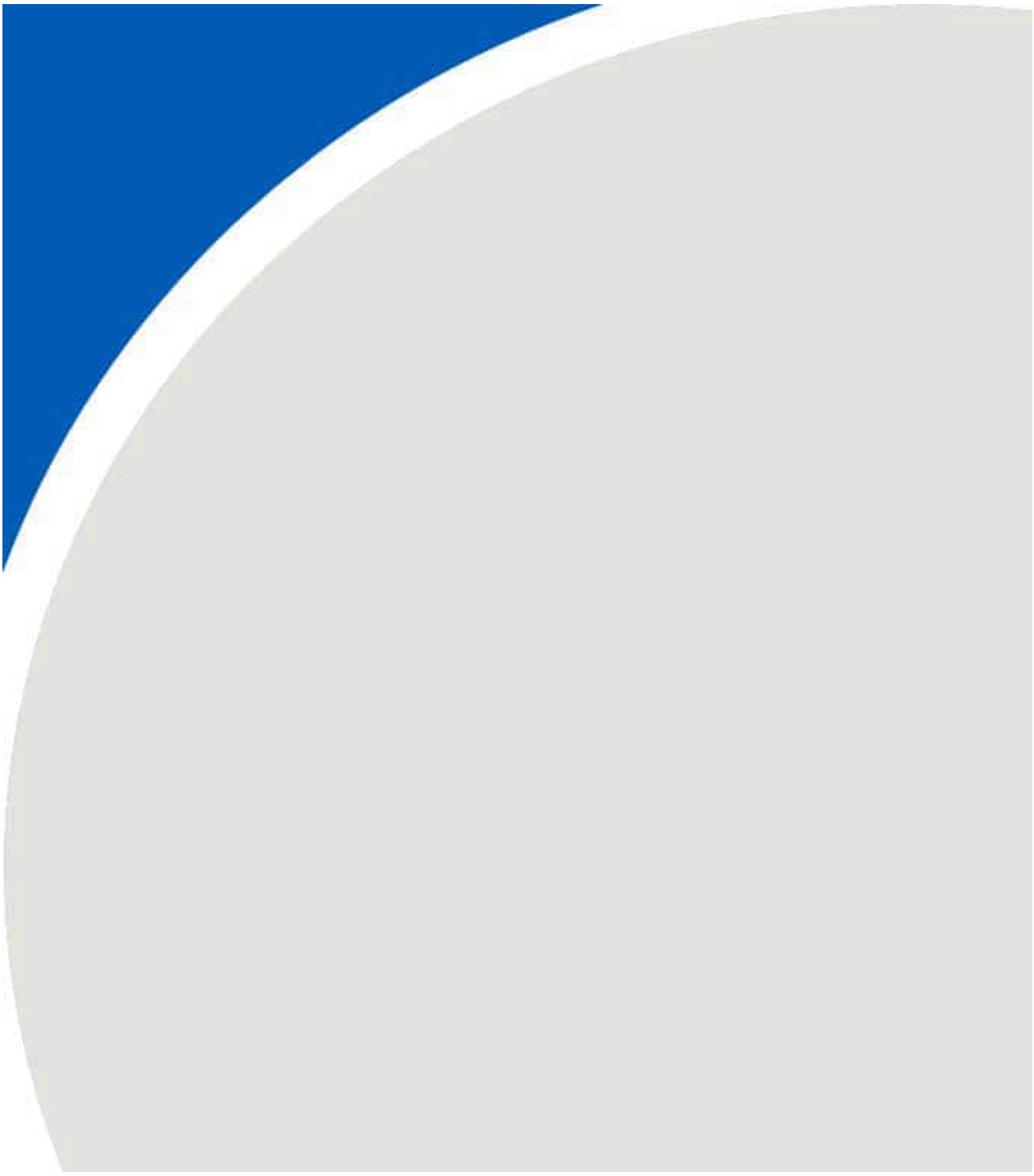
ATTACHMENT A



Warwick Landfill Best Management Plan
Dust Control Training Log

Trained Employee Name	Date of Training	Supervisor Signature

ATTACHMENT B



Warwick Landfill Best Management Plan
Dust Inspection and Dispatch Log

Inspected By: _____ **Inspection Date:** _____

Areas to inspect include: Travelled Surfaces, Material Handling Areas & Exposed Stockpiles

Area Inspected/Date and Time	Visual Observations/Identified Area/Corrective Actions Required	Corrective Action Completed/Date & Time	Additional Control Action Required	Notes
Example: *Site Entrance Roads to Scale House 11/29/2007 @ 10:00am*	*Dirt build-up on roads, visual plume of dust approaching watering criteria* *Initiate road flushing and sweeping* *Include all paved on-site roads*	*Started 11/29/2007 @ 11:00 am with sweeper* *Stopped 11/29/2007 @ 330pm* *Sweeper traveled 200 metre commencing at site entrance*	*No further action at this time*	*none*

ATTACHMENT C

Warwick Landfill Best Management Plan
Dust Complaint Form

WM Personnel:	

Date of Call		Time of Call	
Complainant Name		Complainant Contact Number	
Complainant Address			

Date of Dust Incident		Time of Dust Incident	
Description of Event			

Operations at Time of Incident	
Winds at Time of Incident	
Investigation Results and Corrective Action	

REPORT

WASTE MANAGEMENT OF CANADA CORPORATION

WATFORD, ONTARIO

TWIN CREEKS LANDFILL: BEST MANAGEMENT PRACTICES PLAN (ODOUR) – VERSION 7

RWDI #1600984

April 3, 2017

SUBMITTED TO

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Attachment B: Example of WM Odour Inspection and Dispatch Form
Attachment C: Example of WM Odour Complaint Form
Attachment D: Standard Operating Procedure – Daily Landfill Inspections
Attachment E: Assessment/Decision Flow Chart for Evaluating Odours

1 PURPOSE

An odour is deemed a nuisance if it is detected and considered unpleasant. In an effort to minimize the potential for off-site odour events for the existing and future operations of the Twin Creeks Landfill site, Waste Management of Canada Corporation (WM) has developed this Best Management Practices Plan that outlines measure that will be taken throughout the life of the landfill. Odours from solid waste landfills can occasionally be difficult to manage due to the various fugitive sources on site. The most effective process for minimizing potential odours is:

- to develop this plan identifying the main sources at the site
- outlining the intended target
- listing the control methods, implementation times and record keeping procedures.

The following sections outline the procedure that WM will implement to control the potential for odourous emissions from the site.

2 RESPONSIBILITIES

WM is responsible for ensuring the requirements of this plan. To accomplish this, employees will be trained in this plan, including the deployment, maintenance, monitoring and inspections of equipment and operations and employee responsibilities will be designated.

The Site Superintendent is responsible for:

- Providing training to staff
- Providing guidance on odour control measures
- Maintaining this plan
- Maintaining an Odour Control log

3 GENERAL INFORMATION

Solid waste landfills have the potential to produce odour sources at several locations including the active face and adjacent working area, within the leachate collection system and leachate treatment system and within the waste diversion area. Landfill gas escaping through the daily and interim covers and final cap are also a potential odour source. The active face and adjacent working area are expected to be the dominant odour source at the facility.

Due to this potential, landfill odours have been evaluated for nuisance impacts and this plan identifies methods for minimizing the impacts of site odours.

Each day, prior to landfilling the daily or interim cover is scarred to promote hydraulic conductivity within the landfill. This activity provides an opportunity for landfill gas to be released. The active face will be approximately 3,720 square meters. At the end of each day the top and exposed faces of the cell will be covered with 0.15 metres of daily cover or an alternative cover system.

In addition to odour emissions from the active face, there is a potential for the release of odourous gases from areas that have been covered by interim cover or final cap. The interim cover area will be provided with 0.3 to 0.45 metres of cover graded to promote precipitation run-off. Final cap includes 2.0 metres of material.

The landfill gas collection system will consist initially of horizontal gas collection pipes and finally of vertical collection wells all connected by below ground sub-lateral pipes. The pipes are connected to the main landfill gas collection header pipe. The collection system is designed to achieve a minimum of 70% collection efficiency from the entire site. The collected gas will be sent to up to four (4) landfill gas flares for destruction. As required, the four (4) flares will be progressively installed based on the amount of gas collected from the site. The gas collection and destruction system is critical to the reduction of odours from the site.

Leachate manholes around the existing landfill site are another potential source of odour. To minimize the potential for odour the leachate collection system will be operated under vacuum to prevent fugitive odours from being emitted. The gasses from the leachate system are also destroyed in the flares. The integrity of this system is also critical to controlling nuisance odours.

The waste diversion area (compost area) is also a potential source of nuisance odour. However, if compost is properly processed the potential for nuisance odour is greatly reduced. If, however compost is not processed properly it has the potential to become anaerobic and in turn odourous. The compost area is designed 3,600 m^2 and will operate from Year 1 through 21 of the landfill. The compost area will be removed during the construction and landfilling activities in the final phases of operation.

Alternative cover material for use at the working face for covering material received is included for the WM site. The alternative cover material can consist of a variety of products (in accordance with ECA A032203 Condition 115, other approved alternative cover materials include contaminated soil, wood chips, and auto fluff (ASR)) in addition to the tarps. In the case of tarp material to be placed on the working face, the tarps will be designed for use at landfill sites and will include the following provisions:

a) made of tear resistant, durable material and water resistant;
b) incorporate a system that would be used to either anchor or ballast the tarp down to prevent windlift; and
c) have the ability to provide odour and vapour suppression.

Further details are provided in the Design and Operations Plan for the site. [2] In consultation with the MOECC and various stakeholders, a Standard Operating Procedure (SOP) was developed for the use of alternative cover. The SOP incorporates components of existing regulatory Conditions of the Twin Creeks Landfill Waste ECA, components of the Design & Operations Report [Henderson, Paddon Associates, March 2008] (D&O) and considerations toward the Ministry of the Environment and Climate Change (MOECC) Landfill Standards [MOECC, January 2012] (Landfill Standards), and Ontario Regulation 232/98 (O. Reg. 232). Components of the Operations and Maintenance Manual (OMM, 2008), as well as the Best Management Practices (BMP) for litter, dust, and odour (BMPs, 2007), were also taken into consideration while preparing this SOP. A copy of the SOP is provided in Attachment D.

4 TRAINING

The site superintendent will be responsible for identifying a list of personnel who are trained in the landfill gas collection and flaring system and landfill cap maintenance program. Heavy equipment operators will be trained in proper procedures for daily and interim cover placement as well as use and operation of alternative cover systems and waste load screening procedures as outlined in the Design and Operations plan [2]. This training will include a description of the operating system from the landfill gas collection and destruction system, training on fail-safe features of the equipment, as well as cap maintenance procedures. The list of individuals identified will be listed in the Odour log as well as the date when they were trained. The list will be updated at annual intervals. Attachment A includes an example of the WM Odour Training Log.

Training will be completed outlining the procedures and controls for the poplar plantation with leachate irrigation. The training should involve overview of system operations, control measures, routine inspection requirements, and contingency plans in the event of an upset condition.

In addition, WM personnel will be screened for odour sensitivity using screening kits. WM will be trained on how to administer the tests as well as the frequency of on-going screening. The representatives that best meet the normal range of sensitivity for odours will be utilized to complete the “walkabout” surveys.

Training for WM representatives will also be provided for recordkeeping requirements as outline in the Design & Operations Plan, Environmental Compliance Approvals, etc, as well as the minimum required response time to ensure these requirements are achieved.

For the use of alternative cover systems to be implemented at the site, WM will ensure that proper training is provided to all applicable staff and contractors on the use of the systems, proper techniques for installing and removing, inspection techniques, maintenance of existing systems as well as proper techniques to replace the system in the event that the alternative cover system is beyond repair.

5 INSPECTION AND MAINTENANCE PROCEDURES

The site superintendent or individuals that have been identified by the site superintendent will be responsible for inspecting the landfill gas collection and flaring system to ensure the equipment is running properly. The inspection will include:

- Record of vacuum at points in the collection system particularly at the extremities of the system
- Record of gas flows entering the flares
- Composition of gas entering the flare
- Temperature of the combustion flares

These items will be recorded in a separate logging regime but all anomalies will be noted in the site odour log. The notation will include the time the anomaly was noted, the corrective action taken and the time the corrective measure was implemented. For example, low vacuum, flare temperature low, gas volumes lower or higher than anticipated.

The site superintendent will inspect, oversee the construct and maintain the installation of the horizontal pipes and vertical wells is implemented as presented in the Design & Operations plan for the site to ensure the collection of landfill gas continues with high collection efficiency. [2]

The site superintendent and other identified individuals will routinely monitor areas of the landfill where final cap is installed to ensure that cap erosion or odourous areas can be remediated as soon as possible. The integrity of the cap cover material will be confirmed with a walk about survey on a semi-annual basis.

The “walkabout” survey will consist of a grid survey of the entire landfill mound using a handheld THC analyzer (FID). A portable FID will be used throughout the surveys. The FID will be calibrated using a methane gas standard and zeroed using ultra zero pure air. Measured THC concentrations will be measured as methane. The instrument used will have the following characteristics:

1) A response time of at least 15 seconds;
2) An accuracy of 3% or better; and
3) A minimum detectable limit of 5 ppmv (or lower).

The "walkabout" survey will be completed in a grid like formation gathering data at 7.6 cm or lower (3 inches or lower) above the ground. "Hotspots" or "breakout points" consisting of cracks, fissures, areas of bubbling surface water, or patches of dead (burnt) vegetation on the mound will be visually observed and noted for THC concentrations exceeding 500 ppm (methane). Only readings of 500 ppm or greater should be noted during the instantaneous monitoring survey. The "walkabout" surveys should be completed at winds less than 8 kilometres per hour (5 miles per hour) and during dry conditions (no measurable precipitation for the proceeding 72 hours prior to sampling). In addition, for the instantaneous readings, the surveys should be completed when the ambient temperatures are within 0 to 50 degrees Celsius.

Areas that display THC concentrations of 500 ppm or greater will be considered of concern and will assist WM in defining the potential landfill gas release points that require remedial action.

All THC concentrations measured will be expressed as methane based on the calibration standard used. After the "hotspot" or "breakout points" are fixed, documentation of the corrective actions taken as well as confirmation of adequate actions taken (THC concentration less than 500 ppm) will be presented to the MOE. The "walkabout" survey will include the following:

- Precise locations of all sampling sites on the site map
- Identification of all data obtained in the field measurements
- Documentation of all remedial action

The walkabout surveys are scheduled for completion in the spring and the early fall. The measured areas should include the landfill cover areas as well as the poplar plantation. Additionally, this method will be used to identify otherwise unexplained odour events. Problem areas identified will be repaired as soon as possible and no later than within 2 months of identification. The results of these walkabout surveys, the times they were completed and any remedial actions will each be noted in the site odour log. It is possible that other equivalent or superior methods capable of identifying leaks in the landfill cover exist and these methods would also be acceptable. The walkabout surveys will be performed twice per year or in response to otherwise unexplained odour events. Routine visual inspections of the landfill cap integrity will also occur on a monthly basis to identify possible problem areas

In addition, during the survey of site and during regular inspection periods, detectable odours from the site will be noted and recorded. At a minimum, the odour information will include a description of the odour, time of day (to correspond with wind conditions) and if possible an indication of the main sources contributing to the odour.

The site superintendent and other identified individuals will also routinely monitor the leachate collection and treatment system to ensure that it is operating as designed. This will include a visual survey of any access points (cracks and/or fissures) and soils around access points. Leaking areas can be readily identified by a blackened discolouration and a rotten egg odour. The vacuum in the leachate collection system should be monitored at points roughly every 200 metres on a monthly basis. The vacuum within the leachate collection system will be recorded and all should be negative with respect to ambient conditions. Any anomalies in the system should be noted in the odour log as well together with any corrective actions required. The monitoring of vacuum in the collection system will help maintain the system and will make locating leaks in the system easier. The reduction

of leaks within the system will reduce the amount of fan power required to maintain the system under vacuum. Vacuum should be monitored at several points.

The site superintendent and other identified individuals will also routinely monitor the size of the active working face of the landfill. The size of the working face will be minimized, accounting for traffic at the working face. If for any reason the size of the working face exceeds 3,720 square metres, an explanation will be included in the odour log. The size of the working face must be reduced as quickly as possible should this situation occur.

The site superintendent and other identified individuals will also routinely monitor the compost area. All trucks will be inspected upon entry and any unacceptable waste loads will be either refused or transferred to the landfill operations on-site for disposal. The inspection will be completed on loads that have the tendency to be overly odourous in comparison to normal day-to-day waste. In the event that these loads are received, they should be moved to the landfill and covered upon disposal, Compost material received at the facility must be transferred to windrows by the end of each day. Material in windrows will be inspected daily and signed off on by an operator. The compost operations within the waste diversion area will be operated according to the Ministry of the Environment's "Guidelines for Aerobic Composting Facilities and Compost Use" (November 2004) and as outlined in the Design and Operations Plan [2]. Monitoring for temperature and moisture content within the windrows should be implemented. In the event that waste from the diversion area becomes unacceptable for composting or overly odourous, the material should be removed from this area and landfilled.

Additionally, an annual monitoring program is proposed for volatile organic compounds at the property line during the worst-case, summer, conditions. However, not all odours are the results of VOCs and are therefore not necessarily indicative of proper odour control. This testing will provide on-going supporting evidence that the landfill gas and all potential site odour issues are being properly controlled. This testing includes the upstream and downstream testing for VOCs. Monitoring for VOC's will be conducted through the summer months, with samples to be taken in upwind and downwind pairs, during normal operating hours of the landfill. There would be a total of 5 sample pairs taken between June and September. No more than two (2) samples will be collected in any calendar month. The samples will be 24-hours in duration and compared to their respective Schedule 3 Standards and other guidelines listed in the Ministry document Air Contaminants Benchmarks (ACB) List.

For the use of alternative cover material, in particular the use of tarp material, WM representatives and/or applicable contractors will complete the following inspections and maintenance activities:

a) Visual monitoring of the tarps to be completed on a daily basis as the tarp is removed in the morning, prior to landfilling activities;
b) Inspections for wear and tears as well as other evidence of other damage and longterm use; and
c) Proper repair techniques to ensure that wears and tears can be corrected prior to the next use or provisions to replace the tarp with proper working tarp.

Attachment B includes an example of the WM Odour Inspection and Dispatch Form. In addition, to aid WM field personnel completing the daily inspections, an assessment/decision flow chart for evaluating odours, and where necessary correcting odours, at the TCLS is included in Attachment E.

6 CONTROL METHODS FOR IDENTIFIED SOURCES

The odour control measures relate largely to on-going monitoring and maintenance that has been identified in the previous section. However, there are a number of specific details that are listed below:

- Progressively expand and activate the landfill gas collection and flaring system (total of up to four (4) flares proposed) to minimize the amount of odourous landfill gas that escapes through the mound. The systems should be constructed in a manner to ensure that a minimum of 70% collection efficiency is achieved on a regular basis.

- Regular inspections of the landfill gas collection and flaring system to ensure the equipment is running properly at a minimum should include the following: record of vacuum at points in the collection system particularly at the extremities of the system; record of gas flows entering the flares; composition of gas entering the flare; and temperature of the combustion flares.

- Regular repairs to the covered landfill areas (existing and future landfill areas) based on identifying any fissures, cracks or erosion of the soil cover that would allow for unmitigated landfill gas to escape directly to the atmosphere. These areas will be identified in the "walkabout" survey as described above. The areas requiring repair should be covered with clay, compacted and then covered with topsoil.

- Routinely monitor the size of the active working face of the landfill. The size of the working face will be minimized, accounting for traffic at the working face. If for any reason the size of the working face exceeds 3,720 square metres, an explanation will be included in the odour log. The size of the working face must be reduced as quickly as possible should this situation occur.

- Regular inspection and monitoring of temperature and moisture of the compost windrows. In the event that waste from the diversion area becomes unacceptable for composting or overly odourous, the material should be removed from this area and landfilled.

- Cap completed cells as quickly as possible with final cover to minimize odourous emissions.

- For the use of alternative daily cover systems, the following operational measures will be employed to prevent odour issues arising:

    - Alternative cover systems will be used in a similar fashion to daily cover practices. The alternative cover system will be removed during the next business day during normal landfill periods. Alternative cover system(s) will not be employed for interim or final cover areas.

    - WM will continue to screen incoming loads to identify highly odourous loads. In the case of highly odourous loads, cover material (consisting of soil or low odour waster material) should be immediately applied. The use of alternative daily cover techniques should only be used for loads or areas where waste is not identified as being highly odourous or can be applied to areas with higher odour loads provided that the cover material is first applied to prevent odours from the site.

- During the removal of the alternative daily cover, operators will be trained and instructed to identify times when odours are strong from the waste under the covers. In this case, cover material should be immediately applied as the alternative cover is removed to prevent odours from occurring. WM will keep a stockpile of cover material at the active face to ensure it is readily available for instances where strong odours are detected during the removal of the alternative daily cover system.

Although new waste can have odours, it typically is not the source of significant odours. Once landfilled, the level of the odours and subsequent degree to which it is perceived is directly related to the maintenance of the site. If the additional mitigations measures (as listed above) are implemented along with the proposed monitoring recommendations, the potential for off-site impacts are significantly reduced. The potential for off-site odours to be detectable at nearby residences is always possible and depends on a variety of conditions including meteorological conditions, site maintenance, and possible upset conditions (i.e., landfill gas flare shutting down, etc.). To control this potential upset condition a flame out indicator will be installed with an automatic shut-off to prevent landfill gas from flowing though the collection system during an upset condition.

7 SCHEDULE OF IMPLEMENATION

The following table provides the proposed schedule for implementation of the plan:

Table 7.1: Schedule for Control Methods

Task	Implementation Time Lines
Installation of Landfill Gas Collection System	The main header pipe will be installed in advance of landfilling operations. During landfilling, the horizontal gas collection system would be installed as per the Design & Operations plan. The horizontal collectors will continue to be installed at approximately 12 metre lifts during each phase of the landfill. After capping of a phase, the vertical well system would be installed. These activities will be on-going until site completion.
Installation of Landfill Gas Flares	Installation of the flares, landfill gas building, blowers and main header pipes will likely be in advance of landfill operations. The timing for when the flares will be initiated is dependant on the amount of gas generated from the waste. During initial stages of site preparation, as gas volumes will be low, WM will initiate the flares and blowers once the gas volumes have reached the lowest turndown capacity of the blowers. This may be expedited by placement of interim lower capacity blowers being installed initially and replaced with the first permanent blower once gas volumes increase. The timing for the second and third flares will be based on gas production over the lifespan of the landfill.
Leachate Collection Systems under vacuum and routed to the landfill gas flares	During the initial construction of the landfill gas collection system and on-going during the phases of the landfill life.
Ambient VOC Monitoring	Annual sampling program to occur during the summer months with a total of five (5) samples upwind and five (5) samples downwind.
Total Hydrocarbon Surveys	Total hydrocarbon surveys will be completed annually during the spring and fall seasons or if unexplained odours events persist. Any identified areas should be repaired as soon as possible and no later than within two (2) months
Monitoring of Incoming Odours Loads	Each load should be check for excessive odour upon receipt of the waste. If a waste shipment is deemed to be highly odourous it will be handled in a fashion to mitigate control the odours (ie: cover immediately)

Task	Implementation Time Lines
Alternative Daily Cover Material Use	Alternative daily cover systems will be limited to use on the daily working area(s) and will be employed in a similar fashion to traditional daily cover activities. Alternative cover system(s) will not be employed on interim or final cover area(s). Each load should be checked for excessive odour upon receipt of the waste. If a waste shipment is deemed to be highly odourous it will be handled in a fashion to mitigate control the odours (ie: cover material immediately applied). Alternative Daily Cover systems can be employed on waste material not identified as being highly odourous or on material that was identified as being odourous provided cover material is first applied. Daily Inspections of the alternative cover material will occur each morning to ensure that there are no wears or tears or other concerns with the cover system that would prevent the systems from its ability to prevent odour and vapour suppression. Each business day morning when removing the Alternative Cover Material, the operation must assess the odours from the waste and determine whether or not strong odours are perceived from the waste. If strong odours are detected, WM will apply cover material to the waste area. WM will ensure that a supply of suitable cover material is readily available for use at the working face each business day during the alternative cover material removal period in case strong odours are detected. Five times per year, during the summer, WM will complete an odour survey as the tarp is removed. The survey will be completed on a Monday following a weekend and will be completed by a trained employee, screened for odour sensitivity.

8 RECORD KEEPING

Throughout this document there is reference to an Odour log that will be maintained on site. This log will include notation of the items listed previously as well as any other notes relevant to odour at the site. The log will be three-ringed binder that will contain portioned sections for training, inspection, remediation activities, general notes and the complaint log. The odour log will contain all odour training, inspection, dispatch and complaint records for the previous 2 years.

From time to time there may be complaints regarding odour from the local residents. There will be individual logs with standard forms for odour complaints (Attachment C). Sampling logs will include the following at a minimum:

- Name of complainant
- Time of complaint
- Time that the incident occurred
- Nature of complaint
- Operational details at the time of the complaint
- Wind conditions at the time of the complaint
- Details of any investigation

All complaints will be included in the odour log. On an annual basis, the logs will be reviewed and any unfavourable trends will be examined further to identify corrective actions. These corrective actions will be included in the site annual report.

9 REFERENCES

[1] Ontario Ministry of the Environment. Interim Guide to Estimate and Assess Landfill Air Impacts. Air Resources Branch, October 1992.

[2] Henderson Paddon & Associates Limited: Development and Operations Report Warwick Landfill Expansion Waste Management of Canada Corporation Project #105716. March, 2008.

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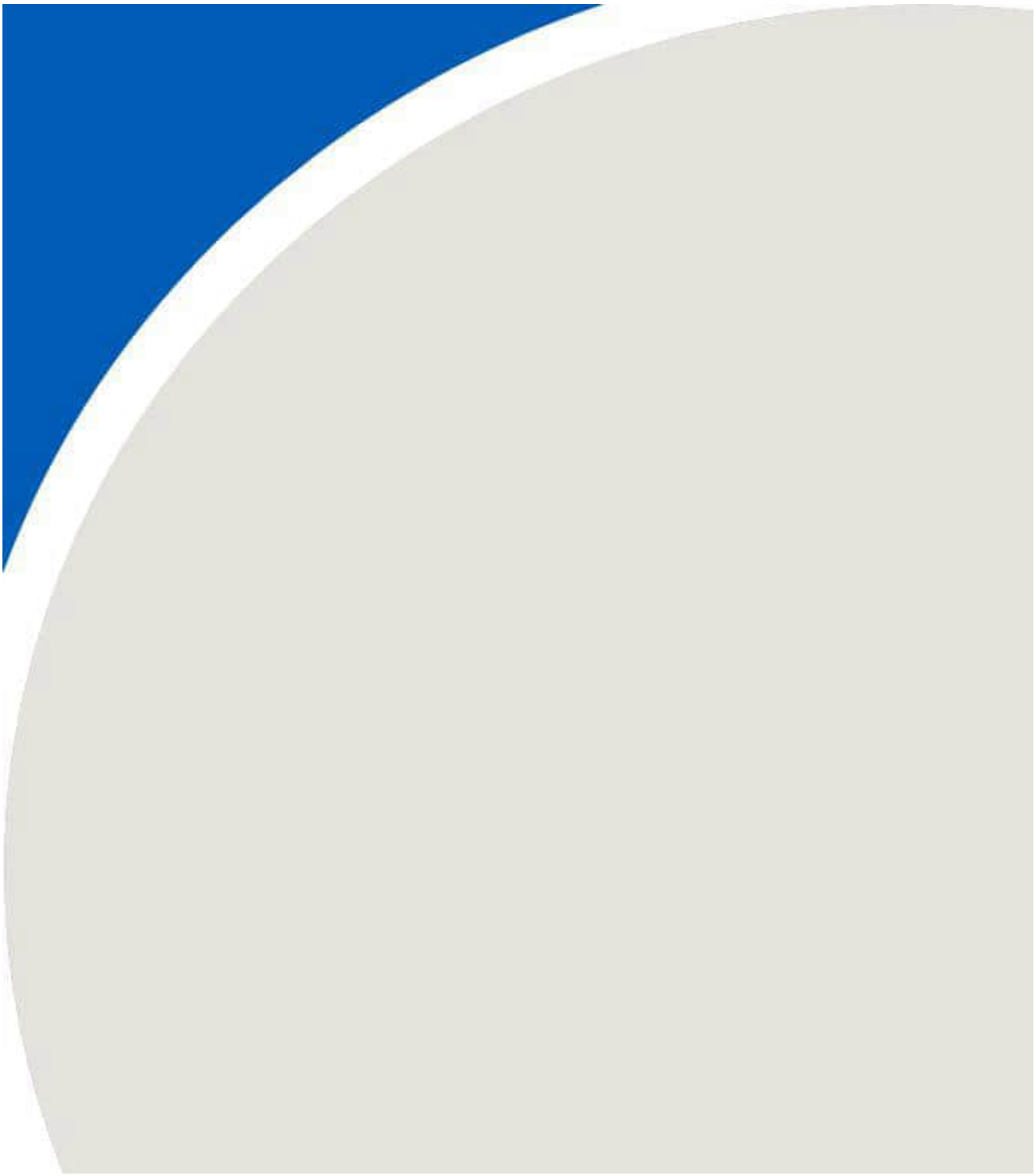
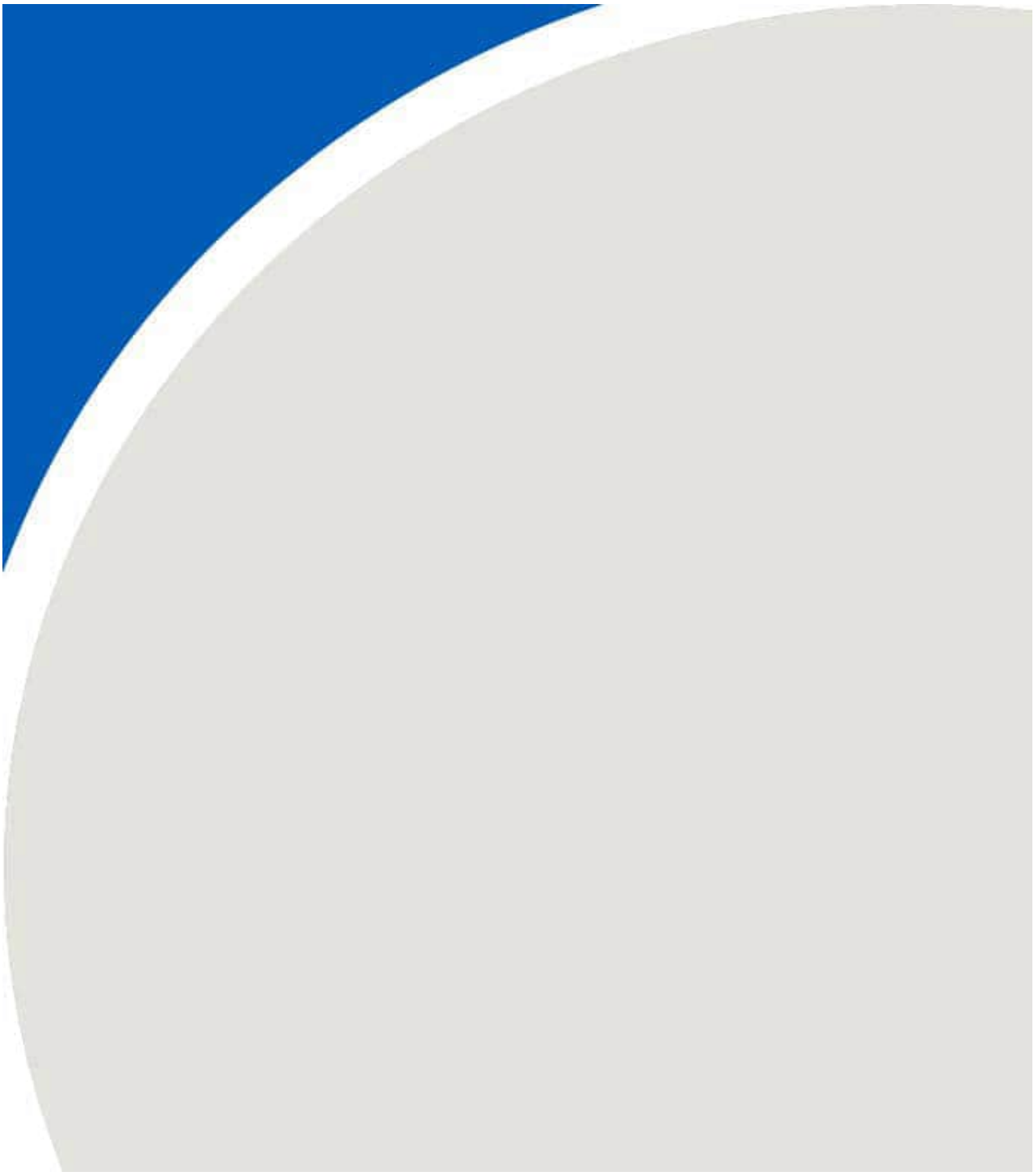
ATTACHMENT A



Warwick Landfill Best Management Plan
Odour Control Training Log

Trained Employee Name	Date of Training	Supervisor Signature

ATTACHMENT B



Warwick Landfill Best Management Plan
Odour Inspection and Dispatch Log

Inspected By: _____ **Inspection Date:** _____

Areas to inspect include: Active Face & Working Area, Interim & Final Cap, Gas Collection System & Flares, Waste Diversion Area (including compost area) and poplar forest irrigation system

Area Inspected/Date and Time	Quality / Characteristic of Odour	Source Identified and Distance Downwind Odours are Detectable	Corrective Action to be Complete?	Notes
Example *Leachate Collection System* *2007/11/29 @ 10:30am*	*Strong odour, smells like rotten eggs*	*SW corner of Cell 1* *Detectable 20 metres from source* No detectable off-site	*Replace leaking piping in collection system* *Action completed within 20 minutes of notable odour*	*Once repair complete, odour survey to ensure corrected*

ATTACHMENT C

Warwick Landfill Best Management Plan
Odour Complaint Form

WM Personnel:	

Date of Call		Time of Call	
Complainant Name		Complainant Contact Number	
Complainant Address			

Date of Odour Incident		Time of Odour Incident	
Description of Event			

Operations at Time of Incident	
Winds at Time of Incident	
Investigation Results and Corrective Action	

ATTACHMENT D

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Twin Creeks Landfill

Township of Warwick, Ontario

Final Report

Standard Operating Procedure – Daily Landfill Inspections

RWDI # 1501190, 3000
December 5, 2015

SUBMITTED TO

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Appendix A: Daily Landfill Inspection Form

1. BACKGROUND

The Twin Creeks Landfill is a solid, non-hazardous waste landfill that contains an existing landfill (Existing Site) and an area approved for expansion (Expansion Site). The Twin Creeks Landfill is located on Part of Lots 19 and 20, Concession 3, South of Egremont Road (SER) and Part of Lots 20 to 22, Concession 4 SER, in the Township of Warwick, County of Lambton, Ontario (Site). The property occupies an area of 301 ha with 101.8 ha licensed for landfilling.

The Site operates in conformance with the following Ministry of Environment and Climate Change (MOECC) documents.

- Environmental Compliance Approval (ECA) No. A032203, dated December 13, 2011, and amended to January 26, 2015 (Waste ECA).
- ECA for an Industrial Sewage Works No. 3506-7M5PU3, dated July 9, 2009, and amended to February 20, 2013 (Sewage ECA).
- Amended ECA for Air No. 4365-7VXJ5G, dated November 10, 2009 (Air ECA).
- Amended Permit To Take Water (PTTW) No. 4430-8PLMKV, dated January 17, 2012.

Historically, landfill operations have not adversely affected local surface water and groundwater resources. To continue to maintain good operational measures, which are implemented to protect surrounding water resources and minimize off-Site environmental and human impacts, this document will focus on the Standard Operating Procedure (SOP) for daily landfill inspections, in accordance with Condition 9.4 of the Waste ECA.

This SOP incorporates components of existing regulatory Conditions of the Twin Creeks Landfill Waste ECA, components of the *Design & Operations Reports* [Henderson, Paddon Associates, March 2008], (D&O) and considerations toward the Ministry of the Environment and Climate Change (MOECC) *Landfill Standards* [MOECC, January 2012] (Landfill Standards), and Ontario Regulation 232/98 (O. Reg. 232). Components of the *Operations and Maintenance Manual* (OMM, 2008), as well as the Best Management Practices (BMP) for litter, dust, and odour (BMPs, 2007), were also taken into consideration while preparing this SOP.

2. DAILY INSPECTION DEFINITION

2.1 General Regulatory Definition

Section 6 of the Landfill Standards and Section 20 of O. Reg. 232 require that daily operational records be completed to assess the effectiveness and efficiency of Site design and operation. The records of operational activities can be utilized to evaluate the effects or relationships to nuisances, environmental impacts, and any public complaints. Documentation of landfill activities are incorporated into the annual operations report and can assist in planning future site operations. Section 20 of O. Reg. 232 describes the requirement of daily record keeping: "*The owner and operator of a landfilling site shall ensure that daily records of site operations are made during the operation of the site and that the records are retained for at least two years after they are made.*"

2.2 Site Specific Definition

Condition 9.3 and 9.4 of the Waste ECA detail the specific Site requirements for daily inspections.

Condition 9.3 denotes: "*An inspection of the entire Site and all equipment on the Site shall be conducted each day the Site is in operation to ensure that the site is being operated in compliance with this ECA. Any deficiencies discovered as a result of the inspection shall be remedied immediately, including temporarily ceasing operations at the Site if needed.*"

Condition 9.4 denotes: "*A record of the inspections shall be kept in a daily log book or a dedicated electronic file that includes:*

i. the name and signature of person that conducted the inspection;
ii. the date and time of the inspection;
iii. the list of any deficiencies discovered;
iv. the recommendations for remedial action; and
v. the date, time and description of actions taken."

In addition to the above-noted general regulatory and specific Site requirements, the SOP for Daily Inspections incorporates components of the best management practices plan (BMPs) for dust, litter, and odour. Inspection forms have been prepared under each of the BMPs for the Twin Creeks Landfill and are included in the aforementioned BMPS, for reference.

3. COMPONENTS OF THE DAILY INSPECTION

3.1 General

The daily inspection entails making observations on the following activities at the Site, and considers the requirements of Condition 9.3 and 9.4 of the Waste ECA, as well as the BMPs for litter, dust, and odour, the O&M, D&O, Landfill Standards, and O. Reg. 232. The Daily Inspection form that WM is to use, in accordance with this SOP, is attached as **Appendix A**.

In general, the Daily Inspection Form addresses the following key items.

1. Name of inspector and date of inspection
2. Litter
3. Dust
4. Odour
5. Daily Cover Integrity
6. Surface Water Management
7. Waste Cap Integrity

3.1.1 Incoming Waste – Scale Records

Section 5.20 of the O&M lists the records required to be maintained at the scale house as it relates to incoming wastes. Observations are made on a daily basis as it relates to the following items.

- Waste type
- Source information
- Date and time of arrival
- Hauler information
- Quantities imported
- Area of disposal operations
- Testing results (i.e. contaminated soil tests completed on a quarterly basis)
- Documentation for non-hazardous industrial wastes
- Date and quantity of leachate removed
- Record of waste rejection and reasons for rejection (in accordance with Condition 9.5 of the Waste ECA)

Waste screening and inspection controls are provided in greater detail within Section 7.5 of the D&O.

3.1.2 Litter, Dust, and Odour Inspections

3.1.2.1 Litter

On a daily basis, visual observations are completed in and around the landfill property to assess the significance of windblown litter. Portable litter fences may be moved to account for wind direction and speed. The portable litter fences should be inspected daily for their overall condition. Areas of the litter fence requiring repair should be noted in the inspection logs and repair records should also be included in the inspection log on the date the repairs took place. Litter pickup for windblown litter beyond the waste tipping/work face should be completed as needed and recorded daily. More details with respect to litter inspections and control measures are provided in the Litter BMP (RWDI, 2007).

3.1.2.2 Dust

Dust inspections will also be completed on a daily basis. Visual observations should be made with respect to the size of dust clouding behind waste hauler trucks and/or waste heavy equipment. Dust inspections rely on the observation of dust cloud formation, as well as cursory inspections of road conditions whereby the accumulation of mud, if not removed from paved surfaces for instance, will eventually dry and turn into dust. Watering of internal roads may be required based on dust accumulation observations. More details with respect to dust inspection and control measures are provided in the Dust BMP (RWDI, 2007).

3.1.2.3 Odour

In accordance with the Odour BMP (RWDI, 2007), odours are assessed at the landfill property boundaries on a routine basis (note not required to be daily). To assess the efficiency of daily cover materials, an odour inspection should be completed in the morning prior to removing the daily cover, and immediately after daily cover removal. Additionally, an odour assessment may be completed during operation to evaluate odours at the landfill boundaries while waste is being deposited at the landfill. More details with respect to odour inspection and control measures are provided in the Odour BMP (RWDI, 2007).

3.1.3 Daily Cover Inspection

The Standard Operating Procedure for Daily Cover (SOP for Daily Cover, RWDI 2015) should be referenced for inspection and maintenance of daily cover materials. In general, daily inspections will include the observation of the condition of daily cover materials. The inspections are completed while the cover materials are being placed, in accordance with the SOP for Daily Cover. The Daily Inspection Form will include observations made as to the type and area of coverage of the daily cover, as well as the thickness of the cover materials placed, other than tarpaulin.

3.1.4 Machinery, Equipment, and Diesel Tank

Heavy equipment used to manage the waste at the Site should be inspected on a daily basis, prior to startup/during startup every day, as well as at the end of the day at shut down. The main focus of the inspection is such that observations are made to whether or not any fluids are leaking from the equipment (i.e. hydraulic fluids, brake fluid, etc.). Repairs should be conducted on any equipment that is noted to be leaking significant amounts of mechanical fluids prior to its usage for operations outside of the waste footprint. Repair records should be maintained on file.

Various diesel tanks are located around the Site for the equipment being used to manage incoming waste, as well as machinery that is used to manage cover materials such as soil. Section 5.16.1 of the O&M describes the daily inspection requirements for the diesel aboveground storage tanks (ASTs). A suggested inspection form for the ASTs at the site is also presented as Table 3.6 in the O&M. Similar to this SOP for Daily Inspections, the O&M is a living document, which is reviewd annually, and updated, as necessary such that the Site operates as effectively as possible.

4. DAILY INSPECTION FORM

The Daily Inspection Form is utilized as a living document, which records daily observations at the landfill. Similar to the Monthly Inspection Form, the Daily Inspection Form lists several items to inspect and make note whether or not any specific items require further attention, or if an item is in good condition/repair or does not require further action. Actions taken, if any, are also recorded on the Daily Inspection Form. A copy of the Daily Inspection Form is attached for reference.

5. REVISIONS AND TRAINING

This document is considered a live document and may be subject to changes in the future such that continuous improvements can be made with respect to performing daily inspections. This SOP for daily inspections will be reviewed on a biennially basis, or updated intermittently in consideration of any significant changes to operations. Routine training (i.e. annually) by WM management should be issue to individuals that complete capping activities, such that those individuals are reminded of the requirements of this SOP, as amended from time to time.

6. CLOSURE

We trust that this Standard Operating Procedure for performing Daily Inspections is sufficient for your requirements. Please do not hesitate to contact us with any questions you may have.

Sincerely,

RWDI AIR Inc.

Philippe E. Janisse, B.Sc., P.Geo.
Senior Specialist – Geoscience

Brent J. Langille, B.Sc., P.Geo.
Senior Consultant / Associate

DAILY LANDFILL INSPECTION FORM (LM-07-F1)

Facility Name/Address: **TWIN CREEKS LANDFILL – 5768 Nauvoo Rd, RR #4, Watford, Ontario, N0M 2S0**			
Date:			Time:
Performed By:			Signature:
Weather	Temperature:		Wind (Direction):
Site Conditions:			
	Yes	No	Comments
LITTER			
Site entrance free of significant liter			
Haul roads free of significant liter			
Ditches/Ponds are free of significant liter			
Portable litter fence free of significant liter			
Permeant litter fences free of significant litter			
Waste drop-off area free of significant litter			
Maintenance yard free of significant litter			
DUST			
Asphalt haul roads free of significant mud/dirt			
Gravel/clay haul roads not causing dust			
ODOUR			
Odour not present outside of landfill foot-print			
Working face kept to a minimum (1,100 m^2)			
Proper compaction of waste taking place			
DAILY COVER			
Amount & type of daily cover placed	NA	NA	___Soil, ___Cont. Soil, ___ASR, ___Tarp, ___Chips
Thickness of Daily cover $\geq$ 150 mm			Tarp thickness does not need to be measured
Daily cover, fully covering waste			
Daily cover reused from previous day			
SURFACE WATER MANAGEMENT			
Daily/intermediate cover able to shed water			
Drainage ditches able to adequately flow water			
Drainage culverts not plugged with debris and can flow water			
No excessively silty water flowing into ponds			
WASTE CAP INTEGRITY			
No abnormal gas/liquid discharges through cap			
No presence of leachate seeps through cap			
No erosion rills showing exposed waste			
Vegetation – green and healthy			

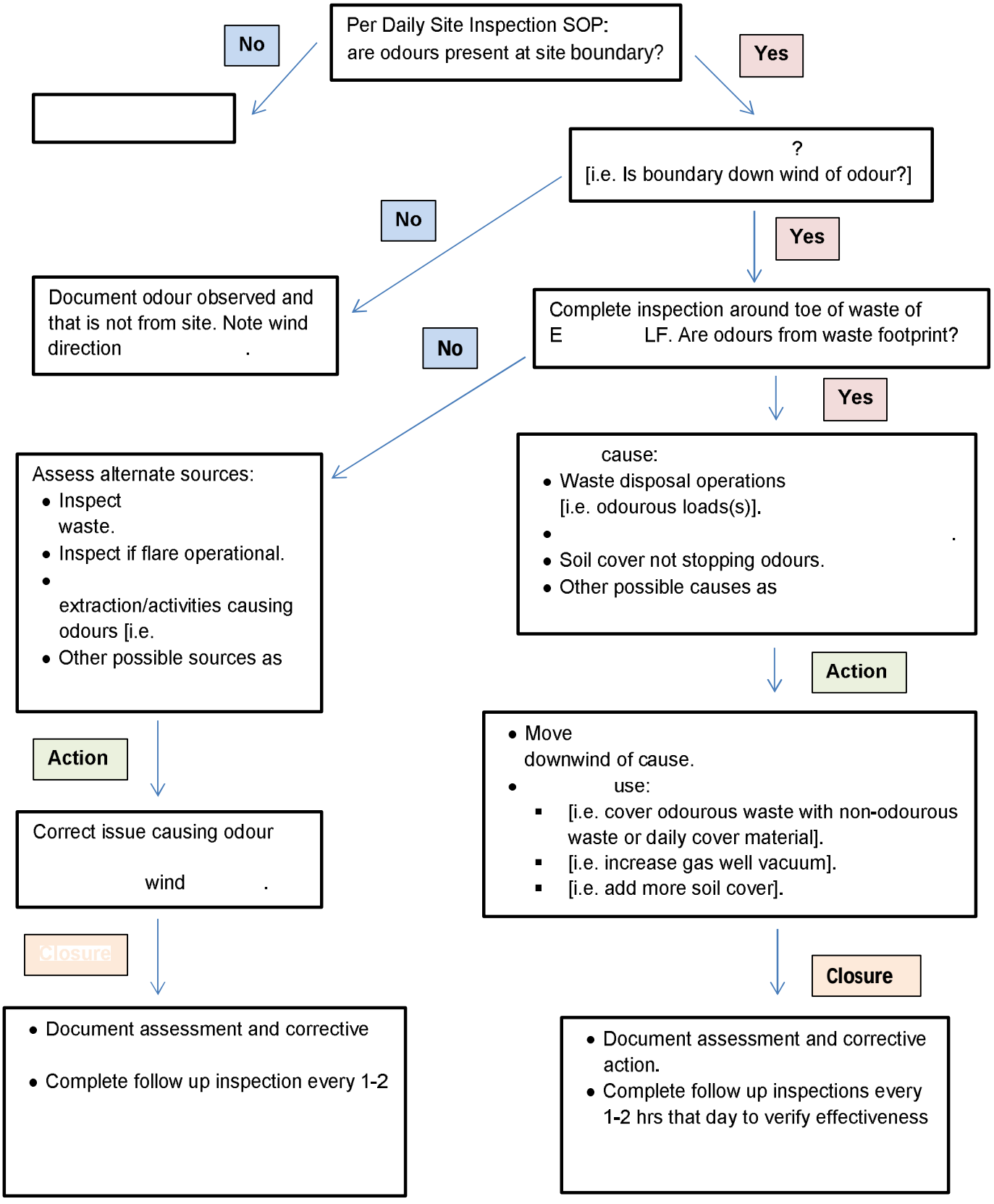
Equipment on Site (Brief Comment of any Construction / Site Maintenance taking place):

Deficiencies/Observations Noted:	**Date / Time / Deficiencies Reported to WM Management**

ATTACHMENT E

TWIN CREEKS LANDFILL

ODOUR ASSESSMENT



REPORT

BEST MANAGEMENT PRACTICES PLAN (LITTER) WARWICK LANDFILL WATFORD, ON

Project Number: #W07-5191A **December 11, 2007**

SUBMITTED TO: **Mr. Wayne Jenken**
Waste Management of Canada Corporation
Warwick Landfill
8039 Zion Line, RR#4
Watford, ON N0M 2S0

SUBMITTED BY: **RWDI AIR Inc.**
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Project Director: John DeYoe, B.A., d.E.T.

Companion studies: Best Management Practices Plan (Dust)
Best Management Practices Plan (Odour)

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ATTACHMENT A: Example of WM Litter Training Form
ATTACHMENT B: Example of WM Litter Inspection and Dispatch Form
ATTACHMENT C: Example of WM Litter Complaint Form

1. PURPOSE

Wind-blown litter has the potential to cause a nuisance at nearby residences. The Interim Waste Authority (IWA) concluded that wind blown litter has a maximum potential travel distance of 1 km. Approximately 50% of escaping litter goes beyond 500 m[1]. The IWA classified the zone from 0 to 500m as medium impact, and the zone from 500 to 1000 m as low impact. RWDI's experience is that this represents a reasonable classification.

In an effort to minimize the potential for litter events for the existing and future operations of the Warwick Landfill site, Waste Management of Canada Corporation (WMCC) has developed this Best Management Practices Plan outlining measure that will be taken throughout the life of the landfill. As litter events from solid waste landfills are sometimes difficult to manage, due to weather condition variability, this plan identifies the control methods, implantation times and record keeping procedures for minimizing this potential nuisance. The following sections outline the procedure that WMCC will implement to control blowing litter events and site and adjacent property cleanups.

2. RESPONSIBILITIES

WMCC is responsible for ensuring the requirements of this plan. To accomplish this employees will be trained in this plan, including the deployment, maintenance, monitoring and inspections of equipment and operations and employee responsibilities will be designated.

The Site Superintendent, is responsible for:

- Providing training to staff
- Providing guidance on litter control measures
- Maintaining this plan
- Maintaining the Litter Control log

3. GENERAL INFORMATION

In the operation of the Warwick Landfill, it is important to minimize any adverse nuisance impacts on surrounding lands. A potential nuisance created by the landfill is blowing litter, which may be transported off-site during events with above average wind speeds. Although it is not feasible to completely eliminate blowing litter, litter can be reduced significantly with proper control practices. The zones of impacts are summarized in Table 2.1.

Table 2.1: Zones of Impact for Blowing Litter

Distance from Landfill Parameter	Finding	Impact Category
0 to 500 m	50% of escaping litter retained	Medium
500 to 1,000 m	Remaining 50% retained	Low
Beyond 1,000 m	Very little escapes beyond this distance	None

In a previous study, RWDI conducted wind tunnel tests on actual samples of residential and commercial waste to determine the threshold speed for wind-blown litter. The threshold speed was found to be approximately 22 km/h (measured at 2.0 m above the surface). Further characterization of the amount of blowing litter as a function of wind speed is summarized in Table 2.2.

Table 2.2: Summary of Threshold Speeds for Blowing Litter

Wind Speed Range*	Litter Description	Impact Category
0 to 22 km/h	No blowing litter	None
22 to 33 km/h	Newsprint, tissues, paper towels and some light bond paper	Light
33 to 47 km/h	All of the above plus plastic bags, small boxes, small cardboard tubes, paper bags and plastic sheets	Moderate
Above 47 km/h	All the above plus extensive heavy bond paper	Heavy

Notes: * Wind speeds are based on a measurement height of 2.0 m above grade

Another potential source of litter is from trucks coming and going from the site. Trucks should ensure that loads are secure prior to arriving at the site as well as ensure that the loads have been completely cleared of the material to avoid litter escaping from the vehicles when leaving.

Standard landfill practices include applying soil cover to the active tipping area at the end of each working day and continuously moving the compactor over new waste throughout the day. This practice is intended to minimize blowing litter after hours. As a result, blowing litter will primarily be restricted to the hours of operation, which are 7:00 am to 7:00 pm Monday to Saturday. However, it is anticipated that Saturday would be a somewhat shortened day for the most part since Saturday work at the transfer stations consists mainly of clean up as opposed to a full receiving day.

4. TRAINING

The site superintendent will be responsible for identifying a list of personnel who are trained in the placement of temporary litter screens. This training will include a description of default positions for the litter screen around the south and east sides of the working face (i.e., downwind for north and west winds). The staff will be able to identify conditions that necessitate the moving of screens to down-wind locations. This will be done when the wind blows from directions other than west or north at speeds greater than 22 km/hr, or, more practically, when papers are observed to be becoming airborne. The list of individuals identified to place the screens will be listed in the Litter log as well as the date when they were trained. This list will be updated at annual intervals. Attachment A includes an example of the WM Litter Training Log.

As noted in the Design and Operations Plan, an inclement weather area should be defined and utilized under high and sustained moderate wind events. In general winds gusting to or exceeding 47 kilometres per hour (short term events) indicating a high litter event or sustained (hourly or daily) moderate litter events (33 to 47 kilometres per hour) should be considered as trigger for landfilling in the inclement weather area. WM employees will be trained in the procedure for reviewing and documenting the predicted weather (wind) forecast. At a minimum the Environment Canada Weather Office under the current website of www.weatheroffice.gc.ca. will be checked. If the wind events of heavy or sustained moderate levels are forecasted landfilling for the following day will be planned within the inclement weather area (air space permitting). If heavy wind events occur that are not forecasted the operations will be moved to the inclement weather area (air space permitting). The procedure and training may be updated based on actual working conditions as required.

WM will also provide training to representatives regarding the recordkeeping requirements as well as the frequency of reporting.

5. INSPECTION AND MAINTENANCE PROCEDURES

For the permanent litter fences that will be installed, the site superintendent will inspect the perimeter litter fences on a weekly basis and enter the results in the litter log. The permanent litter fences will not contain holes greater than 6 inches in diameter. If required, repairs to litter fencing will be ordered and implemented within three weeks. All repairs will be noted in the litter log as well as the date that they are implemented.

Portable screens, located around the working face, will be inspected on an on-going basis. If the screens are improperly placed the superintendent will instruct trained personnel to move the screens. The site superintendent will also note, in the litter log, if the screens were placed inappropriately.

The site superintendent and other identified individuals will routinely monitor litter around the site and note inspections in the litter log. Areas of excessive litter build-up will be noted in the log and a crew will be dispatched within 3 working days to clean the area. This will help to minimize the amount of litter that may leave the site if not captured by the portable or permanent litter fences.

Trucks entering and exiting the site should be inspected for potential for load to release litter from the vehicle movements.

Attachment B includes examples of the WM Litter Inspection and Dispatch Form.

6. CONTROL METHODS FOR IDENTIFIED SOURCES

Light blowing litter conditions have the potential to occur on an occasional basis at the Warwick Landfill site, and moderate to heavy blowing litter conditions will occur infrequently. The predicted zones of impact, extends to a distance of 1,000 m from the site boundary being rated as low beyond 500 m and medium within 500 m.

Blowing litter will be mitigated through a variety of techniques. Below is a summary of blowing litter mitigation techniques that will be used.

1) Installation of portable litter fences that can be moved around the working face area to capture blowing litter on a day-to-day basis based on forecasted meteorological conditions.

2) Installation of permanent litter fences, downwind of the new proposed phases to capture the blowing litter for the predominant wind directions. The permanent litter fences will not contain holes greater than 6 inches in diameter. If required, repairs to litter fencing will be ordered and implemented within three weeks. All repairs will be noted in the litter log as well as the date that they are implemented.

3) Trucks entering and leaving the site should ensure that loads are secure or have been completely removed prior to leaving the site. If operators continue to bring in unsecured loads or failure to ensure all loose waste has been removed, warnings should be issued to the operator of the truck(s).

4) Loads of waste received at the working face with material noted as being a potential for litter should be covered as soon as possible or suppressed with water to prevent the potential for litter events.

5) Creation of an inclement weather area for each landfill expansion phase per the Site Development and Operations Report. The inclement weather area should be utilized under high and sustained moderate wind events. In general winds gusting to or exceeding 47 kilometres per hour (short term events) indicating a high litter event or sustained (hourly or daily) moderate litter events (33 to 47 kilometres per hour) should be considered as trigger for landfilling in the inclement weather area. At a minimum the Environment Canada Weather Office under the current website of www.weatheroffice.gc.ca. will be checked. If the wind events of heavy or sustained moderate levels are forecasted landfilling for the following day will be planned within the inclement weather area (air space permitting). If heavy wind events occur that are not forecasted the operations will be moved to the inclement weather area (air space permitting).

6) Within an hour of a blowing litter event, a site crew will be dispatched to the noted area(s) to retrieve the waste. This applies to litter not only at adjacent properties but also for litter on the main access roads. This only applies during the hours of operation for the landfill. When events occur during hours when the landfill is not operational, the site crew will be dispatched within an hour of the site opening.

7. SCHEDULE OF IMPLEMENATION

The following table provides the proposed schedule for implementation of the plan:

Table 5.1: Schedule for Control Methods

Task	Implementation Time Lines
Installation of portable litter fences	Current practice and on-going through the lifespan of the landfill
Installation of permanent litter fences	Installed in First Phase and should be expanded/supplemented with the construction of each new phase
Creation of inclement weather area.	Area set-aside during each phase for landfilling activities during inclement weather.
Within an hour of a blowing litter event, site crew should be dispatched to the identified area(s) to retrieve the waste.	On-going and through the lifespan of the landfill
Perimeter fence inspection	Ongoing and weekly through lifespan of landfill
Routinely monitor litter around site.	This will occur based on number of litter events.
Maintain a log of all blowing litter complaints and recorded concurrent meteorological conditions during each event.	On-going and through the lifespan of the landfill

8. RECORD KEEPING

Throughout this document there is reference to a Litter log that will be maintained on site. This log will include notation of the items listed previously as well as any other notes relevant to litter at the site. The log will be three-ringed binder that will contain portioned sections for training, inspection, dispatch of site crews for cleanup, general notes complaints. The litter log will contain all litter training, inspection, dispatch and complaint records for the previous 2 years.

From time to time there may be complaints regarding blowing litter. Attachment C includes a sample log including the following information:

- Name of complainant
- Time of complaint
- Time that the incident occurred
- Nature of complaint
- Operational details at the time of the complaint
- Wind conditions at the time of the complaint
- Details of investigation

All complaints will be included in the litter log. On an annual basis, the logs will be reviewed and any unfavourable trends will be further examined to identify corrective actions. These corrective actions will be included in the site annual report.

9. REFERENCES

[1] Interim Waste Authority: Detailed Assessment of the Proposed Site V4A, Summary Document. 1994.

[2] Henderson Paddon & Associates Limited: Development and Operations Report Warwick Landfill Expansion Waste Management of Canada Corporation Project # 105716. March 2006.

Warwick Landfill Best Management Plan
Litter Control Training Log

Trained Employee Name	Date of Training	Supervisor Signature

Warwick Landfill Best Management Plan
Litter Inspection and Dispatch Log

Inspected By: _____ **Inspection Date: _____**

Areas to inspect include: Permanent Litter Fences, Portable Litter Screens, Areas of Litter Build-Up

Area Inspected/Date/Reason for Inspection	Extent of Litter/Identification of Source	Date and Time of Clean-up	Notes/Remedial Action Required
Example *SW Corner of Site* *2007/11/29* *During regular inspection noticed a build-up of paper debris*	*Contained within a 5 metre radius.* *Likely from working face*	*2007/11/29 @noon*	*Small area. Potential re-alignment of portable litter screen*

Warwick Landfill Best Management Plan
Litter Complaint Form

WM Personnel:	

Date of Call		Time of Call	
Complainant Name		Complainant Contact Number	
Complainant Address			

Date of Litter Incident		Time of Litter Incident	
Description of Event			

Operations at Time of Incident	
Winds at Time of Incident	
Investigation Results and Corrective Action	

3A

Future Baseline - Predicted Concentrations, TSP, PM_{10}, $PM_{2.5}$

Summary of Dust Dispersion Modelling Results

Contaminant	CAS #	Averaging Period	Criteria (µg/m³)	Background Concentration (µg/m³)	Preferred Alternative - Scenario 2				
					Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%)	Maximum Modelled Concentration With Background (µg/m³)	Percentage of Criteria With Background (%)	Receptor Location for Maximum Concentration
Total Suspended Particulate	TSP	24-Hour	120	45.9	219.73	183%	265.6	221%	R4
		Annual	60	23.9	15.72	26%	39.6	66%	R4
Particulate Matter <10µm	PM10	24-Hour	50	19.3	79.63	159%	98.9	198%	R4
Particulate Matter <2.5µm	PM2.5	24-Hour	27	12.2	8.99	33%	21.2	78%	R4
		Annual	8.8	6.9	1.19	14%	8.1	92%	R4

Summary of Dust Dispersion Modelling Results

Contaminant	CAS #	Averaging Period	Preferred Alternative - Scenario 2		
			Number of Receptors Potentially Affected [1]	Maximum Frequency of Excedance of Criteria at a Receptor [2]	Receptor Location for Maximum Frequency of Exceedance
Total Suspended Particulate	TSP	24-Hour	7	1.6%	R4
		Annual	0	0%	- -
Particulate Matter <10µm	PM10	24-Hour	5	0.9%	R4
Particulate Matter <2.5µm	PM2.5	24-Hour	0	0%	- -
		Annual	0	0%	- -

Notes:

[1] Number of sensitive receptors with maximum modelled concentrations (including background) that are greater than the criteria for each contaminant. There are a total of 24 residential receptors (applicable to all averaging periods) and 1 short-term receptor (applicable to 1-hour and 10-minute averaging periods only).

[2] Maximum percentage of time the criteria is exceeded at a sensitive receptor location.

Existing Conditions - Final Year of Operation for Landfill Expansion

Annual TSP Predicted Concentrations

Receptor ID	Existing Conditions			
	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]
R1	3	5%	27	45%
R2	11	19%	35	59%
R3	7	12%	31	52%
R4	16	26%	40	66%
R5	6	10%	30	50%
R6	6	10%	30	50%
R7	6	10%	30	50%
R8	3	5%	27	45%
R9	6	10%	30	49%
R10	1	2%	25	42%
R11	2	3%	25	42%
R12	2	4%	26	44%
R13	3	4%	27	44%
R14	3	4%	26	44%
R15	2	3%	26	43%
R16	3	4%	26	44%
R17	4	6%	27	46%
R18	3	5%	27	45%
R19	3	5%	27	45%
R20	3	5%	27	44%
R21	3	4%	26	44%
R22	2	4%	26	44%
R23	2	4%	26	43%
R24	2	3%	26	43%
STR1	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 60 µg/m³
[2] Average Background Concentration = 23.9 µg/m³

Existing Conditions - Final Year of Operation for Landfill Expansion

24-Hour TSP Predicted Concentrations

Receptor ID	Existing Conditions				Exceedances per Year [3]
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Existing Conditions
R1	53	44%	99	83%	0
R2	150	125%	196	163%	3
R3	92	77%	138	115%	<1
R4	220	183%	266	221%	6
R5	78	65%	123	103%	<1
R6	77	64%	123	103%	<1
R7	103	86%	149	124%	<1
R8	53	44%	99	82%	0
R9	107	89%	152	127%	<1
R10	44	36%	90	75%	0
R11	35	29%	80	67%	0
R12	69	58%	115	96%	0
R13	68	57%	114	95%	0
R14	48	40%	94	78%	0
R15	50	42%	96	80%	0
R16	60	50%	106	88%	0
R17	45	37%	91	76%	0
R18	41	34%	87	73%	0
R19	49	40%	94	79%	0
R20	38	31%	83	70%	0
R21	35	29%	81	68%	0
R22	44	36%	90	75%	0
R23	47	39%	93	77%	0
R24	55	46%	101	84%	0
STR1	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 120 µg/m³

[2] 90th Percentile Background Concentration = 46 µg/m³

[3] Exceedances per year have been rounded to the nearest full day.

Existing Conditions - Final Year of Operation for Landfill Expansion

24-Hour PM10 Predicted Concentrations

Receptor ID	Existing Conditions				Exceedances per Year [3]
	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Existing Conditions
R1	19	38%	38	77%	0
R2	55	109%	74	148%	2
R3	32	65%	52	103%	<1
R4	80	159%	99	198%	3
R5	27	55%	47	93%	0
R6	27	54%	46	93%	0
R7	36	73%	56	111%	<1
R8	18	36%	37	75%	0
R9	35	71%	55	109%	<1
R10	16	32%	35	70%	0
R11	12	24%	31	62%	0
R12	25	51%	45	89%	0
R13	25	50%	44	89%	0
R14	17	35%	37	73%	0
R15	19	37%	38	76%	0
R16	21	43%	41	81%	0
R17	17	33%	36	72%	0
R18	15	30%	34	68%	0
R19	18	35%	37	74%	0
R20	14	27%	33	66%	0
R21	13	26%	32	64%	0
R22	16	33%	36	71%	0
R23	18	35%	37	74%	0
R24	21	41%	40	80%	0
STR1	N/A	N/A	N/A	N/A	N/A

Notes:

[1] Criteria = 50 µg/m³

[2] 90th Percentile Background Concentration = 19 µg/m³

[3] Exceedances per year have been rounded to the nearest full day.

Existing Conditions - Final Year of Operation for Landfill Expansion

24-Hour PM2.5 Predicted Concentrations (CAAQS)

Receptor ID	Existing Conditions				Exceedances per Year [4]
	Maximum Modelled Concentration Without Background(µg/m³) [3]	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria with Background (%) [1]	Existing Conditions
R1	2	9%	15	54%	0
R2	7	26%	19	71%	0
R3	5	18%	17	63%	0
R4	9	33%	21	78%	0
R5	4	16%	17	61%	0
R6	5	17%	17	62%	0
R7	4	15%	16	61%	0
R8	3	11%	15	56%	0
R9	4	13%	16	58%	0
R10	2	8%	14	53%	0
R11	2	7%	14	52%	0
R12	3	12%	15	57%	0
R13	2	9%	15	54%	0
R14	3	10%	15	55%	0
R15	2	9%	15	54%	0
R16	2	9%	15	54%	0
R17	3	11%	15	56%	0
R18	3	10%	15	55%	0
R19	2	8%	14	53%	0
R20	2	8%	14	53%	0
R21	2	8%	14	53%	0
R22	2	8%	14	53%	0
R23	2	8%	14	53%	0
R24	2	8%	14	53%	0
STR1	N/A	N/A	N/A	N/A	N/A

Notes:

[1] Criteria = 27 µg/m³

[2] 90th Percentile Background Concentration = 12 µg/m³

[3] Results based on the 3-year average of the annual 98th percentile of the daily 24-hour average concentrations

[4] Exceedances per year have been rounded to the nearest full day.

Existing Conditions - Final Year of Operation for Landfill Expansion

Annual PM2.5 Predicted Concentrations

Receptor ID	Existing Conditions			
	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]
R1	0.3	3%	7.2	82%
R2	0.9	10%	7.8	88%
R3	0.6	7%	7.5	85%
R4	1.2	14%	8.1	92%
R5	0.5	6%	7.4	84%
R6	0.5	6%	7.4	84%
R7	0.5	5%	7.4	84%
R8	0.3	4%	7.2	82%
R9	0.4	5%	7.3	83%
R10	0.1	2%	7.0	80%
R11	0.2	2%	7.1	80%
R12	0.2	3%	7.1	81%
R13	0.3	3%	7.1	81%
R14	0.3	3%	7.1	81%
R15	0.2	2%	7.1	80%
R16	0.3	3%	7.2	81%
R17	0.4	4%	7.2	82%
R18	0.3	3%	7.2	82%
R19	0.3	3%	7.2	81%
R20	0.3	3%	7.2	81%
R21	0.3	3%	7.1	81%
R22	0.2	3%	7.1	81%
R23	0.2	2%	7.1	81%
R24	0.2	2%	7.1	80%
STR1	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 8.8 µg/m³

[2] Average Background Concentration = 7 µg/m³

3B

Future Baseline – Frequency Analysis for 24-hour TSP

Appendix 3B: Frequency Analysis, TSP

RWDI Project #2101750

TCEC Existing Conditions

Receptor Information					Maximum Predicted 24-Hour Concentration ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)	Maximum Predicted plus Background ($\mu g/m^3$)	Predicted Excursions Above Criteria	
								Events > 120 $\mu g/m^3$	
ID#	Description	X	Y	Z				Count	Frequency
R01	Residence	428327	4759333	1.5	53	46	99	0	0.0%
R02	Residence	429414	4759099	1.5	150	46	196	17	0.9%
R03	Residence	429921	4758864	1.5	92	46	138	3	0.2%
R04	Residence	429363	4759027	1.5	220	46	266	30	1.6%
R05	Residence	429934	4759043	1.5	78	46	124	1	0.1%
R06	Residence	430005	4758900	1.5	77	46	123	1	0.1%
R07	Residence	428174	4758398	1.5	103	46	149	4	0.2%
R08	Residence	427821	4758838	1.5	53	46	99	0	0.0%
R09	Residence	428197	4757771	1.5	107	46	153	3	0.2%
R10	Residence	428464	4756293	1.5	44	46	90	0	0.0%
R11	Residence	428874	4756180	1.5	35	46	81	0	0.0%
R12	Residence	429315	4756206	1.5	69	46	115	0	0.0%
R13	Residence	429640	4756198	1.5	68	46	114	0	0.0%
R14	Residence	430164	4756347	1.5	48	46	94	0	0.0%
R15	Residence	428283	4756641	1.5	50	46	96	0	0.0%
R16	Residence	427797	4759047	1.5	60	46	106	0	0.0%
R17	Residence	428305	4759209	1.5	45	46	91	0	0.0%
R18	Residence	428206	4759269	1.5	41	46	87	0	0.0%
R19	Residence	428305	4759399	1.5	49	46	95	0	0.0%
R20	Residence	428313	4759463	1.5	38	46	84	0	0.0%
R21	Residence	428336	4759518	1.5	35	46	81	0	0.0%
R22	Residence	428364	4759661	1.5	44	46	90	0	0.0%
R23	Residence	428368	4759744	1.5	47	46	93	0	0.0%
R24	Residence	428416	4759907	1.5	55	46	101	0	0.0%
STR1	Cemetery	428319	4757590	1.5	N/A	46	N/A	N/A	N/A

1826 Days of valid Meterological Data (enter number of VALID hours in met data file)

3C

Future Baseline – Frequency Analysis for 24-hour PM_{10}

Appendix 3C: Frequency Analysis, PM_{10}

RWDI Project #2101750

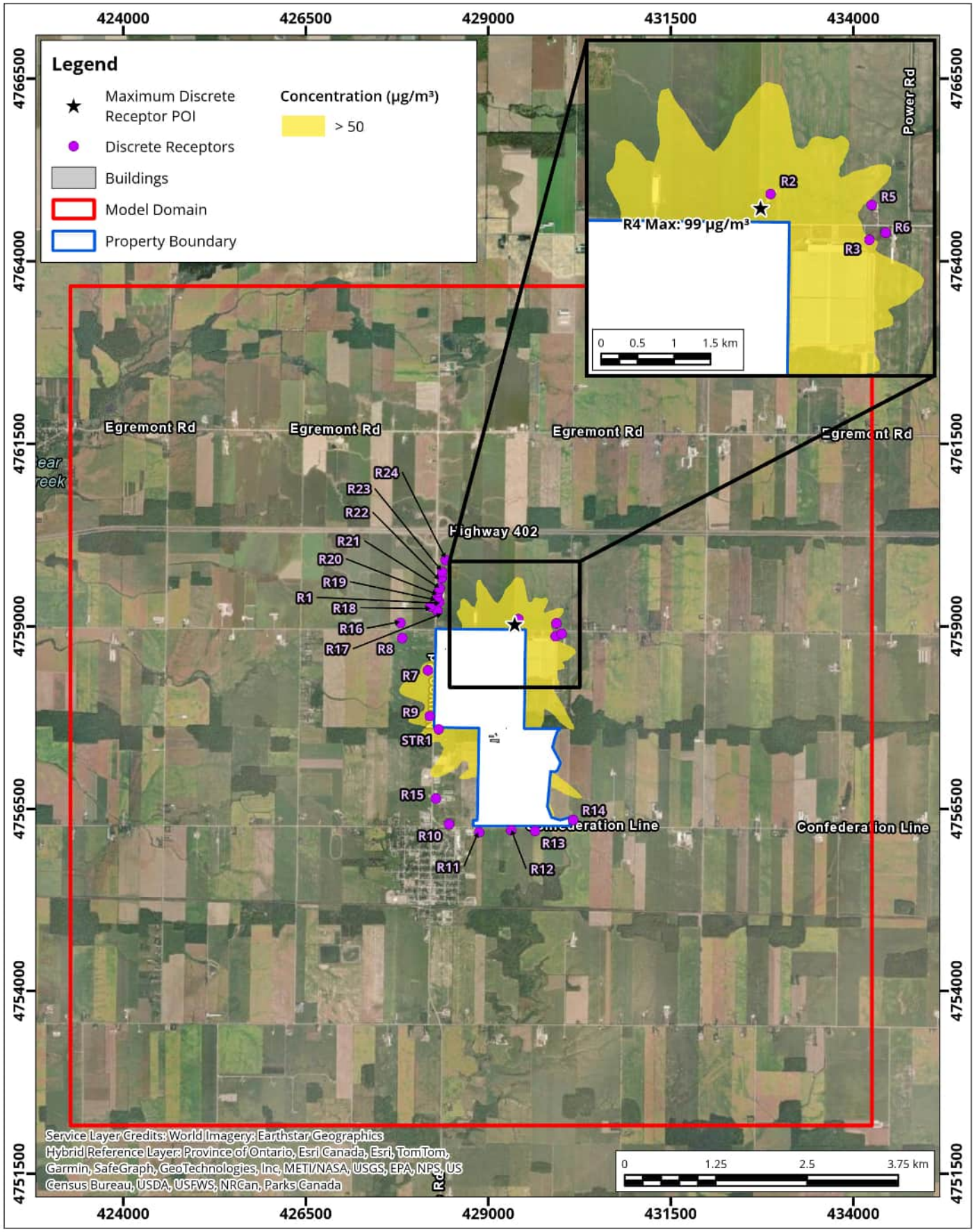
TCEC Existing Conditions

Receptor Information					Maximum Predicted 24-Hour Concentration ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)	Maximum Predicted plus Background ($\mu g/m^3$)	Predicted Excursions Above Criteria	
								Events > 50 $\mu g/m^3$	
ID#	Description	X	Y	Z				Count	Frequency
R01	Residence	428327	4759333	1.5	19	19	38	0	0.0%
R02	Residence	429414	4759099	1.5	55	19	74	12	0.7%
R03	Residence	429921	4758864	1.5	32	19	52	2	0.1%
R04	Residence	429363	4759027	1.5	80	19	99	16	0.9%
R05	Residence	429934	4759043	1.5	27	19	47	0	0.0%
R06	Residence	430005	4758900	1.5	27	19	46	0	0.0%
R07	Residence	428174	4758398	1.5	36	19	56	1	0.1%
R08	Residence	427821	4758838	1.5	18	19	37	0	0.0%
R09	Residence	428197	4757771	1.5	35	19	55	1	0.1%
R10	Residence	428464	4756293	1.5	16	19	35	0	0.0%
R11	Residence	428874	4756180	1.5	12	19	31	0	0.0%
R12	Residence	429315	4756206	1.5	25	19	45	0	0.0%
R13	Residence	429640	4756198	1.5	25	19	44	0	0.0%
R14	Residence	430164	4756347	1.5	17	19	37	0	0.0%
R15	Residence	428283	4756641	1.5	19	19	38	0	0.0%
R16	Residence	427797	4759047	1.5	21	19	41	0	0.0%
R17	Residence	428305	4759209	1.5	17	19	36	0	0.0%
R18	Residence	428206	4759269	1.5	15	19	34	0	0.0%
R19	Residence	428305	4759399	1.5	18	19	37	0	0.0%
R20	Residence	428313	4759463	1.5	14	19	33	0	0.0%
R21	Residence	428336	4759518	1.5	13	19	32	0	0.0%
R22	Residence	428364	4759661	1.5	16	19	36	0	0.0%
R23	Residence	428368	4759744	1.5	18	19	37	0	0.0%
R24	Residence	428416	4759907	1.5	21	19	40	0	0.0%
STR1	Cemetery	428319	4757590	1.5	n/a	n/a	n/a	n/a	n/a

1826 Hours of valid Meterological Data (enter number of VALID hours in met data file)

3D

Future Baseline – Concentration Isopleths, TSP, PM_{10}



Predicted 24-Hour PM_{10} Concentration (in µg/m^3)

Existing Conditions

Map Projection: NAD 1983 UTM Zone 17N

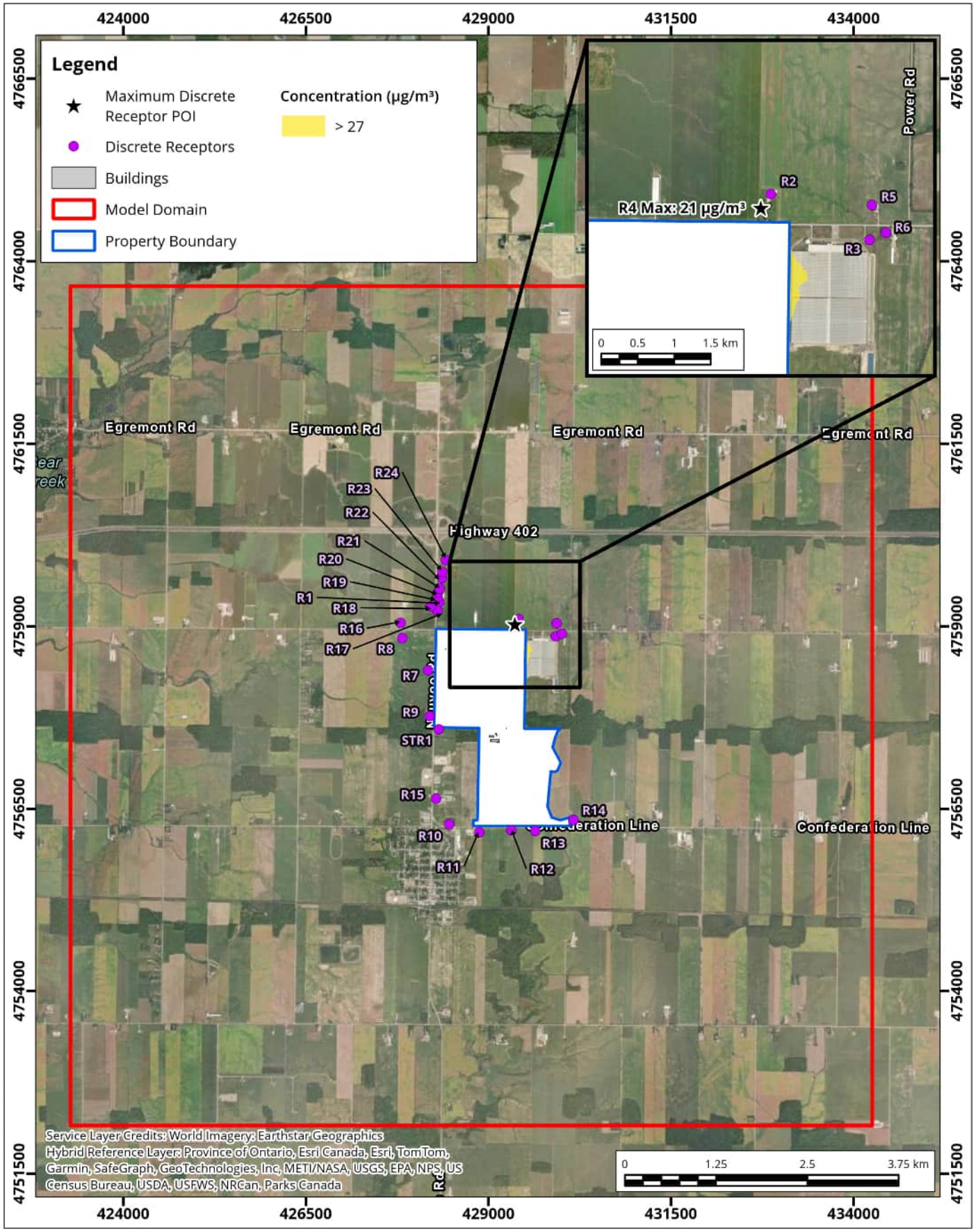
Twin Creeks Environmental Centre - Watford, ON

True North

Criteria - 50 µg/m³
Background - 19.3 µg/m³
Project #: 2101750

Drawn by: RCL	
Approx. Scale:	1:72,000
Date Revised:	Nov 20, 2024

Map Document: C:\GIS\2101750_TwinCreeks\P2101750_TwinCreeks_Oct2024\P2101750_TwinCreeks_Existing_Oct2024.aprx



Predicted 24-Hour $PM_{2.5}$ Concentrations (in µg/m^3)

Existing Conditions

Map Projection: NAD 1983 UTM Zone 17N

Twin Creeks Environmental Centre - Watford, ON

True North

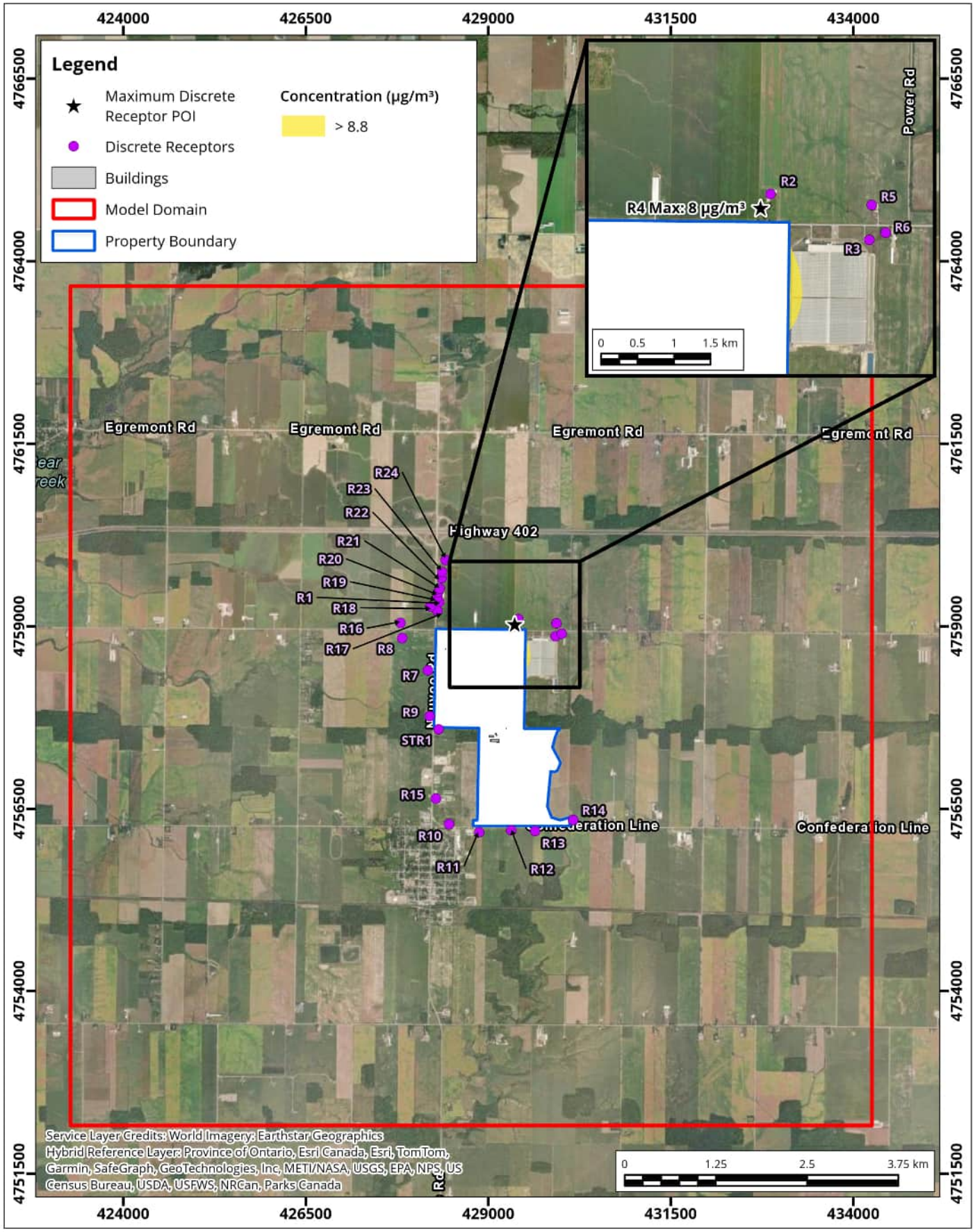
Criteria - 27 µg/m³

Background - 12.2 µg/m³

Project #: 2101750

Drawn by: RCL	
Approx. Scale:	1:72,000
Date Revised:	Nov 20, 2024

Map Document: C:\GIS\2101750_TwinCreeks\P2101750_TwinCreeks_Oct2024\P2101750_TwinCreeks_Existing_Oct2024.aprx



Predicted Annual $PM_{2.5}$ Concentrations (in µg/m³)

Existing Conditions

Map Projection: NAD 1983 UTM Zone 17N

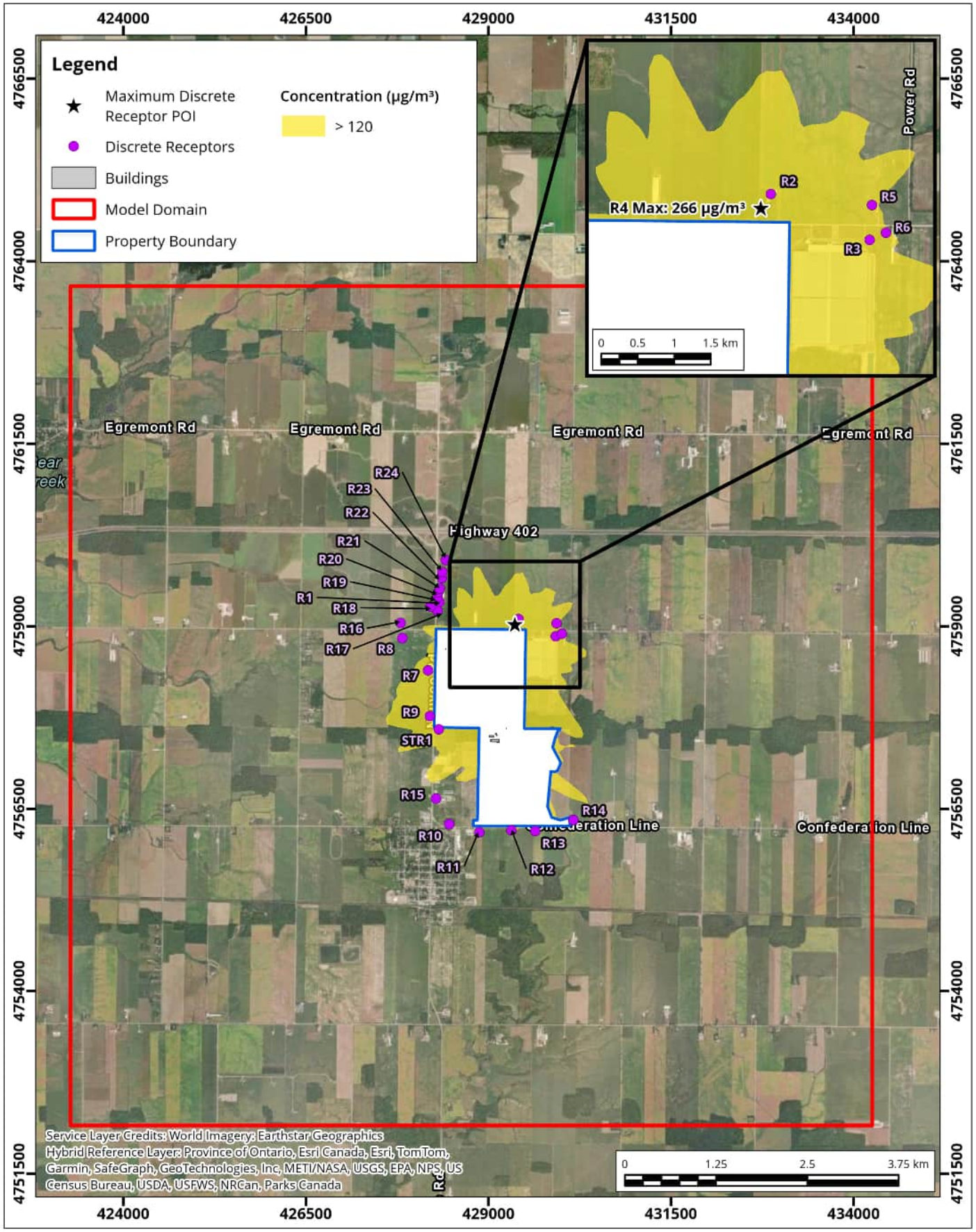
Twin Creeks Environmental Centre - Watford, ON

True North

Criteria - 8.8 µg/m³
Background - 6.9 µg/m³
Project #: 2101750

Drawn by: RCL	
Approx. Scale:	1:72,000
Date Revised:	Nov 20, 2024

Map Document: C:\GIS\2101750_TwinCreeks\P2101750_TwinCreeks_Oct2024\P2101750_TwinCreeks_Existing_Oct2024.aprx



Predicted 24-Hour TSP Concentration (in µg/m³)

Existing Conditions

Map Projection: NAD 1983 UTM Zone 17N

Twin Creeks Environmental Centre - Watford, ON

True North

Criteria - 120 µg/m³
Background - 46 µg/m³
Project #: 2101750

Drawn by: RCL	
Approx. Scale:	1:72,000
Date Revised:	Nov 20, 2024

Map Document: C:\GIS\2101750_TwinCreeks\P2101750_TwinCreeks_Oct2024\P2101750_TwinCreeks_Existing_Oct2024.aprx

3E

Future Baseline – Predicted Concentrations, LFG and Combustion Byproduct Contaminants

Summary of VOCs and Combustion Byproduct Dispersion Modelling Results

Contaminant	CAS #	Averaging Period	Criteria (µg/m³)	Background Concentration (µg/m³)	Existing Conditions				
					Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria Without Background (%)	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%)	POI Location
Benzene	71-43-2	24-Hour	2.3	0.6	0.2	7%	1	32%	R4
		Annual	0.45	0.4	0.02	4%	0.4	93%	R4
Vinyl Chloride	75-01-4	24-Hour	1	0.1	0.1	6%	0.1	11%	R4
		Annual	0.2	0.1	0.01	3%	0.1	29%	R4
1,2-Dichloroethane	107-06-2	24-Hour	2	0.1	0.05	2%	0.1	7%	R4
		Annual	0.4	0.1	0.005	1%	0.1	16%	R4
Ammonia	7664-41-7	24-Hour	100	3	1	1%	4	4%	R9
Hydrogen Sulphide	7783-06-4	10-Minute	13	23	1	6%	23	179%	STR1
		24-Hour	7	6	0.1	1%	6	81%	R9
Total Reduced Sulphur	TRS	10-Minute	13	44	1	9%	45	349%	R4
		24-Hour	7	11	0.2	2%	11	159%	R9
Sulphur Dioxide	7446-09-5	1-Hour	100	2	28	28%	31	31%	STR1
		Annual	10	1	0.3	3%	2	17%	R9
Nitrogen Oxides	10102-44-0	1-Hour	400	21	95	24%	116	29%	R4
		24-Hour	200	19	7	4%	26	13%	R7
Dioxins and Furans	DF	24-Hour	0.1	0.02	0.0001	0%	0.02	20%	R9

Notes:

[1] Dioxin and Furans are presented as pgTEQ/m³)

Summary of VOCs and Combustion Byproduct Dispersion Modelling Results

Contaminant	CAS #	Averaging Period	Existing Conditions		
			Number of Receptors Potentially Affected [1]	Maximum Frequency of Excedance of Criteria at a Receptor [2]	Receptor Location for Maximum Frequency of Exceedance
Benzene	71-43-2	24-Hour	0	0%	- -
		Annual	0	0%	- -
Vinyl Chloride	75-01-4	24-Hour	0	0%	- -
		Annual	0	0%	- -
1,2-Dichloroethane	107-06-2	24-Hour	0	0%	- -
		Annual	0	0%	- -
Ammonia	7664-41-7	24-Hour	0	0%	- -
Hydrogen Sulphide	7783-06-4	10-minute	25	note [3]	- -
		24-Hour	0	0%	- -
Total Reduced Sulphur	TRS	10-minute	25	note [3]	- -
		24-Hour	24	note [3]	- -
Sulphur Dioxide	7446-09-5	1-Hour	0	0%	- -
		Annual	0	0%	- -
Nitrogen Oxides	10102-44-0	1-Hour	0	0%	- -
		24-Hour	0	0%	- -
Dioxins and Furans	DF	24-Hour	0	0%	- -

Notes:

[1] Number of sensitive receptors with maximum modelled concentrations (including background) that are greater than the criteria for each contaminant. There are a total of 24 residential receptors (applicable to all averaging periods) and 1 short-term receptor (applicable to 1-hour and 10-minute averaging periods only).

[2] Maximum percentage of time the criteria is exceeded at a sensitive receptor location.

[3] Background concentrations for 10-minute Hydrogen Sulphide as well as 10-minute and 24-hour Total Reduced Sulphur were above the applicable criteria on their own. However, modelled contributions from the landfill are relatively small compared to background.

Existing Conditions - Final Year of Operation for Landfill Expansion

24-Hour Hydrogen Sulphide Predicted Concentrations

Receptor ID	Existing Conditions			
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]
Max GLC	0.85	12.1%	6.4	92%
R1	0.04	0.6%	5.6	81%
R2	0.07	1.0%	5.7	81%
R3	0.07	1.0%	5.7	81%
R4	0.07	1.0%	5.7	81%
R5	0.06	0.9%	5.7	81%
R6	0.07	1.0%	5.7	81%
R7	0.07	0.9%	5.7	81%
R8	0.04	0.6%	5.6	81%
R9	0.10	1.5%	5.7	81%
R10	0.04	0.5%	5.6	81%
R11	0.06	0.9%	5.7	81%
R12	0.10	1.4%	5.7	81%
R13	0.08	1.1%	5.7	81%
R14	0.07	1.0%	5.7	81%
R15	0.08	1.1%	5.7	81%
R16	0.04	0.6%	5.6	81%
R17	0.04	0.6%	5.6	81%
R18	0.04	0.6%	5.6	81%
R19	0.04	0.6%	5.6	81%
R20	0.04	0.5%	5.6	81%
R21	0.04	0.5%	5.6	81%
R22	0.03	0.5%	5.6	80%
R23	0.03	0.5%	5.6	80%
R24	0.03	0.4%	5.6	80%
STR1	N/A	N/A	N/A	N/A

Notes:

[1] Criteria = 7 µg/m³

[2] 90th Percentile Background Concentration based on all wind directions = 5.6 µg/m³

Existing Conditions - Final Year of Operation for Landfill Expansion

10-Minute Hydrogen Sulphide Predicted Concentrations

Receptor ID	Existing Conditions			
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]
R1	0.43	3.3%	22.9	177%
R2	0.34	2.6%	22.9	176%
R3	0.37	2.8%	22.9	176%
R4	0.40	3.1%	22.9	176%
R5	0.30	2.3%	22.8	176%
R6	0.33	2.6%	22.8	176%
R7	0.41	3.2%	22.9	176%
R8	0.35	2.7%	22.9	176%
R9	0.59	4.6%	23.1	178%
R10	0.28	2.2%	22.8	175%
R11	0.33	2.5%	22.8	176%
R12	0.39	3.0%	22.9	176%
R13	0.37	2.9%	22.9	176%
R14	0.36	2.8%	22.9	176%
R15	0.43	3.3%	22.9	177%
R16	0.34	2.6%	22.9	176%
R17	0.40	3.1%	22.9	176%
R18	0.36	2.8%	22.9	176%
R19	0.43	3.3%	22.9	177%
R20	0.44	3.4%	23.0	177%
R21	0.44	3.4%	23.0	177%
R22	0.43	3.3%	22.9	177%
R23	0.42	3.2%	22.9	176%
R24	0.39	3.0%	22.9	176%
STR1	0.76	5.9%	23.3	179%

Notes:
[1] Criteria = 13 µg/m³

[2] 90th Percentile Background Concentration based on all wind directions = 22.5 µg/m³

Existing Conditions - Final Year of Operation for Landfill Expansion

10-Minute Total Reduced Sulphur Predicted Concentrations

Receptor ID	Existing Conditions			
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]
R1	0.74	5.7%	45.0	346%
R2	1.00	7.7%	45.2	348%
R3	0.76	5.8%	45.0	346%
R4	1.17	9.0%	45.4	349%
R5	0.78	6.0%	45.0	346%
R6	0.72	5.5%	45.0	346%
R7	0.61	4.7%	44.8	345%
R8	0.56	4.3%	44.8	345%
R9	0.63	4.8%	44.9	345%
R10	0.58	4.4%	44.8	345%
R11	0.57	4.4%	44.8	345%
R12	0.67	5.2%	44.9	345%
R13	0.71	5.5%	44.9	346%
R14	0.69	5.3%	44.9	346%
R15	0.63	4.9%	44.9	345%
R16	0.56	4.3%	44.8	345%
R17	0.75	5.8%	45.0	346%
R18	0.72	5.5%	45.0	346%
R19	0.72	5.5%	45.0	346%
R20	0.70	5.4%	44.9	346%
R21	0.69	5.3%	44.9	346%
R22	0.69	5.3%	44.9	346%
R23	0.68	5.3%	44.9	346%
R24	0.70	5.4%	44.9	346%
STR1	0.76	5.9%	45.0	346%

Notes:

[1] Criteria = 13 µg/m³

[2] 90th Percentile Background Concentration based on all wind directions = 44.2 µg/m³

Existing Conditions - Final Year of Operation for Landfill Expansion

24-Hour Total Reduced Sulphur Predicted Concentrations

Receptor ID	Existing Conditions			
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]
Max GLC	0.85	12.2%	11.9	169%
R1	0.08	1.2%	11.1	158%
R2	0.12	1.7%	11.1	159%
R3	0.10	1.5%	11.1	159%
R4	0.13	1.9%	11.1	159%
R5	0.10	1.5%	11.1	159%
R6	0.09	1.3%	11.1	158%
R7	0.13	1.9%	11.1	159%
R8	0.10	1.5%	11.1	159%
R9	0.15	2.2%	11.2	159%
R10	0.06	0.8%	11.1	158%
R11	0.07	1.0%	11.1	158%
R12	0.10	1.5%	11.1	159%
R13	0.08	1.2%	11.1	158%
R14	0.08	1.1%	11.1	158%
R15	0.08	1.1%	11.1	158%
R16	0.08	1.1%	11.1	158%
R17	0.10	1.4%	11.1	159%
R18	0.09	1.2%	11.1	158%
R19	0.07	1.1%	11.1	158%
R20	0.07	1.0%	11.1	158%
R21	0.06	0.9%	11.1	158%
R22	0.05	0.8%	11.1	158%
R23	0.05	0.7%	11.0	158%
R24	0.05	0.7%	11.1	158%
STR1	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 7 µg/m³

[2] 90th Percentile Background Concentration based on all wind directions = 11 µg/m³

Existing Conditions - Final Year of Operation for Landfill Expansion

24-Hour Benzene Predicted Concentrations

Receptor ID	Existing Conditions			
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]
Max GLC	0.32	14.1%	0.9	38%
R1	0.07	3.2%	0.6	28%
R2	0.14	6.2%	0.7	30%
R3	0.12	5.2%	0.7	29%
R4	0.17	7.3%	0.7	32%
R5	0.09	3.8%	0.6	28%
R6	0.10	4.3%	0.7	29%
R7	0.12	5.3%	0.7	30%
R8	0.09	3.9%	0.6	28%
R9	0.10	4.3%	0.7	29%
R10	0.05	2.3%	0.6	27%
R11	0.05	2.2%	0.6	26%
R12	0.06	2.6%	0.6	27%
R13	0.05	2.2%	0.6	27%
R14	0.05	2.1%	0.6	26%
R15	0.05	2.2%	0.6	26%
R16	0.08	3.3%	0.6	28%
R17	0.09	3.9%	0.6	28%
R19	0.07	2.9%	0.6	27%
R20	0.06	2.6%	0.6	27%
R21	0.05	2.4%	0.6	27%
R22	0.04	1.9%	0.6	26%
R23	0.04	1.8%	0.6	26%
R24	0.04	1.6%	0.6	26%
STR1	NA	N/A	N/A	N/A

Notes:
[1] Criteria = 2.3 µg/m³

[2] 90th Percentile Background Concentration = 0.56 µg/m³

Existing Conditions - Final Year of Operation for Landfill Expansion

Annual Benzene Predicted Concentrations

Receptor ID	Existing Conditions			
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]
Max GLC	0.04	9.6%	0.4	98%
R1	0.01	1.3%	0.4	90%
R2	0.01	3.3%	0.4	92%
R3	0.01	2.6%	0.4	91%
R4	0.02	4.2%	0.4	93%
R5	0.01	2.1%	0.4	91%
R6	0.01	2.2%	0.4	91%
R7	0.01	3.1%	0.4	92%
R8	0.01	1.5%	0.4	90%
R9	0.01	2.2%	0.4	91%
R10	0.003	0.6%	0.4	89%
R11	0.003	0.8%	0.4	89%
R12	0.004	1.0%	0.4	90%
R13	0.004	0.9%	0.4	90%
R14	0.003	0.7%	0.4	89%
R15	0.003	0.7%	0.4	89%
R16	0.01	1.3%	0.4	90%
R17	0.01	1.5%	0.4	90%
R18	0.01	1.3%	0.4	90%
R19	0.01	1.2%	0.4	90%
R20	0.01	1.1%	0.4	90%
R21	0.005	1.1%	0.4	90%
R22	0.004	0.9%	0.4	90%
R23	0.004	0.9%	0.4	90%
R24	0.003	0.8%	0.4	89%
STR1	N/A	N/A	N/A	N/A

Notes:

[1] Criteria = 0.45 µg/m³

[2] Average Background Concentration = 0.40 µg/m³

Existing Conditions - Final Year of Operation for Landfill Expansion

24-Hour Vinyl Chloride Predicted Concentrations

Receptor ID	Existing Conditions			
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]
Max GLC	0.41	40.9%	0.5	46%
R1	0.03	2.8%	0.1	8%
R2	0.05	5.1%	0.1	10%
R3	0.03	3.1%	0.1	8%
R4	0.06	5.6%	0.1	11%
R5	0.03	3.0%	0.1	8%
R6	0.03	3.0%	0.1	8%
R7	0.04	4.2%	0.1	9%
R8	0.03	3.3%	0.1	8%
R9	0.04	4.5%	0.1	10%
R10	0.03	3.0%	0.1	8%
R11	0.03	3.0%	0.1	8%
R12	0.04	4.3%	0.1	9%
R13	0.03	3.0%	0.1	8%
R14	0.03	2.8%	0.1	8%
R15	0.03	3.0%	0.1	8%
R16	0.03	2.5%	0.1	8%
R17	0.03	3.4%	0.1	8%
R18	0.03	3.1%	0.1	8%
R19	0.02	2.5%	0.1	8%
R20	0.02	2.2%	0.1	7%
R21	0.02	1.9%	0.1	7%
R22	0.02	1.8%	0.1	7%
R23	0.02	1.8%	0.1	7%
R24	0.02	1.6%	0.1	7%
STR1	N/A	N/A	N/A	N/A

Notes:

[1] Criteria = 1 µg/m³

[2] Average Background Concentration = 0.05 µg/m³

Existing Conditions - Final Year of Operation for Landfill Expansion

Annual Vinyl Chloride Predicted Concentrations

Receptor ID	Existing Conditions			
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]
Max GLC	0.047	23.5%	0.10	49%
R1	0.002	1.2%	0.05	27%
R2	0.005	2.5%	0.06	28%
R3	0.004	2.1%	0.06	28%
R4	0.006	3.0%	0.06	29%
R5	0.003	1.7%	0.05	27%
R6	0.004	1.9%	0.05	27%
R7	0.006	3.0%	0.06	28%
R8	0.003	1.4%	0.05	27%
R9	0.006	2.8%	0.06	28%
R10	0.002	0.8%	0.05	26%
R11	0.002	1.1%	0.05	27%
R12	0.003	1.3%	0.05	27%
R13	0.002	1.1%	0.05	27%
R14	0.002	0.9%	0.05	26%
R15	0.002	1.0%	0.05	27%
R16	0.002	1.2%	0.05	27%
R17	0.003	1.4%	0.05	27%
R18	0.002	1.2%	0.05	27%
R19	0.002	1.1%	0.05	27%
R20	0.002	1.0%	0.05	27%
R21	0.002	1.0%	0.05	27%
R22	0.002	0.9%	0.05	26%
R23	0.002	0.8%	0.05	26%
R24	0.001	0.7%	0.05	26%
STR1	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 0.2 µg/m³

[2] Average Background Concentration = 0.05 µg/m³

Existing Conditions - Final Year of Operation for Landfill Expansion

24-Hour 1,2-Dichloroethane Predicted Concentrations

Receptor ID	Existing Conditions			
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]
Max GLC	0.31	15.3%	0.40	20%
R1	0.02	1.1%	0.12	6%
R2	0.04	2.1%	0.14	7%
R3	0.03	1.3%	0.12	6%
R4	0.05	2.3%	0.14	7%
R5	0.02	1.2%	0.12	6%
R6	0.02	1.2%	0.12	6%
R7	0.04	1.8%	0.13	7%
R8	0.03	1.4%	0.12	6%
R9	0.03	1.7%	0.13	6%
R10	0.02	1.2%	0.12	6%
R11	0.02	1.2%	0.12	6%
R12	0.03	1.7%	0.13	6%
R13	0.02	1.2%	0.12	6%
R14	0.02	1.2%	0.12	6%
R15	0.02	1.2%	0.12	6%
R16	0.02	1.1%	0.12	6%
R17	0.03	1.4%	0.12	6%
R18	0.03	1.3%	0.12	6%
R19	0.02	1.0%	0.12	6%
R20	0.02	0.9%	0.11	6%
R21	0.02	0.8%	0.11	6%
R22	0.01	0.7%	0.11	5%
R23	0.01	0.7%	0.11	5%
R24	0.01	0.6%	0.11	5%
STR1	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 2 µg/m³

[2] Average Background Concentration = 0.10 µg/m³

Existing Conditions - Final Year of Operation for Landfill Expansion

Annual 1,2-Dichloroethane Predicted Concentrations

Receptor ID	Existing Conditions			
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]
Max GLC	0.034	8.6%	0.09	24%
R1	0.002	0.5%	0.06	15%
R2	0.004	1.0%	0.06	16%
R3	0.003	0.9%	0.06	16%
R4	0.005	1.2%	0.06	16%
R5	0.003	0.7%	0.06	16%
R6	0.003	0.8%	0.06	16%
R7	0.005	1.2%	0.06	16%
R8	0.002	0.6%	0.06	16%
R9	0.004	1.1%	0.06	16%
R10	0.001	0.3%	0.06	15%
R11	0.002	0.4%	0.06	15%
R12	0.002	0.5%	0.06	16%
R13	0.002	0.5%	0.06	15%
R14	0.001	0.4%	0.06	15%
R15	0.002	0.4%	0.06	15%
R16	0.002	0.5%	0.06	15%
R17	0.002	0.6%	0.06	16%
R18	0.002	0.5%	0.06	15%
R19	0.002	0.4%	0.06	15%
R20	0.002	0.4%	0.06	15%
R21	0.002	0.4%	0.06	15%
R22	0.001	0.4%	0.06	15%
R23	0.001	0.3%	0.06	15%
R24	0.001	0.3%	0.06	15%
STR1	N/A	N/A	N/A	N/A

Notes:

[1] Criteria = 0.4 µg/m³

[2] Average Background Concentration = 0.06 µg/m³

Existing Conditions - Final Year of Operation for Landfill Expansion

24-Hour Ammonia Predicted Concentrations

Receptor ID	Existing Conditions			
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]
Max GLC	8.5	8.5%	11.6	12%
R1	0.2	0.2%	3.3	3%
R2	0.1	0.1%	3.3	3%
R3	0.3	0.3%	3.5	3%
R4	0.2	0.2%	3.3	3%
R5	0.3	0.3%	3.4	3%
R6	0.3	0.3%	3.4	3%
R7	0.4	0.4%	3.5	3%
R8	0.2	0.2%	3.3	3%
R9	0.8	0.8%	3.9	4%
R10	0.3	0.3%	3.4	3%
R11	0.3	0.3%	3.4	3%
R12	0.5	0.5%	3.6	4%
R13	0.3	0.3%	3.4	3%
R14	0.2	0.2%	3.3	3%
R15	0.4	0.4%	3.5	3%
R16	0.1	0.1%	3.2	3%
R17	0.2	0.2%	3.3	3%
R18	0.2	0.2%	3.3	3%
R19	0.1	0.1%	3.3	3%
R20	0.1	0.1%	3.3	3%
R21	0.1	0.1%	3.3	3%
R22	0.1	0.1%	3.2	3%
R23	0.1	0.1%	3.2	3%
R24	0.1	0.1%	3.2	3%
STR1	N/A	N/A	N/A	N/A

Notes:

[1] Criteria = 100 µg/m³

[2] Average Background Concentration = 3.11 µg/m³

Existing Conditions - Final Year of Operation for Landfill Expansion

1-Hour Sulphur Dioxide Predicted Concentrations

Receptor ID	Existing Conditions			
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]
Max GLC	75	75%	77	77%
R1	8	8%	10	10%
R2	10	10%	12	12%
R3	12	12%	14	14%
R4	11	11%	13	13%
R5	9	9%	12	12%
R6	14	14%	16	16%
R7	21	21%	24	24%
R8	10	10%	12	12%
R9	26	26%	28	28%
R10	19	19%	22	22%
R11	18	18%	21	21%
R12	22	22%	25	25%
R13	20	20%	22	22%
R14	12	12%	15	15%
R15	23	23%	25	25%
R16	9	9%	11	11%
R17	10	10%	12	12%
R18	9	9%	11	11%
R19	8	8%	10	10%
R20	8	8%	10	10%
R21	7	7%	10	10%
R22	7	7%	9	9%
R23	6	6%	9	9%
R24	6	6%	8	8%
STR1	28	28%	31	31%

Notes:

[1] Criteria = 100 µg/m³

[2] Average Background Concentration = 2.4 µg/m³

Existing Conditions - Final Year of Operation for Landfill Expansion

Annual Sulphur Dioxide Predicted Concentrations

Receptor ID	Existing Conditions			
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]
Max GLC	2.02	20.2%	3.4	34%
R1	0.17	1.7%	1.6	16%
R2	0.22	2.2%	1.6	16%
R3	0.24	2.4%	1.6	16%
R4	0.24	2.4%	1.6	16%
R5	0.21	2.1%	1.6	16%
R6	0.22	2.2%	1.6	16%
R7	0.27	2.7%	1.7	17%
R8	0.22	2.2%	1.6	16%
R9	0.32	3.2%	1.7	17%
R10	0.12	1.2%	1.5	15%
R11	0.17	1.7%	1.6	16%
R12	0.26	2.6%	1.7	17%
R13	0.23	2.3%	1.6	16%
R14	0.19	1.9%	1.6	16%
R15	0.19	1.9%	1.6	16%
R16	0.17	1.7%	1.6	16%
R17	0.21	2.1%	1.6	16%
R18	0.18	1.8%	1.6	16%
R19	0.16	1.6%	1.6	16%
R20	0.15	1.5%	1.6	16%
R21	0.14	1.4%	1.5	15%
R22	0.12	1.2%	1.5	15%
R23	0.12	1.2%	1.5	15%
R24	0.11	1.1%	1.5	15%
STR1	N/A	N/A	N/A	N/A

Notes:

[1] Criteria = 10 µg/m³

[2] Average Background Concentration = 1.4 µg/m³

Existing Conditions - Final Year of Operation for Landfill Expansion

1-Hour Nitrogen Oxides Predicted Concentrations

Receptor ID	Existing Conditions			
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]
Max GLC	184	46%	205	51%
R1	46	12%	67	17%
R2	85	21%	106	27%
R3	51	13%	72	18%
R4	95	24%	116	29%
R5	55	14%	76	19%
R6	40	10%	61	15%
R7	77	19%	98	25%
R8	38	9%	59	15%
R9	62	15%	83	21%
R10	18	5%	39	10%
R11	22	6%	43	11%
R12	26	6%	47	12%
R13	27	7%	48	12%
R14	24	6%	45	11%
R15	34	8%	55	14%
R16	41	10%	62	16%
R17	58	14%	79	20%
R18	49	12%	70	17%
R19	45	11%	66	16%
R20	40	10%	61	15%
R21	33	8%	54	13%
R22	31	8%	52	13%
R23	30	7%	51	13%
R24	26	7%	47	12%
STR1	54	13%	75	19%

Notes:

[1] Criteria = 400 µg/m³

[2] Average Background Concentration = 21.0 µg/m³

Existing Conditions - Final Year of Operation for Landfill Expansion

24-Hour Nitrogen Oxides Predicted Concentrations

Receptor ID	Existing Conditions			
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]
Max GLC	31	16%	50	25%
R1	3	1%	22	11%
R2	5	2%	24	12%
R3	5	2%	24	12%
R4	6	3%	25	13%
R5	3	1%	22	11%
R6	4	2%	23	12%
R7	7	4%	26	13%
R8	3	1%	22	11%
R9	6	3%	25	12%
R10	2	1%	21	11%
R11	2	1%	21	11%
R12	3	2%	23	11%
R13	3	1%	22	11%
R14	3	2%	22	11%
R15	3	1%	22	11%
R16	2	1%	22	11%
R17	3	2%	22	11%
R18	3	1%	22	11%
R19	2	1%	22	11%
R20	2	1%	21	11%
R21	2	1%	21	11%
R22	2	1%	21	11%
R23	2	1%	21	10%
R24	2	1%	21	10%
STR1	N/A	N/A	N/A	N/A

Notes:

[1] Criteria = 200 µg/m³

[2] Average Background Concentration = 19.1 µg/m³

Existing Conditions - Final Year of Operation for Landfill Expansion

24-Hour Dioxins and Furans Predicted Concentrations

Receptor ID	Existing Conditions			
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]
Max GLC	0.00099	0.99%	0.02	21%
R1	0.00004	0.04%	0.02	20%
R2	0.00007	0.07%	0.02	20%
R3	0.00008	0.08%	0.02	20%
R4	0.00007	0.07%	0.02	20%
R5	0.00007	0.07%	0.02	20%
R6	0.00008	0.08%	0.02	20%
R7	0.00008	0.08%	0.02	20%
R8	0.00005	0.05%	0.02	20%
R9	0.00011	0.11%	0.02	20%
R10	0.00004	0.04%	0.02	20%
R11	0.00007	0.07%	0.02	20%
R12	0.00011	0.11%	0.02	20%
R13	0.00009	0.09%	0.02	20%
R14	0.00007	0.07%	0.02	20%
R15	0.00009	0.09%	0.02	20%
R16	0.00005	0.05%	0.02	20%
R17	0.00005	0.05%	0.02	20%
R18	0.00005	0.05%	0.02	20%
R19	0.00004	0.04%	0.02	20%
R20	0.00004	0.04%	0.02	20%
R21	0.00004	0.04%	0.02	20%
R22	0.00004	0.04%	0.02	20%
R23	0.00003	0.03%	0.02	20%
R24	0.00003	0.03%	0.02	20%
STR1	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 0.1 pg TEQ/m³

[2] Average Background Concentration = 0.02 pg TEQ/m³

3F

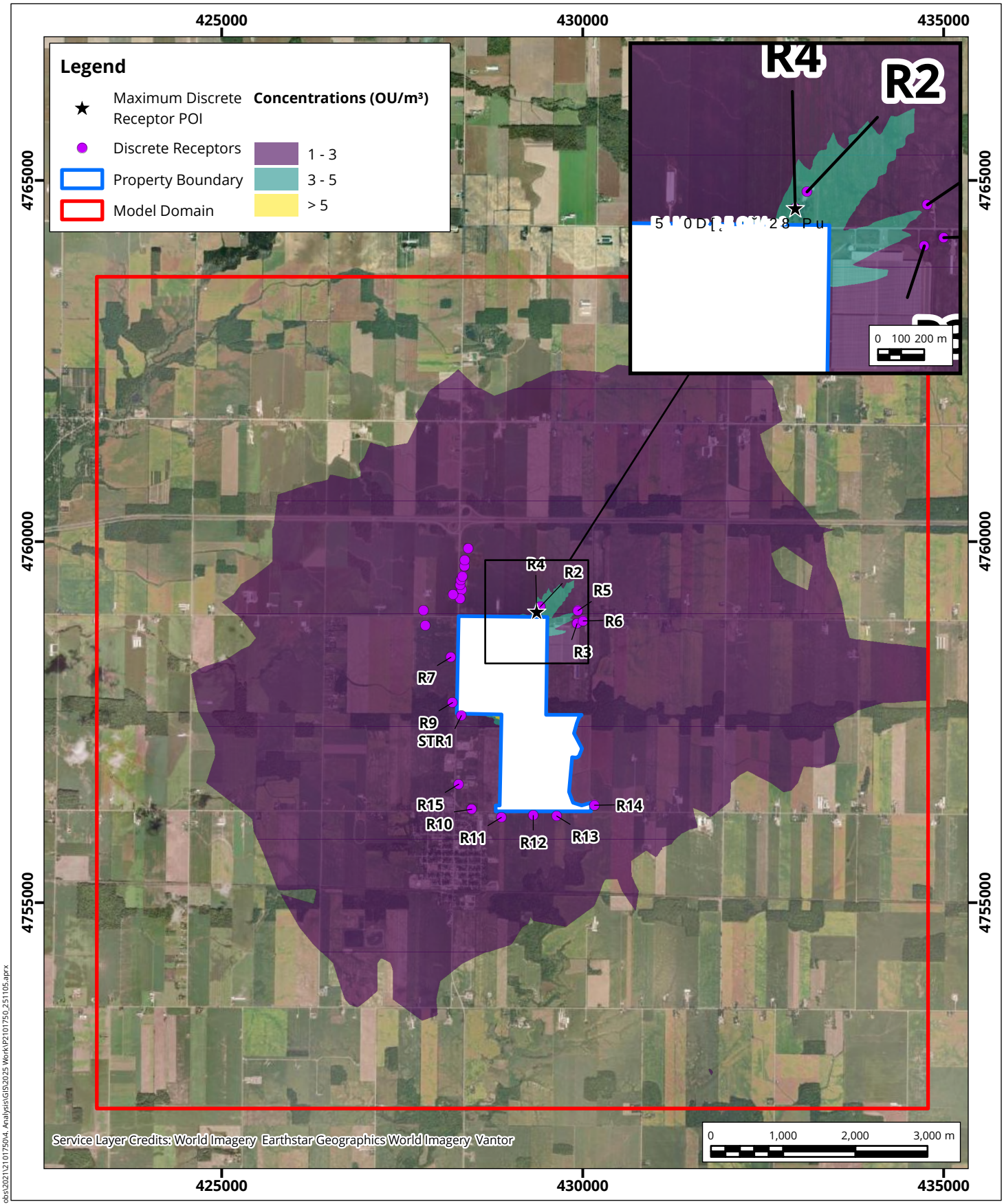
Future Baseline – Predicted Concentrations and Frequency Analysis, Odour

Appendix 3F: Odour Concentrations and Frequency Analysis - Future Baseline

Receptor ID	X (m)	Y (m)		Events > 1 OU		Events > 3 OU		Events > 5 OU	
				2011-2015		2011-2015		2011-2015	
			2011-2015	Count	Frequency of Exceedance	Count	Frequency of Exceedance	Count	Frequency of Exceedance
R1	428327.31	4759332.56	2.0	154	0.4%	0	0.0%	0	0.0%
R2	429414.24	4759098.79	3.4	312	0.7%	1	0.002%	0	0.0%
R3	429921.47	4758863.88	2.5	294	0.7%	0	0.0%	0	0.0%
R4	429363.12	4759026.83	3.5	421	1.0%	3	0.007%	0	0.0%
R5	429934.00	4759042.69	3.0	243	0.6%	0	0.0%	0	0.0%
R6	430005.36	4758899.97	2.5	239	0.6%	0	0.0%	0	0.0%
R7	428174.25	4758397.58	2.4	420	1.0%	0	0.0%	0	0.0%
R8	427821.35	4758837.66	2.1	165	0.4%	0	0.0%	0	0.0%
R9	428196.76	4757770.76	2.7	188	0.4%	0	0.0%	0	0.0%
R10	428463.76	4756292.64	1.8	63	0.1%	0	0.0%	0	0.0%
R11	428874.32	4756180.28	1.8	33	0.1%	0	0.0%	0	0.0%
R12	429315.18	4756206.39	1.6	47	0.1%	0	0.0%	0	0.0%
R13	429640.43	4756197.51	1.3	23	0.1%	0	0.0%	0	0.0%
R14	430163.71	4756347.16	1.3	13	0.0%	0	0.0%	0	0.0%
R15	428283.03	4756641.42	2.0	68	0.2%	0	0.0%	0	0.0%
R16	427797.18	4759046.66	1.9	158	0.4%	0	0.0%	0	0.0%
R17	428304.63	4759209.20	2.0	177	0.4%	0	0.0%	0	0.0%
R18	428205.52	4759268.66	2.0	134	0.3%	0	0.0%	0	0.0%
R19	428304.63	4759399.49	1.9	133	0.3%	0	0.0%	0	0.0%
R20	428312.56	4759462.92	1.9	125	0.3%	0	0.0%	0	0.0%
R21	428336.34	4759518.42	1.8	118	0.3%	0	0.0%	0	0.0%
R22	428364.09	4759661.14	1.8	96	0.2%	0	0.0%	0	0.0%
R23	428368.06	4759744.39	1.7	91	0.2%	0	0.0%	0	0.0%
R24	428415.63	4759906.93	1.6	70	0.2%	0	0.0%	0	0.0%
STR1	428319.45	4757589.64	2.5	197	0.5%	0	0.0%	0	0.0%
STR1 - Daytime	428319.45	4757589.64	2.5	20	0.05%	0	0.0%	0	0.0%

3G

Future Baseline – Concentration Isopleth, Odour



Predicted 10-Minute Odour Concentration (in OU/m³)

True North

Map Projection: NAD 1983 UTM Zone 17N

Twin Creeks Environmental Centre - Watford, Ontario

Project #: 2101750

Drawn by: PIP	Figure: 3G1
Approx. Scale:	1:72,000
Date Revised:	Nov 12, 2025

Map Document: \\rwdlgroup\rwdl\AM_Jobs\2021\2101750\4. Analysis\GIS\2025 Work\P2101750_251105.aprx

3H

Future Baseline – Emissions Calculations, Greenhouse Gas

Old Landfill and Expansion Landfill Phases 1 Through 9 (Year 2031), Greenhouse, RNG Production, and Flaring

Year	Waste Acceptance Years (Inclusive)	Scenario	LANDGEM Emission Rate Landfill Gas (scf/min)	LANDGEM Emission Rate Carbon Dioxide (tonnes/yr)	Landfill Gas Collection Coverage (%)	Landfill Gas Collection Efficiency (%) [1]	Carbon Dioxide Collected (tonnes/year)	Carbon Dioxide to RNG (tonnes/year) [5]	Carbon Dioxide to Flare (tonnes/year)	Methane to Flare (tonnes/year)	Flare Destruction Efficiency (%) [2]	Flare Emission Rate (tonnes/yr) [4]	Fugitive Carbon Dioxide Emission Rate (tonnes/yr)	Fugitive Methane Emission Rate (tonnes/yr)	Oxidation of Methane in Landfill Cover (%) [3]	Mound Emission Rate Carbon Dioxide (Controlled) (tonnes/yr)	Total Annual Carbon Dioxide Emissions (tonnes/yr)
2031	1972-2004	Old Landfill	1.90E+02	2.48E+03	100%	70%	1.74E+03	7.65E+02	7.65E+02	3.02E+02	99.7%	1.59E+03	7.45E+02	2.94E+02	10%	8.26E+02	3.18E+03
2031	2005-2019	Expansion Landfill Phases 1 to 3	2.84E+03	3.72E+04	100%	75%	2.79E+04	1.23E+04	1.23E+04	4.84E+03	99.7%	2.55E+04	9.30E+03	3.67E+03	10%	1.03E+04	4.81E+04
2031	2020-2024	Expansion Landfill Phases 4 to 5	3.20E+03	4.18E+04	100%	75%	3.14E+04	1.38E+04	1.38E+04	5.44E+03	99.7%	2.87E+04	1.05E+04	4.13E+03	10%	1.16E+04	5.41E+04
2031	2025-2029	Expansion Landfill Phases 6 to 7	3.95E+03	5.16E+04	100%	75%	3.87E+04	1.70E+04	1.70E+04	6.72E+03	99.7%	3.54E+04	1.29E+04	5.09E+03	10%	1.43E+04	6.68E+04
2031	2030-2031	Expansion Landfill Phases 8 to 9	8.88E+02	1.16E+04	100%	75%	8.71E+03	3.83E+03	3.83E+03	1.51E+03	99.7%	7.98E+03	2.90E+03	1.15E+03	10%	3.22E+03	1.50E+04
2031	2005-2031	Total	1.11E+04	1.45E+05			1.08E+05	4.77E+04	4.77E+04	1.88E+04		9.93E+04	3.63E+04	1.43E+04		4.02E+04	1.87E+05

Notes:
[1] Government of Canada. (2024). Canada Gazette, Part 1, Volume 158, Number 26: Regulations Respecting the Reduction in the Release of Methane (Waste Sector). https://canadagazette.gc.ca/rp-pr/p1/2024/2024-06-29/html/reg5-eng.html
The proposed regulatory scenario assumed 75% landfill gas collection efficiency at open, regulated landfills and 90% at closed, regulated landfills. It is assumed that landfills that comply with the proposed regulations would achieve these collection efficiencies which are noted in this reference as highest achievable industry standards.
[2] Environment and Climate Change Canada, National Inventory Report 2022 Part 2, Section A3.6.1.2.1 suggests combustion efficiency of methane by flaring at 99.7%.
[3] Environment and Climate Change Canada. (2022). National Inventory Report 1990-2022: Greenhouse Gas Sources and Sinks in Canada, Part 2. Section A3.6.1.2.1
[4] Flare emissions estimation includes carbon dioxide resulting from the combustion of methane as described in Equation 6, AP-42 Section 2.4 Municipal Solid Waste Landfills
[5] Assumed 100% loss of carbon dioxide in the landfill gas transferred to RNG during RNG processing.

Sample Calculations, Year 2031

Carbon Dioxide Collected (Old Landfill) = (LANDGEM Emission Rate CO_2) * (Landfill Gas Collection Coverage) * (Landfill Gas Collection Efficiency)
= 2484.9 * 1.00 * 0.70
= 1.74E+03 tonnes/year

Carbon Dioxide to RNG (Old Landfill) = ((CO_2 Collected) - (CO_2 Transferred as Biogas to Greenhouse)) * (Percentage RNG Plant LFG Flowrate / LFG Collected) * (Percentage On-spec RNG Delivery)
= (1739.4 - 1739.4 * 0.121) * 1.000 * 0.500
= -1.29E+10 tonnes/year

Carbon Dioxide to Flare (Old Landfill) = (CO_2 Collected) - (CO_2 Transferred as Biogas to Greenhouse) - (CO_2 Transferred to RNG)
= 1739.4 - 1739.4 * 14883334.592 - 764.8
= 7.65E+02 tonnes/year

Flare Emission Rate (Old Landfill) = (CO_2 to Flare) + (Methane to Flare) * (Flare Destruction Efficiency) * (Ratio of Molecular Weight CO_2 : CH_4)
= 764.8 + 302 * 0.997 * 2.75
= 1.59E+03 tonnes/year

Fugitive Carbon Dioxide Emission Rate (Old Landfill) = (LANDGEM Emission Rate CO_2) - (LANDGEM Emission Rate CO2) * (Landfill Gas Collection Coverage) * (Landfill Gas Collection Efficiency)
= 2484.9 - 2484.9 * 1.00 * 0.70
= 7.45E+02 tonnes/year

Calculation of Mound Emission Rate (Controlled) (Old Landfill) = (Fugitive Carbon Dioxide Emission Rate) + (Fugitive Methane Emission Rate) * (Percentage Oxidation of Methane in Landfill Cover) * (Ratio of Molecular Weight CO_2:CH_4)
= 745.5 + 294.3 * 0.10 * 2.75
= 8.26E+02 tonnes/year

Calculation of Total Annual CO2 Emission Rate (Old Landfill) = Mound Emission Rate + Flare Emission Rate + Carbon Dioxide Lost During RNG Processing
= 826.4 + 1592.7 + 765
= 3.18E+03 tonnes/year

Old Landfill and Expansion Landfill Phases 1 Through 9 (Year 2031), Greenhouse, RNG Production, and Flaring

Year	Waste Acceptance Years (Inclusive)	Scenario	LANDGEM Emission Rate Landfill Gas (tonnes/year)	LANDGEM Emission Rate Landfill Gas (m^3/year)	LANDGEM Emission Rate Landfill Gas (scf/min)	LANDGEM Emission Rate Methane (tonnes/year)	LANDGEM Emission Rate Methane (m^3/year)	Landfill Gas Collection Coverage (%)	Landfill Gas Collection Efficiency (%) [1]	Landfill Gas Collected (m^3/year)	Methane Collected (tonnes/year)	Methane Collected (m^3/year)
2031	1972-2004	Old Landfill	3.57E+03	2.83E+06	1.90E+02	9.81E+02	1.47E+06	100%	70%	1.98E+06	6.87E+02	1.03E+06
2031	2005-2019	Expansion Landfill Phases 1 to 3	5.34E+04	4.23E+07	2.84E+03	1.47E+04	2.20E+07	100%	75%	3.17E+07	1.10E+04	1.65E+07
2031	2020-2024	Expansion Landfill Phases 4 to 5	6.01E+04	4.76E+07	3.20E+03	1.65E+04	2.47E+07	100%	75%	3.57E+07	1.24E+04	1.86E+07
2031	2025-2029	Expansion Landfill Phases 6 to 7	7.41E+04	5.87E+07	3.95E+03	2.04E+04	3.05E+07	100%	75%	4.40E+07	1.53E+04	2.29E+07
2031	2030-2031	Expansion Landfill Phases 8 to 9	1.67E+04	1.32E+07	8.88E+02	4.59E+03	6.88E+06	100%	75%	9.92E+06	3.44E+03	5.16E+06
2031	2005-2031	Total	2.08E+05	1.65E+08	1.11E+04	5.71E+04	8.56E+07			1.23E+08	4.28E+04	6.42E+07

Year	Waste Acceptance Years (Inclusive)	Scenario	Landfill Gas Collected (m^3/year)	Landfill Gas to Greenhouse (m^3/year)	Landfill Gas to RNG / Flare (m^3/year)	Landfill Gas to RNG (m^3/year)	Landfill Gas to Flare (m^3/year)	Methane to Flare (m^3/year)	Methane to Flare (tonnes/year)	Flare Destruction Efficiency (%) [2]	Flare Methane Emission Rate (tonnes/yr)	Fugitive Methane Emission Rate (tonnes/yr)	Oxidation of Methane in Landfill Cover (%) [3]	Mound Emission Rate (Controlled) (tonnes/yr)	Total Annual Methane Emissions (tonnes/yr)	Global Warming Potential (100-year CO_2 equivalent) [4]	Total Annual Methane Emissions (tCO_2e/yr)
2031	1972-2004	Old Landfill	1.98E+06	2.39E+05	1.74E+06	8.70E+05	8.70E+05	4.53E+05	3.02E+02	100%	9.06E-01	2.94E+02	10%	2.65E+02	2.66E+02	28	7.44E+03
2031	2005-2019	Expansion Landfill Phases 1 to 3	3.17E+07	3.83E+06	2.79E+07	1.40E+07	1.40E+07	7.26E+06	4.84E+03	100%	1.45E+01	3.67E+03	10%	3.30E+03	3.32E+03	28	9.29E+04
2031	2020-2024	Expansion Landfill Phases 4 to 5	3.57E+07	4.30E+06	3.14E+07	1.57E+07	1.57E+07	8.16E+06	5.44E+03	100%	1.63E+01	4.13E+03	10%	3.71E+03	3.73E+03	28	1.04E+05
2031	2025-2029	Expansion Landfill Phases 6 to 7	4.40E+07	5.31E+06	3.87E+07	1.94E+07	1.94E+07	1.01E+07	6.72E+03	100%	2.02E+01	5.09E+03	10%	4.58E+03	4.60E+03	28	1.29E+05
2031	2030-2031	Expansion Landfill Phases 8 to 9	9.92E+06	1.20E+06	8.72E+06	4.36E+06	4.36E+06	2.27E+06	1.51E+03	100%	4.54E+00	1.15E+03	10%	1.03E+03	1.04E+03	28	2.90E+04
2031	2005-2031	Total	1.23E+08	1.49E+07	1.08E+08	5.42E+07	5.42E+07	2.82E+07	1.88E+04		5.65E+01	1.43E+04		1.29E+04	1.30E+04		3.63E+05

Direct-Use of Biogas at Twin Creeks Greenhouse

Annual Landfill Gas to Twin Creeks Greenhouse (m^3)	14,883,335 [5]
Percentage of Landfill Gas Collected (%)	12.1%
Methane Concentration in Landfill Gas (%)	52%
Annual Methane to Twin Creeks Greenhouse (m^3)	7.74E+06
Energy Content LFG Methane (Btu/m^3 methane)	35,738 [6]
Energy Content Natural Gas (Btu/m^3 natural gas)	35,300 [6]
GHG Intensity of Natural Gas (kg CO_2e / m^3 of natural gas)	2.464 [6]
GHG Avoided by Displacing Pipeline Natural Gas (tonnes CO_2e)	**1.93E+04**

Renewable Natural Gas Production

Maximum RNG Plant LFG Flow Rate (scf/min)	8.00E+03 [7]
Maximum RNG Plant LFG Flow Rate (m^3/year)	1.19E+08
Percentage, RNG Plant LFG Flowrate vs LFG Collected (%)	100.00%
Percentage On-Spec RNG Delivery (%)	50.00% [8]
Methane Concentration in LFG (%)	52.00%
Annual Methane to RNG Plant (m^3)	2.82E+07
Fugitive Methane Lost During Upgrading (%)	2.00% [6]
Upgrading Efficiency (Conversion of Methane in LFG to RNG) (%)	94.00% [6]
Energy Content LFG Methane (Btu/m^3 methane)	35738 [6]
Energy Content Natural Gas (Btu/m^3 natural gas)	35300 [6]
GHG Intensity of Natural Gas (kg CO_2e / m^3 of natural gas)	2.464 [6]
GHG Avoided by Displacing Pipeline Natural Gas (tonnes CO_2e)	**6.48E+04**

Notes:
[1] Government of Canada. (2024). Canada Gazette, Part 1, Volume 158, Number 26: Regulations Respecting the Reduction in the Release of Methane (Waste Sector). https://canadagazette.gc.ca/rp-pr/p1/2024/2024-06-29/html/reg5-eng.html
The proposed regulatory scenario assumed 75% landfill gas collection efficiency at open, regulated landfills and 90% at closed, regulated landfills. It is assumed that landfills that comply with the proposed regulations would achieve these collection efficiencies which are noted in this reference as highest achievable industry
[2] Environment and Climate Change Canada, National Inventory Report 2022 Part 2, Section A3.6.1.2.1 suggests combustion efficiency of methane by flaring at 99.7%.
[3] Environment and Climate Change Canada. (2022). National Inventory Report 1990-2022: Greenhouse Gas Sources and Sinks in Canada, Part 2. Section A3.6.1.2.1
[4] Environment and Climate Change Canada. (2024). Global warming potentials. https://www.canada.ca/en/environment-climate-change/services/climate-change/greenhouse-gas-emissions/quantification-guidance/global-warming-potentials.html
[5] RWDI. (2019). Air Quality Assessment of Greenhouse Boiler Impacts. The boiler capacity at the greenhouse and capacity of landfill Flare 4 are assumed to be similar..
[6] Environment and Climate Change Canada. (2022). Greenhouse Gas Calculator for Organic Waste Management: Methodology Report. Section 7.
[7] RWDI. (2023). Twin Creeks Landfill: Emission Summary and Dispersion Modelling Report.
[8] Assumed percentage of time on-spec RNG is distributed through the natural gas distribution network.

Sample Calculations, Year 2031

Methane Collected (Old Landfill) = (LANDGEM Emission Rate CO_2) * (Landfill Gas Collection Coverage) * (Landfill Gas Collection Efficiency)
= 981.1 * 1.00 * 0.70
= 6.87E+02 tonnes/year

Methane to RNG (Old Landfill) = ((Methane Collected) - (Methane Transferred as Biogas to Greenhouse)) * (Percentage RNG Plant LFG Flowrate / LFG Collected) * (Percentage On-spec RNG Delivery)
= (686.8 - 687 * 0.121) * 1.000 * 0.500
= 3.02E+02 tonnes/year

Methane to Flare (Old Landfill) = (Methane Collected) - (Methane Transferred as Biogas to Greenhouse) - (Methane Transferred to RNG)
= 686.8 - 687 * 0.12 - 302
= 3.02E+02 tonnes/year

Flare Emission Rate (Old Landfill) = (Methane to Flare) * (1 - Flare Destruction Efficiency)
= 302 * (1 - 0.997)
= 9.06E-01 tonnes/year

Fugitive Methane Emission Rate (Old Landfill) = (LANDGEM Emission Rate Methane) - (Methane Collected)
= 981.1 - 686.8
= 2.94E+02 tonnes/year

Calculation of Mound Emission Rate (Controlled) (Old Landfill) = (Fugitive Methane Emission Rate) * (1 - Percentage Oxidation of Methane in Landfill Cover)
= 294.3 * (1 - 0.10)
= 2.65E+02 tonnes/year

Calculation of Total Annual Methane Emission Rate (Old Landfill) = (Mound Emission Rate) + (Flare Emission Rate)
= 264.9 + 0.9
= 2.66E+02 tonnes/year

Calculation of GHG Avoided by Displacing Pipeline Natural Gas = (Volume of Methane to Greenhouse) * (Energy Content LFG Methane) / (Energy Content Natural Gas) * (GHG Intensity of Natural Gas)
= (7739334 * 35738 / 35300 * 2.464) / 1,000 kg/tonne
= 1.93E+04 tonnes/year

Calculation of GHG Avoided by Displacing Pipeline Natural Gas = (Volume of Methane to RNG) * (1 - Fugitive Loss) * (Upgrade Efficiency) * (Energy Content LFG Methane) / (Energy Content Natural Gas) * (GHG Intensity of Natural Gas)
= (28208240 * (1 - 0.02) * 0.94 * 35738 / 35300 * 2.464) / 1,000 kg/tonne
= 6.48E+04 tonnes/year

Table 3H-1. GHG Emissions from the Combustion of Natural Gas for the Amine Reboiler (SourceID AMINE) [1]

Name of GHG	Annual Hours of Operation (hours/yr)	Volume of Natural Gas Combusted [2] (scfm)	Volume of Natural Gas Combusted [2] (Sm^3/yr)	Emission Factor [3]		Emission (tonnes/yr)	Global Warming Potential (GWP) [4]	CO_2e Emission (tonnes/yr)
Carbon Dioxide (CO_2)	8,760	64	952,533	1,067.26	lb/hr	4,241	1	4,240.7
Methane (CH_4)	8,760	64	952,533	0.013	lb/hr	0.05	28	1.4
Nitrous Oxide (N_2O)	8,760	64	952,533	0.033	g/m^3	0.03	265	8.3
							Total Annual GHG Emissions:	**4,251**

Notes:

[1] CO_2 and CH_4 emissions generated by the stationary combustion of natural gas were calculated using emission factors provided by the equipment supplier; an emission factor for N_2O was not provided by the supplier and emissions were calculated using Equation 2-13 under Section 2.B of Canada's Greenhouse Gas Quantification Requirements (GGQR), December 2022.
[2] Annual volume of natural gas combusted assuming continuous operation and inlet natural gas flow of 64 scfm as provided by the equipment supplier.
[3] For CO_2 and CH_4, emission factors provided by equipment supplier. For N_2O, emission factor for "Manufacturing Industries" from Table 2-5 in Canada's GGQR, December 2022.
[4] Schedule 1 of Ontario Regulation 390/18 as amended by Ontario Regulation 563/22, December 13, 2022.

Table 3H-2. GHG Emissions from the Combustion of Diesel (Stationary Sources, Generators GEN1, GEN2, GEN3, GEN4) [1]

Name of GHG	Fuel Consumption [2] (L/hr)	Annual Hours of Operation (Combined) (hr)	Volume of Diesel Combusted (kL)	Emission Factor [3] (kg/kL)	Emission (tonnes/yr)	Global Warming Potential (GWP) [4]	CO_2e Emission (tonnes/yr)
Carbon Dioxide (CO_2)	273	480	131.19	2,681	352	1	351.7
Methane (CH_4)	273	480	131.19	0.078	0.01023	28	0.287
Nitrous Oxide (N_2O)	273	480	131.19	0.02	0.00262	265	0.695
						Total Annual GHG Emissions:	**352.7**

Notes:

[1] Emergency generators are not in continuous use and typically will not be significant sources of greenhouse gas emissions. Five days of operation per generator, annually, are assumed. CO_2 emissions were calculated using Equation 2-2 under Section 2.A.2 of Canada's GGQR, December 2022; CH_4 and N_2O emissions were calculated using equation 2-13 under Section 2.B of Canada's GGQR, December 2022.
[2] Fuel consumption from specification sheet for GEN1 at 100% load (Cummins QST30-G5 NR2, 1,000 kW)
[3] From Table 2-2 for CO_2 in Canada's GGQR, December 2022; for CH_4 and N_2O emissions, the emission factors are from Table 2-7 for "Diesel - All industry - stationary combustion" in Canada's GGQR, December 2022.
[4] Schedule 1 of Ontario Regulation 390/18 as amended by Ontario Regulation 563/22, December 13, 2022.

Appendix 3H: Tailpipe Emissions, CO_2

CO_2 Emissions per vehicle pass for variable traffic		(Total CO_2 emissions per roadway, tonnes / hour, for each hour of the day)								AM	AM	AM	MD	MD	MD	MD	MD	PM	PM	PM	PM					
Tailpipe Emissions Rate (g/s)	Tailpipe Emissions Rate (tonne/h)	Source ID	12 AM	1 AM	2 AM	3 AM	4 AM	5 AM	6 AM	7 AM	8 AM	9 AM	10 AM	11 AM	12 PM	1 PM	2 PM	3 PM	4 PM	5 PM	6 PM	7 PM	8 PM	9 PM	10 PM	11 PM	Daily
0.104552868	0.00037639	PR01	0	0	0	0	0	0	0	0.03391277	0.02502996	0.02277161	0.02822927	0.02777761	0.03131568	0.0224705	0.0202498	0.0101249	0.00688794	0	0	0	0	0	0	0	0.22877004
0	0	PR01Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0.24715729	0.000889766	PR04A	0	0	0	0	0	0	0	0.04003948	0.02954024	0.02695992	0.02820559	0.02776071	0.03194261	0.02144337	0.01886304	0.00658427	0.00275828	0	0	0	0	0	0	0	0.2340975
0	0	PR04AZ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0.679746051	0.002447086	UR06	0	0	0	0	0	0	0	0.22048243	0.1627312	0.14804869	0.15538995	0.15245344	0.17545605	0.11794953	0.10351173	0.03646158	0.01517193	0	0	0	0	0	0	0	1.28765654
0	0	UR06Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	UR06Y	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	PR08Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	PR08Y	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	UR09Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	UR09Y	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	UR11Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	UR11Y	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	PR13Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	PR14Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	UR18Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0.347137875	0.001249696	PR04B	0	0	0	0	0	0	0	0.11259764	0.08310481	0.07560663	0.07935572	0.07785608	0.08960323	0.06023536	0.05286216	0.01862048	0.00774812	0	0	0	0	0	0	0	0.65759022
0	0	PR04BZ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0.213474806	0.000768509	PR04C	0	0	0	0	0	0	0	0.03458292	0.02551451	0.02328583	0.02436174	0.02397749	0.02758948	0.01852107	0.0162924	0.00568697	0.00238238	0	0	0	0	0	0	0	0.2021948
0	0	PR04CZ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0																										
1.89113549	0.006808088	IDLE01	0	0	0	0	0	0	0	0.00680809	0.00680809	0.00680809	0.00680809	0.00680809	0.00680809	0.00680809	0.00680809	0.00680809	0.00680809	0	0	0	0	0	0	0	0.06808088
1.89113549	0.006808088	IDLE02	0	0	0	0	0	0	0	0.00680809	0.00680809	0.00680809	0.00680809	0.00680809	0.00680809	0.00680809	0.00680809	0.00680809	0.00680809	0	0	0	0	0	0	0	0.06808088
0	0	DOZE2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	DOZE4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	DOZE2CAP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	DOZE2SS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1.60E+00	All "Y" and "Z" Roads and Dozers	0	0	0	0	0	0	1.59599504	1.59599504	1.59599504	1.59599504	1.59599504	1.59599504	1.59599504	1.59599504	1.59599504	1.59599504	1.59599504	1.59599504	0	0	0	0	0	0	19.1519405
		Total (tonnes/hour)	0	0	0	0	0	0	1.59599504	2.01731368	1.91050197	1.88351228	1.89692421	1.89165894	1.93420258	1.82776055	1.80114054	1.67696451	1.63767192	1.59599504	0	0	0	0	0	0	21.6696413
#operating days / week	6	Total (tonnes/year)	0	0	0	0	0	0	499.318448	631.130995	597.714189	589.270271	593.46629	591.819011	605.129094	571.827945	563.499683	524.650324	512.357357	499.318448	0	0	0	0	0	0	6779.50205

Appendix 3H: Tailpipe Emissions, CH_4

CH_4 Emissions per vehicle pass for variable traffic		(Total CO_2 emissions per roadway, tonnes / hour, for each hour of the day)								AM	AM	AM	MD	MD	MD	MD	MD	PM	PM	PM	PM				
Tailpipe Emissions Rate (g/s)	Tailpipe Emissions Rate (tonne/h)	Source ID	12 AM	1 AM	2 AM	3 AM	4 AM	5 AM	6 AM	7 AM	8 AM [1]	9 AM	10 AM	11 AM	12 PM	1 PM	2 PM	3 PM	4 PM	5 PM	6 PM	7 PM	8 PM	9 PM	10 PM	11 PM	Daily
3.26989E-06	1.17716E-08	PR01	0	0	0	0	0	0	0	1.0606E-06	7.8281E-07	7.1218E-07	9.4997E-07	9.3584E-07	1.0547E-06	7.5691E-07	6.8158E-07	3.1312E-07	2.1189E-07	0	0	0	0	0	0	0	7.4597E-06
0	0	PR01Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7.72984E-06	2.78274E-08	PR04A	0	0	0	0	0	0	0	1.2522E-06	9.2387E-07	8.4317E-07	9.517E-07	9.35E-07	1.0741E-06	7.2351E-07	6.3447E-07	2.0314E-07	8.6265E-08	0	0	0	0	0	0	0	7.6275E-06
0	0	PR04AZ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.1259E-05	7.65326E-08	UR06	0	0	0	0	0	0	0	6.8956E-06	5.0894E-06	4.6302E-06	5.2348E-06	5.1353E-06	5.9083E-06	3.972E-06	3.4899E-06	1.125E-06	4.6685E-07	0	0	0	0	0	0	0	4.1947E-05
0	0	UR06Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	UR06Y	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	PR08Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	PR08Y	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	UR09Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	UR09Y	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	UR11Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	UR11Y	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	PR13Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	PR14Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	UR18Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.08567E-05	3.90842E-08	PR04B	0	0	0	0	0	0	0	3.5215E-06	2.5991E-06	2.3646E-06	2.6734E-06	2.6226E-06	3.0173E-06	2.0285E-06	1.7822E-06	5.7454E-07	2.3841E-07	0	0	0	0	0	0	0	2.1422E-05
0	0	PR04BZ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.67642E-06	2.40351E-08	PR04C	0	0	0	0	0	0	0	1.0816E-06	7.9797E-07	7.2826E-07	8.22E-07	8.0758E-07	9.2776E-07	6.2491E-07	5.48E-07	1.7546E-07	7.4509E-08	0	0	0	0	0	0	0	6.588E-06
0	0	PR04CZ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0																										
9.15823E-05	3.29696E-07	IDLE01	0	0	0	0	0	0	0	3.297E-07	3.297E-07	3.297E-07	3.297E-07	3.297E-07	3.297E-07	3.297E-07	3.297E-07	3.297E-07	3.297E-07	0	0	0	0	0	0	0	3.297E-06
9.15823E-05	3.29696E-07	IDLE02	0	0	0	0	0	0	0	3.297E-07	3.297E-07	3.297E-07	3.297E-07	3.297E-07	3.297E-07	3.297E-07	3.297E-07	3.297E-07	3.297E-07	0	0	0	0	0	0	0	3.297E-06
0	0	DOZE2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	DOZE4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	DOZE2CAP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	DOZE2SS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2.49E-06	All "Y" and "Z" Roads and Dozers	0	0	0	0	0	0	2.4909E-06	2.4909E-06	2.4909E-06	2.4909E-06	2.4909E-06	2.4909E-06	2.4909E-06	2.4909E-06	2.4909E-06	2.4909E-06	2.4909E-06	0	0	0	0	0	0	2.9891E-05
		Total (tonnes/day)	0	0	0	0	0	0	2.4909E-06	1.5901E-05	1.2561E-05	1.1717E-05	1.2832E-05	1.2651E-05	1.4078E-05	1.0499E-05	9.6049E-06	5.2285E-06	4.0163E-06	2.4909E-06	0	0	0	0	0	0	0.00011407
#operating days / week	6	Total (tonnes/year)	0	0	0	0	0	0	0.0007793	0.0049748	0.00392969	0.00366561	0.00401465	0.00395789	0.00440435	0.00328477	0.00300496	0.00163577	0.00125654	0.0007793	0	0	0	0	0	0	0.03568763

Appendix 3H: Tailpipe Emissions, N_2O

N_2O Emissions per vehicle pass for variable traffic		(Total N_2O emissions per roadway, tonnes / hour, for each hour of the day)								AM	AM	AM	MD	MD	MD	MD	MD	PM	PM	PM	PM					
Tailpipe Emissions Rate (g/s)	Tailpipe Emissions Rate (tonne/h)	Source ID	12 AM	1 AM	2 AM	3 AM	4 AM	5 AM	6 AM	7 AM	8 AM	9 AM	10 AM	11 AM	12 PM	1 PM	2 PM	3 PM	4 PM	5 PM	6 PM	7 PM	8 PM	9 PM	10 PM	11 PM	Daily
7.70702E-07	2.77453E-09	PR01	0	0	0	0	0	0	0	2.5E-07	1.845E-07	1.679E-07	2.428E-07	2.389E-07	2.694E-07	1.931E-07	1.742E-07	7.491E-08	5.077E-08	0	0	0	0	0	0	0	1.846E-06
0	0	PR01Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.8219E-06	6.55883E-09	PR04A	0	0	0	0	0	0	0	2.951E-07	2.178E-07	1.987E-07	2.427E-07	2.387E-07	2.742E-07	1.843E-07	1.62E-07	4.854E-08	2.033E-08	0	0	0	0	0	0	0	1.882E-06
0	0	PR04AZ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5.01069E-06	1.80385E-08	UR06	0	0	0	0	0	0	0	1.625E-06	1.2E-06	1.091E-06	1.337E-06	1.311E-06	1.51E-06	1.016E-06	8.911E-07	2.688E-07	1.118E-07	0	0	0	0	0	0	0	1.036E-05
0	0	UR06Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	UR06Y	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	PR08Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	PR08Y	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	UR09Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	UR09Y	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	UR11Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	UR11Y	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	PR13Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	PR14Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	UR18Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.5589E-06	9.21202E-09	PR04B	0	0	0	0	0	0	0	8.3E-07	6.126E-07	5.573E-07	6.826E-07	6.697E-07	7.71E-07	5.186E-07	4.551E-07	1.373E-07	5.711E-08	0	0	0	0	0	0	0	5.291E-06
0	0	PR04BZ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.57361E-06	5.665E-09	PR04C	0	0	0	0	0	0	0	2.549E-07	1.881E-07	1.716E-07	2.096E-07	2.062E-07	2.368E-07	1.592E-07	1.399E-07	4.192E-08	1.756E-08	0	0	0	0	0	0	0	1.626E-06
0	0	PR04CZ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0																										
3.72319E-05	1.34035E-07	IDLE01	0	0	0	0	0	0	0	1.34E-07	1.34E-07	1.34E-07	1.34E-07	1.34E-07	1.34E-07	1.34E-07	1.34E-07	1.34E-07	1.34E-07	0	0	0	0	0	0	0	1.34E-06
3.72319E-05	1.34035E-07	IDLE02	0	0	0	0	0	0	0	1.34E-07	1.34E-07	1.34E-07	1.34E-07	1.34E-07	1.34E-07	1.34E-07	1.34E-07	1.34E-07	1.34E-07	0	0	0	0	0	0	0	1.34E-06
0	0	DOZE2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	DOZE4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	DOZE2CAP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	DOZE2SS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5.61E-08	All "Z" Roads and Dozers	0	0	0	0	0	0	5.606E-08	5.606E-08	5.606E-08	5.606E-08	5.606E-08	5.606E-08	5.606E-08	5.606E-08	5.606E-08	5.606E-08	5.606E-08	5.606E-08	0	0	0	0	0	0	6.727E-07
		Total (tonnes/day)	0	0	0	0	0	0	5.606E-08	3.329E-06	2.542E-06	2.343E-06	2.796E-06	2.75E-06	3.116E-06	2.202E-06	1.972E-06	8.206E-07	5.31E-07	5.606E-08	0	0	0	0	0	0	2.251E-05
#operating days / week	6	Total (tonnes/year)	0	0	0	0	0	0	1.754E-05	0.0010416	0.0007953	0.0007331	0.0008746	0.0008604	0.0009748	0.0006889	0.000617	0.0002567	0.0001661	1.754E-05	0	0	0	0	0	0	0.0070438

5A

All Scenarios – Emissions Calculations, Dust, LFG, and Odour

Appendix 5A-All-5.1a: Silt Loading - Paved Roads

Project #2101750

Twin Creeks Environmental Centre - Preferred Alternative

Sample ID	Sampled Area Dimensions		Area	Combined Area	Lab ID	Lab Measured Dry Weight of Sample (g)	Weight of Sample per m^2 (g/m^2)	Silt %	Silt loading (g/m2)
	length (m)	width (m)	m^2	m^2					
PR1	7.0	12.7	89.0	89.0	WT2217491-001	81.90	0.92	0.50	0.46
PR2	3.3	3.6	11.9	41.7	WT2217491-002	81.10	1.94	0.41	0.80
	6.7	4.4	29.8						
PR3	5.3	3.7	19.5	28.8	WT2217491-003	115.50	4.01	0.19	0.75
	3.5	2.6	9.3						
PR4	1.1	6.6	7.3	7.3	WT2217491-004	100.20	13.80	0.26	3.53
								Average Silt Loading:	1.38

Appendix 5A-All-5.1b: Industrial Wind Erosion Emissions

Project #2101750

Twin Creeks Environmental Centre - Preferred Alternative

INDUSTRIAL WIND EROSION - AP-42 Section 13.2.5

Meteorological Station Anemometer height, z (m):	10	
Maximum recorded hourly wind speed (m/s):	20.1	
Fastest Mile Wind Speed (m/s):	23.115	**[1]**
Shear Velocity u* (m/s):	1.140	**[2]**

Prandtl-von Kármán Equation: $u^* = u_z k / \ln(z / z_o)$, k = 0.4

Emission factor: $E = K \Sigma P_i$ (i from 1 to N)

Erosion potential function: $P = 58 (u^* - u_t^*)^2 + 25 (u^* - u_t^*)$

$P = 0$ for $u^* \le u_t^*$

u* shear / friction velocity (m/s)
u_z wind speed at height z (m/s)
k von Kármán's contstant
K particle size multiplier (1, 0.6, 0.5 and 0.075 for TSP, PM_{15}, PM_{10} and $PM_{2.5}$, respectively)
z_o surface roughness length (m)
z anemometer height (m)

ID [3]	Pile	z_o (m)	u*	u_t^* [3] (m/s)	Number of Disturbances [4] Hourly (#/h)	Daily (#/d)	Annual (#/a)	Area Disturbed [5] (m^2)	Maximum Erosion Potential	Base AP-42 Emission Factor TSP (g/m^2)	PM_{10} (g/m^2)	$PM_{2.5}$ (g/m^2)	Base Emission Rate TSP (g/s)	PM_{10} (g/s)	$PM_{2.5}$ (g/s)	Additional Control Efficiency Applied (%)	Final Controlled Emission Rate at 20.1 m/s TSP (g/s)	Data Quality Rating	PM_{10} (g/s)	Data Quality Rating	$PM_{2.5}$ (g/s)	Data Quality Rating
WIND_SS	Soil stockpile	0.003	1.14	1.02	1	2	4	20900	3.829	3.8E+00	1.9E+00	2.9E-01	2.2E+01	1.1E+01	1.7E+00	0%	2.2E+01	E	1.1E+01	E	1.7E+00	E
WIND_WF	Working face	0.003	1.14	1.02	1	2	4	5040	3.829	3.8E+00	1.9E+00	2.9E-01	5.4E+00	2.7E+00	4.0E-01	0%	5.4E+00	E	2.7E+00	E	4.0E-01	E
WIND_CAP	Final Cap Construction Wind Erosion	0.003	1.14	1.02	1	2	4	5040	3.829	3.8E+00	1.9E+00	2.9E-01	5.4E+00	2.7E+00	4.0E-01	0%	5.4E+00	E	2.7E+00	E	4.0E-01	E

[1] Speed-up factor to convert hourly mean wind speeds to fastest mile wind gust taken from Durst curve for in North America (1.15).
(Krayer, William R>, Marshall, Richard D. 1992: Gust Factors Applied to Hurrican Winds. Bulletin of the American Meteorological Society, Vol. 73, No. 5, May 1992)
[2] Used for sample calculations & factor validation
[3] Typical threshold friction veolocities can be taken from Table 13.2.5-2 of AP-42, or other suitable sources.
[4] Reflects the estimated maximum number of disturbances for each pile within the specified time period.
[5] Estimated from type of operations (e.g., loader operations, scraper activity, etc.)

Comments

Sample Calculations

Shear Velocity: = (23.115 m/s) x 0.4 / LN ((10 m) / (0.003 m)) = 1.14 m/s

Maximum Erosion Potential: 1.14 m/s > 1.02 m/s therefore = 58 x ((1.14 m/s) - (1.02 m/s))^2 + 25 x ((1.14 m/s) - (1.02 m/s))) = 3.829

TSP Emission Factor: = (1) x (3.829) x (1 disturbance per hour) = 3.829 g/m²/h

Base Emission Rate: = (20900 m²) x (3.829 g/m²/h) / (3600 s/h) = 22.227314 g/s

Appendix 5A-All-5.1c: Bulk Material Handling Emissions Spreadsheet

Twin Creeks Environmental Centre - Preferred Alternative

RWDI Project# 2101750

Material handling emissions: $E = 0.0016\ k\ (U / 2.2)^{1.3} / (M / 2)^{1.4}$

E emission factor
k particle size multiplier (0.8, 0.74, 0.35 and 0.053 for TSP, PM_{30}, PM_{10} and $PM_{2.5}$, respectively) [3]
U mean wind speed, meters per second (m/s)
M material moisture content (%)

AGGREGATE HANDLING AND STORAGE PILES - AP-42 Section 13.2.4

Average recorded hourly wind speed (m/s): 3.1
(used for sample calculations & factor validation)

Source ID [1]	Description	Processing Rate			Site Data				Base AP-42 Emission Factor				Base Emission Rate				Additional Control Efficiency Applied	Final Controlled Emission Rate at 3.1 m/s					
		Hourly	Daily	Annual	Site Specific Data?	Silt Content	Moisture Content	Source Conditions Valid [2]	TSP	PM_{10}	$PM_{2.5}$	Silica	TSP	PM_{10}	$PM_{2.5}$	Silica		TSP	Data Quality Rating	PM_{10}	Data Quality Rating	$PM_{2.5}$	Data Quality Rating
		(Mg/h)	(Mg/d)	(Mg/y)	(y/n)	(%)	(%)		(kg/Mg)	(kg/Mg)	(kg/Mg)	(kg/Mg)	(g/s)	(g/s)	(g/s)	(g/s)	(%)	(g/s)		(g/s)		(g/s)	
DC_WF	Daily Cover dropped at Working Face	40			n	9.0%	12.0%	moisture too high	1.6E-04	7.1E-05	1.1E-05	0.0E+00	1.8E-03	7.9E-04	1.2E-04	0.0E+00		1.8E-03	C	7.9E-04	C	1.2E-04	C
DC_SS	Daily Cover dropped at Soil Stockpile	47			n	9.0%	12.0%	moisture too high	1.6E-04	7.1E-05	1.1E-05	0.0E+00	2.1E-03	9.2E-04	1.4E-04	0.0E+00		2.1E-03	C	9.2E-04	C	1.4E-04	C
CDA1	Compost Material dropped at Compost Diversion Area 1 (North)	0			n	9.0%	12.0%	moisture too high	1.6E-04	7.1E-05	1.1E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		0.0E+00	C	0.0E+00	C	0.0E+00	C
CDA2	Compost Material dropped at Compost Diversion Area 2 (South)	0			n	9.0%	12.0%	moisture too high	1.6E-04	7.1E-05	1.1E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		0.0E+00	C	0.0E+00	C	0.0E+00	C
CS_WF	Contaminated Soil dropped at Working Face	3			n	9.0%	12.0%	moisture too high	1.6E-04	7.1E-05	1.1E-05	0.0E+00	1.4E-04	5.9E-05	9.0E-06	0.0E+00		1.4E-04	C	5.9E-05	C	9.0E-06	C
FC_CAP	Final cover truck unloading at final cap working face	218			n	85.2%	20.2%	silt too high	7.8E-05	3.4E-05	5.2E-06	0.0E+00	4.7E-03	2.1E-03	3.1E-04	0.0E+00		4.7E-03	C	2.1E-03	C	3.1E-04	C
FC_SS	Final cover loading of clay at stockpile	218			n	85.2%	20.2%	silt too high	7.8E-05	3.4E-05	5.2E-06	0.0E+00	4.7E-03	2.1E-03	3.1E-04	0.0E+00		4.7E-03	C	2.1E-03	C	3.1E-04	C

[1] ID corresponds to process flow diagram for facility and / or material
[2] Relates to AP-42 Section 13.2.4-4
[3] k-factor for TSP (PM44) scaled up logarithmically to 0.8 from published k-factor of 0.74 which refers to PM30.

Comments

Sample calculation for uncontrolled TSP emission factor for Source DC_WF: Daily Cover dropped at Working Face, at a sample wind speed of 5 m/s

EF = 0.0016 x (0.8) x ((3.1 m/s) / 2.2)^1.3 / ((12%) / 2)^1.4 = 1.6E-04 kg TSP / Mg handled

Sample calculation for TSP emission rate for Source DC_WF: Daily Cover dropped at Working Face, at a sample wind speed of 5 m/s

$$\frac{40\ Mg_{handled}}{1\ h} \left| \frac{1.6E\text{-}04\ kg_{TSP}}{1\ Mg_{handled}} \right| \frac{1\ h}{3600\ s} \left| \frac{1000\ g_{TSP}}{1\ kg_{TSP}} \right| \frac{1\ g_{TSP\ uncontrolled}}{1\ g_{TSP}} = 1.8E\text{-}03\ g_{TSP} / s$$

Appendix 5A-All-5.1d: Bulldozer Activity Emissions

Project #2101750

Twin Creeks Environmental Centre - Preferred Alternative

Western Surface Coal Mining AP -42 Section 11.9 (11.9-2, 11.9-4)

ID [1]	Process Name / Description	AP-42 Process Description	Process Code	AP-42 Chapter	Activity Rate	Units	Additional Parameters		Base AP-42 Emission Factor				Base Emission Rate			Final Controlled Emission Rate [4]					
					Hourly		Material Moisture Content [2]	Material Silt Content [3]	TSP	PM_{10}	$PM_{2.5}$	Units	TSP	PM_{10}	$PM_{2.5}$	TSP	Data Quality Rating	PM_{10}	Data Quality Rating	$PM_{2.5}$	Data Quality Rating
					(units/h)		(%)	(%)					(g/s)	(g/s)	(g/s)	(g/s)		(g/s)		(g/s)	
DOZE1	Cat Dozers at WF	Bulldozing - overburden	4	Table 11.9-2	3	hours of operation	24	44.74	4.0E+00	1.2E+00	4.2E-01	kg/hr	3.3E+00	9.8E-01	3.5E-01	3.3E+00	B	9.8E-01	D	3.5E-01	D
DOZE3	Cat Dozer at SS	Bulldozing - overburden	4	Table 11.9-2	1	hours of operation	12	44.74	9.8E+00	3.1E+00	1.0E+00	kg/hr	2.7E+00	8.7E-01	2.9E-01	2.7E+00	B	8.7E-01	D	2.9E-01	D
DOZE1CAP	CAT Dozer at FC	Bulldozing - overburden	4	Table 11.9-2	2	hours of operation	20.2	81.15	1.0E+01	3.7E+00	1.1E+00	kg/hr	5.7E+00	2.0E+00	6.0E-01	5.7E+00	B	2.0E+00	D	6.0E-01	D

[1] ID corresponds to process flow diagram for facility and / or material
[2] Applies to truck loading, bulldozing and dragline operations only
[3] Applies to bulldozing operations only
[4] Dozer emission rate for DOZE1 (working face) for the first and last hours of operation each day. Daily cover is removed and replaced during these times; for the remaining hours of operation, the working face is exposed waste which is minimal source of fugitive dust.

Appendix 5A-All-5.1e: Landfill Gas Flare Combustion Emissions

Emission Factors and Emission Rate Development for Combustion By-Products from Landfill Gas Flares

Source ID	Source Description	Contaminant	CAS	Emission Factor	Units	Note	Data Quality	Estimation Technique	Landfill Gas Emission Rate (g/s)	Bypass Scenario Emission Rate (g/s) [2]
Flare1	Waste Gas Burner (Flare A)	Particulate Matter	PM	238	kg/10^6 dscm Methane	[1]	D	EF	2.48E-01	--
Flare2	Waste Gas Burner (Flare B)	Particulate Matter	PM	238	kg/10^6 dscm Methane	[1]	D	EF	2.48E-01	--
Flare3	Waste Gas Burner (Flare C)	Particulate Matter	PM	238	kg/10^6 dscm Methane	[1]	D	EF	2.48E-01	--
Flare4	Waste Gas Burner (Flare D)	Particulate Matter	PM	238	kg/10^6 dscm Methane	[1]	D	EF	1.12E-01	--
FLARE5	Waste Gas Burner (Flare E)	Particulate Matter	PM	238	kg/10^6 dscm Methane	[1]	D	EF	2.25E-01	2.18E-01
Flare6	Waste Gas Burner (Flare F)	Particulate Matter	PM	238	kg/10^6 dscm Methane	[1]	D	EF	2.25E-01	2.18E-01
RNG_TO1	Off-Spec RNG Gas	Particulate Matter	PM	238	kg/10^6 dscm Methane	[1]	D	EF	4.65E-03	--
RNG_TO2	Off-Spec RNG Gas	Particulate Matter	PM	238	kg/10^6 dscm Methane	[1]	D	EF	7.71E-02	--

Notes:

[1] Emission factors for PM are from US EPA AP-42 Table 2.4-4 (Emission Factors for Secondary Compounds Exiting Control Devices).

[2] Flare 5 and flare 6 are used to combust off-spec landfill gas when the thermal oxidizers are not operational. For the bypass scenario emissions of sulphur dioxide are calculated in Appendix C9. All sulphur compounds were calculated using the emissions data provided by Morrow Energy.

Data provided by Comcor for Flare1-Flare3

Flare Flow Rate per Flare=	2.08	(m^3/s)
Flare Flow Rate per Flare=	125	(m^3/min)
Flare Methane Concentration per Flare=	50%	
Flare Methane Flow Rate per Flare=	62.5	(m^3/min)
Flare Methane Flow Rate per Flare=	**1.04**	(m^3/s)

Data provided by Comcor for Flare1-Flare3

Flare A Methane Flow Rate =	1.04	(m^3/s)
Flare B Methane Flow Rate =	1.04	(m^3/s)
Flare C Methane Flow Rate =	1.04	(m^3/s)

Data Provided in MRW pre-treatment thermal oxidizer quote

Thermal Oxidizer Flow Rate =	0.33	(m^3/s)
Thermal Oxidizer Flow Rate =	20	(m^3/min)
Thermal Oxidizer Methane Concentration =	6%	
Thermal Oxidizer Methane Flow Rate =	1.2	(m^3/min)
Thermal Oxidizer Methane Flow Rate =	**0.02**	(m^3/s)

Data provided by TCLF for Flare4

Flare Flow Rate =	0.94	(m^3/s)
Flare Flow Rate =	57	(m^3/min)
Flare Methane Concentration =	50%	
Flare Methane Flow Rate =	28.3	(m^3/min)
Flare Methane Flow Rate =	**0.47**	(m^3/s)

Data provided by TCLF for Flare4

Flare D Methane Flow Rate =	0.47	(m^3/s)

Data Provided in MRW direct fired thermal oxidizer quote

Thermal Oxidizer Flow Rate =	2.31	(m^3/s)
Thermal Oxidizer Flow Rate =	139	(m^3/min)
Thermal Oxidizer Methane Concentration =	14%	
Thermal Oxidizer Methane Flow Rate =	19.4	(m^3/min)
Thermal Oxidizer Methane Flow Rate =	**0.32**	(m^3/s)

Data Provided in John Zinkhamworthy quote for Flares 5 and 6 - per flare

Startup Operations

Flare Flow Rate =	1.89	(m^3/s)
Flare Flow Rate =	113	(m^3/min)
Flare Methane Concentration =	50%	
Flare Methane Flow Rate =	56.6	(m^3/min)
Flare Methane Flow Rate =	**0.94**	(m^3/s)

Bypass Scenario

Flare Flow Rate =	0.94	(m^3/s)
Flare Flow Rate =	57	(m^3/min)
Hare Methane Concentration Bypass Scenario=	97%	
=	54.9	(m^3/min)
=	**0.92**	(m^3/s)

Total (for 6 flares) =	**5.48**	(m^3/s)
Total (for 2 thermal oxidizers) =	**0.34**	(m^3/s)

Appendix 5A-All-5.2a: Hydrogen Sulphide (H_2S) and Total Reduced Sulphur (TRS) Emissions from Interim and Final Cover

RWDI# 2101750

Twin Creeks Environmental Centre

			New Interim Cover 01		New Interim Cover 02		New Interim Cover 03		New Interim Cover 04		New Interim Cover 05		Result Units
Compound		D.L.	Result	Average Flux (g/m²/s)	Result	Average Flux (g/m²/s)	Result	Average Flux (g/m²/s)	Result	Average Flux (g/m²/s)	Result	Average Flux (g/m²/s)	
Carbon Disulfide		6.2	<6.2	3.99E-09	<6.2	3.99E-09	<6.5	4.19E-09	<6.2	3.99E-09	<6.2	3.99E-09	µg/m³
Carbon Disulfide		2.0	<2.0		<2.0		<2.1		<2.0		<2.0		ppb (V)
Carbonyl Sulfide		10.0	<10	6.30E-09	<10	6.30E-09	<10	6.61E-09	<10	6.30E-09	<10	6.30E-09	µg/m³
Carbonyl Sulfide		4.0	<4.0		<4.0		<4.2		<4.0		<4.0		ppb (V)
Dimethyl Sulfide		10.0	<10	6.51E-09	<10	6.51E-09	<11	6.84E-09	<10	6.51E-09	<10	6.51E-09	µg/m³
Dimethyl Sulfide		4.0	<4.0		<4.0		<4.2		<4.0		<4.0		ppb (V)
Dimethyl Disulfide		7.7	<7.7	3.26E-09	<7.7	3.26E-09	<8.1	3.42E-09	<7.7	3.26E-09	<7.7	3.26E-09	µg/m³
Dimethyl Disulfide		2.0	<2.0		<2.0		<2.1		<2.0		<2.0		ppb (V)
Hydrogen Sulfide		5.6	<5.6	3.57E-09	<5.6	3.57E-09	**7.2**	4.64E-09	<5.6	3.57E-09	<5.6	3.57E-09	µg/m³
Hydrogen Sulfide		4.0	<4.0		<4.0		**5.2**		<4.0		<4.0		ppb (V)
Methly Mercaptan		7.9	<7.9	5.04E-09	<7.9	5.04E-09	<8.3	5.30E-09	<7.9	5.04E-09	<7.9	5.04E-09	µg/m³
Methyl Mercaptan		4.0	<4.0		<4.0		<4.2		<4.0		<4.0		ppb (V)
Total Reduced Sulfur as H2S (NPRI-6)													
Total Reduced Sulfur		12.0	<12.0	1.07E-08	<12.0	1.07E-08	<12.0	1.07E-08	<12.0	1.07E-08	<12.0	1.07E-08	µg/m³

			New Interim Cover 06		New Interim Cover 07		New Interim Cover 08		New Interim Cover 09		BLANK-DAJH		Result Units
Compound		D.L.	Result	Average Flux (g/m²/s)	Result	Average Flux (g/m²/s)	Result	Average Flux (g/m²/s)	Result	Average Flux (g/m²/s)	Result	Average Flux (g/m²/s)	
Carbon Disulfide		6.2	<6.2	3.99E-09	<6.2	3.99E-09	<6.2	3.99E-09	<6.2	3.99E-09	<6.5	4.19E-09	µg/m³
Carbon Disulfide		2.0	<2.0		<2.0		<2.0		<2.0		<2.1		ppb (V)
Carbonyl Sulfide		10.0	<10	6.30E-09	<10	6.30E-09	<10	6.30E-09	<10	6.30E-09	<10	6.61E-09	µg/m³
Carbonyl Sulfide		4.0	<4.0		<4.0		<4.0		<4.0		<4.2		ppb (V)
Dimethyl Sulfide		10.0	<10	6.51E-09	<10	6.51E-09	<10	6.51E-09	<10	6.51E-09	<11	6.84E-09	µg/m³
Dimethyl Sulfide		4.0	<4.0		<4.0		<4.0		<4.0		<4.2		ppb (V)
Dimethyl Disulfide		7.7	<7.7	3.26E-09	<7.7	3.26E-09	<7.7	3.26E-09	<7.7	3.26E-09	<8.1	3.42E-09	µg/m³
Dimethyl Disulfide		2.0	<2.0		<2.0		<2.0		<2.0		<2.1		ppb (V)
Hydrogen Sulfide		5.6	<5.6	3.57E-09	<5.6	3.57E-09	<5.6	3.57E-09	<5.6	3.57E-09	<5.8	3.75E-09	µg/m³
Hydrogen Sulfide		4.0	<4.0		<4.0		<4.0		<4.0		<4.2		ppb (V)
Methly Mercaptan		7.9	<7.9	5.04E-09	<7.9	5.04E-09	<7.9	5.04E-09	<7.9	5.04E-09	<8.3	5.30E-09	µg/m³
Methyl Mercaptan		4.0	<4.0		<4.0		<4.0		<4.0		<4.2		ppb (V)
Total Reduced Sulfur as H2S (NPRI-6)													
Total Reduced Sulfur		8.5		1.07E-08		1.07E-08		1.07E-08		1.07E-08		1.07E-08	ppb (V)
Total Reduced Sulfur		12.0	<12.0		<12.0		<12.0		<12.0		<12.0		µg/m³

			New Final Cover 01		New Final Cover 02		New Final Cover 03		New Final Cover 04		New Final Cover 05		Result Units
Compound		D.L.	Result	Average Flux (g/m²/s)	Result	Average Flux (g/m²/s)	Result	Average Flux (g/m²/s)	Result	Average Flux (g/m²/s)	Result	Average Flux (g/m²/s)	
Carbon Disulfide		6.2	<6.2	3.99E-09	<6.2	3.99E-09	<6.2	3.99E-09	<6.2	3.99E-09	<6.2	3.99E-09	µg/m³
Carbon Disulfide		2.0	<2.0		<2.0		<2.0		<2.0		<2.0		ppb (V)
Carbonyl Sulfide		10.0	<10	6.30E-09	<10	6.30E-09	<10	6.46E-09	<10	6.46E-09	<10	6.46E-09	µg/m³
Carbonyl Sulfide		4.0	<4.0		<4.0		<4.0		<4.1		<4.1		ppb (V)
Dimethyl Sulfide		10.0	<10	6.51E-09	<10	6.51E-09	<10	6.68E-09	<10	6.68E-09	<10	6.68E-09	µg/m³
Dimethyl Sulfide		4.0	<4.0		<4.0		<4.0		<4.1		<4.1		ppb (V)
Dimethyl Disulfide		7.7	<7.7	3.26E-09	<7.7	3.26E-09	<7.7	3.26E-09	<7.7	3.26E-09	<7.7	3.26E-09	µg/m³
Dimethyl Disulfide		2.0	<2.0		<2.0		<2.0		<2.0		<2.0		ppb (V)
Hydrogen Sulfide		5.6	<5.6	3.57E-09	<5.6	3.57E-09	<5.6	3.66E-09	<5.7	3.66E-09	<5.7	3.66E-09	µg/m³
Hydrogen Sulfide		4.0	<4.0		<4.0		<4.0		<4.1		<4.1		ppb (V)
Methly Mercaptan		7.9	<7.9	5.04E-09	<7.9	5.04E-09	<7.9	5.17E-09	<8.1	5.17E-09	<8.1	5.17E-09	µg/m³
Methyl Mercaptan		4.0	<4.0		<4.0		<4.0		<4.1		<4.1		ppb (V)
Total Reduced Sulfur as H2S (NPRI-6)													
Total Reduced Sulfur		12.0	<12	1.07E-08	<12	1.07E-08	<12	1.07E-08	<12	1.07E-08	<12	1.07E-08	µg/m³

			New Final Cover 06		New Final Cover 07		New Final Cover 08		New Final Cover 09		BLANK-EZH		Result Units
Compound		D.L.	Result	Average Flux (g/m²/s)	Result	Average Flux (g/m²/s)	Result	Average Flux (g/m²/s)	Result	Average Flux (g/m²/s)	Result	Average Flux (g/m²/s)	
Carbon Disulfide		6.2	<6.2	3.99E-09	<6.2	3.99E-09	<6.2	3.99E-09	<6.2	3.99E-09	<6.2	3.45E-07	µg/m³
Carbon Disulfide		2.0	<2.0		<2.0		<2.0		<2.0		<2.0		ppb (V)
Carbonyl Sulfide		10.0	<10	6.30E-09	<10	6.30E-09	<10	6.30E-09	<10	6.46E-09	<10	5.44E-07	µg/m³
Carbonyl Sulfide		4.0	<4.0		<4.0		<4.0		<4.1		<4.0		ppb (V)
Dimethyl Sulfide		10.0	<10	6.51E-09	<10	6.51E-09	<10	6.51E-09	<10	6.68E-09	<10	5.63E-07	µg/m³
Dimethyl Sulfide		4.0	<4.0		<4.0		<4.0		<4.1		<4.0		ppb (V)
Dimethyl Disulfide		7.7	<7.7	3.26E-09	<7.7	3.26E-09	<7.7	3.26E-09	<7.7	3.26E-09	<7.7	2.81E-07	µg/m³
Dimethyl Disulfide		2.0	<2.0		<2.0		<2.0		<2.0		<2.0		ppb (V)
Hydrogen Sulfide		5.6	<5.6	3.57E-09	<5.6	3.57E-09	<5.6	3.57E-09	<5.7	3.66E-09	<5.6	3.09E-07	µg/m³
Hydrogen Sulfide		4.0	<4.0		<4.0		<4.0		<4.1		<4.0		ppb (V)
Methly Mercaptan		7.9	<7.9	5.04E-09	<7.9	5.04E-09	<7.9	5.04E-09	<8.1	5.17E-09	<7.9	4.36E-07	µg/m³
Methyl Mercaptan		4.0	<4.0		<4.0		<4.0		<4.1		<4.0		ppb (V)
Total Reduced Sulfur as H2S (NPRI-6)													
Total Reduced Sulfur		12.0	<12	1.07E-08	<12	1.07E-08	<12	1.07E-08	<12	1.07E-08	<12	1.07E-08	µg/m³

Contaminant	CAS	Interim Cover	Final Cover - Old Landfill	Final Cover - Vertical Expansion Landfill
Hydrogen Sulfide	7783-06-4	3.69E-09	3.61E-09	1.48E-09
Total Reduced Sulfur	TRS	1.07E-08	1.07E-08	4.29E-09

Notes:

[1] The H_2S and TRS flux rate for the expansion landfill was adjusted to account for the increased collection efficiency expected when final cover is applied. Flux rate measurements taken on the interim cover represent 75% collection efficiency of landfill gases. Final cover collection efficiency is expected to be 90%, the interim cover flux rates were adjusted to account for this increase in collection efficiency. The 90% collection efficiency is based a combination of additional controls including an enhanced final cap that aligns with US EPA AP-42 guidance and the integration of a vertical and horizontal gas collection system.

Sample Calculation for Expansion Landfill Final Cover Flux Rate

$$\text{Final Cover Flux Rate (ou/m}^2\text{/s)} = \frac{3.69\text{E-}09 \text{ g/m}^2\text{-s}}{(1 - 0.75)} \times (1 - 0.9)$$

Final Cover Flux Rate (ou/m²/s) = 1.48E-09 OU/m²/s

Appendix 5A-All-5.2b: NMOC Emissions from the Flares

RWDI# 2101750

Twin Creeks Environmental Centre

Modelled Sources: FLARE1-FLARE6
Emissions rates calculated relative to each flare's individual maximum capacity

As a conservative assumption all flares were assumed to operation at their individual maximum capacities. US EPA AP-42 Chapter 2.4 Municipal Solid Waste Landfills suggests 99.2% destruction of NMOC compounds. As a conservative assumption a destruction efficiency of 98% was applied to all landfill gas flares.

Flare ID	Maximum Landfill Gas Flow Rate (m^3/s)
FLARE1	2.08
FLARE2	2.08
FLARE3	2.08
FLARE4	0.94
FLARE5	1.89
FLARE6	1.89

Flare Destruction Efficiency	98%

Compound	CAS Number	Molecular Weight (g/mol)	Average Concentration In Raw LFG (ppm)	Note	Flare 1 -3 Emission Rate (g/s)	Emission Rate FLARE4 (g/s)	Emission Rate FLARE5 (g/s)	Emission Rate FLARE6 (g/s)
Vinyl Chloride	75-01-4	62.5	0.45	[1]	4.91E-05	2.22E-05	4.45E-05	4.45E-05
1,2-Dichloroethane	107-06-2	99.0	0.24	[1]	4.06E-05	1.84E-05	3.68E-05	3.68E-05
Benzene	71-43-2	78.1	0.93	[1]	1.26E-04	5.73E-05	1.15E-04	1.15E-04
Hydrogen Sulfide	7783-06-4	34.1	333	[1]	1.97E-02	8.92E-03	1.78E-02	1.78E-02
Total Reduced Sulphur (TRS) [2]	TRS	- -	333	[1]	1.97E-02	8.92E-03	1.78E-02	1.78E-02

Notes:
[1] Concentrations based on the landfill gas sampling report dated July 13, 2023.
[2] Emissions of Total Reduced Sulphurs (TRS) are based on the total of all sulphur compounds.

Sample Calculation

Vinyl Chloride Emission Rate from Flare 1

$$\text{Molar Flow of Vinyl Chloride} = \frac{101325\ \text{Pa}}{} \left| \frac{0.45\ \text{m}^3}{1{,}000{,}000\ \text{m}^3} \right| \frac{1}{8.314\ \text{Pa m}^3/\text{mol-K}} \left| \frac{1}{293\ \text{K}} \right.$$

$$\text{Molar Flow of Vinyl Chloride} = \frac{1.9\text{E-}05\ \text{mol}}{\text{m}^3}$$

$$\text{Emission Rate of Vinyl Chloride} = \frac{1.9\text{E-}05\ \text{mol}}{\text{m}^3} \left| \frac{62.5\ \text{g}}{\text{mol}} \right| \frac{2.08\ \text{m}^3}{\text{s}} \quad (1\text{-}0.98) \quad \text{destruction efficiency}$$

$$\text{Emission Rate of Vinyl Chloride} = \frac{4.9\text{E-}05\ \text{g}}{\text{s}}$$

Appendix 5A-All-5.2c: Landfill Gas Flare Combustion Emissions

RWDI# 2101750

Emission Factors and Emission Rate Development for Combustion By-Products from Landfill Gas Flares

Source ID	Source Description	Contaminant	CAS	Emission Factor	Units	Note	Data Quality	Estimation Technique	Landfill Gas Emission Rate (g/s)	Bypass Scenario Emission Rate (g/s) (g/s) [3]
Flare1	Waste Gas Burner (Flare A)	Oxides of Nitrogen	10102-44-0	631	kg/10^6 dscm Methane	[1]	C	EF	6.57E-01	--
		Carbon Monoxide	630-08-0	737	kg/10^6 dscm Methane	[1]	C	EF	7.68E-01	--
		Sulphur Dioxide	7446-09-5	187	mg/m^3	[2]	D	EC	3.89E-01	--
		Particulate Matter	PM	238	kg/10^6 dscm Methane	[1]	D	EF	2.48E-01	--
		Dioxins and Furans	DF	11	pg TEQ/m^3	[7]	E	EF	2.29E-11	--
Flare2	Waste Gas Burner (Flare B)	Oxides of Nitrogen	10102-44-0	631	kg/10^6 dscm Methane	[1]	C	EF	6.57E-01	--
		Carbon Monoxide	630-08-0	737	kg/10^6 dscm Methane	[1]	C	EF	7.68E-01	--
		Sulphur Dioxide	7446-09-5	187	mg/m^3	[2]	D	EC	3.89E-01	--
		Particulate Matter	PM	238	kg/10^6 dscm Methane	[1]	D	EF	2.48E-01	--
		Dioxins and Furans	DF	11	pg TEQ/m^3	[7]	E	EF	2.29E-11	--
Flare3	Waste Gas Burner (Flare C)	Oxides of Nitrogen	10102-44-0	631	kg/10^6 dscm Methane	[1]	C	EF	6.57E-01	--
		Carbon Monoxide	630-08-0	737	kg/10^6 dscm Methane	[1]	C	EF	7.68E-01	--
		Sulphur Dioxide	7446-09-5	187	mg/m^3	[2]	D	EC	3.89E-01	--
		Particulate Matter	PM	238	kg/10^6 dscm Methane	[1]	D	EF	2.48E-01	--
		Dioxins and Furans	DF	11	pg TEQ/m^3	[7]	E	EF	2.29E-11	--
Flare4	Waste Gas Burner (Flare D)	Oxides of Nitrogen	10102-44-0	631	kg/10^6 dscm Methane	[1]	C	EF	2.98E-01	--
		Carbon Monoxide	630-08-0	737	kg/10^6 dscm Methane	[1]	C	EF	3.48E-01	--
		Sulphur Dioxide	7446-09-5	187	mg/m^3	[2]	D	EC	1.76E-01	--
		Particulate Matter	PM	238	kg/10^6 dscm Methane	[1]	D	EF	1.12E-01	--
		Dioxins and Furans	DF	11	pg TEQ/m^3	[7]	E	EF	1.04E-11	--
Flare5	Waste Gas Burner (Flare E)	Oxides of Nitrogen	10102-44-0	631	kg/10^6 dscm Methane	[1]	C	EF	5.96E-01	5.78E-01
		Carbon Monoxide	630-08-0	737	kg/10^6 dscm Methane	[1]	C	EF	6.96E-01	6.75E-01
		Sulphur Dioxide [3]	7446-09-5	187	mg/m^3	[2]	D	EC	3.53E-01	2.65E-01
		Particulate Matter	PM	238	kg/10^6 dscm Methane	[1]	D	EF	2.25E-01	2.18E-01
		Dioxins and Furans	DF	11	pg TEQ/m^3	[7]	E	EF	2.08E-11	1.04E-11
Flare6	Waste Gas Burner (Flare F)	Oxides of Nitrogen	10102-44-0	631	kg/10^6 dscm Methane	[1]	C	EF	5.96E-01	5.78E-01
		Carbon Monoxide	630-08-0	737	kg/10^6 dscm Methane	[1]	C	EF	6.96E-01	6.75E-01
		Sulphur Dioxide [3]	7446-09-5	187	mg/m^3	[2]	D	EC	3.53E-01	1.26E-02
		Particulate Matter	PM	238	kg/10^6 dscm Methane	[1]	D	EF	2.25E-01	2.18E-01
		Dioxins and Furans	DF	11	pg TEQ/m^3	[7]	E	EF	2.08E-11	1.04E-11
RNG_TO1	Off-Spec RNG Gas	Oxides of Nitrogen	10102-44-0	0.11	kg/MMBTU	[4]	B	EF	1.30E-01	--
		Carbon Monoxide	630-08-0	0.11	kg/MMBTU	[4]	B	EF	1.30E-01	--
		Sulphur Dioxide	7446-09-5	280	mg/m^3	[6]	D	EC	9.13E-02	--
		Particulate Matter	PM	238	kg/10^6 dscm Methane	[1]	D	EF	4.65E-03	--
		Dioxins and Furans	DF	11	pg TEQ/m^3	[7]	E	EF	3.58E-12	--
RNG_TO2	Off-Spec RNG Gas	Oxides of Nitrogen	10102-44-0	0.11	kg/MMBTU	[5]	B	EF	1.20E+00	--
		Carbon Monoxide	630-08-0	0.11	kg/MMBTU	[5]	B	EF	1.20E+00	--
		Sulphur Dioxide	7446-09-5	13.3	mg/m^3	[6]	D	EC	3.08E-02	--
		Particulate Matter	PM	238	kg/10^6 dscm Methane	[1]	D	EF	7.71E-02	--
		Dioxins and Furans	DF	11	pg TEQ/m^3	[7]	E	EF	2.54E-11	--

Notes:

[1] Emission factors for NO_x (expressed as NO_2), CO, and PM are from US EPA AP-42 Table 2.4-4 (Emission Factors for Secondary Compounds Exiting Control Devices).

[2] Units of SO_2 emission factor are mg/m^3. This emission factor was calculated by assuming that all sulphur compounds in the LFG are converted to SO_2 upon combustion. (The default concentration LFG values from US EPA AP-42 Table 2.4-1 "Default Concentrations for LFG Constituents" of all sulphur compounds were summed - see below.)

[3] Flare 5 and flare 6 are used to combust off-spec landfill gas when the thermal oxidizers are not operational. For the bypass scenario emissions of sulphur dioxide are calculated in Appendix C9. All sulphur compounds were calculated using the emissions data provided by Morrow Energy.

[4] Emission factors for nitrogen oxides and carbon monoxide for the pre-treatment thermal oxidizer (RNG_TO1), were provided by MRW in the proposal dated August 23rd, 2022. Emission factors are based on the maximium thermal input rating provided:

Maximum Thermal Input Rating = 4.14 MMBTU/hr

[5] Emission factors for nitrogen oxides and carbon monoxide for the direct fired thermal oxidizer (RNG_TO2), were provided by MRW in the proposal dated August 23rd, 2022. Emission factors are based on the maximium thermal input rating provided:

Maximum Thermal Input Rating = 38.2 MMBTU/hr

[6] Emissions of SO_2 for the thermal oxidizers were calculated using the sum of the sulphur compounds found in Appendix C9.

Data provided by Comcor for Flare1-Flare3

Flare Flow Rate per Flare=	2.08	(m^3/s)
Flare Flow Rate per Flare=	125	(m^3/min)
Flare Methane Concentration per Flare=	50%	
Flare Methane Flow Rate per Flare=	62.5	(m^3/min)
Flare Methane Flow Rate per Flare=	**1.04**	(m^3/s)

Data provided by TCLF for Flare4

Flare Flow Rate =	0.94	(m^3/s)
Flare Flow Rate =	57	(m^3/min)
Flare Methane Concentration =	50%	
Flare Methane Flow Rate =	28.3	(m^3/min)
Flare Methane Flow Rate =	**0.47**	(m^3/s)

Data Provided in John Zinkhamworthy quote for Flares 5 and 6 - per flare

Startup Operations

Flare Flow Rate =	1.89	(m^3/s)
Flare Flow Rate =	113	(m^3/min)
Flare Methane Concentration =	50%	
Flare Methane Flow Rate =	56.6	(m^3/min)
Flare Methane Flow Rate =	**0.94**	(m^3/s)

Data provided by Comcor for Flare1-Flare3

Flare A Methane Flow Rate =	1.04	(m^3/s)
Flare B Methane Flow Rate =	1.04	(m^3/s)
Flare C Methane Flow Rate =	1.04	(m^3/s)

Data provided by TCLF for Flare4

Flare D Methane Flow Rate =	0.47	(m^3/s)

Bypass Scenario

Flare Flow Rate =	0.94	(m^3/s)
Flare Flow Rate = Flare Methane Concentration Bypass	57	(m^3/min)
Scenario=	97%	
Bypass Scenario Flare Methane Flow Rate =	54.9	(m^3/min)
Bypass Scenario Flare Methane Flow Rate =	**0.92**	(m^3/s)

Data Provided in MRW pre-treatment thermal oxidizer quote

Thermal Oxidizer Flow Rate =	0.33	(m^3/s)
Thermal Oxidizer Flow Rate =	20	(m^3/min)
Thermal Oxidizer Methane Concentration =	6%	
Thermal Oxidizer Methane Flow Rate =	1.2	(m^3/min)
Thermal Oxidizer Methane Flow Rate =	**0.02**	(m^3/s)

Data Provided in MRW direct fired thermal oxidizer quote

Thermal Oxidizer Flow Rate =	2.31	(m^3/s)
Thermal Oxidizer Flow Rate =	139	(m^3/min)
Thermal Oxidizer Methane Concentration =	14%	
Thermal Oxidizer Methane Flow Rate =	19.4	(m^3/min)
Thermal Oxidizer Methane Flow Rate =	**0.32**	(m^3/s)

Total (for 6 flares) =	**5.48**	(m^3/s)
Total (for 2 thermal oxidizers) =	**0.34**	(m^3/s)

Assuming all sulphur compounds in LFG are converted to SO_2:

US EPA AP-42 Table 2.4-1 Default Concentrations for LFG Constituents

Compound	Molecular Weight	Default Concentration (ppm)	Measured Concentrations (ppm) Well 1	Well 2	Well 3	Well 4	Well 5	Well 6	Average Concentration of Measured Values (ppm)
Carbon disulfide	76.13	0.58	0	0	0	0	0	0	0
Carbonyl sulfide	60.07	0.49	-	-	-	-	-	-	-
Dimethyl sulfide (methyl sulfide)	62.13	7.82	0	0	0	0	0	0	0
Ethyl mercaptan (ethanethiol)	62.13	2.28	5.5	0	1.1	0	0	0	1.1
Hydrogen sulfide	34.08	52.6	2.8	140	2.3	0	170	0.68	52.6
Methyl mercaptan	48.11	15.7	1.6	88	2.3	0	1.2	1.2	15.7
$SO_{2\ (ppm)}$	57.11	80.05	9.9	228	5.7	0	171.2	1.88	69.4
$SO_{2\ (mg/m3)}$	**57.11**	**186.86**							

[7] Emissions of Dioxins and Furans were estimated based on the measured concentration for a landfill gas flare at a similar landfill site in Ontario.

Appendix 5A-All-5.2d: NMOC Emissions from the Thermal Oxidizers and Flares 5 &6 Bypass Scenario

RWDI# 2101750

Twin Creeks Environmental Centre

Pre-Treatment and Direct Fired Thermal Oxidizers and Flare Bypass

Emissions from the thermal oxidizers (TO) were based on VOC data provided by Morrow Energy. Emissions for each TO were calculated based on the flow rate of off-spec RNG gas to each flare and the concentration of each contaminant in the gas stream. A destruction efficiency of 99% was provide by Morrow Energy and was applied to the emission calculations.

Pre-Treatment Thermal Oxidizer (RNG_TO1) Design Basis (August 20th, 2022)

Gas Flow	0.33 m^3/s
Methane %	6.0%
VOC Destruction Efficiency %	99%

Direct Fired Thermal Oxidizer (RNG_TO2) Design Basis (August 23rd, 2022)

Gas Flow	2.31 m^3/s
Methane %	14%
VOC Destruction Efficiency %	99%

Total Heat Release	12 MMBTU/hr

Stack Parameters

Gas Flow	0.944 m^3/s
Stack Diameter	-- m
Stack Height	-- m
Exit Temperature	1000 °F

Flares 5 & 6 Design Basis (August 10th, 2022) - Per Flare

Gas Flow	0.94 m^3/s
Methane %	97%
VOC Destruction Efficiency %	98%

Compound	CAS Number	Molecular Weight (g/mol)	Morrow Energy Pre-Treatment Thermal Oxidizer Concentrations (ppm)	Morrow Energy Main Thermal Oxidizer Concentrations (ppm)	Concentration in Pre-Treatment Thermal Oxidizer (g/m^3)	Concentration in Main Thermal Oxidizer (g/m^3)	RNG_TO1 Emission Rate (g/s)	RNG_TO2 Emission Rate (g/s)	FLARE5BP Emission Rate (g/s)	FLARE6BP Emission Rate (g/s)
Maximum LFG Volumetric Flow (m^3/s)	- -	- -	- -		- -	- -	0.33	2.31	0.94	0.94
Destruction Efficiency [1]	- -	- -	- -		- -	- -	99%	99%	98%	98%
VOC										
Benzene	71-43-2	78.11	3.87E+00	1.59E-01	1.30E-02	5.36E-04	4.24E-05	1.24E-05	2.46E-04	1.01E-05
1,2-Dichloroethane	107-06-2	98.96	4.43E-01	4.10E-01	1.89E-03	1.75E-03	6.14E-06	4.04E-05	3.56E-05	3.30E-05
Vinyl Chloride	75-01-4	62.50	2.03E+00	1.50E+00	5.47E-03	4.05E-03	1.78E-05	9.36E-05	1.03E-04	7.64E-05
Total Reduced Sulphur (TRS) [2]	TRS	--	--	--	2.80E-01	1.33E-02	9.13E-04	3.08E-04	5.29E-03	2.51E-04

Notes

[1] Destruction efficiency for the bypass stacks is based on AP-42 Chapter 2.4 Municipal Solid Waste Landfills, Table 2.4-3. Morrow Energy provided a destruction efficiency of 99% for the thermal oxidizers.

[2] Emissions of Total Reduced Sulphurs (TRS) are based on the total of all sulphur compounds.

Sample Calculation

Calculation of 1,1-Dichloroethane Emission Rate (Pre-Treatmet Thermal Oxidizer) = Maximum LFG Flow (m^3/s) * Concentration in Raw LFG (g/m^3) * (1 - Detruction Efficiency)

$$= \frac{0.33\ m^3}{s} \left| \frac{2.87E\text{-}02\ g}{m^3} \right| (1 - 0.99)$$

$$= 9.34E\text{-}05\ g/s$$

NOx Emissions from Natural Gas Burner in Thermal Oxidizers

Gas sent to the thermal oxidizers have low methane concentrations which can make combustion difficult. In order to achieve combustion assist gas is used to increase the methane concentration of the gas. Although the lower methane gas streams are the ones that require more assist gas it was conservatively assumed that the maximum assist gas was sent to the thermal oxidizer under all conditions. The assist gas was assumed to be natural gas

Source	Burner Thermal Input Rating	
RNG_TO1	2.3125 MMBTU/hr	2,384 scf/hr
RNG_TO2	19.5 MMBTU/hr	20,103 scf/hr

Contaminants	Emission Factor (lb/10^6scf)	RNG_TO1 Emission Rate (g/s)	RNG_TO2 Emission Rate (g/s)	RNG_TO1 Emissions from Waste Gas [1] (g/s)	RNG_TO2 Emissions from Waste Gas [1] (g/s)	RNG_TO1 Total Emissions (g/s)	RNG_TO2 Total Emissions (g/s)
Nitrogen Oxides	100	2.95E-02	2.49E-01	1.30E-01	1.20E+00	1.60E-01	1.45E+00
Carbon Monoxide	84	2.48E-02	2.09E-01	1.30E-01	1.20E+00	1.55E-01	1.41E+00
Particulate Matter	7.6	2.25E-03	1.89E-02	4.65E-03	7.71E-02	6.90E-03	9.60E-02

Notes:
[1] Emissions from waste gas are calculated in Appendix C8.

Sample Calculation

Nitrogen Oxides Emission Rate = (1961 scf/h) x (100 lb/10^6 scf) x (453.6 g/lb) / (3660 s/h)

= 2.95E-02 g/s

Notes:
[1] Average concentration for Thermal Oxidizer based on manufacturer outlet concentration of NMOC scaled by Landgem NMOC concentration for contaminants of interest.
[2] Concentration for each contaminant calculated using raw LFG concentration ratios
[3] Conversion Formula: Concentration (ppm) = 24.45 x concentration (mg/m3) ÷ molecular weight
[4] Combustion emissions calculated by sumation of Natural gas combustion and waste stream combustion rates.
[5] Refer to Appendix D1 for waste stream analysis
[6] H2S emissions were calculated using the manufacturer guarenteed outlet concentration.

Appendix 5A-All-5.2e: Emissions Rate Calculations for Waste Soil Storage Pile (WSOIL)

RWDI# 2101750

Emissions from waste soil were based on flux chamber sampling completed at similar facilities in Ontario. Of the two samples available the highest recorded flux rate was used.

Contaminant Name	CAS Number	Facility 1: Emission Flux Rate (g m^{-2} s^{-1})	Facility 2: Emission Flux Rate (g m^{-2} s^{-1})	Overall Maximum Maximum Emission Flux Rate (g m^{-2} s^{-1})
Vinyl Chloride	75-01-4	3.67E-08	0.00E+00	3.67E-08
1,2-Dichloroethane	107-06-2	4.91E-08	7.97E-07	7.97E-07
Benzene	71-43-2	8.76E-08	3.38E-05	3.38E-05

Appendix 5A-All-5.2f: Emissions Rate Calculations for the Generator Associated with the Leachate Pumps (GEN2)

RWDI# 2101750

Contaminant	CAS	Emission Factor (lb/BHP-hr)	Emission Factor (kg/kW-hr)	Emission Rate (g/s)	Data Quality Rating
Oxides of Nitrogen	630-08-0	3.10E-02	1.88E-02	3.27E-01	D
Carbon Monoxide	10102-44-0	6.68E-03	4.06E-03	7.05E-02	D
Particulate Matter	PM	2.20E-03	1.34E-03	2.32E-02	D
Sulphur Dioxide	7446-09-5	2.05E-03	1.25E-03	2.16E-02	D

Note: Emission Factors from the U.S. EPA's AP-42 Document, Chapter 3.3 Gasoline and Diesel Industrial Engines

Generator Size =	50	kW
Engine Size =	62.5	kW (assuming 80% efficiency)
	84	bhp
Conversion Factor	1.341	bhp = 1 kW

Appendix 5A-All-5.3a-Odour: Summary of Odour Source Testing Results, September and October 2025

Summary of Odour Source Testing Results, September and October 2025

Proposed Landfill

Well No.	Gas Flow (m^3/hr)	Odour (OU/m^3)	H2S (ppm)	Methane (ppm)
89	27.9	29,100	208	50
	28.2		384	51.9
	27.9		78	50.9
	27.6		105	50.3
66	40.1	15,700	-	55.7
	47.6		48	55.9
	49.3		19	58.9
26	26.7	29,100	48	54.4
	23.9		-	51.4
	29.8		117	57.8
14	22	96,100	10	53.4
	17		-	51.7
	12.1		178	56.5
257	24.4	79	8	53.9
	28.1		3	55.5
	28.5		6	43.1
2	14.7	111,200	6	59.6
	20.5		14	57.6
	17.6		54	57.1
244	43.4	61	10	43.4
	44.1		2	44.1
	51.6		5	50.4
219	94.5	26,700	8	57.8
	94.5		8	57.8
	73.7		3	50.8
	92		11	54.2
	106		46	56
270	32.9	13,400	6	58.5
	33.9		10	55.9
	29.2		60	57.7
236	76.5	299,100	8	42.4
	76.5		3	38.3
	85.6		1078	55.9
282	59.9	114,200	6	58.5
	66.3		187	57.2
98	34.9	148,200	104	58.2
	60.6		1290	57.1
292	44.6	29,000	6	54.8
	49.8		-	57.1
	45.6		0	0
	20		0	57.4

Old Landfill

Well No.	Gas Flow (m^3/hr)	Odour (OU/m^3)	H2S (ppm)	Methane (ppm)
GW16	14.8	1030	3	42.5
	14.7		2	46.5
GW3	6.7	61	8	41.5
	6.7		8	41.5
	5.7		7	44

New Landfill Odour Summary

Total Number of Wells:	13	nos.
Percentage of Wells with H2S > 150ppm:	3.9	%
Percentage of Wells with H2S < 150ppm:	96.1	%

from Average Frequency of High Samples

For Wells with > 150ppm H2S @ Testing Event:

Average Odour Concentration:	153,760	OU
Weighted Average Odour Concentration:	5,989	OU

For Wells with < 150ppm H2S @ Testing Event:

Average Odour Concentration:	17,893	OU
Weighted Average Odour Concentration:	17,196	OU

Overall Averaged Odour Concentration (based on weighted average):	**23,185**	OU

Source ID	12 AM	1 AM	2 AM	3 AM	4 AM	5 AM	6 AM	7 AM	8 AM	9 AM	10 AM	11 AM	12 PM	1 PM	2 PM	3 PM	4 PM	5 PM	6 PM	7 PM	8 PM	9 PM	10 PM	11 PM
WF	0.08	0.08	0.08	0.08	0.08	0.08	0.46	0.46	0.46	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08

Appendix 5A-All-5.3c1-Odour: SBR Emission Rates (Per Unit)

RWDI# 2101750

WASTEWATER TREATMENT SUMMARY I 12-08-2008 14:07:30

Project I:\W085303\W085303A\Analysis\05 Water9\SBR 11/27/2008 11:11:12 AM

COMPOUND	RATE (g/s)	Fraction Air	Removal		Exit	Adsorb	error	emissions
BENZENE	4.77E-05	0.59	0.4016	0.0029	0.0003	0	(1.50E-03	Mg/yr)
CHLOROETHYLENE (vinyl chloride)	2.14E-04	0.96	0.0303	0.0019	0	0	(6.74E-03	Mg/yr)
1,4 DICHLOROBENZENE (-p)	1.34E-05	0.33	0.6609	0.0046	0.0021	0	(4.22E-04	Mg/yr)
DICHLOROETHYLENE(1,2) cis	1.89E-03	0.98	.	0.0153	0.0001	0	(5.97E-02	Mg/yr)
ETHYLBENZENE	3.40E-04	0.49	0.4969	0.0033	0.0012	0	(1.07E-02	Mg/yr)
METHYLENE CHLORIDE, dichloromethane	1.05E-02	0.79	0.2	0.0046	0.0001	0	(3.31E-01	Mg/yr)
TETRACHLOROETHENE	6.45E-05	0.8	0.1911	0.0031	0.0006	0	(2.03E-03	Mg/yr)
TOLUENE	1.78E-03	0.46	0.5354	0.0025	0.0005	0	(5.60E-02	Mg/yr)
TRICHLOROETHYLENE	1.65E-04	0.74	0.2517	0.0029	0.0004	0	(5.19E-03	Mg/yr)
XYLENE	1.42E-03	0.44	0.5495	0.0042	0.0015	0	(4.48E-02	Mg/yr)
DICHLOROETHANE(1,2)	2.67E-05	0.43	0.5564	0.0053	0.0002	0	(8.42E-04	Mg/yr)
1,1 DICHLOROETHENE vinylidene chloride	6.64E-05	0.83	0.168	0.0019	0.0002	0	(2.10E-03	Mg/yr)
AMMONIA *	1.06E-01	0.07	.	0.9238	0.0056	0	(3.34E+00	Mg/yr)
PHENOL	4.44E-08	0	0.9993	0.0007	0	0	(1.40E-06	Mg/yr)

TOTAL ALL COMPOUNDS 1.23E-01 g/s air emissions

TOTAL ALL COMPOUNDS 3.87E+00 Mg/yr air emissions

Compound	CAS	Emission Rate (g/s)	
BENZENE	71-43-2	4.77E-05	
CHLOROETHYLENE (vinyl chloride)	75-01-4	2.14E-04	
1,4 DICHLOROBENZENE (-p)	106-46-7	1.34E-05	
DICHLOROETHYLENE(1,2) cis	156-59-2	1.89E-03	
ETHYLBENZENE	100-41-4	3.40E-04	
METHYLENE CHLORIDE, dichloromethane	75-09-2	1.05E-02	
TETRACHLOROETHENE	127-18-4	6.45E-05	
TOLUENE	108-88-3	1.78E-03	
TRICHLOROETHYLENE	79-01-6	1.65E-04	
XYLENE	1330-20-7	1.42E-03	
DICHLOROETHANE(1,2)	107-06-2	2.67E-05	
1,1 DICHLOROETHENE vinylidene chloride	75-35-4	6.64E-05	
AMMONIA *	7664-41-7	1.39E-02	Calculated based on info provided by CRA (99% ammonia removal)
PHENOL	108-95-2	4.44E-08	

Appendix 5A-All-5.3c2-Odour: Aeration Tank Emission Rates (1 Unit)

RWDI# 2101750

WASTEWATER TREATMENT SUMMARY I 12-08-2008 14:09:03

Project I:\W085303\W085303A\Analysis\05 Water9\Aeration 12/8/2008 2:03:20 PM

COMPOUND	RATE (g/s)	Fraction Air	Fraction Removal	Exit	Adsorb	error	emissions
BENZENE	9.51E-05	0.99 .	0.0043	0	0	(3.00E-03	Mg/yr)
CHLOROETHYLENE (vinyl chloride)	9.54E-05	0.99 .	0.0012	0	0	(3.01E-03	Mg/yr)
1,4 DICHLOROBENZENE (-p)	9.47E-05	0.99 .	0.0089	0	0	(2.98E-03	Mg/yr)
DICHLOROETHYLENE(1,2) cis	9.43E-05	0.98 .	0.0123	0	0	(2.97E-03	Mg/yr)
ETHYLBENZENE	9.52E-05	0.99 .	0.0036	0	0	(3.00E-03	Mg/yr)
METHYLENE CHLORIDE, dichloromethane	9.48E-05	0.99 .	0.0071	0	0	(2.99E-03	Mg/yr)
TETRACHLOROETHENE	9.53E-05	0.99 .	0.0022	0	0	(3.01E-03	Mg/yr)
TOLUENE	9.51E-05	0.99 .	0.004	0	0	(3.00E-03	Mg/yr)
TRICHLOROETHYLENE	9.52E-05	0.99 .	0.0027	0	0	(3.00E-03	Mg/yr)
XYLENE	2.85E-04	0.99 .	0.0055	0	0	(8.99E-03	Mg/yr)
DICHLOROETHANE(1,2)	9.38E-05	0.98 .	0.0175	0	0	(2.96E-03	Mg/yr)
1,1 DICHLOROETHENE vinylidene chloride	9.54E-05	0.99 .	0.0012	0	0	(3.01E-03	Mg/yr)
AMMONIA *	1.83E-05	0.09 .	0.9041	0	0	(5.78E-04	Mg/yr)
PHENOL	2.69E-08	0.02 .	0.9719	0	0	(8.47E-07	Mg/yr)

TOTAL ALL COMPOUNDS 1.35E-03 g/s air emissions

TOTAL ALL COMPOUNDS 4.25E-02 Mg/yr air emissions

Compound	CAS	Emission Rate (g/s)
BENZENE	71-43-2	9.51E-05
CHLOROETHYLENE (vinyl chloride)	75-01-4	9.54E-05
1,4 DICHLOROBENZENE (-p)	106-46-7	9.47E-05
DICHLOROETHYLENE(1,2) cis	156-59-2	9.43E-05
ETHYLBENZENE	100-41-4	9.52E-05
METHYLENE CHLORIDE, dichloromethane	75-09-2	9.48E-05
TETRACHLOROETHENE	127-18-4	9.53E-05
TOLUENE	108-88-3	9.51E-05
TRICHLOROETHYLENE	79-01-6	9.52E-05
XYLENE	1330-20-7	2.85E-04
DICHLOROETHANE(1,2)	107-06-2	9.38E-05
1,1 DICHLOROETHENE vinylidene chloride	75-35-4	9.54E-05
AMMONIA *	7664-41-7	1.83E-05
PHENOL	108-95-2	2.69E-08

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Appendix 5A-All-5.3c3-Odour: RO System Emission Rates (One Unit)

RWDI# 2101750

WASTEWATER TREATMENT SUMMARY I 12-08-2008 14:06:08

Project I:\W085303\W085303A\Analysis\05 Water9\RO 11/20/2008 4:34:27 PM

COMPOUND	RATE (g/s)	Fraction Air	Removal	Exit	Adsorb	error	emissions
BENZENE	2.55E-04	0.97 .	0.0224	0	0	(8.03E-03	Mg/yr)
CHLOROETHYLENE (vinyl chloride)	2.59E-04	0.99 .	0.0069	0	0	(8.16E-03	Mg/yr)
1,4 DICHLOROBENZENE (-p)	2.48E-04	0.95 .	0.0464	0	0	(7.83E-03	Mg/yr)
DICHLOROETHYLENE(1,2) cis	2.11E-04	0.8 .	0.1919	0	0	(6.64E-03	Mg/yr)
ETHYLBENZENE	2.55E-04	0.98 .	0.0197	0	0	(8.05E-03	Mg/yr)
METHYLENE CHLORIDE, dichloromethane	2.51E-04	0.96 .	0.0351	0	0	(7.93E-03	Mg/yr)
TETRACHLOROETHENE	2.57E-04	0.98 .	0.0125	0	0	(8.11E-03	Mg/yr)
TOLUENE	2.55E-04	0.97 .	0.0209	0	0	(8.04E-03	Mg/yr)
TRICHLOROETHYLENE	2.57E-04	0.98 .	0.0149	0	0	(8.09E-03	Mg/yr)
XYLENE	7.07E-04	0.9 .	0.0956	0	0	(2.23E-02	Mg/yr)
DICHLOROETHANE(1,2)	2.39E-04	0.91 .	0.0821	0	0	(7.54E-03	Mg/yr)
1,1 DICHLOROETHENE vinylidene chloride	2.59E-04	0.99 .	0.0071	0	0	(8.16E-03	Mg/yr)
AMMONIA *	9.49E-06	0.01 .	0.9818	0	0	(2.99E-04	Mg/yr)
PHENOL	1.20E-08	0 .	0.9954	0	0	(3.78E-07	Mg/yr)

TOTAL ALL COMPOUNDS 3.46E-03 g/s air emissions

TOTAL ALL COMPOUNDS 1.09E-01 Mg/yr air emissions

Compound	CAS	Emission Rate (g/s)
BENZENE	71-43-2	2.55E-04
CHLOROETHYLENE (vinyl chloride)	75-01-4	2.59E-04
1,4 DICHLOROBENZENE (-p)	106-46-7	2.48E-04
DICHLOROETHYLENE(1,2) cis	156-59-2	2.11E-04
ETHYLBENZENE	100-41-4	2.55E-04
METHYLENE CHLORIDE, dichloromethane	75-09-2	2.51E-04
TETRACHLOROETHENE	127-18-4	2.57E-04
TOLUENE	108-88-3	2.55E-04
TRICHLOROETHYLENE	79-01-6	2.57E-04
XYLENE	1330-20-7	7.07E-04
DICHLOROETHANE(1,2)	107-06-2	2.39E-04
1,1 DICHLOROETHENE vinylidene chloride	75-35-4	2.59E-04
AMMONIA *	7664-41-7	9.49E-06
PHENOL	108-95-2	1.20E-08

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Appendix 5A-All-5.3c4-Odour: Slurry Dryer Emission Rates

RWDI# 2101750

WASTEWATER TREATMENT SUMMARY I 11-20-2008 16:46:45

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COMPOUND	RATE (g/s) Air	tion Removal	Exit	Adsorb	error	emissions		
BENZENE	6.40E-04	0.99	.	0.0001	0	0	(2.02E-02	Mg/yr)
CHLOROETHYLENE (vinyl chloride)	6.40E-04	0.99	.	0.0001	0	0	(2.02E-02	Mg/yr)
1,4 DICHLOROBENZENE (-p)	6.40E-04	0.99	.	0.0001	0	0	(2.02E-02	Mg/yr)
DICHLOROETHYLENE(1,2) cis	6.40E-04	0.99	.	0.0015	0	0	(2.02E-02	Mg/yr)
ETHYLBENZENE	6.40E-04	0.99	.	.	0	0	(2.02E-02	Mg/yr)
METHYLENE CHLORIDE (dichloromethane)	6.40E-04	0.99	.	0.0002	0	0	(2.02E-02	Mg/yr)
TETRACHLOROETHENE	6.40E-04	0.99	.	.	0	0	(2.02E-02	Mg/yr)
TOLUENE	6.40E-04	0.99	.	0.0001	0	0	(2.02E-02	Mg/yr)
TRICHLOROETHYLENE	6.40E-04	0.99	.	0.0001	0	0	(2.02E-02	Mg/yr)
XYLENE	1.89E-03	0.98	.	0.0154	0	0	(5.96E-02	Mg/yr)
DICHLOROETHANE(1,2)	6.40E-04	0.99	.	0.0003	0	0	(2.02E-02	Mg/yr)
1,1 DICHLOROETHENE (vinylidene chloride)	6.40E-04	0.99	.	.	0	0	(2.02E-02	Mg/yr)
AMMONIA	4.40E-04	0.34	.	0.6556	0	0	(1.39E-02	Mg/yr)
PHENOL	6.62E-06	0.94	.	0.0544	0	0	(2.09E-04	Mg/yr)

TOTAL ALL COMPOUNDS 9.38E-03 g/s air emissions

TOTAL ALL COMPOUNDS 2.96E-01 Mg/yr air emissions

Compound	CAS	Emission Rate (g/s)
BENZENE	71-43-2	6.40E-04
CHLOROETHYLENE (vinyl chloride)	75-01-4	6.40E-04
1,4 DICHLOROBENZENE (-p)	106-46-7	6.40E-04
DICHLOROETHYLENE(1,2) cis	156-59-2	6.40E-04
ETHYLBENZENE	100-41-4	6.40E-04
METHYLENE CHLORIDE, dichloromethane	75-09-2	6.40E-04
TETRACHLOROETHENE	127-18-4	6.40E-04
TOLUENE	108-88-3	6.40E-04
TRICHLOROETHYLENE	79-01-6	6.40E-04
XYLENE	1330-20-7	1.89E-03
DICHLOROETHANE(1,2)	107-06-2	6.40E-04
1,1 DICHLOROETHENE vinylidene chloride	75-35-4	6.40E-04
AMMONIA *	7664-41-7	4.40E-04
PHENOL	108-95-2	6.62E-06

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Appendix 5A-All-5.3d-Odour: Leachate Plant Odour Thresholds

RWDI Project 2101750

Contaminant Name	CAS Number	Molecular Weight	Odour Threshold (ppm)	Odour Threshold (mg/m^3)	Odour Threshold Reference
Benzene	71-43-2	78.11	34	108.62	[1]
Vinyl Chloride (Chloroethylene)	75-01-4	62.50	10	25.56	[2]
1,4 Dichlorobenzene (-p)	106-46-7	147.01	15	90.19	[2]
1,2-Dichloroethylene (cis)	156-59-2	96.95	N/A	N/A	- -
Ethyl Benzene	100-41-4	106.16	0.092	0.40	[2]
Dichloromethane (Methylene Chloride)	75-09-2	84.94	1.2	4.17	[2]
Tetrachloroethene	127-18-4	165.84	2	13.57	[2]
Toluene	108-88-3	92.13	0.16	0.60	[1]
Trichloroethylene	79-01-6	131.40	0.50	2.69	[2]
Xylene	1330-20-7	106.16	0.081	0.35	[2]
1,2-Dichloroethane	107-06-2	98.96	6.00	24.28	[1]
1,1 Dichloroethene (Vinylidene Chloride)	75-35-4	96.94	n/a	0.00	- -
Ammonia	7664-41-7	17.03	0.043	0.03	[2]
Phenol	108-95-2	94.11	0.0045	0.02	[2]

Conversion from ppm to mg/m^3

$$\frac{\text{(gram molecular weight of substance) x (TLV in ppm)}}{24.45}$$

These formulas can be used when measurements are taken at 25°C and the air pressure is 760 torr (= 1 atmosphere or 760 mm Hg).

Notes:

[1] Minimum odour threshold value from range of "Acceptable Values" from AIHA, 1989. *Odour Thresholds for Chemicals with Established Occupational Health Standards* . Akron, Ohio.

[2] Minimum odour threshold value from range of "All Referenced Values" from AIHA, 1989. *Odour Thresholds for Chemicals with Established Occupational Health Standards* . Akron, Ohio.

Appendix 5A-All-5.3e-Odour: Leachate Plant Odour Emissions

RWDI Project 2101750

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temp. (°C)	Stack Inner Diameter [1] (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate (g/s)	In-Stack Concentration (mg/m^3)	Odour Thresholds (mg/m^3)	In-Stack Odour Concentration (OU/m^3)	Maximum Odour Emission Rate (OU/s)	Total Odour Emission Rate [1] (OU/S)
L4	Point	Passive Exhaust Louvre Serving SBR and Aeration Tanks	1.96	25	1.38	1.31	2.13	n/a	0	0	Benzene	71-43-2	1.43E-04	7.29E-02	1.09E+02	6.71E-04	1.31E-03	**476**
											Vinyl Chloride (Chloroethylene)	75-01-4	3.09E-04	1.58E-01	2.56E+01	6.18E-03	1.21E-02	
											1,4 Dichlorobenzene (-p)	106-46-7	1.08E-04	5.52E-02	9.02E+01	6.12E-04	1.20E-03	
											1,2-Dichloroethylene (cis)	156-59-2	1.98E-03	1.01E+00	N/A	N/A	N/A	
											Ethylbenzene	100-41-4	4.35E-04	2.22E-01	3.99E-01	5.56E-01	1.09E+00	
											Dichloromethane (Methylene Chloride)	75-09-2	1.06E-02	5.41E+00	4.17E+00	1.30E+00	2.54E+00	
											Tetrachloroethene	127-18-4	1.60E-04	8.15E-02	1.36E+01	6.01E-03	1.18E-02	
											Toluene	108-88-3	1.88E-03	9.57E-01	6.03E-01	1.59E+00	3.11E+00	
											Trichloroethylene	79-01-6	2.60E-04	1.33E-01	2.69E+00	4.94E-02	9.68E-02	
											Xylene	1330-20-7	1.71E-03	8.70E-01	3.52E-01	2.47E+00	4.85E+00	
											1,2-Dichloroethane	107-06-2	1.21E-04	6.15E-02	2.43E+01	2.53E-03	4.96E-03	
											1,1 Dichloroethene (Vinylidene Chloride)	75-35-4	1.62E-04	8.26E-02	0.00E+00	N/A	N/A	
											Ammonia	7664-41-7	1.39E-02	7.10E+00	3.00E-02	2.37E+02	4.65E+02	
											Phenol	108-95-2	7.13E-08	3.64E-05	1.73E-02	2.10E-03	4.12E-03	
L3	Point	Passive Exhaust Louvre Serving SBR and Aeration Tanks	1.96	25	1.38	1.31	2.13	n/a	0	0	Benzene	71-43-2	1.43E-04	7.29E-02	1.09E+02	6.71E-04	1.31E-03	**476**
											Vinyl Chloride (Chloroethylene)	75-01-4	3.09E-04	1.58E-01	2.56E+01	6.18E-03	1.21E-02	
											1,4 Dichlorobenzene (-p)	106-46-7	1.08E-04	5.52E-02	9.02E+01	6.12E-04	1.20E-03	
											1,2-Dichloroethylene (cis)	156-59-2	1.98E-03	1.01E+00	N/A	N/A	N/A	
											Ethylbenzene	100-41-4	4.35E-04	2.22E-01	3.99E-01	5.56E-01	1.09E+00	
											Dichloromethane (Methylene Chloride)	75-09-2	1.06E-02	5.41E+00	4.17E+00	1.30E+00	2.54E+00	
											Tetrachloroethene	127-18-4	1.60E-04	8.15E-02	1.36E+01	6.01E-03	1.18E-02	
											Toluene	108-88-3	1.88E-03	9.57E-01	6.03E-01	1.59E+00	3.11E+00	
											Trichloroethylene	79-01-6	2.60E-04	1.33E-01	2.69E+00	4.94E-02	9.68E-02	
											Xylene	1330-20-7	1.71E-03	8.70E-01	3.52E-01	2.47E+00	4.85E+00	
											1,2-Dichloroethane	107-06-2	1.21E-04	6.15E-02	2.43E+01	2.53E-03	4.96E-03	
											1,1 Dichloroethene (vinylidene chloride)	75-35-4	1.62E-04	8.26E-02	0.00E+00	N/A	N/A	
											Ammonia	7664-41-7	1.39E-02	7.10E+00	3.00E-02	2.37E+02	4.65E+02	
											Phenol	108-95-2	7.13E-08	3.64E-05	1.73E-02	2.10E-03	4.12E-03	
EF-2	Point	Process Exhaust Fan Serving RO System Area	1.71	25	0.51	8.37	3.96	n/a	0	0	Benzene	71-43-2	2.55E-04	1.49E-01	1.09E+02	1.37E-03	2.35E-03	**4**
											Vinyl Chloride (Chloroethylene)	75-01-4	2.59E-04	1.51E-01	2.56E+01	5.93E-03	1.01E-02	
											1,4 Dichlorobenzene (-p)	106-46-7	2.48E-04	1.45E-01	9.02E+01	1.61E-03	2.75E-03	
											1,2-Dichloroethylene (cis)	156-59-2	2.11E-04	1.23E-01	N/A	N/A	N/A	
											Ethylbenzene	100-41-4	2.55E-04	1.49E-01	3.99E-01	3.73E-01	6.38E-01	
											Dichloromethane (Methylene Chloride)	75-09-2	2.51E-04	1.47E-01	4.17E+00	3.52E-02	6.02E-02	
											Tetrachloroethene	127-18-4	2.57E-04	1.50E-01	1.36E+01	1.11E-02	1.89E-02	
											Toluene	108-88-3	2.55E-04	1.49E-01	6.03E-01	2.47E-01	4.23E-01	
											Trichloroethylene	79-01-6	2.57E-04	1.50E-01	2.69E+00	5.59E-02	9.56E-02	
											Xylene	1330-20-7	7.07E-04	4.13E-01	3.52E-01	1.18E+00	2.01E+00	
											1,2-Dichloroethane	107-06-2	2.39E-04	1.40E-01	2.43E+01	5.76E-03	9.84E-03	
											1,1 Dichloroethene (vinylidene chloride)	75-35-4	2.59E-04	1.51E-01	0.00E+00	N/A	N/A	
											Ammonia	7664-41-7	9.49E-06	5.55E-03	3.00E-02	1.85E-01	3.17E-01	
											Phenol	108-95-2	1.20E-08	7.02E-06	1.73E-02	4.05E-04	6.93E-04	
SD-1	Point	Slurry Dryer Exhaust	0.24	25	0.3	3.34	5.00	n/a	0	0	Benzene	71-43-2	6.40E-04	2.71E+00	1.09E+02	2.50E-02	5.89E-03	**24**
											Vinyl Chloride (Chloroethylene)	75-01-4	6.40E-04	2.71E+00	2.56E+01	1.06E-01	2.50E-02	
											1,4 Dichlorobenzene (-p)	106-46-7	6.40E-04	2.71E+00	9.02E+01	3.01E-02	7.10E-03	
											1,2-Dichloroethylene (cis)	156-59-2	6.40E-04	2.71E+00	N/A	N/A	N/A	
											Ethylbenzene	100-41-4	6.40E-04	2.71E+00	3.99E-01	6.79E+00	1.60E+00	
											Dichloromethane (Methylene Chloride)	75-09-2	6.40E-04	2.71E+00	4.17E+00	6.51E-01	1.54E-01	
											Tetrachloroethene	127-18-4	6.40E-04	2.53E+01	1.36E+01	2.00E-01	4.72E-02	
											Toluene	108-88-3	6.40E-04	4.55E+03	6.03E-01	4.50E+00	1.06E+00	
											Trichloroethylene	79-01-6	6.40E-04	2.71E+00	2.69E+00	1.01E+00	2.38E-01	
											Xylene	1330-20-7	1.89E-03	8.01E+00	3.52E-01	2.28E+01	5.37E+00	
											1,2-Dichloroethane	107-06-2	6.40E-04	2.71E+00	2.43E+01	1.12E-01	2.64E-02	
											1,1 Dichloroethene (vinylidene chloride)	75-35-4	6.40E-04	2.71E+00	0.00E+00	N/A	N/A	
											Ammonia	7664-41-7	4.40E-04	1.86E+00	3.00E-02	6.22E+01	1.47E+01	
											Phenol	108-95-2	6.62E-06	2.81E-02	1.73E-02	1.62E+00	3.82E-01	

Notes:

[1] The Total Odour Emission is the sum of the Maximum Odour Emission Rate for each compound.

Sample Calculations:

Benzene from Source L4

A In-Stack Conc. (mg/m^3) = Maximum Emission Rate (g/s) / Stack Volumetric Flow Rate (m^3
In-Stack Concentration (mg/m^3) = (1.43×10^{-4}) / 1.96 * 1000
In-Stack Concentration (mg/m^3) = 0.07

B In-Stack Odour Conc. (OU/m^3) = In-Stack Concentration (mg/m^3) / Odour Threshold (mg/m^3)
In-Stack Odour Concentration (OU/m^3) = 0.07 / 108.62
In-Stack Odour Concentration (OU/m^3) = 0.0007

C Odour Emission Rate (OU/s) = In-Stack Odour Conc. (OU/m^3) * Stack Volumetric Flow (m^3/s)
Odour Emission Rate (OU/s) = 0.0007 X 1.96
Odour Emission Rate (OU/s) = 0.0013

Appendix 5A-S1: Source Summary Table, Scenario 1

Twin Creeks Environmental Centre

RWDI# 2101750

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (°C)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
FLARE5	POINT	Landfill Gas Flare 5 - RNG Plant Startup	41.67	871	3.66	3.97	15.24	N/A	429140	4757490	Benzene	71-43-2	1.15E-04	N/A	24, Annual	EC	Average	2%
											Vinyl Chloride (Chloroethylene)	75-01-4	4.45E-05	N/A	24	EC	Average	1%
											1,2-Dichloroethane	107-06-2	3.68E-05	N/A	24	EC	Average	1%
											Nitrogen Oxides (NOx)	10102-44-0	5.96E-01	N/A	1, 24	EC	Average	7%
											Particulate Matter (PM)	PM	2.25E-01	N/A	24	EC	Average	<1%
											Sulphur Dioxide (SO2)	7446-09-5	3.53E-01	N/A	1, Annual	EC	Average	13%
											Dioxins and Furans	DF	2.08E-11	N/A	24	EF	Marginal	12%
											Total Reduced Sulphur (TRS)	TRS	1.78E-02	N/A	10-minute, 24	EC	Marginal	15%
											Hydrogen Sulfide	7783-06-4	1.78E-02	N/A	10-minute, 24	EC	Average	17%
FLARE6	POINT	Landfill Gas Flare 6 - RNG Plant Startup	41.67	871	3.66	3.97	15.24	N/A	429149	4757490	Benzene	71-43-2	1.15E-04	N/A	24, Annual	EC	Average	2%
											Vinyl Chloride (Chloroethylene)	75-01-4	4.45E-05	N/A	24	EC	Average	1%
											1,2-Dichloroethane	107-06-2	3.68E-05	N/A	24	EC	Average	1%
											Nitrogen Oxides (NOx)	10102-44-0	5.96E-01	N/A	1, 24	EC	Average	7%
											Particulate Matter (PM)	PM	2.25E-01	N/A	24	EC	Average	<1%
											Sulphur Dioxide (SO2)	7446-09-5	3.53E-01	N/A	1, Annual	EC	Average	13%
											Dioxins and Furans	DF	2.08E-11	N/A	24	EF	Marginal	12%
											Total Reduced Sulphur (TRS)	TRS	1.78E-02	N/A	10-minute, 24	EC	Marginal	15%
											Hydrogen Sulfide	7783-06-4	1.78E-02	N/A	10-minute, 24	EC	Average	17%
RNG_TO1	POINT	RNG Plant Pre-Treatment Thermal Oxidizer	2.51	816	1.22	2.15	15.24	N/A	429116	4757455	Benzene	71-43-2	4.24E-05	N/A	24, Annual	EC	Marginal	<1%
											1,2-Dichloroethane	107-06-2	6.14E-06	N/A	24	EC	Marginal	<1%
											Vinyl Chloride	75-01-4	1.78E-05	N/A	24	EC	Marginal	<1%
											Total Reduced Sulphur (TRS)	TRS	9.13E-04	N/A	10-minute, 24	EC	Marginal	<1%
											Oxides of Nitrogen	10102-44-0	1.30E-01	N/A	1, 24	EC	Marginal	2%
											Sulphur Dioxide	7446-09-5	9.13E-02	N/A	1, Annual	EC	Marginal	3%
											Dioxins and Furans	DF	3.58E-12	N/A	24	EF	Marginal	2%
											Particulate Matter	PM	4.65E-03	N/A	24	EC	Marginal	<1%
RNG_TO2	POINT	RNG Plant Main Thermal Oxidizer	18.03	816	2.90	2.74	15.24	N/A	429124	4757456	Benzene	71-43-2	1.24E-05	N/A	24, Annual	EC	Marginal	<1%
											1,2-Dichloroethane	107-06-2	4.04E-05	N/A	24	EC	Marginal	1%
											Vinyl Chloride	75-01-4	9.36E-05	N/A	24	EC	Marginal	2%
											Total Reduced Sulphur (TRS)	TRS	3.08E-04	N/A	10-minute, 24	EC	Marginal	<1%
											Oxides of Nitrogen	10102-44-0	1.20E+00	N/A	1, 24	EC	Marginal	15%
											Sulphur Dioxide	7446-09-5	3.08E-02	N/A	1, Annual	EC	Marginal	1%
											Dioxins and Furans	DF	2.54E-11	N/A	24	EF	Marginal	15%
											Particulate Matter	PM	7.71E-02	N/A	24	EC	Marginal	<1%
FLARE5BP	POINT	Landfill Gas Flare 5 - Thermal Oxidizer Bypass Scenario	37.15	871	3.66	3.54	15.24	N/A	429140	4757490	Benzene	71-43-2	2.46E-04	N/A	24, Annual	EC	Marginal	3%
											1,2-Dichloroethane	107-06-2	3.56E-05	N/A	24	EC	Marginal	1%
											Vinyl Chloride	75-01-4	1.03E-04	N/A	24	EC	Marginal	3%
											Total Reduced Sulphur (TRS)	TRS	5.29E-03	N/A	10-minute, 24	EC	Marginal	4%
											Oxides of Nitrogen	10102-44-0	5.78E-01	N/A	1, 24	EC	Marginal	7%
											Sulphur Dioxide	7446-09-5	2.65E-01	N/A	1, Annual	EC	Marginal	10%
											Dioxins and Furans	DF	1.04E-11	N/A	24	EF	Marginal	6%
											Particulate Matter	PM	2.18E-01	N/A	24	EC	Marginal	<1%
FLARE6BP	POINT	Landfill Gas Flare 6 - Thermal Oxidizer Bypass Scenario	37.15	871	3.66	3.54	15.24	N/A	429149	4757490	Benzene	71-43-2	1.01E-05	N/A	24, Annual	EC	Marginal	<1%
											1,2-Dichloroethane	107-06-2	3.30E-05	N/A	24	EC	Marginal	1%
											Vinyl Chloride	75-01-4	7.64E-05	N/A	24	EC	Marginal	2%
											Total Reduced Sulphur (TRS)	TRS	2.51E-04	N/A	10-minute, 24	EC	Marginal	<1%
											Oxides of Nitrogen	10102-44-0	5.78E-01	N/A	1, 24	EC	Marginal	7%
											Sulphur Dioxide	7446-09-5	1.26E-02	N/A	1, Annual	EC	Marginal	<1%
											Dioxins and Furans	DF	1.04E-11	N/A	24	EF	Marginal	6%
											Particulate Matter	PM	2.18E-01	N/A	24	EC	Marginal	<1%
AMINE	POINT-CAP	Amine Reboiler	0.59	204	0.39	5.00	4.92	1.87	429070	4757462	Nitrogen Oxides (NOx)	10102-44-0	8.99E-02	N/A	1, 24	EF	Average	1%
											Particulate Matter	PM	3.28E-03	N/A	24	EF	Average	<1%
GEN4	POINT	RNG Plant 360 kW Emergency Diesel Generator	0.48	491	0.15	26.50	2.15	N/A	429125	4757401	Nitrogen Oxides	10102-44-0	5.26E-01	N/A	1, 24	EF	Above-Average	6%
											Particulate Matter	PM	3.01E-02	N/A	24	EF	Above-Average	<1%
											Sulphur Dioxide	7446-09-5	1.26E-01	N/A	1, Annual	EF	Above-Average	5%
L4	POINT-HOR	Passive Exhaust Louvre Serving SBR and Aeration Tanks	1.96	25	1.38	1.31	2.13	N/A	429013	4757497	Benzene	71-43-2	1.43E-04	N/A	24, Annual	EC	Average	2%
											Vinyl Chloride (Chloroethylene)	75-01-4	3.09E-04	N/A	24	EC	Average	8%
											1,2-Dichloroethane	107-06-2	1.21E-04	N/A	24	EC	Average	4%
											Ammonia	7664-41-7	1.39E-02	N/A	24	EC	Average	40%
											Odour	ODOUR	4.76E+02	N/A	10-minute	EC	Average	1%
L3	POINT-HOR	Passive Exhaust Louvre Serving SBR and Aeration Tanks	1.96	25	1.38	1.31	2.13	N/A	429013	4757490	Benzene	71-43-2	1.43E-04	N/A	24, Annual	EC	Average	2%
											Vinyl Chloride (Chloroethylene)	75-01-4	3.09E-04	N/A	24	EC	Average	8%
											1,2-Dichloroethane	107-06-2	1.21E-04	N/A	24	EC	Average	4%

Appendix 5A-S1: Source Summary Table, Scenario 1

Twin Creeks Environmental Centre

RWDI# 2101750

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (°C)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
											Ammonia	7664-41-7	1.39E-02	N/A	24	EC	Average	40%
											Odour	ODOUR	4.76E+02	N/A	10-minute	EC	Average	1%
EF_2	POINT	Process Exhaust Fan Serving RO System Area	1.71	25	0.51	8.37	3.96	N/A	429073	4757502	Benzene	71-43-2	2.55E-04	N/A	24, Annual	EC	Average	3%
											Vinyl Chloride (Chloroethylene)	75-01-4	2.59E-04	N/A	24	EC	Average	7%
											1,2-Dichloroethane	107-06-2	2.39E-04	N/A	24	EC	Average	8%
											Ammonia	7664-41-7	9.49E-06	N/A	24	EC	Average	<1%
											Odour	ODOUR	3.59E+00	N/A	10-minute	EC	Average	<1%
SD_1	POINT-CAP	Slurry Dryer Exhaust	0.24	25	0.30	3.34	5.00	N/A	429057	4757483	Benzene	71-43-2	6.40E-04	N/A	24, Annual	EC	Average	9%
											Vinyl Chloride (Chloroethylene)	75-01-4	6.40E-04	N/A	24	EC	Average	16%
											1,2-Dichloroethane	107-06-2	6.40E-04	N/A	24	EC	Average	21%
											Ammonia	7664-41-7	4.40E-04	N/A	24	EC	Average	1%
											Odour	ODOUR	2.36E+01	N/A	10-minute	EC	Average	<1%
GEN1	POINT	1,000 kW Emergency Diesel Generator Serving Landfill Gas Plant	3.56	477	0.25	72.52	3.60	0.00	429119	4757554	Nitrogen Oxides	10102-44-0	2.72E-01	N/A	1, 24	EF	Above-Average	3%
											Particulate Matter	PM	4.53E-02	N/A	24	EF	Above-Average	<1%
											Sulphur Dioxide	7446-09-5	4.53E-02	N/A	1, Annual	EF	Above-Average	2%
GEN2	POINT	50 kW Diesel Generator Serving Leachate Pumps	0.24	477	0.10	30.56	3.60	0.00	429246	4757604	Nitrogen Oxides	10102-44-0	7.05E-02	N/A	1, 24	EF	Marginal	<1%
											Particulate Matter	PM	2.32E-02	N/A	24	EF	Marginal	<1%
											Sulphur Dioxide	7446-09-5	2.16E-02	N/A	1, Annual	EF	Marginal	<1%
GEN3	POINT	250 kW Emergency Diesel Generator Serving the Maintenance Offices	0.97	477	0.15	54.89	3.60	0.00	428415	4758689	Nitrogen Oxides	10102-44-0	3.53E-01	N/A	1, 24	EF	Marginal	4%
											Particulate Matter	PM	1.16E-01	N/A	24	EF	Marginal	<1%
											Sulphur Dioxide	7446-09-5	1.08E-01	N/A	1, Annual	EF	Marginal	4%
FLARE1	POINT	Landfill Gas Flare (Based on Full Load)	61.30	950	3.70	5.70	15.20	N/A	429117	4757504	Benzene	71-43-2	1.26E-04	N/A	24, Annual	EC	Average	2%
											Vinyl Chloride (Chloroethylene)	75-01-4	4.91E-05	N/A	24	EC	Average	1%
											1,2-Dichloroethane	107-06-2	4.06E-05	N/A	24	EC	Above-Average	1%
											Nitrogen Oxides	10102-44-0	6.57E-01	N/A	1, 24	EF	Average	8%
											Particulate Matter	PM	2.48E-01	N/A	24	EF	Average	<1%
											Sulphur Dioxide	7446-09-5	3.89E-01	N/A	1, Annual	EC	Marginal	14%
											Dioxins and Furans	DF	2.29E-11	N/A	24	EF	Marginal	13%
											Total Reduced Sulphur (TRS)	TRS	1.97E-02	N/A	10-minute, 24	EC	Marginal	16%
											Hydrogen Sulfide	7783-06-4	1.97E-02	N/A	10-minute, 24	EC	Above-Average	18%
FLARE2	POINT	Landfill Gas Flare (Based on Full Load)	61.30	950	3.70	5.70	15.20	N/A	429154	4757504	Benzene	71-43-2	1.26E-04	N/A	24, Annual	EC	Average	2%
											Vinyl Chloride (Chloroethylene)	75-01-4	4.91E-05	N/A	24	EC	Average	1%
											1,2-Dichloroethane	107-06-2	4.06E-05	N/A	24	EC	Above-Average	1%
											Nitrogen Oxides	10102-44-0	6.57E-01	N/A	1, 24	EF	Average	8%
											Particulate Matter	PM	2.48E-01	N/A	24	EF	Average	<1%
											Sulphur Dioxide	7446-09-5	3.89E-01	N/A	1, Annual	EC	Marginal	14%
											Dioxins and Furans	DF	2.29E-11	N/A	24	EF	Marginal	13%
											Total Reduced Sulphur (TRS)	TRS	1.97E-02	N/A	10-minute, 24	EC	Marginal	16%
											Hydrogen Sulfide	7783-06-4	1.97E-02	N/A	10-minute, 24	EC	Above-Average	18%
FLARE3	POINT	Proposed Landfill Gas Flare (Based on Full Load)	61.30	950	3.70	5.70	15.20	N/A	429142	4757504	Benzene	71-43-2	1.26E-04	N/A	24, Annual	EC	Average	2%
											Vinyl Chloride (Chloroethylene)	75-01-4	4.91E-05	N/A	24	EC	Average	1%
											1,2-Dichloroethane	107-06-2	4.06E-05	N/A	24	EC	Above-Average	1%
											Nitrogen Oxides	10102-44-0	6.57E-01	N/A	1, 24	EF	Average	8%
											Particulate Matter	PM	2.48E-01	N/A	24	EF	Average	<1%
											Sulphur Dioxide	7446-09-5	3.89E-01	N/A	1, Annual	EC	Marginal	14%
											Dioxins and Furans	DF	2.29E-11	N/A	24	EF	Marginal	13%
											Total Reduced Sulphur (TRS)	TRS	1.97E-02	N/A	10-minute, 24	EC	Marginal	16%
											Hydrogen Sulfide	7783-06-4	1.97E-02	N/A	10-minute, 24	EC	Above-Average	18%
FLARE4	POINT	Proposed Landfill Gas Flare (Based on Full Load)	25.79	950	3.20	3.21	12.19	N/A	429129	4757504	Benzene	71-43-2	5.73E-05	N/A	24, Annual	EC	Average	<1%
											Vinyl Chloride (Chloroethylene)	75-01-4	2.22E-05	N/A	24	EC	Average	<1%
											1,2-Dichloroethane	107-06-2	1.84E-05	N/A	24	EC	Above-Average	<1%
											Nitrogen Oxides	10102-44-0	2.98E-01	N/A	1, 24	EF	Average	4%
											Particulate Matter	PM	1.12E-01	N/A	24	EF	Average	<1%
											Sulphur Dioxide	7446-09-5	1.76E-01	N/A	1, Annual	EC	Marginal	6%
											Dioxins and Furans	DF	1.04E-11	N/A	24	EF	Marginal	6%
											Total Reduced Sulphur (TRS)	TRS	8.92E-03	N/A	10-minute, 24	EC	Marginal	7%
											Hydrogen Sulfide	7783-06-4	8.92E-03	N/A	10-minute, 24	EC	Above-Average	8%
AREA1	AREA	Expansion Landfill Phases 1 Through 3 Approximate Area = 244,004 m^2 (Emissions Based on Year 2033)	N/A	N/A	N/A	N/A	N/A	N/A	428626	4757721	Benzene	71-43-2	5.20E-05	3.70E-09	24, Annual	EC	Average	<1%
											Vinyl Chloride (Chloroethylene)	75-01-4	3.50E-04	1.44E-09	24	EC	Average	9%
											1,2-Dichloroethane	107-06-2	2.90E-04	1.19E-09	24	EC	Above-Average	10%
											Total Reduced Sulphur (TRS)	TRS	0.00E+00	0.00E+00	10-minute, 24	EC	Marginal	<1%
											Hydrogen Sulfide	7783-06-4	0.00E+00	0.00E+00	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	0.00E+00	0.00E+00	10-minute	ST	Average	<1%

Appendix 5A-S1: Source Summary Table, Scenario 1

Twin Creeks Environmental Centre

RWDI# 2101750

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (°C)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
AREA2	AREA	Expansion Landfill Phases 4 Through 5 Approximate Area = 165,611 m^2 (Emissions Based on Year 2033)	N/A	N/A	N/A	N/A	N/A	N/A	428634	4758149	Benzene	71-43-2	1.02E-03	6.13E-09	24, Annual	EC	Average	14%
											Vinyl Chloride (Chloroethylene)	75-01-4	3.94E-04	2.38E-09	24	EC	Average	10%
											1,2-Dichloroethane	107-06-2	3.26E-04	1.97E-09	24	EC	Above-Average	11%
											Total Reduced Sulphur (TRS)	TRS	0.00E+00	0.00E+00	10-minute, 24	EC	Marginal	<1%
											Hydrogen Sulfide	7783-06-4	0.00E+00	0.00E+00	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	0.00E+00	0.00E+00	10-minute	ST	Average	<1%
AREA3	AREA	Expansion Landfill Phases 6 Through 7 Approximate Area = 179,092 m^2 (Emissions Based on Year 2033)	N/A	N/A	N/A	N/A	N/A	N/A	428637	4758461	Benzene	71-43-2	9.87E-04	5.51E-09	24, Annual	EC	Average	13%
											Vinyl Chloride (Chloroethylene)	75-01-4	3.83E-04	2.14E-09	24	EC	Average	10%
											1,2-Dichloroethane	107-06-2	3.17E-04	1.77E-09	24	EC	Above-Average	10%
											Total Reduced Sulphur (TRS)	TRS	0.00E+00	0.00E+00	10-minute, 24	EC	Marginal	<1%
											Hydrogen Sulfide	7783-06-4	0.00E+00	0.00E+00	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	0.00E+00	0.00E+00	10-minute	ST	Average	<1%
AREA4	AREA	Expansion Landfill Phases 8 Through 9 Approximate Area = 99,012 m^2 (Emissions Based on Year 2033)	N/A	N/A	N/A	N/A	N/A	N/A	429027	4758463	Benzene	71-43-2	0.00E+00	0.00E+00	24, Annual	EC	Average	<1%
											Vinyl Chloride (Chloroethylene)	75-01-4	0.00E+00	0.00E+00	24	EC	Average	<1%
											1,2-Dichloroethane	107-06-2	0.00E+00	0.00E+00	24	EC	Above-Average	<1%
											Total Reduced Sulphur (TRS)	TRS	0.00E+00	0.00E+00	10-minute, 24	EC	Marginal	<1%
											Hydrogen Sulfide	7783-06-4	0.00E+00	0.00E+00	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	0.00E+00	0.00E+00	10-minute	ST	Average	<1%
AREA5	AREA	Existing Landfill Approximate Area = 208,263 m^2 (Emissions Based on Year 2033)	N/A	N/A	N/A	N/A	N/A	N/A	429208	4757609	Benzene	71-43-2	7.24E-05	2.63E-10	24, Annual	EC	Average	<1%
											Vinyl Chloride (Chloroethylene)	75-01-4	2.81E-05	1.02E-10	24	EC	Average	<1%
											1,2-Dichloroethane	107-06-2	2.33E-05	8.45E-11	24	EC	Above-Average	<1%
											Total Reduced Sulphur (TRS)	TRS	2.95E-03	1.07E-08	10-minute, 24	EC	Marginal	2%
											Hydrogen Sulfide	7783-06-4	9.95E-04	3.61E-09	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	1.08E+01	3.94E-05	10-minute	ST	Average	<1%
STAGE1	AREA	Vertical Expansion Landfill Approximate Area = 378,390 m2 (Emissions Based on Year 2034)	N/A	N/A	N/A	N/A	N/A	N/A	428515	4758837	Benzene	71-43-2	1.11E-03	2.94E-09	24, Annual	EC	Average	15%
											Vinyl Chloride (Chloroethylene)	75-01-4	4.31E-04	1.14E-09	24	EC	Average	11%
											1,2-Dichloroethane	107-06-2	3.57E-04	9.44E-10	24	EC	Above-Average	12%
											Total Reduced Sulphur (TRS)	TRS	4.06E-03	1.07E-08	10-minute, 24	EC	Marginal	3%
											Hydrogen Sulfide	7783-06-4	1.40E-03	3.69E-09	10-minute, 24	EC	Above-Average	1%
											Odour	ODOUR	1.98E+04	5.23E-02	10-minute	ST	Average	47%
STAGE1FC	AREA	Vertical Expansion Landfill, Stage 1 area not covered by Stage 3 Approximate Area = 205,538 m2	N/A	N/A	N/A	N/A	N/A	N/A	428508	4757867	Total Reduced Sulphur (TRS)	TRS	0.00E+00	0.00E+00	10-minute, 24	EC	Marginal	<1%
											Hydrogen Sulfide	7783-06-4	0.00E+00	0.00E+00	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	0.00E+00	0.00E+00	10-minute	EC	Average	<1%
STAGE2	AREA	Vertical Expansion Landfill, Stage 2 Approximate Area = 366,429 m2 (Emissions Based on Year 2034)	N/A	N/A	N/A	N/A	N/A	N/A	428878	4758835	Benzene	71-43-2	8.01E-04	2.19E-09	24, Annual	EC	Average	11%
											Vinyl Chloride (Chloroethylene)	75-01-4	3.11E-04	8.48E-10	24	EC	Average	8%
											1,2-Dichloroethane	107-06-2	2.57E-04	7.03E-10	24	EC	Above-Average	8%
											Total Reduced Sulphur (TRS)	TRS	3.93E-03	1.07E-08	10-minute, 24	EC	Marginal	3%
											Hydrogen Sulfide	7783-06-4	1.35E-03	3.69E-09	10-minute, 24	EC	Above-Average	1%
											Odour	ODOUR	1.70E+04	4.65E-02	10-minute	ST	Average	40%
STAGE2FC	AREA	Vertical Expansion Landfill, Stage 2 area not covered by Stage 4 Approximate Area = 210,645 m2	N/A	N/A	N/A	N/A	N/A	N/A	428876	4757705	Total Reduced Sulphur (TRS)	TRS	0.00E+00	0.00E+00	10-minute, 24	EC	Marginal	<1%
											Hydrogen Sulfide	7783-06-4	0.00E+00	0.00E+00	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	0.00E+00	0.00E+00	10-minute	EC	Average	<1%
STAGE3	AREA	Vertical Expansion Landfill, Stage 3 Approximate Area = 147,144 m2 (Emissions Based on Year 2034)	N/A	N/A	N/A	N/A	N/A	N/A	428650	4758699	Benzene	71-43-2	0.00E+00	0.00E+00	24, Annual	EC	Average	<1%
											Vinyl Chloride (Chloroethylene)	75-01-4	0.00E+00	0.00E+00	24	EC	Average	<1%
											1,2-Dichloroethane	107-06-2	0.00E+00	0.00E+00	24	EC	Above-Average	<1%
											Total Reduced Sulphur (TRS)	TRS	0.00E+00	0.00E+00	10-minute, 24	EC	Marginal	<1%
											Hydrogen Sulfide	7783-06-4	0.00E+00	0.00E+00	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	0.00E+00	0.00E+00	10-minute	ST	Average	<1%
STAGE4	AREA	Vertical Expansion Landfill, Stage 4 Approximate Area = 181,496 m2 (Emissions Based on Year 2034)	N/A	N/A	N/A	N/A	N/A	N/A	428847	4758701	Benzene	71-43-2	0.00E+00	0.00E+00	24, Annual	EC	Average	<1%
											Vinyl Chloride (Chloroethylene)	75-01-4	0.00E+00	0.00E+00	24	EC	Average	<1%
											1,2-Dichloroethane	107-06-2	0.00E+00	0.00E+00	24	EC	Above-Average	<1%
											Total Reduced Sulphur (TRS)	TRS	0.00E+00	0.00E+00	10-minute, 24	EC	Marginal	<1%
											Hydrogen Sulfide	7783-06-4	0.00E+00	0.00E+00	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	0.00E+00	0.00E+00	10-minute	ST	Average	<1%
DC_WF	VOLUME	Daily Cover Dropped at Working Face	N/A	N/A	N/A	N/A	N/A	N/A	428541	4758823	Particulate Matter	PM	Variable [4]	N/A	24	EF	Average	N/A
											PM10	PM10	Variable [4]	N/A	24	EF	Average	N/A
											PM2.5	PM25	Variable [4]	N/A	24	EF	Average	N/A
DC_SS	VOLUME	Daily Cover Dropped at Soil Stockpile	N/A	N/A	N/A	N/A	N/A	N/A	429308	4757217	Particulate Matter	PM	Variable [4]	N/A	24	EF	Average	N/A
											PM10	PM10	Variable [4]	N/A	24	EF	Average	N/A
											PM2.5	PM25	Variable [4]	N/A	24	EF	Average	N/A
CDA1	VOLUME	Compost Material Dropped at Compost Diversion Area 1 (North)	N/A	N/A	N/A	N/A	N/A	N/A	429524	4757510	Particulate Matter	PM	Variable [4]	N/A	24	EF	Average	N/A
											PM10	PM10	Variable [4]	N/A	24	EF	Average	N/A
											PM2.5	PM25	Variable [4]	N/A	24	EF	Average	N/A

Appendix 5A-S1: Source Summary Table, Scenario 1

Twin Creeks Environmental Centre

RWDI# 2101750

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (°C)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
CDA2	VOLUME	Compost Material Dropped at Compost Diversion Area 2 (South)	N/A	N/A	N/A	N/A	N/A	N/A	429536	4757510	Particulate Matter	PM	Variable [4]	N/A	24	EF	Average	N/A
											PM10	PM10	Variable [4]	N/A	24	EF	Average	N/A
											PM2.5	PM25	Variable [4]	N/A	24	EF	Average	N/A
CDA	AREA	Compost Diversion Area	N/A	N/A	N/A	N/A	N/A	N/A	429513	4757452	Odour	ODOUR	4.47E+03	8.10E-01	10-minute	EF	Average	11%
CS_WF	VOLUME	Contaminated Soil Dropped at Working Face	N/A	N/A	N/A	N/A	N/A	N/A	428528	4758827	Particulate Matter	PM	Variable [4]	N/A	24	EF	Average	N/A
											PM10	PM10	Variable [4]	N/A	24	EF	Average	N/A
											PM2.5	PM25	Variable [4]	N/A	24	EF	Average	N/A
WIND_SS	AREA	Wind Erosion at Soil Stockpile	N/A	N/A	N/A	N/A	N/A	N/A	429216	4757189	Particulate Matter	PM	N/A	Variable [4]	24	EF	Average	N/A
											PM10	PM10	N/A	Variable [4]	24	EF	Average	N/A
											PM2.5	PM25	N/A	Variable [4]	24	EF	Average	N/A
WIND_WF	AREA	Wind Erosion at Working Face	N/A	N/A	N/A	N/A	N/A	N/A	428523	4758772	Particulate Matter	PM	N/A	Variable [4]	24	EF	Average	N/A
											PM10	PM10	N/A	Variable [4]	24	EF	Average	N/A
											PM2.5	PM25	N/A	Variable [4]	24	EF	Average	N/A
WIND_CDA	AREA	Wind Rrosion at Compost Diversion Area	N/A	N/A	N/A	N/A	N/A	N/A	429513	4757452	Particulate Matter	PM	N/A	Variable	24	EF	Average	N/A
											PM10	PM10	N/A	Variable	24	EF	Average	N/A
											PM2.5	PM25	N/A	Variable	24	EF	Average	N/A
FC_CAP	AREA	Final Cap Construction Clay Drop-off	N/A	N/A	N/A	N/A	N/A	N/A	429030	4758695	Particulate Matter	PM	N/A	Variable [4]	24	EF	Average	N/A
											PM10	PM10	N/A	Variable [4]	24	EF	Average	N/A
											PM2.5	PM25	N/A	Variable [4]	24	EF	Average	N/A
FC_SS	AREA	Final Cap Clay Storage Pile Truck Loading	N/A	N/A	N/A	N/A	N/A	N/A	429278	4757247	Particulate Matter	PM	N/A	Variable [4]	24	EF	Average	N/A
											PM10	PM10	N/A	Variable [4]	24	EF	Average	N/A
											PM2.5	PM25	N/A	Variable [4]	24	EF	Average	N/A
WIND_CAP	AREA	Wind Erosion at the Final Cap Construction Area	N/A	N/A	N/A	N/A	N/A	N/A	429022	4758628	Particulate Matter	PM	N/A	Variable [4]	24	EF	Average	N/A
											PM10	PM10	N/A	Variable [4]	24	EF	Average	N/A
											PM2.5	PM25	N/A	Variable [4]	24	EF	Average	N/A
MH5AB	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429468	4758257	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH4A	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429461	4758000	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH16	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429423	4757612	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH6AB	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429198	4758220	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
SUMP	AREA	Leachate Maintenance Sump	N/A	N/A	N/A	N/A	N/A	N/A	429247	4758070	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH3SF	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429334	4757819	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH18	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429266	4757613	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
CONSOIL	AREA	Contaminated Soil Pile	N/A	N/A	N/A	N/A	N/A	N/A	428532	4758826	Vinyl Chloride (Chloroethylene)	75-01-4	7.34E-07	3.67E-08	24	ST	Average	<1%
											1,2-Dichloroethane	107-06-2	1.59E-05	7.97E-07	24	ST	Average	<1%
											Benzene	71-43-2	6.76E-04	3.38E-05	24, Annual	ST	Average	9%
											Odour	ODOUR	1.53E+00	7.65E-02	10-minute	ST	Average	<1%
WF	AREA	Working Face / Scrape Down Area	N/A	N/A	N/A	N/A	N/A	N/A	428523	4758772	Odour	ODOUR	N/A	Variable [5]	10-minute	ST	Average	N/A
DOZE1	VOLUME	Cat Dozers at Working Face, Dugitive Dust	N/A	N/A	N/A	N/A	N/A	N/A	428554	4758801	Particulate Matter	PM	3.33E+00	N/A	24	EC	Average	5%
											PM10	PM10	9.84E-01	N/A	24	EC	Average	6%
											PM2.5	PM25	3.50E-01	N/A	24	EC	Average	14%
DOZE2	VOLUME	Cat Dozers at Working Face, Tailpipe	N/A	N/A	N/A	N/A	N/A	N/A	428554	4758801	Particulate Matter	PM	2.03E-03	N/A	24	EC	Average	<1%
											PM10	PM10	2.03E-03	N/A	24	EC	Average	<1%
											PM2.5	PM25	1.97E-03	N/A	24	EC	Average	<1%
											Benzene	71-43-2	1.29E-04	N/A	24, Annual	EC	Average	2%
											Ammonia	7664-41-7	7.78E-04	N/A	24	EC	Average	2%
											Nitrogen Dioxide	NO2	3.56E-02	N/A	24	EC	Average	11%
											Nitrogen Oxides	10102-44-0	3.56E-02	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	2.55E-04	N/A	1, Annual	EC	Average	<1%
DOZE3	VOLUME	Cat Dozers at Soil Stockpile, Fugitive Dust	N/A	N/A	N/A	N/A	N/A	N/A	429314	4757233	Particulate Matter	PM	2.73E+00	N/A	24	EC	Average	4%
											PM10	PM10	8.65E-01	N/A	24	EC	Average	5%
											PM2.5	PM25	2.87E-01	N/A	24	EC	Average	11%
DOZE4	VOLUME	Cat Dozers at Soil Stockpile, Tailpipe	N/A	N/A	N/A	N/A	N/A	N/A	429314	4757233	Particulate Matter	PM	4.81E-04	N/A	24	EC	Average	<1%
											PM10	PM10	4.81E-04	N/A	24	EC	Average	<1%
											PM2.5	PM25	4.66E-04	N/A	24	EC	Average	<1%
											Benzene	71-43-2	3.40E-05	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	2.26E-04	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	8.72E-03	N/A	24	EC	Average	3%
											Nitrogen Oxides	10102-44-0	8.72E-03	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	7.37E-05	N/A	1, Annual	EC	Average	<1%
DOZE1CAP	VOLUME	Cat Dozers at Working Face, Dugitive Dust	N/A	N/A	N/A	N/A	N/A	N/A	429059	4758666	Particulate Matter	PM	5.67E+00	N/A	24	EC	Average	9%
											PM10	PM10	2.04E+00	N/A	24	EC	Average	13%
											PM2.5	PM25	5.96E-01	N/A	24	EC	Average	24%

Appendix 5A-S1: Source Summary Table, Scenario 1

Twin Creeks Environmental Centre

RWDI# 2101750

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (°C)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
DOZE2CAP	VOLUME	Cat Dozers at Working Face, Tailpipe	N/A	N/A	N/A	N/A	N/A	N/A	429059	4758666	Particulate Matter	PM	6.74E-04	N/A	24	EC	Average	<1%
											PM10	PM10	6.74E-04	N/A	24	EC	Average	<1%
											PM2.5	PM25	6.54E-04	N/A	24	EC	Average	<1%
											Benzene	71-43-2	5.13E-05	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	1.19E-04	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	8.92E-03	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	3.94E-05	N/A	1, Annual	EC	Average	<1%
DOZE2SS	VOLUME	Cat Dozers at Soil Stockpile, Tailpipe	N/A	N/A	N/A	N/A	N/A	N/A	429460	4757232	Particulate Matter	PM	2.88E-04	N/A	24	EC	Average	<1%
											PM10	PM10	2.88E-04	N/A	24	EC	Average	<1%
											PM2.5	PM25	2.79E-04	N/A	24	EC	Average	<1%
											Benzene	71-43-2	1.67E-05	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	3.33E-04	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	8.51E-03	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	1.08E-04	N/A	1, Annual	EC	Average	<1%
IDLE01	VOLUME	Trucks Idling at the Scale House	N/A	N/A	N/A	N/A	N/A	N/A	428420	4758417	Particulate Matter	PM	3.05E-04	N/A	24	EC	Average	<1%
											PM10	PM10	3.05E-04	N/A	24	EC	Average	<1%
											PM2.5	PM25	2.81E-04	N/A	24	EC	Average	<1%
											Benzene	71-43-2	3.31E-06	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	2.13E-04	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.04E-02	N/A	24	EC	Average	3%
											Nitrogen Oxides	10102-44-0	2.75E-02	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	1.28E-05	N/A	1, Annual	EC	Average	<1%
IDLE02	VOLUME	Trucks Idling at the Working Face	N/A	N/A	N/A	N/A	N/A	N/A	428545	4758809	Particulate Matter	PM	3.05E-04	N/A	24	EC	Average	<1%
											PM10	PM10	3.05E-04	N/A	24	EC	Average	<1%
											PM2.5	PM25	2.81E-04	N/A	24	EC	Average	<1%
											Benzene	71-43-2	3.31E-06	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	2.13E-04	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.04E-02	N/A	24	EC	Average	3%
											Nitrogen Oxides	10102-44-0	2.75E-02	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	1.28E-05	N/A	1, Annual	EC	Average	<1%
PR01	LINE_VOLUME	Main Entrance Road	N/A	N/A	N/A	N/A	N/A	N/A	428277	4758638	Particulate Matter	PM	8.65E-02 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	4.10E-02 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	6.30E-03 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	7.89E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	2.13E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.85E-02 [6]	N/A	24	EC	Average	6%
											Nitrogen Oxides	10102-44-0	4.99E-02 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	3.17E-05 [6]	N/A	1, Annual	EC	Average	<1%
PR01Z	LINE_VOLUME	Main Entrance Road, onsite equipment	N/A	N/A	N/A	N/A	N/A	N/A	428277	4758638	Particulate Matter	PM	9.85E-03 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	3.43E-03 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	5.75E-04 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	1.89E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	2.88E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.29E-03 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	3.59E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	3.63E-06 [6]	N/A	1, Annual	EC	Average	<1%
UR02Z	LINE_VOLUME	Access road to compost diversion area (CDA)	N/A	N/A	N/A	N/A	N/A	N/A	429167	4757583	Particulate Matter	PM	1.15E+00 [6]	N/A	24	EC	Average	2%
											PM10	PM10	3.48E-01 [6]	N/A	24	EC	Average	2%
											PM2.5	PM25	3.49E-02 [6]	N/A	24	EC	Average	1%
											Benzene	71-43-2	3.59E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	4.86E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.69E-03 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	4.78E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	5.85E-06 [6]	N/A	1, Annual	EC	Average	<1%
PR04A	LINE_VOLUME	Entrance to Scale House	N/A	N/A	N/A	N/A	N/A	N/A	428404	4758633	Particulate Matter	PM	1.12E-01 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	4.96E-02 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	7.74E-03 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	9.32E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	2.51E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	2.18E-02 [6]	N/A	24	EC	Average	7%
											Nitrogen Oxides	10102-44-0	5.89E-02 [6]	N/A	1, 24	EC	Average	<1%

Appendix 5A-S1: Source Summary Table, Scenario 1

Twin Creeks Environmental Centre

RWDI# 2101750

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (°C)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
											Sulphur Dioxide	7446-09-5	3.74E-05 [6]	N/A	1, Annual	EC	Average	<1%
PR04AZ	LINE_VOLUME	Entrance to Scale House, onsite equipment	N/A	N/A	N/A	N/A	N/A	N/A	428404	4758633	Particulate Matter	PM	1.30E-02 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	4.22E-03 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	7.21E-04 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	2.23E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	3.40E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.53E-03 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	4.23E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	4.28E-06 [6]	N/A	1, Annual	EC	Average	<1%
BR06	LINE_VOLUME	Across LF to WF southern section	N/A	N/A	N/A	N/A	N/A	N/A	428755	4757734	Particulate Matter	PM	1.25E+01 [6]	N/A	24	EC	Average	20%
											PM10	PM10	2.91E+00 [6]	N/A	24	EC	Average	18%
											PM2.5	PM25	2.95E-01 [6]	N/A	24	EC	Average	12%
											Benzene	71-43-2	2.31E-05 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	6.24E-04 [6]	N/A	24	EC	Average	2%
											Nitrogen Dioxide	NO2	5.42E-02 [6]	N/A	24	EC	Average	16%
											Nitrogen Oxides	10102-44-0	1.46E-01 [6]	N/A	1, 24	EC	Average	2%
											Sulphur Dioxide	7446-09-5	9.29E-05 [6]	N/A	1, Annual	EC	Average	<1%
BR06Z	LINE_VOLUME	Across LF to WF southern section, onsite equipment	N/A	N/A	N/A	N/A	N/A	N/A	428755	4757734	Particulate Matter	PM	1.14E+00 [6]	N/A	24	EC	Average	2%
											PM10	PM10	2.58E-01 [6]	N/A	24	EC	Average	2%
											PM2.5	PM25	2.59E-02 [6]	N/A	24	EC	Average	1%
											Benzene	71-43-2	7.49E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	1.48E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	2.70E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	3.84E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	4.78E-05 [6]	N/A	1, Annual	EC	Average	<1%
BR06Y	LINE_VOLUME	Across LF to WF southern section, final cap construction tru	N/A	N/A	N/A	N/A	N/A	N/A	428755	4757734	Particulate Matter	PM	1.65E+00 [6]	N/A	24	EC	Average	3%
											PM10	PM10	3.74E-01 [6]	N/A	24	EC	Average	2%
											PM2.5	PM25	3.75E-02 [6]	N/A	24	EC	Average	1%
											Benzene	71-43-2	7.49E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	1.50E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	3.83E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	4.86E-05 [6]	N/A	1, Annual	EC	Average	<1%
PR08Z	LINE_VOLUME	WF to SS/LTF	N/A	N/A	N/A	N/A	N/A	N/A	428750	4757727	Particulate Matter	PM	1.10E-01 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	1.75E-02 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	3.91E-03 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	6.54E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	1.17E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.92E-03 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	7.24E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	2.96E-05 [6]	N/A	1, Annual	EC	Average	<1%
PR08Y	LINE_VOLUME	WF to SS/LTF, final cap construction trucks	N/A	N/A	N/A	N/A	N/A	N/A	428750	4757727	Particulate Matter	PM	6.16E-02 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	8.03E-03 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	1.99E-03 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	3.81E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	7.60E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	1.94E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	2.47E-05 [6]	N/A	1, Annual	EC	Average	<1%
UR09AZ	LINE_VOLUME	WF to SS, to CDA turn off	N/A	N/A	N/A	N/A	N/A	N/A	429039	4757671	Particulate Matter	PM	1.51E+00 [6]	N/A	24	EC	Average	2%
											PM10	PM10	4.56E-01 [6]	N/A	24	EC	Average	3%
											PM2.5	PM25	4.57E-02 [6]	N/A	24	EC	Average	2%
											Benzene	71-43-2	4.40E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	7.61E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	8.59E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	3.74E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	1.97E-05 [6]	N/A	1, Annual	EC	Average	<1%
UR09AY	LINE_VOLUME	WF to SS, to CDA turn off, final cap construction trucks	N/A	N/A	N/A	N/A	N/A	N/A	429039	4757671	Particulate Matter	PM	9.65E-01 [6]	N/A	24	EC	Average	2%
											PM10	PM10	2.90E-01 [6]	N/A	24	EC	Average	2%
											PM2.5	PM25	2.91E-02 [6]	N/A	24	EC	Average	1%
											Benzene	71-43-2	2.62E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	5.23E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	<1%

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (°C)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
											Nitrogen Oxides	10102-44-0	1.34E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	1.70E-05 [6]	N/A	1, Annual	EC	Average	<1%
UR09BZ	LINE_VOLUME	WF to SS, after CDA turnoff	N/A	N/A	N/A	N/A	N/A	N/A	429164	4757579	Particulate Matter	PM	6.19E-01 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	1.86E-01 [6]	N/A	24	EC	Average	1%
											PM2.5	PM25	1.87E-02 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	2.18E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	4.35E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	1.11E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	1.41E-05 [6]	N/A	1, Annual	EC	Average	<1%
UR09BY	LINE_VOLUME	WF to SS, after CDA turnoff, final cap construction trucks	N/A	N/A	N/A	N/A	N/A	N/A	429164	4757579	Particulate Matter	PM	9.14E-01 [6]	N/A	24	EC	Average	1%
											PM10	PM10	2.75E-01 [6]	N/A	24	EC	Average	2%
											PM2.5	PM25	2.75E-02 [6]	N/A	24	EC	Average	1%
											Benzene	71-43-2	2.22E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	4.43E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	1.13E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	1.44E-05 [6]	N/A	1, Annual	EC	Average	<1%
UR11Z	LINE_VOLUME	Across SS	N/A	N/A	N/A	N/A	N/A	N/A	429160	4757399	Particulate Matter	PM	8.40E-01 [6]	N/A	24	EC	Average	1%
											PM10	PM10	2.53E-01 [6]	N/A	24	EC	Average	2%
											PM2.5	PM25	2.53E-02 [6]	N/A	24	EC	Average	1%
											Benzene	71-43-2	2.95E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	5.90E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	1.51E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	1.92E-05 [6]	N/A	1, Annual	EC	Average	<1%
UR11Y	LINE_VOLUME	Across SS, final cap construction trucks	N/A	N/A	N/A	N/A	N/A	N/A	429160	4757399	Particulate Matter	PM	1.24E+00 [6]	N/A	24	EC	Average	2%
											PM10	PM10	3.73E-01 [6]	N/A	24	EC	Average	2%
											PM2.5	PM25	3.73E-02 [6]	N/A	24	EC	Average	1%
											Benzene	71-43-2	3.01E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	6.01E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	1.54E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	1.95E-05 [6]	N/A	1, Annual	EC	Average	<1%
UR12	LINE_VOLUME	Across LF to WF northern section	N/A	N/A	N/A	N/A	N/A	N/A	429512	4757267	Particulate Matter	PM	1.81E+01 [6]	N/A	24	EC	Average	29%
											PM10	PM10	4.21E+00 [6]	N/A	24	EC	Average	26%
											PM2.5	PM25	4.27E-01 [6]	N/A	24	EC	Average	17%
											Benzene	71-43-2	3.35E-05 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	9.03E-04 [6]	N/A	24	EC	Average	3%
											Nitrogen Dioxide	NO2	7.85E-02 [6]	N/A	24	EC	Average	24%
											Nitrogen Oxides	10102-44-0	2.12E-01 [6]	N/A	1, 24	EC	Average	3%
											Sulphur Dioxide	7446-09-5	1.34E-04 [6]	N/A	1, Annual	EC	Average	<1%
UR12Z	LINE_VOLUME	Across LF to WF northern section, onsite equipment	N/A	N/A	N/A	N/A	N/A	N/A	429512	4757267	Particulate Matter	PM	1.65E+00 [6]	N/A	24	EC	Average	3%
											PM10	PM10	3.74E-01 [6]	N/A	24	EC	Average	2%
											PM2.5	PM25	3.76E-02 [6]	N/A	24	EC	Average	1%
											Benzene	71-43-2	1.08E-05 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	2.14E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	3.90E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	5.56E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	6.93E-05 [6]	N/A	1, Annual	EC	Average	<1%
UR12Y	LINE_VOLUME	Across LF to WF northern section, final cap construction truc	N/A	N/A	N/A	N/A	N/A	N/A	429512	4757267	Particulate Matter	PM	2.39E+00 [6]	N/A	24	EC	Average	4%
											PM10	PM10	5.42E-01 [6]	N/A	24	EC	Average	3%
											PM2.5	PM25	5.44E-02 [6]	N/A	24	EC	Average	2%
											Benzene	71-43-2	1.08E-05 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	2.17E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	5.54E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	7.04E-05 [6]	N/A	1, Annual	EC	Average	<1%
PR13Z	LINE_VOLUME	WF to LTF	N/A	N/A	N/A	N/A	N/A	N/A	429035	4757669	Particulate Matter	PM	7.26E-03 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	1.52E-03 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	2.97E-04 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	8.28E-08 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	3.70E-06 [6]	N/A	24	EC	Average	<1%

Appendix 5A-S1: Source Summary Table, Scenario 1

Twin Creeks Environmental Centre

RWDI# 2101750

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (°C)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
											Nitrogen Dioxide	NO2	3.62E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	9.70E-04 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	5.75E-07 [6]	N/A	1, Annual	EC	Average	<1%
PR14Z	LINE_VOLUME	WF to LTF	N/A	N/A	N/A	N/A	N/A	N/A	429077	4757516	Particulate Matter	PM	2.67E-03 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	5.59E-04 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	1.09E-04 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	3.04E-08 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	1.36E-06 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.33E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	3.57E-04 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	2.12E-07 [6]	N/A	1, Annual	EC	Average	<1%
UR17Z	LINE_VOLUME	Across CDA	N/A	N/A	N/A	N/A	N/A	N/A	429514	4757517	Particulate Matter	PM	1.90E+00 [6]	N/A	24	EC	Average	3%
											PM10	PM10	5.71E-01 [6]	N/A	24	EC	Average	4%
											PM2.5	PM25	5.74E-02 [6]	N/A	24	EC	Average	2%
											Benzene	71-43-2	2.57E-05 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	5.93E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	4.46E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	1.97E-05 [6]	N/A	1, Annual	EC	Average	<1%
UR18Z	LINE_VOLUME	Across WF, onsite equipment	N/A	N/A	N/A	N/A	N/A	N/A	428567	4758798	Particulate Matter	PM	2.08E+00 [6]	N/A	24	EC	Average	3%
											PM10	PM10	6.34E-01 [6]	N/A	24	EC	Average	4%
											PM2.5	PM25	6.37E-02 [6]	N/A	24	EC	Average	3%
											Benzene	71-43-2	2.62E-05 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	7.02E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	2.00E-06 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	4.74E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	2.32E-05 [6]	N/A	1, Annual	EC	Average	<1%
PR04B	LINE_VOLUME	Scale House to WF	N/A	N/A	N/A	N/A	N/A	N/A	428477	4758211	Particulate Matter	PM	3.49E-01 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	1.44E-01 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	2.28E-02 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	2.61E-05 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	7.04E-04 [6]	N/A	24	EC	Average	2%
											Nitrogen Dioxide	NO2	6.12E-02 [6]	N/A	24	EC	Average	18%
											Nitrogen Oxides	10102-44-0	1.65E-01 [6]	N/A	1, 24	EC	Average	2%
											Sulphur Dioxide	7446-09-5	1.05E-04 [6]	N/A	1, Annual	EC	Average	<1%
PR04BZ	LINE_VOLUME	Scale House to WF, onsite equipment	N/A	N/A	N/A	N/A	N/A	N/A	428477	4758211	Particulate Matter	PM	4.13E-02 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	1.24E-02 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	2.17E-03 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	6.24E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	9.51E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	4.27E-03 [6]	N/A	24	EC	Average	1%
											Nitrogen Oxides	10102-44-0	1.18E-02 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	1.20E-05 [6]	N/A	1, Annual	EC	Average	<1%
PR04C	LINE_VOLUME	Exit Road from WF	N/A	N/A	N/A	N/A	N/A	N/A	428477	4758211	Particulate Matter	PM	1.08E-01 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	4.43E-02 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	7.03E-03 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	8.05E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	2.17E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.89E-02 [6]	N/A	24	EC	Average	6%
											Nitrogen Oxides	10102-44-0	5.09E-02 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	3.23E-05 [6]	N/A	1, Annual	EC	Average	<1%
PR04CZ	LINE_VOLUME	Exit Road from WF, onsite equipment	N/A	N/A	N/A	N/A	N/A	N/A	428477	4758211	Particulate Matter	PM	1.27E-02 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	3.84E-03 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	6.70E-04 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	1.92E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	2.93E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.32E-03 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	3.66E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	3.70E-06 [6]	N/A	1, Annual	EC	Average	<1%
MH17	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429326	4757612	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
LW6	AREA	Leachate Monitoring Well	N/A	N/A	N/A	N/A	N/A	N/A	429295	4757641	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
LW5	AREA	Leachate Monitoring Well	N/A	N/A	N/A	N/A	N/A	N/A	429414	4757638	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH3SB	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429460	4757818	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%

Appendix 5A-S1: Source Summary Table, Scenario 1

Twin Creeks Environmental Centre

RWDI# 2101750

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (°C)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
MH3SD	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429216	4757819	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH3SC	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429211	4757771	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH3SE	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429326	4757780	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH4B	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429448	4758128	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
LW4	AREA	Leachate Monitoring Well	N/A	N/A	N/A	N/A	N/A	N/A	429414	4758056	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
LW3	AREA	Leachate Monitoring Well	N/A	N/A	N/A	N/A	N/A	N/A	429437	4758227	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH8AB	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429215	4758370	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH10	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429205	4758622	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH12AB	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429195	4758697	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH7AB	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429471	4758461	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
LW2	AREA	Leachate Monitoring Well	N/A	N/A	N/A	N/A	N/A	N/A	429451	4758527	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH9AB	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429473	4758617	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH11AB	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429473	4758632	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
LW1	AREA	Leachate Monitoring Well	N/A	N/A	N/A	N/A	N/A	N/A	429457	4758703	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
Total		Total of All Listed Sources									Benzene	71-43-2	7.35E-03					100%
											Vinyl Chloride (Chloroethylene)	75-01-4	3.97E-03					100%
											1,2-Dichloroethane	107-06-2	3.04E-03					100%
											Ammonia	7664-41-7	3.47E-02					100%
											Nitrogen Oxides	10102-44-0	8.14E+00					100%
											Particulate Matter	PM	6.33E+01					100%
											Sulphur Dioxide	7446-09-5	2.75E+00					100%
											Hydrogen Sulfide	7783-06-4	1.07E-01					100%
											Total Reduced Sulphur (TRS)	TRS	1.21E-01					100%
											PM10	PM10	1.63E+01					100%
											PM2.5	PM25	2.51E+00					100%
											Odour	ODOUR	4.23E+04					100%
											Dioxins and Furans	DF	1.70E-10					100%
											Nitrogen Dioxide	NO2	3.32E-01					100%

Notes:

[1] Emission Estimating Technique Short-Forms are V-ST (Validated Source Test), ST (Source Test), EF (Emission Factor), MB (Mass Balance), and EC (Engineering Calculation).

[2] Data Quality Categories: Highest; Above-Average; Average; and Marginal.

[3] For Odour, the units are OU/s and $OU/m^2/s$ for emission rate and flux rate.

[4] Material handling and wind erosion emissions vary by time of day depending on wind conditions in each hour. Hourly emission rates have been applied during modelling.

[5] Odour emissions from the active working face vary depending on the time of day. From 6 a.m. to 9 a.m. the active face is freshly uncovered waste as the daily cover is stripped and new waste is deposited. By 9 a.m. the entire active face has been covered by at least 1 foot to 1 metre of new waste. After 9 a.m. the emission factor for new waste at the active face is applied.

[6] Roadway traffic varies by time of day. The maximum emission rate (g/s) for the entire road segment is shown in this table; hourly emissions rates have been applied during modelling.

Revision Date: 2024-06-05
Prepared by: JWS
Checked by: MDKB

Appendix 5A-S1-5.1a: On-Site Mobile Equipment Emissions Spreadsheet - Fugitive Dust (AM)

Project #2101750

Twin Creeks Environmental Centre - Preferred Alternative

UNPAVED ROAD SECTIONS - AP-42 Section 13.2.2

PAVED ROAD SECTIONS - AP-42 Section 13.2.1

Paved Roads:	$E = k\,(sL)^{0.91}\,(W)^{1.02}$
Unpaved Roads - Industrial:	$E = 281.9\,k\,(s/12)^{a}\,(W/3)^{b}$
Unpaved Roads - Public:	$E = 281.9\,k\,(s/12)^{a}\,(S/30)^{d}\,/\,(M/0.5)^{c} - C$

E particulate emission factor (g/VKT) — **W** average weight of the vehicles traveling the road (US short tons) — **M** surface material moisture content (%)

k particle size multiplier (see below) — **s** surface material silt content (%) — **S** mean vehicle speed (mph)

sL road surface silt loading (g/m^2) — **C** emission factor for 1980's vehicle fleet exhaust, brake wear and tire wear — **a,b,c,d** constants (see below)

Route ID [1]	Route Description	Traffic Passes			Segment Length [2]	Road Surface [3]	Roadway Type [4]	Mean Vehicle Speed		Average Vehicle Weight [5]	Surface Material Moisture Content [6]	Surface Silt Content [7]	Road Surface Silt Loading [8]	Base AP-42 Emission Factor			Base Emission Rate			Additional Control Efficiency Applied	Final Controlled Emission Rate					
		Hourly	Daily	Annual										TSP	PM_{10}	$PM_{2.5}$	TSP	PM_{10}	$PM_{2.5}$		TSP	Data Quality Rating	PM_{10}	Data Quality Rating	$PM_{2.5}$	Data Quality Rating
		(#/h)	(#/d)	(#/a)	(m)			(km/h)	(mph)	(tons)	(%)	(%)	(g/m^2)	(g/VKT)	(g/VKT)	(g/VKT)	(g/s)	(g/s)	(g/s)	(%)	(g/s)		(g/s)		(g/s)	
PR01	Main Entrance Road	1	1	1	206	Paved	Industrial	10	6	30.2	--	--	0.63	1.0E+02	1.3E+01	3.2E+00	5.8E-03	7.5E-04	1.8E-04	90%	5.8E-04	--	7.5E-05	--	1.8E-05	--
PR01Z	Main Entrance Road, onsite equipment	1	1	1	206	Paved	Industrial	10	6	30.2	--	--	0.63	1.0E+02	1.3E+01	3.2E+00	5.8E-03	7.5E-04	1.8E-04	90%	5.8E-04	--	7.5E-05	--	1.8E-05	--
UR02Z	Access road to compost diversion area (CDA)	1	1	1	414	Unpaved	Industrial	10	6	15.5	--	43.1%	--	9.3E+03	2.8E+03	2.8E+02	1.1E+00	3.2E-01	3.2E-02	90%	1.1E-01	--	3.2E-02	--	3.2E-03	--
PR04A	Entrance to Scale House	1	1	1	487	Paved	Industrial	10	6	34.9	--	--	0.63	1.2E+02	1.5E+01	3.7E+00	1.6E-02	2.1E-03	5.0E-04	90%	1.6E-03	--	2.1E-04	--	5.0E-05	--
PR04AZ	Entrance to Scale House, onsite equipment	1	1	1	487	Paved	Industrial	10	6	34.9	--	--	0.63	1.2E+02	1.5E+01	3.7E+00	1.6E-02	2.1E-03	5.0E-04	90%	1.6E-03	--	2.1E-04	--	5.0E-05	--
BR06	Across LF to WF southern section	1	1	1	603	Unpaved	Industrial	10	6	41.2	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	1.4E+00	3.1E-01	3.1E-02	90%	1.4E-01	--	3.1E-02	--	3.1E-03	--
BR06Z	Across LF to WF southern section, onsite equipment	1	1	1	603	Unpaved	Industrial	10	6	41.2	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	1.4E+00	3.1E-01	3.1E-02	90%	1.4E-01	--	3.1E-02	--	3.1E-03	--
BR06Y	Across LF to WF southern section, final cap construction trucks	1	1	1	603	Unpaved	Industrial	10	6	41.2	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	1.4E+00	3.1E-01	3.1E-02	90%	1.4E-01	--	3.1E-02	--	3.1E-03	--
PR08Z	WF to SS/LTF	1	1	1	307	Paved	Industrial	10	6	37.1	--	--	3.53	6.0E+02	7.8E+01	1.9E+01	5.1E-02	6.6E-03	1.6E-03	90%	5.1E-03	--	6.6E-04	--	1.6E-04	--
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	1	307	Paved	Industrial	10	6	37.1	--	--	3.53	6.0E+02	7.8E+01	1.9E+01	5.1E-02	6.6E-03	1.6E-03	90%	5.1E-03	--	6.6E-04	--	1.6E-04	--
UR09AZ	WF to SS, to CDA turn off	1	1	1	211	Unpaved	Industrial	10	6	36.7	--	43.1%	--	1.4E+04	4.1E+03	4.1E+02	8.0E-01	2.4E-01	2.4E-02	90%	8.0E-02	--	2.4E-02	--	2.4E-03	--
UR09AY	WF to SS, to CDA turn off	1	1	1	211	Unpaved	Industrial	10	6	36.7	--	43.1%	--	1.4E+04	4.1E+03	4.1E+02	8.0E-01	2.4E-01	2.4E-02	90%	8.0E-02	--	2.4E-02	--	2.4E-03	--
UR09BZ	WF to SS, after CDA turnoff	1	1	1	179	Unpaved	Industrial	10	6	47.2	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	7.6E-01	2.3E-01	2.3E-02	90%	7.6E-02	--	2.3E-02	--	2.3E-03	--
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	1	179	Unpaved	Industrial	10	6	47.2	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	7.6E-01	2.3E-01	2.3E-02	90%	7.6E-02	--	2.3E-02	--	2.3E-03	--
UR11Z	Across SS	1	1	1	242	Unpaved	Industrial	10	6	47.2	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	1.0E+00	3.1E-01	3.1E-02	90%	1.0E-01	--	3.1E-02	--	3.1E-03	--
UR11Y	Across SS, final cap construction trucks	1	1	1	242	Unpaved	Industrial	10	6	47.2	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	1.0E+00	3.1E-01	3.1E-02	90%	1.0E-01	--	3.1E-02	--	3.1E-03	--
UR12	Across LF to WF northern section	1	1	1	873	Unpaved	Industrial	10	6	41.2	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	2.0E+00	4.5E-01	4.5E-02	90%	2.0E-01	--	4.5E-02	--	4.5E-03	--
UR12Z	Across LF to WF northern section, onsite equipment	1	1	1	873	Unpaved	Industrial	10	6	41.2	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	2.0E+00	4.5E-01	4.5E-02	90%	2.0E-01	--	4.5E-02	--	4.5E-03	--
UR12Y	Across LF to WF northern section, final cap construction trucks	1	1	1	873	Unpaved	Industrial	10	6	41.2	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	2.0E+00	4.5E-01	4.5E-02	90%	2.0E-01	--	4.5E-02	--	4.5E-03	--
PR13Z	WF to LTF	1	1	1	165	Paved	Industrial	10	6	44.3	--	--	3.53	7.2E+02	9.3E+01	2.3E+01	3.3E-02	4.3E-03	1.0E-03	90%	3.3E-03	--	4.3E-04	--	1.0E-04	--
PR14Z	WF to LTF	1	1	1	61	Paved	Industrial	10	6	44.3	--	--	3.53	7.2E+02	9.3E+01	2.3E+01	1.2E-02	1.6E-03	3.8E-04	90%	1.2E-03	--	1.6E-04	--	3.8E-05	--
UR17Z	Across CDA	1	1	1	90	Unpaved	Industrial	10	6	36.4	--	43.1%	--	1.4E+04	4.1E+03	4.1E+02	3.4E-01	1.0E-01	1.0E-02	90%	3.4E-02	--	1.0E-02	--	1.0E-03	--
UR18Z	Across WF, onsite equipment	1	1	1	45	Unpaved	Industrial	10	6	36.4	--	44.7%	--	1.4E+04	4.2E+03	4.2E+02	1.7E-01	5.3E-02	5.3E-03	90%	1.7E-02	--	5.3E-03	--	5.3E-04	--
PR04B	Scale House to WF	1	1	1	681	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	2.6E-02	3.4E-03	8.2E-04	90%	2.6E-03	--	3.4E-04	--	8.2E-05	--
PR04BZ	Scale House to WF, onsite equipment	1	1	1	681	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	2.6E-02	3.4E-03	8.2E-04	90%	2.6E-03	--	3.4E-04	--	8.2E-05	--
PR04C	Exit Road from WF	1	1	1	420	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	1.6E-02	2.1E-03	5.1E-04	90%	1.6E-03	--	2.1E-04	--	5.1E-05	--
PR04CZ	Exit Road from WF, onsite equipment	1	1	1	420	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	1.6E-02	2.1E-03	5.1E-04	90%	1.6E-03	--	2.1E-04	--	5.1E-05	--

Constants for Mobile Emission Equations

Roadway Type	Contaminant	k	a	b	c	d	Quality
Paved Roads:	**$PM_{2.5}$**	0.15	-	-	-	-	-
	PM_{10}	0.62	-	-	-	-	-
	TSP	4.79	-	-	-	-	-
Unpaved Roads - Industrial:	**$PM_{2.5}$**	0.15	0.9	0.45	-	-	C
	PM_{10}	1.5	0.9	0.45	-	-	B
	TSP	7.32	0.6	0.45	-	-	B
Unpaved Roads - Public:	**$PM_{2.5}$**	0.18	1	-	0.2	0.5	C
	PM_{10}	1.8	1	-	0.2	0.5	B
	TSP	8.96	1	-	0.49	0.2	B

[1] Route ID numbers provided on site plan.
[2] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.
[3] Paved surfaces include asphalt, concrete, and recycled asphalt (if it forms a relatively consistent surface).
[4] Publicly accessible and dominated by light vehicles, or industrial, and dominated by heavy vehicles.
[5] The average vehicle weight reflects the average of the empty and loaded vehicle weight, for travel in both directions.
[6] Required only for publicly accessible unpaved roads.
[7] Required only for unpaved roads (public and industrial).
[8] Required only for industrial paved roads.

Sample calculation for uncontrolled TSP emission factor for Source PR01: Main Entrance Road

EF = 281.9 x (4.9) x [(0% / 12)]^(0.7) x [(36.6087628865979 tons) / 3]^(0.45) = 102 g TSP / vehicle kilometer travelled (vkt)

Sample calculation for TSP emission rate for Source PR01: Main Entrance Road

$$\frac{1 \text{ vehicles}}{1 \text{ h}} \times \frac{206 \text{ m}}{1000 \text{ m}} \times \frac{1 \text{ km}}{1 \text{ vehicle km}} \times \frac{102 \text{ g}_{TSP}}{3600 \text{ s}} \times \frac{1 \text{ h}}{1 \text{ g}_{TSP}} \times \frac{0.1 \text{ g}_{TSP\ uncontrolled}}{1 \text{ g}_{TSP}} = 5.8E\text{-}04 \text{ g}_{TSP} / \text{s}$$

Comments

Appendix 5A-S1-5.1a: On-Site Mobile Equipment Emissions Spreadsheet - Fugitive Dust (MD)

Project #2101750

Twin Creeks Environmental Centre - Preferred Alternative

UNPAVED ROAD SECTIONS - AP-42 Section 13.2.2

PAVED ROAD SECTIONS - AP-42 Section 13.2.1

Paved Roads: $E = k\,(sL)^{0.91}\,(W)^{1.02}$

Unpaved Roads - Industrial: $E = 281.9\,k\,(s / 12)^{a}\,(W / 3)^{b}$

Unpaved Roads - Public: $E = 281.9\,k\,(s / 12)^{a}\,(S / 30)^{d} / (M / 0.5)^{c} - C$

E particulate emission factor (g/VKT)
k particle size multiplier (see below)
sL road surface silt loading (g/m^2)
W average weight of the vehicles traveling the road (US short tons)
s surface material silt content (%)
C emission factor for 1980's vehicle fleet exhaust, brake wear and tire wear
M surface material moisture content (%)
S mean vehicle speed (mph)
a,b,c,d constants (see below)

Route ID [1]	Route Description	Traffic Passes [2]			Segment Length [2]	Road Surface [3]	Roadway Type [4]	Mean Vehicle Speed		Average Vehicle Weight [5]	Surface Material Moisture Content [6]	Surface Silt Content [7]	Road Surface Silt Loading [8]	Base AP-42 Emission Factor			Base Emission Rate			Additional Control Efficiency Applied	Final Controlled Emission Rate					
		Hourly	Daily	Annual										TSP	PM_{10}	$PM_{2.5}$	TSP	PM_{10}	$PM_{2.5}$		TSP	Data Quality Rating	PM_{10}	Data Quality Rating	$PM_{2.5}$	Data Quality Rating
		(#/h)	(#/d)	(#/a)	(m)			(km/h)	(mph)	(tons)	(%)	(%)	(g/m^2)	(g/VKT)	(g/VKT)	(g/VKT)	(g/s)	(g/s)	(g/s)	(%)	(g/s)		(g/s)		(g/s)	
PR01	Main Entrance Road	1	1	1	206	Paved	Industrial	10	6	30.2	--	--	0.63	1.0E+02	1.3E+01	3.2E+00	5.8E-03	7.5E-04	1.8E-04	90%	5.8E-04	--	7.5E-05	--	1.8E-05	--
PR01Z	Main Entrance Road, onsite equipment	1	1	1	206	Paved	Industrial	10	6	30.2	--	--	0.63	1.0E+02	1.3E+01	3.2E+00	5.8E-03	7.5E-04	1.8E-04	90%	5.8E-04	--	7.5E-05	--	1.8E-05	--
UR02Z	Access road to compost diversion area (CDA)	1	1	1	414	Unpaved	Industrial	10	6	15.5	--	43.1%	--	9.3E+03	2.8E+03	2.8E+02	1.1E+00	3.2E-01	3.2E-02	90%	1.1E-01	--	3.2E-02	--	3.2E-03	--
PR04A	Entrance to Scale House	1	1	1	487	Paved	Industrial	10	6	34.9	--	--	0.63	1.2E+02	1.5E+01	3.7E+00	1.6E-02	2.1E-03	5.0E-04	90%	1.6E-03	--	2.1E-04	--	5.0E-05	--
PR04AZ	Entrance to Scale House, onsite equipment	1	1	1	487	Paved	Industrial	10	6	34.9	--	--	0.63	1.2E+02	1.5E+01	3.7E+00	1.6E-02	2.1E-03	5.0E-04	90%	1.6E-03	--	2.1E-04	--	5.0E-05	--
BR06	Across LF to WF southern section	1	1	1	603	Unpaved	Industrial	10	6	41.2	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	1.4E+00	3.1E-01	3.1E-02	90%	1.4E-01	--	3.1E-02	--	3.1E-03	--
BR06Z	Across LF to WF southern section, onsite equipment	1	1	1	603	Unpaved	Industrial	10	6	41.2	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	1.4E+00	3.1E-01	3.1E-02	90%	1.4E-01	--	3.1E-02	--	3.1E-03	--
BR06Y	Across LF to WF southern section, final cap construction trucks	1	1	1	603	Unpaved	Industrial	10	6	41.2	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	1.4E+00	3.1E-01	3.1E-02	90%	1.4E-01	--	3.1E-02	--	3.1E-03	--
PR08Z	WF to SS/LTF	1	1	1	307	Paved	Industrial	10	6	37.1	--	--	3.53	6.0E+02	7.8E+01	1.9E+01	5.1E-02	6.6E-03	1.6E-03	90%	5.1E-03	--	6.6E-04	--	1.6E-04	--
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	1	307	Paved	Industrial	10	6	37.1	--	--	3.53	6.0E+02	7.8E+01	1.9E+01	5.1E-02	6.6E-03	1.6E-03	90%	5.1E-03	--	6.6E-04	--	1.6E-04	--
UR09AZ	WF to SS, to CDA turn off	1	1	1	211	Unpaved	Industrial	10	6	36.7	--	43.1%	--	1.4E+04	4.1E+03	4.1E+02	8.0E-01	2.4E-01	2.4E-02	90%	8.0E-02	--	2.4E-02	--	2.4E-03	--
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	1	211	Unpaved	Industrial	10	6	36.7	--	43.1%	--	1.4E+04	4.1E+03	4.1E+02	8.0E-01	2.4E-01	2.4E-02	90%	8.0E-02	--	2.4E-02	--	2.4E-03	--
UR09BZ	WF to SS, after CDA turnoff	1	1	1	179	Unpaved	Industrial	10	6	47.2	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	7.6E-01	2.3E-01	2.3E-02	90%	7.6E-02	--	2.3E-02	--	2.3E-03	--
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	1	179	Unpaved	Industrial	10	6	47.2	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	7.6E-01	2.3E-01	2.3E-02	90%	7.6E-02	--	2.3E-02	--	2.3E-03	--
UR11Z	Across SS	1	1	1	242	Unpaved	Industrial	10	6	47.2	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	1.0E+00	3.1E-01	3.1E-02	90%	1.0E-01	--	3.1E-02	--	3.1E-03	--
UR11Y	Across SS, final cap construction trucks	1	1	1	242	Unpaved	Industrial	10	6	47.2	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	1.0E+00	3.1E-01	3.1E-02	90%	1.0E-01	--	3.1E-02	--	3.1E-03	--
UR12	Across LF to WF northern section	1	1	1	873	Unpaved	Industrial	10	6	41.2	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	2.0E+00	4.5E-01	4.5E-02	90%	2.0E-01	--	4.5E-02	--	4.5E-03	--
UR12Z	Across LF to WF northern section, onsite equipment	1	1	1	873	Unpaved	Industrial	10	6	41.2	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	2.0E+00	4.5E-01	4.5E-02	90%	2.0E-01	--	4.5E-02	--	4.5E-03	--
UR12Y	Across LF to WF northern section, final cap construction trucks	1	1	1	873	Unpaved	Industrial	10	6	41.2	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	2.0E+00	4.5E-01	4.5E-02	90%	2.0E-01	--	4.5E-02	--	4.5E-03	--
PR13Z	WF to LTF	1	1	1	165	Paved	Industrial	10	6	44.3	--	--	3.53	7.2E+02	9.3E+01	2.3E+01	3.3E-02	4.3E-03	1.0E-03	90%	3.3E-03	--	4.3E-04	--	1.0E-04	--
PR14Z	WF to LTF	1	1	1	61	Paved	Industrial	10	6	44.3	--	--	3.53	7.2E+02	9.3E+01	2.3E+01	1.2E-02	1.6E-03	3.8E-04	90%	1.2E-03	--	1.6E-04	--	3.8E-05	--
UR17Z	Across CDA	1	1	1	90	Unpaved	Industrial	10	6	36.4	--	43.1%	--	1.4E+04	4.1E+03	4.1E+02	3.4E-01	1.0E-01	1.0E-02	90%	3.4E-02	--	1.0E-02	--	1.0E-03	--
UR18Z	Across WF, onsite equipment	1	1	1	45	Unpaved	Industrial	10	6	36.4	--	44.7%	--	1.4E+04	4.2E+03	4.2E+02	1.7E-01	5.3E-02	5.3E-03	90%	1.7E-02	--	5.3E-03	--	5.3E-04	--
PR04B	Scale House to WF	1	1	1	681	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	2.6E-02	3.4E-03	8.2E-04	90%	2.6E-03	--	3.4E-04	--	8.2E-05	--
PR04BZ	Scale House to WF, onsite equipment	1	1	1	681	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	2.6E-02	3.4E-03	8.2E-04	90%	2.6E-03	--	3.4E-04	--	8.2E-05	--
PR04C	Exit Road from WF	1	1	1	420	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	1.6E-02	2.1E-03	5.1E-04	90%	1.6E-03	--	2.1E-04	--	5.1E-05	--
PR04CZ	Exit Road from WF, onsite equipment	1	1	1	420	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	1.6E-02	2.1E-03	5.1E-04	90%	1.6E-03	--	2.1E-04	--	5.1E-05	--

Constants for Mobile Emission Equations

Roadway Type	Contaminant	k	a	b	c	d	Quality
Paved Roads:	**$PM_{2.5}$**	0.15	-	-	-	-	-
	PM_{10}	0.62	-	-	-	-	-
	TSP	4.79	-	-	-	-	-
Unpaved Roads - Industrial:	**$PM_{2.5}$**	0.15	0.9	0.45	-	-	C
	PM_{10}	1.5	0.9	0.45	-	-	B
	TSP	7.32	0.6	0.45	-	-	B
Unpaved Roads - Public:	**$PM_{2.5}$**	0.18	1	-	0.2	0.5	C
	PM_{10}	1.8	1	-	0.2	0.5	B
	TSP	8.96	1	-	0.49	0.2	B

[1] Route ID numbers provided on site plan.
[2] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.
[3] Paved surfaces include asphalt, concrete, and recycled asphalt (if it forms a relatively consistent surface).
[4] Publicly accessible and dominated by light vehicles, or industrial, and dominated by heavy vehicles.
[5] The average vehicle weight reflects the average of the empty and loaded vehicle weight, for travel in both directions.
[6] Required only for publicly accessible unpaved roads.
[7] Required only for unpaved roads (public and industrial).
[8] Required only for industrial paved roads.

Sample calculation for uncontrolled TSP emission factor for Source PR01: Main Entrance Road

EF = 281.9 x (4.9) x [(0% / 12)]^(0.7) x [(36.6087628865979 tons) / 3]^(0.45) = 102 g TSP / vehicle kilometer travelled (vkt)

Sample calculation for TSP emission rate for Source PR01: Main Entrance Road

$$\frac{1 \text{ vehicles}}{1 \text{ h}} \times \frac{206 \text{ m}}{1000 \text{ m}} \times \frac{1 \text{ km}}{1 \text{ vehicle km}} \times \frac{102 \text{ g}_{TSP}}{3600 \text{ s}} \times \frac{1 \text{ h}}{1 \text{ g}_{TSP}} \times \frac{0.1 \text{ g}_{TSP\ uncontrolled}}{1 \text{ g}_{TSP}} = 5.8E\text{-}04 \text{ g}_{TSP} / \text{s}$$

Comments

Appendix 5A-S1-5.1a: On-Site Mobile Equipment Emissions Spreadsheet - Fugitive Dust (PM)

Project #2101750

Twin Creeks Environmental Centre - Preferred Alternative

UNPAVED ROAD SECTIONS - AP-42 Section 13.2.2

PAVED ROAD SECTIONS - AP-42 Section 13.2.1

Paved Roads:	$E = k\,(sL)^{0.91}\,(W)^{1.02}$
Unpaved Roads - Industrial:	$E = 281.9\,k\,(s/12)^{a}\,(W/3)^{b}$
Unpaved Roads - Public:	$E = 281.9\,k\,(s/12)^{a}\,(S/30)^{d}\,/\,(M/0.5)^{c} - C$

E particulate emission factor (g/VKT) — **W** average weight of the vehicles traveling the road (US short tons) — **M** surface material moisture content (%)
k particle size multiplier (see below) — **s** surface material silt content (%) — **S** mean vehicle speed (mph)
sL road surface silt loading (g/m^2) — **C** emission factor for 1980's vehicle fleet exhaust, brake wear and tire wear — **a,b,c,d** constants (see below)

Route ID [1]	Route Description	Traffic Passes [2]			Segment Length [2]	Road Surface [3]	Roadway Type [4]	Mean Vehicle Speed		Average Vehicle Weight [5]	Surface Material Moisture Content [6]	Surface Silt Content [7]	Road Surface Silt Loading [8]	Base AP-42 Emission Factor			Base Emission Rate			Additional Control Efficiency Applied	Final Controlled Emission Rate					
		Hourly	Daily	Annual										TSP	PM_{10}	$PM_{2.5}$	TSP	PM_{10}	$PM_{2.5}$		TSP	Data Quality Rating	PM_{10}	Data Quality Rating	$PM_{2.5}$	Data Quality Rating
		(#/h)	(#/d)	(#/a)	(m)			(km/h)	(mph)	(tons)	(%)	(%)	(g/m^2)	(g/VKT)	(g/VKT)	(g/VKT)	(g/s)	(g/s)	(g/s)	(%)	(g/s)		(g/s)		(g/s)	
PR01	Main Entrance Road	1	1	1	206	Paved	Industrial	10	6	30.2	--	--	0.63	1.0E+02	1.3E+01	3.2E+00	5.8E-03	7.5E-04	1.8E-04	90%	5.8E-04	--	7.5E-05	--	1.8E-05	--
PR01Z	Main Entrance Road, onsite equipment	1	1	1	206	Paved	Industrial	10	6	30.2	--	--	0.63	1.0E+02	1.3E+01	3.2E+00	5.8E-03	7.5E-04	1.8E-04	90%	5.8E-04	--	7.5E-05	--	1.8E-05	--
UR02Z	Access road to compost diversion area (CDA)	1	1	1	414	Unpaved	Industrial	10	6	15.5	--	43.1%	--	9.3E+03	2.8E+03	2.8E+02	1.1E+00	3.2E-01	3.2E-02	90%	1.1E-01	--	3.2E-02	--	3.2E-03	--
PR04A	Entrance to Scale House	1	1	1	487	Paved	Industrial	10	6	34.9	--	--	0.63	1.2E+02	1.5E+01	3.7E+00	1.6E-02	2.1E-03	5.0E-04	90%	1.6E-03	--	2.1E-04	--	5.0E-05	--
PR04AZ	Entrance to Scale House, onsite equipment	1	1	1	487	Paved	Industrial	10	6	34.9	--	--	0.63	1.2E+02	1.5E+01	3.7E+00	1.6E-02	2.1E-03	5.0E-04	90%	1.6E-03	--	2.1E-04	--	5.0E-05	--
BR06	Across LF to WF southern section	1	1	1	603	Unpaved	Industrial	10	6	41.2	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	1.4E+00	3.1E-01	3.1E-02	90%	1.4E-01	--	3.1E-02	--	3.1E-03	--
BR06Z	Across LF to WF southern section, onsite equipment	1	1	1	603	Unpaved	Industrial	10	6	41.2	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	1.4E+00	3.1E-01	3.1E-02	90%	1.4E-01	--	3.1E-02	--	3.1E-03	--
BR06Y	Across LF to WF southern section, final cap construction trucks	1	1	1	603	Unpaved	Industrial	10	6	41.2	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	1.4E+00	3.1E-01	3.1E-02	90%	1.4E-01	--	3.1E-02	--	3.1E-03	--
PR08Z	WF to SS/LTF	1	1	1	307	Paved	Industrial	10	6	37.1	--	--	3.53	6.0E+02	7.8E+01	1.9E+01	5.1E-02	6.6E-03	1.6E-03	90%	5.1E-03	--	6.6E-04	--	1.6E-04	--
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	1	307	Paved	Industrial	10	6	37.1	--	--	3.53	6.0E+02	7.8E+01	1.9E+01	5.1E-02	6.6E-03	1.6E-03	90%	5.1E-03	--	6.6E-04	--	1.6E-04	--
UR09AZ	WF to SS, to CDA turn off	1	1	1	211	Unpaved	Industrial	10	6	36.7	--	43.1%	--	1.4E+04	4.1E+03	4.1E+02	8.0E-01	2.4E-01	2.4E-02	90%	8.0E-02	--	2.4E-02	--	2.4E-03	--
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	1	211	Unpaved	Industrial	10	6	36.7	--	43.1%	--	1.4E+04	4.1E+03	4.1E+02	8.0E-01	2.4E-01	2.4E-02	90%	8.0E-02	--	2.4E-02	--	2.4E-03	--
UR09BZ	WF to SS, after CDA turnoff	1	1	1	179	Unpaved	Industrial	10	6	47.2	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	7.6E-01	2.3E-01	2.3E-02	90%	7.6E-02	--	2.3E-02	--	2.3E-03	--
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	1	179	Unpaved	Industrial	10	6	47.2	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	7.6E-01	2.3E-01	2.3E-02	90%	7.6E-02	--	2.3E-02	--	2.3E-03	--
UR11Z	Across SS	1	1	1	242	Unpaved	Industrial	10	6	47.2	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	1.0E+00	3.1E-01	3.1E-02	90%	1.0E-01	--	3.1E-02	--	3.1E-03	--
UR11Y	Across SS, final cap construction trucks	1	1	1	242	Unpaved	Industrial	10	6	47.2	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	1.0E+00	3.1E-01	3.1E-02	90%	1.0E-01	--	3.1E-02	--	3.1E-03	--
UR12	Across LF to WF northern section	1	1	1	873	Unpaved	Industrial	10	6	41.2	--	16.8%		8.2E+03	1.9E+03	1.9E+02	2.0E+00	4.5E-01	4.5E-02	90%	2.0E-01	--	4.5E-02	--	4.5E-03	--
UR12Z	Across LF to WF northern section, onsite equipment	1	1	1	873	Unpaved	Industrial	10	6	41.2	--	16.8%		8.2E+03	1.9E+03	1.9E+02	2.0E+00	4.5E-01	4.5E-02	90%	2.0E-01	--	4.5E-02	--	4.5E-03	--
UR12Y	Across LF to WF northern section, final cap construction trucks	1	1	1	873	Unpaved	Industrial	10	6	41.2	--	16.8%		8.2E+03	1.9E+03	1.9E+02	2.0E+00	4.5E-01	4.5E-02	90%	2.0E-01	--	4.5E-02	--	4.5E-03	--
PR13Z	WF to LTF	1	1	1	165	Paved	Industrial	10	6	44.3	--	--	3.53	7.2E+02	9.3E+01	2.3E+01	3.3E-02	4.3E-03	1.0E-03	90%	3.3E-03	--	4.3E-04	--	1.0E-04	--
PR14Z	WF to LTF	1	1	1	61	Paved	Industrial	10	6	44.3	--	--	3.53	7.2E+02	9.3E+01	2.3E+01	1.2E-02	1.6E-03	3.8E-04	90%	1.2E-03	--	1.6E-04	--	3.8E-05	--
UR17Z	Across CDA	1	1	1	90	Unpaved	Industrial	10	6	36.4	--	43.1%	--	1.4E+04	4.1E+03	4.1E+02	3.4E-01	1.0E-01	1.0E-02	90%	3.4E-02	--	1.0E-02	--	1.0E-03	--
UR18Z	Across WF, onsite equipment	1	1	1	45	Unpaved	Industrial	10	6	36.4	--	44.7%	--	1.4E+04	4.2E+03	4.2E+02	1.7E-01	5.3E-02	5.3E-03	90%	1.7E-02	--	5.3E-03	--	5.3E-04	--
PR04B	Scale House to WF	1	1	1	681	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	2.6E-02	3.4E-03	8.2E-04	90%	2.6E-03	--	3.4E-04	--	8.2E-05	--
PR04BZ	Scale House to WF, onsite equipment	1	1	1	681	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	2.6E-02	3.4E-03	8.2E-04	90%	2.6E-03	--	3.4E-04	--	8.2E-05	--
PR04C	Exit Road from WF	1	1	1	420	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	1.6E-02	2.1E-03	5.1E-04	90%	1.6E-03	--	2.1E-04	--	5.1E-05	--
PR04CZ	Exit Road from WF, onsite equipment	1	1	1	420	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	1.6E-02	2.1E-03	5.1E-04	90%	1.6E-03	--	2.1E-04	--	5.1E-05	--

Constants for Mobile Emission Equations

Roadway Type	Contaminant	k	a	b	c	d	Quality
Paved Roads:	**$PM_{2.5}$**	0.15	-	-	-	-	-
	PM_{10}	0.62	-	-	-	-	-
	TSP	4.79	-	-	-	-	-
Unpaved Roads - Industrial:	**$PM_{2.5}$**	0.15	0.9	0.45	-	-	C
	PM_{10}	1.5	0.9	0.45	-	-	B
	TSP	7.32	0.6	0.45	-	-	B
Unpaved Roads - Public:	**$PM_{2.5}$**	0.18	1	-	0.2	0.5	C
	PM_{10}	1.8	1	-	0.2	0.5	B
	TSP	8.96	1	-	0.49	0.2	B

[1] Route ID numbers provided on site plan.
[2] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.
[3] Paved surfaces include asphalt, concrete, and recycled asphalt (if it forms a relatively consistent surface).
[4] Publicly accessible and dominated by light vehicles, or industrial, and dominated by heavy vehicles.
[5] The average vehicle weight reflects the average of the empty and loaded vehicle weight, for travel in both directions.
[6] Required only for publicly accessible unpaved roads.
[7] Required only for unpaved roads (public and industrial).
[8] Required only for industrial paved roads.

Sample calculation for uncontrolled TSP emission factor for Source PR01: Main Entrance Road

EF = 281.9 x (4.9) x [(0% / 12)]^(0.7) x [(36.6087628865979 tons) / 3]^(0.45) = 102 g TSP / vehicle kilometer travelled (vkt)

Sample calculation for TSP emission rate for Source PR01: Main Entrance Road

$$\frac{1 \text{ vehicles}}{1 \text{ h}} \times \frac{206 \text{ m}}{1000 \text{ m}} \times \frac{1 \text{ km}}{1 \text{ vehicle km}} \times \frac{102 \text{ g}_{TSP}}{3600 \text{ s}} \times \frac{1 \text{ h}}{1 \text{ g}_{TSP}} \times \frac{0.1 \text{ g}_{TSP\ uncontrolled}}{1 \text{ g}_{TSP}} = 5.8E\text{-}04 \text{ g}_{TSP} / \text{s}$$

Comments

Appendix 5A-S1-5.1b: Vehicle Emission Rates - Tailpipe Emissions, AM

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Tailpipe Emission Factor [5] TSP PM (g/vkt)	TSP PM (g/h)	PM10 PM10 (g/vkt)	PM10 PM10 (g/h)	PM2.5 PM25 (g/vkt)	PM2.5 PM25 (g/h)	Benzene 71-43-2 (g/vkt)	Benzene 71-43-2 (g/h)	Ammonia 7664-41-7 (g/vkt)	Ammonia 7664-41-7 (g/h)	Nitrogen Dioxide NO2 (g/vkt)	Nitrogen Dioxide NO2 (g/h)	Nitrogen Oxides 10102-44-0 (g/vkt)	Nitrogen Oxides 10102-44-0 (g/h)
Mobile Equipment																				
PR01	Main Entrance Road	1	1	206	10	100%	6.63E+00	0.00E+00	6.63E+00	0.00E+00	9.05E-01	0.00E+00	1.53E-03	0.00E+00	4.13E-02	0.00E+00	3.59E+00	0.00E+00	9.68E+00	0.00E+00
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	0.00E+00	7.00E-01	0.00E+00	7.00E-01	0.00E+00	9.75E-02	0.00E+00	5.36E-04	0.00E+00	8.17E-03	0.00E+00	3.67E-01	0.00E+00	1.02E+00
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	0.00E+00	1.11E+00	0.00E+00	1.11E+00	0.00E+00	1.56E-01	0.00E+00	1.21E-03	0.00E+00	1.64E-02	0.00E+00	5.69E-01	0.00E+00	1.61E+00
PR04A	Entrance to Scale House	1	1	487	10	100%	6.63E+00	1.16E+00	6.63E+00	1.16E+00	9.05E-01	1.74E-01	1.53E-03	2.77E-03	4.13E-02	2.28E-02	3.59E+00	5.48E-01	9.68E+00	1.71E+00
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	0.00E+00	1.66E+00	0.00E+00	1.66E+00	0.00E+00	2.30E-01	0.00E+00	1.27E-03	0.00E+00	1.93E-02	0.00E+00	8.67E-01	0.00E+00	2.41E+00
BR06	Across LF to WF southern section	1	1	603	10	100%	6.63E+00	0.00E+00	6.63E+00	0.00E+00	9.05E-01	0.00E+00	1.53E-03	0.00E+00	4.13E-02	0.00E+00	3.59E+00	0.00E+00	9.68E+00	0.00E+00
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	0.00E+00	8.01E-02	0.00E+00	8.01E-02	0.00E+00	5.73E-02	0.00E+00	3.26E-03	0.00E+00	6.44E-02	0.00E+00	1.17E-02	0.00E+00	1.67E+00
BR06Y	Across LF to WF southern section, final cap construction truck	1	1	603	10	100%	0.00E+00	3.88E-02	0.00E+00	3.88E-02	0.00E+00	3.76E-02	0.00E+00	2.25E-03	0.00E+00	4.49E-02	0.00E+00	0.00E+00	0.00E+00	1.15E+00
PR08Z	WF to SS/LTF	1	1	307	10	100%	0.00E+00	6.46E-01	0.00E+00	6.46E-01	0.00E+00	9.92E-02	0.00E+00	1.13E-03	0.00E+00	2.03E-02	0.00E+00	3.33E-01	0.00E+00	1.25E+00
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	0.00E+00	1.97E-02	0.00E+00	1.97E-02	0.00E+00	1.91E-02	0.00E+00	1.14E-03	0.00E+00	2.28E-02	0.00E+00	0.00E+00	0.00E+00	5.83E-01
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	0.00E+00	3.29E-01	0.00E+00	3.29E-01	0.00E+00	5.34E-02	0.00E+00	8.42E-04	0.00E+00	1.46E-02	0.00E+00	1.65E-01	0.00E+00	7.17E-01
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	0.00E+00	1.36E-02	0.00E+00	1.36E-02	0.00E+00	1.32E-02	0.00E+00	7.86E-04	0.00E+00	1.57E-02	0.00E+00	0.00E+00	0.00E+00	4.02E-01
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	0.00E+00	1.66E-02	0.00E+00	1.66E-02	0.00E+00	1.61E-02	0.00E+00	9.63E-04	0.00E+00	1.92E-02	0.00E+00	0.00E+00	0.00E+00	4.92E-01
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	0.00E+00	1.15E-02	0.00E+00	1.15E-02	0.00E+00	1.11E-02	0.00E+00	6.65E-04	0.00E+00	1.33E-02	0.00E+00	0.00E+00	0.00E+00	3.40E-01
UR11Z	Across SS	1	1	242	10	100%	0.00E+00	2.26E-02	0.00E+00	2.26E-02	0.00E+00	2.19E-02	0.00E+00	1.31E-03	0.00E+00	2.61E-02	0.00E+00	0.00E+00	0.00E+00	6.68E-01
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	0.00E+00	1.56E-02	0.00E+00	1.56E-02	0.00E+00	1.51E-02	0.00E+00	9.02E-04	0.00E+00	1.80E-02	0.00E+00	0.00E+00	0.00E+00	4.61E-01
UR12	Across LF to WF northern section	1	1	873	10	100%	6.63E+00	0.00E+00	6.63E+00	0.00E+00	9.05E-01	0.00E+00	1.53E-03	0.00E+00	4.13E-02	0.00E+00	3.59E+00	0.00E+00	9.68E+00	0.00E+00
UR12Z	Across LF to WF northern section, onsite equipment	1	1	873	10	100%	0.00E+00	1.16E-01	0.00E+00	1.16E-01	0.00E+00	8.30E-02	0.00E+00	4.72E-03	0.00E+00	9.33E-02	0.00E+00	1.70E-02	0.00E+00	2.42E+00
UR12Y	Across LF to WF northern section, final cap construction truck	1	1	873	10	100%	0.00E+00	5.62E-02	0.00E+00	5.62E-02	0.00E+00	5.45E-02	0.00E+00	3.25E-03	0.00E+00	6.50E-02	0.00E+00	0.00E+00	0.00E+00	1.66E+00
PR13Z	WF to LTF	1	1	165	10	100%	0.00E+00	1.20E+00	0.00E+00	1.20E+00	0.00E+00	1.62E-01	0.00E+00	1.49E-04	0.00E+00	6.66E-03	0.00E+00	6.52E-01	0.00E+00	1.75E+00
PR14Z	WF to LTF	1	1	61	10	100%	0.00E+00	4.40E-01	0.00E+00	4.40E-01	0.00E+00	5.97E-02	0.00E+00	5.48E-05	0.00E+00	2.45E-03	0.00E+00	2.40E-01	0.00E+00	6.42E-01
UR17Z	Across CDA	1	1	90	10	100%	0.00E+00	2.18E-02	0.00E+00	2.18E-02	0.00E+00	2.11E-02	0.00E+00	1.66E-03	0.00E+00	3.83E-03	0.00E+00	0.00E+00	0.00E+00	2.88E-01
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	0.00E+00	1.05E-02	0.00E+00	1.05E-02	0.00E+00	1.01E-02	0.00E+00	7.86E-04	0.00E+00	2.10E-03	0.00E+00	5.99E-05	0.00E+00	1.42E-01
PR04B	Scale House to WF	1	1	681	10	100%	6.63E+00	1.63E+00	6.63E+00	1.63E+00	9.05E-01	2.43E-01	1.53E-03	3.87E-03	4.13E-02	3.18E-02	3.59E+00	7.66E-01	9.68E+00	2.39E+00
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	0.00E+00	2.32E+00	0.00E+00	2.32E+00	0.00E+00	3.22E-01	0.00E+00	1.77E-03	0.00E+00	2.70E-02	0.00E+00	1.21E+00	0.00E+00	3.37E+00
PR04C	Exit Road from WF	1	1	420	10	100%	6.63E+00	1.00E+00	6.63E+00	1.00E+00	9.05E-01	1.50E-01	1.53E-03	2.39E-03	4.13E-02	1.97E-02	3.59E+00	4.73E-01	9.68E+00	1.47E+00
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	0.00E+00	1.43E+00	0.00E+00	1.43E+00	0.00E+00	1.99E-01	0.00E+00	1.09E-03	0.00E+00	1.67E-02	0.00E+00	7.49E-01	0.00E+00	2.08E+00
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	--	--	--	--	--	--	--	--	--	--	--	--	--	--
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	--	--	--	--	--	--	--	--	--	--	--	--	--	--
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	0.00E+00	7.31E+00	0.00E+00	7.31E+00	0.00E+00	7.09E+00	0.00E+00	4.65E-01	0.00E+00	2.80E+00	0.00E+00	0.00E+00	0.00E+00	1.28E+02
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	0.00E+00	1.73E+00	0.00E+00	1.73E+00	0.00E+00	1.68E+00	0.00E+00	1.22E-01	0.00E+00	8.13E-01	0.00E+00	0.00E+00	0.00E+00	3.14E+01
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	0.00E+00	2.43E+00	0.00E+00	2.43E+00	0.00E+00	2.35E+00	0.00E+00	1.85E-01	0.00E+00	4.27E-01	0.00E+00	0.00E+00	0.00E+00	3.21E+01
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	0.00E+00	1.04E+00	0.00E+00	1.04E+00	0.00E+00	1.00E+00	0.00E+00	6.00E-02	0.00E+00	1.20E+00	0.00E+00	0.00E+00	0.00E+00	3.06E+01

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes). For idling, this is the number of trucks idling per hour.

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Emissions are input on either a vehicle distance or operation time basis.

[5] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S1-5.1b: Vehicle Emission Rates - Tailpipe Emissions, AM

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Sulphur Dioxide 7446-09-5 (g/vkt)	Sulphur Dioxide 7446-09-5 (g/h)	Carbon Dioxide 124-38-9 (g/vkt)	Carbon Dioxide 124-38-9 (g/h)	Methane 74-82-8 (g/vkt)	Methane 74-82-8 (g/h)	Nitrous Oxide 10024-97-2 (g/vkt)	Nitrous Oxide 10024-97-2 (g/h)
Mobile Equipment														
PR01	Main Entrance Road	1	1	206	10	100%	6.15E-03	0.00E+00	1.80E+03	0.00E+00	5.75E-02	0.00E+00	1.30E-02	0.00E+00
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	0.00E+00	1.03E-03	0.00E+00	2.56E+02	0.00E+00	8.16E-03	0.00E+00	2.21E-03
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	0.00E+00	1.97E-03	0.00E+00	4.64E+02	0.00E+00	1.49E-02	0.00E+00	4.28E-03
PR04A	Entrance to Scale House	1	1	487	10	100%	6.15E-03	2.54E-03	1.80E+03	6.09E+02	5.75E-02	2.22E-02	1.30E-02	6.85E-03
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	0.00E+00	2.43E-03	0.00E+00	6.04E+02	0.00E+00	1.93E-02	0.00E+00	5.23E-03
BR06	Across LF to WF southern section	1	1	603	10	100%	6.15E-03	0.00E+00	1.80E+03	0.00E+00	5.75E-02	0.00E+00	1.30E-02	0.00E+00
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	0.00E+00	2.08E-02	0.00E+00	7.90E+03	0.00E+00	5.78E-03	0.00E+00	1.47E-04
BR06Y	Across LF to WF southern section, final cap construction truck	1	1	603	10	100%	0.00E+00	1.46E-02	0.00E+00	5.54E+03	0.00E+00	3.73E-03	0.00E+00	0.00E+00
PR08Z	WF to SS/LTF	1	1	307	10	100%	0.00E+00	5.13E-03	0.00E+00	1.83E+03	0.00E+00	8.47E-03	0.00E+00	2.01E-03
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	0.00E+00	7.41E-03	0.00E+00	2.81E+03	0.00E+00	1.89E-03	0.00E+00	0.00E+00
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	0.00E+00	3.77E-03	0.00E+00	1.35E+03	0.00E+00	5.12E-03	0.00E+00	1.24E-03
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	0.00E+00	5.10E-03	0.00E+00	1.94E+03	0.00E+00	1.30E-03	0.00E+00	0.00E+00
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	0.00E+00	6.25E-03	0.00E+00	2.37E+03	0.00E+00	1.60E-03	0.00E+00	0.00E+00
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	0.00E+00	4.31E-03	0.00E+00	1.64E+03	0.00E+00	1.10E-03	0.00E+00	0.00E+00
UR11Z	Across SS	1	1	242	10	100%	0.00E+00	8.48E-03	0.00E+00	3.22E+03	0.00E+00	2.17E-03	0.00E+00	0.00E+00
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	0.00E+00	5.85E-03	0.00E+00	2.22E+03	0.00E+00	1.50E-03	0.00E+00	0.00E+00
UR12	Across LF to WF northern section	1	1	873	10	100%	6.15E-03	0.00E+00	1.80E+03	0.00E+00	5.75E-02	0.00E+00	1.30E-02	0.00E+00
UR12Z	Across LF to WF northern section, onsite equipment	1	1	873	10	100%	0.00E+00	3.01E-02	0.00E+00	1.14E+04	0.00E+00	8.37E-03	0.00E+00	2.12E-04
UR12Y	Across LF to WF northern section, final cap construction truck	1	1	873	10	100%	0.00E+00	2.11E-02	0.00E+00	8.02E+03	0.00E+00	5.40E-03	0.00E+00	0.00E+00
PR13Z	WF to LTF	1	1	165	10	100%	0.00E+00	1.04E-03	0.00E+00	3.10E+02	0.00E+00	9.76E-03	0.00E+00	2.11E-03
PR14Z	WF to LTF	1	1	61	10	100%	0.00E+00	3.81E-04	0.00E+00	1.14E+02	0.00E+00	3.59E-03	0.00E+00	7.76E-04
UR17Z	Across CDA	1	1	90	10	100%	0.00E+00	1.27E-03	0.00E+00	4.72E+02	0.00E+00	2.53E-03	0.00E+00	0.00E+00
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	0.00E+00	6.96E-04	0.00E+00	2.59E+02	0.00E+00	1.20E-03	0.00E+00	7.48E-07
PR04B	Scale House to WF	1	1	681	10	100%	6.15E-03	3.55E-03	1.80E+03	8.52E+02	5.75E-02	3.11E-02	1.30E-02	9.58E-03
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	0.00E+00	3.40E-03	0.00E+00	8.46E+02	0.00E+00	2.70E-02	0.00E+00	7.31E-03
PR04C	Exit Road from WF	1	1	420	10	100%	6.15E-03	2.19E-03	1.80E+03	5.26E+02	5.75E-02	1.92E-02	1.30E-02	5.92E-03
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	0.00E+00	2.10E-03	0.00E+00	5.22E+02	0.00E+00	1.67E-02	0.00E+00	4.51E-03
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	--	--	--	--	--	--	--	--
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	--	--	--	--	--	--	--	--
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	0.00E+00	9.18E-01	0.00E+00	3.45E+05	0.00E+00	7.32E-01	0.00E+00	0.00E+00
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	0.00E+00	2.65E-01	0.00E+00	1.00E+05	0.00E+00	1.91E-01	0.00E+00	0.00E+00
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	0.00E+00	1.42E-01	0.00E+00	5.26E+04	0.00E+00	2.82E-01	0.00E+00	0.00E+00
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	0.00E+00	3.89E-01	0.00E+00	1.48E+05	0.00E+00	9.95E-02	0.00E+00	0.00E+00

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes). For idling, this is the number of trucks idling per hour.

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Emissions are input on either a vehicle distance or operation time basis.

[5] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S1-5.1b: Vehicle Emission Rates - Tailpipe Emissions, AM

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Source ID	TSP PM (g/s)	PM10 PM10 (g/s)	PM2.5 PM25 (g/s)	Benzene 71-43-2 (g/s)	Ammonia 7664-41-7 (g/s)
Mobile Equipment							**Mobile Equipment**					
PR01	Main Entrance Road	1	1	206	10	100%	PR01	3.79E-04	3.79E-04	5.17E-05	8.76E-08	2.36E-06
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	PR01Z	1.95E-04	1.95E-04	2.71E-05	1.49E-07	2.27E-06
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	UR02Z	3.08E-04	3.08E-04	4.33E-05	3.36E-07	4.54E-06
PR04A	Entrance to Scale House	1	1	487	10	100%	PR04A	8.97E-04	8.97E-04	1.22E-04	2.07E-07	5.58E-06
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	PR04AZ	4.60E-04	4.60E-04	6.40E-05	3.52E-07	5.36E-06
BR06	Across LF to WF southern section	1	1	603	10	100%	BR06	1.11E-03	1.11E-03	1.52E-04	2.57E-07	6.92E-06
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	BR06Z	2.23E-05	2.23E-05	1.59E-05	9.05E-07	1.79E-05
BR06Y	Across LF to WF southern section, final cap construction truck	1	1	603	10	100%	BR06Y	1.08E-05	1.08E-05	1.05E-05	6.24E-07	1.25E-05
PR08Z	WF to SS/LTF	1	1	307	10	100%	PR08Z	1.80E-04	1.80E-04	2.76E-05	3.15E-07	5.65E-06
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	PR08Y	5.48E-06	5.48E-06	5.31E-06	3.17E-07	6.34E-06
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	UR09AZ	9.14E-05	9.14E-05	1.48E-05	2.34E-07	4.05E-06
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	UR09AY	3.77E-06	3.77E-06	3.66E-06	2.18E-07	4.36E-06
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	UR09BZ	4.62E-06	4.62E-06	4.48E-06	2.68E-07	5.35E-06
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	UR09BY	3.19E-06	3.19E-06	3.09E-06	1.85E-07	3.69E-06
UR11Z	Across SS	1	1	242	10	100%	UR11Z	6.27E-06	6.27E-06	6.08E-06	3.63E-07	7.25E-06
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	UR11Y	4.33E-06	4.33E-06	4.20E-06	2.51E-07	5.01E-06
UR12	Across LF to WF northern section	1	1	873	10	100%	UR12	1.61E-03	1.61E-03	2.20E-04	3.72E-07	1.00E-05
UR12Z	Across LF to WF northern section, onsite equipment	1	1	873	10	100%	UR12Z	3.22E-05	3.22E-05	2.30E-05	1.31E-06	2.59E-05
UR12Y	Across LF to WF northern section, final cap construction truck	1	1	873	10	100%	UR12Y	1.56E-05	1.56E-05	1.51E-05	9.04E-07	1.81E-05
PR13Z	WF to LTF	1	1	165	10	100%	PR13Z	3.32E-04	3.32E-04	4.51E-05	4.14E-08	1.85E-06
PR14Z	WF to LTF	1	1	61	10	100%	PR14Z	1.22E-04	1.22E-04	1.66E-05	1.52E-08	6.81E-07
UR17Z	Across CDA	1	1	90	10	100%	UR17Z	6.05E-06	6.05E-06	5.86E-06	4.60E-07	1.06E-06
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	UR18Z	2.92E-06	2.92E-06	2.80E-06	2.18E-07	5.85E-07
PR04B	Scale House to WF	1	1	681	10	100%	PR04B	1.25E-03	1.25E-03	1.71E-04	2.90E-07	7.81E-06
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	PR04BZ	6.43E-04	6.43E-04	8.95E-05	4.92E-07	7.51E-06
PR04C	Exit Road from WF	1	1	420	10	100%	PR04C	7.74E-04	7.74E-04	1.06E-04	1.79E-07	4.82E-06
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	PR04CZ	3.97E-04	3.97E-04	5.53E-05	3.04E-07	4.63E-06
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	IDLE01	1.53E-04	1.53E-04	1.40E-04	1.66E-06	1.07E-04
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	IDLE02	1.53E-04	1.53E-04	1.40E-04	1.66E-06	1.07E-04
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	DOZE2	2.03E-03	2.03E-03	1.97E-03	1.29E-04	7.78E-04
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	DOZE4	4.81E-04	4.81E-04	4.66E-04	3.40E-05	2.26E-04
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	DOZE2CAP	6.74E-04	6.74E-04	6.54E-04	5.13E-05	1.19E-04
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	DOZE2SS	2.88E-04	2.88E-04	2.79E-04	1.67E-05	3.33E-04

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes). For idling, this is the number of trucks idling per hour.

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Emissions are input on either a vehicle distance or operation time basis.

[5] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S1-5.1b: Vehicle Emission Rates - Tailpipe Emissions, AM

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Tailpipe Emission Rate: Nitrogen Dioxide NO2 (g/s)	Nitrogen Oxides 10102-44-0 (g/s)	Sulphur Dioxide 7446-09-5 (g/s)	Carbon Dioxide 124-38-9 (g/s)	Methane 74-82-8 (g/s)	Nitrous Oxide 10024-97-2 (g/s)
Mobile Equipment												
PR01	Main Entrance Road	1	1	206	10	100%	2.05E-04	5.54E-04	3.52E-07	1.03E-01	3.29E-06	7.42E-07
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	1.02E-04	2.83E-04	2.86E-07	7.10E-02	2.27E-06	6.14E-07
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	1.58E-04	4.46E-04	5.47E-07	1.29E-01	4.13E-06	1.19E-06
PR04A	Entrance to Scale House	1	1	487	10	100%	4.85E-04	1.31E-03	8.31E-07	2.43E-01	7.77E-06	1.75E-06
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	2.41E-04	6.69E-04	6.76E-07	1.68E-01	5.36E-06	1.45E-06
BR06	Across LF to WF southern section	1	1	603	10	100%	6.01E-04	1.62E-03	1.03E-06	3.01E-01	9.64E-06	2.18E-06
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	3.26E-06	4.64E-04	5.78E-06	2.19E+00	1.61E-06	4.07E-08
BR06Y	Across LF to WF southern section, final cap construction truck	1	1	603	10	100%	0.00E+00	3.19E-04	4.05E-06	1.54E+00	1.03E-06	0.00E+00
PR08Z	WF to SS/LTF	1	1	307	10	100%	9.25E-05	3.48E-04	1.42E-06	5.07E-01	2.35E-06	5.57E-07
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	0.00E+00	1.62E-04	2.06E-06	7.81E-01	5.26E-07	0.00E+00
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	4.57E-05	1.99E-04	1.05E-06	3.75E-01	1.42E-06	3.44E-07
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	0.00E+00	1.12E-04	1.42E-06	5.38E-01	3.62E-07	0.00E+00
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	0.00E+00	1.37E-04	1.74E-06	6.59E-01	4.44E-07	0.00E+00
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	0.00E+00	9.44E-05	1.20E-06	4.55E-01	3.06E-07	0.00E+00
UR11Z	Across SS	1	1	242	10	100%	0.00E+00	1.86E-04	2.36E-06	8.95E-01	6.02E-07	0.00E+00
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	0.00E+00	1.28E-04	1.63E-06	6.18E-01	4.16E-07	0.00E+00
UR12	Across LF to WF northern section	1	1	873	10	100%	8.71E-04	2.35E-03	1.49E-06	4.36E-01	1.40E-05	3.15E-06
UR12Z	Across LF to WF northern section, onsite equipment	1	1	873	10	100%	4.72E-06	6.72E-04	8.37E-06	3.18E+00	2.33E-06	5.90E-08
UR12Y	Across LF to WF northern section, final cap construction truck	1	1	873	10	100%	0.00E+00	4.62E-04	5.86E-06	2.23E+00	1.50E-06	0.00E+00
PR13Z	WF to LTF	1	1	165	10	100%	1.81E-04	4.85E-04	2.88E-07	8.60E-02	2.71E-06	5.86E-07
PR14Z	WF to LTF	1	1	61	10	100%	6.66E-05	1.78E-04	1.06E-07	3.16E-02	9.97E-07	2.15E-07
UR17Z	Across CDA	1	1	90	10	100%	0.00E+00	8.00E-05	3.53E-07	1.31E-01	7.02E-07	0.00E+00
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	1.66E-08	3.95E-05	1.93E-07	7.20E-02	3.34E-07	2.08E-10
PR04B	Scale House to WF	1	1	681	10	100%	6.79E-04	1.83E-03	1.16E-06	3.40E-01	1.09E-05	2.45E-06
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	3.37E-04	9.35E-04	9.45E-07	2.35E-01	7.49E-06	2.03E-06
PR04C	Exit Road from WF	1	1	420	10	100%	4.19E-04	1.13E-03	7.18E-07	2.10E-01	6.71E-06	1.52E-06
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	2.08E-04	5.77E-04	5.84E-07	1.45E-01	4.63E-06	1.25E-06
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	5.20E-03	1.38E-02	6.40E-06	1.86E+00	9.29E-05	3.59E-05
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	5.20E-03	1.38E-02	6.40E-06	1.86E+00	9.29E-05	3.59E-05
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	0.00E+00	3.56E-02	2.55E-04	9.59E+01	2.03E-04	0.00E+00
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	0.00E+00	8.72E-03	7.37E-05	2.78E+01	5.30E-05	0.00E+00
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	0.00E+00	8.92E-03	3.94E-05	1.46E+01	7.83E-05	0.00E+00
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	0.00E+00	8.51E-03	1.08E-04	4.10E+01	2.76E-05	0.00E+00

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes). For idling, this is the number of trucks idling per hour.

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Emissions are input on either a vehicle distance or operation time basis.

[5] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S1-5.1b: Vehicle Emission Rates - Tailpipe Emissions, AM

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Tailpipe + Fugitive Emission Rate [6] TSP PM (g/s)	Tailpipe + Fugitive Emission Rate [6] PM10 PM10 (g/s)	Tailpipe + Fugitive Emission Rate [6] PM2.5 PM2.5 (g/s)	Ratio Tailpipe : Total Emission Rate TSP PM (g/s)	Ratio Tailpipe : Total Emission Rate PM10 PM10 (g/s)	Ratio Tailpipe : Total Emission Rate PM2.5 PM2.5 (g/s)	Source ID
Mobile Equipment													**Mobile Equipment**
PR01	Main Entrance Road	1	1	206	10	100%	9.61E-04	4.55E-04	6.99E-05	3.95E-01	8.34E-01	7.40E-01	PR01
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	7.76E-04	2.70E-04	4.53E-05	2.51E-01	7.21E-01	5.98E-01	PR01Z
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	1.07E-01	3.25E-02	3.26E-03	2.87E-03	9.46E-03	1.33E-02	UR02Z
PR04A	Entrance to Scale House	1	1	487	10	100%	2.49E-03	1.10E-03	1.72E-04	3.60E-01	8.13E-01	7.11E-01	PR04A
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	2.05E-03	6.66E-04	1.14E-04	2.24E-01	6.91E-01	5.62E-01	PR04AZ
BR06	Across LF to WF southern section	1	1	603	10	100%	1.39E-01	3.23E-02	3.27E-03	8.02E-03	3.44E-02	4.64E-02	BR06
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	1.38E-01	3.12E-02	3.13E-03	1.62E-04	7.13E-04	5.08E-03	BR06Z
BR06Y	Across LF to WF southern section, final cap construction truck	1	1	603	10	100%	1.38E-01	3.12E-02	3.13E-03	7.83E-05	3.45E-04	3.34E-03	BR06Y
PR08Z	WF to SS/LTF	1	1	307	10	100%	5.31E-03	8.43E-04	1.88E-04	3.38E-02	2.13E-01	1.46E-01	PR08Z
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	5.13E-03	6.69E-04	1.66E-04	1.07E-03	8.18E-03	3.20E-02	PR08Y
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	8.05E-02	2.43E-02	2.43E-03	1.14E-03	3.77E-03	6.10E-03	UR09AZ
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	8.04E-02	2.42E-02	2.42E-03	4.69E-05	1.56E-04	1.51E-03	UR09AY
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	7.62E-02	2.29E-02	2.30E-03	6.07E-05	2.02E-04	1.95E-03	UR09BZ
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	7.62E-02	2.29E-02	2.29E-03	4.19E-05	1.39E-04	1.35E-03	UR09BY
UR11Z	Across SS	1	1	242	10	100%	1.03E-01	3.11E-02	3.11E-03	6.07E-05	2.02E-04	1.95E-03	UR11Z
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	1.03E-01	3.11E-02	3.11E-03	4.19E-05	1.39E-04	1.35E-03	UR11Y
UR12	Across LF to WF northern section	1	1	873	10	100%	2.01E-01	4.68E-02	4.74E-03	8.02E-03	3.44E-02	4.64E-02	UR12
UR12Z	Across LF to WF northern section, onsite equipment	1	1	873	10	100%	1.99E-01	4.52E-02	4.54E-03	1.62E-04	7.13E-04	5.08E-03	UR12Z
UR12Y	Across LF to WF northern section, final cap construction truck	1	1	873	10	100%	1.99E-01	4.52E-02	4.53E-03	7.83E-05	3.45E-04	3.34E-03	UR12Y
PR13Z	WF to LTF	1	1	165	10	100%	3.63E-03	7.59E-04	1.48E-04	9.15E-02	4.38E-01	3.04E-01	PR13Z
PR14Z	WF to LTF	1	1	61	10	100%	1.34E-03	2.79E-04	5.46E-05	9.15E-02	4.38E-01	3.04E-01	PR14Z
UR17Z	Across CDA	1	1	90	10	100%	3.41E-02	1.02E-02	1.03E-03	1.78E-04	5.90E-04	5.69E-03	UR17Z
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	1.73E-02	5.28E-03	5.30E-04	1.68E-04	5.53E-04	5.29E-03	UR18Z
PR04B	Scale House to WF	1	1	681	10	100%	3.87E-03	1.59E-03	2.53E-04	3.24E-01	7.87E-01	6.76E-01	PR04B
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	3.26E-03	9.82E-04	1.71E-04	1.97E-01	6.55E-01	5.22E-01	PR04BZ
PR04C	Exit Road from WF	1	1	420	10	100%	2.39E-03	9.83E-04	1.56E-04	3.24E-01	7.87E-01	6.76E-01	PR04C
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	2.01E-03	6.06E-04	1.06E-04	1.97E-01	6.55E-01	5.22E-01	PR04CZ
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	1.53E-04	1.53E-04	1.40E-04	n/a	n/a	n/a	IDLE01
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	1.53E-04	1.53E-04	1.40E-04	n/a	n/a	n/a	IDLE02
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	2.03E-03	2.03E-03	1.97E-03	1.00E+00	1.00E+00	1.00E+00	DOZE2
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	4.81E-04	4.81E-04	4.66E-04	1.00E+00	1.00E+00	1.00E+00	DOZE4
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	6.74E-04	6.74E-04	6.54E-04	1.00E+00	1.00E+00	1.00E+00	DOZE2CAP
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	2.88E-04	2.88E-04	2.79E-04	1.00E+00	1.00E+00	1.00E+00	DOZE2SS

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes). For idling, this is the number of trucks idling per hour.

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Emissions are input on either a vehicle distance or operation time basis.

[5] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S1-5.1b: Vehicle Emission Rates - Tailpipe Emissions, AM

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	# of Volume Sources g/hr	# of Volume Sources g/vkt	Emission rate per volume s TSP PM	PM10 PM10	PM2.5 PM25	Benzene 71-43-2	Ammonia 7664-41-7	Nitrogen Dioxide NO2
Mobile Equipment														
PR01	Main Entrance Road	1	1	206	10	100%	11	11	8.73E-05	4.13E-05	6.36E-06	7.97E-09	2.15E-07	1.87E-05
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	11	11	7.05E-05	2.45E-05	4.12E-06	1.35E-08	2.06E-07	9.27E-06
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	48	48	2.24E-03	6.77E-04	6.80E-05	6.99E-09	9.47E-08	3.29E-06
PR04A	Entrance to Scale House	1	1	487	10	100%	57	57	4.36E-05	1.93E-05	3.02E-06	3.63E-09	9.80E-08	8.51E-06
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	57	57	3.60E-05	1.17E-05	2.00E-06	6.17E-09	9.41E-08	4.23E-06
BR06	Across LF to WF southern section	1	1	603	10	100%	70	70	1.98E-03	4.61E-04	4.67E-05	3.67E-09	9.89E-08	8.59E-06
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	70	70	1.97E-03	4.46E-04	4.48E-05	1.29E-08	2.56E-07	4.65E-08
BR06Y	Across LF to WF southern section, final cap construction truck	1	1	603	10	100%	70	70	1.96E-03	4.46E-04	4.47E-05	8.92E-09	1.78E-07	0.00E+00
PR08Z	WF to SS/LTF	1	1	307	10	100%	36	36	1.47E-04	2.34E-05	5.23E-06	8.74E-09	1.57E-07	2.57E-06
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	36	36	1.43E-04	1.86E-05	4.61E-06	8.81E-09	1.76E-07	0.00E+00
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	25	25	3.22E-03	9.71E-04	9.73E-05	9.36E-09	1.62E-07	1.83E-06
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	25	25	3.22E-03	9.67E-04	9.69E-05	8.73E-09	1.74E-07	0.00E+00
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	21	21	3.63E-03	1.09E-03	1.09E-04	1.27E-08	2.55E-07	0.00E+00
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	21	21	3.63E-03	1.09E-03	1.09E-04	8.80E-09	1.76E-07	0.00E+00
UR11Z	Across SS	1	1	242	10	100%	28	28	3.69E-03	1.11E-03	1.11E-04	1.30E-08	2.59E-07	0.00E+00
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	28	28	3.69E-03	1.11E-03	1.11E-04	8.95E-09	1.79E-07	0.00E+00
UR12	Across LF to WF northern section	1	1	873	10	100%	102	102	1.97E-03	4.59E-04	4.64E-05	3.65E-09	9.83E-08	8.54E-06
UR12Z	Across LF to WF northern section, onsite equipment	1	1	873	10	100%	102	102	1.95E-03	4.43E-04	4.45E-05	1.28E-08	2.54E-07	4.62E-08
UR12Y	Across LF to WF northern section, final cap construction truck	1	1	873	10	100%	102	102	1.95E-03	4.43E-04	4.44E-05	8.86E-09	1.77E-07	0.00E+00
PR13Z	WF to LTF	1	1	165	10	100%	19	19	1.91E-04	4.00E-05	7.81E-06	2.18E-09	9.74E-08	9.53E-06
PR14Z	WF to LTF	1	1	61	10	100%	7	7	1.91E-04	3.99E-05	7.80E-06	2.17E-09	9.72E-08	9.51E-06
UR17Z	Across CDA	1	1	90	10	100%	10	10	3.41E-03	1.02E-03	1.03E-04	4.60E-08	1.06E-07	0.00E+00
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	5	5	3.47E-03	1.06E-03	1.06E-04	4.37E-08	1.17E-07	3.33E-09
PR04B	Scale House to WF	1	1	681	10	100%	79	79	4.90E-05	2.02E-05	3.20E-06	3.67E-09	9.89E-08	8.59E-06
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	79	79	4.13E-05	1.24E-05	2.17E-06	6.23E-09	9.50E-08	4.27E-06
PR04C	Exit Road from WF	1	1	420	10	100%	49	49	4.88E-05	2.01E-05	3.19E-06	3.65E-09	9.84E-08	8.55E-06
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	49	49	4.11E-05	1.24E-05	2.16E-06	6.20E-09	9.46E-08	4.25E-06
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	1	1	3.05E-04	3.05E-04	2.81E-04	3.31E-06	2.13E-04	1.04E-02
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	1	1	3.05E-04	3.05E-04	2.81E-04	3.31E-06	2.13E-04	1.04E-02
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	1	1	2.03E-03	2.03E-03	1.97E-03	1.29E-04	7.78E-04	0.00E+00
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	1	1	4.81E-04	4.81E-04	4.66E-04	3.40E-05	2.26E-04	0.00E+00
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	1	1	6.74E-04	6.74E-04	6.54E-04	5.13E-05	1.19E-04	0.00E+00
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	1	1	2.88E-04	2.88E-04	2.79E-04	1.67E-05	3.33E-04	0.00E+00

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes). For idling, this is the number of trucks idling per hour.

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Emissions are input on either a vehicle distance or operation time basis.

[5] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S1-5.1b: Vehicle Emission Rates - Tailpipe Emissions, AM

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Source (g/s) Nitrogen Oxides 10102-44-0	Sulphur Dioxide 7446-09-5	Carbon Dioxide 124-38-9	Methane 74-82-8	Nitrous Oxide 10024-97-2
Mobile Equipment											
PR01	Main Entrance Road	1	1	206	10	100%	5.03E-05	3.20E-08	9.35E-03	2.99E-07	6.75E-08
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	2.57E-05	2.60E-08	6.46E-03	2.06E-07	5.58E-08
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	9.30E-06	1.14E-08	2.69E-03	8.60E-08	2.48E-08
PR04A	Entrance to Scale House	1	1	487	10	100%	2.30E-05	1.46E-08	4.27E-03	1.36E-07	3.08E-08
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	1.17E-05	1.19E-08	2.95E-03	9.40E-08	2.55E-08
BR06	Across LF to WF southern section	1	1	603	10	100%	2.32E-05	1.47E-08	4.31E-03	1.38E-07	3.11E-08
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	6.63E-06	8.26E-08	3.13E-02	2.29E-08	5.82E-10
BR06Y	Across LF to WF southern section, final cap construction truck	1	1	603	10	100%	4.56E-06	5.78E-08	2.20E-02	1.48E-08	0.00E+00
PR08Z	WF to SS/LTF	1	1	307	10	100%	9.68E-06	3.96E-08	1.41E-02	6.54E-08	1.55E-08
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	4.50E-06	5.72E-08	2.17E-02	1.46E-08	0.00E+00
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	7.96E-06	4.18E-08	1.50E-02	5.69E-08	1.38E-08
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	4.46E-06	5.67E-08	2.15E-02	1.45E-08	0.00E+00
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	6.51E-06	8.27E-08	3.14E-02	2.11E-08	0.00E+00
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	4.49E-06	5.71E-08	2.17E-02	1.46E-08	0.00E+00
UR11Z	Across SS	1	1	242	10	100%	6.63E-06	8.41E-08	3.20E-02	2.15E-08	0.00E+00
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	4.57E-06	5.81E-08	2.21E-02	1.48E-08	0.00E+00
UR12	Across LF to WF northern section	1	1	873	10	100%	2.30E-05	1.46E-08	4.28E-03	1.37E-07	3.09E-08
UR12Z	Across LF to WF northern section, onsite equipment	1	1	873	10	100%	6.59E-06	8.21E-08	3.11E-02	2.28E-08	5.78E-10
UR12Y	Across LF to WF northern section, final cap construction truck	1	1	873	10	100%	4.53E-06	5.75E-08	2.18E-02	1.47E-08	0.00E+00
PR13Z	WF to LTF	1	1	165	10	100%	2.55E-05	1.51E-08	4.53E-03	1.43E-07	3.08E-08
PR14Z	WF to LTF	1	1	61	10	100%	2.55E-05	1.51E-08	4.52E-03	1.42E-07	3.08E-08
UR17Z	Across CDA	1	1	90	10	100%	8.00E-06	3.53E-08	1.31E-02	7.02E-08	0.00E+00
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	7.90E-06	3.87E-08	1.44E-02	6.68E-08	4.16E-11
PR04B	Scale House to WF	1	1	681	10	100%	2.32E-05	1.47E-08	4.31E-03	1.38E-07	3.11E-08
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	1.18E-05	1.20E-08	2.97E-03	9.48E-08	2.57E-08
PR04C	Exit Road from WF	1	1	420	10	100%	2.31E-05	1.47E-08	4.29E-03	1.37E-07	3.09E-08
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	1.18E-05	1.19E-08	2.96E-03	9.44E-08	2.56E-08
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	2.75E-02	1.28E-05	3.72E+00	1.86E-04	7.17E-05
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	2.75E-02	1.28E-05	3.72E+00	1.86E-04	7.17E-05
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	3.56E-02	2.55E-04	9.59E+01	2.03E-04	0.00E+00
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	8.72E-03	7.37E-05	2.78E+01	5.30E-05	0.00E+00
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	8.92E-03	3.94E-05	1.46E+01	7.83E-05	0.00E+00
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	8.51E-03	1.08E-04	4.10E+01	2.76E-05	0.00E+00

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes). For idling, this is the number of trucks idling per hour.

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Emissions are input on either a vehicle distance or operation time basis.

[5] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S1-5.1b: Vehicle Emission Rates - Tailpipe Emissions, MD

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Tailpipe Emission Factor [5], [7] TSP PM (g/vkt)	TSP PM (g/h)	PM10 PM10 (g/vkt)	PM10 PM10 (g/h)	PM2.5 PM25 (g/vkt)	PM2.5 PM25 (g/h)	Benzene 71-43-2 (g/vkt)	Benzene 71-43-2 (g/h)	Ammonia 7664-41-7 (g/vkt)	Ammonia 7664-41-7 (g/h)	Nitrogen Dioxide NO2 (g/vkt)	Nitrogen Dioxide NO2 (g/h)	Nitrogen Oxides 10102-44-0 (g/vkt)	Nitrogen Oxides 10102-44-0 (g/h)
Mobile Equipment																				
PR01	Main Entrance Road	1	1	206	10	100%	4.30E+00	0.00E+00	4.30E+00	0.00E+00	5.96E-01	0.00E+00	2.85E-03	0.00E+00	4.16E-02	0.00E+00	2.26E+00	0.00E+00	6.26E+00	0.00E+00
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	0.00E+00	7.00E-01	0.00E+00	7.00E-01	0.00E+00	9.75E-02	0.00E+00	5.36E-04	0.00E+00	8.17E-03	0.00E+00	3.67E-01	0.00E+00	1.02E+00
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	0.00E+00	1.11E+00	0.00E+00	1.11E+00	0.00E+00	1.56E-01	0.00E+00	1.21E-03	0.00E+00	1.64E-02	0.00E+00	5.69E-01	0.00E+00	1.61E+00
PR04A	Entrance to Scale House	1	1	487	10	100%	4.30E+00	1.16E+00	4.30E+00	1.16E+00	5.96E-01	1.74E-01	2.85E-03	2.77E-03	4.16E-02	2.28E-02	2.26E+00	5.48E-01	6.26E+00	1.71E+00
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	0.00E+00	1.66E+00	0.00E+00	1.66E+00	0.00E+00	2.30E-01	0.00E+00	1.27E-03	0.00E+00	1.93E-02	0.00E+00	8.67E-01	0.00E+00	2.41E+00
BR06	Across LF to WF southern section	1	1	603	10	100%	4.30E+00	0.00E+00	4.30E+00	0.00E+00	5.96E-01	0.00E+00	2.85E-03	0.00E+00	4.16E-02	0.00E+00	2.26E+00	0.00E+00	6.26E+00	0.00E+00
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	0.00E+00	8.01E-02	0.00E+00	8.01E-02	0.00E+00	5.73E-02	0.00E+00	3.26E-03	0.00E+00	6.44E-02	0.00E+00	1.17E-02	0.00E+00	1.67E+00
BR06Y	Across LF to WF southern section, final cap construction truc	1	1	603	10	100%	0.00E+00	3.88E-02	0.00E+00	3.88E-02	0.00E+00	3.76E-02	0.00E+00	2.25E-03	0.00E+00	4.49E-02	0.00E+00	0.00E+00	0.00E+00	1.15E+00
PR08Z	WF to SS/LTF	1	1	307	10	100%	0.00E+00	6.46E-01	0.00E+00	6.46E-01	0.00E+00	9.92E-02	0.00E+00	1.13E-03	0.00E+00	2.03E-02	0.00E+00	3.33E-01	0.00E+00	1.25E+00
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	0.00E+00	1.97E-02	0.00E+00	1.97E-02	0.00E+00	1.91E-02	0.00E+00	1.14E-03	0.00E+00	2.28E-02	0.00E+00	0.00E+00	0.00E+00	5.83E-01
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	0.00E+00	3.29E-01	0.00E+00	3.29E-01	0.00E+00	5.34E-02	0.00E+00	8.42E-04	0.00E+00	1.46E-02	0.00E+00	1.65E-01	0.00E+00	7.17E-01
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	0.00E+00	1.36E-02	0.00E+00	1.36E-02	0.00E+00	1.32E-02	0.00E+00	7.86E-04	0.00E+00	1.57E-02	0.00E+00	0.00E+00	0.00E+00	4.02E-01
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	0.00E+00	1.66E-02	0.00E+00	1.66E-02	0.00E+00	1.61E-02	0.00E+00	9.63E-04	0.00E+00	1.92E-02	0.00E+00	0.00E+00	0.00E+00	4.92E-01
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	0.00E+00	1.15E-02	0.00E+00	1.15E-02	0.00E+00	1.11E-02	0.00E+00	6.65E-04	0.00E+00	1.33E-02	0.00E+00	0.00E+00	0.00E+00	3.40E-01
UR11Z	Across SS	1	1	242	10	100%	0.00E+00	2.26E-02	0.00E+00	2.26E-02	0.00E+00	2.19E-02	0.00E+00	1.31E-03	0.00E+00	2.61E-02	0.00E+00	0.00E+00	0.00E+00	6.68E-01
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	0.00E+00	1.56E-02	0.00E+00	1.56E-02	0.00E+00	1.51E-02	0.00E+00	9.02E-04	0.00E+00	1.80E-02	0.00E+00	0.00E+00	0.00E+00	4.61E-01
UR12	Across LF to WF northern section	1	1	873	10	100%	4.30E+00	0.00E+00	4.30E+00	0.00E+00	5.96E-01	0.00E+00	2.85E-03	0.00E+00	4.16E-02	0.00E+00	2.26E+00	0.00E+00	6.26E+00	0.00E+00
UR12Z	Across LF to WF northern section, onsite equipment	1	1	873	10	100%	0.00E+00	1.16E-01	0.00E+00	1.16E-01	0.00E+00	8.30E-02	0.00E+00	4.72E-03	0.00E+00	9.33E-02	0.00E+00	1.70E-02	0.00E+00	2.42E+00
UR12Y	Across LF to WF northern section, final cap construction truc	1	1	873	10	100%	0.00E+00	5.62E-02	0.00E+00	5.62E-02	0.00E+00	5.45E-02	0.00E+00	3.25E-03	0.00E+00	6.50E-02	0.00E+00	0.00E+00	0.00E+00	1.66E+00
PR13Z	WF to LTF	1	1	165	10	100%	0.00E+00	1.20E+00	0.00E+00	1.20E+00	0.00E+00	1.62E-01	0.00E+00	1.49E-04	0.00E+00	6.66E-03	0.00E+00	6.52E-01	0.00E+00	1.75E+00
PR14Z	WF to LTF	1	1	61	10	100%	0.00E+00	4.40E-01	0.00E+00	4.40E-01	0.00E+00	5.97E-02	0.00E+00	5.48E-05	0.00E+00	2.45E-03	0.00E+00	2.40E-01	0.00E+00	6.42E-01
UR17Z	Across CDA	1	1	90	10	100%	0.00E+00	2.18E-02	0.00E+00	2.18E-02	0.00E+00	2.11E-02	0.00E+00	1.66E-03	0.00E+00	3.83E-03	0.00E+00	0.00E+00	0.00E+00	2.88E-01
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	0.00E+00	1.05E-02	0.00E+00	1.05E-02	0.00E+00	1.01E-02	0.00E+00	7.86E-04	0.00E+00	2.10E-03	0.00E+00	5.99E-05	0.00E+00	1.42E-01
PR04B	Scale House to WF	1	1	681	10	100%	4.30E+00	1.63E+00	4.30E+00	1.63E+00	5.96E-01	2.43E-01	2.85E-03	3.87E-03	4.16E-02	3.18E-02	2.26E+00	7.66E-01	6.26E+00	2.39E+00
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	0.00E+00	2.32E+00	0.00E+00	2.32E+00	0.00E+00	3.22E-01	0.00E+00	1.77E-03	0.00E+00	2.70E-02	0.00E+00	1.21E+00	0.00E+00	3.37E+00
PR04C	Exit Road from WF	1	1	420	10	100%	4.30E+00	1.00E+00	4.30E+00	1.00E+00	5.96E-01	1.50E-01	2.85E-03	2.39E-03	4.16E-02	1.97E-02	2.26E+00	4.73E-01	6.26E+00	1.47E+00
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	0.00E+00	1.43E+00	0.00E+00	1.43E+00	0.00E+00	1.99E-01	0.00E+00	1.09E-03	0.00E+00	1.67E-02	0.00E+00	7.49E-01	0.00E+00	2.08E+00
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	--	--	--	--	--	--	--	--	--	--	--	--	--	--
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	--	--	--	--	--	--	--	--	--	--	--	--	--	--
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	0.00E+00	7.31E+00	0.00E+00	7.31E+00	0.00E+00	7.09E+00	0.00E+00	4.65E-01	0.00E+00	2.80E+00	0.00E+00	0.00E+00	0.00E+00	1.28E+02
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	0.00E+00	1.73E+00	0.00E+00	1.73E+00	0.00E+00	1.68E+00	0.00E+00	1.22E-01	0.00E+00	8.13E-01	0.00E+00	0.00E+00	0.00E+00	3.14E+01
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	0.00E+00	2.43E+00	0.00E+00	2.43E+00	0.00E+00	2.35E+00	0.00E+00	1.85E-01	0.00E+00	4.27E-01	0.00E+00	0.00E+00	0.00E+00	3.21E+01
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	0.00E+00	1.04E+00	0.00E+00	1.04E+00	0.00E+00	1.00E+00	0.00E+00	6.00E-02	0.00E+00	1.20E+00	0.00E+00	0.00E+00	0.00E+00	3.06E+01

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes)

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

[5] Emissions are input on either a vehicle distance or power rating basis. Load factor applies only to emissions based on power ratings.

[6] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S1-5.1b: Vehicle Emission Rates - Tailpipe Emissions, MD

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Sulphur Dioxide 7446-09-5 (g/vkt)	Sulphur Dioxide 7446-09-5 (g/h)	Carbon Dioxide 124-38-9 (g/vkt)	Carbon Dioxide 124-38-9 (g/h)	Methane 74-82-8 (g/vkt)	Methane 74-82-8 (g/h)	Nitrous Oxide 10024-97-2 (g/vkt)	Nitrous Oxide 10024-97-2 (g/h)	Source ID	Tailpipe Emission Rate TSP PM (g/s)	PM10 PM10 (g/s)	PM2.5 PM25 (g/s)	Benzene 71-43-2 (g/s)	Ammonia 7664-41-7 (g/s)	Nitrogen Dioxide NO2 (g/s)	Nitrogen Oxides 10102-44-0 (g/s)
Mobile Equipment															**Mobile Equipment**							
PR01	Main Entrance Road	1	1	206	10	100%	5.43E-03	0.00E+00	1.43E+03	0.00E+00	4.68E-02	0.00E+00	1.22E-02	0.00E+00	PR01	2.5E-04	2.5E-04	3.4E-05	1.6E-07	2.4E-06	1.3E-04	3.6E-04
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	0.00E+00	1.03E-03	0.00E+00	2.56E+02	0.00E+00	8.16E-03	0.00E+00	2.21E-03	PR01Z	1.9E-04	1.9E-04	2.7E-05	1.5E-07	2.3E-06	1.0E-04	2.8E-04
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	0.00E+00	1.97E-03	0.00E+00	4.64E+02	0.00E+00	1.49E-02	0.00E+00	4.28E-03	UR02Z	3.1E-04	3.1E-04	4.3E-05	3.4E-07	4.5E-06	1.6E-04	4.5E-04
PR04A	Entrance to Scale House	1	1	487	10	100%	5.43E-03	2.54E-03	1.43E+03	6.09E+02	4.68E-02	2.22E-02	1.22E-02	6.85E-03	PR04A	5.8E-04	5.8E-04	8.1E-05	3.8E-07	5.6E-06	3.1E-04	8.5E-04
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	0.00E+00	2.43E-03	0.00E+00	6.04E+02	0.00E+00	1.93E-02	0.00E+00	5.23E-03	PR04AZ	4.6E-04	4.6E-04	6.4E-05	3.5E-07	5.4E-06	2.4E-04	6.7E-04
BR06	Across LF to WF southern section	1	1	603	10	100%	5.43E-03	0.00E+00	1.43E+03	0.00E+00	4.68E-02	0.00E+00	1.22E-02	0.00E+00	BR06	7.2E-04	7.2E-04	1.0E-04	4.8E-07	7.0E-06	3.8E-04	1.0E-03
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	0.00E+00	2.08E-02	0.00E+00	7.90E+03	0.00E+00	5.78E-03	0.00E+00	1.47E-04	BR06Z	2.2E-05	2.2E-05	1.6E-05	9.1E-07	1.8E-05	3.3E-06	4.6E-04
BR06Y	Across LF to WF southern section, final cap construction truc	1	1	603	10	100%	0.00E+00	1.46E-02	0.00E+00	5.54E+03	0.00E+00	3.73E-03	0.00E+00	0.00E+00	BR06Y	1.1E-05	1.1E-05	1.0E-05	6.2E-07	1.2E-05	0.0E+00	3.2E-04
PR08Z	WF to SS/LTF	1	1	307	10	100%	0.00E+00	5.13E-03	0.00E+00	1.83E+03	0.00E+00	8.47E-03	0.00E+00	2.01E-03	PR08Z	1.8E-04	1.8E-04	2.8E-05	3.1E-07	5.6E-06	9.2E-05	3.5E-04
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	0.00E+00	7.41E-03	0.00E+00	2.81E+03	0.00E+00	1.89E-03	0.00E+00	0.00E+00	PR08Y	5.5E-06	5.5E-06	5.3E-06	3.2E-07	6.3E-06	0.0E+00	1.6E-04
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	0.00E+00	3.77E-03	0.00E+00	1.35E+03	0.00E+00	5.12E-03	0.00E+00	1.24E-03	UR09AZ	9.1E-05	9.1E-05	1.5E-05	2.3E-07	4.0E-06	4.6E-05	2.0E-04
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	0.00E+00	5.10E-03	0.00E+00	1.94E+03	0.00E+00	1.30E-03	0.00E+00	0.00E+00	UR09AY	3.8E-06	3.8E-06	3.7E-06	2.2E-07	4.4E-06	0.0E+00	1.1E-04
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	0.00E+00	6.25E-03	0.00E+00	2.37E+03	0.00E+00	1.60E-03	0.00E+00	0.00E+00	UR09BZ	4.6E-06	4.6E-06	4.5E-06	2.7E-07	5.3E-06	0.0E+00	1.4E-04
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	0.00E+00	4.31E-03	0.00E+00	1.64E+03	0.00E+00	1.10E-03	0.00E+00	0.00E+00	UR09BY	3.2E-06	3.2E-06	3.1E-06	1.8E-07	3.7E-06	0.0E+00	9.4E-05
UR11Z	Across SS	1	1	242	10	100%	0.00E+00	8.48E-03	0.00E+00	3.22E+03	0.00E+00	2.17E-03	0.00E+00	0.00E+00	UR11Z	6.3E-06	6.3E-06	6.1E-06	3.6E-07	7.3E-06	0.0E+00	1.9E-04
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	0.00E+00	5.85E-03	0.00E+00	2.22E+03	0.00E+00	1.50E-03	0.00E+00	0.00E+00	UR11Y	4.3E-06	4.3E-06	4.2E-06	2.5E-07	5.0E-06	0.0E+00	1.3E-04
UR12	Across LF to WF northern section	1	1	873	10	100%	5.43E-03	0.00E+00	1.43E+03	0.00E+00	4.68E-02	0.00E+00	1.22E-02	0.00E+00	UR12	1.0E-03	1.0E-03	1.4E-04	6.9E-07	1.0E-05	5.5E-04	1.5E-03
UR12Z	Across LF to WF northern section, onsite equipment	1	1	873	10	100%	0.00E+00	3.01E-02	0.00E+00	1.14E+04	0.00E+00	8.37E-03	0.00E+00	2.12E-04	UR12Z	3.2E-05	3.2E-05	2.3E-05	1.3E-06	2.6E-05	4.7E-06	6.7E-04
UR12Y	Across LF to WF northern section, final cap construction trucl	1	1	873	10	100%	0.00E+00	2.11E-02	0.00E+00	8.02E+03	0.00E+00	5.40E-03	0.00E+00	0.00E+00	UR12Y	1.6E-05	1.6E-05	1.5E-05	9.0E-07	1.8E-05	0.0E+00	4.6E-04
PR13Z	WF to LTF	1	1	165	10	100%	0.00E+00	1.04E-03	0.00E+00	3.10E+02	0.00E+00	9.76E-03	0.00E+00	2.11E-03	PR13Z	3.3E-04	3.3E-04	4.5E-05	4.1E-08	1.9E-06	1.8E-04	4.9E-04
PR14Z	WF to LTF	1	1	61	10	100%	0.00E+00	3.81E-04	0.00E+00	1.14E+02	0.00E+00	3.59E-03	0.00E+00	7.76E-04	PR14Z	1.2E-04	1.2E-04	1.7E-05	1.5E-08	6.8E-07	6.7E-05	1.8E-04
UR17Z	Across CDA	1	1	90	10	100%	0.00E+00	1.27E-03	0.00E+00	4.72E+02	0.00E+00	2.53E-03	0.00E+00	0.00E+00	UR17Z	6.0E-06	6.0E-06	5.9E-06	4.6E-07	1.1E-06	0.0E+00	8.0E-05
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	0.00E+00	6.96E-04	0.00E+00	2.59E+02	0.00E+00	1.20E-03	0.00E+00	7.48E-07	UR18Z	2.9E-06	2.9E-06	2.8E-06	2.2E-07	5.8E-07	1.7E-08	3.9E-05
PR04B	Scale House to WF	1	1	681	10	100%	5.43E-03	3.55E-03	1.43E+03	8.52E+02	4.68E-02	3.11E-02	1.22E-02	9.58E-03	PR04B	8.1E-04	8.1E-04	1.1E-04	5.4E-07	7.9E-06	4.3E-04	1.2E-03
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	0.00E+00	3.40E-03	0.00E+00	8.46E+02	0.00E+00	2.70E-02	0.00E+00	7.31E-03	PR04BZ	6.4E-04	6.4E-04	9.0E-05	4.9E-07	7.5E-06	3.4E-04	9.4E-04
PR04C	Exit Road from WF	1	1	420	10	100%	5.43E-03	2.19E-03	1.43E+03	5.26E+02	4.68E-02	1.92E-02	1.22E-02	5.92E-03	PR04C	5.0E-04	5.0E-04	7.0E-05	3.3E-07	4.9E-06	2.6E-04	7.3E-04
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	0.00E+00	2.10E-03	0.00E+00	5.22E+02	0.00E+00	1.67E-02	0.00E+00	4.51E-03	PR04CZ	4.0E-04	4.0E-04	5.5E-05	3.0E-07	4.6E-06	2.1E-04	5.8E-04
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	--	--	--	--	--	--	--	--	IDLE01	1.39E-04	1.39E-04	1.27E-04	2.82E-06	1.05E-04	3.32E-03	8.94E-03
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	--	--	--	--	--	--	--	--	IDLE02	1.39E-04	1.39E-04	1.27E-04	2.82E-06	1.05E-04	3.32E-03	8.94E-03
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	0.00E+00	9.18E-01	0.00E+00	3.45E+05	0.00E+00	7.32E-01	0.00E+00	0.00E+00	DOZE2	2.0E-03	2.0E-03	2.0E-03	1.3E-04	7.8E-04	0.0E+00	3.6E-02
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	0.00E+00	2.65E-01	0.00E+00	1.00E+05	0.00E+00	1.91E-01	0.00E+00	0.00E+00	DOZE4	4.8E-04	4.8E-04	4.7E-04	3.4E-05	2.3E-04	0.0E+00	8.7E-03
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	0.00E+00	1.42E-01	0.00E+00	5.26E+04	0.00E+00	2.82E-01	0.00E+00	0.00E+00	DOZE2CAP	6.7E-04	6.7E-04	6.5E-04	5.1E-05	1.2E-04	0.0E+00	8.9E-03
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	0.00E+00	3.89E-01	0.00E+00	1.48E+05	0.00E+00	9.95E-02	0.00E+00	0.00E+00	DOZE2SS	2.9E-04	2.9E-04	2.8E-04	1.7E-05	3.3E-04	0.0E+00	8.5E-03

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes)

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

[5] Emissions are input on either a vehicle distance or power rating basis. Load factor applies only to emissions based on p

[6] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S1-5.1b: Vehicle Emission Rates - Tailpipe Emissions, MD

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Sulphur Dioxide 7446-09-5 (g/s)	Carbon Dioxide 124-38-9 (g/s)	Methane 74-82-8 (g/s)	Nitrous Oxide 10024-97-2 (g/s)	Tailpipe + Fugitive Emission Rate [6] TSP PM (g/s)	Tailpipe + Fugitive Emission Rate [6] PM10 PM10 (g/s)	Tailpipe + Fugitive Emission Rate [6] PM2.5 PM2.5 (g/s)	Ratio Tailpipe : Total Emission Rate TSP PM (g/s)	Ratio Tailpipe : Total Emission Rate PM10 PM10 (g/s)	Ratio Tailpipe : Total Emission Rate PM2.5 PM2.5 (g/s)	Source ID	# of Volume Sources g/hr	# of Volume Sources g/vkt	TSP PM	PM10 PM10
Mobile Equipment																	**Mobile Equipment**				
PR01	Main Entrance Road	1	1	206	10	100%	3.1E-07	8.2E-02	2.7E-06	6.9E-07	8.27E-04	3.21E-04	5.23E-05	2.97E-01	7.65E-01	6.52E-01	PR01	11	11	7.5E-05	2.9E-05
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	2.9E-07	7.1E-02	2.3E-06	6.1E-07	7.76E-04	2.70E-04	4.53E-05	2.51E-01	7.21E-01	5.98E-01	PR01Z	11	11	7.1E-05	2.5E-05
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	5.5E-07	1.3E-01	4.1E-06	1.2E-06	1.07E-01	3.25E-02	3.26E-03	2.87E-03	9.46E-03	1.33E-02	UR02Z	48	48	2.2E-03	6.8E-04
PR04A	Entrance to Scale House	1	1	487	10	100%	7.3E-07	1.9E-01	6.3E-06	1.6E-06	2.17E-03	7.86E-04	1.30E-04	2.67E-01	7.38E-01	6.18E-01	PR04A	57	57	3.8E-05	1.4E-05
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	6.8E-07	1.7E-01	5.4E-06	1.5E-06	2.05E-03	6.66E-04	1.14E-04	2.24E-01	6.91E-01	5.62E-01	PR04AZ	57	57	3.6E-05	1.2E-05
BR06	Across LF to WF southern section	1	1	603	10	100%	9.1E-07	2.4E-01	7.8E-06	2.0E-06	1.38E-01	3.19E-02	3.22E-03	5.20E-03	2.26E-02	3.10E-02	BR06	70	70	2.0E-03	4.6E-04
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	5.8E-06	2.2E+00	1.6E-06	4.1E-08	1.38E-01	3.12E-02	3.13E-03	1.62E-04	7.13E-04	5.08E-03	BR06Z	70	70	2.0E-03	4.5E-04
BR06Y	Across LF to WF southern section, final cap construction truc	1	1	603	10	100%	4.0E-06	1.5E+00	1.0E-06	0.0E+00	1.38E-01	3.12E-02	3.13E-03	7.83E-05	3.45E-04	3.34E-03	BR06Y	70	70	2.0E-03	4.5E-04
PR08Z	WF to SS/LTF	1	1	307	10	100%	1.4E-06	5.1E-01	2.4E-06	5.6E-07	5.31E-03	8.43E-04	1.88E-04	3.38E-02	2.13E-01	1.46E-01	PR08Z	36	36	1.5E-04	2.3E-05
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	2.1E-06	7.8E-01	5.3E-07	0.0E+00	5.13E-03	6.69E-04	1.66E-04	1.07E-03	8.18E-03	3.20E-02	PR08Y	36	36	1.4E-04	1.9E-05
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	1.0E-06	3.7E-01	1.4E-06	3.4E-07	8.05E-02	2.43E-02	2.43E-03	1.14E-03	3.77E-03	6.10E-03	UR09AZ	25	25	3.2E-03	9.7E-04
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	1.4E-06	5.4E-01	3.6E-07	0.0E+00	8.04E-02	2.42E-02	2.42E-03	4.69E-05	1.56E-04	1.51E-03	UR09AY	25	25	3.2E-03	9.7E-04
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	1.7E-06	6.6E-01	4.4E-07	0.0E+00	7.62E-02	2.29E-02	2.30E-03	6.07E-05	2.02E-04	1.95E-03	UR09BZ	21	21	3.6E-03	1.1E-03
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	1.2E-06	4.6E-01	3.1E-07	0.0E+00	7.62E-02	2.29E-02	2.29E-03	4.19E-05	1.39E-04	1.35E-03	UR09BY	21	21	3.6E-03	1.1E-03
UR11Z	Across SS	1	1	242	10	100%	2.4E-06	8.9E-01	6.0E-07	0.0E+00	1.03E-01	3.11E-02	3.11E-03	6.07E-05	2.02E-04	1.95E-03	UR11Z	28	28	3.7E-03	1.1E-03
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	1.6E-06	6.2E-01	4.2E-07	0.0E+00	1.03E-01	3.11E-02	3.11E-03	4.19E-05	1.39E-04	1.35E-03	UR11Y	28	28	3.7E-03	1.1E-03
UR12	Across LF to WF northern section	1	1	873	10	100%	1.3E-06	3.5E-01	1.1E-05	2.9E-06	2.00E-01	4.62E-02	4.66E-03	5.20E-03	2.26E-02	3.10E-02	UR12	102	102	2.0E-03	4.5E-04
UR12Z	Across LF to WF northern section, onsite equipment	1	1	873	10	100%	8.4E-06	3.2E+00	2.3E-06	5.9E-08	1.99E-01	4.52E-02	4.54E-03	1.62E-04	7.13E-04	5.08E-03	UR12Z	102	102	2.0E-03	4.4E-04
UR12Y	Across LF to WF northern section, final cap construction trucl	1	1	873	10	100%	5.9E-06	2.2E+00	1.5E-06	0.0E+00	1.99E-01	4.52E-02	4.53E-03	7.83E-05	3.45E-04	3.34E-03	UR12Y	102	102	2.0E-03	4.4E-04
PR13Z	WF to LTF	1	1	165	10	100%	2.9E-07	8.6E-02	2.7E-06	5.9E-07	3.63E-03	7.59E-04	1.48E-04	9.15E-02	4.38E-01	3.04E-01	PR13Z	19	19	1.9E-04	4.0E-05
PR14Z	WF to LTF	1	1	61	10	100%	1.1E-07	3.2E-02	1.0E-06	2.2E-07	1.34E-03	2.79E-04	5.46E-05	9.15E-02	4.38E-01	3.04E-01	PR14Z	7	7	1.9E-04	4.0E-05
UR17Z	Across CDA	1	1	90	10	100%	3.5E-07	1.3E-01	7.0E-07	0.0E+00	3.41E-02	1.02E-02	1.03E-03	1.78E-04	5.90E-04	5.69E-03	UR17Z	10	10	3.4E-03	1.0E-03
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	1.9E-07	7.2E-02	3.3E-07	2.1E-10	1.73E-02	5.28E-03	5.30E-04	1.68E-04	5.53E-04	5.29E-03	UR18Z	5	5	3.5E-03	1.1E-03
PR04B	Scale House to WF	1	1	681	10	100%	1.0E-06	2.7E-01	8.9E-06	2.3E-06	3.43E-03	1.15E-03	1.95E-04	2.37E-01	7.06E-01	5.79E-01	PR04B	79	79	4.3E-05	1.5E-05
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	9.5E-07	2.3E-01	7.5E-06	2.0E-06	3.26E-03	9.82E-04	1.71E-04	1.97E-01	6.55E-01	5.22E-01	PR04BZ	79	79	4.1E-05	1.2E-05
PR04C	Exit Road from WF	1	1	420	10	100%	6.3E-07	1.7E-01	5.5E-06	1.4E-06	2.12E-03	7.10E-04	1.20E-04	2.37E-01	7.06E-01	5.79E-01	PR04C	49	49	4.3E-05	1.4E-05
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	5.8E-07	1.5E-01	4.6E-06	1.3E-06	2.01E-03	6.06E-04	1.06E-04	1.97E-01	6.55E-01	5.22E-01	PR04CZ	49	49	4.1E-05	1.2E-05
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	6.23E-06	1.59E+00	7.32E-05	3.36E-05	1.39E-04	1.39E-04	1.27E-04	1.00E+00	1.00E+00	1.00E+00	IDLE01	1	1	2.77E-04	2.77E-04
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	6.23E-06	1.59E+00	7.32E-05	3.36E-05	1.39E-04	1.39E-04	1.27E-04	1.00E+00	1.00E+00	1.00E+00	IDLE02	1	1	2.77E-04	2.77E-04
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	2.6E-04	9.6E+01	2.0E-04	0.0E+00	2.03E-03	2.03E-03	1.97E-03	1.00E+00	1.00E+00	1.00E+00	DOZE2	1	1	2.0E-03	2.0E-03
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	7.4E-05	2.8E+01	5.3E-05	0.0E+00	4.81E-04	4.81E-04	4.66E-04	1.00E+00	1.00E+00	1.00E+00	DOZE4	1	1	4.8E-04	4.8E-04
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	3.9E-05	1.5E+01	7.8E-05	0.0E+00	6.74E-04	6.74E-04	6.54E-04	1.00E+00	1.00E+00	1.00E+00	DOZE2CAP	1	1	6.7E-04	6.7E-04
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	1.1E-04	4.1E+01	2.8E-05	0.0E+00	2.88E-04	2.88E-04	2.79E-04	1.00E+00	1.00E+00	1.00E+00	DOZE2SS	1	1	2.9E-04	2.9E-04

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes)

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

[5] Emissions are input on either a vehicle distance or power rating basis. Load factor applies only to emissions based on p

[6] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

QA		tail	fug	tot	
	PR01	0.00024554	0.0005813	8.3E-04	TRUE
	PR01Z	0.00019457	0.0005813	7.8E-04	TRUE
	UR02Z	0.00030762	0.10705183	1.1E-01	TRUE
	PR03	0	0	0.0E+00	TRUE
	PR04A	0.00058043	0.00159079	2.2E-03	TRUE
	PR04AZ	0.00045994	0.00159079	2.1E-03	TRUE

Appendix 5A-S1-5.1b: Vehicle Emission Rates - Tailpipe Emissions, MD

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Emission rate per volume source: PM2.5 PM25	Benzene 71-43-2	Ammonia 7664-41-7	Nitrogen Dioxide NO2	Nitrogen Oxides 10102-44-0	Sulphur Dioxide 7446-09-5	Carbon Dioxide 124-38-9	Methane 74-82-8	Nitrous Oxide 10024-97-2
Mobile Equipment															
PR01	Main Entrance Road	1	1	206	10	100%	4.8E-06	1.5E-08	2.2E-07	1.2E-05	3.3E-05	2.8E-08	7.4E-03	2.4E-07	6.3E-08
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	4.1E-06	1.4E-08	2.1E-07	9.3E-06	2.6E-05	2.6E-08	6.5E-03	2.1E-07	5.6E-08
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	6.8E-05	7.0E-09	9.5E-08	3.3E-06	9.3E-06	1.1E-08	2.7E-03	8.6E-08	2.5E-08
PR04A	Entrance to Scale House	1	1	487	10	100%	2.3E-06	6.7E-09	9.9E-08	5.4E-06	1.5E-05	1.3E-08	3.4E-03	1.1E-07	2.9E-08
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	2.0E-06	6.2E-09	9.4E-08	4.2E-06	1.2E-05	1.2E-08	2.9E-03	9.4E-08	2.5E-08
BR06	Across LF to WF southern section	1	1	603	10	100%	4.6E-05	6.8E-09	1.0E-07	5.4E-06	1.5E-05	1.3E-08	3.4E-03	1.1E-07	2.9E-08
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	4.5E-05	1.3E-08	2.6E-07	4.7E-08	6.6E-06	8.3E-08	3.1E-02	2.3E-08	5.8E-10
BR06Y	Across LF to WF southern section, final cap construction truc	1	1	603	10	100%	4.5E-05	8.9E-09	1.8E-07	0.0E+00	4.6E-06	5.8E-08	2.2E-02	1.5E-08	0.0E+00
PR08Z	WF to SS/LTF	1	1	307	10	100%	5.2E-06	8.7E-09	1.6E-07	2.6E-06	9.7E-06	4.0E-08	1.4E-02	6.5E-08	1.5E-08
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	4.6E-06	8.8E-09	1.8E-07	0.0E+00	4.5E-06	5.7E-08	2.2E-02	1.5E-08	0.0E+00
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	9.7E-05	9.4E-09	1.6E-07	1.8E-06	8.0E-06	4.2E-08	1.5E-02	5.7E-08	1.4E-08
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	9.7E-05	8.7E-09	1.7E-07	0.0E+00	4.5E-06	5.7E-08	2.2E-02	1.4E-08	0.0E+00
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	1.1E-04	1.3E-08	2.5E-07	0.0E+00	6.5E-06	8.3E-08	3.1E-02	2.1E-08	0.0E+00
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	1.1E-04	8.8E-09	1.8E-07	0.0E+00	4.5E-06	5.7E-08	2.2E-02	1.5E-08	0.0E+00
UR11Z	Across SS	1	1	242	10	100%	1.1E-04	1.3E-08	2.6E-07	0.0E+00	6.6E-06	8.4E-08	3.2E-02	2.2E-08	0.0E+00
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	1.1E-04	9.0E-09	1.8E-07	0.0E+00	4.6E-06	5.8E-08	2.2E-02	1.5E-08	0.0E+00
UR12	Across LF to WF northern section	1	1	873	10	100%	4.6E-05	6.8E-09	9.9E-08	5.4E-06	1.5E-05	1.3E-08	3.4E-03	1.1E-07	2.9E-08
UR12Z	Across LF to WF northern section, onsite equipment	1	1	873	10	100%	4.4E-05	1.3E-08	2.5E-07	4.6E-08	6.6E-06	8.2E-08	3.1E-02	2.3E-08	5.8E-10
UR12Y	Across LF to WF northern section, final cap construction truc	1	1	873	10	100%	4.4E-05	8.9E-09	1.8E-07	0.0E+00	4.5E-06	5.7E-08	2.2E-02	1.5E-08	0.0E+00
PR13Z	WF to LTF	1	1	165	10	100%	7.8E-06	2.2E-09	9.7E-08	9.5E-06	2.6E-05	1.5E-08	4.5E-03	1.4E-07	3.1E-08
PR14Z	WF to LTF	1	1	61	10	100%	7.8E-06	2.2E-09	9.7E-08	9.5E-06	2.5E-05	1.5E-08	4.5E-03	1.4E-07	3.1E-08
UR17Z	Across CDA	1	1	90	10	100%	1.0E-04	4.6E-08	1.1E-07	0.0E+00	8.0E-06	3.5E-08	1.3E-02	7.0E-08	0.0E+00
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	1.1E-04	4.4E-08	1.2E-07	3.3E-09	7.9E-06	3.9E-08	1.4E-02	6.7E-08	4.2E-11
PR04B	Scale House to WF	1	1	681	10	100%	2.5E-06	6.8E-09	1.0E-07	5.4E-06	1.5E-05	1.3E-08	3.4E-03	1.1E-07	2.9E-08
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	2.2E-06	6.2E-09	9.5E-08	4.3E-06	1.2E-05	1.2E-08	3.0E-03	9.5E-08	2.6E-08
PR04C	Exit Road from WF	1	1	420	10	100%	2.5E-06	6.8E-09	9.9E-08	5.4E-06	1.5E-05	1.3E-08	3.4E-03	1.1E-07	2.9E-08
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	2.2E-06	6.2E-09	9.5E-08	4.2E-06	1.2E-05	1.2E-08	3.0E-03	9.4E-08	2.6E-08
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	2.55E-04	5.64E-06	2.10E-04	6.64E-03	1.79E-02	1.25E-05	3.19E+00	1.46E-04	6.71E-05
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	2.55E-04	5.64E-06	2.10E-04	6.64E-03	1.79E-02	1.25E-05	3.19E+00	1.46E-04	6.71E-05
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	2.0E-03	1.3E-04	7.8E-04	0.0E+00	3.6E-02	2.6E-04	9.6E+01	2.0E-04	0.0E+00
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	4.7E-04	3.4E-05	2.3E-04	0.0E+00	8.7E-03	7.4E-05	2.8E+01	5.3E-05	0.0E+00
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	6.5E-04	5.1E-05	1.2E-04	0.0E+00	8.9E-03	3.9E-05	1.5E+01	7.8E-05	0.0E+00
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	2.8E-04	1.7E-05	3.3E-04	0.0E+00	8.5E-03	1.1E-04	4.1E+01	2.8E-05	0.0E+00

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes)

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

[5] Emissions are input on either a vehicle distance or power rating basis. Load factor applies only to emissions based on p

[6] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S1-5.1b: Vehicle Emission Rates - Tailpipe Emissions, PM

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Tailpipe Emission Factor [5], [7] TSP PM (g/vkt)	TSP PM (g/h)	PM10 PM10 (g/vkt)	PM10 PM10 (g/h)	PM2.5 PM25 (g/vkt)	PM2.5 PM25 (g/h)	Benzene 71-43-2 (g/vkt)	Benzene 71-43-2 (g/h)	Ammonia 7664-41-7 (g/vkt)	Ammonia 7664-41-7 (g/h)	Nitrogen Dioxide NO2 (g/vkt)	Nitrogen Dioxide NO2 (g/h)	Nitrogen Oxides 10102-44-0 (g/vkt)	Nitrogen Oxides 10102-44-0 (g/h)
Mobile Equipment																				
PR01	Main Entrance Road	1	1	206	10	100%	5.21E+00	0.00E+00	5.21E+00	0.00E+00	7.10E-01	0.00E+00	1.27E-03	0.00E+00	3.86E-02	0.00E+00	2.82E+00	0.00E+00	7.58E+00	0.00E+00
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	0.00E+00	7.00E-01	0.00E+00	7.00E-01	0.00E+00	9.75E-02	0.00E+00	5.36E-04	0.00E+00	8.17E-03	0.00E+00	3.67E-01	0.00E+00	1.02E+00
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	0.00E+00	1.11E+00	0.00E+00	1.11E+00	0.00E+00	1.56E-01	0.00E+00	1.21E-03	0.00E+00	1.64E-02	0.00E+00	5.69E-01	0.00E+00	1.61E+00
PR04A	Entrance to Scale House	1	1	487	10	100%	5.21E+00	1.16E+00	5.21E+00	1.16E+00	7.10E-01	1.74E-01	1.27E-03	2.77E-03	3.86E-02	2.28E-02	2.82E+00	5.48E-01	7.58E+00	1.71E+00
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	0.00E+00	1.66E+00	0.00E+00	1.66E+00	0.00E+00	2.30E-01	0.00E+00	1.27E-03	0.00E+00	1.93E-02	0.00E+00	8.67E-01	0.00E+00	2.41E+00
BR06	Across LF to WF southern section	1	1	603	10	100%	5.21E+00	0.00E+00	5.21E+00	0.00E+00	7.10E-01	0.00E+00	1.27E-03	0.00E+00	3.86E-02	0.00E+00	2.82E+00	0.00E+00	7.58E+00	0.00E+00
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	0.00E+00	8.01E-02	0.00E+00	8.01E-02	0.00E+00	5.73E-02	0.00E+00	3.26E-03	0.00E+00	6.44E-02	0.00E+00	1.17E-02	0.00E+00	1.67E+00
BR06Y	Across LF to WF southern section, final cap construction truck	1	1	603	10	100%	0.00E+00	3.88E-02	0.00E+00	3.88E-02	0.00E+00	3.76E-02	0.00E+00	2.25E-03	0.00E+00	4.49E-02	0.00E+00	0.00E+00	0.00E+00	1.15E+00
PR08Z	WF to SS/LTF	1	1	307	10	100%	0.00E+00	6.46E-01	0.00E+00	6.46E-01	0.00E+00	9.92E-02	0.00E+00	1.13E-03	0.00E+00	2.03E-02	0.00E+00	3.33E-01	0.00E+00	1.25E+00
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	0.00E+00	1.97E-02	0.00E+00	1.97E-02	0.00E+00	1.91E-02	0.00E+00	1.14E-03	0.00E+00	2.28E-02	0.00E+00	0.00E+00	0.00E+00	5.83E-01
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	0.00E+00	3.29E-01	0.00E+00	3.29E-01	0.00E+00	5.34E-02	0.00E+00	8.42E-04	0.00E+00	1.46E-02	0.00E+00	1.65E-01	0.00E+00	7.17E-01
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	0.00E+00	1.36E-02	0.00E+00	1.36E-02	0.00E+00	1.32E-02	0.00E+00	7.86E-04	0.00E+00	1.57E-02	0.00E+00	0.00E+00	0.00E+00	4.02E-01
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	0.00E+00	1.66E-02	0.00E+00	1.66E-02	0.00E+00	1.61E-02	0.00E+00	9.63E-04	0.00E+00	1.92E-02	0.00E+00	0.00E+00	0.00E+00	4.92E-01
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	0.00E+00	1.15E-02	0.00E+00	1.15E-02	0.00E+00	1.11E-02	0.00E+00	6.65E-04	0.00E+00	1.33E-02	0.00E+00	0.00E+00	0.00E+00	3.40E-01
UR11Z	Across SS	1	1	242	10	100%	0.00E+00	2.26E-02	0.00E+00	2.26E-02	0.00E+00	2.19E-02	0.00E+00	1.31E-03	0.00E+00	2.61E-02	0.00E+00	0.00E+00	0.00E+00	6.68E-01
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	0.00E+00	1.56E-02	0.00E+00	1.56E-02	0.00E+00	1.51E-02	0.00E+00	9.02E-04	0.00E+00	1.80E-02	0.00E+00	0.00E+00	0.00E+00	4.61E-01
UR12	Across LF to WF northern section	1	1	873	10	100%	5.21E+00	0.00E+00	5.21E+00	0.00E+00	7.10E-01	0.00E+00	1.27E-03	0.00E+00	3.86E-02	0.00E+00	2.82E+00	0.00E+00	7.58E+00	0.00E+00
UR12Z	Across LF to WF northern section, onsite equipment	1	1	873	10	100%	0.00E+00	1.16E-01	0.00E+00	1.16E-01	0.00E+00	8.30E-02	0.00E+00	4.72E-03	0.00E+00	9.33E-02	0.00E+00	1.70E-02	0.00E+00	2.42E+00
UR12Y	Across LF to WF northern section, final cap construction truck	1	1	873	10	100%	0.00E+00	5.62E-02	0.00E+00	5.62E-02	0.00E+00	5.45E-02	0.00E+00	3.25E-03	0.00E+00	6.50E-02	0.00E+00	0.00E+00	0.00E+00	1.66E+00
PR13Z	WF to LTF	1	1	165	10	100%	0.00E+00	1.20E+00	0.00E+00	1.20E+00	0.00E+00	1.62E-01	0.00E+00	1.49E-04	0.00E+00	6.66E-03	0.00E+00	6.52E-01	0.00E+00	1.75E+00
PR14Z	WF to LTF	1	1	61	10	100%	0.00E+00	4.40E-01	0.00E+00	4.40E-01	0.00E+00	5.97E-02	0.00E+00	5.48E-05	0.00E+00	2.45E-03	0.00E+00	2.40E-01	0.00E+00	6.42E-01
UR17Z	Across CDA	1	1	90	10	100%	0.00E+00	2.18E-02	0.00E+00	2.18E-02	0.00E+00	2.11E-02	0.00E+00	1.66E-03	0.00E+00	3.83E-03	0.00E+00	0.00E+00	0.00E+00	2.88E-01
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	0.00E+00	1.05E-02	0.00E+00	1.05E-02	0.00E+00	1.01E-02	0.00E+00	7.86E-04	0.00E+00	2.10E-03	0.00E+00	5.99E-05	0.00E+00	1.42E-01
PR04B	Scale House to WF	1	1	681	10	100%	5.21E+00	1.63E+00	5.21E+00	1.63E+00	7.10E-01	2.43E-01	1.27E-03	3.87E-03	3.86E-02	3.18E-02	2.82E+00	7.66E-01	7.58E+00	2.39E+00
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	0.00E+00	2.32E+00	0.00E+00	2.32E+00	0.00E+00	3.22E-01	0.00E+00	1.77E-03	0.00E+00	2.70E-02	0.00E+00	1.21E+00	0.00E+00	3.37E+00
PR04C	Exit Road from WF	1	1	420	10	100%	5.21E+00	1.00E+00	5.21E+00	1.00E+00	7.10E-01	1.50E-01	1.27E-03	2.39E-03	3.86E-02	1.97E-02	2.82E+00	4.73E-01	7.58E+00	1.47E+00
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	0.00E+00	1.43E+00	0.00E+00	1.43E+00	0.00E+00	1.99E-01	0.00E+00	1.09E-03	0.00E+00	1.67E-02	0.00E+00	7.49E-01	0.00E+00	2.08E+00
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	--	--	--	--	--	--	--	--	--	--	--	--	--	--
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	--	--	--	--	--	--	--	--	--	--	--	--	--	--
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	0.00E+00	7.31E+00	0.00E+00	7.31E+00	0.00E+00	7.09E+00	0.00E+00	4.65E-01	0.00E+00	2.80E+00	0.00E+00	0.00E+00	0.00E+00	1.28E+02
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	0.00E+00	1.73E+00	0.00E+00	1.73E+00	0.00E+00	1.68E+00	0.00E+00	1.22E-01	0.00E+00	8.13E-01	0.00E+00	0.00E+00	0.00E+00	3.14E+01
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	0.00E+00	2.43E+00	0.00E+00	2.43E+00	0.00E+00	2.35E+00	0.00E+00	1.85E-01	0.00E+00	4.27E-01	0.00E+00	0.00E+00	0.00E+00	3.21E+01
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	0.00E+00	1.04E+00	0.00E+00	1.04E+00	0.00E+00	1.00E+00	0.00E+00	6.00E-02	0.00E+00	1.20E+00	0.00E+00	0.00E+00	0.00E+00	3.06E+01

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes)

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

[5] Emissions are input on either a vehicle distance or power rating basis. Load factor applies only to emissions based on power ratings.

[6] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S1-5.1b: Vehicle Emission Rates - Tailpipe Emissions, PM

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Sulphur Dioxide 7446-09-5 (g/vkt)	Sulphur Dioxide 7446-09-5 (g/h)	Carbon Dioxide 124-38-9 (g/vkt)	Carbon Dioxide 124-38-9 (g/h)	Methane 74-82-8 (g/vkt)	Methane 74-82-8 (g/h)	Nitrous Oxide 10024-97-2 (g/vkt)	Nitrous Oxide 10024-97-2 (g/h)	Source ID
Mobile Equipment															**Mobile Equipment**
PR01	Main Entrance Road	1	1	206	10	100%	5.49E-03	0.00E+00	1.50E+03	0.00E+00	4.65E-02	0.00E+00	1.09E-02	0.00E+00	PR01
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	0.00E+00	1.03E-03	0.00E+00	2.56E+02	0.00E+00	8.16E-03	0.00E+00	2.21E-03	PR01Z
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	0.00E+00	1.97E-03	0.00E+00	4.64E+02	0.00E+00	1.49E-02	0.00E+00	4.28E-03	UR02Z
PR04A	Entrance to Scale House	1	1	487	10	100%	5.49E-03	2.54E-03	1.50E+03	6.09E+02	4.65E-02	2.22E-02	1.09E-02	6.85E-03	PR04A
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	0.00E+00	2.43E-03	0.00E+00	6.04E+02	0.00E+00	1.93E-02	0.00E+00	5.23E-03	PR04AZ
BR06	Across LF to WF southern section	1	1	603	10	100%	5.49E-03	0.00E+00	1.50E+03	0.00E+00	4.65E-02	0.00E+00	1.09E-02	0.00E+00	BR06
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	0.00E+00	2.08E-02	0.00E+00	7.90E+03	0.00E+00	5.78E-03	0.00E+00	1.47E-04	BR06Z
BR06Y	Across LF to WF southern section, final cap construction truck	1	1	603	10	100%	0.00E+00	1.46E-02	0.00E+00	5.54E+03	0.00E+00	3.73E-03	0.00E+00	0.00E+00	BR06Y
PR08Z	WF to SS/LTF	1	1	307	10	100%	0.00E+00	5.13E-03	0.00E+00	1.83E+03	0.00E+00	8.47E-03	0.00E+00	2.01E-03	PR08Z
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	0.00E+00	7.41E-03	0.00E+00	2.81E+03	0.00E+00	1.89E-03	0.00E+00	0.00E+00	PR08Y
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	0.00E+00	3.77E-03	0.00E+00	1.35E+03	0.00E+00	5.12E-03	0.00E+00	1.24E-03	UR09AZ
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	0.00E+00	5.10E-03	0.00E+00	1.94E+03	0.00E+00	1.30E-03	0.00E+00	0.00E+00	UR09AY
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	0.00E+00	6.25E-03	0.00E+00	2.37E+03	0.00E+00	1.60E-03	0.00E+00	0.00E+00	UR09BZ
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	0.00E+00	4.31E-03	0.00E+00	1.64E+03	0.00E+00	1.10E-03	0.00E+00	0.00E+00	UR09BY
UR11Z	Across SS	1	1	242	10	100%	0.00E+00	8.48E-03	0.00E+00	3.22E+03	0.00E+00	2.17E-03	0.00E+00	0.00E+00	UR11Z
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	0.00E+00	5.85E-03	0.00E+00	2.22E+03	0.00E+00	1.50E-03	0.00E+00	0.00E+00	UR11Y
UR12	Across LF to WF northern section	1	1	873	10	100%	5.49E-03	0.00E+00	1.50E+03	0.00E+00	4.65E-02	0.00E+00	1.09E-02	0.00E+00	UR12
UR12Z	Across LF to WF northern section, onsite equipment	1	1	873	10	100%	0.00E+00	3.01E-02	0.00E+00	1.14E+04	0.00E+00	8.37E-03	0.00E+00	2.12E-04	UR12Z
UR12Y	Across LF to WF northern section, final cap construction truck	1	1	873	10	100%	0.00E+00	2.11E-02	0.00E+00	8.02E+03	0.00E+00	5.40E-03	0.00E+00	0.00E+00	UR12Y
PR13Z	WF to LTF	1	1	165	10	100%	0.00E+00	1.04E-03	0.00E+00	3.10E+02	0.00E+00	9.76E-03	0.00E+00	2.11E-03	PR13Z
PR14Z	WF to LTF	1	1	61	10	100%	0.00E+00	3.81E-04	0.00E+00	1.14E+02	0.00E+00	3.59E-03	0.00E+00	7.76E-04	PR14Z
UR17Z	Across CDA	1	1	90	10	100%	0.00E+00	1.27E-03	0.00E+00	4.72E+02	0.00E+00	2.53E-03	0.00E+00	0.00E+00	UR17Z
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	0.00E+00	6.96E-04	0.00E+00	2.59E+02	0.00E+00	1.20E-03	0.00E+00	7.48E-07	UR18Z
PR04B	Scale House to WF	1	1	681	10	100%	5.49E-03	3.55E-03	1.50E+03	8.52E+02	4.65E-02	3.11E-02	1.09E-02	9.58E-03	PR04B
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	0.00E+00	3.40E-03	0.00E+00	8.46E+02	0.00E+00	2.70E-02	0.00E+00	7.31E-03	PR04BZ
PR04C	Exit Road from WF	1	1	420	10	100%	5.49E-03	2.19E-03	1.50E+03	5.26E+02	4.65E-02	1.92E-02	1.09E-02	5.92E-03	PR04C
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	0.00E+00	2.10E-03	0.00E+00	5.22E+02	0.00E+00	1.67E-02	0.00E+00	4.51E-03	PR04CZ
															0
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	--	--	--	--	--	--	--	--	IDLE01
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	--	--	--	--	--	--	--	--	IDLE02
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	0.00E+00	9.18E-01	0.00E+00	3.45E+05	0.00E+00	7.32E-01	0.00E+00	0.00E+00	DOZE2
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	0.00E+00	2.65E-01	0.00E+00	1.00E+05	0.00E+00	1.91E-01	0.00E+00	0.00E+00	DOZE4
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	0.00E+00	1.42E-01	0.00E+00	5.26E+04	0.00E+00	2.82E-01	0.00E+00	0.00E+00	DOZE2CAP
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	0.00E+00	3.89E-01	0.00E+00	1.48E+05	0.00E+00	9.95E-02	0.00E+00	0.00E+00	DOZE2SS

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes)

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

[5] Emissions are input on either a vehicle distance or power rating basis. Load factor applies only to emissions based on power ratings.

[6] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S1-5.1b: Vehicle Emission Rates - Tailpipe Emissions, PM

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Tailpipe Emission Rate TSP PM (g/s)	PM10 PM10 (g/s)	PM2.5 PM25 (g/s)	Benzene 71-43-2 (g/s)	Ammonia 7664-41-7 (g/s)	Nitrogen Dioxide NO2 (g/s)
Mobile Equipment												
PR01	Main Entrance Road	1	1	206	10	100%	3.0E-04	3.0E-04	4.1E-05	7.3E-08	2.2E-06	1.6E-04
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	1.9E-04	1.9E-04	2.7E-05	1.5E-07	2.3E-06	1.0E-04
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	3.1E-04	3.1E-04	4.3E-05	3.4E-07	4.5E-06	1.6E-04
PR04A	Entrance to Scale House	1	1	487	10	100%	7.0E-04	7.0E-04	9.6E-05	1.7E-07	5.2E-06	3.8E-04
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	4.6E-04	4.6E-04	6.4E-05	3.5E-07	5.4E-06	2.4E-04
BR06	Across LF to WF southern section	1	1	603	10	100%	8.7E-04	8.7E-04	1.2E-04	2.1E-07	6.5E-06	4.7E-04
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	2.2E-05	2.2E-05	1.6E-05	9.1E-07	1.8E-05	3.3E-06
BR06Y	Across LF to WF southern section, final cap construction truck	1	1	603	10	100%	1.1E-05	1.1E-05	1.0E-05	6.2E-07	1.2E-05	0.0E+00
PR08Z	WF to SS/LTF	1	1	307	10	100%	1.8E-04	1.8E-04	2.8E-05	3.1E-07	5.6E-06	9.2E-05
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	5.5E-06	5.5E-06	5.3E-06	3.2E-07	6.3E-06	0.0E+00
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	9.1E-05	9.1E-05	1.5E-05	2.3E-07	4.0E-06	4.6E-05
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	3.8E-06	3.8E-06	3.7E-06	2.2E-07	4.4E-06	0.0E+00
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	4.6E-06	4.6E-06	4.5E-06	2.7E-07	5.3E-06	0.0E+00
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	3.2E-06	3.2E-06	3.1E-06	1.8E-07	3.7E-06	0.0E+00
UR11Z	Across SS	1	1	242	10	100%	6.3E-06	6.3E-06	6.1E-06	3.6E-07	7.3E-06	0.0E+00
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	4.3E-06	4.3E-06	4.2E-06	2.5E-07	5.0E-06	0.0E+00
UR12	Across LF to WF northern section	1	1	873	10	100%	1.3E-03	1.3E-03	1.7E-04	3.1E-07	9.4E-06	6.8E-04
UR12Z	Across LF to WF northern section, onsite equipment	1	1	873	10	100%	3.2E-05	3.2E-05	2.3E-05	1.3E-06	2.6E-05	4.7E-06
UR12Y	Across LF to WF northern section, final cap construction truck	1	1	873	10	100%	1.6E-05	1.6E-05	1.5E-05	9.0E-07	1.8E-05	0.0E+00
PR13Z	WF to LTF	1	1	165	10	100%	3.3E-04	3.3E-04	4.5E-05	4.1E-08	1.9E-06	1.8E-04
PR14Z	WF to LTF	1	1	61	10	100%	1.2E-04	1.2E-04	1.7E-05	1.5E-08	6.8E-07	6.7E-05
UR17Z	Across CDA	1	1	90	10	100%	6.0E-06	6.0E-06	5.9E-06	4.6E-07	1.1E-06	0.0E+00
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	2.9E-06	2.9E-06	2.8E-06	2.2E-07	5.8E-07	1.7E-08
PR04B	Scale House to WF	1	1	681	10	100%	9.9E-04	9.9E-04	1.3E-04	2.4E-07	7.3E-06	5.3E-04
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	6.4E-04	6.4E-04	9.0E-05	4.9E-07	7.5E-06	3.4E-04
PR04C	Exit Road from WF	1	1	420	10	100%	6.1E-04	6.1E-04	8.3E-05	1.5E-07	4.5E-06	3.3E-04
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	4.0E-04	4.0E-04	5.5E-05	3.0E-07	4.6E-06	2.1E-04
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	1.15E-04	1.15E-04	1.06E-04	1.40E-06	9.63E-05	4.08E-03
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	1.15E-04	1.15E-04	1.06E-04	1.40E-06	9.63E-05	4.08E-03
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	2.0E-03	2.0E-03	2.0E-03	1.3E-04	7.8E-04	0.0E+00
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	4.8E-04	4.8E-04	4.7E-04	3.4E-05	2.3E-04	0.0E+00
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	6.7E-04	6.7E-04	6.5E-04	5.1E-05	1.2E-04	0.0E+00
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	2.9E-04	2.9E-04	2.8E-04	1.7E-05	3.3E-04	0.0E+00

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes)

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

[5] Emissions are input on either a vehicle distance or power rating basis. Load factor applies only to emissions based on power ratings.

[6] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S1-5.1b: Vehicle Emission Rates - Tailpipe Emissions, PM

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Nitrogen Oxides 10102-44-0 (g/s)	Sulphur Dioxide 7446-09-5 (g/s)	Carbon Dioxide 124-38-9 (g/s)	Methane 74-82-8 (g/s)	Nitrous Oxide 10024-97-2 (g/s)	Tailpipe + Fugitive Emission Rate [6] TSP PM (g/s)	PM10 PM10 (g/s)	PM2.5 PM2.5 (g/s)
Mobile Equipment														
PR01	Main Entrance Road	1	1	206	10	100%	4.3E-04	3.1E-07	8.6E-02	2.7E-06	6.2E-07	8.8E-04	3.7E-04	5.9E-05
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	2.8E-04	2.9E-07	7.1E-02	2.3E-06	6.1E-07	7.8E-04	2.7E-04	4.5E-05
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	4.5E-04	5.5E-07	1.3E-01	4.1E-06	1.2E-06	1.1E-01	3.3E-02	3.3E-03
PR04A	Entrance to Scale House	1	1	487	10	100%	1.0E-03	7.4E-07	2.0E-01	6.3E-06	1.5E-06	2.3E-03	9.1E-04	1.5E-04
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	6.7E-04	6.8E-07	1.7E-01	5.4E-06	1.5E-06	2.1E-03	6.7E-04	1.1E-04
BR06	Across LF to WF southern section	1	1	603	10	100%	1.3E-03	9.2E-07	2.5E-01	7.8E-06	1.8E-06	1.4E-01	3.2E-02	3.2E-03
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	4.6E-04	5.8E-06	2.2E+00	1.6E-06	4.1E-08	1.4E-01	3.1E-02	3.1E-03
BR06Y	Across LF to WF southern section, final cap construction truck	1	1	603	10	100%	3.2E-04	4.0E-06	1.5E+00	1.0E-06	0.0E+00	1.4E-01	3.1E-02	3.1E-03
PR08Z	WF to SS/LTF	1	1	307	10	100%	3.5E-04	1.4E-06	5.1E-01	2.4E-06	5.6E-07	5.3E-03	8.4E-04	1.9E-04
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	1.6E-04	2.1E-06	7.8E-01	5.3E-07	0.0E+00	5.1E-03	6.7E-04	1.7E-04
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	2.0E-04	1.0E-06	3.7E-01	1.4E-06	3.4E-07	8.0E-02	2.4E-02	2.4E-03
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	1.1E-04	1.4E-06	5.4E-01	3.6E-07	0.0E+00	8.0E-02	2.4E-02	2.4E-03
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	1.4E-04	1.7E-06	6.6E-01	4.4E-07	0.0E+00	7.6E-02	2.3E-02	2.3E-03
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	9.4E-05	1.2E-06	4.6E-01	3.1E-07	0.0E+00	7.6E-02	2.3E-02	2.3E-03
UR11Z	Across SS	1	1	242	10	100%	1.9E-04	2.4E-06	8.9E-01	6.0E-07	0.0E+00	1.0E-01	3.1E-02	3.1E-03
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	1.3E-04	1.6E-06	6.2E-01	4.2E-07	0.0E+00	1.0E-01	3.1E-02	3.1E-03
UR12	Across LF to WF northern section	1	1	873	10	100%	1.8E-03	1.3E-06	3.7E-01	1.1E-05	2.6E-06	2.0E-01	4.6E-02	4.7E-03
UR12Z	Across LF to WF northern section, onsite equipment	1	1	873	10	100%	6.7E-04	8.4E-06	3.2E+00	2.3E-06	5.9E-08	2.0E-01	4.5E-02	4.5E-03
UR12Y	Across LF to WF northern section, final cap construction truck	1	1	873	10	100%	4.6E-04	5.9E-06	2.2E+00	1.5E-06	0.0E+00	2.0E-01	4.5E-02	4.5E-03
PR13Z	WF to LTF	1	1	165	10	100%	4.9E-04	2.9E-07	8.6E-02	2.7E-06	5.9E-07	3.6E-03	7.6E-04	1.5E-04
PR14Z	WF to LTF	1	1	61	10	100%	1.8E-04	1.1E-07	3.2E-02	1.0E-06	2.2E-07	1.3E-03	2.8E-04	5.5E-05
UR17Z	Across CDA	1	1	90	10	100%	8.0E-05	3.5E-07	1.3E-01	7.0E-07	0.0E+00	3.4E-02	1.0E-02	1.0E-03
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	3.9E-05	1.9E-07	7.2E-02	3.3E-07	2.1E-10	1.7E-02	5.3E-03	5.3E-04
PR04B	Scale House to WF	1	1	681	10	100%	1.4E-03	1.0E-06	2.8E-01	8.8E-06	2.1E-06	3.6E-03	1.3E-03	2.2E-04
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	9.4E-04	9.5E-07	2.3E-01	7.5E-06	2.0E-06	3.3E-03	9.8E-04	1.7E-04
PR04C	Exit Road from WF	1	1	420	10	100%	8.9E-04	6.4E-07	1.8E-01	5.4E-06	1.3E-06	2.2E-03	8.2E-04	1.3E-04
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	5.8E-04	5.8E-07	1.5E-01	4.6E-06	1.3E-06	2.0E-03	6.1E-04	1.1E-04
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	1.08E-02	6.16E-06	1.62E+00	7.41E-05	3.02E-05	1.15E-04	1.15E-04	1.06E-04
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	1.08E-02	6.16E-06	1.62E+00	7.41E-05	3.02E-05	1.15E-04	1.15E-04	1.06E-04
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	3.6E-02	2.6E-04	9.6E+01	2.0E-04	0.0E+00	2.0E-03	2.0E-03	2.0E-03
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	8.7E-03	7.4E-05	2.8E+01	5.3E-05	0.0E+00	4.8E-04	4.8E-04	4.7E-04
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	8.9E-03	3.9E-05	1.5E+01	7.8E-05	0.0E+00	6.7E-04	6.7E-04	6.5E-04
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	8.5E-03	1.1E-04	4.1E+01	2.8E-05	0.0E+00	2.9E-04	2.9E-04	2.8E-04

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes)

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

[5] Emissions are input on either a vehicle distance or power rating basis. Load factor applies only to emissions based on power ratings.

[6] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S1-5.1b: Vehicle Emission Rates - Tailpipe Emissions, PM

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Ratio Tailpipe : Total Emission Rate TSP PM (g/s)	PM10 PM10 (g/s)	PM2.5 PM2.5 (g/s)	Source ID	# of Volume Sources g/hr	# of Volume Sources g/vkt	TSP PM	PM10 PM10
Mobile Equipment										**Mobile Equipment**				
PR01	Main Entrance Road	1	1	206	10	100%	3.39E-01	7.98E-01	6.90E-01	PR01	11	11	8.0E-05	3.4E-05
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	2.51E-01	7.21E-01	5.98E-01	PR01Z	11	11	7.1E-05	2.5E-05
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	2.87E-03	9.46E-03	1.33E-02	UR02Z	48	48	2.2E-03	6.8E-04
PR04A	Entrance to Scale House	1	1	487	10	100%	3.07E-01	7.74E-01	6.58E-01	PR04A	57	57	4.0E-05	1.6E-05
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	2.24E-01	6.91E-01	5.62E-01	PR04AZ	57	57	3.6E-05	1.2E-05
BR06	Across LF to WF southern section	1	1	603	10	100%	6.31E-03	2.72E-02	3.67E-02	BR06	70	70	2.0E-03	4.6E-04
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	1.62E-04	7.13E-04	5.08E-03	BR06Z	70	70	2.0E-03	4.5E-04
BR06Y	Across LF to WF southern section, final cap construction truck	1	1	603	10	100%	7.83E-05	3.45E-04	3.34E-03	BR06Y	70	70	2.0E-03	4.5E-04
PR08Z	WF to SS/LTF	1	1	307	10	100%	3.38E-02	2.13E-01	1.46E-01	PR08Z	36	36	1.5E-04	2.3E-05
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	1.07E-03	8.18E-03	3.20E-02	PR08Y	36	36	1.4E-04	1.9E-05
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	1.14E-03	3.77E-03	6.10E-03	UR09AZ	25	25	3.2E-03	9.7E-04
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	4.69E-05	1.56E-04	1.51E-03	UR09AY	25	25	3.2E-03	9.7E-04
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	6.07E-05	2.02E-04	1.95E-03	UR09BZ	21	21	3.6E-03	1.1E-03
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	4.19E-05	1.39E-04	1.35E-03	UR09BY	21	21	3.6E-03	1.1E-03
UR11Z	Across SS	1	1	242	10	100%	6.07E-05	2.02E-04	1.95E-03	UR11Z	28	28	3.7E-03	1.1E-03
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	4.19E-05	1.39E-04	1.35E-03	UR11Y	28	28	3.7E-03	1.1E-03
UR12	Across LF to WF northern section	1	1	873	10	100%	6.31E-03	2.72E-02	3.67E-02	UR12	102	102	2.0E-03	4.6E-04
UR12Z	Across LF to WF northern section, onsite equipment	1	1	873	10	100%	1.62E-04	7.13E-04	5.08E-03	UR12Z	102	102	2.0E-03	4.4E-04
UR12Y	Across LF to WF northern section, final cap construction truck	1	1	873	10	100%	7.83E-05	3.45E-04	3.34E-03	UR12Y	102	102	2.0E-03	4.4E-04
PR13Z	WF to LTF	1	1	165	10	100%	9.15E-02	4.38E-01	3.04E-01	PR13Z	19	19	1.9E-04	4.0E-05
PR14Z	WF to LTF	1	1	61	10	100%	9.15E-02	4.38E-01	3.04E-01	PR14Z	7	7	1.9E-04	4.0E-05
UR17Z	Across CDA	1	1	90	10	100%	1.78E-04	5.90E-04	5.69E-03	UR17Z	10	10	3.4E-03	1.0E-03
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	1.68E-04	5.53E-04	5.29E-03	UR18Z	5	5	3.5E-03	1.1E-03
PR04B	Scale House to WF	1	1	681	10	100%	2.74E-01	7.44E-01	6.21E-01	PR04B	79	79	4.6E-05	1.7E-05
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	1.97E-01	6.55E-01	5.22E-01	PR04BZ	79	79	4.1E-05	1.2E-05
PR04C	Exit Road from WF	1	1	420	10	100%	2.74E-01	7.44E-01	6.21E-01	PR04C	49	49	4.5E-05	1.7E-05
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	1.97E-01	6.55E-01	5.22E-01	PR04CZ	49	49	4.1E-05	1.2E-05
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	n/a	n/a	n/a	IDLE01	1	1	2.30E-04	2.30E-04
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	n/a	n/a	n/a	IDLE02	1	1	2.30E-04	2.30E-04
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	1.00E+00	1.00E+00	1.00E+00	DOZE2	1	1	2.0E-03	2.0E-03
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	1.00E+00	1.00E+00	1.00E+00	DOZE4	1	1	4.8E-04	4.8E-04
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	1.00E+00	1.00E+00	1.00E+00	DOZE2CAP	1	1	6.7E-04	6.7E-04
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	1.00E+00	1.00E+00	1.00E+00	DOZE2SS	1	1	2.9E-04	2.9E-04

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes)

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

[5] Emissions are input on either a vehicle distance or power rating basis. Load factor applies only to emissions based on power ratings.

[6] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S1-5.1b: Vehicle Emission Rates - Tailpipe Emissions, PM

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Emission rate per volume source: PM2.5 PM25	Benzene 71-43-2	Ammonia 7664-41-7	Nitrogen Dioxide NO2	Nitrogen Oxides 10102-44-0	Sulphur Dioxide 7446-09-5	Carbon Dioxide 124-38-9	Methane 74-82-8	Nitrous Oxide 10024-97-2
Mobile Equipment															
PR01	Main Entrance Road	1	1	206	10	100%	5.3E-06	6.6E-09	2.0E-07	1.5E-05	3.9E-05	2.9E-08	7.8E-03	2.4E-07	5.7E-08
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	4.1E-06	1.4E-08	2.1E-07	9.3E-06	2.6E-05	2.6E-08	6.5E-03	2.1E-07	5.6E-08
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	6.8E-05	7.0E-09	9.5E-08	3.3E-06	9.3E-06	1.1E-08	2.7E-03	8.6E-08	2.5E-08
PR04A	Entrance to Scale House	1	1	487	10	100%	2.6E-06	3.0E-09	9.1E-08	6.7E-06	1.8E-05	1.3E-08	3.6E-03	1.1E-07	2.6E-08
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	2.0E-06	6.2E-09	9.4E-08	4.2E-06	1.2E-05	1.2E-08	2.9E-03	9.4E-08	2.5E-08
BR06	Across LF to WF southern section	1	1	603	10	100%	4.6E-05	3.0E-09	9.2E-08	6.7E-06	1.8E-05	1.3E-08	3.6E-03	1.1E-07	2.6E-08
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	4.5E-05	1.3E-08	2.6E-07	4.7E-08	6.6E-06	8.3E-08	3.1E-02	2.3E-08	5.8E-10
BR06Y	Across LF to WF southern section, final cap construction truck	1	1	603	10	100%	4.5E-05	8.9E-09	1.8E-07	0.0E+00	4.6E-06	5.8E-08	2.2E-02	1.5E-08	0.0E+00
PR08Z	WF to SS/LTF	1	1	307	10	100%	5.2E-06	8.7E-09	1.6E-07	2.6E-06	9.7E-06	4.0E-08	1.4E-02	6.5E-08	1.5E-08
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	4.6E-06	8.8E-09	1.8E-07	0.0E+00	4.5E-06	5.7E-08	2.2E-02	1.5E-08	0.0E+00
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	9.7E-05	9.4E-09	1.6E-07	1.8E-06	8.0E-06	4.2E-08	1.5E-02	5.7E-08	1.4E-08
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	9.7E-05	8.7E-09	1.7E-07	0.0E+00	4.5E-06	5.7E-08	2.2E-02	1.4E-08	0.0E+00
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	1.1E-04	1.3E-08	2.5E-07	0.0E+00	6.5E-06	8.3E-08	3.1E-02	2.1E-08	0.0E+00
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	1.1E-04	8.8E-09	1.8E-07	0.0E+00	4.5E-06	5.7E-08	2.2E-02	1.5E-08	0.0E+00
UR11Z	Across SS	1	1	242	10	100%	1.1E-04	1.3E-08	2.6E-07	0.0E+00	6.6E-06	8.4E-08	3.2E-02	2.2E-08	0.0E+00
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	1.1E-04	9.0E-09	1.8E-07	0.0E+00	4.6E-06	5.8E-08	2.2E-02	1.5E-08	0.0E+00
UR12	Across LF to WF northern section	1	1	873	10	100%	4.6E-05	3.0E-09	9.2E-08	6.7E-06	1.8E-05	1.3E-08	3.6E-03	1.1E-07	2.6E-08
UR12Z	Across LF to WF northern section, onsite equipment	1	1	873	10	100%	4.4E-05	1.3E-08	2.5E-07	4.6E-08	6.6E-06	8.2E-08	3.1E-02	2.3E-08	5.8E-10
UR12Y	Across LF to WF northern section, final cap construction truck	1	1	873	10	100%	4.4E-05	8.9E-09	1.8E-07	0.0E+00	4.5E-06	5.7E-08	2.2E-02	1.5E-08	0.0E+00
PR13Z	WF to LTF	1	1	165	10	100%	7.8E-06	2.2E-09	9.7E-08	9.5E-06	2.6E-05	1.5E-08	4.5E-03	1.4E-07	3.1E-08
PR14Z	WF to LTF	1	1	61	10	100%	7.8E-06	2.2E-09	9.7E-08	9.5E-06	2.5E-05	1.5E-08	4.5E-03	1.4E-07	3.1E-08
UR17Z	Across CDA	1	1	90	10	100%	1.0E-04	4.6E-08	1.1E-07	0.0E+00	8.0E-06	3.5E-08	1.3E-02	7.0E-08	0.0E+00
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	1.1E-04	4.4E-08	1.2E-07	3.3E-09	7.9E-06	3.9E-08	1.4E-02	6.7E-08	4.2E-11
PR04B	Scale House to WF	1	1	681	10	100%	2.7E-06	3.0E-09	9.2E-08	6.7E-06	1.8E-05	1.3E-08	3.6E-03	1.1E-07	2.6E-08
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	2.2E-06	6.2E-09	9.5E-08	4.3E-06	1.2E-05	1.2E-08	3.0E-03	9.5E-08	2.6E-08
PR04C	Exit Road from WF	1	1	420	10	100%	2.7E-06	3.0E-09	9.2E-08	6.7E-06	1.8E-05	1.3E-08	3.6E-03	1.1E-07	2.6E-08
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	2.2E-06	6.2E-09	9.5E-08	4.2E-06	1.2E-05	1.2E-08	3.0E-03	9.4E-08	2.6E-08
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	2.12E-04	2.81E-06	1.93E-04	8.17E-03	2.16E-02	1.23E-05	3.25E+00	1.48E-04	6.03E-05
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	2.12E-04	2.81E-06	1.93E-04	8.17E-03	2.16E-02	1.23E-05	3.25E+00	1.48E-04	6.03E-05
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	2.0E-03	1.3E-04	7.8E-04	0.0E+00	3.6E-02	2.6E-04	9.6E+01	2.0E-04	0.0E+00
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	4.7E-04	3.4E-05	2.3E-04	0.0E+00	8.7E-03	7.4E-05	2.8E+01	5.3E-05	0.0E+00
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	6.5E-04	5.1E-05	1.2E-04	0.0E+00	8.9E-03	3.9E-05	1.5E+01	7.8E-05	0.0E+00
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	2.8E-04	1.7E-05	3.3E-04	0.0E+00	8.5E-03	1.1E-04	4.1E+01	2.8E-05	0.0E+00

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes)

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

[5] Emissions are input on either a vehicle distance or power rating basis. Load factor applies only to emissions based on power ratings.

[6] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S1-5.1c: Average Vehicle Weights

Calculation of total Vehicles and Conversion of counts to Peak Daily. [1]
Vehicle type distribution assumed to remain the same.
This only affects off-site vehicles; on-site / non variable vehicle traffic remains the same.

Road	Vehicle Type	Vehicle Weight (tons)	Vehicles Total	Mean Vehicle Weight (tons)	Vehicles Total (based on peak hourly)	Total Off-site Vehicles	Off-Site Vehicle Distribution	Peak Daily Vehicles (NOT passes)	Average Vehicle Weight based on Peak Daily	Peak Hourly Vehicles AM	Vehicles MD	Vehicles PM
PR01	Residential Packers	26.0	28.9	30.2	45.5	474.6	9.6%	28.9	30.2	8.9	34.3	2.3
	Roll-offs	21.2	50.6		79.6		16.8%	50.6		15.5	60.1	4.0
	Transfer Trailers	44.3	221.1		347.4		73.2%	221.1		160.6	109.5	77.3
	Small Vehicles	2.2	63.4					63.4		0.0	35.4	28.0
	Contaminated Soil Vehicles	44.3	1.4		2.1		0.5%	1.4		1.0	0.7	0.5
PR01Z	Leachate Tankers	44.3	12.0	30.2				12.0		3.0	5.0	4.0
	Compost Truck 1	2.8	24.0					24.0		6.0	10.0	8.0
	Compost Truck 2	18.9	25.0					25.0		6.3	10.4	8.3
	Compost Truck Tri-Axle	30.3	15.0					15.0		3.8	6.3	5.0
UR02Z	Compost Truck 1	2.8	24.0	15.5				24.0		6.0	10.0	8.0
	Compost Truck 2	18.9	25.0					25.0		6.3	10.4	8.3
	Compost Truck Tri-Axle	30.3	15.0					15.0		3.8	6.3	5.0
PR04A	Residential Packers	26.0	14.5	34.9	22.7	237.3	9.6%	14.5	34.9	4.4	17.2	1.1
	Roll-offs	21.2	25.3		39.8		16.8%	25.3		7.8	30.0	2.0
	Transfer Trailers	44.3	110.5		173.7		73.2%	110.5		80.3	54.7	38.7
	Contaminated Soil Vehicles	44.3	0.7		1.1		0.5%	0.7		0.5	0.3	0.2
	On-Site Roll Off	21.2	0.5					0.5		0.1	0.2	0.2
PR04AZ	Leachate Tankers	44.3	6.0	34.9				6.0		1.5	2.5	2.0
	Compost Truck 1	2.8	12.0					12.0		3.0	5.0	4.0
	Compost Truck 2	18.9	12.5					12.5		3.1	5.2	4.2
	Compost Truck Tri-Axle	30.3	7.5					7.5		1.9	3.1	2.5
PR04B	Residential Packers	26.0	28.9	34.9	45.5	474.6	9.6%	28.9	34.9	8.9	34.3	2.3
	Roll-offs	21.2	50.6		79.6		16.8%	50.6		15.5	60.1	4.0
	Transfer Trailers	44.3	221.1		347.4		73.2%	221.1		160.6	109.5	77.3
	Contaminated Soil Vehicles	44.3	1.4		2.1		0.5%	1.4		1.0	0.7	0.5
	On-Site Roll Off	21.2	1.0					1.0		0.3	0.4	0.4
PR04BZ	Leachate Tankers	44.3	12.0	34.9				12.0		3.0	5.0	4.0
	Compost Truck 1	2.8	24.0					24.0		6.0	10.0	8.0
	Compost Truck 2	18.9	25.0					25.0		6.3	10.4	8.3
	Compost Truck Tri-Axle	30.3	15.0					15.0		3.8	6.3	5.0
PR04C	Residential Packers	26.0	14.5	34.9	22.7	237.3	9.6%	14.5	34.9	4.4	17.2	1.1
	Roll-offs	21.2	25.3		39.8		16.8%	25.3		7.8	30.0	2.0
	Transfer Trailers	44.3	110.5		173.7		73.2%	110.5		80.3	54.7	38.7
	Contaminated Soil Vehicles	44.3	0.7		1.1		0.5%	0.7		0.5	0.3	0.2
	On-Site Roll Off	21.2	0.5					0.5		0.1	0.2	0.2
PR04CZ	Leachate Tankers	44.3	6.0	34.9				6.0		1.5	2.5	2.0
	Compost Truck 1	2.8	12.0					12.0		3.0	5.0	4.0
	Compost Truck 2	18.9	12.5					12.5		3.1	5.2	4.2
	Compost Truck Tri-Axle	30.3	7.5					7.5		1.9	3.1	2.5

Road	Vehicle Type	Vehicle Weight (tons)	Vehicles Total	Mean Vehicle Weight (tons)	Vehicles Total (based on peak hourly)	Total Off-site Vehicles	Off-Site Vehicle Distribution	Peak Daily Vehicles (NOT passes)	Average Vehicle Weight based on Peak Daily	Vehicles AM	Vehicles MD	Vehicles PM
BR06	Residential Packers	26.0	28.9	41.2	45.5	474.6	9.6%	28.9	41.2	8.9	34.3	2.3
	Roll-offs	21.2	50.6		79.6		16.8%	50.6		15.5	60.1	4.0
	Transfer Trailers	44.3	221.1		347.4		73.2%	221.1		160.6	109.5	77.3
	Contaminated Soil Vehicles	44.3	1.4		2.1		0.5%	1.4		1.0	0.7	0.5
BR06Z	Cat D400 Articulated Truck	36.4	56.9	41.2				56.9		16.3	20.3	20.3
	On-Site Roll Off	21.2	1.0					1.0		0.3	0.4	0.4
BR06Y	Final Cap Construction Trucks	55.7	72.0	41.2				72.0		18.0	30.0	24.0
PR08Z	Leachate Tankers	44.3	12.0	37.1				12.0		3.0	5.0	4.0
	Cat D400 Articulated Truck	36.4	56.9					56.9		16.3	20.3	20.3
	Compost Truck 1	2.8	24.0					24.0		6.0	10.0	8.0
	Compost Truck 2	18.9	25.0					25.0		6.3	10.4	8.3
	Compost Truck Tri-Axle	30.3	15.0					15.0		3.8	6.3	5.0
PR08Y	Final Cap Construction Trucks	55.7	72.0	37.1				72.0		18.0	30.0	24.0
UR09AZ	Cat D400 Articulated Truck	36.4	56.9	36.7				56.9		16.3	20.3	20.3
	Compost Truck 1	2.8	24.0					24.0		6.0	10.0	8.0
	Compost Truck 2	18.9	25.0					25.0		6.3	10.4	8.3
	Compost Truck Tri-Axle	30.3	15.0					15.0		3.8	6.3	5.0
UR09AY	Final Cap Construction Trucks	55.7	72.0	36.7				72.0		18.0	30.0	24.0
UR09BZ	Cat D400 Articulated Truck	36.4	56.9	47.2				56.9		16.3	20.3	20.3
UR09BY	Final Cap Construction Trucks	55.7	72.0	47.2				72.0		18.0	30.0	24.0
UR11Z	Cat D400 Articulated Truck	36.4	56.9	47.2				56.9		16.3	20.3	20.3
UR11Y	Final Cap Construction Trucks	55.7	72.0	47.2				72.0		18.0	30.0	24.0
UR12	Residential Packers	26.0	28.9	41.2	45.5	474.6	9.6%	28.9	41.2	8.9	34.3	2.3
	Roll-offs	21.2	50.6		79.6		16.8%	50.6		15.5	60.1	4.0
	Transfer Trailers	44.3	221.1		347.4		73.2%	221.1		160.6	109.5	77.3
	Contaminated Soil Vehicles	44.3	1.4		2.1		0.5%	1.4		1.0	0.7	0.5
UR12Z	Cat D400 Articulated Truck	36.4	56.9	41.2				56.9		16.3	20.3	20.3
	On-Site Roll Off	21.2	1.0					1.0		0.3	0.4	0.4
UR12Y	Final Cap Construction Trucks	55.7	72.0	41.2				72.0		18.0	30.0	24.0
PR13Z	Leachate Tankers	44.3	12.0	44.3				12.0		3.0	5.0	4.0
PR14Z	Leachate Tankers	44.3	12.0	44.3				12.0		3.0	5.0	4.0
UR17Z	Cat 950F Rubber-Tired Loader	36.4	390.2	36.4				390.2		111.5	139.4	139.4
UR18Z	Cat 836G Compactor	36.4	1566.0	36.4				1566.0		447.4	559.3	559.3
	Cat D8R Dozer	36.4	0.0					0.0		0.0	0.0	0.0
	Cat D400 Articulated Truck	36.4	56.9					56.9		16.3	20.3	20.3
	Cat D6R Dozer	36.4	0.0					0.0		0.0	0.0	0.0
	Tracked Loader	36.4	783.0					783.0		223.7	279.6	279.6
	On-Site Roll Off	21.2	1.0					1.0		0.3	0.4	0.4

Notes:

[1] The maximum daily off-site vehicle count was 302 trucks based on HDR analysis of 2022 weigh scale data. A distribution of this traffic by hour of day was determined using additional weigh scale data analysis that provided maximum hourly volumes. The maximum traffic count was distributed by hour-of-day based on percentage of each hourly volume of the total. Off-site traffic counts after 5pm were assumed.

Hour of Day	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
Percent of Daily Off-site Traffic	0%	0%	0%	0%	0%	0%	0%	15%	11%	10%	13%	13%	15%	10%	9%	3%	1%	1%	1%	0%	0%	0%	0%	0%

Old Landfill - Existing Conditions Area 5 - Vinyl Chloride Concentration (Year 2034)

Year	Waste Acceptance Years (Inclusive)	LANDGEM Emission Rate (Mg/yr)	Biodegradable Portion	Corrected Concentration for Biodegradable Portion (Mg/year)	Emission Rate (g/s)	Assumed Landfill Area (m^2)	Emission Rate ($g/m^2/s$)	Gas Collection Coverage (%)	Gas Collection Efficiency (%)	Flare Destruction Efficiency (%)	Mound Emission Rate (Controlled) (g/m2/s)	Flare Emission (g/s)
2034	1972-2004	2.95E-03	100%	2.95E-03	9.37E-05	275,424	3.40E-10	100%	70%	98%	1.02E-10	1.31E-06

Sample Calculations

Calculation of g/s Emission Rate = LANDGEM Emission Rate * 1,000,000 (g/Mg) / 365 (days/yr) / 24 (hr/day) / 3,600 (s/hr)
= 0.003 Mg/yr * 1,000,000 / 365 / 24 / 3,600
= 9.37E-05 g/s

Calculation of $g/m^2/s$ Emission Flux Rate = Emission Rate / Landfill Area
= 9.37E-05 g/s/ 275424.2 m2
= 3.40E-10 g/m2/s

Calculation of Mound Emission Rate (Controlled) ($g/m^2/s$) = Emission Flux Rate * (1 - Gas Collection Efficiency)
= 3.40E-10 g/m2/s * (1 - 0.7)
= 1.02E-10 g/m2/s

Calculation of Total Flare Emission Rate (g/s) = Emission Rate * Gas Collection Efficiency * (1 - Flare Destruction Efficiency)
= 9.37E-05 g/s * 0.7 * (1-0.98)
= 1.31E-06 g/s

Appendix 5A-S1-5.2a1: NMOC Emissions from the Old Landfill (Year 2034) RWDI# 2101750

Twin Creeks Environmental Centre

Modelled Source: AREA5

Emissions rates calculated relative to the Vinyl Chloride emission rate.

Compound	CAS Number	Molecular Weight (g/mol)	Average Concentration In Raw LFG (ppm)	Note	Total AREA5 Flux Rate ($g/m^2/s$)	Total AREA5 Emission Rate [1] (g/s)
Vinyl Chloride	75-01-4	62.5	0.45	[2]	1.02E-10	2.81E-05
1,2-Dichloroethane	107-06-2	99.0	0.24	[2]	8.45E-11	2.33E-05
Benzene	71-43-2	78.1	0.93	[2]	2.63E-10	7.24E-05

Notes:

[1] Based on a source area of 275,424 m^2

[2] Concentrations based on the landfill gas sampling report dated July 13, 2023.

[3] Concentrations from the US EPA *User's Manual - Landfill Gas Emissions Model Version 2.0*, 1998.

[4] Emissions of Total Reduced Sulphurs (TRS) are based on the total of all sulphur compounds.

[5] Laboratory reported Total Reduced Sulfur as H_2S.

Sample Calculation

$$\text{Calculation of Benzene Emission Flux Rate} = \frac{\text{Vinyl Chloride Emission Flux Rate} * \text{Benzene Concentration in LFG} * \text{Molecular Weight of Benzene}}{\text{Vinyl Chloride Concentration in LFG} * \text{Molecular Weight of Vinyl Chloride}}$$

$$= \frac{1.02\text{E-}10\ g/m^2/s * 0.93\ ppm * 78.1\ g/mol}{0.45\ ppm * 62.5\ g/mol}$$

$$= 2.63\text{E-}10\ g/m^2/s$$

Appendix 5A-S1-5.2b: Vinyl Chloride Emissions

RWDI# 2101750

Twin Creeks Environmental Centre

Expansion Landfill Phases 1 Through 7 - (Year 2034)

Year	Waste Acceptance Years (Inclusive)	Scenario	LANDGEM Emission Rate (Mg/yr)	Emission Rate (g/s)	Approximate Landfill Area (m^2)	Emission Flux Rate ($g/m^2/s$)	Gas Collection Coverage (%)	Gas Collection Efficiency (%)	Flare Destruction Efficiency (%)	Mound Emission Rate (Controlled) ($g/m^2/s$)
2034	2005-2019	Phases 1 to 3	4.42E-02	1.40E-03	244,004	5.74E-09	100%	75%	98%	1.44E-09
2034	2020-2024	Phases 4 to 5	4.97E-02	1.58E-03	165,611	9.52E-09	100%	75%	98%	2.38E-09
2034	2025-2028 [1]	Phases 6 to 7	4.83E-02	1.53E-03	179,092	8.55E-09	100%	75%	98%	2.14E-09
2034	n/a [1]	Phases 8 to 9	0.00E+00	0.00E+00	99,012	0.00E+00	100%	50%	98%	0.00E+00
2034	2005-2028	Total Emissions	1.42E-01	4.51E-03	687,719	2.38E-08	100%	75%	98%	5.95E-09

Notes:

[1] The planned start of filling for the Vertical Expansion is 2028 when elevation 265.7 masl is reached. The side slopes would be filled/increased first so that final cover can then be applied on the completed side slopes. Waste quantities for 2028 to 2031 that had been assigned to Expansion Landfill Phases 6 through 9 in the Existing Conditions assessment have been reassigned to Vertical Expansion Stage 1 and Stage 2.

Sample Calculations

Calculation of Emission Rate (Phases 1 to 3) = LANDGEM Emission Rate * 1,000,000 (g/Mg) / 365 (days/yr) / 24 (hr/day) / 3,600 (s/hr)
= 4.42E-02 Mg/yr * 1,000,000 / 365 / 24 / 3,600
= 1.40E-03 g/s

Calculation of Emission Flux Rate (Phases 1 to 3) = Emission Rate / Landfill Area
= 1.40E-03 g/s/ 244,004 m^2
= 5.74E-09 $g/m^2/s$

Calculation of Mound Emission Rate (Controlled) (Phases 1 to 3) = Emission Flux Rate * (1 - Gas Collection Efficiency)
= 5.74E-09 $g/m^2/s$ * (1 - 0.75)
= 1.44E-09 $g/m^2/s$

Calculation of Total Flare Emission Rate (Phases 1 to 3) = Emission Rate * Gas Collection Efficiency * (1 - Flare Destruction Efficiency)
= 1.40E-03 g/s * 0.75 * (1 - 0.98)
= 2.10E-05 g/s

Appendix 5A-S1-5.2b1: NMOC Emissions from the Expansion Landfill Phases 1 Through 3 (Year 2034) RWDI# 2101750

Twin Creeks Environmental Centre

Modelled Source: AREA1

Emissions rates calculated relative to the Vinyl Chloride emission rate.

Compound	CAS Number	Molecular Weight (g/mol)	Average Concentration In Raw LFG (ppm)	Note	Total AREA1 Flux Rate ($g/m^2/s$)	Total AREA1 Emission Rate [1] (g/s)	Flare Emission Rate from Phases 1 Through 3 (g/s)
Vinyl Chloride	75-01-4	62.50	0.45	[2]	1.44E-09	3.50E-04	2.10E-05
1,2-Dichloroethane	107-06-2	98.96	0.24	[2]	1.19E-09	2.90E-04	1.74E-05
Benzene	71-43-2	78.13	0.93	[2]	3.70E-09	9.03E-04	5.42E-05

Notes:

[1] Based on a source area of 244,004 m^2

[2] Concentrations based on the landfill gas sampling report dated July 13, 2023.

[3] Concentrations from the US EPA *User's Manual - Landfill Gas Emissions Model Version 2.0*, 1998.

[4] Emissions of Total Reduced Sulphurs (TRS) are based on the total of all sulphur compounds.

[5] Laboratory reported Total Reduced Sulfur as H_2S.

Sample Calculation

$$\text{Calculation of Benzene Emission Flux Rate} = \frac{\text{Vinyl Chloride Emission Flux Rate} * \text{Benzene Concentration in LFG} * \text{Molecular Weight of Benzene}}{\text{Vinyl Chloride Concentration in LFG} * \text{Molecular Weight of Vinyl Chloride}}$$

$$= \frac{1.44\text{E-9 g/m}^2\text{/s} * 0.93 \text{ ppm} * 78.13 \text{ g/mol}}{0.45 \text{ ppm} * 62.50 \text{ g/mol}}$$

$$= 3.70\text{E-09 g/m}^2\text{/s}$$

Modelled Source: AREA2
Emissions rates calculated relative to the Vinyl Chloride emission rate.

Compound	CAS Number	Molecular Weight (g/mol)	Average Concentration In Raw LFG (ppm)	Note	Total AREA2 Flux Rate ($g/m^2/s$)	Total AREA2 Emission Rate [1] (g/s)	Flare Emission Rate from Phases 4 Through 6 (g/s)
Vinyl Chloride	75-01-4	62.50	0.45	[2]	2.38E-09	3.94E-04	2.36E-05
1,2-Dichloroethane	107-06-2	98.96	0.24	[2]	1.97E-09	3.26E-04	1.96E-05
Benzene	71-43-2	78.13	0.93	[2]	6.13E-09	1.02E-03	6.09E-05

Notes:
[1] Based on a source area of 165,611 m^2
[2] Concentrations based on the landfill gas sampling report dated July 13, 2023.
[3] Concentrations from the US EPA *User's Manual - Landfill Gas Emissions Model Version 2.0*, 1998.
[4] Emissions of Total Reduced Sulphurs (TRS) are based on the total of all sulphur compounds.
[5] Laboratory reported Total Reduced Sulfur as H_2S.

Sample Calculation

Calculation of Benzene Emission Flux Rate = $\frac{\text{Vinyl Chloride Emission Flux Rate * Benzene Concentration in LFG * Molecular Weight of Benzene}}{\text{Vinyl Chloride Concentration in LFG * Molecular Weight of Vinyl Chloride}}$

= $\frac{\text{2.38E-09 g/m²/s * 0.93 ppm * 78.13 g/mol}}{\text{0.45 ppm * 62.50 g/mol}}$

= 6.13E-09 g/m²/s

Appendix 5A-S1-5.2b3: NMOC Emissions from the Expansion Landfill Phases 6 Through 7 (Year 2034)

RWDI# 2101750

Twin Creeks Environmental Centre

Modelled Source: AREA3

Emissions rates calculated relative to the Vinyl Chloride emission rate.

Compound	CAS Number	Molecular Weight (g/mol)	Average Concentration In Raw LFG (ppm)	Note	Total AREA3 Flux Rate ($g/m^2/s$)	Total AREA3 Emission Rate [1] (g/s)	Flare Emission Rate from Phases 7 Through 9 (g/s)
Vinyl Chloride	75-01-4	62.50	0.45	[2]	2.14E-09	3.83E-04	2.30E-05
1,2-Dichloroethane	107-06-2	98.96	0.24	[2]	1.77E-09	3.17E-04	1.90E-05
Benzene	71-43-2	78.13	0.93	[2]	5.51E-09	9.87E-04	5.92E-05

Notes:

[1] Based on a source area of 179,092 m^2

[2] Concentrations based on the landfill gas sampling report dated July 13, 2023.

[3] Concentrations from the US EPA *User's Manual - Landfill Gas Emissions Model Version 2.0*, 1998.

[4] Emissions of Total Reduced Sulphurs (TRS) are based on the total of all sulphur compounds.

[5] Laboratory reported Total Reduced Sulfur as H_2S.

Sample Calculation

Calculation of Benzene Emission Flux Rate = $\frac{\text{Vinyl Chloride Emission Flux Rate} * \text{Benzene Concentration in LFG} * \text{Molecular Weight of Benzene}}{\text{Vinyl Chloride Concentration in LFG} * \text{Molecular Weight of Vinyl Chloride}}$

= $\frac{2.14\text{E-}09\ g/m^2/s * 0.93\ ppm * 78.13\ g/mol}{0.45\ ppm * 62.50\ g/mol}$

= 5.51E-09 $g/m^2/s$

Appendix 5A-S1-5.2b4: NMOC Emissions from the Expansion Landfill Phases 8 Through 9 (Year 2034)RWDI# 2101750

Twin Creeks Environmental Centre

Modelled Source: AREA4

Emissions rates calculated relative to the Vinyl Chloride emission rate.

Compound	CAS Number	Molecular Weight (g/mol)	Average Concentration In Raw LFG (ppm)	Note	Total AREA4 Flux Rate ($g/m^2/s$)	Total AREA4 Emission Rate [1] (g/s)
Vinyl Chloride	75-01-4	62.50	0.45	[2]	0.00E+00	0.00E+00
1,2-Dichloroethane	107-06-2	98.96	0.24	[2]	0.00E+00	0.00E+00
Benzene	71-43-2	78.13	0.93	[2]	0.00E+00	0.00E+00

Notes:

[1] Based on a source area of 99,012 m^2

[2] Concentrations based on the landfill gas sampling report dated July 13, 2023.

[3] Concentrations from the US EPA *User's Manual - Landfill Gas Emissions Model Version 2.0*, 1998.

[4] Emissions of Total Reduced Sulphurs (TRS) are based on the total of all sulphur compounds.

[5] Laboratory reported Total Reduced Sulfur as H_2S.

Sample Calculation

Calculation of Benzene Emission Flux Rate = $\frac{\text{Vinyl Chloride Emission Flux Rate} * \text{Benzene Concentration in LFG} * \text{Molecular Weight of Benzene}}{\text{Vinyl Chloride Concentration in LFG} * \text{Molecular Weight of Vinyl Chloride}}$

= $\frac{0.00E+00\ g/m^2/s * 0.93\ ppm * 78.13\ g/mol}{0.45\ ppm * 62.50\ g/mol}$

= 0.00E+00 $g/m^2/s$

Appendix 5A-S1-5.2c: Vinyl Chloride Emissions

RWDI# 2101750

Twin Creeks Environmental Centre

Vertical Expansion Landfill Stage 1 - (Year 2034)

Year	Waste Acceptance Years (Inclusive)	Scenario	LANDGEM Emission Rate (Mg/yr)	Emission Rate (g/s)	Approximate Landfill Area (m^2)	Emission Flux Rate ($g/m^2/s$)	Gas Collection Coverage (%)	Gas Collection Efficiency (%)	Flare Destruction Efficiency (%)	Mound Emission Rate (Controlled) ($g/m^2/s$)
2034	2028-2034	Stage 1	5.44E-02	1.73E-03	378,390	4.56E-09	100%	75%	98%	1.14E-09
2034	2028-2031	Stage 2	3.92E-02	1.24E-03	366,429	3.39E-09	100%	75%	98%	8.48E-10
2034	n/a	Stage 3	0.00E+00	0.00E+00	147,145	0.00E+00	100%	0%	98%	0.00E+00
2034	n/a	Stage 4	0.00E+00	0.00E+00	181,496	0.00E+00	100%	0%	98%	0.00E+00
2034	2028-2034	Total Emissions	9.36E-02	2.97E-03	1.07E+06	7.95E-09	100%	75%	98%	1.99E-09

Sample Calculations

Calculation of Emission Rate (Stage 1) = LANDGEM Emission Rate * 1,000,000 (g/Mg) / 365 (days/yr) / 24 (hr/day) / 3,600 (s/hr)
= 5.44E-02 Mg/yr * 1,000,000 / 365 / 24 / 3,600
= 1.73E-03 g/s

Calculation of Emission Flux Rate (Stage 1) = Emission Rate / Landfill Area
= 1.73E-03 g/s/ 378,390 m^2
= 4.56E-09 $g/m^2/s$

Calculation of Mound Emission Rate (Controlled) (Stage 1) = Emission Flux Rate * (1 - Gas Collection Efficiency)
= 4.56E-09 $g/m^2/s$ * (1 - 0.75)
= 1.14E-09 $g/m^2/s$

Calculation of Total Flare Emission Rate (Stage 1) = Emission Rate * Gas Collection Efficiency * (1 - Flare Destruction Efficiency)
= 1.73E-03 g/s * 0.75 * (1 - 0.98)
= 2.59E-05 g/s

Appendix 5A-S1-5.2c1: NMOC Emissions from the Vertical Expansion Landfill Stage 1 (Year 2034) RWDI# 2101750

Twin Creeks Environmental Centre

Modelled Source: STAGE1
Emissions rates calculated relative to the Vinyl Chloride emission rate.

Compound	CAS Number	Molecular Weight (g/mol)	Average Concentration In Raw LFG (ppm)	Note	Total STAGE1 Flux Rate ($g/m^2/s$)	Total STAGE1 Emission Rate [1] (g/s)
Vinyl Chloride	75-01-4	62.50	0.45	[2]	1.14E-09	4.31E-04
1,2-Dichloroethane	107-06-2	98.96	0.24	[2]	9.44E-10	3.57E-04
Benzene	71-43-2	78.13	0.93	[2]	2.94E-09	1.11E-03

Notes:
[1] Based on a source area of 378,390 m^2
[2] Concentrations based on the landfill gas sampling report dated July 13, 2023.
[3] Concentrations from the US EPA *User's Manual - Landfill Gas Emissions Model Version 2.0*, 1998.
[4] Emissions of Total Reduced Sulphurs (TRS) are based on the total of all sulphur compounds.
[5] Laboratory reported Total Reduced Sulfur as H_2S.

Sample Calculation

Calculation of Benzene Emission Flux Rate = $\frac{\text{Vinyl Chloride Emission Flux Rate * Benzene Concentration in LFG * Molecular Weight of Benzene}}{\text{Vinyl Chloride Concentration in LFG * Molecular Weight of Vinyl Chloride}}$

= $\frac{\text{1.14E-09 g/m²/s * 0.93 ppm * 78.13 g/mol}}{\text{0.45 ppm * 62.50 g/mol}}$

= 2.94E-09 g/m²/s

Appendix 5A-S1-5.2c2: NMOC Emissions from the Vertical Expansion Landfill Stage 2 (Year 2034) RWDI# 2101750

Twin Creeks Environmental Centre

Modelled Source: STAGE2

Emissions rates calculated relative to the Vinyl Chloride emission rate.

Compound	CAS Number	Molecular Weight (g/mol)	Average Concentration In Raw LFG (ppm)	Note	Total STAGE2 Flux Rate ($g/m^2/s$)	Total STAGE2 Emission Rate [1] (g/s)
Vinyl Chloride	75-01-4	62.50	0.45	[2]	8.48E-10	3.11E-04
1,2-Dichloroethane	107-06-2	98.96	0.24	[2]	7.03E-10	2.57E-04
Benzene	71-43-2	78.13	0.93	[2]	2.19E-09	8.01E-04

Notes:

[1] Based on a source area of 366,429 m^2

[2] Concentrations based on the landfill gas sampling report dated July 13, 2023.

[3] Concentrations from the US EPA *User's Manual - Landfill Gas Emissions Model Version 2.0*, 1998.

[4] Emissions of Total Reduced Sulphurs (TRS) are based on the total of all sulphur compounds.

[5] Laboratory reported Total Reduced Sulfur as H_2S.

Sample Calculation

Calculation of Benzene Emission Flux Rate = $\frac{\text{Vinyl Chloride Emission Flux Rate * Benzene Concentration in LFG * Molecular Weight of Benzene}}{\text{Vinyl Chloride Concentration in LFG * Molecular Weight of Vinyl Chloride}}$

= $\frac{\text{8.48E-10 g/m²/s * 0.93 ppm * 78.13 g/mol}}{\text{0.45 ppm * 62.50 g/mol}}$

= 2.19E-09 g/m²/s

Appendix 5A-S1-5.2c3: NMOC Emissions from the Vertical Expansion Landfill Stage 3 (Year 2034) RWDI# 2101750

Twin Creeks Environmental Centre

Modelled Source: STAGE3

Emissions rates calculated relative to the Vinyl Chloride emission rate.

Compound	CAS Number	Molecular Weight (g/mol)	Average Concentration In Raw LFG (ppm)	Note	Total STAGE3 Flux Rate ($g/m^2/s$)	Total STAGE3 Emission Rate [1] (g/s)
Vinyl Chloride	75-01-4	62.50	0.45	[2]	0.00E+00	0.00E+00
1,2-Dichloroethane	107-06-2	98.96	0.24	[2]	0.00E+00	0.00E+00
Benzene	71-43-2	78.13	0.93	[2]	0.00E+00	0.00E+00

Notes:

[1] Based on a source area of 147,145 m^2

[2] Concentrations based on the landfill gas sampling report dated July 13, 2023.

[3] Concentrations from the US EPA *User's Manual - Landfill Gas Emissions Model Version 2.0*, 1998.

[4] Emissions of Total Reduced Sulphurs (TRS) are based on the total of all sulphur compounds.

[5] Laboratory reported Total Reduced Sulfur as H_2S.

Sample Calculation

Calculation of Benzene Emission Flux Rate = $\frac{\text{Vinyl Chloride Emission Flux Rate * Benzene Concentration in LFG * Molecular Weight of Benzene}}{\text{Vinyl Chloride Concentration in LFG * Molecular Weight of Vinyl Chloride}}$

= $\frac{\text{0.00E+00 g/m²/s * 0.93 ppm * 78.13 g/mol}}{\text{0.45 ppm * 62.50 g/mol}}$

= 0.00E+00 g/m²/s

Appendix 5A-S1-5.2c4: NMOC Emissions from the Vertical Expansion Landfill Stage 4 (Year 2034)

RWDI# 2101750

Twin Creeks Environmental Centre

Modelled Source: STAGE4

Emissions rates calculated relative to the Vinyl Chloride emission rate.

Compound	CAS Number	Molecular Weight (g/mol)	Average Concentration In Raw LFG (ppm)	Note	Total STAGE4 Flux Rate ($g/m^2/s$)	Total STAGE4 Emission Rate [1] (g/s)
Vinyl Chloride	75-01-4	62.50	0.45	[2]	0.00E+00	0.00E+00
1,2-Dichloroethane	107-06-2	98.96	0.24	[2]	0.00E+00	0.00E+00
Benzene	71-43-2	78.13	0.93	[2]	0.00E+00	0.00E+00

Notes:

[1] Based on a source area of 181,496 m^2

[2] Concentrations based on the landfill gas sampling report dated July 13, 2023.

[3] Concentrations from the US EPA *User's Manual - Landfill Gas Emissions Model Version 2.0*, 1998.

[4] Emissions of Total Reduced Sulphurs (TRS) are based on the total of all sulphur compounds.

[5] Laboratory reported Total Reduced Sulfur as H_2S.

Sample Calculation

Calculation of Benzene Emission Flux Rate = $\frac{\text{Vinyl Chloride Emission Flux Rate * Benzene Concentration in LFG * Molecular Weight of Benzene}}{\text{Vinyl Chloride Concentration in LFG * Molecular Weight of Vinyl Chloride}}$

= $\frac{\text{0.00E+00 g/m²/s * 0.93 ppm * 78.13 g/mol}}{\text{0.45 ppm * 62.50 g/mol}}$

= 0.00E+00 g/m²/s

USER INPUTS

Landfill Name or Identifier: Twin Creeks Environmental Centre

Clear ALL Non-Parameter Inputs/Selections

1: PROVIDE LANDFILL CHARACTERISTICS

Landfill Open Year	1972	
Landfill Closure Year	2005	
Have Model Calculate Closure Year?	○ Yes ◉ No	
Waste Design Capacity		megagrams

Restore Default Model Parameters

2: DETERMINE MODEL PARAMETERS

Methane Generation Rate, k (*year*$^{-1}$)
User-specified
User-specified k value should be based on site-specific data and determined by EPA Method 2E.
User-specified value: 0.040

Potential Methane Generation Capacity, L_o (*m*^{3}/*Mg*)
User-specified
User-specified Lo value should be based on site-specific data and determined by waste type and composition.
User-specified value: 125

NMOC Concentration (*ppmv as hexane*)
User-specified
User-specified value: 595

Methane Content (*% by volume*)
User-specified
User-specified value: 52

3: SELECT GASES/POLLUTANTS

Gas / Pollutant #1 #REF!
Total landfill gas

Gas / Pollutant #2
Methane

Gas / Pollutant #3
Carbon dioxide

Gas / Pollutant #4
NMOC

Edit Existing or Add New Pollutant Parameters

Restore Default Pollutant Parameters

Description/Comments:

Modelling of existing landfill Area 5. Values based on MECP Interim Guide.

4: ENTER WASTE ACCEPTANCE RATES

Input Units: *Mg/year*

Year	Input Units *(Mg/year)*	Calculated Units *(short tons/year)*
1972	9,979	10,977
1973	9,979	10,977
1974	9,979	10,977
1975	9,979	10,977
1976	9,979	10,977
1977	9,979	10,977
1978	9,979	10,977
1979	9,979	10,977
1980	9,979	10,977
1981	9,979	10,977
1982	9,979	10,977
1983	9,979	10,977
1984	9,979	10,977
1985	9,979	10,977
1986	9,979	10,977
1987	9,979	10,977
1988	9,979	10,977
1989	9,979	10,977
1990	9,979	10,977
1991	9,979	10,977
1992	9,979	10,977
1993	9,979	10,977
1994	69,605	76,566
1995	55,074	60,581
1996	43,328	47,661
1997	57,497	63,247
1998	57,903	63,693
1999	58,599	64,459
2000	53,819	59,201
2001	191,426	210,569
2002	108,441	119,285
2003	86,909	95,600
2004	98,516	108,368
2005		
2006		
2007		
2008		
2009		
2010		
2011		

4: ENTER WASTE ACCEPTANCE RATES

Input Units: Mg/year

Year	Input Units *(Mg/year)*	Calculated Units *(short tons/year)*
2012		
2013		
2014		
2015		
2016		
2017		
2018		
2019		
2020		
2021		
2022		
2023		
2024		
2025		
2026		
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2048		
2049		
2050		
2051		

INVENTORY

Landfill Name or Identifier: Twin Creeks Environmental Centre

Enter year of emissions inventory: 2034

Gas / Pollutant	Emission Rate				
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(ft^3/year)*	*(short tons/year)*
Total landfill gas	3.166E+03	2.508E+06	1.685E+02	8.858E+07	3.483E+03
Methane	8.702E+02	1.304E+06	8.764E+01	4.606E+07	9.572E+02
Carbon dioxide	2.204E+03	1.204E+06	8.090E+01	4.252E+07	2.424E+03
NMOC	5.350E+00	1.492E+03	1.003E-01	5.271E+04	5.885E+00
1,1,1-Trichloroethane (methyl chloroform) - HAP	3.201E-04	5.769E-02	3.876E-06	2.037E+00	3.521E-04
1,1,2,2-Tetrachloroethane - HAP/VOC	4.028E-04	5.769E-02	3.876E-06	2.037E+00	4.430E-04
1,1-Dichloroethane (ethylidene dichloride) - HAP/VOC	2.375E-04	5.769E-02	3.876E-06	2.037E+00	2.612E-04
1,1-Dichloroethene (vinylidene chloride) - HAP/VOC	2.023E-04	5.017E-02	3.371E-06	1.772E+00	2.225E-04
1,2-Dichloroethane (ethylene dichloride) - HAP/VOC	2.447E-03	5.945E-01	3.994E-05	2.099E+01	2.692E-03
1,2-Dichloropropane (propylene dichloride) - HAP/VOC	8.016E-04	1.706E-01	1.146E-05	6.024E+00	8.818E-04
2-Propanol (isopropyl alcohol) - VOC	3.888E-02	1.555E+01	1.045E-03	5.492E+02	4.277E-02
Acetone	4.242E-02	1.756E+01	1.180E-03	6.201E+02	4.666E-02
Acrylonitrile - HAP/VOC	3.487E-02	1.580E+01	1.062E-03	5.581E+02	3.836E-02
Benzene - No or Unknown Co-disposal - HAP/VOC	7.613E-03	2.343E+00	1.574E-04	8.274E+01	8.375E-03
Benzene - Co-disposal - HAP/VOC	8.964E-02	2.759E+01	1.854E-03	9.744E+02	9.860E-02
Bromodichloromethane - VOC	7.862E-04	1.154E-01	7.753E-06	4.075E+00	8.649E-04
Butane - VOC	3.032E-02	1.254E+01	8.427E-04	4.429E+02	3.335E-02
Carbon disulfide - HAP/VOC	6.513E-02	2.057E+01	1.382E-03	7.264E+02	7.164E-02
Carbon monoxide	4.091E-01	3.512E+02	2.359E-02	1.240E+04	4.500E-01
Carbon tetrachloride - HAP/VOC	3.691E-04	5.769E-02	3.876E-06	2.037E+00	4.060E-04
Carbonyl sulfide - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chlorobenzene - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chlorodifluoromethane	#REF!	#REF!	#REF!	#REF!	#REF!
Chloroethane (ethyl chloride) - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chloroform - HAP/VOC	2.865E-04	5.769E-02	3.876E-06	2.037E+00	3.151E-04
Chloromethane - VOC	5.004E-04	2.383E-01	1.601E-05	8.415E+00	5.505E-04
Dichlorobenzene - (HAP for para isomer/VOC)	#REF!	#REF!	#REF!	#REF!	#REF!
Dichlorodifluoromethane	7.064E-04	1.405E-01	9.438E-06	4.961E+00	7.770E-04
Dichlorofluoromethane - VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Dichloromethane (methylene chloride) - HAP	#REF!	#REF!	#REF!	#REF!	#REF!
Dimethyl sulfide (methyl sulfide) - VOC	2.204E-01	8.528E+01	5.730E-03	3.012E+03	2.424E-01
Ethane	2.792E+00	2.232E+03	1.500E-01	7.884E+04	3.071E+00
Ethanol - VOC	1.380E-01	7.199E+01	4.837E-03	2.542E+03	1.518E-01
Ethyl mercaptan (ethanethiol) - VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Ethylbenzene - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Ethylene dibromide - HAP/VOC	4.508E-04	5.769E-02	3.876E-06	2.037E+00	4.959E-04
Fluorotrichloromethane - VOC	1.089E-02	1.906E+00	1.281E-04	6.732E+01	1.198E-02
Hexane - HAP/VOC	1.510E-02	4.214E+00	2.831E-04	1.488E+02	1.662E-02
Hydrogen sulfide	1.316E+00	9.281E+02	6.236E-02	3.278E+04	1.447E+00
Mercury (total) - HAP	6.070E-06	7.274E-04	4.888E-08	2.569E-02	6.676E-06
Methyl ethyl ketone - HAP/VOC	1.422E-01	4.741E+01	3.185E-03	1.674E+03	1.564E-01
Methyl isobutyl ketone - HAP/VOC	5.340E-03	1.282E+00	8.612E-05	4.527E+01	5.874E-03
Methyl mercaptan - VOC	1.656E-01	8.278E+01	5.562E-03	2.923E+03	1.822E-01
Pentane - VOC	2.484E-02	8.278E+00	5.562E-04	2.923E+02	2.732E-02
Perchloroethylene (tetrachloroethylene) - HAP	1.211E-02	1.756E+00	1.180E-04	6.201E+01	1.332E-02
Propane - VOC	5.060E-02	2.759E+01	1.854E-03	9.744E+02	5.566E-02
t-1,2-Dichloroethene - VOC	2.832E-02	7.023E+00	4.719E-04	2.480E+02	3.115E-02
Toluene - No or Unknown Co-disposal - HAP/VOC	1.288E-01	3.361E+01	2.258E-03	1.187E+03	1.417E-01
Toluene - Co-disposal - HAP/VOC	1.634E+00	4.264E+02	2.865E-02	1.506E+04	1.797E+00
Trichloroethylene (trichloroethene) - HAP/VOC	2.577E-03	4.716E-01	3.168E-05	1.665E+01	2.835E-03
Vinyl chloride - HAP/VOC	2.954E-03	1.136E+00	7.635E-05	4.013E+01	3.249E-03
Xylenes - HAP/VOC	1.022E-01	2.315E+01	1.556E-03	8.176E+02	1.124E-01
1,2-Dichloroethene cis	1.699E-02	4.214E+00	2.831E-04	1.488E+02	1.869E-02
1,2-Dichloroethylene	7.384E-03	1.831E+00	1.230E-04	6.466E+01	8.122E-03
2-Butanol	4.462E-02	1.447E+01	9.724E-04	5.111E+02	4.908E-02
Octane	2.086E-02	4.390E+00	2.949E-04	1.550E+02	2.294E-02
1,1,2-Trichloroethane	6.541E-03	1.179E+00	7.921E-05	4.163E+01	7.195E-03
1,2-Dibromoethane	1.960E-04	2.508E-02	1.685E-06	8.858E-01	2.156E-04
1,2-Dichloroethene trans	7.383E-03	1.831E+00	1.230E-04	6.466E+01	8.121E-03

USER INPUTS

Landfill Name or Identifier: Twin Creeks Environmental Centre

Clear ALL Non-Parameter Inputs/Selections

1: PROVIDE LANDFILL CHARACTERISTICS

Landfill Open Year	1972	
Landfill Closure Year	2020	
Have Model Calculate Closure Year?	○ Yes ◉ No	
Waste Design Capacity		megagrams

Restore Default Model Parameters

2: DETERMINE MODEL PARAMETERS

Methane Generation Rate, k (*year*$^{-1}$)
User-specified
User-specified value: 0.040
User-specified k value should be based on site-specific data and determined by EPA Method 2E.

Potential Methane Generation Capacity, L_o (*m*^{3}/*Mg*)
User-specified
User-specified value: 125
User-specified Lo value should be based on site-specific data and determined by waste type and composition.

NMOC Concentration (*ppmv as hexane*)
User-specified
User-specified value: 595

Methane Content (*% by volume*)
User-specified
User-specified value: 52

3: SELECT GASES/POLLUTANTS

Gas / Pollutant #1 #REF!
Total landfill gas

Gas / Pollutant #2
Methane

Gas / Pollutant #3
Carbon dioxide

Gas / Pollutant #4
NMOC

Edit Existing or Add New Pollutant Parameters

Restore Default Pollutant Parameters

Description/Comments:

Modelling of existing landfill Area 1. Values based on MECP Interim Guide.

4: ENTER WASTE ACCEPTANCE RATES

Input Units: *Mg/year*

Year	Input Units *(Mg/year)*	Calculated Units *(short tons/year)*
1972		0
1973		0
1974		0
1975		0
1976		0
1977		0
1978		0
1979		0
1980		0
1981		0
1982		0
1983		0
1984		0
1985		0
1986		0
1987		0
1988		0
1989		0
1990		0
1991		0
1992		0
1993		0
1994		0
1995		0
1996		0
1997		0
1998		0
1999		0
2000		0
2001		0
2002		0
2003		0
2004		0
2005	218,455	240,301
2006	298,090	327,899
2007	304,043	334,447
2008	283,591	311,950
2009	169,803	186,783
2010	311,006	342,107
2011	429,041	471,945

4: ENTER WASTE ACCEPTANCE RATES

Input Units: *Mg/year*

Year	Input Units *(Mg/year)*	Calculated Units *(short tons/year)*
2012	528,571	581,428
2013	452,641	497,905
2014	470,377	517,415
2015	533,326	586,659
2016	678,031	745,834
2017	820,360	902,396
2018	1,324,830	1,457,313
2019	1,417,281	1,559,009
2020		
2021		
2022		
2023		
2024		
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2050		
2051		

INVENTORY

Landfill Name or Identifier: Twin Creeks Environmental Centre

Enter year of emissions inventory: 2034

Gas / Pollutant	Emission Rate				
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(ft^3/year)*	*(short tons/year)*
Total landfill gas	4.739E+04	3.754E+07	2.522E+03	1.326E+09	5.212E+04
Methane	1.302E+04	1.952E+07	1.312E+03	6.894E+08	1.433E+04
Carbon dioxide	3.299E+04	1.802E+07	1.211E+03	6.364E+08	3.629E+04
NMOC	8.007E+01	2.234E+04	1.501E+00	7.889E+05	8.808E+01
1,1,1-Trichloroethane (methyl chloroform) - HAP	4.791E-03	8.635E-01	5.802E-05	3.049E+01	5.270E-03
1,1,2,2-Tetrachloroethane - HAP/VOC	6.028E-03	8.635E-01	5.802E-05	3.049E+01	6.631E-03
1,1-Dichloroethane (ethylidene dichloride) - HAP/VOC	3.554E-03	8.635E-01	5.802E-05	3.049E+01	3.910E-03
1,1-Dichloroethene (vinylidene chloride) - HAP/VOC	3.027E-03	7.509E-01	5.045E-05	2.652E+01	3.330E-03
1,2-Dichloroethane (ethylene dichloride) - HAP/VOC	3.662E-02	8.898E+00	5.978E-04	3.142E+02	4.028E-02
1,2-Dichloropropane (propylene dichloride) - HAP/VOC	1.200E-02	2.553E+00	1.715E-04	9.016E+01	1.320E-02
2-Propanol (isopropyl alcohol) - VOC	5.819E-01	2.328E+02	1.564E-02	8.220E+03	6.401E-01
Acetone	6.348E-01	2.628E+02	1.766E-02	9.281E+03	6.983E-01
Acrylonitrile - HAP/VOC	5.220E-01	2.365E+02	1.589E-02	8.353E+03	5.742E-01
Benzene - No or Unknown Co-disposal - HAP/VOC	1.139E-01	3.506E+01	2.356E-03	1.238E+03	1.253E-01
Benzene - Co-disposal - HAP/VOC	1.342E+00	4.130E+02	2.775E-02	1.458E+04	1.476E+00
Bromodichloromethane - VOC	1.177E-02	1.727E+00	1.160E-04	6.099E+01	1.294E-02
Butane - VOC	4.538E-01	1.877E+02	1.261E-02	6.629E+03	4.991E-01
Carbon disulfide - HAP/VOC	9.748E-01	3.078E+02	2.068E-02	1.087E+04	1.072E+00
Carbon monoxide	6.123E+00	5.256E+03	3.531E-01	1.856E+05	6.736E+00
Carbon tetrachloride - HAP/VOC	5.524E-03	8.635E-01	5.802E-05	3.049E+01	6.077E-03
Carbonyl sulfide - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chlorobenzene - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chlorodifluoromethane	#REF!	#REF!	#REF!	#REF!	#REF!
Chloroethane (ethyl chloride) - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chloroform - HAP/VOC	4.287E-03	8.635E-01	5.802E-05	3.049E+01	4.716E-03
Chloromethane - VOC	7.490E-03	3.567E+00	2.396E-04	1.260E+02	8.239E-03
Dichlorobenzene - (HAP for para isomer/VOC)	#REF!	#REF!	#REF!	#REF!	#REF!
Dichlorodifluoromethane	1.057E-02	2.102E+00	1.413E-04	7.425E+01	1.163E-02
Dichlorofluoromethane - VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Dichloromethane (methylene chloride) - HAP	#REF!	#REF!	#REF!	#REF!	#REF!
Dimethyl sulfide (methyl sulfide) - VOC	3.299E+00	1.276E+03	8.576E-02	4.508E+04	3.628E+00
Ethane	4.179E+01	3.341E+04	2.245E+00	1.180E+06	4.597E+01
Ethanol - VOC	2.065E+00	1.077E+03	7.240E-02	3.805E+04	2.272E+00
Ethyl mercaptan (ethanethiol) - VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Ethylbenzene - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Ethylene dibromide - HAP/VOC	6.748E-03	8.635E-01	5.802E-05	3.049E+01	7.422E-03
Fluorotrichloromethane - VOC	1.630E-01	2.853E+01	1.917E-03	1.008E+03	1.793E-01
Hexane - HAP/VOC	2.261E-01	6.307E+01	4.238E-03	2.227E+03	2.487E-01
Hydrogen sulfide	1.969E+01	1.389E+04	9.333E-01	4.906E+05	2.166E+01
Mercury (total) - HAP	9.084E-05	1.089E-02	7.315E-07	3.845E-01	9.993E-05
Methyl ethyl ketone - HAP/VOC	2.128E+00	7.096E+02	4.767E-02	2.506E+04	2.341E+00
Methyl isobutyl ketone - HAP/VOC	7.992E-02	1.918E+01	1.289E-03	6.775E+02	8.791E-02
Methyl mercaptan - VOC	2.479E+00	1.239E+03	8.324E-02	4.375E+04	2.726E+00
Pentane - VOC	3.718E-01	1.239E+02	8.324E-03	4.375E+03	4.090E-01
Perchloroethylene (tetrachloroethylene) - HAP	1.813E-01	2.628E+01	1.766E-03	9.281E+02	1.994E-01
Propane - VOC	7.573E-01	4.130E+02	2.775E-02	1.458E+04	8.330E-01
t-1,2-Dichloroethene - VOC	4.238E-01	1.051E+02	7.063E-03	3.712E+03	4.662E-01
Toluene - No or Unknown Co-disposal - HAP/VOC	1.928E+00	5.031E+02	3.380E-02	1.777E+04	2.121E+00
Toluene - Co-disposal - HAP/VOC	2.446E+01	6.382E+03	4.288E-01	2.254E+05	2.690E+01
Trichloroethylene (trichloroethene) - HAP/VOC	3.857E-02	7.058E+00	4.742E-04	2.493E+02	4.243E-02
Vinyl chloride - HAP/VOC	4.421E-02	1.701E+01	1.143E-03	6.006E+02	4.863E-02
Xylenes - HAP/VOC	1.530E+00	3.465E+02	2.328E-02	1.224E+04	1.683E+00
1,2-Dichloroethene cis	2.543E-01	6.307E+01	4.238E-03	2.227E+03	2.797E-01
1,2-Dichloroethylene	1.105E-01	2.741E+01	1.841E-03	9.678E+02	1.216E-01
2-Butanol	6.678E-01	2.166E+02	1.455E-02	7.650E+03	7.346E-01
Octane	3.121E-01	6.570E+01	4.414E-03	2.320E+03	3.434E-01
1,1,2-Trichloroethane	9.790E-02	1.765E+01	1.186E-03	6.231E+02	1.077E-01
1,2-Dibromoethane	2.933E-03	3.754E-01	2.522E-05	1.326E+01	3.227E-03
1,2-Dichloroethene trans	1.105E-01	2.741E+01	1.841E-03	9.678E+02	1.216E-01

USER INPUTS

Landfill Name or Identifier: Twin Creeks Environmental Centre

Clear ALL Non-Parameter Inputs/Selections

1: PROVIDE LANDFILL CHARACTERISTICS

Landfill Open Year	1972	
Landfill Closure Year	2025	
Have Model Calculate Closure Year?	○ Yes ◉ No	
Waste Design Capacity		megagrams

Restore Default Model Parameters

2: DETERMINE MODEL PARAMETERS

Methane Generation Rate, k (*year*$^{-1}$)
User-specified
User-specified value: 0.040
User-specified k value should be based on site-specific data and determined by EPA Method 2E.

Potential Methane Generation Capacity, L_o (*m^3/Mg*)
User-specified
User-specified value: 125
User-specified Lo value should be based on site-specific data and determined by waste type and composition.

NMOC Concentration (*ppmv as hexane*)
User-specified
User-specified value: 595

Methane Content (*% by volume*)
User-specified
User-specified value: 52

3: SELECT GASES/POLLUTANTS

Gas / Pollutant #1 #REF!
Total landfill gas

Gas / Pollutant #2
Methane

Gas / Pollutant #3
Carbon dioxide

Gas / Pollutant #4
NMOC

Edit Existing or Add New Pollutant Parameters

Restore Default Pollutant Parameters

Description/Comments:

Modelling of existing landfill Area 2. Values based on MECP Interim Guide.

4: ENTER WASTE ACCEPTANCE RATES

Input Units: Mg/year

Year	Input Units *(Mg/year)*	Calculated Units *(short tons/year)*
1972		0
1973		0
1974		0
1975		0
1976		0
1977		0
1978		0
1979		0
1980		0
1981		0
1982		0
1983		0
1984		0
1985		0
1986		0
1987		0
1988		0
1989		0
1990		0
1991		0
1992		0
1993		0
1994		0
1995		0
1996		0
1997		0
1998		0
1999		0
2000		0
2001		0
2002		0
2003		0
2004		0
2005		0
2006		0
2007		0
2008		0
2009		0
2010		0
2011		0

4: ENTER WASTE ACCEPTANCE RATES

Input Units: *Mg/year*

Year	Input Units *(Mg/year)*	Calculated Units *(short tons/year)*
2012		0
2013		0
2014		0
2015		0
2016		0
2017		0
2018		0
2019		0
2020	1,330,444	1,463,488
2021	1,399,849	1,539,834
2022	1,391,172	1,530,290
2023	1,400,000	1,540,000
2024	1,400,000	1,540,000
2025		
2026		
2027		
2028		
2029		
2030		
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2032		
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2051		

INVENTORY

Landfill Name or Identifier: Twin Creeks Environmental Centre

Enter year of emissions inventory: 2034

Gas / Pollutant	Emission Rate				
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(ft^3/year)*	*(short tons/year)*
Total landfill gas	5.326E+04	4.220E+07	2.835E+03	1.490E+09	5.859E+04
Methane	1.464E+04	2.194E+07	1.474E+03	7.750E+08	1.610E+04
Carbon dioxide	3.708E+04	2.026E+07	1.361E+03	7.154E+08	4.079E+04
NMOC	9.000E+01	2.511E+04	1.687E+00	8.867E+05	9.901E+01
1,1,1-Trichloroethane (methyl chloroform) - HAP	5.385E-03	9.706E-01	6.522E-05	3.428E+01	5.924E-03
1,1,2,2-Tetrachloroethane - HAP/VOC	6.776E-03	9.706E-01	6.522E-05	3.428E+01	7.454E-03
1,1-Dichloroethane (ethylidene dichloride) - HAP/VOC	3.996E-03	9.706E-01	6.522E-05	3.428E+01	4.395E-03
1,1-Dichloroethene (vinylidene chloride) - HAP/VOC	3.403E-03	8.440E-01	5.671E-05	2.981E+01	3.743E-03
1,2-Dichloroethane (ethylene dichloride) - HAP/VOC	4.117E-02	1.000E+01	6.720E-04	3.532E+02	4.528E-02
1,2-Dichloropropane (propylene dichloride) - HAP/VOC	1.349E-02	2.870E+00	1.928E-04	1.013E+02	1.483E-02
2-Propanol (isopropyl alcohol) - VOC	6.542E-01	2.616E+02	1.758E-02	9.240E+03	7.196E-01
Acetone	7.136E-01	2.954E+02	1.985E-02	1.043E+04	7.850E-01
Acrylonitrile - HAP/VOC	5.867E-01	2.659E+02	1.786E-02	9.389E+03	6.454E-01
Benzene - No or Unknown Co-disposal - HAP/VOC	1.281E-01	3.942E+01	2.648E-03	1.392E+03	1.409E-01
Benzene - Co-disposal - HAP/VOC	1.508E+00	4.642E+02	3.119E-02	1.639E+04	1.659E+00
Bromodichloromethane - VOC	1.323E-02	1.941E+00	1.304E-04	6.856E+01	1.455E-02
Butane - VOC	5.101E-01	2.110E+02	1.418E-02	7.452E+03	5.611E-01
Carbon disulfide - HAP/VOC	1.096E+00	3.460E+02	2.325E-02	1.222E+04	1.205E+00
Carbon monoxide	6.883E+00	5.908E+03	3.970E-01	2.086E+05	7.571E+00
Carbon tetrachloride - HAP/VOC	6.210E-03	9.706E-01	6.522E-05	3.428E+01	6.831E-03
Carbonyl sulfide - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chlorobenzene - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chlorodifluoromethane	#REF!	#REF!	#REF!	#REF!	#REF!
Chloroethane (ethyl chloride) - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chloroform - HAP/VOC	4.819E-03	9.706E-01	6.522E-05	3.428E+01	5.301E-03
Chloromethane - VOC	8.419E-03	4.009E+00	2.694E-04	1.416E+02	9.261E-03
Dichlorobenzene - (HAP for para isomer/VOC)	#REF!	#REF!	#REF!	#REF!	#REF!
Dichlorodifluoromethane	1.188E-02	2.363E+00	1.588E-04	8.346E+01	1.307E-02
Dichlorofluoromethane - VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Dichloromethane (methylene chloride) - HAP	#REF!	#REF!	#REF!	#REF!	#REF!
Dimethyl sulfide (methyl sulfide) - VOC	3.708E+00	1.435E+03	9.641E-02	5.067E+04	4.079E+00
Ethane	4.697E+01	3.756E+04	2.524E+00	1.326E+06	5.167E+01
Ethanol - VOC	2.321E+00	1.211E+03	8.138E-02	4.277E+04	2.553E+00
Ethyl mercaptan (ethanethiol) - VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Ethylbenzene - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Ethylene dibromide - HAP/VOC	7.585E-03	9.706E-01	6.522E-05	3.428E+01	8.343E-03
Fluorotrichloromethane - VOC	1.833E-01	3.207E+01	2.155E-03	1.133E+03	2.016E-01
Hexane - HAP/VOC	2.541E-01	7.090E+01	4.764E-03	2.504E+03	2.795E-01
Hydrogen sulfide	2.213E+01	1.561E+04	1.049E+00	5.514E+05	2.435E+01
Mercury (total) - HAP	1.021E-04	1.224E-02	8.223E-07	4.322E-01	1.123E-04
Methyl ethyl ketone - HAP/VOC	2.392E+00	7.976E+02	5.359E-02	2.817E+04	2.631E+00
Methyl isobutyl ketone - HAP/VOC	8.984E-02	2.156E+01	1.449E-03	7.616E+02	9.882E-02
Methyl mercaptan - VOC	2.786E+00	1.393E+03	9.357E-02	4.918E+04	3.065E+00
Pentane - VOC	4.179E-01	1.393E+02	9.357E-03	4.918E+03	4.597E-01
Perchloroethylene (tetrachloroethylene) - HAP	2.038E-01	2.954E+01	1.985E-03	1.043E+03	2.241E-01
Propane - VOC	8.513E-01	4.642E+02	3.119E-02	1.639E+04	9.364E-01
t-1,2-Dichloroethene - VOC	4.764E-01	1.182E+02	7.939E-03	4.173E+03	5.241E-01
Toluene - No or Unknown Co-disposal - HAP/VOC	2.167E+00	5.655E+02	3.800E-02	1.997E+04	2.384E+00
Toluene - Co-disposal - HAP/VOC	2.749E+01	7.174E+03	4.820E-01	2.534E+05	3.024E+01
Trichloroethylene (trichloroethene) - HAP/VOC	4.336E-02	7.934E+00	5.331E-04	2.802E+02	4.769E-02
Vinyl chloride - HAP/VOC	4.970E-02	1.912E+01	1.284E-03	6.751E+02	5.467E-02
Xylenes - HAP/VOC	1.720E+00	3.895E+02	2.617E-02	1.376E+04	1.892E+00
1,2-Dichloroethene cis	2.859E-01	7.090E+01	4.764E-03	2.504E+03	3.144E-01
1,2-Dichloroethylene	1.242E-01	3.081E+01	2.070E-03	1.088E+03	1.366E-01
2-Butanol	7.507E-01	2.435E+02	1.636E-02	8.599E+03	8.258E-01
Octane	3.509E-01	7.385E+01	4.962E-03	2.608E+03	3.860E-01
1,1,2-Trichloroethane	1.101E-01	1.983E+01	1.333E-03	7.005E+02	1.211E-01
1,2-Dibromoethane	3.297E-03	4.220E-01	2.835E-05	1.490E+01	3.627E-03
1,2-Dichloroethene trans	1.242E-01	3.081E+01	2.070E-03	1.088E+03	1.366E-01

USER INPUTS

Landfill Name or Identifier: Twin Creeks Environmental Centre

Clear ALL Non-Parameter Inputs/Selections

1: PROVIDE LANDFILL CHARACTERISTICS

Landfill Open Year	1972	
Landfill Closure Year	2030	
Have Model Calculate Closure Year?	○ Yes ◉ No	
Waste Design Capacity		megagrams

Restore Default Model Parameters

2: DETERMINE MODEL PARAMETERS

Methane Generation Rate, k (*year*$^{-1}$)
User-specified
User-specified value: 0.040
User-specified k value should be based on site-specific data and determined by EPA Method 2E.

Potential Methane Generation Capacity, L_o (*m*^{3}/*Mg*)
User-specified
User-specified value: 125
User-specified Lo value should be based on site-specific data and determined by waste type and composition.

NMOC Concentration (*ppmv as hexane*)
User-specified
User-specified value: 595

Methane Content (*% by volume*)
User-specified
User-specified value: 52

3: SELECT GASES/POLLUTANTS

Gas / Pollutant #1 #REF!
Total landfill gas

Gas / Pollutant #2
Methane

Gas / Pollutant #3
Carbon dioxide

Gas / Pollutant #4
NMOC

Edit Existing or Add New Pollutant Parameters

Restore Default Pollutant Parameters

Description/Comments:

Modelling of existing landfill Area 3. Values based on MECP Interim Guide.

4: ENTER WASTE ACCEPTANCE RATES

Input Units: *Mg/year*

Year	Input Units *(Mg/year)*	Calculated Units *(short tons/year)*
1972		0
1973		0
1974		0
1975		0
1976		0
1977		0
1978		0
1979		0
1980		0
1981		0
1982		0
1983		0
1984		0
1985		0
1986		0
1987		0
1988		0
1989		0
1990		0
1991		0
1992		0
1993		0
1994		0
1995		0
1996		0
1997		0
1998		0
1999		0
2000		0
2001		0
2002		0
2003		0
2004		0
2005		0
2006		0
2007		0
2008		0
2009		0
2010		0
2011		0

4: ENTER WASTE ACCEPTANCE RATES

Input Units: *Mg/year*

Year	Input Units *(Mg/year)*	Calculated Units *(short tons/year)*
2012		0
2013		0
2014		0
2015		0
2016		0
2017		0
2018		0
2019		0
2020		0
2021		0
2022		0
2023		0
2024		0
2025	1,400,000	1,540,000
2026	1,400,000	1,540,000
2027	1,400,000	1,540,000
2028	700,000	770,000
2029		
2030		
2031		
2032		
2033		
2034		
2035		
2036		
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2050		
2051		

INVENTORY

Landfill Name or Identifier: Twin Creeks Environmental Centre

Enter year of emissions inventory: 2034

Gas / Pollutant	Emission Rate				
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(ft^3/year)*	*(short tons/year)*
Total landfill gas	5.180E+04	4.104E+07	2.758E+03	1.449E+09	5.698E+04
Methane	1.424E+04	2.134E+07	1.434E+03	7.537E+08	1.566E+04
Carbon dioxide	3.606E+04	1.970E+07	1.324E+03	6.957E+08	3.967E+04
NMOC	8.753E+01	2.442E+04	1.641E+00	8.624E+05	9.629E+01
1,1,1-Trichloroethane (methyl chloroform) - HAP	5.238E-03	9.440E-01	6.342E-05	3.334E+01	5.761E-03
1,1,2,2-Tetrachloroethane - HAP/VOC	6.590E-03	9.440E-01	6.342E-05	3.334E+01	7.249E-03
1,1-Dichloroethane (ethylidene dichloride) - HAP/VOC	3.886E-03	9.440E-01	6.342E-05	3.334E+01	4.274E-03
1,1-Dichloroethene (vinylidene chloride) - HAP/VOC	3.310E-03	8.208E-01	5.515E-05	2.899E+01	3.641E-03
1,2-Dichloroethane (ethylene dichloride) - HAP/VOC	4.004E-02	9.727E+00	6.536E-04	3.435E+02	4.404E-02
1,2-Dichloropropane (propylene dichloride) - HAP/VOC	1.312E-02	2.791E+00	1.875E-04	9.856E+01	1.443E-02
2-Propanol (isopropyl alcohol) - VOC	6.362E-01	2.545E+02	1.710E-02	8.986E+03	6.998E-01
Acetone	6.940E-01	2.873E+02	1.930E-02	1.015E+04	7.634E-01
Acrylonitrile - HAP/VOC	5.706E-01	2.586E+02	1.737E-02	9.131E+03	6.277E-01
Benzene - No or Unknown Co-disposal - HAP/VOC	1.246E-01	3.833E+01	2.576E-03	1.354E+03	1.370E-01
Benzene - Co-disposal - HAP/VOC	1.467E+00	4.515E+02	3.033E-02	1.594E+04	1.613E+00
Bromodichloromethane - VOC	1.286E-02	1.888E+00	1.268E-04	6.667E+01	1.415E-02
Butane - VOC	4.961E-01	2.052E+02	1.379E-02	7.247E+03	5.457E-01
Carbon disulfide - HAP/VOC	1.066E+00	3.365E+02	2.261E-02	1.189E+04	1.172E+00
Carbon monoxide	6.694E+00	5.746E+03	3.861E-01	2.029E+05	7.363E+00
Carbon tetrachloride - HAP/VOC	6.039E-03	9.440E-01	6.342E-05	3.334E+01	6.643E-03
Carbonyl sulfide - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chlorobenzene - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chlorodifluoromethane	#REF!	#REF!	#REF!	#REF!	#REF!
Chloroethane (ethyl chloride) - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chloroform - HAP/VOC	4.687E-03	9.440E-01	6.342E-05	3.334E+01	5.156E-03
Chloromethane - VOC	8.188E-03	3.899E+00	2.620E-04	1.377E+02	9.007E-03
Dichlorobenzene - (HAP for para isomer/VOC)	#REF!	#REF!	#REF!	#REF!	#REF!
Dichlorodifluoromethane	1.156E-02	2.298E+00	1.544E-04	8.117E+01	1.271E-02
Dichlorofluoromethane - VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Dichloromethane (methylene chloride) - HAP	#REF!	#REF!	#REF!	#REF!	#REF!
Dimethyl sulfide (methyl sulfide) - VOC	3.606E+00	1.395E+03	9.376E-02	4.928E+04	3.967E+00
Ethane	4.568E+01	3.653E+04	2.454E+00	1.290E+06	5.025E+01
Ethanol - VOC	2.258E+00	1.178E+03	7.914E-02	4.160E+04	2.483E+00
Ethyl mercaptan (ethanethiol) - VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Ethylbenzene - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Ethylene dibromide - HAP/VOC	7.377E-03	9.440E-01	6.342E-05	3.334E+01	8.114E-03
Fluorotrichloromethane - VOC	1.782E-01	3.119E+01	2.096E-03	1.102E+03	1.961E-01
Hexane - HAP/VOC	2.472E-01	6.895E+01	4.633E-03	2.435E+03	2.719E-01
Hydrogen sulfide	2.153E+01	1.519E+04	1.020E+00	5.363E+05	2.368E+01
Mercury (total) - HAP	9.931E-05	1.190E-02	7.997E-07	4.203E-01	1.092E-04
Methyl ethyl ketone - HAP/VOC	2.326E+00	7.757E+02	5.212E-02	2.739E+04	2.559E+00
Methyl isobutyl ketone - HAP/VOC	8.737E-02	2.097E+01	1.409E-03	7.406E+02	9.611E-02
Methyl mercaptan - VOC	2.710E+00	1.354E+03	9.100E-02	4.783E+04	2.981E+00
Pentane - VOC	4.064E-01	1.354E+02	9.100E-03	4.783E+03	4.471E-01
Perchloroethylene (tetrachloroethylene) - HAP	1.982E-01	2.873E+01	1.930E-03	1.015E+03	2.180E-01
Propane - VOC	8.279E-01	4.515E+02	3.033E-02	1.594E+04	9.107E-01
t-1,2-Dichloroethene - VOC	4.633E-01	1.149E+02	7.721E-03	4.058E+03	5.097E-01
Toluene - No or Unknown Co-disposal - HAP/VOC	2.107E+00	5.500E+02	3.695E-02	1.942E+04	2.318E+00
Toluene - Co-disposal - HAP/VOC	2.674E+01	6.977E+03	4.688E-01	2.464E+05	2.941E+01
Trichloroethylene (trichloroethene) - HAP/VOC	4.217E-02	7.716E+00	5.184E-04	2.725E+02	4.638E-02
Vinyl chloride - HAP/VOC	4.833E-02	1.859E+01	1.249E-03	6.566E+02	5.316E-02
Xylenes - HAP/VOC	1.673E+00	3.788E+02	2.545E-02	1.338E+04	1.840E+00
1,2-Dichloroethene cis	2.780E-01	6.895E+01	4.633E-03	2.435E+03	3.058E-01
1,2-Dichloroethylene	1.208E-01	2.996E+01	2.013E-03	1.058E+03	1.329E-01
2-Butanol	7.301E-01	2.368E+02	1.591E-02	8.363E+03	8.031E-01
Octane	3.412E-01	7.182E+01	4.826E-03	2.536E+03	3.754E-01
1,1,2-Trichloroethane	1.070E-01	1.929E+01	1.296E-03	6.812E+02	1.177E-01
1,2-Dibromoethane	3.207E-03	4.104E-01	2.758E-05	1.449E+01	3.528E-03
1,2-Dichloroethene trans	1.208E-01	2.996E+01	2.013E-03	1.058E+03	1.329E-01

USER INPUTS

Landfill Name or Identifier: Twin Creeks Environmental Centre

Clear ALL Non-Parameter Inputs/Selections

1: PROVIDE LANDFILL CHARACTERISTICS

Landfill Open Year	1972	
Landfill Closure Year	2035	
Have Model Calculate Closure Year?	○ Yes ◉ No	
Waste Design Capacity		megagrams

Restore Default Model Parameters

2: DETERMINE MODEL PARAMETERS

Methane Generation Rate, k (*year*$^{-1}$)
User-specified
User-specified value: 0.040
User-specified k value should be based on site-specific data and determined by EPA Method 2E.

Potential Methane Generation Capacity, L_o (*m*^{3}/*Mg*)
User-specified
User-specified value: 125
User-specified Lo value should be based on site-specific data and determined by waste type and composition.

NMOC Concentration (*ppmv as hexane*)
User-specified
User-specified value: 595

Methane Content (*% by volume*)
User-specified
User-specified value: 52

3: SELECT GASES/POLLUTANTS

Gas / Pollutant #1 #REF!
Total landfill gas

Gas / Pollutant #2
Methane

Gas / Pollutant #3
Carbon dioxide

Gas / Pollutant #4
NMOC

Edit Existing or Add New Pollutant Parameters

Restore Default Pollutant Parameters

Description/Comments:

Modelling of existing landfill Area 2. Values based on MECP Interim Guide.

4: ENTER WASTE ACCEPTANCE RATES

Input Units: Mg/year

Year	Input Units *(Mg/year)*	Calculated Units *(short tons/year)*
1972		0
1973		0
1974		0
1975		0
1976		0
1977		0
1978		0
1979		0
1980		0
1981		0
1982		0
1983		0
1984		0
1985		0
1986		0
1987		0
1988		0
1989		0
1990		0
1991		0
1992		0
1993		0
1994		0
1995		0
1996		0
1997		0
1998		0
1999		0
2000		0
2001		0
2002		0
2003		0
2004		0
2005		0
2006		0
2007		0
2008		0
2009		0
2010		0
2011		0

4: ENTER WASTE ACCEPTANCE RATES

Input Units: Mg/year

Year	Input Units *(Mg/year)*	Calculated Units *(short tons/year)*
2012		0
2013		0
2014		0
2015		0
2016		0
2017		0
2018		0
2019		0
2020		0
2021		0
2022		0
2023		0
2024		0
2025		0
2026		0
2027		0
2028	350,000	385,000
2029	700,000	770,000
2030	700,000	770,000
2031	700,000	770,000
2032	1,400,000	1,540,000
2033	1,400,000	1,540,000
2034	400,000	440,000
2035		
2036		
2037		
2038		
2039		
2040		
2041		
2042		
2043		
2044		
2045		
2046		
2047		
2048		
2049		
2050		
2051		

INVENTORY

Landfill Name or Identifier: Twin Creeks Environmental Centre

Enter year of emissions inventory: 2034

Gas / Pollutant	Emission Rate				
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(ft^3/year)*	*(short tons/year)*
Total landfill gas	5.835E+04	4.623E+07	3.106E+03	1.633E+09	6.419E+04
Methane	1.604E+04	2.404E+07	1.615E+03	8.490E+08	1.764E+04
Carbon dioxide	4.062E+04	2.219E+07	1.491E+03	7.837E+08	4.468E+04
NMOC	9.860E+01	2.751E+04	1.848E+00	9.715E+05	1.085E+02
1,1,1-Trichloroethane (methyl chloroform) - HAP	5.900E-03	1.063E+00	7.145E-05	3.755E+01	6.490E-03
1,1,2,2-Tetrachloroethane - HAP/VOC	7.424E-03	1.063E+00	7.145E-05	3.755E+01	8.166E-03
1,1-Dichloroethane (ethylidene dichloride) - HAP/VOC	4.377E-03	1.063E+00	7.145E-05	3.755E+01	4.815E-03
1,1-Dichloroethene (vinylidene chloride) - HAP/VOC	3.728E-03	9.246E-01	6.213E-05	3.265E+01	4.101E-03
1,2-Dichloroethane (ethylene dichloride) - HAP/VOC	4.510E-02	1.096E+01	7.362E-04	3.870E+02	4.961E-02
1,2-Dichloropropane (propylene dichloride) - HAP/VOC	1.477E-02	3.144E+00	2.112E-04	1.110E+02	1.625E-02
2-Propanol (isopropyl alcohol) - VOC	7.166E-01	2.866E+02	1.926E-02	1.012E+04	7.883E-01
Acetone	7.818E-01	3.236E+02	2.174E-02	1.143E+04	8.600E-01
Acrylonitrile - HAP/VOC	6.428E-01	2.913E+02	1.957E-02	1.029E+04	7.071E-01
Benzene - No or Unknown Co-disposal - HAP/VOC	1.403E-01	4.318E+01	2.901E-03	1.525E+03	1.544E-01
Benzene - Co-disposal - HAP/VOC	1.652E+00	5.086E+02	3.417E-02	1.796E+04	1.817E+00
Bromodichloromethane - VOC	1.449E-02	2.127E+00	1.429E-04	7.510E+01	1.594E-02
Butane - VOC	5.588E-01	2.312E+02	1.553E-02	8.164E+03	6.147E-01
Carbon disulfide - HAP/VOC	1.200E+00	3.791E+02	2.547E-02	1.339E+04	1.320E+00
Carbon monoxide	7.541E+00	6.473E+03	4.349E-01	2.286E+05	8.295E+00
Carbon tetrachloride - HAP/VOC	6.803E-03	1.063E+00	7.145E-05	3.755E+01	7.483E-03
Carbonyl sulfide - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chlorobenzene - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chlorodifluoromethane	#REF!	#REF!	#REF!	#REF!	#REF!
Chloroethane (ethyl chloride) - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chloroform - HAP/VOC	5.280E-03	1.063E+00	7.145E-05	3.755E+01	5.808E-03
Chloromethane - VOC	9.223E-03	4.392E+00	2.951E-04	1.551E+02	1.015E-02
Dichlorobenzene - (HAP for para isomer/VOC)	#REF!	#REF!	#REF!	#REF!	#REF!
Dichlorodifluoromethane	1.302E-02	2.589E+00	1.740E-04	9.143E+01	1.432E-02
Dichlorofluoromethane - VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Dichloromethane (methylene chloride) - HAP	#REF!	#REF!	#REF!	#REF!	#REF!
Dimethyl sulfide (methyl sulfide) - VOC	4.062E+00	1.572E+03	1.056E-01	5.551E+04	4.468E+00
Ethane	5.146E+01	4.115E+04	2.765E+00	1.453E+06	5.661E+01
Ethanol - VOC	2.543E+00	1.327E+03	8.915E-02	4.686E+04	2.797E+00
Ethyl mercaptan (ethanethiol) - VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Ethylbenzene - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Ethylene dibromide - HAP/VOC	8.309E-03	1.063E+00	7.145E-05	3.755E+01	9.140E-03
Fluorotrichloromethane - VOC	2.008E-01	3.514E+01	2.361E-03	1.241E+03	2.208E-01
Hexane - HAP/VOC	2.784E-01	7.767E+01	5.219E-03	2.743E+03	3.062E-01
Hydrogen sulfide	2.425E+01	1.711E+04	1.149E+00	6.041E+05	2.667E+01
Mercury (total) - HAP	1.119E-04	1.341E-02	9.008E-07	4.735E-01	1.231E-04
Methyl ethyl ketone - HAP/VOC	2.621E+00	8.738E+02	5.871E-02	3.086E+04	2.883E+00
Methyl isobutyl ketone - HAP/VOC	9.842E-02	2.362E+01	1.587E-03	8.343E+02	1.083E-01
Methyl mercaptan - VOC	3.052E+00	1.526E+03	1.025E-01	5.388E+04	3.358E+00
Pentane - VOC	4.578E-01	1.526E+02	1.025E-02	5.388E+03	5.036E-01
Perchloroethylene (tetrachloroethylene) - HAP	2.232E-01	3.236E+01	2.174E-03	1.143E+03	2.455E-01
Propane - VOC	9.326E-01	5.086E+02	3.417E-02	1.796E+04	1.026E+00
t-1,2-Dichloroethene - VOC	5.219E-01	1.295E+02	8.698E-03	4.572E+03	5.741E-01
Toluene - No or Unknown Co-disposal - HAP/VOC	2.374E+00	6.195E+02	4.163E-02	2.188E+04	2.611E+00
Toluene - Co-disposal - HAP/VOC	3.012E+01	7.860E+03	5.281E-01	2.776E+05	3.313E+01
Trichloroethylene (trichloroethene) - HAP/VOC	4.750E-02	8.692E+00	5.840E-04	3.069E+02	5.225E-02
Vinyl chloride - HAP/VOC	5.444E-02	2.094E+01	1.407E-03	7.396E+02	5.989E-02
Xylenes - HAP/VOC	1.884E+00	4.267E+02	2.867E-02	1.507E+04	2.073E+00
1,2-Dichloroethene cis	3.132E-01	7.767E+01	5.219E-03	2.743E+03	3.445E-01
1,2-Dichloroethylene	1.361E-01	3.375E+01	2.268E-03	1.192E+03	1.497E-01
2-Butanol	8.224E-01	2.668E+02	1.792E-02	9.421E+03	9.047E-01
Octane	3.844E-01	8.091E+01	5.436E-03	2.857E+03	4.228E-01
1,1,2-Trichloroethane	1.206E-01	2.173E+01	1.460E-03	7.674E+02	1.326E-01
1,2-Dibromoethane	3.612E-03	4.623E-01	3.106E-05	1.633E+01	3.974E-03
1,2-Dichloroethene trans	1.361E-01	3.375E+01	2.268E-03	1.192E+03	1.497E-01

USER INPUTS

Landfill Name or Identifier: Twin Creeks Environmental Centre

Clear ALL Non-Parameter Inputs/Selections

1: PROVIDE LANDFILL CHARACTERISTICS

Landfill Open Year	1972	
Landfill Closure Year	2035	
Have Model Calculate Closure Year?	○ Yes ◉ No	
Waste Design Capacity		megagrams

Restore Default Model Parameters

2: DETERMINE MODEL PARAMETERS

Methane Generation Rate, k (*year*$^{-1}$)
User-specified
User-specified k value should be based on site-specific data and determined by EPA Method 2E.
User-specified value: 0.040

Potential Methane Generation Capacity, L_o (*m*^{3}/*Mg*)
User-specified
User-specified Lo value should be based on site-specific data and determined by waste type and composition.
User-specified value: 125

NMOC Concentration (*ppmv as hexane*)
User-specified
User-specified value: 595

Methane Content (*% by volume*)
User-specified
User-specified value: 52

3: SELECT GASES/POLLUTANTS

Gas / Pollutant #1 #REF!
Total landfill gas

Gas / Pollutant #2
Methane

Gas / Pollutant #3
Carbon dioxide

Gas / Pollutant #4
NMOC

Edit Existing or Add New Pollutant Parameters

Restore Default Pollutant Parameters

Description/Comments:

Modelling of existing landfill Area 2. Values based on MECP Interim Guide.

4: ENTER WASTE ACCEPTANCE RATES

Input Units: Mg/year

Year	Input Units *(Mg/year)*	Calculated Units *(short tons/year)*
1972		0
1973		0
1974		0
1975		0
1976		0
1977		0
1978		0
1979		0
1980		0
1981		0
1982		0
1983		0
1984		0
1985		0
1986		0
1987		0
1988		0
1989		0
1990		0
1991		0
1992		0
1993		0
1994		0
1995		0
1996		0
1997		0
1998		0
1999		0
2000		0
2001		0
2002		0
2003		0
2004		0
2005		0
2006		0
2007		0
2008		0
2009		0
2010		0
2011		0

4: ENTER WASTE ACCEPTANCE RATES

Input Units: Mg/year

Year	Input Units *(Mg/year)*	Calculated Units *(short tons/year)*
2012		0
2013		0
2014		0
2015		0
2016		0
2017		0
2018		0
2019		0
2020		0
2021		0
2022		0
2023		0
2024		0
2025		0
2026		0
2027		0
2028	350,000	385,000
2029	700,000	770,000
2030	700,000	770,000
2031	700,000	770,000
2032		
2033		
2034		
2035		
2036		
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2050		
2051		

INVENTORY

Landfill Name or Identifier: Twin Creeks Environmental Centre

Enter year of emissions inventory: 2034

Gas / Pollutant	Emission Rate				
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(ft^3/year)*	*(short tons/year)*
Total landfill gas	4.199E+04	3.327E+07	2.235E+03	1.175E+09	4.619E+04
Methane	1.154E+04	1.730E+07	1.162E+03	6.110E+08	1.270E+04
Carbon dioxide	2.923E+04	1.597E+07	1.073E+03	5.640E+08	3.216E+04
NMOC	7.096E+01	1.980E+04	1.330E+00	6.991E+05	7.805E+01
1,1,1-Trichloroethane (methyl chloroform) - HAP	4.246E-03	7.652E-01	5.141E-05	2.702E+01	4.670E-03
1,1,2,2-Tetrachloroethane - HAP/VOC	5.342E-03	7.652E-01	5.141E-05	2.702E+01	5.876E-03
1,1-Dichloroethane (ethylidene dichloride) - HAP/VOC	3.150E-03	7.652E-01	5.141E-05	2.702E+01	3.465E-03
1,1-Dichloroethene (vinylidene chloride) - HAP/VOC	2.683E-03	6.654E-01	4.471E-05	2.350E+01	2.951E-03
1,2-Dichloroethane (ethylene dichloride) - HAP/VOC	3.245E-02	7.885E+00	5.298E-04	2.785E+02	3.570E-02
1,2-Dichloropropane (propylene dichloride) - HAP/VOC	1.063E-02	2.262E+00	1.520E-04	7.989E+01	1.170E-02
2-Propanol (isopropyl alcohol) - VOC	5.157E-01	2.063E+02	1.386E-02	7.284E+03	5.673E-01
Acetone	5.626E-01	2.329E+02	1.565E-02	8.224E+03	6.188E-01
Acrylonitrile - HAP/VOC	4.626E-01	2.096E+02	1.408E-02	7.402E+03	5.088E-01
Benzene - No or Unknown Co-disposal - HAP/VOC	1.010E-01	3.107E+01	2.088E-03	1.097E+03	1.111E-01
Benzene - Co-disposal - HAP/VOC	1.189E+00	3.660E+02	2.459E-02	1.292E+04	1.308E+00
Bromodichloromethane - VOC	1.043E-02	1.530E+00	1.028E-04	5.405E+01	1.147E-02
Butane - VOC	4.021E-01	1.663E+02	1.118E-02	5.875E+03	4.423E-01
Carbon disulfide - HAP/VOC	8.638E-01	2.728E+02	1.833E-02	9.634E+03	9.502E-01
Carbon monoxide	5.426E+00	4.658E+03	3.130E-01	1.645E+05	5.969E+00
Carbon tetrachloride - HAP/VOC	4.896E-03	7.652E-01	5.141E-05	2.702E+01	5.385E-03
Carbonyl sulfide - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chlorobenzene - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chlorodifluoromethane	#REF!	#REF!	#REF!	#REF!	#REF!
Chloroethane (ethyl chloride) - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chloroform - HAP/VOC	3.799E-03	7.652E-01	5.141E-05	2.702E+01	4.179E-03
Chloromethane - VOC	6.637E-03	3.161E+00	2.124E-04	1.116E+02	7.301E-03
Dichlorobenzene - (HAP for para isomer/VOC)	#REF!	#REF!	#REF!	#REF!	#REF!
Dichlorodifluoromethane	9.369E-03	1.863E+00	1.252E-04	6.579E+01	1.031E-02
Dichlorofluoromethane - VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Dichloromethane (methylene chloride) - HAP	#REF!	#REF!	#REF!	#REF!	#REF!
Dimethyl sulfide (methyl sulfide) - VOC	2.923E+00	1.131E+03	7.600E-02	3.995E+04	3.215E+00
Ethane	3.703E+01	2.961E+04	1.989E+00	1.046E+06	4.074E+01
Ethanol - VOC	1.830E+00	9.548E+02	6.416E-02	3.372E+04	2.013E+00
Ethyl mercaptan (ethanethiol) - VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Ethylbenzene - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Ethylene dibromide - HAP/VOC	5.980E-03	7.652E-01	5.141E-05	2.702E+01	6.578E-03
Fluorotrichloromethane - VOC	1.445E-01	2.528E+01	1.699E-03	8.929E+02	1.589E-01
Hexane - HAP/VOC	2.003E-01	5.589E+01	3.755E-03	1.974E+03	2.204E-01
Hydrogen sulfide	1.745E+01	1.231E+04	8.271E-01	4.347E+05	1.919E+01
Mercury (total) - HAP	8.050E-05	9.648E-03	6.483E-07	3.407E-01	8.855E-05
Methyl ethyl ketone - HAP/VOC	1.886E+00	6.288E+02	4.225E-02	2.221E+04	2.075E+00
Methyl isobutyl ketone - HAP/VOC	7.082E-02	1.700E+01	1.142E-03	6.004E+02	7.791E-02
Methyl mercaptan - VOC	2.196E+00	1.098E+03	7.377E-02	3.877E+04	2.416E+00
Pentane - VOC	3.295E-01	1.098E+02	7.377E-03	3.877E+03	3.624E-01
Perchloroethylene (tetrachloroethylene) - HAP	1.606E-01	2.329E+01	1.565E-03	8.224E+02	1.767E-01
Propane - VOC	6.711E-01	3.660E+02	2.459E-02	1.292E+04	7.382E-01
t-1,2-Dichloroethene - VOC	3.756E-01	9.315E+01	6.259E-03	3.290E+03	4.132E-01
Toluene - No or Unknown Co-disposal - HAP/VOC	1.708E+00	4.458E+02	2.995E-02	1.574E+04	1.879E+00
Toluene - Co-disposal - HAP/VOC	2.167E+01	5.656E+03	3.800E-01	1.997E+05	2.384E+01
Trichloroethylene (trichloroethene) - HAP/VOC	3.418E-02	6.255E+00	4.202E-04	2.209E+02	3.760E-02
Vinyl chloride - HAP/VOC	3.918E-02	1.507E+01	1.013E-03	5.322E+02	4.310E-02
Xylenes - HAP/VOC	1.356E+00	3.071E+02	2.063E-02	1.084E+04	1.491E+00
1,2-Dichloroethene cis	2.254E-01	5.589E+01	3.755E-03	1.974E+03	2.479E-01
1,2-Dichloroethylene	9.793E-02	2.429E+01	1.632E-03	8.577E+02	1.077E-01
2-Butanol	5.918E-01	1.920E+02	1.290E-02	6.779E+03	6.510E-01
Octane	2.766E-01	5.822E+01	3.912E-03	2.056E+03	3.043E-01
1,1,2-Trichloroethane	8.676E-02	1.564E+01	1.051E-03	5.522E+02	9.544E-02
1,2-Dibromoethane	2.600E-03	3.327E-01	2.235E-05	1.175E+01	2.860E-03
1,2-Dichloroethene trans	9.792E-02	2.429E+01	1.632E-03	8.577E+02	1.077E-01

Appendix 5A-S1-5.3a: Twin Creeks Landfill, Fugitive Odour Emission Assessment - Scenario 1 - End of Stage 1 (2034)

Sampling Result

Sampling Location	Odour Intensity from Sampling (OU/m^3) [1]
	Average
Old Landfill	546
New Landfill	23,185

Note:
[1] Average odour intensity was adopted in the modelling.

Gas Collection Efficiency

Landfill Area	Sources	Gas Collection Efficiency
Current Landfill and Proposed Landfill	Interim Cover	75%
	Final Cover	90%
Old Landfill, i.e. AREA5	Final Cover	75%

Summary of Odour Emissions for Scenario 1

Source ID	Source Description	Area (m^2)	Odour Flux Rate ($OU/s/m^2$)	Emission Rate (OU/s)	LandGEM Gas Generation (m^3/yr)	Fugitive LFG Emissions (m^3/s)	Odour Intensity (OU/m^3)
AREA5	Old Landfill - Final Cover	275,424	**3.94E-05**	1.08E+01	2.508E+06	1.99E-02	**546**
STAGE1	Vertical Expansion, Stage 1 - Interim Cover	378,390	**5.23E-02**	1.98E+04	4.623E+07	8.53E-01	**23,185**
STAGE2	Vertical Expansion, Stage 2 (AREA2, AREA3, AREA4 to height of 267.5 m) - Interim Cover	366,429	**4.65E-02**	1.70E+04	3.327E+07	7.35E-01	**23,185**
AREA1	Current Landfill - Interim Cover **Emitted through STAGE1 and STAGE2 based on the size of the landfill areas*	-	-	-	3.754E+07	2.98E-01	**23,185**
AREA2		-	-	-	4.220E+07	3.35E-01	**23,185**
AREA3		-	-	-	4.104E+07	3.25E-01	**23,185**

Sample Calculation for AREA5

$$\frac{2.51E+06\ m^3}{1\ yr} \times \frac{1\ yr}{31{,}536{,}000\ s} \times \frac{100 - 75}{1}\ \% \times \frac{546\ OU}{1\ m^3} \times \frac{1}{275{,}424\ m^2}$$

= 3.94E-05 $OU/s/m^2$

Appendix 5A-S2: Source Summary Table, Scenario 2

Twin Creeks Environmental Centre

RWDI# 2101750

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (°C)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
FLARE5	POINT	Landfill Gas Flare 5 - RNG Plant Startup	41.67	871	3.66	3.97	15.24	N/A	429140	4757490	Benzene	71-43-2	1.15E-04	N/A	24, Annual	EC	Average	2%
											Vinyl Chloride (Chloroethylene)	75-01-4	4.45E-05	N/A	24	EC	Average	1%
											1,2-Dichloroethane	107-06-2	3.68E-05	N/A	24	EC	Average	1%
											Nitrogen Oxides (NOx)	10102-44-0	5.96E-01	N/A	1, 24	EC	Average	7%
											Particulate Matter (PM)	PM	2.25E-01	N/A	24	EC	Average	<1%
											Sulphur Dioxide (SO2)	7446-09-5	3.53E-01	N/A	1, Annual	EC	Average	13%
											Dioxins and Furans	DF	2.08E-11	N/A	24	EF	Marginal	12%
											Total Reduced Sulphur (TRS)	TRS	1.78E-02	N/A	10-minute, 24	EC	Marginal	15%
											Hydrogen Sulfide	7783-06-4	1.78E-02	N/A	10-minute, 24	EC	Average	17%
FLARE6	POINT	Landfill Gas Flare 6 - RNG Plant Startup	41.67	871	3.66	3.97	15.24	N/A	429149	4757490	Benzene	71-43-2	1.15E-04	N/A	24, Annual	EC	Average	2%
											Vinyl Chloride (Chloroethylene)	75-01-4	4.45E-05	N/A	24	EC	Average	1%
											1,2-Dichloroethane	107-06-2	3.68E-05	N/A	24	EC	Average	1%
											Nitrogen Oxides (NOx)	10102-44-0	5.96E-01	N/A	1, 24	EC	Average	7%
											Particulate Matter (PM)	PM	2.25E-01	N/A	24	EC	Average	<1%
											Sulphur Dioxide (SO2)	7446-09-5	3.53E-01	N/A	1, Annual	EC	Average	13%
											Dioxins and Furans	DF	2.08E-11	N/A	24	EF	Marginal	12%
											Total Reduced Sulphur (TRS)	TRS	1.78E-02	N/A	10-minute, 24	EC	Marginal	15%
											Hydrogen Sulfide	7783-06-4	1.78E-02	N/A	10-minute, 24	EC	Average	17%
RNG_TO1	POINT	RNG Plant Pre-Treatment Thermal Oxidizer	2.51	816	1.22	2.15	15.24	N/A	429116	4757455	Benzene	71-43-2	4.24E-05	N/A	24, Annual	EC	Marginal	<1%
											1,2-Dichloroethane	107-06-2	6.14E-06	N/A	24	EC	Marginal	<1%
											Vinyl Chloride	75-01-4	1.78E-05	N/A	24	EC	Marginal	<1%
											Total Reduced Sulphur (TRS)	TRS	9.13E-04	N/A	10-minute, 24	EC	Marginal	<1%
											Oxides of Nitrogen	10102-44-0	1.30E-01	N/A	1, 24	EC	Marginal	2%
											Sulphur Dioxide	7446-09-5	9.13E-02	N/A	1, Annual	EC	Marginal	3%
											Dioxins and Furans	DF	3.58E-12	N/A	24	EF	Marginal	2%
											Particulate Matter	PM	4.65E-03	N/A	24	EC	Marginal	<1%
RNG_TO2	POINT	RNG Plant Main Thermal Oxidizer	18.03	816	2.90	2.74	15.24	N/A	429124	4757456	Benzene	71-43-2	1.24E-05	N/A	24, Annual	EC	Marginal	<1%
											1,2-Dichloroethane	107-06-2	4.04E-05	N/A	24	EC	Marginal	1%
											Vinyl Chloride	75-01-4	9.36E-05	N/A	24	EC	Marginal	2%
											Total Reduced Sulphur (TRS)	TRS	3.08E-04	N/A	10-minute, 24	EC	Marginal	<1%
											Oxides of Nitrogen	10102-44-0	1.20E+00	N/A	1, 24	EC	Marginal	15%
											Sulphur Dioxide	7446-09-5	3.08E-02	N/A	1, Annual	EC	Marginal	1%
											Dioxins and Furans	DF	2.54E-11	N/A	24	EF	Marginal	15%
											Particulate Matter	PM	7.71E-02	N/A	24	EC	Marginal	<1%
FLARE5BP	POINT	Landfill Gas Flare 5 - Thermal Oxidizer Bypass Scenario	37.15	871	3.66	3.54	15.24	N/A	429140	4757490	Benzene	71-43-2	2.46E-04	N/A	24, Annual	EC	Marginal	4%
											1,2-Dichloroethane	107-06-2	3.56E-05	N/A	24	EC	Marginal	1%
											Vinyl Chloride	75-01-4	1.03E-04	N/A	24	EC	Marginal	3%
											Total Reduced Sulphur (TRS)	TRS	5.29E-03	N/A	10-minute, 24	EC	Marginal	4%
											Oxides of Nitrogen	10102-44-0	5.78E-01	N/A	1, 24	EC	Marginal	7%
											Sulphur Dioxide	7446-09-5	2.65E-01	N/A	1, Annual	EC	Marginal	10%
											Dioxins and Furans	DF	1.04E-11	N/A	24	EF	Marginal	6%
											Particulate Matter	PM	2.18E-01	N/A	24	EC	Marginal	<1%
FLARE6BP	POINT	Landfill Gas Flare 6 - Thermal Oxidizer Bypass Scenario	37.15	871	3.66	3.54	15.24	N/A	429149	4757490	Benzene	71-43-2	1.01E-05	N/A	24, Annual	EC	Marginal	<1%
											1,2-Dichloroethane	107-06-2	3.30E-05	N/A	24	EC	Marginal	1%
											Vinyl Chloride	75-01-4	7.64E-05	N/A	24	EC	Marginal	2%
											Total Reduced Sulphur (TRS)	TRS	2.51E-04	N/A	10-minute, 24	EC	Marginal	<1%
											Oxides of Nitrogen	10102-44-0	5.78E-01	N/A	1, 24	EC	Marginal	7%
											Sulphur Dioxide	7446-09-5	1.26E-02	N/A	1, Annual	EC	Marginal	<1%
											Dioxins and Furans	DF	1.04E-11	N/A	24	EF	Marginal	6%
											Particulate Matter	PM	2.18E-01	N/A	24	EC	Marginal	<1%
AMINE	POINT-CAP	Amine Reboiler	0.59	204	0.39	5.00	4.92	1.87	429070	4757462	Nitrogen Oxides (NOx)	10102-44-0	8.99E-02	N/A	1, 24	EF	Average	1%
											Particulate Matter	PM	3.28E-03	N/A	24	EF	Average	<1%
GEN4	POINT	RNG Plant 360 kW Emergency Diesel Generator	0.48	491	0.15	26.50	2.15	N/A	429125	4757401	Nitrogen Oxides	10102-44-0	5.26E-01	N/A	1, 24	EF	Above-Average	7%
											Particulate Matter	PM	3.01E-02	N/A	24	EF	Above-Average	<1%
											Sulphur Dioxide	7446-09-5	1.26E-01	N/A	1, Annual	EF	Above-Average	5%
L4	POINT-HOR	Passive Exhaust Louvre Serving SBR and Aeration Tanks	1.96	25	1.38	1.31	2.13	N/A	429013	4757497	Benzene	71-43-2	1.43E-04	N/A	24, Annual	EC	Average	2%
											Vinyl Chloride (Chloroethylene)	75-01-4	3.09E-04	N/A	24	EC	Average	8%
											1,2-Dichloroethane	107-06-2	1.21E-04	N/A	24	EC	Average	4%
											Ammonia	7664-41-7	1.39E-02	N/A	24	EC	Average	40%
											Odour	ODOUR	4.76E+02	N/A	10-minute	EC	Average	1%
L3	POINT-HOR	Passive Exhaust Louvre Serving SBR and Aeration Tanks	1.96	25	1.38	1.31	2.13	N/A	429013	4757490	Benzene	71-43-2	1.43E-04	N/A	24, Annual	EC	Average	2%
											Vinyl Chloride (Chloroethylene)	75-01-4	3.09E-04	N/A	24	EC	Average	8%
											1,2-Dichloroethane	107-06-2	1.21E-04	N/A	24	EC	Average	4%
											Ammonia	7664-41-7	1.39E-02	N/A	24	EC	Average	40%
											Odour	ODOUR	4.76E+02	N/A	10-minute	EC	Average	1%

Appendix 5A-S2: Source Summary Table, Scenario 2

Twin Creeks Environmental Centre

RWDI# 2101750

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (°C)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
EF_2	POINT	Process Exhaust Fan Serving RO System Area	1.71	25	0.51	8.37	3.96	N/A	429073	4757502	Benzene	71-43-2	2.55E-04	N/A	24, Annual	EC	Average	4%
											Vinyl Chloride (Chloroethylene)	75-01-4	2.59E-04	N/A	24	EC	Average	7%
											1,2-Dichloroethane	107-06-2	2.39E-04	N/A	24	EC	Average	8%
											Ammonia	7664-41-7	9.49E-06	N/A	24	EC	Average	<1%
											Odour	ODOUR	3.59E+00	N/A	10-minute	EC	Average	<1%
SD_1	POINT-CAP	Slurry Dryer Exhaust	0.24	25	0.30	3.34	5.00	N/A	429057	4757483	Benzene	71-43-2	6.40E-04	N/A	24, Annual	EC	Average	9%
											Vinyl Chloride (Chloroethylene)	75-01-4	6.40E-04	N/A	24	EC	Average	17%
											1,2-Dichloroethane	107-06-2	6.40E-04	N/A	24	EC	Average	22%
											Ammonia	7664-41-7	4.40E-04	N/A	24	EC	Average	1%
											Odour	ODOUR	2.36E+01	N/A	10-minute	EC	Average	<1%
GEN1	POINT	1,000 kW Emergency Diesel Generator Serving Landfill Gas Plant	3.56	477	0.25	72.52	3.60	0.00	429119	4757554	Nitrogen Oxides	10102-44-0	2.72E-01	N/A	1, 24	EF	Above-Average	3%
											Particulate Matter	PM	4.53E-02	N/A	24	EF	Above-Average	<1%
											Sulphur Dioxide	7446-09-5	4.53E-02	N/A	1, Annual	EF	Above-Average	2%
GEN2	POINT	50 kW Diesel Generator Serving Leachate Pumps	0.24	477	0.10	30.56	3.60	0.00	429246	4757604	Nitrogen Oxides	10102-44-0	7.05E-02	N/A	1, 24	EF	Marginal	<1%
											Particulate Matter	PM	2.32E-02	N/A	24	EF	Marginal	<1%
											Sulphur Dioxide	7446-09-5	2.16E-02	N/A	1, Annual	EF	Marginal	<1%
GEN3	POINT	250 kW Emergency Diesel Generator Serving the Maintenance Offices	0.97	477	0.15	54.89	3.60	0.00	428415	4758689	Nitrogen Oxides	10102-44-0	3.53E-01	N/A	1, 24	EF	Marginal	4%
											Particulate Matter	PM	1.16E-01	N/A	24	EF	Marginal	<1%
											Sulphur Dioxide	7446-09-5	1.08E-01	N/A	1, Annual	EF	Marginal	4%
FLARE1	POINT	Landfill Gas Flare (Based on Full Load)	61.30	950	3.70	5.70	15.20	N/A	429117	4757504	Benzene	71-43-2	1.26E-04	N/A	24, Annual	EC	Average	2%
											Vinyl Chloride (Chloroethylene)	75-01-4	4.91E-05	N/A	24	EC	Average	1%
											1,2-Dichloroethane	107-06-2	4.06E-05	N/A	24	EC	Above-Average	1%
											Nitrogen Oxides	10102-44-0	6.57E-01	N/A	1, 24	EF	Average	8%
											Particulate Matter	PM	2.48E-01	N/A	24	EF	Average	<1%
											Sulphur Dioxide	7446-09-5	3.89E-01	N/A	1, Annual	EC	Marginal	14%
											Dioxins and Furans	DF	2.29E-11	N/A	24	EF	Marginal	13%
											Total Reduced Sulphur (TRS)	TRS	1.97E-02	N/A	10-minute, 24	EC	Marginal	16%
											Hydrogen Sulfide	7783-06-4	1.97E-02	N/A	10-minute, 24	EC	Above-Average	18%
FLARE2	POINT	Landfill Gas Flare (Based on Full Load)	61.30	950	3.70	5.70	15.20	N/A	429154	4757504	Benzene	71-43-2	1.26E-04	N/A	24, Annual	EC	Average	2%
											Vinyl Chloride (Chloroethylene)	75-01-4	4.91E-05	N/A	24	EC	Average	1%
											1,2-Dichloroethane	107-06-2	4.06E-05	N/A	24	EC	Above-Average	1%
											Nitrogen Oxides	10102-44-0	6.57E-01	N/A	1, 24	EF	Average	8%
											Particulate Matter	PM	2.48E-01	N/A	24	EF	Average	<1%
											Sulphur Dioxide	7446-09-5	3.89E-01	N/A	1, Annual	EC	Marginal	14%
											Dioxins and Furans	DF	2.29E-11	N/A	24	EF	Marginal	13%
											Total Reduced Sulphur (TRS)	TRS	1.97E-02	N/A	10-minute, 24	EC	Marginal	16%
											Hydrogen Sulfide	7783-06-4	1.97E-02	N/A	10-minute, 24	EC	Above-Average	18%
FLARE3	POINT	Proposed Landfill Gas Flare (Based on Full Load)	61.30	950	3.70	5.70	15.20	N/A	429142	4757504	Benzene	71-43-2	1.26E-04	N/A	24, Annual	EC	Average	2%
											Vinyl Chloride (Chloroethylene)	75-01-4	4.91E-05	N/A	24	EC	Average	1%
											1,2-Dichloroethane	107-06-2	4.06E-05	N/A	24	EC	Above-Average	1%
											Nitrogen Oxides	10102-44-0	6.57E-01	N/A	1, 24	EF	Average	8%
											Particulate Matter	PM	2.48E-01	N/A	24	EF	Average	<1%
											Sulphur Dioxide	7446-09-5	3.89E-01	N/A	1, Annual	EC	Marginal	14%
											Dioxins and Furans	DF	2.29E-11	N/A	24	EF	Marginal	13%
											Total Reduced Sulphur (TRS)	TRS	1.97E-02	N/A	10-minute, 24	EC	Marginal	16%
											Hydrogen Sulfide	7783-06-4	1.97E-02	N/A	10-minute, 24	EC	Above-Average	18%
FLARE4	POINT	Proposed Landfill Gas Flare (Based on Full Load)	25.79	950	3.20	3.21	12.19	N/A	429129	4757504	Benzene	71-43-2	5.73E-05	N/A	24, Annual	EC	Average	<1%
											Vinyl Chloride (Chloroethylene)	75-01-4	2.22E-05	N/A	24	EC	Average	<1%
											1,2-Dichloroethane	107-06-2	1.84E-05	N/A	24	EC	Above-Average	<1%
											Nitrogen Oxides	10102-44-0	2.98E-01	N/A	1, 24	EF	Average	4%
											Particulate Matter	PM	1.12E-01	N/A	24	EF	Average	<1%
											Sulphur Dioxide	7446-09-5	1.76E-01	N/A	1, Annual	EC	Marginal	6%
											Dioxins and Furans	DF	1.04E-11	N/A	24	EF	Marginal	6%
											Total Reduced Sulphur (TRS)	TRS	8.92E-03	N/A	10-minute, 24	EC	Marginal	7%
											Hydrogen Sulfide	7783-06-4	8.92E-03	N/A	10-minute, 24	EC	Above-Average	8%
AREA1	AREA	Expansion Landfill Phases 1 Through 3 Approximate Area = 244,004 m^2 (Emissions Based on Year 2037)	N/A	N/A	N/A	N/A	N/A	N/A	428626	4757721	Benzene	71-43-2	4.71E-05	2.79E-09	24, Annual	EC	Average	<1%
											Vinyl Chloride (Chloroethylene)	75-01-4	2.64E-04	1.08E-09	24	EC	Average	7%
											1,2-Dichloroethane	107-06-2	2.19E-04	8.97E-10	24	EC	Above-Average	8%
											Total Reduced Sulphur (TRS)	TRS	0.00E+00	0.00E+00	10-minute, 24	EC	Marginal	<1%
											Hydrogen Sulfide	7783-06-4	0.00E+00	0.00E+00	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	0.00E+00	0.00E+00	10-minute	ST	Average	<1%

Appendix 5A-S2: Source Summary Table, Scenario 2

Twin Creeks Environmental Centre

RWDI# 2101750

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (°C)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
AREA2	AREA	Expansion Landfill Phases 4 Through 5 Approximate Area = 165,611 m^2 (Emissions Based on Year 2037)	N/A	N/A	N/A	N/A	N/A	N/A	428634	4758149	Benzene	71-43-2	9.01E-04	5.44E-09	24, Annual	EC	Average	13%
											Vinyl Chloride (Chloroethylene)	75-01-4	3.49E-04	2.11E-09	24	EC	Average	9%
											1,2-Dichloroethane	107-06-2	2.89E-04	1.75E-09	24	EC	Above-Average	10%
											Total Reduced Sulphur (TRS)	TRS	0.00E+00	0.00E+00	10-minute, 24	EC	Marginal	<1%
											Hydrogen Sulfide	7783-06-4	0.00E+00	0.00E+00	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	0.00E+00	0.00E+00	10-minute	ST	Average	<1%
AREA3	AREA	Expansion Landfill Phases 6 Through 7 Approximate Area = 179,092 m^2 (Emissions Based on Year 2037)	N/A	N/A	N/A	N/A	N/A	N/A	428637	4758461	Benzene	71-43-2	8.23E-04	4.60E-09	24, Annual	EC	Average	12%
											Vinyl Chloride (Chloroethylene)	75-01-4	3.19E-04	1.78E-09	24	EC	Average	8%
											1,2-Dichloroethane	107-06-2	2.65E-04	1.48E-09	24	EC	Above-Average	9%
											Total Reduced Sulphur (TRS)	TRS	0.00E+00	0.00E+00	10-minute, 24	EC	Marginal	<1%
											Hydrogen Sulfide	7783-06-4	0.00E+00	0.00E+00	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	0.00E+00	0.00E+00	10-minute	ST	Average	<1%
AREA4	AREA	Expansion Landfill Phases 8 Through 9 Approximate Area = 99,012 m^2 (Emissions Based on Year 2037)	N/A	N/A	N/A	N/A	N/A	N/A	429027	4758463	Benzene	71-43-2	0.00E+00	0.00E+00	24, Annual	EC	Average	<1%
											Vinyl Chloride (Chloroethylene)	75-01-4	0.00E+00	0.00E+00	24	EC	Average	<1%
											1,2-Dichloroethane	107-06-2	0.00E+00	0.00E+00	24	EC	Above-Average	<1%
											Total Reduced Sulphur (TRS)	TRS	0.00E+00	0.00E+00	10-minute, 24	EC	Marginal	<1%
											Hydrogen Sulfide	7783-06-4	0.00E+00	0.00E+00	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	0.00E+00	0.00E+00	10-minute	ST	Average	<1%
AREA5	AREA	Existing Landfill Approximate Area = 208,263 m^2 (Emissions Based on Year 2037)	N/A	N/A	N/A	N/A	N/A	N/A	429208	4757609	Benzene	71-43-2	6.42E-05	2.33E-10	24, Annual	EC	Average	<1%
											Vinyl Chloride (Chloroethylene)	75-01-4	2.49E-05	9.05E-11	24	EC	Average	<1%
											1,2-Dichloroethane	107-06-2	2.06E-05	7.50E-11	24	EC	Above-Average	<1%
											Total Reduced Sulphur (TRS)	TRS	2.95E-03	1.07E-08	10-minute, 24	EC	Marginal	2%
											Hydrogen Sulfide	7783-06-4	9.95E-04	3.61E-09	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	9.62E+00	3.49E-05	10-minute	ST	Average	<1%
STAGE1	AREA	Vertical Expansion Landfill Approximate Area = 378,390 m2 (Emissions Based on Year 2037)	N/A	N/A	N/A	N/A	N/A	N/A	428515	4758837	Benzene	71-43-2	6.78E-04	1.79E-09	24, Annual	EC	Average	10%
											Vinyl Chloride (Chloroethylene)	75-01-4	2.63E-04	6.95E-10	24	EC	Average	7%
											1,2-Dichloroethane	107-06-2	2.18E-04	5.76E-10	24	EC	Above-Average	8%
											Total Reduced Sulphur (TRS)	TRS	0.00E+00	0.00E+00	10-minute, 24	EC	Marginal	<1%
											Hydrogen Sulfide	7783-06-4	0.00E+00	0.00E+00	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	0.00E+00	0.00E+00	10-minute	ST	Average	<1%
STAGE1FC	AREA	Vertical Expansion Landfill, Stage 1 area not covered by Stage 3 Approximate Area = 205,538 m2	N/A	N/A	N/A	N/A	N/A	N/A	428508	4757867	Total Reduced Sulphur (TRS)	TRS	8.81E-04	4.29E-09	10-minute, 24	EC	Marginal	<1%
											Hydrogen Sulfide	7783-06-4	3.04E-04	1.48E-09	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	6.31E+03	3.07E-02	10-minute	EC	Average	17%
STAGE2	AREA	Vertical Expansion Landfill, Stage 2 Approximate Area = 366,429 m2 (Emissions Based on Year 2037)	N/A	N/A	N/A	N/A	N/A	N/A	428878	4758835	Benzene	71-43-2	1.27E-03	3.46E-09	24, Annual	EC	Average	18%
											Vinyl Chloride (Chloroethylene)	75-01-4	4.92E-04	1.34E-09	24	EC	Average	13%
											1,2-Dichloroethane	107-06-2	4.07E-04	1.11E-09	24	EC	Above-Average	14%
											Total Reduced Sulphur (TRS)	TRS	3.93E-03	1.07E-08	10-minute, 24	EC	Marginal	3%
											Hydrogen Sulfide	7783-06-4	1.35E-03	3.69E-09	10-minute, 24	EC	Above-Average	1%
											Odour	ODOUR	1.78E+04	4.85E-02	10-minute	ST	Average	48%
STAGE2FC	AREA	Vertical Expansion Landfill, Stage 2 area not covered by Stage 4 Approximate Area = 210,645 m2	N/A	N/A	N/A	N/A	N/A	N/A	428876	4757705	Total Reduced Sulphur (TRS)	TRS	0.00E+00	0.00E+00	10-minute, 24	EC	Marginal	<1%
											Hydrogen Sulfide	7783-06-4	0.00E+00	0.00E+00	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	0.00E+00	0.00E+00	10-minute	EC	Average	<1%
STAGE3	AREA	Vertical Expansion Landfill, Stage 3 Approximate Area = 147,144 m2 (Emissions Based on Year 2037)	N/A	N/A	N/A	N/A	N/A	N/A	428650	4758699	Benzene	71-43-2	0.00E+00	0.00E+00	24, Annual	EC	Average	<1%
											Vinyl Chloride (Chloroethylene)	75-01-4	0.00E+00	0.00E+00	24	EC	Average	<1%
											1,2-Dichloroethane	107-06-2	0.00E+00	0.00E+00	24	EC	Above-Average	<1%
											Total Reduced Sulphur (TRS)	TRS	1.58E-03	1.07E-08	10-minute, 24	EC	Marginal	1%
											Hydrogen Sulfide	7783-06-4	5.43E-04	3.69E-09	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	7.55E+03	5.13E-02	10-minute	ST	Average	20%
STAGE4	AREA	Vertical Expansion Landfill, Stage 4 Approximate Area = 181,496 m2 (Emissions Based on Year 2037)	N/A	N/A	N/A	N/A	N/A	N/A	428847	4758701	Benzene	71-43-2	0.00E+00	0.00E+00	24, Annual	EC	Average	<1%
											Vinyl Chloride (Chloroethylene)	75-01-4	0.00E+00	0.00E+00	24	EC	Average	<1%
											1,2-Dichloroethane	107-06-2	0.00E+00	0.00E+00	24	EC	Above-Average	<1%
											Total Reduced Sulphur (TRS)	TRS	0.00E+00	0.00E+00	10-minute, 24	EC	Marginal	<1%
											Hydrogen Sulfide	7783-06-4	0.00E+00	0.00E+00	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	0.00E+00	0.00E+00	10-minute	ST	Average	<1%
DC_WF	VOLUME	Daily Cover Dropped at Working Face	N/A	N/A	N/A	N/A	N/A	N/A	429243	4758818	Particulate Matter	PM	Variable [4]	N/A	24	EF	Average	N/A
											PM10	PM10	Variable [4]	N/A	24	EF	Average	N/A
											PM2.5	PM25	Variable [4]	N/A	24	EF	Average	N/A
DC_SS	VOLUME	Daily Cover Dropped at Soil Stockpile	N/A	N/A	N/A	N/A	N/A	N/A	429308	4757217	Particulate Matter	PM	Variable [4]	N/A	24	EF	Average	N/A
											PM10	PM10	Variable [4]	N/A	24	EF	Average	N/A
											PM2.5	PM25	Variable [4]	N/A	24	EF	Average	N/A
CDA1	VOLUME	Compost Material Dropped at Compost Diversion Area 1 (North)	N/A	N/A	N/A	N/A	N/A	N/A	429524	4757510	Particulate Matter	PM	Variable [4]	N/A	24	EF	Average	N/A
											PM10	PM10	Variable [4]	N/A	24	EF	Average	N/A
											PM2.5	PM25	Variable [4]	N/A	24	EF	Average	N/A

Appendix 5A-S2: Source Summary Table, Scenario 2

Twin Creeks Environmental Centre

RWDI# 2101750

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (°C)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
CDA2	VOLUME	Compost Material Dropped at Compost Diversion Area 2 (South)	N/A	N/A	N/A	N/A	N/A	N/A	429536	4757510	Particulate Matter	PM	Variable [4]	N/A	24	EF	Average	N/A
											PM10	PM10	Variable [4]	N/A	24	EF	Average	N/A
											PM2.5	PM25	Variable [4]	N/A	24	EF	Average	N/A
CDA	AREA	Compost Diversion Area	N/A	N/A	N/A	N/A	N/A	N/A	429513	4757452	Odour	ODOUR	4.47E+03	8.10E-01	10-minute	EF	Average	12%
CS_WF	VOLUME	Contaminated Soil Dropped at Working Face	N/A	N/A	N/A	N/A	N/A	N/A	429230	4758823	Particulate Matter	PM	Variable [4]	N/A	24	EF	Average	N/A
											PM10	PM10	Variable [4]	N/A	24	EF	Average	N/A
											PM2.5	PM25	Variable [4]	N/A	24	EF	Average	N/A
WIND_SS	AREA	Wind Erosion at Soil Stockpile	N/A	N/A	N/A	N/A	N/A	N/A	429216	4757189	Particulate Matter	PM	N/A	Variable [4]	24	EF	Average	N/A
											PM10	PM10	N/A	Variable [4]	24	EF	Average	N/A
											PM2.5	PM25	N/A	Variable [4]	24	EF	Average	N/A
WIND_WF	AREA	Wind Erosion at Working Face	N/A	N/A	N/A	N/A	N/A	N/A	429226	4758768	Particulate Matter	PM	N/A	Variable [4]	24	EF	Average	N/A
											PM10	PM10	N/A	Variable [4]	24	EF	Average	N/A
											PM2.5	PM25	N/A	Variable [4]	24	EF	Average	N/A
WIND_CDA	AREA	Wind Rrosion at Compost Diversion Area	N/A	N/A	N/A	N/A	N/A	N/A	429513	4757452	Particulate Matter	PM	N/A	Variable	24	EF	Average	N/A
											PM10	PM10	N/A	Variable	24	EF	Average	N/A
											PM2.5	PM25	N/A	Variable	24	EF	Average	N/A
FC_CAP	AREA	Final Cap Construction Clay Drop-off	N/A	N/A	N/A	N/A	N/A	N/A	429155	4758819	Particulate Matter	PM	N/A	Variable [4]	24	EF	Average	N/A
											PM10	PM10	N/A	Variable [4]	24	EF	Average	N/A
											PM2.5	PM25	N/A	Variable [4]	24	EF	Average	N/A
FC_SS	AREA	Final Cap Clay Storage Pile Truck Loading	N/A	N/A	N/A	N/A	N/A	N/A	429278	4757247	Particulate Matter	PM	N/A	Variable [4]	24	EF	Average	N/A
											PM10	PM10	N/A	Variable [4]	24	EF	Average	N/A
											PM2.5	PM25	N/A	Variable [4]	24	EF	Average	N/A
WIND_CAP	AREA	Wind Erosion at the Final Cap Construction Area	N/A	N/A	N/A	N/A	N/A	N/A	429147	4758752	Particulate Matter	PM	N/A	Variable [4]	24	EF	Average	N/A
											PM10	PM10	N/A	Variable [4]	24	EF	Average	N/A
											PM2.5	PM25	N/A	Variable [4]	24	EF	Average	N/A
MH5AB	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429468	4758257	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH4A	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429461	4758000	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH3SA	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429461	4757794	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH16	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429423	4757612	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH6AB	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429198	4758220	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
SUMP	AREA	Leachate Maintenance Sump	N/A	N/A	N/A	N/A	N/A	N/A	429247	4758070	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH3SF	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429334	4757819	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH18	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429266	4757613	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
CONSOIL	AREA	Contaminated Soil Pile	N/A	N/A	N/A	N/A	N/A	N/A	429235	4758822	Vinyl Chloride (Chloroethylene)	75-01-4	7.34E-07	3.67E-08	24	ST	Average	<1%
											1,2-Dichloroethane	107-06-2	1.59E-05	7.97E-07	24	ST	Average	<1%
											Benzene	71-43-2	6.76E-04	3.38E-05	24, Annual	ST	Average	10%
											Odour	ODOUR	1.53E+00	7.65E-02	10-minute	ST	Average	<1%
WF	AREA	Working Face / Scrape Down Area	N/A	N/A	N/A	N/A	N/A	N/A	429225	4758767	Odour	ODOUR	N/A	Variable [5]	10-minute	ST	Average	N/A
DOZE1	VOLUME	Cat Dozers at Working Face, Dugitive Dust	N/A	N/A	N/A	N/A	N/A	N/A	429257	4758797	Particulate Matter	PM	3.33E+00	N/A	24	EC	Average	6%
											PM10	PM10	9.84E-01	N/A	24	EC	Average	6%
											PM2.5	PM25	3.50E-01	N/A	24	EC	Average	14%
DOZE2	VOLUME	Cat Dozers at Working Face, Tailpipe	N/A	N/A	N/A	N/A	N/A	N/A	429257	4758797	Particulate Matter	PM	1.26E-03	N/A	24	EC	Average	<1%
											PM10	PM10	1.26E-03	N/A	24	EC	Average	<1%
											PM2.5	PM25	1.22E-03	N/A	24	EC	Average	<1%
											Benzene	71-43-2	8.45E-05	N/A	24, Annual	EC	Average	1%
											Ammonia	7664-41-7	7.78E-04	N/A	24	EC	Average	2%
											Nitrogen Dioxide	NO2	2.61E-02	N/A	24	EC	Average	8%
											Nitrogen Oxides	10102-44-0	2.61E-02	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	2.54E-04	N/A	1, Annual	EC	Average	<1%
DOZE3	VOLUME	Cat Dozers at Soil Stockpile, Fugitive Dust	N/A	N/A	N/A	N/A	N/A	N/A	429314	4757233	Particulate Matter	PM	2.73E+00	N/A	24	EC	Average	5%
											PM10	PM10	8.65E-01	N/A	24	EC	Average	6%
											PM2.5	PM25	2.87E-01	N/A	24	EC	Average	12%
DOZE4	VOLUME	Cat Dozers at Soil Stockpile, Tailpipe	N/A	N/A	N/A	N/A	N/A	N/A	429314	4757233	Particulate Matter	PM	3.26E-04	N/A	24	EC	Average	<1%
											PM10	PM10	3.26E-04	N/A	24	EC	Average	<1%
											PM2.5	PM25	3.16E-04	N/A	24	EC	Average	<1%
											Benzene	71-43-2	2.36E-05	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	2.26E-04	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	7.14E-03	N/A	24	EC	Average	2%
											Nitrogen Oxides	10102-44-0	7.14E-03	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	7.35E-05	N/A	1, Annual	EC	Average	<1%
DOZE1CAP	VOLUME	Cat Dozers at Working Face, Dugitive Dust	N/A	N/A	N/A	N/A	N/A	N/A	429185	4758790	Particulate Matter	PM	5.67E+00	N/A	24	EC	Average	9%
											PM10	PM10	2.04E+00	N/A	24	EC	Average	13%
											PM2.5	PM25	5.96E-01	N/A	24	EC	Average	24%

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (°C)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
DOZE2CAP	VOLUME	Cat Dozers at Working Face, Tailpipe	N/A	N/A	N/A	N/A	N/A	N/A	429185	4758790	Particulate Matter	PM	3.65E-04	N/A	24	EC	Average	<1%
											PM10	PM10	3.65E-04	N/A	24	EC	Average	<1%
											PM2.5	PM25	3.54E-04	N/A	24	EC	Average	<1%
											Benzene	71-43-2	3.06E-05	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	1.19E-04	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	5.76E-03	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	3.89E-05	N/A	1, Annual	EC	Average	<1%
DOZE2SS	VOLUME	Cat Dozers at Soil Stockpile, Tailpipe	N/A	N/A	N/A	N/A	N/A	N/A	429460	4757232	Particulate Matter	PM	2.86E-04	N/A	24	EC	Average	<1%
											PM10	PM10	2.86E-04	N/A	24	EC	Average	<1%
											PM2.5	PM25	2.78E-04	N/A	24	EC	Average	<1%
											Benzene	71-43-2	1.67E-05	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	3.33E-04	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	8.51E-03	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	1.08E-04	N/A	1, Annual	EC	Average	<1%
IDLE01	VOLUME	Trucks Idling at the Scale House	N/A	N/A	N/A	N/A	N/A	N/A	428420	4758417	Particulate Matter	PM	1.28E-04	N/A	24	EC	Average	<1%
											PM10	PM10	1.28E-04	N/A	24	EC	Average	<1%
											PM2.5	PM25	1.18E-04	N/A	24	EC	Average	<1%
											Benzene	71-43-2	1.23E-06	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	2.13E-04	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.08E-02	N/A	24	EC	Average	3%
											Nitrogen Oxides	10102-44-0	2.75E-02	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	1.24E-05	N/A	1, Annual	EC	Average	<1%
IDLE02	VOLUME	Trucks Idling at the Working Face	N/A	N/A	N/A	N/A	N/A	N/A	429247	4758805	Particulate Matter	PM	1.28E-04	N/A	24	EC	Average	<1%
											PM10	PM10	1.28E-04	N/A	24	EC	Average	<1%
											PM2.5	PM25	1.18E-04	N/A	24	EC	Average	<1%
											Benzene	71-43-2	1.23E-06	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	2.13E-04	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.08E-02	N/A	24	EC	Average	3%
											Nitrogen Oxides	10102-44-0	2.75E-02	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	1.24E-05	N/A	1, Annual	EC	Average	<1%
PR01	LINE_VOLUME	Main Entrance Road	N/A	N/A	N/A	N/A	N/A	N/A	428277	4758638	Particulate Matter	PM	8.63E-02 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	4.07E-02 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	6.10E-03 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	3.53E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	2.13E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.90E-02 [6]	N/A	24	EC	Average	6%
											Nitrogen Oxides	10102-44-0	4.86E-02 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	3.06E-05 [6]	N/A	1, Annual	EC	Average	<1%
PR01Z	LINE_VOLUME	Main Entrance Road, onsite equipment	N/A	N/A	N/A	N/A	N/A	N/A	428277	4758638	Particulate Matter	PM	9.83E-03 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	3.40E-03 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	5.52E-04 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	1.24E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	2.88E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.33E-03 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	3.45E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	3.52E-06 [6]	N/A	1, Annual	EC	Average	<1%
UR02Z	LINE_VOLUME	Access road to compost diversion area (CDA)	N/A	N/A	N/A	N/A	N/A	N/A	429167	4757583	Particulate Matter	PM	1.15E+00 [6]	N/A	24	EC	Average	2%
											PM10	PM10	3.48E-01 [6]	N/A	24	EC	Average	2%
											PM2.5	PM25	3.49E-02 [6]	N/A	24	EC	Average	1%
											Benzene	71-43-2	2.45E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	4.85E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.75E-03 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	4.56E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	5.67E-06 [6]	N/A	1, Annual	EC	Average	<1%
PR04A	LINE_VOLUME	Entrance to Scale House	N/A	N/A	N/A	N/A	N/A	N/A	428404	4758633	Particulate Matter	PM	1.15E-01 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	4.98E-02 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	7.61E-03 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	4.17E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	2.51E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	2.24E-02 [6]	N/A	24	EC	Average	7%
											Nitrogen Oxides	10102-44-0	5.73E-02 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	3.62E-05 [6]	N/A	1, Annual	EC	Average	<1%

Appendix 5A-S2: Source Summary Table, Scenario 2

Twin Creeks Environmental Centre

RWDI# 2101750

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (°C)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
PR04AZ	LINE_VOLUME	Entrance to Scale House, onsite equipment	N/A	N/A	N/A	N/A	N/A	N/A	428404	4758633	Particulate Matter	PM	1.34E-02 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	4.23E-03 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	7.05E-04 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	1.45E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	3.37E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.56E-03 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	4.05E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	4.12E-06 [6]	N/A	1, Annual	EC	Average	<1%
BR06	LINE_VOLUME	South Ramp - Variable Traffic	N/A	N/A	N/A	N/A	N/A	N/A	428755	4757734	Particulate Matter	PM	1.25E+01 [6]	N/A	24	EC	Average	21%
											PM10	PM10	2.91E+00 [6]	N/A	24	EC	Average	19%
											PM2.5	PM25	2.94E-01 [6]	N/A	24	EC	Average	12%
											Benzene	71-43-2	1.03E-05 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	6.24E-04 [6]	N/A	24	EC	Average	2%
											Nitrogen Dioxide	NO2	5.56E-02 [6]	N/A	24	EC	Average	18%
											Nitrogen Oxides	10102-44-0	1.42E-01 [6]	N/A	1, 24	EC	Average	2%
											Sulphur Dioxide	7446-09-5	8.98E-05 [6]	N/A	1, Annual	EC	Average	<1%
BR06Z	LINE_VOLUME	South Ramp - Non-variable Traffic	N/A	N/A	N/A	N/A	N/A	N/A	428755	4757734	Particulate Matter	PM	1.20E+00 [6]	N/A	24	EC	Average	2%
											PM10	PM10	2.71E-01 [6]	N/A	24	EC	Average	2%
											PM2.5	PM25	2.72E-02 [6]	N/A	24	EC	Average	1%
											Benzene	71-43-2	7.83E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	1.56E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	2.85E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	4.03E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	5.03E-05 [6]	N/A	1, Annual	EC	Average	<1%
BR06Y	LINE_VOLUME	South Ramp - Construction Traffic	N/A	N/A	N/A	N/A	N/A	N/A	428755	4757734	Particulate Matter	PM	1.65E+00 [6]	N/A	24	EC	Average	3%
											PM10	PM10	3.74E-01 [6]	N/A	24	EC	Average	2%
											PM2.5	PM25	3.75E-02 [6]	N/A	24	EC	Average	2%
											Benzene	71-43-2	7.88E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	1.58E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	4.03E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	5.12E-05 [6]	N/A	1, Annual	EC	Average	<1%
PR08Z	LINE_VOLUME	WF to SS/LTF - Non-variable Traffic	N/A	N/A	N/A	N/A	N/A	N/A	428750	4757727	Particulate Matter	PM	1.12E-01 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	1.78E-02 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	3.95E-03 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	5.77E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	1.21E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.98E-03 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	7.14E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	3.07E-05 [6]	N/A	1, Annual	EC	Average	<1%
PR08Y	LINE_VOLUME	WF to SS/LTF - Construction Traffic	N/A	N/A	N/A	N/A	N/A	N/A	428750	4757727	Particulate Matter	PM	6.16E-02 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	8.03E-03 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	1.99E-03 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	4.01E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	8.01E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	2.05E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	2.60E-05 [6]	N/A	1, Annual	EC	Average	<1%
UR09AZ	LINE_VOLUME	WF to SS, to CDA turn off - Non-variable Traffic	N/A	N/A	N/A	N/A	N/A	N/A	429039	4757671	Particulate Matter	PM	1.55E+00 [6]	N/A	24	EC	Average	3%
											PM10	PM10	4.66E-01 [6]	N/A	24	EC	Average	3%
											PM2.5	PM25	4.67E-02 [6]	N/A	24	EC	Average	2%
											Benzene	71-43-2	3.95E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	7.87E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	8.88E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	3.70E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	2.04E-05 [6]	N/A	1, Annual	EC	Average	<1%
UR09AY	LINE_VOLUME	WF to SS, to CDA turnoff - Construction Traffic	N/A	N/A	N/A	N/A	N/A	N/A	429039	4757671	Particulate Matter	PM	9.65E-01 [6]	N/A	24	EC	Average	2%
											PM10	PM10	2.90E-01 [6]	N/A	24	EC	Average	2%
											PM2.5	PM25	2.91E-02 [6]	N/A	24	EC	Average	1%
											Benzene	71-43-2	2.76E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	5.51E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	1.41E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	1.79E-05 [6]	N/A	1, Annual	EC	Average	<1%

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (°C)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
UR09BZ	LINE_VOLUME	WF to SS, after CDA turnoff - Non-variable Traffic	N/A	N/A	N/A	N/A	N/A	N/A	429164	4757579	Particulate Matter	PM	6.50E-01 [6]	N/A	24	EC	Average	1%
											PM10	PM10	1.96E-01 [6]	N/A	24	EC	Average	1%
											PM2.5	PM25	1.96E-02 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	2.29E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	4.57E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	1.17E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	1.49E-05 [6]	N/A	1, Annual	EC	Average	<1%
UR09BY	LINE_VOLUME	WF to SS, after CDA turnoff - Construction Traffic	N/A	N/A	N/A	N/A	N/A	N/A	429164	4757579	Particulate Matter	PM	9.12E-01 [6]	N/A	24	EC	Average	2%
											PM10	PM10	2.74E-01 [6]	N/A	24	EC	Average	2%
											PM2.5	PM25	2.75E-02 [6]	N/A	24	EC	Average	1%
											Benzene	71-43-2	2.33E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	4.66E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	1.19E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	1.51E-05 [6]	N/A	1, Annual	EC	Average	<1%
UR11Z	LINE_VOLUME	Across SS - Variable Traffic	N/A	N/A	N/A	N/A	N/A	N/A	429160	4757399	Particulate Matter	PM	8.82E-01 [6]	N/A	24	EC	Average	1%
											PM10	PM10	2.65E-01 [6]	N/A	24	EC	Average	2%
											PM2.5	PM25	2.66E-02 [6]	N/A	24	EC	Average	1%
											Benzene	71-43-2	3.10E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	6.21E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	1.59E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	2.02E-05 [6]	N/A	1, Annual	EC	Average	<1%
UR11Y	LINE_VOLUME	Across SS - Construction Traffic	N/A	N/A	N/A	N/A	N/A	N/A	429160	4757399	Particulate Matter	PM	1.24E+00 [6]	N/A	24	EC	Average	2%
											PM10	PM10	3.72E-01 [6]	N/A	24	EC	Average	2%
											PM2.5	PM25	3.73E-02 [6]	N/A	24	EC	Average	2%
											Benzene	71-43-2	3.17E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	6.33E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	1.62E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	2.05E-05 [6]	N/A	1, Annual	EC	Average	<1%
UR12	LINE_VOLUME	Unpaved Road to working face - Variable Traffic	N/A	N/A	N/A	N/A	N/A	N/A	429512	4757267	Particulate Matter	PM	1.56E+01 [6]	N/A	24	EC	Average	26%
											PM10	PM10	3.63E+00 [6]	N/A	24	EC	Average	23%
											PM2.5	PM25	3.67E-01 [6]	N/A	24	EC	Average	15%
											Benzene	71-43-2	1.29E-05 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	7.78E-04 [6]	N/A	24	EC	Average	2%
											Nitrogen Dioxide	NO2	6.93E-02 [6]	N/A	24	EC	Average	22%
											Nitrogen Oxides	10102-44-0	1.78E-01 [6]	N/A	1, 24	EC	Average	2%
											Sulphur Dioxide	7446-09-5	1.12E-04 [6]	N/A	1, Annual	EC	Average	<1%
UR12Z	LINE_VOLUME	Unpaved Road to working face - Non-variable Traffic	N/A	N/A	N/A	N/A	N/A	N/A	429512	4757267	Particulate Matter	PM	1.49E+00 [6]	N/A	24	EC	Average	2%
											PM10	PM10	3.38E-01 [6]	N/A	24	EC	Average	2%
											PM2.5	PM25	3.40E-02 [6]	N/A	24	EC	Average	1%
											Benzene	71-43-2	9.76E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	1.94E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	3.55E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	5.03E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	6.27E-05 [6]	N/A	1, Annual	EC	Average	<1%
UR12Y	LINE_VOLUME	Unpaved Road to working face - Construction Traffic	N/A	N/A	N/A	N/A	N/A	N/A	429512	4757267	Particulate Matter	PM	2.06E+00 [6]	N/A	24	EC	Average	3%
											PM10	PM10	4.67E-01 [6]	N/A	24	EC	Average	3%
											PM2.5	PM25	4.68E-02 [6]	N/A	24	EC	Average	2%
											Benzene	71-43-2	9.83E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	1.96E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	5.03E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	6.38E-05 [6]	N/A	1, Annual	EC	Average	<1%
PR13Z	LINE_VOLUME	WF to LTF	N/A	N/A	N/A	N/A	N/A	N/A	429035	4757669	Particulate Matter	PM	7.26E-03 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	1.52E-03 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	2.93E-04 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	1.70E-08 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	3.70E-06 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	3.71E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	9.47E-04 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	5.56E-07 [6]	N/A	1, Annual	EC	Average	<1%

Appendix 5A-S2: Source Summary Table, Scenario 2

Twin Creeks Environmental Centre

RWDI# 2101750

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (°C)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
PR14Z	LINE_VOLUME	WF to LTF	N/A	N/A	N/A	N/A	N/A	N/A	429077	4757516	Particulate Matter	PM	2.67E-03 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	5.57E-04 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	1.08E-04 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	6.25E-09 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	1.36E-06 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.36E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	3.48E-04 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	2.04E-07 [6]	N/A	1, Annual	EC	Average	<1%
UR17Z	LINE_VOLUME	Across CDA	N/A	N/A	N/A	N/A	N/A	N/A	429514	4757517	Particulate Matter	PM	1.90E+00 [6]	N/A	24	EC	Average	3%
											PM10	PM10	5.71E-01 [6]	N/A	24	EC	Average	4%
											PM2.5	PM25	5.73E-02 [6]	N/A	24	EC	Average	2%
											Benzene	71-43-2	1.53E-05 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	5.93E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	2.88E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	1.95E-05 [6]	N/A	1, Annual	EC	Average	<1%
UR18Z	LINE_VOLUME	Across WF, onsite equipment	N/A	N/A	N/A	N/A	N/A	N/A	429270	4758794	Particulate Matter	PM	2.09E+00 [6]	N/A	24	EC	Average	3%
											PM10	PM10	6.36E-01 [6]	N/A	24	EC	Average	4%
											PM2.5	PM25	6.38E-02 [6]	N/A	24	EC	Average	3%
											Benzene	71-43-2	1.59E-05 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	7.08E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	2.11E-06 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	3.18E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	2.32E-05 [6]	N/A	1, Annual	EC	Average	<1%
PR04B	LINE_VOLUME	Scale House to WF	N/A	N/A	N/A	N/A	N/A	N/A	428477	4758211	Particulate Matter	PM	3.48E-01 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	1.43E-01 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	2.21E-02 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	1.17E-05 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	7.04E-04 [6]	N/A	24	EC	Average	2%
											Nitrogen Dioxide	NO2	6.27E-02 [6]	N/A	24	EC	Average	20%
											Nitrogen Oxides	10102-44-0	1.61E-01 [6]	N/A	1, 24	EC	Average	2%
											Sulphur Dioxide	7446-09-5	1.01E-04 [6]	N/A	1, Annual	EC	Average	<1%
PR04BZ	LINE_VOLUME	Scale House to WF, onsite equipment	N/A	N/A	N/A	N/A	N/A	N/A	428477	4758211	Particulate Matter	PM	4.12E-02 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	1.24E-02 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	2.10E-03 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	4.08E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	9.49E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	4.40E-03 [6]	N/A	24	EC	Average	1%
											Nitrogen Oxides	10102-44-0	1.14E-02 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	1.16E-05 [6]	N/A	1, Annual	EC	Average	<1%
PR04C	LINE_VOLUME	Exit Road from WF	N/A	N/A	N/A	N/A	N/A	N/A	428477	4758211	Particulate Matter	PM	1.11E-01 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	4.45E-02 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	6.93E-03 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	3.60E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	2.17E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.93E-02 [6]	N/A	24	EC	Average	6%
											Nitrogen Oxides	10102-44-0	4.95E-02 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	3.13E-05 [6]	N/A	1, Annual	EC	Average	<1%
PR04CZ	LINE_VOLUME	Exit Road from WF, onsite equipment	N/A	N/A	N/A	N/A	N/A	N/A	428477	4758211	Particulate Matter	PM	1.32E-02 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	3.88E-03 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	6.63E-04 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	1.26E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	2.93E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.36E-03 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	3.52E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	3.58E-06 [6]	N/A	1, Annual	EC	Average	<1%
MH17	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429326	4757612	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
LW6	AREA	Leachate Monitoring Well	N/A	N/A	N/A	N/A	N/A	N/A	429295	4757641	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
LW5	AREA	Leachate Monitoring Well	N/A	N/A	N/A	N/A	N/A	N/A	429414	4757638	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH3SB	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429460	4757818	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH3SD	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429216	4757819	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH3SC	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429211	4757771	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH3SE	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429326	4757780	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH4B	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429448	4758128	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
LW4	AREA	Leachate Monitoring Well	N/A	N/A	N/A	N/A	N/A	N/A	429414	4758056	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%

Appendix 5A-S2: Source Summary Table, Scenario 2

RWDI# 2101750

Twin Creeks Environmental Centre

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (°C)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
LW3	AREA	Leachate Monitoring Well	N/A	N/A	N/A	N/A	N/A	N/A	429437	4758227	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH8AB	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429215	4758370	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH10	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429205	4758622	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH12AB	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429195	4758697	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH7AB	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429471	4758461	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
LW2	AREA	Leachate Monitoring Well	N/A	N/A	N/A	N/A	N/A	N/A	429451	4758527	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH9AB	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429473	4758617	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH11AB	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429473	4758632	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
LW1	AREA	Leachate Monitoring Well	N/A	N/A	N/A	N/A	N/A	N/A	429457	4758703	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
Total		Total of All Listed Sources									Benzene	71-43-2	6.92E-03					100%
											Vinyl Chloride (Chloroethylene)	75-01-4	3.78E-03					100%
											1,2-Dichloroethane	107-06-2	2.88E-03					100%
											Ammonia	7664-41-7	3.46E-02					100%
											Nitrogen Oxides	10102-44-0	8.07E+00					100%
											Particulate Matter	PM	6.05E+01					100%
											Sulphur Dioxide	7446-09-5	2.75E+00					100%
											Hydrogen Sulfide	7783-06-4	1.07E-01					100%
											Total Reduced Sulphur (TRS)	TRS	1.20E-01					100%
											PM10	PM10	1.56E+01					100%
											PM2.5	PM25	2.44E+00					100%
											Odour	ODOUR	3.71E+04					100%
											Dioxins and Furans	DF	1.70E-10					100%
											Nitrogen Dioxide	NO2	3.17E-01					100%

Notes:

[1] Emission Estimating Technique Short-Forms are V-ST (Validated Source Test), ST (Source Test), EF (Emission Factor), MB (Mass Balance), and EC (Engineering Calculation).

[2] Data Quality Categories: Highest; Above-Average; Average; and Marginal.

[3] For Odour, the units are OU/s and $OU/m^2/s$ for emission rate and flux rate.

[4] Material handling and wind erosion emissions vary by time of day depending on wind conditions in each hour. Hourly emission rates have been applied during modelling.

[5] Odour emissions from the active working face vary depending on the time of day. From 6 a.m. to 9 a.m. the active face is freshly uncovered waste as the daily cover is stripped and new waste is deposited. By 9 a.m. the entire active face has been covered by at least 1 foot to 1 metre of new waste. After 9 a.m. the emission factor for new waste at the active face is applied.

[6] Roadway traffic varies by time of day. The maximum emission rate (g/s) for the entire road segment is shown in this table; hourly emissions rates have been applied during modelling.

Appendix 5A-S2-5.1a: On-Site Mobile Equipment Emissions Spreadsheet - Fugitive Dust (AM)

Project #2101750

Twin Creeks Environmental Centre - Preferred Alternative

UNPAVED ROAD SECTIONS - AP-42 Section 13.2.2
PAVED ROAD SECTIONS - AP-42 Section 13.2.1

Paved Roads: $E = k\,(sL)^{0.91}\,(W)^{1.02}$
Unpaved Roads - Industrial: $E = 281.9\,k\,(s/12)^{a}\,(W/3)^{b}$
Unpaved Roads - Public: $E = 281.9\,k\,(s/12)^{a}\,(S/30)^{d}\,/\,(M/0.5)^{c} - C$

E particulate emission factor (g/VKT)
k particle size multiplier (see below)
sL road surface silt loading (g/m^2)
W average weight of the vehicles traveling the road (US short tons)
s surface material silt content (%)
C emission factor for 1980's vehicle fleet exhaust, brake wear and tire wear
M surface material moisture content (%)
S mean vehicle speed (mph)
a,b,c,d constants (see below)

Route ID [1]	Route Description	Traffic Passes			Segment Length [2]	Road Surface [3]	Roadway Type [4]	Mean Vehicle Speed		Average Vehicle Weight [5]	Surface Material Moisture Content [6]	Surface Silt Content [7]	Road Surface Silt Loading [8]	Base AP-42 Emission Factor			Base Emission Rate			Additional Control Efficiency Applied	Final Controlled Emission Rate					
		Hourly	Daily	Annual										TSP	PM_{10}	$PM_{2.5}$	TSP	PM_{10}	$PM_{2.5}$		TSP	Data Quality Rating	PM_{10}	Data Quality Rating	$PM_{2.5}$	Data Quality Rating
		(#/h)	(#/d)	(#/a)	(m)			(km/h)	(mph)	(tons)	(%)	(%)	(g/m^2)	(g/VKT)	(g/VKT)	(g/VKT)	(g/s)	(g/s)	(g/s)	(%)	(g/s)		(g/s)		(g/s)	
PR01	Main Entrance Road	1	1	1	206	Paved	Industrial	10	6	30.2	--	--	0.63	1.0E+02	1.3E+01	3.2E+00	5.8E-03	7.5E-04	1.8E-04	90%	5.8E-04	--	7.5E-05	--	1.8E-05	--
PR01Z	Main Entrance Road, onsite equipment	1	1	1	206	Paved	Industrial	10	6	30.2	--	--	0.63	1.0E+02	1.3E+01	3.2E+00	5.8E-03	7.5E-04	1.8E-04	90%	5.8E-04	--	7.5E-05	--	1.8E-05	--
UR02Z	Access road to compost diversion area (CDA)	1	1	1	414	Unpaved	Industrial	10	6	15.5	--	43.1%	--	9.3E+03	2.8E+03	2.8E+02	1.1E+00	3.2E-01	3.2E-02	90%	1.1E-01	--	3.2E-02	--	3.2E-03	--
PR04A	Entrance to Scale House	1	1	1	487	Paved	Industrial	10	6	36.6	--	--	0.63	1.2E+02	1.6E+01	3.9E+00	1.7E-02	2.2E-03	5.2E-04	90%	1.7E-03	--	2.2E-04	--	5.2E-05	--
PR04AZ	Entrance to Scale House, onsite equipment	1	1	1	487	Paved	Industrial	10	6	36.6	--	--	0.63	1.2E+02	1.6E+01	3.9E+00	1.7E-02	2.2E-03	5.2E-04	90%	1.7E-03	--	2.2E-04	--	5.2E-05	--
BR06	South Ramp - Variable Traffic	1	1	1	603	Unpaved	Industrial	10	6	41.1	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	1.4E+00	3.1E-01	3.1E-02	90%	1.4E-01	--	3.1E-02	--	3.1E-03	--
BR06Z	South Ramp - Non-variable Traffic	1	1	1	603	Unpaved	Industrial	10	6	41.1	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	1.4E+00	3.1E-01	3.1E-02	90%	1.4E-01	--	3.1E-02	--	3.1E-03	--
BR06Y	South Ramp - Construction Traffic	1	1	1	603	Unpaved	Industrial	10	6	41.1	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	1.4E+00	3.1E-01	3.1E-02	90%	1.4E-01	--	3.1E-02	--	3.1E-03	--
PR08Z	WF to SS/LTF - Non-variable Traffic	1	1	1	307	Paved	Industrial	10	6	37.1	--	--	3.53	6.0E+02	7.8E+01	1.9E+01	5.1E-02	6.6E-03	1.6E-03	90%	5.1E-03	--	6.6E-04	--	1.6E-04	--
PR08Y	WF to SS/LTF - Construction Traffic	1	1	1	307	Paved	Industrial	10	6	37.1	--	--	3.53	6.0E+02	7.8E+01	1.9E+01	5.1E-02	6.6E-03	1.6E-03	90%	5.1E-03	--	6.6E-04	--	1.6E-04	--
UR09AZ	WF to SS, to CDA turn off - Non-variable Traffic	1	1	1	211	Unpaved	Industrial	10	6	36.7	--	43.1%	--	1.4E+04	4.1E+03	4.1E+02	8.0E-01	2.4E-01	2.4E-02	90%	8.0E-02	--	2.4E-02	--	2.4E-03	--
UR09AY	WF to SS, to CDA turnoff - Construction Traffic	1	1	1	211	Unpaved	Industrial	10	6	36.7	--	43.1%	--	1.4E+04	4.1E+03	4.1E+02	8.0E-01	2.4E-01	2.4E-02	90%	8.0E-02	--	2.4E-02	--	2.4E-03	--
UR09BZ	WF to SS, after CDA turnoff - Non-variable Traffic	1	1	1	179	Unpaved	Industrial	10	6	46.9	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	7.6E-01	2.3E-01	2.3E-02	90%	7.6E-02	--	2.3E-02	--	2.3E-03	--
UR09BY	WF to SS, after CDA turnoff - Construction Traffic	1	1	1	179	Unpaved	Industrial	10	6	46.9	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	7.6E-01	2.3E-01	2.3E-02	90%	7.6E-02	--	2.3E-02	--	2.3E-03	--
UR11Z	Across SS - Variable Traffic	1	1	1	242	Unpaved	Industrial	10	6	46.9	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	1.0E+00	3.1E-01	3.1E-02	90%	1.0E-01	--	3.1E-02	--	3.1E-03	--
UR11Y	Across SS - Construction Traffic	1	1	1	242	Unpaved	Industrial	10	6	46.9	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	1.0E+00	3.1E-01	3.1E-02	90%	1.0E-01	--	3.1E-02	--	3.1E-03	--
UR12	Unpaved Road to working face - Variable Traffic	1	1	1	752	Unpaved	Industrial	10	6	41.1	--	16.8%		8.2E+03	1.9E+03	1.9E+02	1.7E+00	3.9E-01	3.9E-02	90%	1.7E-01	--	3.9E-02	--	3.9E-03	--
UR12Z	Unpaved Road to working face - Non-variable Traffic	1	1	1	752	Unpaved	Industrial	10	6	41.1	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	1.7E+00	3.9E-01	3.9E-02	90%	1.7E-01	--	3.9E-02	--	3.9E-03	--
UR12Y	Unpaved Road to working face - Construction Traffic	1	1	1	752	Unpaved	Industrial	10	6	41.1	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	1.7E+00	3.9E-01	3.9E-02	90%	1.7E-01	--	3.9E-02	--	3.9E-03	--
PR13Z	WF to LTF	1	1	1	165	Paved	Industrial	10	6	44.3	--	--	3.53	7.2E+02	9.3E+01	2.3E+01	3.3E-02	4.3E-03	1.0E-03	90%	3.3E-03	--	4.3E-04	--	1.0E-04	--
PR14Z	WF to LTF	1	1	1	61	Paved	Industrial	10	6	44.3	--	--	3.53	7.2E+02	9.3E+01	2.3E+01	1.2E-02	1.6E-03	3.8E-04	90%	1.2E-03	--	1.6E-04	--	3.8E-05	--
UR17Z	Across CDA	1	1	1	90	Unpaved	Industrial	10	6	36.4	--	43.1%	--	1.4E+04	4.1E+03	4.1E+02	3.4E-01	1.0E-01	1.0E-02	90%	3.4E-02	--	1.0E-02	--	1.0E-03	--
UR18Z	Across WF, onsite equipment	1	1	1	45	Unpaved	Industrial	10	6	36.4	--	44.7%	--	1.4E+04	4.2E+03	4.2E+02	1.7E-01	5.3E-02	5.3E-03	90%	1.7E-02	--	5.3E-03	--	5.3E-04	--
PR04B	Scale House to WF	1	1	1	681	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	2.6E-02	3.4E-03	8.2E-04	90%	2.6E-03	--	3.4E-04	--	8.2E-05	--
PR04BZ	Scale House to WF, onsite equipment	1	1	1	681	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	2.6E-02	3.4E-03	8.2E-04	90%	2.6E-03	--	3.4E-04	--	8.2E-05	--
PR04C	Exit Road from WF	1	1	1	420	Paved	Industrial	10	6	36.6	--	--	0.75	1.5E+02	1.9E+01	4.5E+00	1.7E-02	2.2E-03	5.3E-04	90%	1.7E-03	--	2.2E-04	--	5.3E-05	--
PR04CZ	Exit Road from WF, onsite equipment	1	1	1	420	Paved	Industrial	10	6	36.6	--	--	0.75	1.5E+02	1.9E+01	4.5E+00	1.7E-02	2.2E-03	5.3E-04	90%	1.7E-03	--	2.2E-04	--	5.3E-05	--

Constants for Mobile Emission Equations

Roadway Type	Contaminant	k	a	b	c	d	Quality
Paved Roads:	**$PM_{2.5}$**	0.15	-	-	-	-	-
	PM_{10}	0.62	-	-	-	-	-
	TSP	4.79	-	-	-	-	-
Unpaved Roads - Industrial:	**$PM_{2.5}$**	0.15	0.9	0.45	-	-	C
	PM_{10}	1.5	0.9	0.45	-	-	B
	TSP	7.32	0.6	0.45	-	-	B
Unpaved Roads - Public:	**$PM_{2.5}$**	0.18	1	-	0.2	0.5	C
	PM_{10}	1.8	1	-	0.2	0.5	B
	TSP	8.96	1	-	0.49	0.2	B

[1] Route ID numbers provided on site plan.
[2] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.
[3] Paved surfaces include asphalt, concrete, and recycled asphalt (if it forms a relatively consistent surface).
[4] Publicly accessible and dominated by light vehicles, or industrial, and dominated by heavy vehicles.
[5] The average vehicle weight reflects the average of the empty and loaded vehicle weight, for travel in both directions.
[6] Required only for publicly accessible unpaved roads.
[7] Required only for unpaved roads (public and industrial).
[8] Required only for industrial paved roads.

Sample calculation for uncontrolled TSP emission factor for Source PR01: Main Entrance Road

EF = 281.9 x (4.9) x [(0% / 12)]^(0.7) x [(36.6087628865979 tons) / 3]^(0.45) = 102 g TSP / vehicle kilometer travelled (vkt)

Sample calculation for TSP emission rate for Source PR01: Main Entrance Road

$$\frac{1 \text{ vehicles}}{1 \text{ h}} \times \frac{206 \text{ m}}{1000 \text{ m}} \times \frac{1 \text{ km}}{1 \text{ vehicle km}} \times \frac{102 \text{ g}_{TSP}}{3600 \text{ s}} \times \frac{1 \text{ h}}{1 \text{ g}_{TSP}} \times \frac{0.1 \text{ g}_{TSP\ uncontrolled}}{1 \text{ g}_{TSP}} = 5.8E\text{-}04 \text{ g}_{TSP} / \text{s}$$

Comments

Appendix 5A-S2-5.1a: On-Site Mobile Equipment Emissions Spreadsheet - Fugitive Dust (MD)

Project #2101750

Twin Creeks Environmental Centre - Preferred Alternative

UNPAVED ROAD SECTIONS - AP-42 Section 13.2.2
PAVED ROAD SECTIONS - AP-42 Section 13.2.1

Paved Roads: $E = k\,(sL)^{0.91}\,(W)^{1.02}$
Unpaved Roads - Industrial: $E = 281.9\,k\,(s/12)^{a}\,(W/3)^{b}$
Unpaved Roads - Public: $E = 281.9\,k\,(s/12)^{a}\,(S/30)^{d}\,/\,(M/0.5)^{c} - C$

E particulate emission factor (g/VKT)
k particle size multiplier (see below)
sL road surface silt loading (g/m^2)
W average weight of the vehicles traveling the road (US short tons)
s surface material silt content (%)
C emission factor for 1980's vehicle fleet exhaust, brake wear and tire wear
M surface material moisture content (%)
S mean vehicle speed (mph)
a,b,c,d constants (see below)

Route ID [1]	Route Description	Traffic Passes [2]			Segment Length [2]	Road Surface [3]	Roadway Type [4]	Mean Vehicle Speed		Average Vehicle Weight [5]	Surface Material Moisture Content [6]	Surface Silt Content [7]	Road Surface Silt Loading [8]	Base AP-42 Emission Factor			Base Emission Rate			Additional Control Efficiency Applied	Final Controlled Emission Rate					
		Hourly	Daily	Annual										TSP	PM_{10}	$PM_{2.5}$	TSP	PM_{10}	$PM_{2.5}$		TSP	Data Quality Rating	PM_{10}	Data Quality Rating	$PM_{2.5}$	Data Quality Rating
		(#/h)	(#/d)	(#/a)	(m)			(km/h)	(mph)	(tons)	(%)	(%)	(g/m^2)	(g/VKT)	(g/VKT)	(g/VKT)	(g/s)	(g/s)	(g/s)	(%)	(g/s)		(g/s)		(g/s)	
PR01	Main Entrance Road	1	1	1	206	Paved	Industrial	10	6	30.2	--	--	0.63	1.0E+02	1.3E+01	3.2E+00	5.8E-03	7.5E-04	1.8E-04	90%	5.8E-04	--	7.5E-05	--	1.8E-05	--
PR01Z	Main Entrance Road, onsite equipment	1	1	1	206	Paved	Industrial	10	6	30.2	--	--	0.63	1.0E+02	1.3E+01	3.2E+00	5.8E-03	7.5E-04	1.8E-04	90%	5.8E-04	--	7.5E-05	--	1.8E-05	--
UR02Z	Access road to compost diversion area (CDA)	1	1	1	414	Unpaved	Industrial	10	6	15.5	--	43.1%	--	9.3E+03	2.8E+03	2.8E+02	1.1E+00	3.2E-01	3.2E-02	90%	1.1E-01	--	3.2E-02	--	3.2E-03	--
PR04A	Entrance to Scale House	1	1	1	487	Paved	Industrial	10	6	36.6	--	--	0.63	1.2E+02	1.6E+01	3.9E+00	1.7E-02	2.2E-03	5.2E-04	90%	1.7E-03	--	2.2E-04	--	5.2E-05	--
PR04AZ	Entrance to Scale House, onsite equipment	1	1	1	487	Paved	Industrial	10	6	36.6	--	--	0.63	1.2E+02	1.6E+01	3.9E+00	1.7E-02	2.2E-03	5.2E-04	90%	1.7E-03	--	2.2E-04	--	5.2E-05	--
BR06	South Ramp - Variable Traffic	1	1	1	603	Unpaved	Industrial	10	6	41.1	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	1.4E+00	3.1E-01	3.1E-02	90%	1.4E-01	--	3.1E-02	--	3.1E-03	--
BR06Z	South Ramp - Non-variable Traffic	1	1	1	603	Unpaved	Industrial	10	6	41.1	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	1.4E+00	3.1E-01	3.1E-02	90%	1.4E-01	--	3.1E-02	--	3.1E-03	--
BR06Y	South Ramp - Construction Traffic	1	1	1	603	Unpaved	Industrial	10	6	41.1	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	1.4E+00	3.1E-01	3.1E-02	90%	1.4E-01	--	3.1E-02	--	3.1E-03	--
PR08Z	WF to SS/LTF - Non-variable Traffic	1	1	1	307	Paved	Industrial	10	6	37.1	--	--	3.53	6.0E+02	7.8E+01	1.9E+01	5.1E-02	6.6E-03	1.6E-03	90%	5.1E-03	--	6.6E-04	--	1.6E-04	--
PR08Y	WF to SS/LTF - Construction Traffic	1	1	1	307	Paved	Industrial	10	6	37.1	--	--	3.53	6.0E+02	7.8E+01	1.9E+01	5.1E-02	6.6E-03	1.6E-03	90%	5.1E-03	--	6.6E-04	--	1.6E-04	--
UR09AZ	WF to SS, to CDA turn off - Non-variable Traffic	1	1	1	211	Unpaved	Industrial	10	6	36.7	--	43.1%	--	1.4E+04	4.1E+03	4.1E+02	8.0E-01	2.4E-01	2.4E-02	90%	8.0E-02	--	2.4E-02	--	2.4E-03	--
UR09AY	WF to SS, to CDA turnoff - Construction Traffic	1	1	1	211	Unpaved	Industrial	10	6	36.7	--	43.1%	--	1.4E+04	4.1E+03	4.1E+02	8.0E-01	2.4E-01	2.4E-02	90%	8.0E-02	--	2.4E-02	--	2.4E-03	--
UR09BZ	WF to SS, after CDA turnoff - Non-variable Traffic	1	1	1	179	Unpaved	Industrial	10	6	46.9	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	7.6E-01	2.3E-01	2.3E-02	90%	7.6E-02	--	2.3E-02	--	2.3E-03	--
UR09BY	WF to SS, after CDA turnoff - Construction Traffic	1	1	1	179	Unpaved	Industrial	10	6	46.9	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	7.6E-01	2.3E-01	2.3E-02	90%	7.6E-02	--	2.3E-02	--	2.3E-03	--
UR11Z	Across SS - Variable Traffic	1	1	1	242	Unpaved	Industrial	10	6	46.9	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	1.0E+00	3.1E-01	3.1E-02	90%	1.0E-01	--	3.1E-02	--	3.1E-03	--
UR11Y	Across SS - Construction Traffic	1	1	1	242	Unpaved	Industrial	10	6	46.9	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	1.0E+00	3.1E-01	3.1E-02	90%	1.0E-01	--	3.1E-02	--	3.1E-03	--
UR12	Unpaved Road to working face - Variable Traffic	1	1	1	752	Unpaved	Industrial	10	6	41.1	--	16.8%		8.2E+03	1.9E+03	1.9E+02	1.7E+00	3.9E-01	3.9E-02	90%	1.7E-01	--	3.9E-02	--	3.9E-03	--
UR12Z	Unpaved Road to working face - Non-variable Traffic	1	1	1	752	Unpaved	Industrial	10	6	41.1	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	1.7E+00	3.9E-01	3.9E-02	90%	1.7E-01	--	3.9E-02	--	3.9E-03	--
UR12Y	Unpaved Road to working face - Construction Traffic	1	1	1	752	Unpaved	Industrial	10	6	41.1	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	1.7E+00	3.9E-01	3.9E-02	90%	1.7E-01	--	3.9E-02	--	3.9E-03	--
PR13Z	WF to LTF	1	1	1	165	Paved	Industrial	10	6	44.3	--	--	3.53	7.2E+02	9.3E+01	2.3E+01	3.3E-02	4.3E-03	1.0E-03	90%	3.3E-03	--	4.3E-04	--	1.0E-04	--
PR14Z	WF to LTF	1	1	1	61	Paved	Industrial	10	6	44.3	--	--	3.53	7.2E+02	9.3E+01	2.3E+01	1.2E-02	1.6E-03	3.8E-04	90%	1.2E-03	--	1.6E-04	--	3.8E-05	--
UR17Z	Across CDA	1	1	1	90	Unpaved	Industrial	10	6	36.4	--	43.1%	--	1.4E+04	4.1E+03	4.1E+02	3.4E-01	1.0E-01	1.0E-02	90%	3.4E-02	--	1.0E-02	--	1.0E-03	--
UR18Z	Across WF, onsite equipment	1	1	1	45	Unpaved	Industrial	10	6	36.4	--	44.7%	--	1.4E+04	4.2E+03	4.2E+02	1.7E-01	5.3E-02	5.3E-03	90%	1.7E-02	--	5.3E-03	--	5.3E-04	--
PR04B	Scale House to WF	1	1	1	681	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	2.6E-02	3.4E-03	8.2E-04	90%	2.6E-03	--	3.4E-04	--	8.2E-05	--
PR04BZ	Scale House to WF, onsite equipment	1	1	1	681	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	2.6E-02	3.4E-03	8.2E-04	90%	2.6E-03	--	3.4E-04	--	8.2E-05	--
PR04C	Exit Road from WF	1	1	1	420	Paved	Industrial	10	6	36.6	--	--	0.75	1.5E+02	1.9E+01	4.5E+00	1.7E-02	2.2E-03	5.3E-04	90%	1.7E-03	--	2.2E-04	--	5.3E-05	--
PR04CZ	Exit Road from WF, onsite equipment	1	1	1	420	Paved	Industrial	10	6	36.6	--	--	0.75	1.5E+02	1.9E+01	4.5E+00	1.7E-02	2.2E-03	5.3E-04	90%	1.7E-03	--	2.2E-04	--	5.3E-05	--

Constants for Mobile Emission Equations

Roadway Type	Contaminant	k	a	b	c	d	Quality
Paved Roads:	**$PM_{2.5}$**	0.15	-	-	-	-	-
	PM_{10}	0.62	-	-	-	-	-
	TSP	4.79	-	-	-	-	-
Unpaved Roads - Industrial:	**$PM_{2.5}$**	0.15	0.9	0.45	-	-	C
	PM_{10}	1.5	0.9	0.45	-	-	B
	TSP	7.32	0.6	0.45	-	-	B
Unpaved Roads - Public:	**$PM_{2.5}$**	0.18	1	-	0.2	0.5	C
	PM_{10}	1.8	1	-	0.2	0.5	B
	TSP	8.96	1	-	0.49	0.2	B

[1] Route ID numbers provided on site plan.
[2] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.
[3] Paved surfaces include asphalt, concrete, and recycled asphalt (if it forms a relatively consistent surface).
[4] Publicly accessible and dominated by light vehicles, or industrial, and dominated by heavy vehicles.
[5] The average vehicle weight reflects the average of the empty and loaded vehicle weight, for travel in both directions.
[6] Required only for publicly accessible unpaved roads.
[7] Required only for unpaved roads (public and industrial).
[8] Required only for industrial paved roads.

Sample calculation for uncontrolled TSP emission factor for Source PR01: Main Entrance Road

EF = 281.9 x (4.9) x [(0% / 12)]^(0.7) x [(36.6087628865979 tons) / 3]^(0.45) = 102 g TSP / vehicle kilometer travelled (vkt)

Sample calculation for TSP emission rate for Source PR01: Main Entrance Road

$$\frac{1 \text{ vehicles}}{1 \text{ h}} \times \frac{206 \text{ m}}{1000 \text{ m}} \times \frac{1 \text{ km}}{1 \text{ vehicle km}} \times \frac{102 \text{ g}_{TSP}}{3600 \text{ s}} \times \frac{1 \text{ h}}{1 \text{ g}_{TSP}} \times \frac{0.1 \text{ g}_{TSP\ uncontrolled}}{1 \text{ g}_{TSP}} = 5.8E\text{-}04 \text{ g}_{TSP} / \text{s}$$

Comments

Appendix 5A-S2-5.1a: On-Site Mobile Equipment Emissions Spreadsheet - Fugitive Dust (PM)

Project #2101750

Twin Creeks Environmental Centre - Preferred Alternative

UNPAVED ROAD SECTIONS - AP-42 Section 13.2.2
PAVED ROAD SECTIONS - AP-42 Section 13.2.1

Paved Roads: $E = k\,(sL)^{0.91}\,(W)^{1.02}$
Unpaved Roads - Industrial: $E = 281.9\,k\,(s/12)^{a}\,(W/3)^{b}$
Unpaved Roads - Public: $E = 281.9\,k\,(s/12)^{a}\,(S/30)^{d}\,/\,(M/0.5)^{c} - C$

E particulate emission factor (g/VKT)
k particle size multiplier (see below)
sL road surface silt loading (g/m^2)
W average weight of the vehicles traveling the road (US short tons)
s surface material silt content (%)
C emission factor for 1980's vehicle fleet exhaust, brake wear and tire wear
M surface material moisture content (%)
S mean vehicle speed (mph)
a,b,c,d constants (see below)

Route ID [1]	Route Description	Traffic Passes [2]			Segment Length [2]	Road Surface [3]	Roadway Type [4]	Mean Vehicle Speed		Average Vehicle Weight [5]	Surface Material Moisture Content [6]	Surface Silt Content [7]	Road Surface Silt Loading [8]	Base AP-42 Emission Factor			Base Emission Rate			Additional Control Efficiency Applied	Final Controlled Emission Rate					
		Hourly	Daily	Annual										TSP	PM_{10}	$PM_{2.5}$	TSP	PM_{10}	$PM_{2.5}$		TSP	Data Quality Rating	PM_{10}	Data Quality Rating	$PM_{2.5}$	Data Quality Rating
		(#/h)	(#/d)	(#/a)	(m)			(km/h)	(mph)	(tons)	(%)	(%)	(g/m^2)	(g/VKT)	(g/VKT)	(g/VKT)	(g/s)	(g/s)	(g/s)	(%)	(g/s)		(g/s)		(g/s)	
PR01	Main Entrance Road	1	1	1	206	Paved	Industrial	10	6	30.2	--	--	0.63	1.0E+02	1.3E+01	3.2E+00	5.8E-03	7.5E-04	1.8E-04	90%	5.8E-04	--	7.5E-05	--	1.8E-05	--
PR01Z	Main Entrance Road, onsite equipment	1	1	1	206	Paved	Industrial	10	6	30.2	--	--	0.63	1.0E+02	1.3E+01	3.2E+00	5.8E-03	7.5E-04	1.8E-04	90%	5.8E-04	--	7.5E-05	--	1.8E-05	--
UR02Z	Access road to compost diversion area (CDA)	1	1	1	414	Unpaved	Industrial	10	6	15.5	--	43.1%	--	9.3E+03	2.8E+03	2.8E+02	1.1E+00	3.2E-01	3.2E-02	90%	1.1E-01	--	3.2E-02	--	3.2E-03	--
PR04A	Entrance to Scale House	1	1	1	487	Paved	Industrial	10	6	36.6	--	--	0.63	1.2E+02	1.6E+01	3.9E+00	1.7E-02	2.2E-03	5.2E-04	90%	1.7E-03	--	2.2E-04	--	5.2E-05	--
PR04AZ	Entrance to Scale House, onsite equipment	1	1	1	487	Paved	Industrial	10	6	36.6	--	--	0.63	1.2E+02	1.6E+01	3.9E+00	1.7E-02	2.2E-03	5.2E-04	90%	1.7E-03	--	2.2E-04	--	5.2E-05	--
BR06	South Ramp - Variable Traffic	1	1	1	603	Unpaved	Industrial	10	6	41.1	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	1.4E+00	3.1E-01	3.1E-02	90%	1.4E-01	--	3.1E-02	--	3.1E-03	--
BR06Z	South Ramp - Non-variable Traffic	1	1	1	603	Unpaved	Industrial	10	6	41.1	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	1.4E+00	3.1E-01	3.1E-02	90%	1.4E-01	--	3.1E-02	--	3.1E-03	--
BR06Y	South Ramp - Construction Traffic	1	1	1	603	Unpaved	Industrial	10	6	41.1	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	1.4E+00	3.1E-01	3.1E-02	90%	1.4E-01	--	3.1E-02	--	3.1E-03	--
PR08Z	WF to SS/LTF - Non-variable Traffic	1	1	1	307	Paved	Industrial	10	6	37.1	--	--	3.53	6.0E+02	7.8E+01	1.9E+01	5.1E-02	6.6E-03	1.6E-03	90%	5.1E-03	--	6.6E-04	--	1.6E-04	--
PR08Y	WF to SS/LTF - Construction Traffic	1	1	1	307	Paved	Industrial	10	6	37.1	--	--	3.53	6.0E+02	7.8E+01	1.9E+01	5.1E-02	6.6E-03	1.6E-03	90%	5.1E-03	--	6.6E-04	--	1.6E-04	--
UR09AZ	WF to SS, to CDA turn off - Non-variable Traffic	1	1	1	211	Unpaved	Industrial	10	6	36.7	--	43.1%	--	1.4E+04	4.1E+03	4.1E+02	8.0E-01	2.4E-01	2.4E-02	90%	8.0E-02	--	2.4E-02	--	2.4E-03	--
UR09AY	WF to SS, to CDA turnoff - Construction Traffic	1	1	1	211	Unpaved	Industrial	10	6	36.7	--	43.1%	--	1.4E+04	4.1E+03	4.1E+02	8.0E-01	2.4E-01	2.4E-02	90%	8.0E-02	--	2.4E-02	--	2.4E-03	--
UR09BZ	WF to SS, after CDA turnoff - Non-variable Traffic	1	1	1	179	Unpaved	Industrial	10	6	46.9	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	7.6E-01	2.3E-01	2.3E-02	90%	7.6E-02	--	2.3E-02	--	2.3E-03	--
UR09BY	WF to SS, after CDA turnoff - Construction Traffic	1	1	1	179	Unpaved	Industrial	10	6	46.9	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	7.6E-01	2.3E-01	2.3E-02	90%	7.6E-02	--	2.3E-02	--	2.3E-03	--
UR11Z	Across SS - Variable Traffic	1	1	1	242	Unpaved	Industrial	10	6	46.9	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	1.0E+00	3.1E-01	3.1E-02	90%	1.0E-01	--	3.1E-02	--	3.1E-03	--
UR11Y	Across SS - Construction Traffic	1	1	1	242	Unpaved	Industrial	10	6	46.9	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	1.0E+00	3.1E-01	3.1E-02	90%	1.0E-01	--	3.1E-02	--	3.1E-03	--
UR12	Unpaved Road to working face - Variable Traffic	1	1	1	752	Unpaved	Industrial	10	6	41.1	--	16.8%		8.2E+03	1.9E+03	1.9E+02	1.7E+00	3.9E-01	3.9E-02	90%	1.7E-01	--	3.9E-02	--	3.9E-03	--
UR12Z	Unpaved Road to working face - Non-variable Traffic	1	1	1	752	Unpaved	Industrial	10	6	41.1	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	1.7E+00	3.9E-01	3.9E-02	90%	1.7E-01	--	3.9E-02	--	3.9E-03	--
UR12Y	Unpaved Road to working face - Construction Traffic	1	1	1	752	Unpaved	Industrial	10	6	41.1	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	1.7E+00	3.9E-01	3.9E-02	90%	1.7E-01	--	3.9E-02	--	3.9E-03	--
PR13Z	WF to LTF	1	1	1	165	Paved	Industrial	10	6	44.3	--	--	3.53	7.2E+02	9.3E+01	2.3E+01	3.3E-02	4.3E-03	1.0E-03	90%	3.3E-03	--	4.3E-04	--	1.0E-04	--
PR14Z	WF to LTF	1	1	1	61	Paved	Industrial	10	6	44.3	--	--	3.53	7.2E+02	9.3E+01	2.3E+01	1.2E-02	1.6E-03	3.8E-04	90%	1.2E-03	--	1.6E-04	--	3.8E-05	--
UR17Z	Across CDA	1	1	1	90	Unpaved	Industrial	10	6	36.4	--	43.1%	--	1.4E+04	4.1E+03	4.1E+02	3.4E-01	1.0E-01	1.0E-02	90%	3.4E-02	--	1.0E-02	--	1.0E-03	--
UR18	Across WF	0	0	0	0	Unpaved	Industrial	10	6	0.0	--	31.6%	--	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	90%	0.0E+00	--	0.0E+00	--	0.0E+00	--
UR18Z	Across WF, onsite equipment	1	1	1	45	Unpaved	Industrial	10	6	36.4	--	44.7%	--	1.4E+04	4.2E+03	4.2E+02	1.7E-01	5.3E-02	5.3E-03	90%	1.7E-02	--	5.3E-03	--	5.3E-04	--
PR04B	Scale House to WF	1	1	1	681	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	2.6E-02	3.4E-03	8.2E-04	90%	2.6E-03	--	3.4E-04	--	8.2E-05	--
PR04BZ	Scale House to WF, onsite equipment	1	1	1	681	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	2.6E-02	3.4E-03	8.2E-04	90%	2.6E-03	--	3.4E-04	--	8.2E-05	--
PR04C	Exit Road from WF	1	1	1	420	Paved	Industrial	10	6	36.6	--	--	0.75	1.5E+02	1.9E+01	4.5E+00	1.7E-02	2.2E-03	5.3E-04	90%	1.7E-03	--	2.2E-04	--	5.3E-05	--
PR04CZ	Exit Road from WF, onsite equipment	1	1	1	420	Paved	Industrial	10	6	36.6	--	--	0.75	1.5E+02	1.9E+01	4.5E+00	1.7E-02	2.2E-03	5.3E-04	90%	1.7E-03	--	2.2E-04	--	5.3E-05	--

Constants for Mobile Emission Equations

Roadway Type	Contaminant	k	a	b	c	d	Quality
Paved Roads:	**$PM_{2.5}$**	0.15	-	-	-	-	-
	PM_{10}	0.62	-	-	-	-	-
	TSP	4.79	-	-	-	-	-
Unpaved Roads - Industrial:	**$PM_{2.5}$**	0.15	0.9	0.45	-	-	C
	PM_{10}	1.5	0.9	0.45	-	-	B
	TSP	7.32	0.6	0.45	-	-	B
Unpaved Roads - Public:	**$PM_{2.5}$**	0.18	1	-	0.2	0.5	C
	PM_{10}	1.8	1	-	0.2	0.5	B
	TSP	8.96	1	-	0.49	0.2	B

[1] Route ID numbers provided on site plan.
[2] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.
[3] Paved surfaces include asphalt, concrete, and recycled asphalt (if it forms a relatively consistent surface).
[4] Publicly accessible and dominated by light vehicles, or industrial, and dominated by heavy vehicles.
[5] The average vehicle weight reflects the average of the empty and loaded vehicle weight, for travel in both directions.
[6] Required only for publicly accessible unpaved roads.
[7] Required only for unpaved roads (public and industrial).
[8] Required only for industrial paved roads.

Sample calculation for uncontrolled TSP emission factor for Source PR01: Main Entrance Road

EF = 281.9 x (4.9) x [(0% / 12)]^(0.7) x [(36.6087628865979 tons) / 3]^(0.45) = 102 g TSP / vehicle kilometer travelled (vkt)

Sample calculation for TSP emission rate for Source PR01: Main Entrance Road

$$\frac{1 \text{ vehicles}}{1 \text{ h}} \times \frac{206 \text{ m}}{} \times \frac{1 \text{ km}}{1000 \text{ m}} \times \frac{102 \text{ } g_{TSP}}{1 \text{ vehicle km}} \times \frac{1 \text{ h}}{3600 \text{ s}} \times \frac{0.1 \text{ } g_{TSP\ uncontrolled}}{1 \text{ } g_{TSP}} = 5.8E\text{-}04 \text{ } g_{TSP} / \text{s}$$

Comments

Appendix 5A-S2-5.1b: Vehicle Emission Rates - Tailpipe Emissions, AM

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	PM TSP PM (g/vkt)	PM TSP PM (g/h)	PM10 PM10 (g/vkt)	PM10 PM10 (g/h)	PM25 PM25 (g/vkt)	PM25 PM25 (g/h)	71-43-2 Benzene 71-43-2 (g/vkt)	71-43-2 Benzene 71-43-2 (g/h)	7664-41-7 Ammonia 7664-41-7 (g/vkt)	7664-41-7 Ammonia 7664-41-7 (g/h)	NO2 Nitrogen Dioxide NO2 (g/vkt)	NO2 Nitrogen Dioxide NO2 (g/h)	10102-44-0 Nitrogen Oxides 10102-44-0 (g/vkt)	10102-44-0 Nitrogen Oxides 10102-44-0 (g/h)
							Tailpipe Emission Factor [5]													
Mobile Equipment																				
PR01	Main Entrance Road	1	1	206	10	100%	6.60E+00	0.00E+00	6.60E+00	0.00E+00	8.65E-01	0.00E+00	6.85E-04	0.00E+00	4.13E-02	0.00E+00	3.68E+00	0.00E+00	9.43E+00	0.00E+00
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	0.00E+00	6.94E-01	0.00E+00	6.94E-01	0.00E+00	9.09E-02	0.00E+00	3.51E-04	0.00E+00	8.15E-03	0.00E+00	3.78E-01	0.00E+00	9.79E-01
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	0.00E+00	1.09E+00	0.00E+00	1.09E+00	0.00E+00	1.43E-01	0.00E+00	8.23E-04	0.00E+00	1.63E-02	0.00E+00	5.88E-01	0.00E+00	1.53E+00
PR04A	Entrance to Scale House	1	1	487	10	100%	6.60E+00	1.13E+00	6.60E+00	1.13E+00	8.65E-01	1.47E-01	6.85E-04	1.94E-03	4.13E-02	2.27E-02	3.68E+00	5.79E-01	9.43E+00	1.57E+00
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	0.00E+00	1.64E+00	0.00E+00	1.64E+00	0.00E+00	2.15E-01	0.00E+00	8.29E-04	0.00E+00	1.93E-02	0.00E+00	8.94E-01	0.00E+00	2.31E+00
BR06	South Ramp - Variable Traffic	1	1	603	10	100%	6.60E+00	0.00E+00	6.60E+00	0.00E+00	8.65E-01	0.00E+00	6.85E-04	0.00E+00	4.13E-02	0.00E+00	3.68E+00	0.00E+00	9.43E+00	0.00E+00
BR06Z	South Ramp - Non-variable Traffic	1	1	603	10	100%	0.00E+00	7.81E-02	0.00E+00	7.81E-02	0.00E+00	5.63E-02	0.00E+00	3.24E-03	0.00E+00	6.44E-02	0.00E+00	1.18E-02	0.00E+00	1.67E+00
BR06Y	South Ramp - Construction Traffic	1	1	603	10	100%	0.00E+00	4.06E-02	0.00E+00	4.06E-02	0.00E+00	3.94E-02	0.00E+00	2.36E-03	0.00E+00	4.73E-02	0.00E+00	0.00E+00	0.00E+00	1.21E+00
PR08Z	WF to SS/LTF - Non-variable Traffic	1	1	307	10	100%	0.00E+00	6.28E-01	0.00E+00	6.28E-01	0.00E+00	9.19E-02	0.00E+00	9.79E-04	0.00E+00	2.06E-02	0.00E+00	3.36E-01	0.00E+00	1.21E+00
PR08Y	WF to SS/LTF - Construction Traffic	1	1	307	10	100%	0.00E+00	2.06E-02	0.00E+00	2.06E-02	0.00E+00	2.00E-02	0.00E+00	1.20E-03	0.00E+00	2.40E-02	0.00E+00	0.00E+00	0.00E+00	6.14E-01
UR09AZ	WF to SS, to CDA turn off - Non-variable Traffic	1	1	211	10	100%	0.00E+00	3.18E-01	0.00E+00	3.18E-01	0.00E+00	4.90E-02	0.00E+00	7.40E-04	0.00E+00	1.47E-02	0.00E+00	1.66E-01	0.00E+00	6.93E-01
UR09AY	WF to SS, to CDA turnoff - Construction Traffic	1	1	211	10	100%	0.00E+00	1.42E-02	0.00E+00	1.42E-02	0.00E+00	1.38E-02	0.00E+00	8.27E-04	0.00E+00	1.65E-02	0.00E+00	0.00E+00	0.00E+00	4.23E-01
UR09BZ	WF to SS, after CDA turnoff - Non-variable Traffic	1	1	179	10	100%	0.00E+00	1.65E-02	0.00E+00	1.65E-02	0.00E+00	1.61E-02	0.00E+00	9.63E-04	0.00E+00	1.92E-02	0.00E+00	0.00E+00	0.00E+00	4.92E-01
UR09BY	WF to SS, after CDA turnoff - Construction Traffic	1	1	179	10	100%	0.00E+00	1.20E-02	0.00E+00	1.20E-02	0.00E+00	1.17E-02	0.00E+00	7.00E-04	0.00E+00	1.40E-02	0.00E+00	0.00E+00	0.00E+00	3.58E-01
UR11Z	Across SS - Variable Traffic	1	1	242	10	100%	0.00E+00	2.25E-02	0.00E+00	2.25E-02	0.00E+00	2.18E-02	0.00E+00	1.31E-03	0.00E+00	2.61E-02	0.00E+00	0.00E+00	0.00E+00	6.68E-01
UR11Y	Across SS - Construction Traffic	1	1	242	10	100%	0.00E+00	1.63E-02	0.00E+00	1.63E-02	0.00E+00	1.58E-02	0.00E+00	9.50E-04	0.00E+00	1.90E-02	0.00E+00	0.00E+00	0.00E+00	4.85E-01
UR12	Unpaved Road to working face - Variable Traffic	1	1	752	10	100%	6.60E+00	0.00E+00	6.60E+00	0.00E+00	8.65E-01	0.00E+00	6.85E-04	0.00E+00	4.13E-02	0.00E+00	3.68E+00	0.00E+00	9.43E+00	0.00E+00
UR12Z	Unpaved Road to working face - Non-variable Traffic	1	1	752	10	100%	0.00E+00	9.74E-02	0.00E+00	9.74E-02	0.00E+00	7.03E-02	0.00E+00	4.04E-03	0.00E+00	8.04E-02	0.00E+00	1.47E-02	0.00E+00	2.08E+00
UR12Y	Unpaved Road to working face - Construction Traffic	1	1	752	10	100%	0.00E+00	5.07E-02	0.00E+00	5.07E-02	0.00E+00	4.92E-02	0.00E+00	2.95E-03	0.00E+00	5.89E-02	0.00E+00	0.00E+00	0.00E+00	1.51E+00
PR13Z	WF to LTF	1	1	165	10	100%	0.00E+00	1.19E+00	0.00E+00	1.19E+00	0.00E+00	1.56E-01	0.00E+00	3.06E-05	0.00E+00	6.67E-03	0.00E+00	6.67E-01	0.00E+00	1.70E+00
PR14Z	WF to LTF	1	1	61	10	100%	0.00E+00	4.38E-01	0.00E+00	4.38E-01	0.00E+00	5.75E-02	0.00E+00	1.12E-05	0.00E+00	2.45E-03	0.00E+00	2.45E-01	0.00E+00	6.27E-01
UR17Z	Across CDA	1	1	90	10	100%	0.00E+00	1.18E-02	0.00E+00	1.18E-02	0.00E+00	1.14E-02	0.00E+00	9.87E-04	0.00E+00	3.83E-03	0.00E+00	0.00E+00	0.00E+00	1.86E-01
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	0.00E+00	5.87E-03	0.00E+00	5.87E-03	0.00E+00	5.59E-03	0.00E+00	4.74E-04	0.00E+00	2.11E-03	0.00E+00	6.31E-05	0.00E+00	9.49E-02
PR04B	Scale House to WF	1	1	681	10	100%	6.60E+00	1.59E+00	6.60E+00	1.59E+00	8.65E-01	2.06E-01	6.85E-04	2.72E-03	4.13E-02	3.17E-02	3.68E+00	8.10E-01	9.43E+00	2.19E+00
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	0.00E+00	2.29E+00	0.00E+00	2.29E+00	0.00E+00	3.01E-01	0.00E+00	1.16E-03	0.00E+00	2.70E-02	0.00E+00	1.25E+00	0.00E+00	3.24E+00
PR04C	Exit Road from WF	1	1	420	10	100%	6.60E+00	9.79E-01	6.60E+00	9.79E-01	8.65E-01	1.27E-01	6.85E-04	1.68E-03	4.13E-02	1.96E-02	3.68E+00	5.00E-01	9.43E+00	1.35E+00
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	0.00E+00	1.42E+00	0.00E+00	1.42E+00	0.00E+00	1.86E-01	0.00E+00	7.16E-04	0.00E+00	1.66E-02	0.00E+00	7.72E-01	0.00E+00	2.00E+00
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	--	--	--	--	--	--	--	--	--	--	--	--	--	--
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	--	--	--	--	--	--	--	--	--	--	--	--	--	--
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	0.00E+00	4.54E+00	0.00E+00	4.54E+00	0.00E+00	4.40E+00	0.00E+00	3.04E-01	0.00E+00	2.80E+00	0.00E+00	0.00E+00	0.00E+00	9.39E+01
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	0.00E+00	1.17E+00	0.00E+00	1.17E+00	0.00E+00	1.14E+00	0.00E+00	8.50E-02	0.00E+00	8.13E-01	0.00E+00	0.00E+00	0.00E+00	2.57E+01
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	0.00E+00	1.31E+00	0.00E+00	1.31E+00	0.00E+00	1.28E+00	0.00E+00	1.10E-01	0.00E+00	4.27E-01	0.00E+00	0.00E+00	0.00E+00	2.07E+01
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	0.00E+00	1.03E+00	0.00E+00	1.03E+00	0.00E+00	9.99E-01	0.00E+00	6.00E-02	0.00E+00	1.20E+00	0.00E+00	0.00E+00	0.00E+00	3.06E+01

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes). For idling, this is the number of trucks idling per hour.

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Emissions are input on either a vehicle distance or operation time basis.

[5] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S2-5.1b: Vehicle Emission Rates - Tailpipe Emissions, AM

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	7446-09-5 Sulphur Dioxide (g/vkt)	7446-09-5 Sulphur Dioxide (g/h)	124-38-9 Carbon Dioxide (g/vkt)	124-38-9 Carbon Dioxide (g/h)	74-82-8 Methane (g/vkt)	74-82-8 Methane (g/h)	10024-97-2 Nitrous Oxide (g/vkt)	10024-97-2 Nitrous Oxide (g/h)	Source ID	TSP PM (g/s)
Mobile Equipment															**Mobile Equipment**	
PR01	Main Entrance Road	1	1	206	10	100%	5.95E-03	0.00E+00	1.74E+03	0.00E+00	5.93E-02	0.00E+00	1.15E-02	0.00E+00	PR01	3.77E-04
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	0.00E+00	9.97E-04	0.00E+00	2.48E+02	0.00E+00	8.62E-03	0.00E+00	1.99E-03	PR01Z	1.93E-04
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	0.00E+00	1.91E-03	0.00E+00	4.51E+02	0.00E+00	1.59E-02	0.00E+00	3.87E-03	UR02Z	3.04E-04
PR04A	Entrance to Scale House	1	1	487	10	100%	5.95E-03	2.47E-03	1.74E+03	5.96E+02	5.93E-02	2.58E-02	1.15E-02	6.11E-03	PR04A	8.91E-04
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	0.00E+00	2.36E-03	0.00E+00	5.87E+02	0.00E+00	2.04E-02	0.00E+00	4.70E-03	PR04AZ	4.55E-04
BR06	South Ramp - Variable Traffic	1	1	603	10	100%	5.95E-03	0.00E+00	1.74E+03	0.00E+00	5.93E-02	0.00E+00	1.15E-02	0.00E+00	BR06	1.10E-03
BR06Z	South Ramp - Non-variable Traffic	1	1	603	10	100%	0.00E+00	2.08E-02	0.00E+00	7.90E+03	0.00E+00	5.83E-03	0.00E+00	1.24E-04	BR06Z	2.17E-05
BR06Y	South Ramp - Construction Traffic	1	1	603	10	100%	0.00E+00	1.53E-02	0.00E+00	5.83E+03	0.00E+00	3.92E-03	0.00E+00	0.00E+00	BR06Y	1.13E-05
PR08Z	WF to SS/LTF - Non-variable Traffic	1	1	307	10	100%	0.00E+00	5.21E-03	0.00E+00	1.86E+03	0.00E+00	8.77E-03	0.00E+00	1.77E-03	PR08Z	1.74E-04
PR08Y	WF to SS/LTF - Construction Traffic	1	1	307	10	100%	0.00E+00	7.80E-03	0.00E+00	2.96E+03	0.00E+00	1.99E-03	0.00E+00	0.00E+00	PR08Y	5.74E-06
UR09AZ	WF to SS, to CDA turn off - Non-variable Traffic	1	1	211	10	100%	0.00E+00	3.83E-03	0.00E+00	1.38E+03	0.00E+00	5.34E-03	0.00E+00	1.09E-03	UR09AZ	8.85E-05
UR09AY	WF to SS, to CDA turnoff - Construction Traffic	1	1	211	10	100%	0.00E+00	5.37E-03	0.00E+00	2.04E+03	0.00E+00	1.37E-03	0.00E+00	0.00E+00	UR09AY	3.95E-06
UR09BZ	WF to SS, after CDA turnoff - Non-variable Traffic	1	1	179	10	100%	0.00E+00	6.25E-03	0.00E+00	2.37E+03	0.00E+00	1.60E-03	0.00E+00	0.00E+00	UR09BZ	4.60E-06
UR09BY	WF to SS, after CDA turnoff - Construction Traffic	1	1	179	10	100%	0.00E+00	4.54E-03	0.00E+00	1.72E+03	0.00E+00	1.16E-03	0.00E+00	0.00E+00	UR09BY	3.34E-06
UR11Z	Across SS - Variable Traffic	1	1	242	10	100%	0.00E+00	8.48E-03	0.00E+00	3.22E+03	0.00E+00	2.17E-03	0.00E+00	0.00E+00	UR11Z	6.24E-06
UR11Y	Across SS - Construction Traffic	1	1	242	10	100%	0.00E+00	6.16E-03	0.00E+00	2.34E+03	0.00E+00	1.57E-03	0.00E+00	0.00E+00	UR11Y	4.53E-06
UR12	Unpaved Road to working face - Variable Traffic	1	1	752	10	100%	5.95E-03	0.00E+00	1.74E+03	0.00E+00	5.93E-02	0.00E+00	1.15E-02	0.00E+00	UR12	1.38E-03
UR12Z	Unpaved Road to working face - Non-variable Traffic	1	1	752	10	100%	0.00E+00	2.60E-02	0.00E+00	9.86E+03	0.00E+00	7.28E-03	0.00E+00	1.55E-04	UR12Z	2.71E-05
UR12Y	Unpaved Road to working face - Construction Traffic	1	1	752	10	100%	0.00E+00	1.91E-02	0.00E+00	7.27E+03	0.00E+00	4.89E-03	0.00E+00	0.00E+00	UR12Y	1.41E-05
PR13Z	WF to LTF	1	1	165	10	100%	0.00E+00	1.00E-03	0.00E+00	3.00E+02	0.00E+00	9.91E-03	0.00E+00	1.86E-03	PR13Z	3.31E-04
PR14Z	WF to LTF	1	1	61	10	100%	0.00E+00	3.68E-04	0.00E+00	1.10E+02	0.00E+00	3.64E-03	0.00E+00	6.84E-04	PR14Z	1.22E-04
UR17Z	Across CDA	1	1	90	10	100%	0.00E+00	1.26E-03	0.00E+00	4.72E+02	0.00E+00	1.55E-03	0.00E+00	0.00E+00	UR17Z	3.28E-06
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	0.00E+00	6.93E-04	0.00E+00	2.60E+02	0.00E+00	7.47E-04	0.00E+00	6.65E-07	UR18Z	1.63E-06
PR04B	Scale House to WF	1	1	681	10	100%	5.95E-03	3.46E-03	1.74E+03	8.34E+02	5.93E-02	3.61E-02	1.15E-02	8.55E-03	PR04B	1.25E-03
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	0.00E+00	3.30E-03	0.00E+00	8.21E+02	0.00E+00	2.85E-02	0.00E+00	6.57E-03	PR04BZ	6.37E-04
PR04C	Exit Road from WF	1	1	420	10	100%	5.95E-03	2.14E-03	1.74E+03	5.15E+02	5.93E-02	2.23E-02	1.15E-02	5.28E-03	PR04C	7.70E-04
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	0.00E+00	2.04E-03	0.00E+00	5.07E+02	0.00E+00	1.76E-02	0.00E+00	4.06E-03	PR04CZ	3.93E-04
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	--	--	--	--	--	--	--	--	IDLE01	6.41E-05
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	--	--	--	--	--	--	--	--	IDLE02	6.41E-05
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	0.00E+00	9.13E-01	0.00E+00	3.45E+05	0.00E+00	4.90E-01	0.00E+00	0.00E+00	DOZE2	1.26E-03
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	0.00E+00	2.65E-01	0.00E+00	1.00E+05	0.00E+00	1.36E-01	0.00E+00	0.00E+00	DOZE4	3.26E-04
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	0.00E+00	1.40E-01	0.00E+00	5.26E+04	0.00E+00	1.73E-01	0.00E+00	0.00E+00	DOZE2CAP	3.65E-04
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	0.00E+00	3.89E-01	0.00E+00	1.48E+05	0.00E+00	9.94E-02	0.00E+00	0.00E+00	DOZE2SS	2.86E-04

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes). For idling, this is the number of trucks idling per hour.

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Emissions are input on either a vehicle distance or operation time basis.

[5] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S2-5.1b: Vehicle Emission Rates - Tailpipe Emissions, AM

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Tailpipe Emission Rate PM10 PM10 (g/s)	PM2.5 PM25 (g/s)	Benzene 71-43-2 (g/s)	Ammonia 7664-41-7 (g/s)	Nitrogen Dioxide NO2 (g/s)	Nitrogen Oxides 10102-44-0 (g/s)
Mobile Equipment												
PR01	Main Entrance Road	1	1	206	10	100%	3.77E-04	4.95E-05	3.92E-08	2.36E-06	2.10E-04	5.39E-04
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	1.93E-04	2.53E-05	9.75E-08	2.26E-06	1.05E-04	2.72E-04
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	3.04E-04	3.98E-05	2.29E-07	4.53E-06	1.63E-04	4.26E-04
PR04A	Entrance to Scale House	1	1	487	10	100%	8.91E-04	1.17E-04	9.26E-08	5.58E-06	4.97E-04	1.27E-03
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	4.55E-04	5.97E-05	2.30E-07	5.35E-06	2.48E-04	6.43E-04
BR06	South Ramp - Variable Traffic	1	1	603	10	100%	1.10E-03	1.45E-04	1.15E-07	6.92E-06	6.17E-04	1.58E-03
BR06Z	South Ramp - Non-variable Traffic	1	1	603	10	100%	2.17E-05	1.57E-05	9.00E-07	1.79E-05	3.28E-06	4.63E-04
BR06Y	South Ramp - Construction Traffic	1	1	603	10	100%	1.13E-05	1.09E-05	6.57E-07	1.31E-05	0.00E+00	3.36E-04
PR08Z	WF to SS/LTF - Non-variable Traffic	1	1	307	10	100%	1.74E-04	2.55E-05	2.72E-07	5.71E-06	9.34E-05	3.36E-04
PR08Y	WF to SS/LTF - Construction Traffic	1	1	307	10	100%	5.74E-06	5.56E-06	3.34E-07	6.67E-06	0.00E+00	1.71E-04
UR09AZ	WF to SS, to CDA turn off - Non-variable Traffic	1	1	211	10	100%	8.85E-05	1.36E-05	2.05E-07	4.10E-06	4.62E-05	1.92E-04
UR09AY	WF to SS, to CDA turnoff - Construction Traffic	1	1	211	10	100%	3.95E-06	3.83E-06	2.30E-07	4.59E-06	0.00E+00	1.17E-04
UR09BZ	WF to SS, after CDA turnoff - Non-variable Traffic	1	1	179	10	100%	4.60E-06	4.46E-06	2.68E-07	5.35E-06	0.00E+00	1.37E-04
UR09BY	WF to SS, after CDA turnoff - Construction Traffic	1	1	179	10	100%	3.34E-06	3.24E-06	1.94E-07	3.89E-06	0.00E+00	9.94E-05
UR11Z	Across SS - Variable Traffic	1	1	242	10	100%	6.24E-06	6.05E-06	3.63E-07	7.25E-06	0.00E+00	1.86E-04
UR11Y	Across SS - Construction Traffic	1	1	242	10	100%	4.53E-06	4.40E-06	2.64E-07	5.27E-06	0.00E+00	1.35E-04
UR12	Unpaved Road to working face - Variable Traffic	1	1	752	10	100%	1.38E-03	1.81E-04	1.43E-07	8.64E-06	7.69E-04	1.97E-03
UR12Z	Unpaved Road to working face - Non-variable Traffic	1	1	752	10	100%	2.71E-05	1.95E-05	1.12E-06	2.23E-05	4.09E-06	5.78E-04
UR12Y	Unpaved Road to working face - Construction Traffic	1	1	752	10	100%	1.41E-05	1.37E-05	8.19E-07	1.64E-05	0.00E+00	4.19E-04
PR13Z	WF to LTF	1	1	165	10	100%	3.31E-04	4.34E-05	8.49E-09	1.85E-06	1.85E-04	4.74E-04
PR14Z	WF to LTF	1	1	61	10	100%	1.22E-04	1.60E-05	3.12E-09	6.81E-07	6.82E-05	1.74E-04
UR17Z	Across CDA	1	1	90	10	100%	3.28E-06	3.18E-06	2.74E-07	1.06E-06	0.00E+00	5.17E-05
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	1.63E-06	1.55E-06	1.32E-07	5.87E-07	1.75E-08	2.64E-05
PR04B	Scale House to WF	1	1	681	10	100%	1.25E-03	1.64E-04	1.30E-07	7.81E-06	6.96E-04	1.78E-03
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	6.37E-04	8.35E-05	3.22E-07	7.49E-06	3.47E-04	8.99E-04
PR04C	Exit Road from WF	1	1	420	10	100%	7.70E-04	1.01E-04	8.00E-08	4.82E-06	4.30E-04	1.10E-03
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	3.93E-04	5.16E-05	1.99E-07	4.62E-06	2.14E-04	5.55E-04
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	6.41E-05	5.90E-05	6.13E-07	1.07E-04	5.38E-03	1.37E-02
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	6.41E-05	5.90E-05	6.13E-07	1.07E-04	5.38E-03	1.37E-02
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	1.26E-03	1.22E-03	8.45E-05	7.78E-04	0.00E+00	2.61E-02
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	3.26E-04	3.16E-04	2.36E-05	2.26E-04	0.00E+00	7.14E-03
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	3.65E-04	3.54E-04	3.06E-05	1.19E-04	0.00E+00	5.76E-03
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	2.86E-04	2.78E-04	1.67E-05	3.33E-04	0.00E+00	8.51E-03

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes). For idling, this is the number of trucks idling per hour.

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Emissions are input on either a vehicle distance or operation time basis.

[5] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S2-5.1b: Vehicle Emission Rates - Tailpipe Emissions, AM

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Sulphur Dioxide 7446-09-5 (g/s)	Carbon Dioxide 124-38-9 (g/s)	Methane 74-82-8 (g/s)	Nitrous Oxide 10024-97-2 (g/s)	Tailpipe + Fugitive Emission Rate [6] TSP PM (g/s)	PM10 PM10 (g/s)	PM2.5 PM2.5 (g/s)	Ratio Tail TSP PM (g/s)
Mobile Equipment														
PR01	Main Entrance Road	1	1	206	10	100%	3.40E-07	9.97E-02	3.39E-06	6.55E-07	9.58E-04	4.52E-04	6.77E-05	3.93E-01
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	2.77E-07	6.90E-02	2.40E-06	5.52E-07	7.74E-04	2.68E-04	4.35E-05	2.49E-01
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	5.30E-07	1.25E-01	4.42E-06	1.07E-06	1.07E-01	3.25E-02	3.26E-03	2.83E-03
PR04A	Entrance to Scale House	1	1	487	10	100%	8.04E-07	2.36E-01	8.01E-06	1.55E-06	2.56E-03	1.11E-03	1.69E-04	3.48E-01
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	6.55E-07	1.63E-01	5.66E-06	1.30E-06	2.12E-03	6.71E-04	1.12E-04	2.14E-01
BR06	South Ramp - Variable Traffic	1	1	603	10	100%	9.97E-07	2.92E-01	9.93E-06	1.92E-06	1.39E-01	3.23E-02	3.26E-03	7.97E-03
BR06Z	South Ramp - Non-variable Traffic	1	1	603	10	100%	5.78E-06	2.19E+00	1.62E-06	3.46E-08	1.38E-01	3.12E-02	3.13E-03	1.58E-04
BR06Y	South Ramp - Construction Traffic	1	1	603	10	100%	4.26E-06	1.62E+00	1.09E-06	0.00E+00	1.38E-01	3.12E-02	3.13E-03	8.21E-05
PR08Z	WF to SS/LTF - Non-variable Traffic	1	1	307	10	100%	1.45E-06	5.18E-01	2.44E-06	4.91E-07	5.30E-03	8.38E-04	1.86E-04	3.29E-02
PR08Y	WF to SS/LTF - Construction Traffic	1	1	307	10	100%	2.17E-06	8.23E-01	5.54E-07	0.00E+00	5.13E-03	6.69E-04	1.66E-04	1.12E-03
UR09AZ	WF to SS, to CDA turn off - Non-variable Traffic	1	1	211	10	100%	1.06E-06	3.82E-01	1.48E-06	3.04E-07	8.05E-02	2.43E-02	2.43E-03	1.10E-03
UR09AY	WF to SS, to CDA turnoff - Construction Traffic	1	1	211	10	100%	1.49E-06	5.66E-01	3.81E-07	0.00E+00	8.04E-02	2.42E-02	2.42E-03	4.91E-05
UR09BZ	WF to SS, after CDA turnoff - Non-variable Traffic	1	1	179	10	100%	1.74E-06	6.59E-01	4.44E-07	0.00E+00	7.60E-02	2.29E-02	2.29E-03	6.05E-05
UR09BY	WF to SS, after CDA turnoff - Construction Traffic	1	1	179	10	100%	1.26E-06	4.79E-01	3.22E-07	0.00E+00	7.60E-02	2.29E-02	2.29E-03	4.40E-05
UR11Z	Across SS - Variable Traffic	1	1	242	10	100%	2.36E-06	8.95E-01	6.02E-07	0.00E+00	1.03E-01	3.10E-02	3.11E-03	6.05E-05
UR11Y	Across SS - Construction Traffic	1	1	242	10	100%	1.71E-06	6.50E-01	4.37E-07	0.00E+00	1.03E-01	3.10E-02	3.11E-03	4.40E-05
UR12	Unpaved Road to working face - Variable Traffic	1	1	752	10	100%	1.24E-06	3.65E-01	1.24E-05	2.40E-06	1.73E-01	4.03E-02	4.07E-03	7.97E-03
UR12Z	Unpaved Road to working face - Non-variable Traffic	1	1	752	10	100%	7.22E-06	2.74E+00	2.02E-06	4.31E-08	1.72E-01	3.89E-02	3.91E-03	1.58E-04
UR12Y	Unpaved Road to working face - Construction Traffic	1	1	752	10	100%	5.32E-06	2.02E+00	1.36E-06	0.00E+00	1.72E-01	3.89E-02	3.90E-03	8.21E-05
PR13Z	WF to LTF	1	1	165	10	100%	2.78E-07	8.33E-02	2.75E-06	5.16E-07	3.63E-03	7.58E-04	1.47E-04	9.11E-02
PR14Z	WF to LTF	1	1	61	10	100%	1.02E-07	3.06E-02	1.01E-06	1.90E-07	1.34E-03	2.79E-04	5.40E-05	9.11E-02
UR17Z	Across CDA	1	1	90	10	100%	3.49E-07	1.31E-01	4.30E-07	0.00E+00	3.41E-02	1.02E-02	1.03E-03	9.62E-05
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	1.92E-07	7.24E-02	2.08E-07	1.85E-10	1.73E-02	5.28E-03	5.29E-04	9.40E-05
PR04B	Scale House to WF	1	1	681	10	100%	1.12E-06	3.30E-01	1.12E-05	2.17E-06	3.86E-03	1.59E-03	2.45E-04	3.23E-01
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	9.16E-07	2.28E-01	7.92E-06	1.83E-06	3.25E-03	9.76E-04	1.65E-04	1.96E-01
PR04C	Exit Road from WF	1	1	420	10	100%	6.94E-07	2.04E-01	6.92E-06	1.34E-06	2.46E-03	9.89E-04	1.54E-04	3.12E-01
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	5.65E-07	1.41E-01	4.89E-06	1.13E-06	2.09E-03	6.13E-04	1.05E-04	1.88E-01
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	6.20E-06	1.81E+00	9.65E-05	3.17E-05	6.41E-05	6.41E-05	5.90E-05	n/a
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	6.20E-06	1.81E+00	9.65E-05	3.17E-05	6.41E-05	6.41E-05	5.90E-05	n/a
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	2.54E-04	9.59E+01	1.36E-04	0.00E+00	1.26E-03	1.26E-03	1.22E-03	1.00E+00
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	7.35E-05	2.78E+01	3.78E-05	0.00E+00	3.26E-04	3.26E-04	3.16E-04	1.00E+00
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	3.89E-05	1.46E+01	4.80E-05	0.00E+00	3.65E-04	3.65E-04	3.54E-04	1.00E+00
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	1.08E-04	4.10E+01	2.76E-05	0.00E+00	2.86E-04	2.86E-04	2.78E-04	1.00E+00

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes). For idling, this is the number of trucks idling per hour.

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Emissions are input on either a vehicle distance or operation time basis.

[5] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S2-5.1b: Vehicle Emission Rates - Tailpipe Emissions, AM

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	ipe : Total Emission Rate PM10 PM10 (g/s)	PM2.5 PM2.5 (g/s)	Source ID	# of Volume Sources g/hr	# of Volume Sources g/vkt	TSP PM	PM10 PM10	PM2.5 PM25
Mobile Equipment									**Mobile Equipment**					
PR01	Main Entrance Road	1	1	206	10	100%	8.34E-01	7.31E-01	PR01	11	11	8.71E-05	4.11E-05	6.15E-06
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	7.19E-01	5.81E-01	PR01Z	11	11	7.04E-05	2.44E-05	3.95E-06
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	9.35E-03	1.22E-02	UR02Z	48	48	2.24E-03	6.77E-04	6.79E-05
PR04A	Entrance to Scale House	1	1	487	10	100%	8.05E-01	6.91E-01	PR04A	57	57	4.49E-05	1.94E-05	2.97E-06
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	6.78E-01	5.33E-01	PR04AZ	57	57	3.73E-05	1.18E-05	1.96E-06
BR06	South Ramp - Variable Traffic	1	1	603	10	100%	3.42E-02	4.44E-02	BR06	70	70	1.98E-03	4.61E-04	4.66E-05
BR06Z	South Ramp - Non-variable Traffic	1	1	603	10	100%	6.95E-04	5.00E-03	BR06Z	70	70	1.96E-03	4.46E-04	4.48E-05
BR06Y	South Ramp - Construction Traffic	1	1	603	10	100%	3.62E-04	3.50E-03	BR06Y	70	70	1.96E-03	4.45E-04	4.47E-05
PR08Z	WF to SS/LTF - Non-variable Traffic	1	1	307	10	100%	2.08E-01	1.37E-01	PR08Z	36	36	1.47E-04	2.33E-05	5.17E-06
PR08Y	WF to SS/LTF - Construction Traffic	1	1	307	10	100%	8.57E-03	3.35E-02	PR08Y	36	36	1.43E-04	1.86E-05	4.61E-06
UR09AZ	WF to SS, to CDA turn off - Non-variable Traffic	1	1	211	10	100%	3.65E-03	5.60E-03	UR09AZ	25	25	3.22E-03	9.71E-04	9.73E-05
UR09AY	WF to SS, to CDA turnoff - Construction Traffic	1	1	211	10	100%	1.63E-04	1.58E-03	UR09AY	25	25	3.22E-03	9.67E-04	9.69E-05
UR09BZ	WF to SS, after CDA turnoff - Non-variable Traffic	1	1	179	10	100%	2.01E-04	1.95E-03	UR09BZ	21	21	3.62E-03	1.09E-03	1.09E-04
UR09BY	WF to SS, after CDA turnoff - Construction Traffic	1	1	179	10	100%	1.46E-04	1.42E-03	UR09BY	21	21	3.62E-03	1.09E-03	1.09E-04
UR11Z	Across SS - Variable Traffic	1	1	242	10	100%	2.01E-04	1.95E-03	UR11Z	28	28	3.68E-03	1.11E-03	1.11E-04
UR11Y	Across SS - Construction Traffic	1	1	242	10	100%	1.46E-04	1.42E-03	UR11Y	28	28	3.68E-03	1.11E-03	1.11E-04
UR12	Unpaved Road to working face - Variable Traffic	1	1	752	10	100%	3.42E-02	4.44E-02	UR12	87	87	1.99E-03	4.63E-04	4.68E-05
UR12Z	Unpaved Road to working face - Non-variable Traffic	1	1	752	10	100%	6.95E-04	5.00E-03	UR12Z	87	87	1.97E-03	4.47E-04	4.49E-05
UR12Y	Unpaved Road to working face - Construction Traffic	1	1	752	10	100%	3.62E-04	3.50E-03	UR12Y	87	87	1.97E-03	4.47E-04	4.49E-05
PR13Z	WF to LTF	1	1	165	10	100%	4.36E-01	2.96E-01	PR13Z	19	19	1.91E-04	3.99E-05	7.72E-06
PR14Z	WF to LTF	1	1	61	10	100%	4.36E-01	2.96E-01	PR14Z	7	7	1.91E-04	3.98E-05	7.71E-06
UR17Z	Across CDA	1	1	90	10	100%	3.20E-04	3.09E-03	UR17Z	10	10	3.41E-03	1.02E-03	1.03E-04
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	3.09E-04	2.94E-03	UR18Z	5	5	3.47E-03	1.06E-03	1.06E-04
PR04B	Scale House to WF	1	1	681	10	100%	7.86E-01	6.66E-01	PR04B	79	79	4.89E-05	2.01E-05	3.11E-06
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	6.53E-01	5.05E-01	PR04BZ	79	79	4.12E-05	1.24E-05	2.09E-06
PR04C	Exit Road from WF	1	1	420	10	100%	7.78E-01	6.56E-01	PR04C	49	49	5.03E-05	2.02E-05	3.14E-06
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	6.42E-01	4.93E-01	PR04CZ	49	49	4.26E-05	1.25E-05	2.14E-06
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	n/a	n/a	IDLE01	1	1	1.28E-04	1.28E-04	1.18E-04
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	n/a	n/a	IDLE02	1	1	1.28E-04	1.28E-04	1.18E-04
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	1.00E+00	1.00E+00	DOZE2	1	1	1.26E-03	1.26E-03	1.22E-03
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	1.00E+00	1.00E+00	DOZE4	1	1	3.26E-04	3.26E-04	3.16E-04
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	1.00E+00	1.00E+00	DOZE2CAP	1	1	3.65E-04	3.65E-04	3.54E-04
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	1.00E+00	1.00E+00	DOZE2SS	1	1	2.86E-04	2.86E-04	2.78E-04

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes). For idling, this is the number of trucks idling per hour.

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Emissions are input on either a vehicle distance or operation time basis.

[5] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S2-5.1b: Vehicle Emission Rates - Tailpipe Emissions, AM

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Emission rate per volume source (g/s) Benzene 71-43-2	Ammonia 7664-41-7	Nitrogen Dioxide NO2	Nitrogen Oxides 10102-44-0	Sulphur Dioxide 7446-09-5	Carbon Dioxide 124-38-9	Methane 74-82-8	Nitrous Oxide 10024-97-2
Mobile Equipment														
PR01	Main Entrance Road	1	1	206	10	100%	3.56E-09	2.15E-07	1.91E-05	4.90E-05	3.09E-08	9.07E-03	3.08E-07	5.96E-08
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	8.86E-09	2.06E-07	9.55E-06	2.47E-05	2.52E-08	6.27E-03	2.18E-07	5.02E-08
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	4.76E-09	9.44E-08	3.40E-06	8.87E-06	1.10E-08	2.61E-03	9.21E-08	2.24E-08
PR04A	Entrance to Scale House	1	1	487	10	100%	1.62E-09	9.80E-08	8.73E-06	2.24E-05	1.41E-08	4.14E-03	1.41E-07	2.72E-08
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	4.04E-09	9.39E-08	4.36E-06	1.13E-05	1.15E-08	2.86E-03	9.93E-08	2.29E-08
BR06	South Ramp - Variable Traffic	1	1	603	10	100%	1.64E-09	9.89E-08	8.81E-06	2.26E-05	1.42E-08	4.18E-03	1.42E-07	2.74E-08
BR06Z	South Ramp - Non-variable Traffic	1	1	603	10	100%	1.29E-08	2.56E-07	4.68E-08	6.62E-06	8.26E-08	3.14E-02	2.31E-08	4.94E-10
BR06Y	South Ramp - Construction Traffic	1	1	603	10	100%	9.38E-09	1.88E-07	0.00E+00	4.80E-06	6.09E-08	2.31E-02	1.56E-08	0.00E+00
PR08Z	WF to SS/LTF - Non-variable Traffic	1	1	307	10	100%	7.55E-09	1.59E-07	2.59E-06	9.34E-06	4.02E-08	1.44E-02	6.77E-08	1.36E-08
PR08Y	WF to SS/LTF - Construction Traffic	1	1	307	10	100%	9.27E-09	1.85E-07	0.00E+00	4.74E-06	6.02E-08	2.29E-02	1.54E-08	0.00E+00
UR09AZ	WF to SS, to CDA turn off - Non-variable Traffic	1	1	211	10	100%	8.22E-09	1.64E-07	1.85E-06	7.70E-06	4.25E-08	1.53E-02	5.94E-08	1.22E-08
UR09AY	WF to SS, to CDA turnoff - Construction Traffic	1	1	211	10	100%	9.19E-09	1.84E-07	0.00E+00	4.70E-06	5.97E-08	2.27E-02	1.52E-08	0.00E+00
UR09BZ	WF to SS, after CDA turnoff - Non-variable Traffic	1	1	179	10	100%	1.27E-08	2.55E-07	0.00E+00	6.51E-06	8.27E-08	3.14E-02	2.11E-08	0.00E+00
UR09BY	WF to SS, after CDA turnoff - Construction Traffic	1	1	179	10	100%	9.26E-09	1.85E-07	0.00E+00	4.73E-06	6.01E-08	2.28E-02	1.54E-08	0.00E+00
UR11Z	Across SS - Variable Traffic	1	1	242	10	100%	1.30E-08	2.59E-07	0.00E+00	6.63E-06	8.41E-08	3.20E-02	2.15E-08	0.00E+00
UR11Y	Across SS - Construction Traffic	1	1	242	10	100%	9.42E-09	1.88E-07	0.00E+00	4.82E-06	6.11E-08	2.32E-02	1.56E-08	0.00E+00
UR12	Unpaved Road to working face - Variable Traffic	1	1	752	10	100%	1.65E-09	9.93E-08	8.84E-06	2.26E-05	1.43E-08	4.19E-03	1.42E-07	2.75E-08
UR12Z	Unpaved Road to working face - Non-variable Traffic	1	1	752	10	100%	1.29E-08	2.57E-07	4.70E-08	6.64E-06	8.29E-08	3.15E-02	2.32E-08	4.96E-10
UR12Y	Unpaved Road to working face - Construction Traffic	1	1	752	10	100%	9.42E-09	1.88E-07	0.00E+00	4.81E-06	6.11E-08	2.32E-02	1.56E-08	0.00E+00
PR13Z	WF to LTF	1	1	165	10	100%	4.47E-10	9.75E-08	9.76E-06	2.49E-05	1.46E-08	4.38E-03	1.45E-07	2.72E-08
PR14Z	WF to LTF	1	1	61	10	100%	4.46E-10	9.73E-08	9.74E-06	2.49E-05	1.46E-08	4.38E-03	1.45E-07	2.71E-08
UR17Z	Across CDA	1	1	90	10	100%	2.74E-08	1.06E-07	0.00E+00	5.17E-06	3.49E-08	1.31E-02	4.30E-08	0.00E+00
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	2.63E-08	1.17E-07	3.50E-09	5.27E-06	3.85E-08	1.45E-02	4.15E-08	3.70E-11
PR04B	Scale House to WF	1	1	681	10	100%	1.64E-09	9.89E-08	8.81E-06	2.26E-05	1.42E-08	4.18E-03	1.42E-07	2.74E-08
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	4.08E-09	9.48E-08	4.40E-06	1.14E-05	1.16E-08	2.89E-03	1.00E-07	2.31E-08
PR04C	Exit Road from WF	1	1	420	10	100%	1.63E-09	9.84E-08	8.77E-06	2.25E-05	1.42E-08	4.16E-03	1.41E-07	2.73E-08
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	4.06E-09	9.44E-08	4.38E-06	1.13E-05	1.15E-08	2.88E-03	9.98E-08	2.30E-08
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	1.23E-06	2.13E-04	1.08E-02	2.75E-02	1.24E-05	3.62E+00	1.93E-04	6.33E-05
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	1.23E-06	2.13E-04	1.08E-02	2.75E-02	1.24E-05	3.62E+00	1.93E-04	6.33E-05
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	8.45E-05	7.78E-04	0.00E+00	2.61E-02	2.54E-04	9.59E+01	1.36E-04	0.00E+00
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	2.36E-05	2.26E-04	0.00E+00	7.14E-03	7.35E-05	2.78E+01	3.78E-05	0.00E+00
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	3.06E-05	1.19E-04	0.00E+00	5.76E-03	3.89E-05	1.46E+01	4.80E-05	0.00E+00
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	1.67E-05	3.33E-04	0.00E+00	8.51E-03	1.08E-04	4.10E+01	2.76E-05	0.00E+00

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes). For idling, this is the number of trucks idling per hour.

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Emissions are input on either a vehicle distance or operation time basis.

[5] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S2-5.1b: Vehicle Emission Rates - Tailpipe Emissions, MD

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Tailpipe Emission Factor [5], [7] TSP PM (g/vkt)	TSP PM (g/h)	PM10 PM10 (g/vkt)	PM10 PM10 (g/h)	PM2.5 PM25 (g/vkt)	PM2.5 PM25 (g/h)	Benzene 71-43-2 (g/vkt)	Benzene 71-43-2 (g/h)	Ammonia 7664-41-7 (g/vkt)	Ammonia 7664-41-7 (g/h)	Nitrogen Dioxide NO2 (g/vkt)	Nitrogen Dioxide NO2 (g/h)	Nitrogen Oxides 10102-44-0 (g/vkt)	Nitrogen Oxides 10102-44-0 (g/h)
Mobile Equipment																				
PR01	Main Entrance Road	1	1	206	10	100%	4.25E+00	0.00E+00	4.25E+00	0.00E+00	5.57E-01	0.00E+00	1.81E-03	0.00E+00	4.16E-02	0.00E+00	2.33E+00	0.00E+00	6.03E+00	0.00E+00
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	0.00E+00	6.94E-01	0.00E+00	6.94E-01	0.00E+00	9.09E-02	0.00E+00	3.51E-04	0.00E+00	8.15E-03	0.00E+00	3.78E-01	0.00E+00	9.79E-01
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	0.00E+00	1.09E+00	0.00E+00	1.09E+00	0.00E+00	1.43E-01	0.00E+00	8.23E-04	0.00E+00	1.63E-02	0.00E+00	5.88E-01	0.00E+00	1.53E+00
PR04A	Entrance to Scale House	1	1	487	10	100%	4.25E+00	1.13E+00	4.25E+00	1.13E+00	5.57E-01	1.47E-01	1.81E-03	1.94E-03	4.16E-02	2.27E-02	2.33E+00	5.79E-01	6.03E+00	1.57E+00
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	0.00E+00	1.64E+00	0.00E+00	1.64E+00	0.00E+00	2.15E-01	0.00E+00	8.29E-04	0.00E+00	1.93E-02	0.00E+00	8.94E-01	0.00E+00	2.31E+00
BR06	South Ramp - Variable Traffic	1	1	603	10	100%	4.25E+00	0.00E+00	4.25E+00	0.00E+00	5.57E-01	0.00E+00	1.81E-03	0.00E+00	4.16E-02	0.00E+00	2.33E+00	0.00E+00	6.03E+00	0.00E+00
BR06Z	South Ramp - Non-variable Traffic	1	1	603	10	100%	0.00E+00	7.81E-02	0.00E+00	7.81E-02	0.00E+00	5.63E-02	0.00E+00	3.24E-03	0.00E+00	6.44E-02	0.00E+00	1.18E-02	0.00E+00	1.67E+00
BR06Y	South Ramp - Construction Traffic	1	1	603	10	100%	0.00E+00	4.06E-02	0.00E+00	4.06E-02	0.00E+00	3.94E-02	0.00E+00	2.36E-03	0.00E+00	4.73E-02	0.00E+00	0.00E+00	0.00E+00	1.21E+00
PR08Z	WF to SS/LTF - Non-variable Traffic	1	1	307	10	100%	0.00E+00	6.28E-01	0.00E+00	6.28E-01	0.00E+00	9.19E-02	0.00E+00	9.79E-04	0.00E+00	2.06E-02	0.00E+00	3.36E-01	0.00E+00	1.21E+00
PR08Y	WF to SS/LTF - Construction Traffic	1	1	307	10	100%	0.00E+00	2.06E-02	0.00E+00	2.06E-02	0.00E+00	2.00E-02	0.00E+00	1.20E-03	0.00E+00	2.40E-02	0.00E+00	0.00E+00	0.00E+00	6.14E-01
UR09AZ	WF to SS, to CDA turn off - Non-variable Traffic	1	1	211	10	100%	0.00E+00	3.18E-01	0.00E+00	3.18E-01	0.00E+00	4.90E-02	0.00E+00	7.40E-04	0.00E+00	1.47E-02	0.00E+00	1.66E-01	0.00E+00	6.93E-01
UR09AY	WF to SS, to CDA turnoff - Construction Traffic	1	1	211	10	100%	0.00E+00	1.42E-02	0.00E+00	1.42E-02	0.00E+00	1.38E-02	0.00E+00	8.27E-04	0.00E+00	1.65E-02	0.00E+00	0.00E+00	0.00E+00	4.23E-01
UR09BZ	WF to SS, after CDA turnoff - Non-variable Traffic	1	1	179	10	100%	0.00E+00	1.65E-02	0.00E+00	1.65E-02	0.00E+00	1.61E-02	0.00E+00	9.63E-04	0.00E+00	1.92E-02	0.00E+00	0.00E+00	0.00E+00	4.92E-01
UR09BY	WF to SS, after CDA turnoff - Construction Traffic	1	1	179	10	100%	0.00E+00	1.20E-02	0.00E+00	1.20E-02	0.00E+00	1.17E-02	0.00E+00	7.00E-04	0.00E+00	1.40E-02	0.00E+00	0.00E+00	0.00E+00	3.58E-01
UR11Z	Across SS - Variable Traffic	1	1	242	10	100%	0.00E+00	2.25E-02	0.00E+00	2.25E-02	0.00E+00	2.18E-02	0.00E+00	1.31E-03	0.00E+00	2.61E-02	0.00E+00	0.00E+00	0.00E+00	6.68E-01
UR11Y	Across SS - Construction Traffic	1	1	242	10	100%	0.00E+00	1.63E-02	0.00E+00	1.63E-02	0.00E+00	1.58E-02	0.00E+00	9.50E-04	0.00E+00	1.90E-02	0.00E+00	0.00E+00	0.00E+00	4.85E-01
UR12	Unpaved Road to working face - Variable Traffic	1	1	752	10	100%	4.25E+00	0.00E+00	4.25E+00	0.00E+00	5.57E-01	0.00E+00	1.81E-03	0.00E+00	4.16E-02	0.00E+00	2.33E+00	0.00E+00	6.03E+00	0.00E+00
UR12Z	Unpaved Road to working face - Non-variable Traffic	1	1	752	10	100%	0.00E+00	9.74E-02	0.00E+00	9.74E-02	0.00E+00	7.03E-02	0.00E+00	4.04E-03	0.00E+00	8.04E-02	0.00E+00	1.47E-02	0.00E+00	2.08E+00
UR12Y	Unpaved Road to working face - Construction Traffic	1	1	752	10	100%	0.00E+00	5.07E-02	0.00E+00	5.07E-02	0.00E+00	4.92E-02	0.00E+00	2.95E-03	0.00E+00	5.89E-02	0.00E+00	0.00E+00	0.00E+00	1.51E+00
PR13Z	WF to LTF	1	1	165	10	100%	0.00E+00	1.19E+00	0.00E+00	1.19E+00	0.00E+00	1.56E-01	0.00E+00	3.06E-05	0.00E+00	6.67E-03	0.00E+00	6.67E-01	0.00E+00	1.70E+00
PR14Z	WF to LTF	1	1	61	10	100%	0.00E+00	4.38E-01	0.00E+00	4.38E-01	0.00E+00	5.75E-02	0.00E+00	1.12E-05	0.00E+00	2.45E-03	0.00E+00	2.45E-01	0.00E+00	6.27E-01
UR17Z	Across CDA	1	1	90	10	100%	0.00E+00	1.18E-02	0.00E+00	1.18E-02	0.00E+00	1.14E-02	0.00E+00	9.87E-04	0.00E+00	3.83E-03	0.00E+00	0.00E+00	0.00E+00	1.86E-01
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	0.00E+00	5.87E-03	0.00E+00	5.87E-03	0.00E+00	5.59E-03	0.00E+00	4.74E-04	0.00E+00	2.11E-03	0.00E+00	6.31E-05	0.00E+00	9.49E-02
PR04B	Scale House to WF	1	1	681	10	100%	4.25E+00	1.59E+00	4.25E+00	1.59E+00	5.57E-01	2.06E-01	1.81E-03	2.72E-03	4.16E-02	3.17E-02	2.33E+00	8.10E-01	6.03E+00	2.19E+00
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	0.00E+00	2.29E+00	0.00E+00	2.29E+00	0.00E+00	3.01E-01	0.00E+00	1.16E-03	0.00E+00	2.70E-02	0.00E+00	1.25E+00	0.00E+00	3.24E+00
PR04C	Exit Road from WF	1	1	420	10	100%	4.25E+00	9.79E-01	4.25E+00	9.79E-01	5.57E-01	1.27E-01	1.81E-03	1.68E-03	4.16E-02	1.96E-02	2.33E+00	5.00E-01	6.03E+00	1.35E+00
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	0.00E+00	1.42E+00	0.00E+00	1.42E+00	0.00E+00	1.86E-01	0.00E+00	7.16E-04	0.00E+00	1.66E-02	0.00E+00	7.72E-01	0.00E+00	2.00E+00
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	--	--	--	--	--	--	--	--	--	--	--	--	--	--
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	--	--	--	--	--	--	--	--	--	--	--	--	--	--
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	0.00E+00	4.54E+00	0.00E+00	4.54E+00	0.00E+00	4.40E+00	0.00E+00	3.04E-01	0.00E+00	2.80E+00	0.00E+00	0.00E+00	0.00E+00	9.39E+01
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	0.00E+00	1.17E+00	0.00E+00	1.17E+00	0.00E+00	1.14E+00	0.00E+00	8.50E-02	0.00E+00	8.13E-01	0.00E+00	0.00E+00	0.00E+00	2.57E+01
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	0.00E+00	1.31E+00	0.00E+00	1.31E+00	0.00E+00	1.28E+00	0.00E+00	1.10E-01	0.00E+00	4.27E-01	0.00E+00	0.00E+00	0.00E+00	2.07E+01
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	0.00E+00	1.03E+00	0.00E+00	1.03E+00	0.00E+00	9.99E-01	0.00E+00	6.00E-02	0.00E+00	1.20E+00	0.00E+00	0.00E+00	0.00E+00	3.06E+01

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes)

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

[5] Emissions are input on either a vehicle distance or power rating basis. Load factor applies only to emissions based on power ratings. Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

[6]

Appendix 5A-S2-5.1b: Vehicle Emission Rates - Tailpipe Emissions, MD

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Sulphur Dioxide 7446-09-5 (g/vkt)	Sulphur Dioxide 7446-09-5 (g/h)	Carbon Dioxide 124-38-9 (g/vkt)	Carbon Dioxide 124-38-9 (g/h)	Methane 74-82-8 (g/vkt)	Methane 74-82-8 (g/h)	Nitrous Oxide 10024-97-2 (g/vkt)	Nitrous Oxide 10024-97-2 (g/h)	Source ID	Tailpipe Emission Rate TSP PM (g/s)	PM10 PM10 (g/s)	PM2.5 PM25 (g/s)	Benzene 71-43-2 (g/s)	Ammonia 7664-41-7 (g/s)	Nitrogen Dioxide NO2 (g/s)	Nitrogen Oxides 10102-44-0 (g/s)
Mobile Equipment															**Mobile Equipment**							
PR01	Main Entrance Road	1	1	206	10	100%	5.26E-03	0.00E+00	1.39E+03	0.00E+00	4.99E-02	0.00E+00	1.08E-02	0.00E+00	PR01	2.43E-04	2.43E-04	3.19E-05	1.03E-07	2.38E-06	1.33E-04	3.45E-04
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	0.00E+00	9.97E-04	0.00E+00	2.48E+02	0.00E+00	8.62E-03	0.00E+00	1.99E-03	PR01Z	1.93E-04	1.93E-04	2.53E-05	9.75E-08	2.26E-06	1.05E-04	2.72E-04
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	0.00E+00	1.91E-03	0.00E+00	4.51E+02	0.00E+00	1.59E-02	0.00E+00	3.87E-03	UR02Z	3.04E-04	3.04E-04	3.98E-05	2.29E-07	4.53E-06	1.63E-04	4.26E-04
PR04A	Entrance to Scale House	1	1	487	10	100%	5.26E-03	2.47E-03	1.39E+03	5.96E+02	4.99E-02	2.58E-02	1.08E-02	6.11E-03	PR04A	5.75E-04	5.75E-04	7.53E-05	2.44E-07	5.62E-06	3.15E-04	8.15E-04
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	0.00E+00	2.36E-03	0.00E+00	5.87E+02	0.00E+00	2.04E-02	0.00E+00	4.70E-03	PR04AZ	4.55E-04	4.55E-04	5.97E-05	2.30E-07	5.35E-06	2.48E-04	6.43E-04
BR06	South Ramp - Variable Traffic	1	1	603	10	100%	5.26E-03	0.00E+00	1.39E+03	0.00E+00	4.99E-02	0.00E+00	1.08E-02	0.00E+00	BR06	7.13E-04	7.13E-04	9.34E-05	3.03E-07	6.96E-06	3.91E-04	1.01E-03
BR06Z	South Ramp - Non-variable Traffic	1	1	603	10	100%	0.00E+00	2.08E-02	0.00E+00	7.90E+03	0.00E+00	5.83E-03	0.00E+00	1.24E-04	BR06Z	2.17E-05	2.17E-05	1.57E-05	9.00E-07	1.79E-05	3.28E-06	4.63E-04
BR06Y	South Ramp - Construction Traffic	1	1	603	10	100%	0.00E+00	1.53E-02	0.00E+00	5.83E+03	0.00E+00	3.92E-03	0.00E+00	0.00E+00	BR06Y	1.13E-05	1.13E-05	1.09E-05	6.57E-07	1.31E-05	0.00E+00	3.36E-04
PR08Z	WF to SS/LTF - Non-variable Traffic	1	1	307	10	100%	0.00E+00	5.21E-03	0.00E+00	1.86E+03	0.00E+00	8.77E-03	0.00E+00	1.77E-03	PR08Z	1.74E-04	1.74E-04	2.55E-05	2.72E-07	5.71E-06	9.34E-05	3.36E-04
PR08Y	WF to SS/LTF - Construction Traffic	1	1	307	10	100%	0.00E+00	7.80E-03	0.00E+00	2.96E+03	0.00E+00	1.99E-03	0.00E+00	0.00E+00	PR08Y	5.74E-06	5.74E-06	5.56E-06	3.34E-07	6.67E-06	0.00E+00	1.71E-04
UR09AZ	WF to SS, to CDA turn off - Non-variable Traffic	1	1	211	10	100%	0.00E+00	3.83E-03	0.00E+00	1.38E+03	0.00E+00	5.34E-03	0.00E+00	1.09E-03	UR09AZ	8.85E-05	8.85E-05	1.36E-05	2.05E-07	4.10E-06	4.62E-05	1.92E-04
UR09AY	WF to SS, to CDA turnoff - Construction Traffic	1	1	211	10	100%	0.00E+00	5.37E-03	0.00E+00	2.04E+03	0.00E+00	1.37E-03	0.00E+00	0.00E+00	UR09AY	3.95E-06	3.95E-06	3.83E-06	2.30E-07	4.59E-06	0.00E+00	1.17E-04
UR09BZ	WF to SS, after CDA turnoff - Non-variable Traffic	1	1	179	10	100%	0.00E+00	6.25E-03	0.00E+00	2.37E+03	0.00E+00	1.60E-03	0.00E+00	0.00E+00	UR09BZ	4.60E-06	4.60E-06	4.46E-06	2.68E-07	5.35E-06	0.00E+00	1.37E-04
UR09BY	WF to SS, after CDA turnoff - Construction Traffic	1	1	179	10	100%	0.00E+00	4.54E-03	0.00E+00	1.72E+03	0.00E+00	1.16E-03	0.00E+00	0.00E+00	UR09BY	3.34E-06	3.34E-06	3.24E-06	1.94E-07	3.89E-06	0.00E+00	9.94E-05
UR11Z	Across SS - Variable Traffic	1	1	242	10	100%	0.00E+00	8.48E-03	0.00E+00	3.22E+03	0.00E+00	2.17E-03	0.00E+00	0.00E+00	UR11Z	6.24E-06	6.24E-06	6.05E-06	3.63E-07	7.25E-06	0.00E+00	1.86E-04
UR11Y	Across SS - Construction Traffic	1	1	242	10	100%	0.00E+00	6.16E-03	0.00E+00	2.34E+03	0.00E+00	1.57E-03	0.00E+00	0.00E+00	UR11Y	4.53E-06	4.53E-06	4.40E-06	2.64E-07	5.27E-06	0.00E+00	1.35E-04
UR12	Unpaved Road to working face - Variable Traffic	1	1	752	10	100%	5.26E-03	0.00E+00	1.39E+03	0.00E+00	4.99E-02	0.00E+00	1.08E-02	0.00E+00	UR12	8.89E-04	8.89E-04	1.16E-04	3.78E-07	8.68E-06	4.87E-04	1.26E-03
UR12Z	Unpaved Road to working face - Non-variable Traffic	1	1	752	10	100%	0.00E+00	2.60E-02	0.00E+00	9.86E+03	0.00E+00	7.28E-03	0.00E+00	1.55E-04	UR12Z	2.71E-05	2.71E-05	1.95E-05	1.12E-06	2.23E-05	4.09E-06	5.78E-04
UR12Y	Unpaved Road to working face - Construction Traffic	1	1	752	10	100%	0.00E+00	1.91E-02	0.00E+00	7.27E+03	0.00E+00	4.89E-03	0.00E+00	0.00E+00	UR12Y	1.41E-05	1.41E-05	1.37E-05	8.19E-07	1.64E-05	0.00E+00	4.19E-04
PR13Z	WF to LTF	1	1	165	10	100%	0.00E+00	1.00E-03	0.00E+00	3.00E+02	0.00E+00	9.91E-03	0.00E+00	1.86E-03	PR13Z	3.31E-04	3.31E-04	4.34E-05	8.49E-09	1.85E-06	1.85E-04	4.74E-04
PR14Z	WF to LTF	1	1	61	10	100%	0.00E+00	3.68E-04	0.00E+00	1.10E+02	0.00E+00	3.64E-03	0.00E+00	6.84E-04	PR14Z	1.22E-04	1.22E-04	1.60E-05	3.12E-09	6.81E-07	6.82E-05	1.74E-04
UR17Z	Across CDA	1	1	90	10	100%	0.00E+00	1.26E-03	0.00E+00	4.72E+02	0.00E+00	1.55E-03	0.00E+00	0.00E+00	UR17Z	3.28E-06	3.28E-06	3.18E-06	2.74E-07	1.06E-06	0.00E+00	5.17E-05
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	0.00E+00	6.93E-04	0.00E+00	2.60E+02	0.00E+00	7.47E-04	0.00E+00	6.65E-07	UR18Z	1.63E-06	1.63E-06	1.55E-06	1.32E-07	5.87E-07	1.75E-08	2.64E-05
PR04B	Scale House to WF	1	1	681	10	100%	5.26E-03	3.46E-03	1.39E+03	8.34E+02	4.99E-02	3.61E-02	1.08E-02	8.55E-03	PR04B	8.04E-04	8.04E-04	1.05E-04	3.42E-07	7.86E-06	4.41E-04	1.14E-03
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	0.00E+00	3.30E-03	0.00E+00	8.21E+02	0.00E+00	2.85E-02	0.00E+00	6.57E-03	PR04BZ	6.37E-04	6.37E-04	8.35E-05	3.22E-07	7.49E-06	3.47E-04	8.99E-04
PR04C	Exit Road from WF	1	1	420	10	100%	5.26E-03	2.14E-03	1.39E+03	5.15E+02	4.99E-02	2.23E-02	1.08E-02	5.28E-03	PR04C	4.97E-04	4.97E-04	6.51E-05	2.11E-07	4.85E-06	2.72E-04	7.04E-04
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	0.00E+00	2.04E-03	0.00E+00	5.07E+02	0.00E+00	1.76E-02	0.00E+00	4.06E-03	PR04CZ	3.93E-04	3.93E-04	5.16E-05	1.99E-07	4.62E-06	2.14E-04	5.55E-04
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	--	--	--	--	--	--	--	--	IDLE01	3.95E-05	3.95E-05	3.63E-05	1.51E-06	1.05E-04	3.45E-03	8.85E-03
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	--	--	--	--	--	--	--	--	IDLE02	3.95E-05	3.95E-05	3.63E-05	1.51E-06	1.05E-04	3.45E-03	8.85E-03
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	0.00E+00	9.13E-01	0.00E+00	3.45E+05	0.00E+00	4.90E-01	0.00E+00	0.00E+00	DOZE2	1.26E-03	1.26E-03	1.22E-03	8.45E-05	7.78E-04	0.00E+00	2.61E-02
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	0.00E+00	2.65E-01	0.00E+00	1.00E+05	0.00E+00	1.36E-01	0.00E+00	0.00E+00	DOZE4	3.26E-04	3.26E-04	3.16E-04	2.36E-05	2.26E-04	0.00E+00	7.14E-03
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	0.00E+00	1.40E-01	0.00E+00	5.26E+04	0.00E+00	1.73E-01	0.00E+00	0.00E+00	DOZE2CAP	3.65E-04	3.65E-04	3.54E-04	3.06E-05	1.19E-04	0.00E+00	5.76E-03
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	0.00E+00	3.89E-01	0.00E+00	1.48E+05	0.00E+00	9.94E-02	0.00E+00	0.00E+00	DOZE2SS	2.86E-04	2.86E-04	2.78E-04	1.67E-05	3.33E-04	0.00E+00	8.51E-03

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes)

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

[5] Emissions are input on either a vehicle distance or power rating basis. Load factor applies only to emissions based on p

[6] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S2-5.1b: Vehicle Emission Rates - Tailpipe Emissions, MD

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Sulphur Dioxide 7446-09-5 (g/s)	Carbon Dioxide 124-38-9 (g/s)	Methane 74-82-8 (g/s)	Nitrous Oxide 10024-97-2 (g/s)	Tailpipe + Fugitive Emission Rate [6] TSP PM (g/s)	Tailpipe + Fugitive Emission Rate [6] PM10 PM10 (g/s)	Tailpipe + Fugitive Emission Rate [6] PM2.5 PM2.5 (g/s)	Ratio Tailpipe : Total Emission Rate TSP PM (g/s)	Ratio Tailpipe : Total Emission Rate PM10 PM10 (g/s)	Ratio Tailpipe : Total Emission Rate PM2.5 PM2.5 (g/s)	Source ID	# of Volume Sources g/hr	# of Volume Sources g/vkt	TSP PM	PM10 PM10
Mobile Equipment																	**Mobile Equipment**				
PR01	Main Entrance Road	1	1	206	10	100%	3.01E-07	7.96E-02	2.86E-06	6.19E-07	8.25E-04	3.18E-04	5.01E-05	2.95E-01	7.64E-01	6.36E-01	PR01	11	11	7.50E-05	2.90E-05
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	2.77E-07	6.90E-02	2.40E-06	5.52E-07	7.74E-04	2.68E-04	4.35E-05	2.49E-01	7.19E-01	5.81E-01	PR01Z	11	11	7.04E-05	2.44E-05
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	5.30E-07	1.25E-01	4.42E-06	1.07E-06	1.07E-01	3.25E-02	3.26E-03	2.83E-03	9.35E-03	1.22E-02	UR02Z	48	48	2.24E-03	6.77E-04
PR04A	Entrance to Scale House	1	1	487	10	100%	7.11E-07	1.88E-01	6.75E-06	1.46E-06	2.24E-03	7.91E-04	1.28E-04	2.56E-01	7.27E-01	5.90E-01	PR04A	57	57	3.94E-05	1.39E-05
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	6.55E-07	1.63E-01	5.66E-06	1.30E-06	2.12E-03	6.71E-04	1.12E-04	2.14E-01	6.78E-01	5.33E-01	PR04AZ	57	57	3.73E-05	1.18E-05
BR06	South Ramp - Variable Traffic	1	1	603	10	100%	8.82E-07	2.33E-01	8.37E-06	1.81E-06	1.38E-01	3.19E-02	3.21E-03	5.16E-03	2.24E-02	2.91E-02	BR06	70	70	1.97E-03	4.55E-04
BR06Z	South Ramp - Non-variable Traffic	1	1	603	10	100%	5.78E-06	2.19E+00	1.62E-06	3.46E-08	1.38E-01	3.12E-02	3.13E-03	1.58E-04	6.95E-04	5.00E-03	BR06Z	70	70	1.96E-03	4.46E-04
BR06Y	South Ramp - Construction Traffic	1	1	603	10	100%	4.26E-06	1.62E+00	1.09E-06	0.00E+00	1.38E-01	3.12E-02	3.13E-03	8.21E-05	3.62E-04	3.50E-03	BR06Y	70	70	1.96E-03	4.45E-04
PR08Z	WF to SS/LTF - Non-variable Traffic	1	1	307	10	100%	1.45E-06	5.18E-01	2.44E-06	4.91E-07	5.30E-03	8.38E-04	1.86E-04	3.29E-02	2.08E-01	1.37E-01	PR08Z	36	36	1.47E-04	2.33E-05
PR08Y	WF to SS/LTF - Construction Traffic	1	1	307	10	100%	2.17E-06	8.23E-01	5.54E-07	0.00E+00	5.13E-03	6.69E-04	1.66E-04	1.12E-03	8.57E-03	3.35E-02	PR08Y	36	36	1.43E-04	1.86E-05
UR09AZ	WF to SS, to CDA turn off - Non-variable Traffic	1	1	211	10	100%	1.06E-06	3.82E-01	1.48E-06	3.04E-07	8.05E-02	2.43E-02	2.43E-03	1.10E-03	3.65E-03	5.60E-03	UR09AZ	25	25	3.22E-03	9.71E-04
UR09AY	WF to SS, to CDA turnoff - Construction Traffic	1	1	211	10	100%	1.49E-06	5.66E-01	3.81E-07	0.00E+00	8.04E-02	2.42E-02	2.42E-03	4.91E-05	1.63E-04	1.58E-03	UR09AY	25	25	3.22E-03	9.67E-04
UR09BZ	WF to SS, after CDA turnoff - Non-variable Traffic	1	1	179	10	100%	1.74E-06	6.59E-01	4.44E-07	0.00E+00	7.60E-02	2.29E-02	2.29E-03	6.05E-05	2.01E-04	1.95E-03	UR09BZ	21	21	3.62E-03	1.09E-03
UR09BY	WF to SS, after CDA turnoff - Construction Traffic	1	1	179	10	100%	1.26E-06	4.79E-01	3.22E-07	0.00E+00	7.60E-02	2.29E-02	2.29E-03	4.40E-05	1.46E-04	1.42E-03	UR09BY	21	21	3.62E-03	1.09E-03
UR11Z	Across SS - Variable Traffic	1	1	242	10	100%	2.36E-06	8.95E-01	6.02E-07	0.00E+00	1.03E-01	3.10E-02	3.11E-03	6.05E-05	2.01E-04	1.95E-03	UR11Z	28	28	3.68E-03	1.11E-03
UR11Y	Across SS - Construction Traffic	1	1	242	10	100%	1.71E-06	6.50E-01	4.37E-07	0.00E+00	1.03E-01	3.10E-02	3.11E-03	4.40E-05	1.46E-04	1.42E-03	UR11Y	28	28	3.68E-03	1.11E-03
UR12	Unpaved Road to working face - Variable Traffic	1	1	752	10	100%	1.10E-06	2.91E-01	1.04E-05	2.26E-06	1.72E-01	3.98E-02	4.00E-03	5.16E-03	2.24E-02	2.91E-02	UR12	87	87	1.98E-03	4.57E-04
UR12Z	Unpaved Road to working face - Non-variable Traffic	1	1	752	10	100%	7.22E-06	2.74E+00	2.02E-06	4.31E-08	1.72E-01	3.89E-02	3.91E-03	1.58E-04	6.95E-04	5.00E-03	UR12Z	87	87	1.97E-03	4.47E-04
UR12Y	Unpaved Road to working face - Construction Traffic	1	1	752	10	100%	5.32E-06	2.02E+00	1.36E-06	0.00E+00	1.72E-01	3.89E-02	3.90E-03	8.21E-05	3.62E-04	3.50E-03	UR12Y	87	87	1.97E-03	4.47E-04
PR13Z	WF to LTF	1	1	165	10	100%	2.78E-07	8.33E-02	2.75E-06	5.16E-07	3.63E-03	7.58E-04	1.47E-04	9.11E-02	4.36E-01	2.96E-01	PR13Z	19	19	1.91E-04	3.99E-05
PR14Z	WF to LTF	1	1	61	10	100%	1.02E-07	3.06E-02	1.01E-06	1.90E-07	1.34E-03	2.79E-04	5.40E-05	9.11E-02	4.36E-01	2.96E-01	PR14Z	7	7	1.91E-04	3.98E-05
UR17Z	Across CDA	1	1	90	10	100%	3.49E-07	1.31E-01	4.30E-07	0.00E+00	3.41E-02	1.02E-02	1.03E-03	9.62E-05	3.20E-04	3.09E-03	UR17Z	10	10	3.41E-03	1.02E-03
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	1.92E-07	7.24E-02	2.08E-07	1.85E-10	1.73E-02	5.28E-03	5.29E-04	9.40E-05	3.09E-04	2.94E-03	UR18Z	5	5	3.47E-03	1.06E-03
PR04B	Scale House to WF	1	1	681	10	100%	9.95E-07	2.63E-01	9.44E-06	2.05E-06	3.42E-03	1.14E-03	1.87E-04	2.35E-01	7.04E-01	5.63E-01	PR04B	79	79	4.33E-05	1.45E-05
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	9.16E-07	2.28E-01	7.92E-06	1.83E-06	3.25E-03	9.76E-04	1.65E-04	1.96E-01	6.53E-01	5.05E-01	PR04BZ	79	79	4.12E-05	1.24E-05
PR04C	Exit Road from WF	1	1	420	10	100%	6.14E-07	1.62E-01	5.83E-06	1.26E-06	2.19E-03	7.16E-04	1.18E-04	2.27E-01	6.94E-01	5.51E-01	PR04C	49	49	4.47E-05	1.46E-05
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	5.65E-07	1.41E-01	4.89E-06	1.13E-06	2.09E-03	6.13E-04	1.05E-04	1.88E-01	6.42E-01	4.93E-01	PR04CZ	49	49	4.26E-05	1.25E-05
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	6.05E-06	1.55E+00	7.94E-05	2.99E-05	3.95E-05	3.95E-05	3.63E-05	n/a	n/a	n/a	IDLE01	1	1	7.91E-05	7.91E-05
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	6.05E-06	1.55E+00	7.94E-05	2.99E-05	3.95E-05	3.95E-05	3.63E-05	n/a	n/a	n/a	IDLE02	1	1	7.91E-05	7.91E-05
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	2.54E-04	9.59E+01	1.36E-04	0.00E+00	1.26E-03	1.26E-03	1.22E-03	1.00E+00	1.00E+00	1.00E+00	DOZE2	1	1	1.26E-03	1.26E-03
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	7.35E-05	2.78E+01	3.78E-05	0.00E+00	3.26E-04	3.26E-04	3.16E-04	1.00E+00	1.00E+00	1.00E+00	DOZE4	1	1	3.26E-04	3.26E-04
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	3.89E-05	1.46E+01	4.80E-05	0.00E+00	3.65E-04	3.65E-04	3.54E-04	1.00E+00	1.00E+00	1.00E+00	DOZE4	1	1	3.65E-04	3.65E-04
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	1.08E-04	4.10E+01	2.76E-05	0.00E+00	2.86E-04	2.86E-04	2.78E-04	1.00E+00	1.00E+00	1.00E+00	DOZE4	1	1	2.86E-04	2.86E-04

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes)

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

[5] Emissions are input on either a vehicle distance or power rating basis. Load factor applies only to emissions based on p

[6] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

QA	tail	fug	tot	
PR01	0.00024322	0.0005813	8.2E-04	TRUE
PR01Z	0.00019268	0.0005813	7.7E-04	TRUE
UR02Z	0.00030389	0.10705183	1.1E-01	TRUE
PR03	0	0	0.0E+00	TRUE
PR04A	0.00057497	0.0016687	2.2E-03	TRUE
PR04AZ	0.00045548	0.0016687	2.1E-03	TRUE

Appendix 5A-S2-5.1b: Vehicle Emission Rates - Tailpipe Emissions, MD

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Emission rate per volume source: PM2.5 PM25	Benzene 71-43-2	Ammonia 7664-41-7	Nitrogen Dioxide NO2	Nitrogen Oxides 10102-44-0	Sulphur Dioxide 7446-09-5	Carbon Dioxide 124-38-9	Methane 74-82-8	Nitrous Oxide 10024-97-2
Mobile Equipment															
PR01	Main Entrance Road	1	1	206	10	100%	4.55E-06	9.40E-09	2.16E-07	1.21E-05	3.14E-05	2.74E-08	7.23E-03	2.60E-07	5.63E-08
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	3.95E-06	8.86E-09	2.06E-07	9.55E-06	2.47E-05	2.52E-08	6.27E-03	2.18E-07	5.02E-08
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	6.79E-05	4.76E-09	9.44E-08	3.40E-06	8.87E-06	1.10E-08	2.61E-03	9.21E-08	2.24E-08
PR04A	Entrance to Scale House	1	1	487	10	100%	2.24E-06	4.29E-09	9.85E-08	5.53E-06	1.43E-05	1.25E-08	3.30E-03	1.18E-07	2.57E-08
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	1.96E-06	4.04E-09	9.39E-08	4.36E-06	1.13E-05	1.15E-08	2.86E-03	9.93E-08	2.29E-08
BR06	South Ramp - Variable Traffic	1	1	603	10	100%	4.59E-05	4.33E-09	9.95E-08	5.58E-06	1.44E-05	1.26E-08	3.33E-03	1.20E-07	2.59E-08
BR06Z	South Ramp - Non-variable Traffic	1	1	603	10	100%	4.48E-05	1.29E-08	2.56E-07	4.68E-08	6.62E-06	8.26E-08	3.14E-02	2.31E-08	4.94E-10
BR06Y	South Ramp - Construction Traffic	1	1	603	10	100%	4.47E-05	9.38E-09	1.88E-07	0.00E+00	4.80E-06	6.09E-08	2.31E-02	1.56E-08	0.00E+00
PR08Z	WF to SS/LTF - Non-variable Traffic	1	1	307	10	100%	5.17E-06	7.55E-09	1.59E-07	2.59E-06	9.34E-06	4.02E-08	1.44E-02	6.77E-08	1.36E-08
PR08Y	WF to SS/LTF - Construction Traffic	1	1	307	10	100%	4.61E-06	9.27E-09	1.85E-07	0.00E+00	4.74E-06	6.02E-08	2.29E-02	1.54E-08	0.00E+00
UR09AZ	WF to SS, to CDA turn off - Non-variable Traffic	1	1	211	10	100%	9.73E-05	8.22E-09	1.64E-07	1.85E-06	7.70E-06	4.25E-08	1.53E-02	5.94E-08	1.22E-08
UR09AY	WF to SS, to CDA turnoff - Construction Traffic	1	1	211	10	100%	9.69E-05	9.19E-09	1.84E-07	0.00E+00	4.70E-06	5.97E-08	2.27E-02	1.52E-08	0.00E+00
UR09BZ	WF to SS, after CDA turnoff - Non-variable Traffic	1	1	179	10	100%	1.09E-04	1.27E-08	2.55E-07	0.00E+00	6.51E-06	8.27E-08	3.14E-02	2.11E-08	0.00E+00
UR09BY	WF to SS, after CDA turnoff - Construction Traffic	1	1	179	10	100%	1.09E-04	9.26E-09	1.85E-07	0.00E+00	4.73E-06	6.01E-08	2.28E-02	1.54E-08	0.00E+00
UR11Z	Across SS - Variable Traffic	1	1	242	10	100%	1.11E-04	1.30E-08	2.59E-07	0.00E+00	6.63E-06	8.41E-08	3.20E-02	2.15E-08	0.00E+00
UR11Y	Across SS - Construction Traffic	1	1	242	10	100%	1.11E-04	9.42E-09	1.88E-07	0.00E+00	4.82E-06	6.11E-08	2.32E-02	1.56E-08	0.00E+00
UR12	Unpaved Road to working face - Variable Traffic	1	1	752	10	100%	4.60E-05	4.34E-09	9.98E-08	5.60E-06	1.45E-05	1.26E-08	3.34E-03	1.20E-07	2.60E-08
UR12Z	Unpaved Road to working face - Non-variable Traffic	1	1	752	10	100%	4.49E-05	1.29E-08	2.57E-07	4.70E-08	6.64E-06	8.29E-08	3.15E-02	2.32E-08	4.96E-10
UR12Y	Unpaved Road to working face - Construction Traffic	1	1	752	10	100%	4.49E-05	9.42E-09	1.88E-07	0.00E+00	4.81E-06	6.11E-08	2.32E-02	1.56E-08	0.00E+00
PR13Z	WF to LTF	1	1	165	10	100%	7.72E-06	4.47E-10	9.75E-08	9.76E-06	2.49E-05	1.46E-08	4.38E-03	1.45E-07	2.72E-08
PR14Z	WF to LTF	1	1	61	10	100%	7.71E-06	4.46E-10	9.73E-08	9.74E-06	2.49E-05	1.46E-08	4.38E-03	1.45E-07	2.71E-08
UR17Z	Across CDA	1	1	90	10	100%	1.03E-04	2.74E-08	1.06E-07	0.00E+00	5.17E-06	3.49E-08	1.31E-02	4.30E-08	0.00E+00
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	1.06E-04	2.63E-08	1.17E-07	3.50E-09	5.27E-06	3.85E-08	1.45E-02	4.15E-08	3.70E-11
PR04B	Scale House to WF	1	1	681	10	100%	2.37E-06	4.33E-09	9.95E-08	5.58E-06	1.44E-05	1.26E-08	3.33E-03	1.20E-07	2.59E-08
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	2.09E-06	4.08E-09	9.48E-08	4.40E-06	1.14E-05	1.16E-08	2.89E-03	1.00E-07	2.31E-08
PR04C	Exit Road from WF	1	1	420	10	100%	2.41E-06	4.31E-09	9.90E-08	5.56E-06	1.44E-05	1.25E-08	3.32E-03	1.19E-07	2.58E-08
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	2.14E-06	4.06E-09	9.44E-08	4.38E-06	1.13E-05	1.15E-08	2.88E-03	9.98E-08	2.30E-08
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	7.26E-05	3.02E-06	2.10E-04	6.89E-03	1.77E-02	1.21E-05	3.10E+00	1.59E-04	5.98E-05
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	7.26E-05	3.02E-06	2.10E-04	6.89E-03	1.77E-02	1.21E-05	3.10E+00	1.59E-04	5.98E-05
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	1.22E-03	8.45E-05	7.78E-04	0.00E+00	2.61E-02	2.54E-04	9.59E+01	1.36E-04	0.00E+00
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	3.16E-04	2.36E-05	2.26E-04	0.00E+00	7.14E-03	7.35E-05	2.78E+01	3.78E-05	0.00E+00
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	3.54E-04	3.06E-05	1.19E-04	0.00E+00	5.76E-03	3.89E-05	1.46E+01	4.80E-05	0.00E+00
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	2.78E-04	1.67E-05	3.33E-04	0.00E+00	8.51E-03	1.08E-04	4.10E+01	2.76E-05	0.00E+00

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes)

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

[5] Emissions are input on either a vehicle distance or power rating basis. Load factor applies only to emissions based on p

[6] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S2-5.1b: Vehicle Emission Rates - Tailpipe Emissions, PM

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Tailpipe Emission Factor [5], [7] TSP PM (g/vkt)	TSP PM (g/h)	PM10 PM10 (g/vkt)	PM10 PM10 (g/h)	PM2.5 PM25 (g/vkt)	PM2.5 PM25 (g/h)	Benzene 71-43-2 (g/vkt)	Benzene 71-43-2 (g/h)	Ammonia 7664-41-7 (g/vkt)	Ammonia 7664-41-7 (g/h)	Nitrogen Dioxide NO2 (g/vkt)	Nitrogen Dioxide NO2 (g/h)	Nitrogen Oxides 10102-44-0 (g/vkt)	Nitrogen Oxides 10102-44-0 (g/h)
Mobile Equipment																				
PR01	Main Entrance Road	1	1	206	10	100%	5.18E+00	0.00E+00	5.18E+00	0.00E+00	6.80E-01	0.00E+00	6.09E-04	0.00E+00	3.86E-02	0.00E+00	2.89E+00	0.00E+00	7.39E+00	0.00E+00
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	0.00E+00	6.94E-01	0.00E+00	6.94E-01	0.00E+00	9.09E-02	0.00E+00	3.51E-04	0.00E+00	8.15E-03	0.00E+00	3.78E-01	0.00E+00	9.79E-01
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	0.00E+00	1.09E+00	0.00E+00	1.09E+00	0.00E+00	1.43E-01	0.00E+00	8.23E-04	0.00E+00	1.63E-02	0.00E+00	5.88E-01	0.00E+00	1.53E+00
PR04A	Entrance to Scale House	1	1	487	10	100%	5.18E+00	1.13E+00	5.18E+00	1.13E+00	6.80E-01	1.47E-01	6.09E-04	1.94E-03	3.86E-02	2.27E-02	2.89E+00	5.79E-01	7.39E+00	1.57E+00
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	0.00E+00	1.64E+00	0.00E+00	1.64E+00	0.00E+00	2.15E-01	0.00E+00	8.29E-04	0.00E+00	1.93E-02	0.00E+00	8.94E-01	0.00E+00	2.31E+00
BR06	South Ramp - Variable Traffic	1	1	603	10	100%	5.18E+00	0.00E+00	5.18E+00	0.00E+00	6.80E-01	0.00E+00	6.09E-04	0.00E+00	3.86E-02	0.00E+00	2.89E+00	0.00E+00	7.39E+00	0.00E+00
BR06Z	South Ramp - Non-variable Traffic	1	1	603	10	100%	0.00E+00	7.81E-02	0.00E+00	7.81E-02	0.00E+00	5.63E-02	0.00E+00	3.24E-03	0.00E+00	6.44E-02	0.00E+00	1.18E-02	0.00E+00	1.67E+00
BR06Y	South Ramp - Construction Traffic	1	1	603	10	100%	0.00E+00	4.06E-02	0.00E+00	4.06E-02	0.00E+00	3.94E-02	0.00E+00	2.36E-03	0.00E+00	4.73E-02	0.00E+00	0.00E+00	0.00E+00	1.21E+00
PR08Z	WF to SS/LTF - Non-variable Traffic	1	1	307	10	100%	0.00E+00	6.28E-01	0.00E+00	6.28E-01	0.00E+00	9.19E-02	0.00E+00	9.79E-04	0.00E+00	2.06E-02	0.00E+00	3.36E-01	0.00E+00	1.21E+00
PR08Y	WF to SS/LTF - Construction Traffic	1	1	307	10	100%	0.00E+00	2.06E-02	0.00E+00	2.06E-02	0.00E+00	2.00E-02	0.00E+00	1.20E-03	0.00E+00	2.40E-02	0.00E+00	0.00E+00	0.00E+00	6.14E-01
UR09AZ	WF to SS, to CDA turn off - Non-variable Traffic	1	1	211	10	100%	0.00E+00	3.18E-01	0.00E+00	3.18E-01	0.00E+00	4.90E-02	0.00E+00	7.40E-04	0.00E+00	1.47E-02	0.00E+00	1.66E-01	0.00E+00	6.93E-01
UR09AY	WF to SS, to CDA turnoff - Construction Traffic	1	1	211	10	100%	0.00E+00	1.42E-02	0.00E+00	1.42E-02	0.00E+00	1.38E-02	0.00E+00	8.27E-04	0.00E+00	1.65E-02	0.00E+00	0.00E+00	0.00E+00	4.23E-01
UR09BZ	WF to SS, after CDA turnoff - Non-variable Traffic	1	1	179	10	100%	0.00E+00	1.65E-02	0.00E+00	1.65E-02	0.00E+00	1.61E-02	0.00E+00	9.63E-04	0.00E+00	1.92E-02	0.00E+00	0.00E+00	0.00E+00	4.92E-01
UR09BY	WF to SS, after CDA turnoff - Construction Traffic	1	1	179	10	100%	0.00E+00	1.20E-02	0.00E+00	1.20E-02	0.00E+00	1.17E-02	0.00E+00	7.00E-04	0.00E+00	1.40E-02	0.00E+00	0.00E+00	0.00E+00	3.58E-01
UR11Z	Across SS - Variable Traffic	1	1	242	10	100%	0.00E+00	2.25E-02	0.00E+00	2.25E-02	0.00E+00	2.18E-02	0.00E+00	1.31E-03	0.00E+00	2.61E-02	0.00E+00	0.00E+00	0.00E+00	6.68E-01
UR11Y	Across SS - Construction Traffic	1	1	242	10	100%	0.00E+00	1.63E-02	0.00E+00	1.63E-02	0.00E+00	1.58E-02	0.00E+00	9.50E-04	0.00E+00	1.90E-02	0.00E+00	0.00E+00	0.00E+00	4.85E-01
UR12	Unpaved Road to working face - Variable Traffic	1	1	752	10	100%	5.18E+00	0.00E+00	5.18E+00	0.00E+00	6.80E-01	0.00E+00	6.09E-04	0.00E+00	3.86E-02	0.00E+00	2.89E+00	0.00E+00	7.39E+00	0.00E+00
UR12Z	Unpaved Road to working face - Non-variable Traffic	1	1	752	10	100%	0.00E+00	9.74E-02	0.00E+00	9.74E-02	0.00E+00	7.03E-02	0.00E+00	4.04E-03	0.00E+00	8.04E-02	0.00E+00	1.47E-02	0.00E+00	2.08E+00
UR12Y	Unpaved Road to working face - Construction Traffic	1	1	752	10	100%	0.00E+00	5.07E-02	0.00E+00	5.07E-02	0.00E+00	4.92E-02	0.00E+00	2.95E-03	0.00E+00	5.89E-02	0.00E+00	0.00E+00	0.00E+00	1.51E+00
PR13Z	WF to LTF	1	1	165	10	100%	0.00E+00	1.19E+00	0.00E+00	1.19E+00	0.00E+00	1.56E-01	0.00E+00	3.06E-05	0.00E+00	6.67E-03	0.00E+00	6.67E-01	0.00E+00	1.70E+00
PR14Z	WF to LTF	1	1	61	10	100%	0.00E+00	4.38E-01	0.00E+00	4.38E-01	0.00E+00	5.75E-02	0.00E+00	1.12E-05	0.00E+00	2.45E-03	0.00E+00	2.45E-01	0.00E+00	6.27E-01
UR17Z	Across CDA	1	1	90	10	100%	0.00E+00	1.18E-02	0.00E+00	1.18E-02	0.00E+00	1.14E-02	0.00E+00	9.87E-04	0.00E+00	3.83E-03	0.00E+00	0.00E+00	0.00E+00	1.86E-01
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	0.00E+00	5.87E-03	0.00E+00	5.87E-03	0.00E+00	5.59E-03	0.00E+00	4.74E-04	0.00E+00	2.11E-03	0.00E+00	6.31E-05	0.00E+00	9.49E-02
PR04B	Scale House to WF	1	1	681	10	100%	5.18E+00	1.59E+00	5.18E+00	1.59E+00	6.80E-01	2.06E-01	6.09E-04	2.72E-03	3.86E-02	3.17E-02	2.89E+00	8.10E-01	7.39E+00	2.19E+00
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	0.00E+00	2.29E+00	0.00E+00	2.29E+00	0.00E+00	3.01E-01	0.00E+00	1.16E-03	0.00E+00	2.70E-02	0.00E+00	1.25E+00	0.00E+00	3.24E+00
PR04C	Exit Road from WF	1	1	420	10	100%	5.18E+00	9.79E-01	5.18E+00	9.79E-01	6.80E-01	1.27E-01	6.09E-04	1.68E-03	3.86E-02	1.96E-02	2.89E+00	5.00E-01	7.39E+00	1.35E+00
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	0.00E+00	1.42E+00	0.00E+00	1.42E+00	0.00E+00	1.86E-01	0.00E+00	7.16E-04	0.00E+00	1.66E-02	0.00E+00	7.72E-01	0.00E+00	2.00E+00
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	--	--	--	--	--	--	--	--	--	--	--	--	--	--
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	--	--	--	--	--	--	--	--	--	--	--	--	--	--
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	0.00E+00	4.54E+00	0.00E+00	4.54E+00	0.00E+00	4.40E+00	0.00E+00	3.04E-01	0.00E+00	2.80E+00	0.00E+00	0.00E+00	0.00E+00	9.39E+01
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	0.00E+00	1.17E+00	0.00E+00	1.17E+00	0.00E+00	1.14E+00	0.00E+00	8.50E-02	0.00E+00	8.13E-01	0.00E+00	0.00E+00	0.00E+00	2.57E+01
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	0.00E+00	1.31E+00	0.00E+00	1.31E+00	0.00E+00	1.28E+00	0.00E+00	1.10E-01	0.00E+00	4.27E-01	0.00E+00	0.00E+00	0.00E+00	2.07E+01
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	0.00E+00	1.03E+00	0.00E+00	1.03E+00	0.00E+00	9.99E-01	0.00E+00	6.00E-02	0.00E+00	1.20E+00	0.00E+00	0.00E+00	0.00E+00	3.06E+01

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes)

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

[5] Emissions are input on either a vehicle distance or power rating basis. Load factor applies only to emissions based on power ratings.

[6] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S2-5.1b: Vehicle Emission Rates - Tailpipe Emissions, PM

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Sulphur Dioxide 7446-09-5 (g/vkt)	Sulphur Dioxide 7446-09-5 (g/h)	Carbon Dioxide 124-38-9 (g/vkt)	Carbon Dioxide 124-38-9 (g/h)	Methane 74-82-8 (g/vkt)	Methane 74-82-8 (g/h)	Nitrous Oxide 10024-97-2 (g/vkt)	Nitrous Oxide 10024-97-2 (g/h)	Source ID
Mobile Equipment															**Mobile Equipment**
PR01	Main Entrance Road	1	1	206	10	100%	5.30E-03	0.00E+00	1.46E+03	0.00E+00	4.72E-02	0.00E+00	9.74E-03	0.00E+00	PR01
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	0.00E+00	9.97E-04	0.00E+00	2.48E+02	0.00E+00	8.62E-03	0.00E+00	1.99E-03	PR01Z
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	0.00E+00	1.91E-03	0.00E+00	4.51E+02	0.00E+00	1.59E-02	0.00E+00	3.87E-03	UR02Z
PR04A	Entrance to Scale House	1	1	487	10	100%	5.30E-03	2.47E-03	1.46E+03	5.96E+02	4.72E-02	2.58E-02	9.74E-03	6.11E-03	PR04A
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	0.00E+00	2.36E-03	0.00E+00	5.87E+02	0.00E+00	2.04E-02	0.00E+00	4.70E-03	PR04AZ
BR06	South Ramp - Variable Traffic	1	1	603	10	100%	5.30E-03	0.00E+00	1.46E+03	0.00E+00	4.72E-02	0.00E+00	9.74E-03	0.00E+00	BR06
BR06Z	South Ramp - Non-variable Traffic	1	1	603	10	100%	0.00E+00	2.08E-02	0.00E+00	7.90E+03	0.00E+00	5.83E-03	0.00E+00	1.24E-04	BR06Z
BR06Y	South Ramp - Construction Traffic	1	1	603	10	100%	0.00E+00	1.53E-02	0.00E+00	5.83E+03	0.00E+00	3.92E-03	0.00E+00	0.00E+00	BR06Y
PR08Z	WF to SS/LTF - Non-variable Traffic	1	1	307	10	100%	0.00E+00	5.21E-03	0.00E+00	1.86E+03	0.00E+00	8.77E-03	0.00E+00	1.77E-03	PR08Z
PR08Y	WF to SS/LTF - Construction Traffic	1	1	307	10	100%	0.00E+00	7.80E-03	0.00E+00	2.96E+03	0.00E+00	1.99E-03	0.00E+00	0.00E+00	PR08Y
UR09AZ	WF to SS, to CDA turn off - Non-variable Traffic	1	1	211	10	100%	0.00E+00	3.83E-03	0.00E+00	1.38E+03	0.00E+00	5.34E-03	0.00E+00	1.09E-03	UR09AZ
UR09AY	WF to SS, to CDA turnoff - Construction Traffic	1	1	211	10	100%	0.00E+00	5.37E-03	0.00E+00	2.04E+03	0.00E+00	1.37E-03	0.00E+00	0.00E+00	UR09AY
UR09BZ	WF to SS, after CDA turnoff - Non-variable Traffic	1	1	179	10	100%	0.00E+00	6.25E-03	0.00E+00	2.37E+03	0.00E+00	1.60E-03	0.00E+00	0.00E+00	UR09BZ
UR09BY	WF to SS, after CDA turnoff - Construction Traffic	1	1	179	10	100%	0.00E+00	4.54E-03	0.00E+00	1.72E+03	0.00E+00	1.16E-03	0.00E+00	0.00E+00	UR09BY
UR11Z	Across SS - Variable Traffic	1	1	242	10	100%	0.00E+00	8.48E-03	0.00E+00	3.22E+03	0.00E+00	2.17E-03	0.00E+00	0.00E+00	UR11Z
UR11Y	Across SS - Construction Traffic	1	1	242	10	100%	0.00E+00	6.16E-03	0.00E+00	2.34E+03	0.00E+00	1.57E-03	0.00E+00	0.00E+00	UR11Y
UR12	Unpaved Road to working face - Variable Traffic	1	1	752	10	100%	5.30E-03	0.00E+00	1.46E+03	0.00E+00	4.72E-02	0.00E+00	9.74E-03	0.00E+00	UR12
UR12Z	Unpaved Road to working face - Non-variable Traffic	1	1	752	10	100%	0.00E+00	2.60E-02	0.00E+00	9.86E+03	0.00E+00	7.28E-03	0.00E+00	1.55E-04	UR12Z
UR12Y	Unpaved Road to working face - Construction Traffic	1	1	752	10	100%	0.00E+00	1.91E-02	0.00E+00	7.27E+03	0.00E+00	4.89E-03	0.00E+00	0.00E+00	UR12Y
PR13Z	WF to LTF	1	1	165	10	100%	0.00E+00	1.00E-03	0.00E+00	3.00E+02	0.00E+00	9.91E-03	0.00E+00	1.86E-03	PR13Z
PR14Z	WF to LTF	1	1	61	10	100%	0.00E+00	3.68E-04	0.00E+00	1.10E+02	0.00E+00	3.64E-03	0.00E+00	6.84E-04	PR14Z
UR17Z	Across CDA	1	1	90	10	100%	0.00E+00	1.26E-03	0.00E+00	4.72E+02	0.00E+00	1.55E-03	0.00E+00	0.00E+00	UR17Z
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	0.00E+00	6.93E-04	0.00E+00	2.60E+02	0.00E+00	7.47E-04	0.00E+00	6.65E-07	UR18Z
PR04B	Scale House to WF	1	1	681	10	100%	5.30E-03	3.46E-03	1.46E+03	8.34E+02	4.72E-02	3.61E-02	9.74E-03	8.55E-03	PR04B
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	0.00E+00	3.30E-03	0.00E+00	8.21E+02	0.00E+00	2.85E-02	0.00E+00	6.57E-03	PR04BZ
PR04C	Exit Road from WF	1	1	420	10	100%	5.30E-03	2.14E-03	1.46E+03	5.15E+02	4.72E-02	2.23E-02	9.74E-03	5.28E-03	PR04C
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	0.00E+00	2.04E-03	0.00E+00	5.07E+02	0.00E+00	1.76E-02	0.00E+00	4.06E-03	PR04CZ
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	--	--	--	--	--	--	--	--	IDLE01
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	--	--	--	--	--	--	--	--	IDLE02
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	0.00E+00	9.13E-01	0.00E+00	3.45E+05	0.00E+00	4.90E-01	0.00E+00	0.00E+00	DOZE2
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	0.00E+00	2.65E-01	0.00E+00	1.00E+05	0.00E+00	1.36E-01	0.00E+00	0.00E+00	DOZE4
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	0.00E+00	1.40E-01	0.00E+00	5.26E+04	0.00E+00	1.73E-01	0.00E+00	0.00E+00	DOZE2CAP
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	0.00E+00	3.89E-01	0.00E+00	1.48E+05	0.00E+00	9.94E-02	0.00E+00	0.00E+00	DOZE2SS

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes)

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

[5] Emissions are input on either a vehicle distance or power rating basis. Load factor applies only to emissions based on power ratings.

[6] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S2-5.1b: Vehicle Emission Rates - Tailpipe Emissions, PM

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Tailpipe Emission Rate TSP PM (g/s)	PM10 PM10 (g/s)	PM2.5 PM25 (g/s)	Benzene 71-43-2 (g/s)	Ammonia 7664-41-7 (g/s)	Nitrogen Dioxide NO2 (g/s)
Mobile Equipment												
PR01	Main Entrance Road	1	1	206	10	100%	2.96E-04	2.96E-04	3.89E-05	3.48E-08	2.20E-06	1.65E-04
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	1.93E-04	1.93E-04	2.53E-05	9.75E-08	2.26E-06	1.05E-04
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	3.04E-04	3.04E-04	3.98E-05	2.29E-07	4.53E-06	1.63E-04
PR04A	Entrance to Scale House	1	1	487	10	100%	7.00E-04	7.00E-04	9.19E-05	8.22E-08	5.21E-06	3.90E-04
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	4.55E-04	4.55E-04	5.97E-05	2.30E-07	5.35E-06	2.48E-04
BR06	South Ramp - Variable Traffic	1	1	603	10	100%	8.68E-04	8.68E-04	1.14E-04	1.02E-07	6.46E-06	4.84E-04
BR06Z	South Ramp - Non-variable Traffic	1	1	603	10	100%	2.17E-05	2.17E-05	1.57E-05	9.00E-07	1.79E-05	3.28E-06
BR06Y	South Ramp - Construction Traffic	1	1	603	10	100%	1.13E-05	1.13E-05	1.09E-05	6.57E-07	1.31E-05	0.00E+00
PR08Z	WF to SS/LTF - Non-variable Traffic	1	1	307	10	100%	1.74E-04	1.74E-04	2.55E-05	2.72E-07	5.71E-06	9.34E-05
PR08Y	WF to SS/LTF - Construction Traffic	1	1	307	10	100%	5.74E-06	5.74E-06	5.56E-06	3.34E-07	6.67E-06	0.00E+00
UR09AZ	WF to SS, to CDA turn off - Non-variable Traffic	1	1	211	10	100%	8.85E-05	8.85E-05	1.36E-05	2.05E-07	4.10E-06	4.62E-05
UR09AY	WF to SS, to CDA turnoff - Construction Traffic	1	1	211	10	100%	3.95E-06	3.95E-06	3.83E-06	2.30E-07	4.59E-06	0.00E+00
UR09BZ	WF to SS, after CDA turnoff - Non-variable Traffic	1	1	179	10	100%	4.60E-06	4.60E-06	4.46E-06	2.68E-07	5.35E-06	0.00E+00
UR09BY	WF to SS, after CDA turnoff - Construction Traffic	1	1	179	10	100%	3.34E-06	3.34E-06	3.24E-06	1.94E-07	3.89E-06	0.00E+00
UR11Z	Across SS - Variable Traffic	1	1	242	10	100%	6.24E-06	6.24E-06	6.05E-06	3.63E-07	7.25E-06	0.00E+00
UR11Y	Across SS - Construction Traffic	1	1	242	10	100%	4.53E-06	4.53E-06	4.40E-06	2.64E-07	5.27E-06	0.00E+00
UR12	Unpaved Road to working face - Variable Traffic	1	1	752	10	100%	1.08E-03	1.08E-03	1.42E-04	1.27E-07	8.06E-06	6.03E-04
UR12Z	Unpaved Road to working face - Non-variable Traffic	1	1	752	10	100%	2.71E-05	2.71E-05	1.95E-05	1.12E-06	2.23E-05	4.09E-06
UR12Y	Unpaved Road to working face - Construction Traffic	1	1	752	10	100%	1.41E-05	1.41E-05	1.37E-05	8.19E-07	1.64E-05	0.00E+00
PR13Z	WF to LTF	1	1	165	10	100%	3.31E-04	3.31E-04	4.34E-05	8.49E-09	1.85E-06	1.85E-04
PR14Z	WF to LTF	1	1	61	10	100%	1.22E-04	1.22E-04	1.60E-05	3.12E-09	6.81E-07	6.82E-05
UR17Z	Across CDA	1	1	90	10	100%	3.28E-06	3.28E-06	3.18E-06	2.74E-07	1.06E-06	0.00E+00
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	1.63E-06	1.63E-06	1.55E-06	1.32E-07	5.87E-07	1.75E-08
PR04B	Scale House to WF	1	1	681	10	100%	9.80E-04	9.80E-04	1.29E-04	1.15E-07	7.29E-06	5.46E-04
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	6.37E-04	6.37E-04	8.35E-05	3.22E-07	7.49E-06	3.47E-04
PR04C	Exit Road from WF	1	1	420	10	100%	6.05E-04	6.05E-04	7.94E-05	7.10E-08	4.50E-06	3.37E-04
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	3.93E-04	3.93E-04	5.16E-05	1.99E-07	4.62E-06	2.14E-04
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	5.15E-05	5.15E-05	4.74E-05	6.04E-07	9.62E-05	4.22E-03
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	5.15E-05	5.15E-05	4.74E-05	6.04E-07	9.62E-05	4.22E-03
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	1.26E-03	1.26E-03	1.22E-03	8.45E-05	7.78E-04	0.00E+00
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	3.26E-04	3.26E-04	3.16E-04	2.36E-05	2.26E-04	0.00E+00
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	3.65E-04	3.65E-04	3.54E-04	3.06E-05	1.19E-04	0.00E+00
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	2.86E-04	2.86E-04	2.78E-04	1.67E-05	3.33E-04	0.00E+00

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes)

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

[5] Emissions are input on either a vehicle distance or power rating basis. Load factor applies only to emissions based on power ratings.

[6] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S2-5.1b: Vehicle Emission Rates - Tailpipe Emissions, PM

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Nitrogen Oxides 10102-44-0 (g/s)	Sulphur Dioxide 7446-09-5 (g/s)	Carbon Dioxide 124-38-9 (g/s)	Methane 74-82-8 (g/s)	Nitrous Oxide 10024-97-2 (g/s)	Tailpipe + Fugitive Emission Rate [6] TSP PM (g/s)	PM10 PM10 (g/s)	PM2.5 PM2.5 (g/s)
Mobile Equipment														
PR01	Main Entrance Road	1	1	206	10	100%	4.22E-04	3.03E-07	8.33E-02	2.70E-06	5.57E-07	8.78E-04	3.71E-04	5.71E-05
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	2.72E-04	2.77E-07	6.90E-02	2.40E-06	5.52E-07	7.74E-04	2.68E-04	4.35E-05
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	4.26E-04	5.30E-07	1.25E-01	4.42E-06	1.07E-06	1.07E-01	3.25E-02	3.26E-03
PR04A	Entrance to Scale House	1	1	487	10	100%	9.98E-04	7.17E-07	1.97E-01	6.38E-06	1.32E-06	2.37E-03	9.16E-04	1.44E-04
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	6.43E-04	6.55E-07	1.63E-01	5.66E-06	1.30E-06	2.12E-03	6.71E-04	1.12E-04
BR06	South Ramp - Variable Traffic	1	1	603	10	100%	1.24E-03	8.89E-07	2.44E-01	7.91E-06	1.63E-06	1.38E-01	3.20E-02	3.23E-03
BR06Z	South Ramp - Non-variable Traffic	1	1	603	10	100%	4.63E-04	5.78E-06	2.19E+00	1.62E-06	3.46E-08	1.38E-01	3.12E-02	3.13E-03
BR06Y	South Ramp - Construction Traffic	1	1	603	10	100%	3.36E-04	4.26E-06	1.62E+00	1.09E-06	0.00E+00	1.38E-01	3.12E-02	3.13E-03
PR08Z	WF to SS/LTF - Non-variable Traffic	1	1	307	10	100%	3.36E-04	1.45E-06	5.18E-01	2.44E-06	4.91E-07	5.30E-03	8.38E-04	1.86E-04
PR08Y	WF to SS/LTF - Construction Traffic	1	1	307	10	100%	1.71E-04	2.17E-06	8.23E-01	5.54E-07	0.00E+00	5.13E-03	6.69E-04	1.66E-04
UR09AZ	WF to SS, to CDA turn off - Non-variable Traffic	1	1	211	10	100%	1.92E-04	1.06E-06	3.82E-01	1.48E-06	3.04E-07	8.05E-02	2.43E-02	2.43E-03
UR09AY	WF to SS, to CDA turnoff - Construction Traffic	1	1	211	10	100%	1.17E-04	1.49E-06	5.66E-01	3.81E-07	0.00E+00	8.04E-02	2.42E-02	2.42E-03
UR09BZ	WF to SS, after CDA turnoff - Non-variable Traffic	1	1	179	10	100%	1.37E-04	1.74E-06	6.59E-01	4.44E-07	0.00E+00	7.60E-02	2.29E-02	2.29E-03
UR09BY	WF to SS, after CDA turnoff - Construction Traffic	1	1	179	10	100%	9.94E-05	1.26E-06	4.79E-01	3.22E-07	0.00E+00	7.60E-02	2.29E-02	2.29E-03
UR11Z	Across SS - Variable Traffic	1	1	242	10	100%	1.86E-04	2.36E-06	8.95E-01	6.02E-07	0.00E+00	1.03E-01	3.10E-02	3.11E-03
UR11Y	Across SS - Construction Traffic	1	1	242	10	100%	1.35E-04	1.71E-06	6.50E-01	4.37E-07	0.00E+00	1.03E-01	3.10E-02	3.11E-03
UR12	Unpaved Road to working face - Variable Traffic	1	1	752	10	100%	1.54E-03	1.11E-06	3.05E-01	9.86E-06	2.04E-06	1.73E-01	4.00E-02	4.03E-03
UR12Z	Unpaved Road to working face - Non-variable Traffic	1	1	752	10	100%	5.78E-04	7.22E-06	2.74E+00	2.02E-06	4.31E-08	1.72E-01	3.89E-02	3.91E-03
UR12Y	Unpaved Road to working face - Construction Traffic	1	1	752	10	100%	4.19E-04	5.32E-06	2.02E+00	1.36E-06	0.00E+00	1.72E-01	3.89E-02	3.90E-03
PR13Z	WF to LTF	1	1	165	10	100%	4.74E-04	2.78E-07	8.33E-02	2.75E-06	5.16E-07	3.63E-03	7.58E-04	1.47E-04
PR14Z	WF to LTF	1	1	61	10	100%	1.74E-04	1.02E-07	3.06E-02	1.01E-06	1.90E-07	1.34E-03	2.79E-04	5.40E-05
UR17Z	Across CDA	1	1	90	10	100%	5.17E-05	3.49E-07	1.31E-01	4.30E-07	0.00E+00	3.41E-02	1.02E-02	1.03E-03
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	2.64E-05	1.92E-07	7.24E-02	2.08E-07	1.85E-10	1.73E-02	5.28E-03	5.29E-04
PR04B	Scale House to WF	1	1	681	10	100%	1.40E-03	1.00E-06	2.76E-01	8.92E-06	1.84E-06	3.60E-03	1.32E-03	2.11E-04
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	8.99E-04	9.16E-07	2.28E-01	7.92E-06	1.83E-06	3.25E-03	9.76E-04	1.65E-04
PR04C	Exit Road from WF	1	1	420	10	100%	8.62E-04	6.19E-07	1.70E-01	5.51E-06	1.14E-06	2.30E-03	8.24E-04	1.32E-04
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	5.55E-04	5.65E-07	1.41E-01	4.89E-06	1.13E-06	2.09E-03	6.13E-04	1.05E-04
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	1.08E-02	5.96E-06	1.58E+00	7.59E-05	2.69E-05	5.15E-05	5.15E-05	4.74E-05
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	1.08E-02	5.96E-06	1.58E+00	7.59E-05	2.69E-05	5.15E-05	5.15E-05	4.74E-05
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	2.61E-02	2.54E-04	9.59E+01	1.36E-04	0.00E+00	1.26E-03	1.26E-03	1.22E-03
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	7.14E-03	7.35E-05	2.78E+01	3.78E-05	0.00E+00	3.26E-04	3.26E-04	3.16E-04
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	5.76E-03	3.89E-05	1.46E+01	4.80E-05	0.00E+00	3.65E-04	3.65E-04	3.54E-04
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	8.51E-03	1.08E-04	4.10E+01	2.76E-05	0.00E+00	2.86E-04	2.86E-04	2.78E-04

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes)

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

[5] Emissions are input on either a vehicle distance or power rating basis. Load factor applies only to emissions based on power ratings.

[6] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S2-5.1b: Vehicle Emission Rates - Tailpipe Emissions, PM

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Ratio Tailpipe : Total Emission Rate TSP PM (g/s)	PM10 PM10 (g/s)	PM2.5 PM2.5 (g/s)	Source ID	# of Volume Sources g/hr	# of Volume Sources g/vkt	TSP PM	PM10 PM10
Mobile Equipment										**Mobile Equipment**				
PR01	Main Entrance Road	1	1	206	10	100%	3.38E-01	7.97E-01	6.81E-01	PR01	11	11	7.98E-05	3.38E-05
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	2.49E-01	7.19E-01	5.81E-01	PR01Z	11	11	7.04E-05	2.44E-05
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	2.83E-03	9.35E-03	1.22E-02	UR02Z	48	48	2.24E-03	6.77E-04
PR04A	Entrance to Scale House	1	1	487	10	100%	2.96E-01	7.64E-01	6.38E-01	PR04A	57	57	4.16E-05	1.61E-05
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	2.14E-01	6.78E-01	5.33E-01	PR04AZ	57	57	3.73E-05	1.18E-05
BR06	South Ramp - Variable Traffic	1	1	603	10	100%	6.27E-03	2.71E-02	3.53E-02	BR06	70	70	1.98E-03	4.58E-04
BR06Z	South Ramp - Non-variable Traffic	1	1	603	10	100%	1.58E-04	6.95E-04	5.00E-03	BR06Z	70	70	1.96E-03	4.46E-04
BR06Y	South Ramp - Construction Traffic	1	1	603	10	100%	8.21E-05	3.62E-04	3.50E-03	BR06Y	70	70	1.96E-03	4.45E-04
PR08Z	WF to SS/LTF - Non-variable Traffic	1	1	307	10	100%	3.29E-02	2.08E-01	1.37E-01	PR08Z	36	36	1.47E-04	2.33E-05
PR08Y	WF to SS/LTF - Construction Traffic	1	1	307	10	100%	1.12E-03	8.57E-03	3.35E-02	PR08Y	36	36	1.43E-04	1.86E-05
UR09AZ	WF to SS, to CDA turn off - Non-variable Traffic	1	1	211	10	100%	1.10E-03	3.65E-03	5.60E-03	UR09AZ	25	25	3.22E-03	9.71E-04
UR09AY	WF to SS, to CDA turnoff - Construction Traffic	1	1	211	10	100%	4.91E-05	1.63E-04	1.58E-03	UR09AY	25	25	3.22E-03	9.67E-04
UR09BZ	WF to SS, after CDA turnoff - Non-variable Traffic	1	1	179	10	100%	6.05E-05	2.01E-04	1.95E-03	UR09BZ	21	21	3.62E-03	1.09E-03
UR09BY	WF to SS, after CDA turnoff - Construction Traffic	1	1	179	10	100%	4.40E-05	1.46E-04	1.42E-03	UR09BY	21	21	3.62E-03	1.09E-03
UR11Z	Across SS - Variable Traffic	1	1	242	10	100%	6.05E-05	2.01E-04	1.95E-03	UR11Z	28	28	3.68E-03	1.11E-03
UR11Y	Across SS - Construction Traffic	1	1	242	10	100%	4.40E-05	1.46E-04	1.42E-03	UR11Y	28	28	3.68E-03	1.11E-03
UR12	Unpaved Road to working face - Variable Traffic	1	1	752	10	100%	6.27E-03	2.71E-02	3.53E-02	UR12	87	87	1.98E-03	4.59E-04
UR12Z	Unpaved Road to working face - Non-variable Traffic	1	1	752	10	100%	1.58E-04	6.95E-04	5.00E-03	UR12Z	87	87	1.97E-03	4.47E-04
UR12Y	Unpaved Road to working face - Construction Traffic	1	1	752	10	100%	8.21E-05	3.62E-04	3.50E-03	UR12Y	87	87	1.97E-03	4.47E-04
PR13Z	WF to LTF	1	1	165	10	100%	9.11E-02	4.36E-01	2.96E-01	PR13Z	19	19	1.91E-04	3.99E-05
PR14Z	WF to LTF	1	1	61	10	100%	9.11E-02	4.36E-01	2.96E-01	PR14Z	7	7	1.91E-04	3.98E-05
UR17Z	Across CDA	1	1	90	10	100%	9.62E-05	3.20E-04	3.09E-03	UR17Z	10	10	3.41E-03	1.02E-03
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	9.40E-05	3.09E-04	2.94E-03	UR18Z	5	5	3.47E-03	1.06E-03
PR04B	Scale House to WF	1	1	681	10	100%	2.72E-01	7.43E-01	6.11E-01	PR04B	79	79	4.55E-05	1.67E-05
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	1.96E-01	6.53E-01	5.05E-01	PR04BZ	79	79	4.12E-05	1.24E-05
PR04C	Exit Road from WF	1	1	420	10	100%	2.63E-01	7.34E-01	5.99E-01	PR04C	49	49	4.69E-05	1.68E-05
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	1.88E-01	6.42E-01	4.93E-01	PR04CZ	49	49	4.26E-05	1.25E-05
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	n/a	n/a	n/a	IDLE01	1	1	1.03E-04	1.03E-04
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	n/a	n/a	n/a	IDLE02	1	1	1.03E-04	1.03E-04
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	1.00E+00	1.00E+00	1.00E+00	DOZE2	1	1	1.26E-03	1.26E-03
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	1.00E+00	1.00E+00	1.00E+00	DOZE4	1	1	3.26E-04	3.26E-04
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	1.00E+00	1.00E+00	1.00E+00	DOZE4	1	1	3.65E-04	3.65E-04
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	1.00E+00	1.00E+00	1.00E+00	DOZE4	1	1	2.86E-04	2.86E-04

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes)

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

[5] Emissions are input on either a vehicle distance or power rating basis. Load factor applies only to emissions based on power ratings.

[6] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S2-5.1b: Vehicle Emission Rates - Tailpipe Emissions, PM

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Emission rate per volume source: PM2.5 PM25	Benzene 71-43-2	Ammonia 7664-41-7	Nitrogen Dioxide NO2	Nitrogen Oxides 10102-44-0	Sulphur Dioxide 7446-09-5	Carbon Dioxide 124-38-9	Methane 74-82-8	Nitrous Oxide 10024-97-2
Mobile Equipment															
PR01	Main Entrance Road	1	1	206	10	100%	5.19E-06	3.16E-09	2.00E-07	1.50E-05	3.84E-05	2.76E-08	7.58E-03	2.45E-07	5.06E-08
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	3.95E-06	8.86E-09	2.06E-07	9.55E-06	2.47E-05	2.52E-08	6.27E-03	2.18E-07	5.02E-08
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	6.79E-05	4.76E-09	9.44E-08	3.40E-06	8.87E-06	1.10E-08	2.61E-03	9.21E-08	2.24E-08
PR04A	Entrance to Scale House	1	1	487	10	100%	2.53E-06	1.44E-09	9.14E-08	6.84E-06	1.75E-05	1.26E-08	3.46E-03	1.12E-07	2.31E-08
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	1.96E-06	4.04E-09	9.39E-08	4.36E-06	1.13E-05	1.15E-08	2.86E-03	9.93E-08	2.29E-08
BR06	South Ramp - Variable Traffic	1	1	603	10	100%	4.62E-05	1.46E-09	9.23E-08	6.91E-06	1.77E-05	1.27E-08	3.49E-03	1.13E-07	2.33E-08
BR06Z	South Ramp - Non-variable Traffic	1	1	603	10	100%	4.48E-05	1.29E-08	2.56E-07	4.68E-08	6.62E-06	8.26E-08	3.14E-02	2.31E-08	4.94E-10
BR06Y	South Ramp - Construction Traffic	1	1	603	10	100%	4.47E-05	9.38E-09	1.88E-07	0.00E+00	4.80E-06	6.09E-08	2.31E-02	1.56E-08	0.00E+00
PR08Z	WF to SS/LTF - Non-variable Traffic	1	1	307	10	100%	5.17E-06	7.55E-09	1.59E-07	2.59E-06	9.34E-06	4.02E-08	1.44E-02	6.77E-08	1.36E-08
PR08Y	WF to SS/LTF - Construction Traffic	1	1	307	10	100%	4.61E-06	9.27E-09	1.85E-07	0.00E+00	4.74E-06	6.02E-08	2.29E-02	1.54E-08	0.00E+00
UR09AZ	WF to SS, to CDA turn off - Non-variable Traffic	1	1	211	10	100%	9.73E-05	8.22E-09	1.64E-07	1.85E-06	7.70E-06	4.25E-08	1.53E-02	5.94E-08	1.22E-08
UR09AY	WF to SS, to CDA turnoff - Construction Traffic	1	1	211	10	100%	9.69E-05	9.19E-09	1.84E-07	0.00E+00	4.70E-06	5.97E-08	2.27E-02	1.52E-08	0.00E+00
UR09BZ	WF to SS, after CDA turnoff - Non-variable Traffic	1	1	179	10	100%	1.09E-04	1.27E-08	2.55E-07	0.00E+00	6.51E-06	8.27E-08	3.14E-02	2.11E-08	0.00E+00
UR09BY	WF to SS, after CDA turnoff - Construction Traffic	1	1	179	10	100%	1.09E-04	9.26E-09	1.85E-07	0.00E+00	4.73E-06	6.01E-08	2.28E-02	1.54E-08	0.00E+00
UR11Z	Across SS - Variable Traffic	1	1	242	10	100%	1.11E-04	1.30E-08	2.59E-07	0.00E+00	6.63E-06	8.41E-08	3.20E-02	2.15E-08	0.00E+00
UR11Y	Across SS - Construction Traffic	1	1	242	10	100%	1.11E-04	9.42E-09	1.88E-07	0.00E+00	4.82E-06	6.11E-08	2.32E-02	1.56E-08	0.00E+00
UR12	Unpaved Road to working face - Variable Traffic	1	1	752	10	100%	4.63E-05	1.46E-09	9.26E-08	6.93E-06	1.77E-05	1.27E-08	3.50E-03	1.13E-07	2.34E-08
UR12Z	Unpaved Road to working face - Non-variable Traffic	1	1	752	10	100%	4.49E-05	1.29E-08	2.57E-07	4.70E-08	6.64E-06	8.29E-08	3.15E-02	2.32E-08	4.96E-10
UR12Y	Unpaved Road to working face - Construction Traffic	1	1	752	10	100%	4.49E-05	9.42E-09	1.88E-07	0.00E+00	4.81E-06	6.11E-08	2.32E-02	1.56E-08	0.00E+00
PR13Z	WF to LTF	1	1	165	10	100%	7.72E-06	4.47E-10	9.75E-08	9.76E-06	2.49E-05	1.46E-08	4.38E-03	1.45E-07	2.72E-08
PR14Z	WF to LTF	1	1	61	10	100%	7.71E-06	4.46E-10	9.73E-08	9.74E-06	2.49E-05	1.46E-08	4.38E-03	1.45E-07	2.71E-08
UR17Z	Across CDA	1	1	90	10	100%	1.03E-04	2.74E-08	1.06E-07	0.00E+00	5.17E-06	3.49E-08	1.31E-02	4.30E-08	0.00E+00
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	1.06E-04	2.63E-08	1.17E-07	3.50E-09	5.27E-06	3.85E-08	1.45E-02	4.15E-08	3.70E-11
PR04B	Scale House to WF	1	1	681	10	100%	2.67E-06	1.46E-09	9.23E-08	6.91E-06	1.77E-05	1.27E-08	3.49E-03	1.13E-07	2.33E-08
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	2.09E-06	4.08E-09	9.48E-08	4.40E-06	1.14E-05	1.16E-08	2.89E-03	1.00E-07	2.31E-08
PR04C	Exit Road from WF	1	1	420	10	100%	2.70E-06	1.45E-09	9.18E-08	6.88E-06	1.76E-05	1.26E-08	3.47E-03	1.12E-07	2.32E-08
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	2.14E-06	4.06E-09	9.44E-08	4.38E-06	1.13E-05	1.15E-08	2.88E-03	9.98E-08	2.30E-08
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	9.47E-05	1.21E-06	1.92E-04	8.44E-03	2.15E-02	1.19E-05	3.15E+00	1.52E-04	5.38E-05
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	9.47E-05	1.21E-06	1.92E-04	8.44E-03	2.15E-02	1.19E-05	3.15E+00	1.52E-04	5.38E-05
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	1.22E-03	8.45E-05	7.78E-04	0.00E+00	2.61E-02	2.54E-04	9.59E+01	1.36E-04	0.00E+00
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	3.16E-04	2.36E-05	2.26E-04	0.00E+00	7.14E-03	7.35E-05	2.78E+01	3.78E-05	0.00E+00
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	3.54E-04	3.06E-05	1.19E-04	0.00E+00	5.76E-03	3.89E-05	1.46E+01	4.80E-05	0.00E+00
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	2.78E-04	1.67E-05	3.33E-04	0.00E+00	8.51E-03	1.08E-04	4.10E+01	2.76E-05	0.00E+00

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes)

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

[5] Emissions are input on either a vehicle distance or power rating basis. Load factor applies only to emissions based on power ratings.

[6] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S2-5.1c: Average Vehicle Weights

Calculation of total Vehicles and Conversion of counts to Peak Daily. [1]
Vehicle type distribution assumed to remain the same.
This only affects off-site vehicles; on-site / non variable vehicle traffic remains the same.

Road	Vehicle Type	Vehicle Weight (tons)	Vehicles Total	Mean Vehicle Weight (tons)	Vehicles Total (based on peak hourly)	Total Off-site Vehicles	Off-Site Vehicle Distribution	Peak Daily Vehicles (NOT passes)	Average Vehicle Weight based on Peak Daily	Vehicles AM	Vehicles MD	Vehicles PM
PR01	Residential Packers	26.0	28.9	30.2	45.5	474.6	9.6%	28.9	30.2	8.9	34.3	2.3
	Roll-offs	21.2	50.6		79.6		16.8%	50.6		15.5	60.1	4.0
	Transfer Trailers	44.3	221.1		347.4		73.2%	221.1		160.6	109.5	77.3
	Small Vehicles	2.2	63.4					63.4		0.0	35.4	28.0
	Contaminated Soil Vehicles	44.3	1.4		2.1		0.5%	1.4		1.0	0.7	0.5
PR01Z	Leachate Tankers	44.3	12.0	30.2				12.0		3.0	5.0	4.0
	Compost Truck 1	2.8	24.0					24.0		6.0	10.0	8.0
	Compost Truck 2	18.9	25.0					25.0		6.3	10.4	8.3
	Compost Truck Tri-Axle	30.3	15.0					15.0		3.8	6.3	5.0
UR02Z	Compost Truck 1	2.8	24.0	15.5				24.0		6.0	10.0	8.0
	Compost Truck 2	18.9	25.0					25.0		6.3	10.4	8.3
	Compost Truck Tri-Axle	30.3	15.0					15.0		3.8	6.3	5.0
PR04A	Residential Packers	26.0	28.9	36.6	22.7	237.3	9.6%	28.9	36.6	4.4	17.2	1.1
	Roll-offs	21.2	50.6		39.8		16.8%	50.6		7.8	30.0	2.0
	Transfer Trailers	44.3	221.1		173.7		73.2%	221.1		80.3	54.7	38.7
	Contaminated Soil Vehicles	44.3	1.4		1.1		0.5%	1.4		0.5	0.3	0.2
	On-Site Roll Off	21.2	0.5					0.5		0.1	0.2	0.2
PR04AZ	Leachate Tankers	44.3	6.0	36.6				6.0		1.5	2.5	2.0
	Compost Truck 1	2.8	12.0					12.0		3.0	5.0	4.0
	Compost Truck 2	18.9	12.5					12.5		3.1	5.2	4.2
	Compost Truck Tri-Axle	30.3	7.5					7.5		1.9	3.1	2.5
PR04B	Residential Packers	26.0	28.9	34.9	45.5	474.6	9.6%	28.9	34.9	8.9	34.3	2.3
	Roll-offs	21.2	50.6		79.6		16.8%	50.6		15.5	60.1	4.0
	Transfer Trailers	44.3	221.1		347.4		73.2%	221.1		160.6	109.5	77.3
	Contaminated Soil Vehicles	44.3	1.4		2.1		0.5%	1.4		1.0	0.7	0.5
	On-Site Roll Off	21.2	1.0					1.0		0.3	0.4	0.4
PR04BZ	Leachate Tankers	44.3	12.0	34.9				12.0		3.0	5.0	4.0
	Compost Truck 1	2.8	24.0					24.0		6.0	10.0	8.0
	Compost Truck 2	18.9	25.0					25.0		6.3	10.4	8.3
	Compost Truck Tri-Axle	30.3	15.0					15.0		3.8	6.3	5.0
PR04C	Residential Packers	26.0	28.9	36.6	22.7	237.3	9.6%	28.9	36.6	4.4	17.2	1.1
	Roll-offs	21.2	50.6		39.8		16.8%	50.6		7.8	30.0	2.0
	Transfer Trailers	44.3	221.1		173.7		73.2%	221.1		80.3	54.7	38.7
	Contaminated Soil Vehicles	44.3	1.4		1.1		0.5%	1.4		0.5	0.3	0.2
	On-Site Roll Off	21.2	0.5					0.5		0.1	0.2	0.2
PR04CZ	Leachate Tankers	44.3	6.0	36.6				6.0		1.5	2.5	2.0
	Compost Truck 1	2.8	12.0					12.0		3.0	5.0	4.0
	Compost Truck 2	18.9	12.5					12.5		3.1	5.2	4.2
	Compost Truck Tri-Axle	30.3	7.5					7.5		1.9	3.1	2.5

BR06	Residential Packers	26.0	28.9	41.1	45.5	474.6	9.6%	28.9	41.1	8.9	34.3	2.3
	Roll-offs	21.2	50.6		79.6		16.8%	50.6		15.5	60.1	4.0
	Transfer Trailers	44.3	221.1		347.4		73.2%	221.1		160.6	109.5	77.3
	Contaminated Soil Vehicles	44.3	1.4		2.1		0.5%	1.4		1.0	0.7	0.5
BR06Z	Cat D400 Articulated Truck	36.4	59.9	41.1				59.9		17.1	21.4	21.4
	On-Site Roll Off	21.2	1.0					1.0		0.3	0.4	0.4
BR06Y	Final Cap Construction Trucks	55.7	72.0	41.1				72.0		18.0	30.0	24.0
PR08Z	Leachate Tankers	44.3	12.0	37.1				12.0		3.0	5.0	4.0
	Cat D400 Articulated Truck	36.4	59.9					59.9		17.1	21.4	21.4
	Compost Truck 1	2.8	24.0					24.0		6.0	10.0	8.0
	Compost Truck 2	18.9	25.0					25.0		6.3	10.4	8.3
	Compost Truck Tri-Axle	30.3	15.0					15.0		3.8	6.3	5.0
PR08Y	Final Cap Construction Trucks	55.7	72.0	37.1				72.0		18.0	30.0	24.0
UR09AZ	Cat D400 Articulated Truck	36.4	59.9	36.7				59.9		17.1	21.4	21.4
	Compost Truck 1	2.8	24.0					24.0		6.0	10.0	8.0
	Compost Truck 2	18.9	25.0					25.0		6.3	10.4	8.3
	Compost Truck Tri-Axle	30.3	15.0					15.0		3.8	6.3	5.0
UR09AY	Final Cap Construction Trucks	55.7	72.0	36.7				72.0		18.0	30.0	24.0
UR09BZ	Cat D400 Articulated Truck	36.4	59.9	46.9				59.9		17.1	21.4	21.4
UR09BY	Final Cap Construction Trucks	55.7	72.0	46.9				72.0		18.0	30.0	24.0
UR11Z	Cat D400 Articulated Truck	36.4	59.9	46.9				59.9		17.1	21.4	21.4
UR11Y	Final Cap Construction Trucks	55.7	72.0	46.9				72.0		18.0	30.0	24.0
UR12	Residential Packers	26.0	28.9	41.1	45.5	474.6	9.6%	28.9	41.1	8.9	34.3	2.3
	Roll-offs	21.2	50.6		79.6		16.8%	50.6		15.5	60.1	4.0
	Transfer Trailers	44.3	221.1		347.4		73.2%	221.1		160.6	109.5	77.3
	Contaminated Soil Vehicles	44.3	1.4		2.1		0.5%	1.4		1.0	0.7	0.5
UR12Z	Cat D400 Articulated Truck	36.4	59.9	41.1				59.9		17.1	21.4	21.4
	On-Site Roll Off	21.2	1.0					1.0		0.3	0.4	0.4
UR12Y	Final Cap Construction Trucks	55.7	72.0	41.1				72.0		18.0	30.0	24.0
PR13Z	Leachate Tankers	44.3	12.0	44.3				12.0		3.0	5.0	4.0
PR14Z	Leachate Tankers	44.3	12.0	44.3				12.0		3.0	5.0	4.0
UR17Z	Cat 950F Rubber-Tired Loader	36.4	390.2	36.4				390.2		111.5	139.4	139.4
UR18Z	Cat 836G Compactor	36.4	1566.0	36.4				1566.0		447.4	559.3	559.3
	Cat D8R Dozer	36.4	0.0					0.0		0.0	0.0	0.0
	Cat D400 Articulated Truck	36.4	59.9					59.9		17.1	21.4	21.4
	Cat D6R Dozer	36.4	0.0					0.0		0.0	0.0	0.0
	Tracked Loader	36.4	783.0					783.0		223.7	279.6	279.6
	On-Site Roll Off	21.2	1.0					1.0		0.3	0.4	0.4

Notes:

[1] The maximum daily off-site vehicle count was 302 trucks based on HDR analysis of 2022 weigh scale data. A distribution of this traffic by hour of day was determined using additional weigh scale data analysis that provided maximum hourly volumes. The maximum traffic count was distributed by hour-of-day based on percentage of each hourly volume of the total. Off-site traffic counts after 5pm were assumed.

Hour of Day	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
Percent of Daily Off-site Traffic	0%	0%	0%	0%	0%	0%	0%	15%	11%	10%	13%	13%	15%	10%	9%	3%	1%	1%	1%	0%	0%	0%	0%	0%

Old Landfill - Existing Conditions Area 5 - Vinyl Chloride Concentration (Year 2037)

Year	Waste Acceptance Years (Inclusive)	LANDGEM Emission Rate (Mg/yr)	Biodegradable Portion	Corrected Concentration for Biodegradable Portion (Mg/year)	Emission Rate (g/s)	Assumed Landfill Area (m^2)	Emission Rate ($g/m^2/s$)	Gas Collection Coverage (%)	Gas Collection Efficiency (%)	Flare Destruction Efficiency (%)	Mound Emission Rate (Controlled) (g/m2/s)	Flare Emission (g/s)
2037	1972-2004	2.62E-03	100%	2.62E-03	8.31E-05	275,424	3.02E-10	100%	70%	98%	9.05E-11	1.16E-06

Sample Calculations

Calculation of g/s Emission Rate = LANDGEM Emission Rate * 1,000,000 (g/Mg) / 365 (days/yr) / 24 (hr/day) / 3,600 (s/hr)
= 0.003 Mg/yr * 1,000,000 / 365 / 24 / 3,600
= 8.31E-05 g/s

Calculation of $g/m^2/s$ Emission Flux Rate = Emission Rate / Landfill Area
= 8.31E-05 g/s/ 275424.2 m2
= 3.02E-10 g/m2/s

Calculation of Mound Emission Rate (Controlled) ($g/m^2/s$) = Emission Flux Rate * (1 - Gas Collection Efficiency)
= 3.02E-10 g/m2/s * (1 - 0.7)
= 9.05E-11 g/m2/s

Calculation of Total Flare Emission Rate (g/s) = Emission Rate * Gas Collection Efficiency * (1 - Flare Destruction Efficiency)
= 8.31E-05 g/s * 0.7 * (1-0.98)
= 1.16E-06 g/s

Appendix 5A-S2-5.2a1: NMOC Emissions from the Old Landfill (Year 2037) RWDI# 2101750

Twin Creeks Environmental Centre

Modelled Source: AREA5

Emissions rates calculated relative to the Vinyl Chloride emission rate.

Compound	CAS Number	Molecular Weight (g/mol)	Average Concentration In Raw LFG (ppm)	Note	Total AREA5 Flux Rate ($g/m^2/s$)	Total AREA5 Emission Rate [1] (g/s)
Vinyl Chloride	75-01-4	62.5	0.45	[2]	9.05E-11	2.49E-05
1,2-Dichloroethane	107-06-2	99.0	0.24	[2]	7.50E-11	2.06E-05
Benzene	71-43-2	78.1	0.93	[2]	2.33E-10	6.42E-05

Notes:

[1] Based on a source area of 275,424 m^2

[2] Concentrations based on the landfill gas sampling report dated July 13, 2023.

[3] Concentrations from the US EPA *User's Manual - Landfill Gas Emissions Model Version 2.0*, 1998.

[4] Emissions of Total Reduced Sulphurs (TRS) are based on the total of all sulphur compounds.

[5] Laboratory reported Total Reduced Sulfur as H_2S.

Sample Calculation

$$\text{Calculation of Benzene Emission Flux Rate} = \frac{\text{Vinyl Chloride Emission Flux Rate} * \text{Benzene Concentration in LFG} * \text{Molecular Weight of Benzene}}{\text{Vinyl Chloride Concentration in LFG} * \text{Molecular Weight of Vinyl Chloride}}$$

$$= \frac{9.05\text{E-}11\ g/m^2/s * 0.93\ ppm * 78.1\ g/mol}{0.45\ ppm * 62.5\ g/mol}$$

$$= 2.33\text{E-}10\ g/m^2/s$$

Expansion Landfill Phases 1 Through 7 - (Year 2037)

Year	Waste Acceptance Years (Inclusive)	Scenario [2]	LANDGEM Emission Rate (Mg/yr) [3]	Emission Rate (g/s)	Approximate Landfill Area (m^2)	Emission Flux Rate ($g/m^2/s$)	Gas Collection Coverage (%)	Gas Collection Efficiency (%) [4]	Flare Destruction Efficiency (%)	Mound Emission Rate (Controlled) ($g/m^2/s$)
2037	2005-2019	Phases 1 to 3	3.92E-02	1.24E-03	244,004	5.10E-09	100%	79%	98%	1.08E-09
2037	2005-2019	Phases 1 to 3 Final	9.80E-03	3.11E-04	61,001	5.10E-09	100%	90%	n/a	n/a
2037	2005-2019	Phases 1 to 3 Interim	2.94E-02	9.33E-04	183,003	5.10E-09	100%	75%	n/a	n/a
2037	2020-2024	Phases 4 to 5	4.41E-02	1.40E-03	165,611	8.44E-09	100%	75%	98%	2.11E-09
2037	2025-2028 [1]	Phases 6 to 7	4.29E-02	1.36E-03	179,092	7.59E-09	100%	77%	98%	1.78E-09
2037	2025-2028 [1]	Phases 6 to 7 Final	4.29E-03	1.36E-04	17,909	7.59E-09	100%	90%	n/a	n/a
2037	2025-2028 [1]	Phases 6 to 7 Interim	3.86E-02	1.22E-03	161,183	7.59E-09	100%	75%	n/a	n/a
2037	n/a [1]	Phases 8 to 9	0.00E+00	0.00E+00	99,012	0.00E+00	100%	0%	98%	0.00E+00
2037	2005-2028	Total Emissions	1.26E-01	4.00E-03	6.88E+05	2.11E-08	100%	77%	98%	4.98E-09

Notes:

[1] The planned start of filling for the Vertical Expansion is 2028 when elevation 265.7 masl is reached. The side slopes would be filled/increased first so that final cover can then be applied on the completed side slopes. Waste quantities for 2028 to 2031 that had been assigned to Expansion Landfill Phases 6 through 9 in the Existing Conditions assessment have been reassigned to Vertical Expansion Stage 1 and Stage 2.

[2] At the end of Vertical Expansion Stage 2, filling in the areas represented by Vertical Expansion Stage 1 and Stage 2 is complete and has covered the areas of the Expansion Landfill Phases 1 to 7. The type of cover used for the Vertical Expansion Stages is assumed to influence the landfill gas collection efficiency of the underlying Expansion Landfill Phases as well. Vertical Expansion Stage 1 has been split into two areas; Stage 1 Interim is the area of Stage 1 where filling will continue as Stage 3 progresses, and Stage 1 Final is the outer edge of Stage 1 where no further filling is expected to occur. It is estimated that 25% of the underlying Expansion Landfill Phases 1 to 3 will be under Stage 1 Final, and 75% will be under Stage 1 Interim. Gas collection efficiency for areas under interim cover has been applied to Expansion Landfill Phases 1 to 3 Interim, and landfill gas collection efficiency for areas under final cover has been applied to Expansion Landfill Phases 1 to 3 Final. A similar approach was used for the other Expansion landfill phases, and it is estimated that

[3] The LANDGEM Emission Rate for Phases 1 to 3 has been scaled for Phases 1 to 3 Final and Phases 1 to 3 Interim based on percent of total Phases 1 to 3 area. A similar approach was used to scale LANDGEM emission rates for Phases 6 to 7.

[4] An aggregate Gas Collection Efficiency has been calculated for Phases 1 to 3 based on the weighted average of emission rate and collection efficiency for Phases 1 to 3 Final and Phases 1 to 3 Interim. Mound Emission Rate is considered for the whole of Phases 1 to 3 based on this calculated collection efficiency and is not reported separately for Phases 1 to 3 Final and Phases 1 to 3 Interim. A similar approach was used for

Sample Calculations

Calculation of Emission Rate (Phases 1 to 3) = LANDGEM Emission Rate * 1,000,000 (g/Mg) / 365 (days/yr) / 24 (hr/day) / 3,600 (s/hr)
= 3.92E-02 Mg/yr * 1,000,000 / 365 / 24 / 3,600
= 1.24E-03 g/s

Calculation of Emission Flux Rate (Phases 1 to 3) = Emission Rate / Landfill Area
= 1.24E-03 g/s/ 244,004 m^2
= 5.10E-09 $g/m^2/s$

Calculation of Landfill Gas Collection Efficiency (CE) (Phases 1 to 3) = ((ER Phase 1 to 3 Final * CE Phase 1 to 3 Final) + (ER Phase 1 to 3 Interim * CE Phase 1 to 3 Interim))/Total EI
((3.11E-04 * 0.9) + (9.33E-04 * 0.75)) / 1.24E-03 %
= 79%

Calculation of Mound Emission Rate (Controlled) (Phases 1 to 3) = Emission Flux Rate * (1 - Gas Collection Efficiency)
= 5.10E-09 $g/m^2/s$ * (1 - 0.79)
= 1.08E-09 $g/m^2/s$

Calculation of Total Flare Emission Rate (Phases 1 to 3) = Emission Rate * Gas Collection Efficiency * (1 - Flare Destruction Efficiency)
= 1.24E-03 g/s * 0.79 * (1 - 0.98)
= 1.96E-05 g/s

Modelled Source: AREA1
Emissions rates calculated relative to the Vinyl Chloride emission rate.

Compound	CAS Number	Molecular Weight (g/mol)	Average Concentration In Raw LFG (ppm)	Note	Total AREA1 Flux Rate ($g/m^2/s$)	Total AREA1 Emission Rate [1] (g/s)	Flare Emission Rate from Phases 1 Through 3 (g/s)
Vinyl Chloride	75-01-4	62.50	0.45	[2]	1.08E-09	2.64E-04	1.96E-05
1,2-Dichloroethane	107-06-2	98.96	0.24	[2]	8.97E-10	2.19E-04	1.62E-05
Benzene	71-43-2	78.13	0.93	[2]	2.79E-09	6.81E-04	5.05E-05

Notes:
[1] Based on a source area of 244,004 m^2
[2] Concentrations based on the landfill gas sampling report dated July 13, 2023.
[3] Concentrations from the US EPA *User's Manual - Landfill Gas Emissions Model Version 2.0*, 1998.
[4] Emissions of Total Reduced Sulphurs (TRS) are based on the total of all sulphur compounds.
[5] Laboratory reported Total Reduced Sulfur as H_2S.

Sample Calculation

Calculation of Benzene Emission Flux Rate = $\frac{\text{Vinyl Chloride Emission Flux Rate * Benzene Concentration in LFG * Molecular Weight of Benzene}}{\text{Vinyl Chloride Concentration in LFG * Molecular Weight of Vinyl Chloride}}$

= $\frac{\text{1.08E-9 g/m²/s * 0.93 ppm * 78.13 g/mol}}{\text{0.45 ppm * 62.50 g/mol}}$

= 2.79E-09 g/m²/s

Modelled Source: AREA2
Emissions rates calculated relative to the Vinyl Chloride emission rate.

Compound	CAS Number	Molecular Weight (g/mol)	Average Concentration In Raw LFG (ppm)	Note	Total AREA2 Flux Rate ($g/m^2/s$)	Total AREA2 Emission Rate [1] (g/s)	Flare Emission Rate from Phases 4 Through 6 (g/s)
Vinyl Chloride	75-01-4	62.50	0.45	[2]	2.11E-09	3.49E-04	2.10E-05
1,2-Dichloroethane	107-06-2	98.96	0.24	[2]	1.75E-09	2.89E-04	1.74E-05
Benzene	71-43-2	78.13	0.93	[2]	5.44E-09	9.01E-04	5.40E-05

Notes:
[1] Based on a source area of 165,611 m^2
[2] Concentrations based on the landfill gas sampling report dated July 13, 2023.
[3] Concentrations from the US EPA *User's Manual - Landfill Gas Emissions Model Version 2.0*, 1998.
[4] Emissions of Total Reduced Sulphurs (TRS) are based on the total of all sulphur compounds.
[5] Laboratory reported Total Reduced Sulfur as H_2S.

Sample Calculation

Calculation of Benzene Emission Flux Rate = $\frac{\text{Vinyl Chloride Emission Flux Rate * Benzene Concentration in LFG * Molecular Weight of Benzene}}{\text{Vinyl Chloride Concentration in LFG * Molecular Weight of Vinyl Chloride}}$

= $\frac{\text{2.11E-09 g/m²/s * 0.93 ppm * 78.13 g/mol}}{\text{0.45 ppm * 62.50 g/mol}}$

= 5.44E-09 g/m²/s

Appendix 5A-S2-5.2b3: NMOC Emissions from the Expansion Landfill Phases 6 Through 7 (Year 2037)

RWDI# 2101750

Twin Creeks Environmental Centre

Modelled Source: AREA3

Emissions rates calculated relative to the Vinyl Chloride emission rate.

Compound	CAS Number	Molecular Weight (g/mol)	Average Concentration In Raw LFG (ppm)	Note	Total AREA3 Flux Rate ($g/m^2/s$)	Total AREA3 Emission Rate [1] (g/s)	Flare Emission Rate from Phases 7 Through 9 (g/s)
Vinyl Chloride	75-01-4	62.50	0.45	[2]	1.78E-09	3.19E-04	2.08E-05
1,2-Dichloroethane	107-06-2	98.96	0.24	[2]	1.48E-09	2.65E-04	1.72E-05
Benzene	71-43-2	78.13	0.93	[2]	4.60E-09	8.23E-04	5.36E-05

Notes:

[1] Based on a source area of 179,092 m^2

[2] Concentrations based on the landfill gas sampling report dated July 13, 2023.

[3] Concentrations from the US EPA *User's Manual - Landfill Gas Emissions Model Version 2.0*, 1998.

[4] Emissions of Total Reduced Sulphurs (TRS) are based on the total of all sulphur compounds.

[5] Laboratory reported Total Reduced Sulfur as H_2S.

Sample Calculation

Calculation of Benzene Emission Flux Rate = $\frac{\text{Vinyl Chloride Emission Flux Rate} * \text{Benzene Concentration in LFG} * \text{Molecular Weight of Benzene}}{\text{Vinyl Chloride Concentration in LFG} * \text{Molecular Weight of Vinyl Chloride}}$

= $\frac{1.78E\text{-}09\ g/m^2/s * 0.93\ ppm * 78.13\ g/mol}{0.45\ ppm * 62.50\ g/mol}$

= 4.60E-09 $g/m^2/s$

Appendix 5A-S2-5.2b4: NMOC Emissions from the Expansion Landfill Phases 8 Through 9 (Year 2037)

Twin Creeks Environmental Centre RWDI# 2101750

Modelled Source: AREA4
Emissions rates calculated relative to the Vinyl Chloride emission rate.

Compound	CAS Number	Molecular Weight (g/mol)	Average Concentration In Raw LFG (ppm)	Note	Total AREA4 Flux Rate ($g/m^2/s$)	Total AREA4 Emission Rate [1] (g/s)
Vinyl Chloride	75-01-4	62.50	0.45	[2]	0.00E+00	0.00E+00
1,2-Dichloroethane	107-06-2	98.96	0.24	[2]	0.00E+00	0.00E+00
Benzene	71-43-2	78.13	0.93	[2]	0.00E+00	0.00E+00

Notes:
[1] Based on a source area of 99,012 m^2
[2] Concentrations based on the landfill gas sampling report dated July 13, 2023.
[3] Concentrations from the US EPA *User's Manual - Landfill Gas Emissions Model Version 2.0*, 1998.
[4] Emissions of Total Reduced Sulphurs (TRS) are based on the total of all sulphur compounds.
[5] Laboratory reported Total Reduced Sulfur as H_2S.

Sample Calculation

Calculation of Benzene Emission Flux Rate = $\frac{\text{Vinyl Chloride Emission Flux Rate} * \text{Benzene Concentration in LFG} * \text{Molecular Weight of Benzene}}{\text{Vinyl Chloride Concentration in LFG} * \text{Molecular Weight of Vinyl Chloride}}$

= $\frac{0.00\text{E+00 g/m}^2\text{/s} * 0.93 \text{ ppm} * 78.13 \text{ g/mol}}{0.45 \text{ ppm} * 62.50 \text{ g/mol}}$

= 0.00E+00 $g/m^2/s$

Vertical Expansion Landfill End of Stage 2 - (Year 2037)

Year	Waste Acceptance Years (Inclusive)	Scenario [1]	LANDGEM Emission Rate (Mg/yr) [2]	Emission Rate (g/s)	Approximate Landfill Area (m^2)	Emission Flux Rate ($g/m^2/s$)	Gas Collection Coverage (%)	Gas Collection Efficiency (%) [3]	Flare Destruction Efficiency (%)	Mound Emission Rate (Controlled) ($g/m^2/s$)
2037	2028-2034	Stage 1	5.24E-02	1.66E-03	378,390	4.39E-09	100%	84%	98%	6.95E-10
2037	2028-2034	Stage 1 Final	3.20E-02	1.02E-03	231,245	4.39E-09	100%	90%	n/a	n/a
2037	2028-2034	Stage 1 Interim	2.04E-02	6.46E-04	147,145	4.39E-09	100%	75%	n/a	n/a
2037	2028-2037	Stage 2	6.20E-02	1.97E-03	366,429	5.37E-09	100%	75%	98%	1.34E-09
2037	n/a	Stage 3	0.00E+00	0.00E+00	147,145	0.00E+00	100%	0%	98%	0.00E+00
2037	n/a	Stage 4	0.00E+00	0.00E+00	181,496	0.00E+00	100%	0%	98%	0.00E+00
2037	2028-2037	Total Emissions	1.14E-01	3.63E-03	1.07E+06	9.76E-09	100%	79%	98%	2.04E-09

Notes:
[1] At the end of Stage 2, filling in the areas represented by Stage 1 and Stage 2 is complete. Stage 1 has been split into two areas; Stage 1 Interim is the area of Stage 1 where filling will continue as Stage 3 progresses, and Stage 1 Final is the outer edge of Stage 1 where no further filling is expected to occur. Gas collection efficiency for areas under interim cover has been applied to Stage 1 Interim, and landfill gas collection efficiency for areas under final cover has been applied to Stage 1 Final.
[2] The LANDGEM Emission Rate for Stage 1 has been scaled for Stage 1 Final and Stage 1 Interim based on percent of total Stage 1 area.
[3] An aggregate Gas Collection Efficiency has been calculated for Stage 1 based on the weighted average of emission rate and collection efficiency for Stage 1 Final and Stage 1 Interim. Mound Emission Rate is considered for the whole of Stage 1 based on this calculated collection efficiency and is not reported separately for Stage 1 Final and Stage 1 Interim.

Sample Calculations

Calculation of Emission Rate (ER) (Stage 1) = LANDGEM Emission Rate * 1,000,000 (g/Mg) / 365 (days/yr) / 24 (hr/day) / 3,600 (s/hr)
= 5.24E-02 Mg/yr * 1,000,000 / 365 / 24 / 3,600
= 1.66E-03 g/s

Calculation of Emission Flux Rate (Stage 1) = Emission Rate / Landfill Area
= 1.66E-03 g/s/ 378,390 m²
= 4.39E-09 g/m²/s

Calculation of Landfill Gas Collection Efficiency (CE) (Stage 1) = ((ER Stage 1 Final * CE Stage 1 Final) + (ER Stage 1 Interim * CE Stage 1 Interim))/Total ER
((1.02E-03 * 0.9) + (6.46E-04 * 0.75)) / 1.66E-03 %
= 84%

Calculation of Mound Emission Rate (Controlled) (Stage 1) = Emission Flux Rate * (1 - Gas Collection Efficiency)
= 4.39E-09 g/m²/s * (1 - 0.84)
= 6.95E-10 g/m²/s

Calculation of Total Flare Emission Rate (Stage 1) = Emission Rate * Gas Collection Efficiency * (1 - Flare Destruction Efficiency)
= 1.66E-03 g/s * 0.84 * (1 - 0.98)
= 2.80E-05 g/s

Appendix 5A-S2-5.2c1: NMOC Emissions from the Vertical Expansion Landfill Stage 1 (Year 2037) RWDI# 2101750

Twin Creeks Environmental Centre

Modelled Source: STAGE1

Emissions rates calculated relative to the Vinyl Chloride emission rate.

Compound	CAS Number	Molecular Weight (g/mol)	Average Concentration In Raw LFG (ppm)	Note	Total STAGE1 Flux Rate ($g/m^2/s$)	Total STAGE1 Emission Rate [1] (g/s)
Vinyl Chloride	75-01-4	62.50	0.45	[2]	6.95E-10	2.63E-04
1,2-Dichloroethane	107-06-2	98.96	0.24	[2]	5.76E-10	2.18E-04
Benzene	71-43-2	78.13	0.93	[2]	1.79E-09	6.78E-04

Notes:

[1] Based on a source area of 378,390 m^2

[2] Concentrations based on the landfill gas sampling report dated July 13, 2023.

[3] Concentrations from the US EPA *User's Manual - Landfill Gas Emissions Model Version 2.0*, 1998.

[4] Emissions of Total Reduced Sulphurs (TRS) are based on the total of all sulphur compounds.

[5] Laboratory reported Total Reduced Sulfur as H_2S.

Sample Calculation

Calculation of Benzene Emission Flux Rate = $\frac{\text{Vinyl Chloride Emission Flux Rate * Benzene Concentration in LFG * Molecular Weight of Benzene}}{\text{Vinyl Chloride Concentration in LFG * Molecular Weight of Vinyl Chloride}}$

= $\frac{\text{6.95E-10 g/m²/s * 0.93 ppm * 78.13 g/mol}}{\text{0.45 ppm * 62.50 g/mol}}$

= 1.79E-09 g/m²/s

Appendix 5A-S2-5.2c2: NMOC Emissions from the Vertical Expansion Landfill Stage 2 (Year 2037) RWDI# 2101750

Twin Creeks Environmental Centre

Modelled Source: STAGE2

Emissions rates calculated relative to the Vinyl Chloride emission rate.

Compound	CAS Number	Molecular Weight (g/mol)	Average Concentration In Raw LFG (ppm)	Note	Total STAGE2 Flux Rate ($g/m^2/s$)	Total STAGE2 Emission Rate [1] (g/s)
Vinyl Chloride	75-01-4	62.50	0.45	[2]	1.34E-09	4.92E-04
1,2-Dichloroethane	107-06-2	98.96	0.24	[2]	1.11E-09	4.07E-04
Benzene	71-43-2	78.13	0.93	[2]	3.46E-09	1.27E-03

Notes:

[1] Based on a source area of 366,429 m^2

[2] Concentrations based on the landfill gas sampling report dated July 13, 2023.

[3] Concentrations from the US EPA *User's Manual - Landfill Gas Emissions Model Version 2.0*, 1998.

[4] Emissions of Total Reduced Sulphurs (TRS) are based on the total of all sulphur compounds.

[5] Laboratory reported Total Reduced Sulfur as H_2S.

Sample Calculation

$$\text{Calculation of Benzene Emission Flux Rate} = \frac{\text{Vinyl Chloride Emission Flux Rate} * \text{Benzene Concentration in LFG} * \text{Molecular Weight of Benzene}}{\text{Vinyl Chloride Concentration in LFG} * \text{Molecular Weight of Vinyl Chloride}}$$

$$= \frac{1.34\text{E-}09\ g/m^2/s * 0.93\ ppm * 78.13\ g/mol}{0.45\ ppm * 62.50\ g/mol}$$

$$= 3.46\text{E-}09\ g/m^2/s$$

Appendix 5A-S2-5.2c3: NMOC Emissions from the Vertical Expansion Landfill Stage 3 (Year 2037) RWDI# 2101750

Twin Creeks Environmental Centre

Modelled Source: STAGE3

Emissions rates calculated relative to the Vinyl Chloride emission rate.

Compound	CAS Number	Molecular Weight (g/mol)	Average Concentration In Raw LFG (ppm)	Note	Total STAGE3 Flux Rate ($g/m^2/s$)	Total STAGE3 Emission Rate [1] (g/s)
Vinyl Chloride	75-01-4	62.50	0.45	[2]	0.00E+00	0.00E+00
1,2-Dichloroethane	107-06-2	98.96	0.24	[2]	0.00E+00	0.00E+00
Benzene	71-43-2	78.13	0.93	[2]	0.00E+00	0.00E+00

Notes:

[1] Based on a source area of 147,145 m^2

[2] Concentrations based on the landfill gas sampling report dated July 13, 2023.

[3] Concentrations from the US EPA *User's Manual - Landfill Gas Emissions Model Version 2.0*, 1998.

[4] Emissions of Total Reduced Sulphurs (TRS) are based on the total of all sulphur compounds.

[5] Laboratory reported Total Reduced Sulfur as H_2S.

Sample Calculation

Calculation of Benzene Emission Flux Rate = $\frac{\text{Vinyl Chloride Emission Flux Rate * Benzene Concentration in LFG * Molecular Weight of Benzene}}{\text{Vinyl Chloride Concentration in LFG * Molecular Weight of Vinyl Chloride}}$

= $\frac{\text{0.00E+00 g/m²/s * 0.93 ppm * 78.13 g/mol}}{\text{0.45 ppm * 62.50 g/mol}}$

= 0.00E+00 g/m²/s

Appendix 5A-S2-5.2c4: NMOC Emissions from the Vertical Expansion Landfill Stage 4 (Year 2037) RWDI# 2101750

Twin Creeks Environmental Centre

Modelled Source: STAGE4

Emissions rates calculated relative to the Vinyl Chloride emission rate.

Compound	CAS Number	Molecular Weight (g/mol)	Average Concentration In Raw LFG (ppm)	Note	Total STAGE4 Flux Rate ($g/m^2/s$)	Total STAGE4 Emission Rate [1] (g/s)
Vinyl Chloride	75-01-4	62.50	0.45	[2]	0.00E+00	0.00E+00
1,2-Dichloroethane	107-06-2	98.96	0.24	[2]	0.00E+00	0.00E+00
Benzene	71-43-2	78.13	0.93	[2]	0.00E+00	0.00E+00

Notes:

[1] Based on a source area of 181,496 m^2

[2] Concentrations based on the landfill gas sampling report dated July 13, 2023.

[3] Concentrations from the US EPA *User's Manual - Landfill Gas Emissions Model Version 2.0*, 1998.

[4] Emissions of Total Reduced Sulphurs (TRS) are based on the total of all sulphur compounds.

[5] Laboratory reported Total Reduced Sulfur as H_2S.

Sample Calculation

$$\text{Calculation of Benzene Emission Flux Rate} = \frac{\text{Vinyl Chloride Emission Flux Rate} * \text{Benzene Concentration in LFG} * \text{Molecular Weight of Benzene}}{\text{Vinyl Chloride Concentration in LFG} * \text{Molecular Weight of Vinyl Chloride}}$$

$$= \frac{0.00\text{E+00 g/m}^2\text{/s} * 0.93 \text{ ppm} * 78.13 \text{ g/mol}}{0.45 \text{ ppm} * 62.50 \text{ g/mol}}$$

$$= 0.00\text{E+00 g/m}^2\text{/s}$$

USER INPUTS

Landfill Name or Identifier: Twin Creeks Environmental Centre

Clear ALL Non-Parameter Inputs/Selections

1: PROVIDE LANDFILL CHARACTERISTICS

Landfill Open Year	1972	
Landfill Closure Year	2005	
Have Model Calculate Closure Year?	○ Yes ◉ No	
Waste Design Capacity		megagrams

Restore Default Model Parameters

2: DETERMINE MODEL PARAMETERS

Methane Generation Rate, k (*year*$^{-1}$)
User-specified
User-specified value: 0.040
User-specified k value should be based on site-specific data and determined by EPA Method 2E.

Potential Methane Generation Capacity, L_o (*m*^{3}/*Mg*)
User-specified
User-specified value: 125
User-specified Lo value should be based on site-specific data and determined by waste type and composition.

NMOC Concentration (*ppmv as hexane*)
User-specified
User-specified value: 595

Methane Content (*% by volume*)
User-specified
User-specified value: 52

3: SELECT GASES/POLLUTANTS

Gas / Pollutant #1 #REF!
Total landfill gas

Gas / Pollutant #2
Methane

Gas / Pollutant #3
Carbon dioxide

Gas / Pollutant #4
NMOC

Edit Existing or Add New Pollutant Parameters

Restore Default Pollutant Parameters

Description/Comments:

Modelling of existing landfill Area 5. Values based on MECP Interim Guide.

4: ENTER WASTE ACCEPTANCE RATES

Input Units: Mg/year

Year	Input Units *(Mg/year)*	Calculated Units *(short tons/year)*
1972	9,979	10,977
1973	9,979	10,977
1974	9,979	10,977
1975	9,979	10,977
1976	9,979	10,977
1977	9,979	10,977
1978	9,979	10,977
1979	9,979	10,977
1980	9,979	10,977
1981	9,979	10,977
1982	9,979	10,977
1983	9,979	10,977
1984	9,979	10,977
1985	9,979	10,977
1986	9,979	10,977
1987	9,979	10,977
1988	9,979	10,977
1989	9,979	10,977
1990	9,979	10,977
1991	9,979	10,977
1992	9,979	10,977
1993	9,979	10,977
1994	69,605	76,566
1995	55,074	60,581
1996	43,328	47,661
1997	57,497	63,247
1998	57,903	63,693
1999	58,599	64,459
2000	53,819	59,201
2001	191,426	210,569
2002	108,441	119,285
2003	86,909	95,600
2004	98,516	108,368
2005		
2006		
2007		
2008		
2009		
2010		
2011		

4: ENTER WASTE ACCEPTANCE RATES

Input Units: Mg/year

Year	Input Units *(Mg/year)*	Calculated Units *(short tons/year)*
2012		
2013		
2014		
2015		
2016		
2017		
2018		
2019		
2020		
2021		
2022		
2023		
2024		
2025		
2026		
2027		
2028		
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2046		
2047		
2048		
2049		
2050		
2051		

INVENTORY

Landfill Name or Identifier: Twin Creeks Environmental Centre

Enter year of emissions inventory: 2037

Gas / Pollutant	Emission Rate				
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(ft^3/year)*	*(short tons/year)*
Total landfill gas	2.808E+03	2.225E+06	1.495E+02	7.857E+07	3.089E+03
Methane	7.718E+02	1.157E+06	7.773E+01	4.085E+07	8.490E+02
Carbon dioxide	1.955E+03	1.068E+06	7.175E+01	3.771E+07	2.150E+03
NMOC	4.745E+00	1.324E+03	8.894E-02	4.675E+04	5.219E+00
1,1,1-Trichloroethane (methyl chloroform) - HAP	2.839E-04	5.117E-02	3.438E-06	1.807E+00	3.123E-04
1,1,2,2-Tetrachloroethane - HAP/VOC	3.572E-04	5.117E-02	3.438E-06	1.807E+00	3.929E-04
1,1-Dichloroethane (ethylidene dichloride) - HAP/VOC	2.106E-04	5.117E-02	3.438E-06	1.807E+00	2.317E-04
1,1-Dichloroethene (vinylidene chloride) - HAP/VOC	1.794E-04	4.449E-02	2.990E-06	1.571E+00	1.973E-04
1,2-Dichloroethane (ethylene dichloride) - HAP/VOC	2.170E-03	5.273E-01	3.543E-05	1.862E+01	2.387E-03
1,2-Dichloropropane (propylene dichloride) - HAP/VOC	7.109E-04	1.513E-01	1.016E-05	5.342E+00	7.820E-04
2-Propanol (isopropyl alcohol) - VOC	3.448E-02	1.379E+01	9.268E-04	4.871E+02	3.793E-02
Acetone	3.762E-02	1.557E+01	1.046E-03	5.500E+02	4.138E-02
Acrylonitrile - HAP/VOC	3.093E-02	1.402E+01	9.417E-04	4.950E+02	3.402E-02
Benzene - No or Unknown Co-disposal - HAP/VOC	6.752E-03	2.078E+00	1.396E-04	7.338E+01	7.428E-03
Benzene - Co-disposal - HAP/VOC	7.950E-02	2.447E+01	1.644E-03	8.642E+02	8.745E-02
Bromodichloromethane - VOC	6.973E-04	1.023E-01	6.876E-06	3.614E+00	7.671E-04
Butane - VOC	2.689E-02	1.112E+01	7.474E-04	3.928E+02	2.958E-02
Carbon disulfide - HAP/VOC	5.776E-02	1.824E+01	1.226E-03	6.442E+02	6.354E-02
Carbon monoxide	3.629E-01	3.115E+02	2.093E-02	1.100E+04	3.991E-01
Carbon tetrachloride - HAP/VOC	3.274E-04	5.117E-02	3.438E-06	1.807E+00	3.601E-04
Carbonyl sulfide - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chlorobenzene - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chlorodifluoromethane	#REF!	#REF!	#REF!	#REF!	#REF!
Chloroethane (ethyl chloride) - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chloroform - HAP/VOC	2.541E-04	5.117E-02	3.438E-06	1.807E+00	2.795E-04
Chloromethane - VOC	4.438E-04	2.113E-01	1.420E-05	7.464E+00	4.882E-04
Dichlorobenzene - (HAP for para isomer/VOC)	#REF!	#REF!	#REF!	#REF!	#REF!
Dichlorodifluoromethane	6.265E-04	1.246E-01	8.371E-06	4.400E+00	6.892E-04
Dichlorofluoromethane - VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Dichloromethane (methylene chloride) - HAP	#REF!	#REF!	#REF!	#REF!	#REF!
Dimethyl sulfide (methyl sulfide) - VOC	1.955E-01	7.564E+01	5.082E-03	2.671E+03	2.150E-01
Ethane	2.476E+00	1.980E+03	1.330E-01	6.992E+04	2.724E+00
Ethanol - VOC	1.224E-01	6.385E+01	4.290E-03	2.255E+03	1.346E-01
Ethyl mercaptan (ethanethiol) - VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Ethylbenzene - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Ethylene dibromide - HAP/VOC	3.998E-04	5.117E-02	3.438E-06	1.807E+00	4.398E-04
Fluorotrichloromethane - VOC	9.661E-03	1.691E+00	1.136E-04	5.971E+01	1.063E-02
Hexane - HAP/VOC	1.340E-02	3.737E+00	2.511E-04	1.320E+02	1.474E-02
Hydrogen sulfide	1.167E+00	8.231E+02	5.531E-02	2.907E+04	1.283E+00
Mercury (total) - HAP	5.383E-06	6.452E-04	4.335E-08	2.278E-02	5.922E-06
Methyl ethyl ketone - HAP/VOC	1.261E-01	4.205E+01	2.825E-03	1.485E+03	1.387E-01
Methyl isobutyl ketone - HAP/VOC	4.736E-03	1.137E+00	7.638E-05	4.015E+01	5.210E-03
Methyl mercaptan - VOC	1.469E-01	7.341E+01	4.933E-03	2.593E+03	1.616E-01
Pentane - VOC	2.203E-02	7.341E+00	4.933E-04	2.593E+02	2.423E-02
Perchloroethylene (tetrachloroethylene) - HAP	1.074E-02	1.557E+00	1.046E-04	5.500E+01	1.182E-02
Propane - VOC	4.488E-02	2.447E+01	1.644E-03	8.642E+02	4.936E-02
t-1,2-Dichloroethene - VOC	2.512E-02	6.229E+00	4.185E-04	2.200E+02	2.763E-02
Toluene - No or Unknown Co-disposal - HAP/VOC	1.142E-01	2.981E+01	2.003E-03	1.053E+03	1.257E-01
Toluene - Co-disposal - HAP/VOC	1.449E+00	3.782E+02	2.541E-02	1.336E+04	1.594E+00
Trichloroethylene (trichloroethene) - HAP/VOC	2.286E-03	4.182E-01	2.810E-05	1.477E+01	2.514E-03
Vinyl chloride - HAP/VOC	2.620E-03	1.008E+00	6.771E-05	3.559E+01	2.882E-03
Xylenes - HAP/VOC	9.067E-02	2.053E+01	1.380E-03	7.252E+02	9.973E-02
1,2-Dichloroethene cis	1.507E-02	3.737E+00	2.511E-04	1.320E+02	1.658E-02
1,2-Dichloroethylene	6.549E-03	1.624E+00	1.091E-04	5.735E+01	7.204E-03
2-Butanol	3.957E-02	1.284E+01	8.625E-04	4.533E+02	4.353E-02
Octane	1.850E-02	3.893E+00	2.616E-04	1.375E+02	2.035E-02
1,1,2-Trichloroethane	5.802E-03	1.046E+00	7.025E-05	3.693E+01	6.382E-03
1,2-Dibromoethane	1.738E-04	2.225E-02	1.495E-06	7.857E-01	1.912E-04
1,2-Dichloroethene trans	6.548E-03	1.624E+00	1.091E-04	5.735E+01	7.203E-03

USER INPUTS

Landfill Name or Identifier: Twin Creeks Environmental Centre

Clear ALL Non-Parameter Inputs/Selections

1: PROVIDE LANDFILL CHARACTERISTICS

Landfill Open Year	1972	
Landfill Closure Year	2020	
Have Model Calculate Closure Year?	○ Yes ◉ No	
Waste Design Capacity		megagrams

Restore Default Model Parameters

2: DETERMINE MODEL PARAMETERS

Methane Generation Rate, k (*year*$^{-1}$)
User-specified
User-specified value: 0.040
User-specified k value should be based on site-specific data and determined by EPA Method 2E.

Potential Methane Generation Capacity, L_o (*m*^{3}/*Mg*)
User-specified
User-specified value: 125
User-specified Lo value should be based on site-specific data and determined by waste type and composition.

NMOC Concentration (*ppmv as hexane*)
User-specified
User-specified value: 595

Methane Content (*% by volume*)
User-specified
User-specified value: 52

3: SELECT GASES/POLLUTANTS

Gas / Pollutant #1 #REF!
Total landfill gas

Gas / Pollutant #2
Methane

Gas / Pollutant #3
Carbon dioxide

Gas / Pollutant #4
NMOC

Edit Existing or Add New Pollutant Parameters

Restore Default Pollutant Parameters

Description/Comments:

Modelling of existing landfill Area 1. Values based on MECP Interim Guide.

4: ENTER WASTE ACCEPTANCE RATES

Input Units: *Mg/year*

Year	Input Units *(Mg/year)*	Calculated Units *(short tons/year)*
1972		0
1973		0
1974		0
1975		0
1976		0
1977		0
1978		0
1979		0
1980		0
1981		0
1982		0
1983		0
1984		0
1985		0
1986		0
1987		0
1988		0
1989		0
1990		0
1991		0
1992		0
1993		0
1994		0
1995		0
1996		0
1997		0
1998		0
1999		0
2000		0
2001		0
2002		0
2003		0
2004		0
2005	218,455	240,301
2006	298,090	327,899
2007	304,043	334,447
2008	283,591	311,950
2009	169,803	186,783
2010	311,006	342,107
2011	429,041	471,945

4: ENTER WASTE ACCEPTANCE RATES

Input Units: Mg/year

Year	Input Units *(Mg/year)*	Calculated Units *(short tons/year)*
2012	528,571	581,428
2013	452,641	497,905
2014	470,377	517,415
2015	533,326	586,659
2016	678,031	745,834
2017	820,360	902,396
2018	1,324,830	1,457,313
2019	1,417,281	1,559,009
2020		
2021		
2022		
2023		
2024		
2025		
2026		
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2049		
2050		
2051		

INVENTORY

Landfill Name or Identifier: Twin Creeks Environmental Centre

Enter year of emissions inventory: 2037

Gas / Pollutant	Emission Rate				
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(ft^3/year)*	*(short tons/year)*
Total landfill gas	4.203E+04	3.330E+07	2.237E+03	1.176E+09	4.623E+04
Methane	1.155E+04	1.731E+07	1.163E+03	6.115E+08	1.271E+04
Carbon dioxide	2.926E+04	1.598E+07	1.074E+03	5.644E+08	3.218E+04
NMOC	7.102E+01	1.981E+04	1.331E+00	6.997E+05	7.812E+01
1,1,1-Trichloroethane (methyl chloroform) - HAP	4.249E-03	7.658E-01	5.146E-05	2.705E+01	4.674E-03
1,1,2,2-Tetrachloroethane - HAP/VOC	5.347E-03	7.658E-01	5.146E-05	2.705E+01	5.881E-03
1,1-Dichloroethane (ethylidene dichloride) - HAP/VOC	3.153E-03	7.658E-01	5.146E-05	2.705E+01	3.468E-03
1,1-Dichloroethene (vinylidene chloride) - HAP/VOC	2.685E-03	6.659E-01	4.474E-05	2.352E+01	2.954E-03
1,2-Dichloroethane (ethylene dichloride) - HAP/VOC	3.248E-02	7.891E+00	5.302E-04	2.787E+02	3.573E-02
1,2-Dichloropropane (propylene dichloride) - HAP/VOC	1.064E-02	2.264E+00	1.521E-04	7.996E+01	1.170E-02
2-Propanol (isopropyl alcohol) - VOC	5.161E-01	2.064E+02	1.387E-02	7.291E+03	5.678E-01
Acetone	5.631E-01	2.331E+02	1.566E-02	8.231E+03	6.194E-01
Acrylonitrile - HAP/VOC	4.630E-01	2.098E+02	1.409E-02	7.408E+03	5.092E-01
Benzene - No or Unknown Co-disposal - HAP/VOC	1.011E-01	3.110E+01	2.090E-03	1.098E+03	1.112E-01
Benzene - Co-disposal - HAP/VOC	1.190E+00	3.663E+02	2.461E-02	1.293E+04	1.309E+00
Bromodichloromethane - VOC	1.044E-02	1.532E+00	1.029E-04	5.409E+01	1.148E-02
Butane - VOC	4.025E-01	1.665E+02	1.119E-02	5.879E+03	4.427E-01
Carbon disulfide - HAP/VOC	8.646E-01	2.730E+02	1.835E-02	9.642E+03	9.510E-01
Carbon monoxide	5.431E+00	4.662E+03	3.132E-01	1.646E+05	5.974E+00
Carbon tetrachloride - HAP/VOC	4.900E-03	7.658E-01	5.146E-05	2.705E+01	5.390E-03
Carbonyl sulfide - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chlorobenzene - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chlorodifluoromethane	#REF!	#REF!	#REF!	#REF!	#REF!
Chloroethane (ethyl chloride) - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chloroform - HAP/VOC	3.803E-03	7.658E-01	5.146E-05	2.705E+01	4.183E-03
Chloromethane - VOC	6.643E-03	3.163E+00	2.125E-04	1.117E+02	7.307E-03
Dichlorobenzene - (HAP for para isomer/VOC)	#REF!	#REF!	#REF!	#REF!	#REF!
Dichlorodifluoromethane	9.377E-03	1.865E+00	1.253E-04	6.585E+01	1.032E-02
Dichlorofluoromethane - VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Dichloromethane (methylene chloride) - HAP	#REF!	#REF!	#REF!	#REF!	#REF!
Dimethyl sulfide (methyl sulfide) - VOC	2.926E+00	1.132E+03	7.607E-02	3.998E+04	3.218E+00
Ethane	3.706E+01	2.963E+04	1.991E+00	1.047E+06	4.077E+01
Ethanol - VOC	1.832E+00	9.556E+02	6.421E-02	3.375E+04	2.015E+00
Ethyl mercaptan (ethanethiol) - VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Ethylbenzene - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Ethylene dibromide - HAP/VOC	5.985E-03	7.658E-01	5.146E-05	2.705E+01	6.583E-03
Fluorotrichloromethane - VOC	1.446E-01	2.531E+01	1.700E-03	8.937E+02	1.591E-01
Hexane - HAP/VOC	2.005E-01	5.594E+01	3.759E-03	1.976E+03	2.206E-01
Hydrogen sulfide	1.746E+01	1.232E+04	8.278E-01	4.351E+05	1.921E+01
Mercury (total) - HAP	8.057E-05	9.656E-03	6.488E-07	3.410E-01	8.863E-05
Methyl ethyl ketone - HAP/VOC	1.887E+00	6.293E+02	4.228E-02	2.222E+04	2.076E+00
Methyl isobutyl ketone - HAP/VOC	7.088E-02	1.701E+01	1.143E-03	6.009E+02	7.797E-02
Methyl mercaptan - VOC	2.198E+00	1.099E+03	7.383E-02	3.880E+04	2.418E+00
Pentane - VOC	3.297E-01	1.099E+02	7.383E-03	3.880E+03	3.627E-01
Perchloroethylene (tetrachloroethylene) - HAP	1.608E-01	2.331E+01	1.566E-03	8.231E+02	1.768E-01
Propane - VOC	6.717E-01	3.663E+02	2.461E-02	1.293E+04	7.388E-01
t-1,2-Dichloroethene - VOC	3.759E-01	9.323E+01	6.264E-03	3.293E+03	4.135E-01
Toluene - No or Unknown Co-disposal - HAP/VOC	1.710E+00	4.462E+02	2.998E-02	1.576E+04	1.881E+00
Toluene - Co-disposal - HAP/VOC	2.169E+01	5.661E+03	3.803E-01	1.999E+05	2.386E+01
Trichloroethylene (trichloroethene) - HAP/VOC	3.421E-02	6.260E+00	4.206E-04	2.211E+02	3.763E-02
Vinyl chloride - HAP/VOC	3.921E-02	1.508E+01	1.013E-03	5.327E+02	4.313E-02
Xylenes - HAP/VOC	1.357E+00	3.073E+02	2.065E-02	1.085E+04	1.493E+00
1,2-Dichloroethene cis	2.255E-01	5.594E+01	3.759E-03	1.976E+03	2.481E-01
1,2-Dichloroethylene	9.802E-02	2.431E+01	1.633E-03	8.584E+02	1.078E-01
2-Butanol	5.923E-01	1.921E+02	1.291E-02	6.785E+03	6.515E-01
Octane	2.769E-01	5.827E+01	3.915E-03	2.058E+03	3.045E-01
1,1,2-Trichloroethane	8.683E-02	1.565E+01	1.052E-03	5.527E+02	9.552E-02
1,2-Dibromoethane	2.602E-03	3.330E-01	2.237E-05	1.176E+01	2.862E-03
1,2-Dichloroethene trans	9.801E-02	2.431E+01	1.633E-03	8.584E+02	1.078E-01

USER INPUTS

Landfill Name or Identifier: Twin Creeks Environmental Centre

Clear ALL Non-Parameter Inputs/Selections

1: PROVIDE LANDFILL CHARACTERISTICS

Landfill Open Year	1972	
Landfill Closure Year	2025	
Have Model Calculate Closure Year?	○ Yes ◉ No	
Waste Design Capacity		megagrams

Restore Default Model Parameters

2: DETERMINE MODEL PARAMETERS

Methane Generation Rate, k (*year*$^{-1}$)
User-specified
User-specified value: 0.040
User-specified k value should be based on site-specific data and determined by EPA Method 2E.

Potential Methane Generation Capacity, L_o (*m*^{3}/*Mg*)
User-specified
User-specified value: 125
User-specified Lo value should be based on site-specific data and determined by waste type and composition.

NMOC Concentration (*ppmv as hexane*)
User-specified
User-specified value: 595

Methane Content (*% by volume*)
User-specified
User-specified value: 52

3: SELECT GASES/POLLUTANTS

Gas / Pollutant #1 #REF!
Total landfill gas

Gas / Pollutant #2
Methane

Gas / Pollutant #3
Carbon dioxide

Gas / Pollutant #4
NMOC

Edit Existing or Add New Pollutant Parameters

Restore Default Pollutant Parameters

Description/Comments:

Modelling of existing landfill Area 2. Values based on MECP Interim Guide.

4: ENTER WASTE ACCEPTANCE RATES

Input Units: *Mg/year*

Year	Input Units *(Mg/year)*	Calculated Units *(short tons/year)*
1972		0
1973		0
1974		0
1975		0
1976		0
1977		0
1978		0
1979		0
1980		0
1981		0
1982		0
1983		0
1984		0
1985		0
1986		0
1987		0
1988		0
1989		0
1990		0
1991		0
1992		0
1993		0
1994		0
1995		0
1996		0
1997		0
1998		0
1999		0
2000		0
2001		0
2002		0
2003		0
2004		0
2005		0
2006		0
2007		0
2008		0
2009		0
2010		0
2011		0

4: ENTER WASTE ACCEPTANCE RATES

Input Units: *Mg/year*

Year	Input Units *(Mg/year)*	Calculated Units *(short tons/year)*
2012		0
2013		0
2014		0
2015		0
2016		0
2017		0
2018		0
2019		0
2020	1,330,444	1,463,488
2021	1,399,849	1,539,834
2022	1,391,172	1,530,290
2023	1,400,000	1,540,000
2024	1,400,000	1,540,000
2025		
2026		
2027		
2028		
2029		
2030		
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2051		

INVENTORY

Landfill Name or Identifier: Twin Creeks Environmental Centre

Enter year of emissions inventory: 2037

Gas / Pollutant	Emission Rate				
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(ft^3/year)*	*(short tons/year)*
Total landfill gas	4.724E+04	3.743E+07	2.515E+03	1.322E+09	5.197E+04
Methane	1.298E+04	1.946E+07	1.308E+03	6.873E+08	1.428E+04
Carbon dioxide	3.289E+04	1.797E+07	1.207E+03	6.345E+08	3.618E+04
NMOC	7.983E+01	2.227E+04	1.496E+00	7.865E+05	8.781E+01
1,1,1-Trichloroethane (methyl chloroform) - HAP	4.777E-03	8.609E-01	5.784E-05	3.040E+01	5.254E-03
1,1,2,2-Tetrachloroethane - HAP/VOC	6.010E-03	8.609E-01	5.784E-05	3.040E+01	6.611E-03
1,1-Dichloroethane (ethylidene dichloride) - HAP/VOC	3.544E-03	8.609E-01	5.784E-05	3.040E+01	3.898E-03
1,1-Dichloroethene (vinylidene chloride) - HAP/VOC	3.018E-03	7.486E-01	5.030E-05	2.644E+01	3.320E-03
1,2-Dichloroethane (ethylene dichloride) - HAP/VOC	3.651E-02	8.871E+00	5.960E-04	3.133E+02	4.016E-02
1,2-Dichloropropane (propylene dichloride) - HAP/VOC	1.196E-02	2.545E+00	1.710E-04	8.988E+01	1.316E-02
2-Propanol (isopropyl alcohol) - VOC	5.802E-01	2.321E+02	1.559E-02	8.195E+03	6.382E-01
Acetone	6.329E-01	2.620E+02	1.760E-02	9.253E+03	6.962E-01
Acrylonitrile - HAP/VOC	5.204E-01	2.358E+02	1.584E-02	8.327E+03	5.724E-01
Benzene - No or Unknown Co-disposal - HAP/VOC	1.136E-01	3.496E+01	2.349E-03	1.235E+03	1.250E-01
Benzene - Co-disposal - HAP/VOC	1.338E+00	4.117E+02	2.766E-02	1.454E+04	1.471E+00
Bromodichloromethane - VOC	1.173E-02	1.722E+00	1.157E-04	6.080E+01	1.291E-02
Butane - VOC	4.524E-01	1.871E+02	1.257E-02	6.609E+03	4.976E-01
Carbon disulfide - HAP/VOC	9.718E-01	3.069E+02	2.062E-02	1.084E+04	1.069E+00
Carbon monoxide	6.105E+00	5.240E+03	3.521E-01	1.851E+05	6.715E+00
Carbon tetrachloride - HAP/VOC	5.508E-03	8.609E-01	5.784E-05	3.040E+01	6.058E-03
Carbonyl sulfide - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chlorobenzene - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chlorodifluoromethane	#REF!	#REF!	#REF!	#REF!	#REF!
Chloroethane (ethyl chloride) - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chloroform - HAP/VOC	4.275E-03	8.609E-01	5.784E-05	3.040E+01	4.702E-03
Chloromethane - VOC	7.467E-03	3.556E+00	2.389E-04	1.256E+02	8.214E-03
Dichlorobenzene - (HAP for para isomer/VOC)	#REF!	#REF!	#REF!	#REF!	#REF!
Dichlorodifluoromethane	1.054E-02	2.096E+00	1.408E-04	7.402E+01	1.159E-02
Dichlorofluoromethane - VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Dichloromethane (methylene chloride) - HAP	#REF!	#REF!	#REF!	#REF!	#REF!
Dimethyl sulfide (methyl sulfide) - VOC	3.289E+00	1.273E+03	8.551E-02	4.494E+04	3.617E+00
Ethane	4.166E+01	3.331E+04	2.238E+00	1.176E+06	4.583E+01
Ethanol - VOC	2.059E+00	1.074E+03	7.218E-02	3.794E+04	2.265E+00
Ethyl mercaptan (ethanethiol) - VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Ethylbenzene - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Ethylene dibromide - HAP/VOC	6.727E-03	8.609E-01	5.784E-05	3.040E+01	7.400E-03
Fluorotrichloromethane - VOC	1.625E-01	2.845E+01	1.911E-03	1.005E+03	1.788E-01
Hexane - HAP/VOC	2.254E-01	6.288E+01	4.225E-03	2.221E+03	2.479E-01
Hydrogen sulfide	1.963E+01	1.385E+04	9.305E-01	4.891E+05	2.159E+01
Mercury (total) - HAP	9.057E-05	1.085E-02	7.293E-07	3.833E-01	9.963E-05
Methyl ethyl ketone - HAP/VOC	2.122E+00	7.074E+02	4.753E-02	2.498E+04	2.334E+00
Methyl isobutyl ketone - HAP/VOC	7.968E-02	1.913E+01	1.285E-03	6.754E+02	8.765E-02
Methyl mercaptan - VOC	2.471E+00	1.235E+03	8.299E-02	4.362E+04	2.718E+00
Pentane - VOC	3.707E-01	1.235E+02	8.299E-03	4.362E+03	4.077E-01
Perchloroethylene (tetrachloroethylene) - HAP	1.807E-01	2.620E+01	1.760E-03	9.253E+02	1.988E-01
Propane - VOC	7.550E-01	4.117E+02	2.766E-02	1.454E+04	8.305E-01
t-1,2-Dichloroethene - VOC	4.226E-01	1.048E+02	7.042E-03	3.701E+03	4.648E-01
Toluene - No or Unknown Co-disposal - HAP/VOC	1.922E+00	5.015E+02	3.370E-02	1.771E+04	2.114E+00
Toluene - Co-disposal - HAP/VOC	2.438E+01	6.363E+03	4.275E-01	2.247E+05	2.682E+01
Trichloroethylene (trichloroethene) - HAP/VOC	3.845E-02	7.037E+00	4.728E-04	2.485E+02	4.230E-02
Vinyl chloride - HAP/VOC	4.408E-02	1.696E+01	1.139E-03	5.988E+02	4.848E-02
Xylenes - HAP/VOC	1.525E+00	3.455E+02	2.321E-02	1.220E+04	1.678E+00
1,2-Dichloroethene cis	2.535E-01	6.288E+01	4.225E-03	2.221E+03	2.789E-01
1,2-Dichloroethylene	1.102E-01	2.732E+01	1.836E-03	9.649E+02	1.212E-01
2-Butanol	6.658E-01	2.160E+02	1.451E-02	7.627E+03	7.324E-01
Octane	3.112E-01	6.550E+01	4.401E-03	2.313E+03	3.423E-01
1,1,2-Trichloroethane	9.761E-02	1.759E+01	1.182E-03	6.212E+02	1.074E-01
1,2-Dibromoethane	2.925E-03	3.743E-01	2.515E-05	1.322E+01	3.217E-03
1,2-Dichloroethene trans	1.102E-01	2.732E+01	1.836E-03	9.649E+02	1.212E-01

USER INPUTS

Landfill Name or Identifier: Twin Creeks Environmental Centre

Clear ALL Non-Parameter Inputs/Selections

1: PROVIDE LANDFILL CHARACTERISTICS

Landfill Open Year	1972	
Landfill Closure Year	2030	
Have Model Calculate Closure Year?	○ Yes ◉ No	
Waste Design Capacity		megagrams

Restore Default Model Parameters

2: DETERMINE MODEL PARAMETERS

Methane Generation Rate, k (*year*$^{-1}$)
User-specified
User-specified k value should be based on site-specific data and determined by EPA Method 2E.
User-specified value: 0.040

Potential Methane Generation Capacity, L_o (*m*^{3}/*Mg*)
User-specified
User-specified Lo value should be based on site-specific data and determined by waste type and composition.
User-specified value: 125

NMOC Concentration (*ppmv as hexane*)
User-specified
User-specified value: 595

Methane Content (*% by volume*)
User-specified
User-specified value: 52

3: SELECT GASES/POLLUTANTS

Gas / Pollutant #1 #REF!
Total landfill gas

Gas / Pollutant #2
Methane

Gas / Pollutant #3
Carbon dioxide

Gas / Pollutant #4
NMOC

Edit Existing or Add New Pollutant Parameters

Restore Default Pollutant Parameters

Description/Comments:

Modelling of existing landfill Area 3. Values based on MECP Interim Guide.

4: ENTER WASTE ACCEPTANCE RATES

Input Units: *Mg/year*

Year	Input Units *(Mg/year)*	Calculated Units *(short tons/year)*
1972		0
1973		0
1974		0
1975		0
1976		0
1977		0
1978		0
1979		0
1980		0
1981		0
1982		0
1983		0
1984		0
1985		0
1986		0
1987		0
1988		0
1989		0
1990		0
1991		0
1992		0
1993		0
1994		0
1995		0
1996		0
1997		0
1998		0
1999		0
2000		0
2001		0
2002		0
2003		0
2004		0
2005		0
2006		0
2007		0
2008		0
2009		0
2010		0
2011		0

4: ENTER WASTE ACCEPTANCE RATES

Input Units: *Mg/year*

Year	Input Units *(Mg/year)*	Calculated Units *(short tons/year)*
2012		0
2013		0
2014		0
2015		0
2016		0
2017		0
2018		0
2019		0
2020		0
2021		0
2022		0
2023		0
2024		0
2025	1,400,000	1,540,000
2026	1,400,000	1,540,000
2027	1,400,000	1,540,000
2028	700,000	770,000
2029	0	
2030		
2031		
2032		
2033		
2034		
2035		
2036		
2037		
2038		
2039		
2040		
2041		
2042		
2043		
2044		
2045		
2046		
2047		
2048		
2049		
2050		
2051		

INVENTORY

Landfill Name or Identifier: Twin Creeks Environmental Centre

Enter year of emissions inventory: 2037

Gas / Pollutant	Emission Rate				
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(ft^3/year)*	*(short tons/year)*
Total landfill gas	4.594E+04	3.640E+07	2.446E+03	1.285E+09	5.054E+04
Methane	1.263E+04	1.893E+07	1.272E+03	6.685E+08	1.389E+04
Carbon dioxide	3.198E+04	1.747E+07	1.174E+03	6.170E+08	3.518E+04
NMOC	7.763E+01	2.166E+04	1.455E+00	7.649E+05	8.540E+01
1,1,1-Trichloroethane (methyl chloroform) - HAP	4.645E-03	8.372E-01	5.625E-05	2.957E+01	5.110E-03
1,1,2,2-Tetrachloroethane - HAP/VOC	5.845E-03	8.372E-01	5.625E-05	2.957E+01	6.429E-03
1,1-Dichloroethane (ethylidene dichloride) - HAP/VOC	3.446E-03	8.372E-01	5.625E-05	2.957E+01	3.791E-03
1,1-Dichloroethene (vinylidene chloride) - HAP/VOC	2.935E-03	7.280E-01	4.892E-05	2.571E+01	3.229E-03
1,2-Dichloroethane (ethylene dichloride) - HAP/VOC	3.551E-02	8.627E+00	5.796E-04	3.047E+02	3.906E-02
1,2-Dichloropropane (propylene dichloride) - HAP/VOC	1.163E-02	2.475E+00	1.663E-04	8.741E+01	1.280E-02
2-Propanol (isopropyl alcohol) - VOC	5.642E-01	2.257E+02	1.516E-02	7.970E+03	6.207E-01
Acetone	6.155E-01	2.548E+02	1.712E-02	8.998E+03	6.771E-01
Acrylonitrile - HAP/VOC	5.061E-01	2.293E+02	1.541E-02	8.099E+03	5.567E-01
Benzene - No or Unknown Co-disposal - HAP/VOC	1.105E-01	3.400E+01	2.284E-03	1.201E+03	1.215E-01
Benzene - Co-disposal - HAP/VOC	1.301E+00	4.004E+02	2.690E-02	1.414E+04	1.431E+00
Bromodichloromethane - VOC	1.141E-02	1.674E+00	1.125E-04	5.913E+01	1.255E-02
Butane - VOC	4.400E-01	1.820E+02	1.223E-02	6.427E+03	4.840E-01
Carbon disulfide - HAP/VOC	9.451E-01	2.985E+02	2.006E-02	1.054E+04	1.040E+00
Carbon monoxide	5.937E+00	5.096E+03	3.424E-01	1.800E+05	6.531E+00
Carbon tetrachloride - HAP/VOC	5.356E-03	8.372E-01	5.625E-05	2.957E+01	5.892E-03
Carbonyl sulfide - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chlorobenzene - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chlorodifluoromethane	#REF!	#REF!	#REF!	#REF!	#REF!
Chloroethane (ethyl chloride) - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chloroform - HAP/VOC	4.157E-03	8.372E-01	5.625E-05	2.957E+01	4.573E-03
Chloromethane - VOC	7.262E-03	3.458E+00	2.323E-04	1.221E+02	7.988E-03
Dichlorobenzene - (HAP for para isomer/VOC)	#REF!	#REF!	#REF!	#REF!	#REF!
Dichlorodifluoromethane	1.025E-02	2.038E+00	1.370E-04	7.199E+01	1.128E-02
Dichlorofluoromethane - VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Dichloromethane (methylene chloride) - HAP	#REF!	#REF!	#REF!	#REF!	#REF!
Dimethyl sulfide (methyl sulfide) - VOC	3.198E+00	1.238E+03	8.316E-02	4.371E+04	3.518E+00
Ethane	4.052E+01	3.240E+04	2.177E+00	1.144E+06	4.457E+01
Ethanol - VOC	2.002E+00	1.045E+03	7.019E-02	3.689E+04	2.203E+00
Ethyl mercaptan (ethanethiol) - VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Ethylbenzene - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Ethylene dibromide - HAP/VOC	6.542E-03	8.372E-01	5.625E-05	2.957E+01	7.197E-03
Fluorotrichloromethane - VOC	1.581E-01	2.766E+01	1.859E-03	9.770E+02	1.739E-01
Hexane - HAP/VOC	2.192E-01	6.115E+01	4.109E-03	2.160E+03	2.411E-01
Hydrogen sulfide	1.909E+01	1.347E+04	9.049E-01	4.756E+05	2.100E+01
Mercury (total) - HAP	8.808E-05	1.056E-02	7.093E-07	3.728E-01	9.689E-05
Methyl ethyl ketone - HAP/VOC	2.063E+00	6.880E+02	4.623E-02	2.430E+04	2.270E+00
Methyl isobutyl ketone - HAP/VOC	7.749E-02	1.860E+01	1.250E-03	6.569E+02	8.524E-02
Methyl mercaptan - VOC	2.403E+00	1.201E+03	8.071E-02	4.242E+04	2.644E+00
Pentane - VOC	3.605E-01	1.201E+02	8.071E-03	4.242E+03	3.965E-01
Perchloroethylene (tetrachloroethylene) - HAP	1.757E-01	2.548E+01	1.712E-03	8.998E+02	1.933E-01
Propane - VOC	7.343E-01	4.004E+02	2.690E-02	1.414E+04	8.077E-01
t-1,2-Dichloroethene - VOC	4.110E-01	1.019E+02	6.848E-03	3.599E+03	4.520E-01
Toluene - No or Unknown Co-disposal - HAP/VOC	1.869E+00	4.878E+02	3.277E-02	1.723E+04	2.056E+00
Toluene - Co-disposal - HAP/VOC	2.371E+01	6.188E+03	4.158E-01	2.185E+05	2.608E+01
Trichloroethylene (trichloroethene) - HAP/VOC	3.740E-02	6.843E+00	4.598E-04	2.417E+02	4.114E-02
Vinyl chloride - HAP/VOC	4.287E-02	1.649E+01	1.108E-03	5.823E+02	4.715E-02
Xylenes - HAP/VOC	1.484E+00	3.360E+02	2.257E-02	1.187E+04	1.632E+00
1,2-Dichloroethene cis	2.466E-01	6.115E+01	4.109E-03	2.160E+03	2.712E-01
1,2-Dichloroethylene	1.072E-01	2.657E+01	1.785E-03	9.384E+02	1.179E-01
2-Butanol	6.475E-01	2.100E+02	1.411E-02	7.417E+03	7.123E-01
Octane	3.027E-01	6.370E+01	4.280E-03	2.250E+03	3.329E-01
1,1,2-Trichloroethane	9.493E-02	1.711E+01	1.150E-03	6.042E+02	1.044E-01
1,2-Dibromoethane	2.844E-03	3.640E-01	2.446E-05	1.285E+01	3.129E-03
1,2-Dichloroethene trans	1.071E-01	2.657E+01	1.785E-03	9.384E+02	1.179E-01

USER INPUTS

Landfill Name or Identifier: Twin Creeks Environmental Centre

Clear ALL Non-Parameter Inputs/Selections

1: PROVIDE LANDFILL CHARACTERISTICS

Landfill Open Year	1972	
Landfill Closure Year	2035	
Have Model Calculate Closure Year?	○ Yes ◉ No	
Waste Design Capacity		megagrams

Restore Default Model Parameters

2: DETERMINE MODEL PARAMETERS

Methane Generation Rate, k (*year*$^{-1}$)
User-specified
User-specified value: 0.040
User-specified k value should be based on site-specific data and determined by EPA Method 2E.

Potential Methane Generation Capacity, L_o (*m*^{3}/*Mg*)
User-specified
User-specified value: 125
User-specified Lo value should be based on site-specific data and determined by waste type and composition.

NMOC Concentration (*ppmv as hexane*)
User-specified
User-specified value: 595

Methane Content (*% by volume*)
User-specified
User-specified value: 52

3: SELECT GASES/POLLUTANTS

Gas / Pollutant #1 #REF!
Total landfill gas

Gas / Pollutant #2
Methane

Gas / Pollutant #3
Carbon dioxide

Gas / Pollutant #4
NMOC

Edit Existing or Add New Pollutant Parameters

Restore Default Pollutant Parameters

Description/Comments:

Modelling of existing landfill Area 2. Values based on MECP Interim Guide.

4: ENTER WASTE ACCEPTANCE RATES

Input Units: Mg/year

Year	Input Units *(Mg/year)*	Calculated Units *(short tons/year)*
1972		0
1973		0
1974		0
1975		0
1976		0
1977		0
1978		0
1979		0
1980		0
1981		0
1982		0
1983		0
1984		0
1985		0
1986		0
1987		0
1988		0
1989		0
1990		0
1991		0
1992		0
1993		0
1994		0
1995		0
1996		0
1997		0
1998		0
1999		0
2000		0
2001		0
2002		0
2003		0
2004		0
2005		0
2006		0
2007		0
2008		0
2009		0
2010		0
2011		0

4: ENTER WASTE ACCEPTANCE RATES

Input Units: Mg/year

Year	Input Units *(Mg/year)*	Calculated Units *(short tons/year)*
2012		0
2013		0
2014		0
2015		0
2016		0
2017		0
2018		0
2019		0
2020		0
2021		0
2022		0
2023		0
2024		0
2025		0
2026		0
2027		0
2028	350,000	385,000
2029	700,000	770,000
2030	700,000	770,000
2031	700,000	770,000
2032	1,400,000	1,540,000
2033	1,400,000	1,540,000
2034	400,000	440,000
2035		
2036		
2037		
2038		
2039		
2040		
2041		
2042		
2043		
2044		
2045		
2046		
2047		
2048		
2049		
2050		
2051		

INVENTORY

Landfill Name or Identifier: Twin Creeks Environmental Centre

Enter year of emissions inventory: 2037

Gas / Pollutant	Emission Rate				
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(ft^3/year)*	*(short tons/year)*
Total landfill gas	5.616E+04	4.449E+07	2.989E+03	1.571E+09	6.177E+04
Methane	1.543E+04	2.314E+07	1.554E+03	8.170E+08	1.698E+04
Carbon dioxide	3.909E+04	2.136E+07	1.435E+03	7.542E+08	4.300E+04
NMOC	9.489E+01	2.647E+04	1.779E+00	9.349E+05	1.044E+02
1,1,1-Trichloroethane (methyl chloroform) - HAP	5.678E-03	1.023E+00	6.876E-05	3.614E+01	6.246E-03
1,1,2,2-Tetrachloroethane - HAP/VOC	7.144E-03	1.023E+00	6.876E-05	3.614E+01	7.859E-03
1,1-Dichloroethane (ethylidene dichloride) - HAP/VOC	4.212E-03	1.023E+00	6.876E-05	3.614E+01	4.634E-03
1,1-Dichloroethene (vinylidene chloride) - HAP/VOC	3.588E-03	8.898E-01	5.979E-05	3.142E+01	3.947E-03
1,2-Dichloroethane (ethylene dichloride) - HAP/VOC	4.340E-02	1.054E+01	7.085E-04	3.724E+02	4.774E-02
1,2-Dichloropropane (propylene dichloride) - HAP/VOC	1.422E-02	3.025E+00	2.033E-04	1.068E+02	1.564E-02
2-Propanol (isopropyl alcohol) - VOC	6.897E-01	2.758E+02	1.853E-02	9.742E+03	7.586E-01
Acetone	7.524E-01	3.114E+02	2.093E-02	1.100E+04	8.276E-01
Acrylonitrile - HAP/VOC	6.186E-01	2.803E+02	1.883E-02	9.899E+03	6.805E-01
Benzene - No or Unknown Co-disposal - HAP/VOC	1.350E-01	4.156E+01	2.792E-03	1.468E+03	1.485E-01
Benzene - Co-disposal - HAP/VOC	1.590E+00	4.894E+02	3.288E-02	1.728E+04	1.749E+00
Bromodichloromethane - VOC	1.395E-02	2.047E+00	1.375E-04	7.228E+01	1.534E-02
Butane - VOC	5.378E-01	2.225E+02	1.495E-02	7.856E+03	5.915E-01
Carbon disulfide - HAP/VOC	1.155E+00	3.648E+02	2.451E-02	1.288E+04	1.271E+00
Carbon monoxide	7.257E+00	6.229E+03	4.185E-01	2.200E+05	7.982E+00
Carbon tetrachloride - HAP/VOC	6.547E-03	1.023E+00	6.876E-05	3.614E+01	7.202E-03
Carbonyl sulfide - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chlorobenzene - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chlorodifluoromethane	#REF!	#REF!	#REF!	#REF!	#REF!
Chloroethane (ethyl chloride) - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chloroform - HAP/VOC	5.081E-03	1.023E+00	6.876E-05	3.614E+01	5.589E-03
Chloromethane - VOC	8.876E-03	4.227E+00	2.840E-04	1.493E+02	9.764E-03
Dichlorobenzene - (HAP for para isomer/VOC)	#REF!	#REF!	#REF!	#REF!	#REF!
Dichlorodifluoromethane	1.253E-02	2.492E+00	1.674E-04	8.799E+01	1.378E-02
Dichlorofluoromethane - VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Dichloromethane (methylene chloride) - HAP	#REF!	#REF!	#REF!	#REF!	#REF!
Dimethyl sulfide (methyl sulfide) - VOC	3.909E+00	1.513E+03	1.016E-01	5.342E+04	4.300E+00
Ethane	4.952E+01	3.960E+04	2.661E+00	1.398E+06	5.448E+01
Ethanol - VOC	2.447E+00	1.277E+03	8.580E-02	4.509E+04	2.692E+00
Ethyl mercaptan (ethanethiol) - VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Ethylbenzene - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Ethylene dibromide - HAP/VOC	7.997E-03	1.023E+00	6.876E-05	3.614E+01	8.796E-03
Fluorotrichloromethane - VOC	1.932E-01	3.381E+01	2.272E-03	1.194E+03	2.125E-01
Hexane - HAP/VOC	2.679E-01	7.475E+01	5.022E-03	2.640E+03	2.947E-01
Hydrogen sulfide	2.333E+01	1.646E+04	1.106E+00	5.814E+05	2.567E+01
Mercury (total) - HAP	1.077E-04	1.290E-02	8.669E-07	4.557E-01	1.184E-04
Methyl ethyl ketone - HAP/VOC	2.522E+00	8.409E+02	5.650E-02	2.970E+04	2.774E+00
Methyl isobutyl ketone - HAP/VOC	9.471E-02	2.274E+01	1.528E-03	8.029E+02	1.042E-01
Methyl mercaptan - VOC	2.937E+00	1.468E+03	9.865E-02	5.185E+04	3.231E+00
Pentane - VOC	4.406E-01	1.468E+02	9.865E-03	5.185E+03	4.847E-01
Perchloroethylene (tetrachloroethylene) - HAP	2.148E-01	3.114E+01	2.093E-03	1.100E+03	2.363E-01
Propane - VOC	8.975E-01	4.894E+02	3.288E-02	1.728E+04	9.872E-01
t-1,2-Dichloroethene - VOC	5.023E-01	1.246E+02	8.370E-03	4.399E+03	5.525E-01
Toluene - No or Unknown Co-disposal - HAP/VOC	2.285E+00	5.962E+02	4.006E-02	2.105E+04	2.513E+00
Toluene - Co-disposal - HAP/VOC	2.898E+01	7.564E+03	5.082E-01	2.671E+05	3.188E+01
Trichloroethylene (trichloroethene) - HAP/VOC	4.571E-02	8.364E+00	5.620E-04	2.954E+02	5.028E-02
Vinyl chloride - HAP/VOC	5.239E-02	2.015E+01	1.354E-03	7.118E+02	5.763E-02
Xylenes - HAP/VOC	1.813E+00	4.107E+02	2.759E-02	1.450E+04	1.995E+00
1,2-Dichloroethene cis	3.014E-01	7.475E+01	5.022E-03	2.640E+03	3.315E-01
1,2-Dichloroethylene	1.310E-01	3.248E+01	2.182E-03	1.147E+03	1.441E-01
2-Butanol	7.914E-01	2.567E+02	1.725E-02	9.066E+03	8.706E-01
Octane	3.699E-01	7.786E+01	5.231E-03	2.750E+03	4.069E-01
1,1,2-Trichloroethane	1.160E-01	2.091E+01	1.405E-03	7.385E+02	1.276E-01
1,2-Dibromoethane	3.476E-03	4.449E-01	2.989E-05	1.571E+01	3.824E-03
1,2-Dichloroethene trans	1.310E-01	3.248E+01	2.182E-03	1.147E+03	1.441E-01

USER INPUTS

Landfill Name or Identifier: Twin Creeks Environmental Centre

Clear ALL Non-Parameter Inputs/Selections

1: PROVIDE LANDFILL CHARACTERISTICS

Landfill Open Year	1972	
Landfill Closure Year	2038	
Have Model Calculate Closure Year?	○ Yes ◉ No	
Waste Design Capacity		megagrams

Restore Default Model Parameters

2: DETERMINE MODEL PARAMETERS

Methane Generation Rate, k (*year*$^{-1}$)
User-specified
User-specified value: 0.040
User-specified k value should be based on site-specific data and determined by EPA Method 2E.

Potential Methane Generation Capacity, L_o (*m*^{3}/*Mg*)
User-specified
User-specified value: 125
User-specified Lo value should be based on site-specific data and determined by waste type and composition.

NMOC Concentration (*ppmv as hexane*)
User-specified
User-specified value: 595

Methane Content (*% by volume*)
User-specified
User-specified value: 52

3: SELECT GASES/POLLUTANTS

Gas / Pollutant #1 #REF!
Total landfill gas

Gas / Pollutant #2
Methane

Gas / Pollutant #3
Carbon dioxide

Gas / Pollutant #4
NMOC

Edit Existing or Add New Pollutant Parameters

Restore Default Pollutant Parameters

Description/Comments:

Modelling of existing landfill Area 2. Values based on MECP Interim Guide.

4: ENTER WASTE ACCEPTANCE RATES

Input Units: Mg/year

Year	Input Units *(Mg/year)*	Calculated Units *(short tons/year)*
1972		0
1973		0
1974		0
1975		0
1976		0
1977		0
1978		0
1979		0
1980		0
1981		0
1982		0
1983		0
1984		0
1985		0
1986		0
1987		0
1988		0
1989		0
1990		0
1991		0
1992		0
1993		0
1994		0
1995		0
1996		0
1997		0
1998		0
1999		0
2000		0
2001		0
2002		0
2003		0
2004		0
2005		0
2006		0
2007		0
2008		0
2009		0
2010		0
2011		0

4: ENTER WASTE ACCEPTANCE RATES

Input Units: Mg/year

Year	Input Units *(Mg/year)*	Calculated Units *(short tons/year)*
2012		0
2013		0
2014		0
2015		0
2016		0
2017		0
2018		0
2019		0
2020		0
2021		0
2022		0
2023		0
2024		0
2025		0
2026		0
2027		0
2028	350,000	385,000
2029	700,000	770,000
2030	700,000	770,000
2031	700,000	770,000
2032	0	0
2033	0	0
2034	1,000,000	1,100,000
2035	1,400,000	1,540,000
2036	1,400,000	1,540,000
2037	500,000	550,000
2038		
2039		
2040		
2041		
2042		
2043		
2044		
2045		
2046		
2047		
2048		
2049		
2050		
2051		

INVENTORY

Landfill Name or Identifier: Twin Creeks Environmental Centre

Enter year of emissions inventory: 2037

Gas / Pollutant	Emission Rate				
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(ft^3/year)*	*(short tons/year)*
Total landfill gas	6.646E+04	5.265E+07	3.538E+03	1.859E+09	7.310E+04
Methane	1.827E+04	2.738E+07	1.840E+03	9.669E+08	2.009E+04
Carbon dioxide	4.626E+04	2.527E+07	1.698E+03	8.926E+08	5.089E+04
NMOC	1.123E+02	3.133E+04	2.105E+00	1.106E+06	1.235E+02
1,1,1-Trichloroethane (methyl chloroform) - HAP	6.720E-03	1.211E+00	8.137E-05	4.277E+01	7.391E-03
1,1,2,2-Tetrachloroethane - HAP/VOC	8.455E-03	1.211E+00	8.137E-05	4.277E+01	9.300E-03
1,1-Dichloroethane (ethylidene dichloride) - HAP/VOC	4.985E-03	1.211E+00	8.137E-05	4.277E+01	5.484E-03
1,1-Dichloroethene (vinylidene chloride) - HAP/VOC	4.246E-03	1.053E+00	7.076E-05	3.719E+01	4.671E-03
1,2-Dichloroethane (ethylene dichloride) - HAP/VOC	5.136E-02	1.248E+01	8.385E-04	4.407E+02	5.650E-02
1,2-Dichloropropane (propylene dichloride) - HAP/VOC	1.683E-02	3.581E+00	2.406E-04	1.264E+02	1.851E-02
2-Propanol (isopropyl alcohol) - VOC	8.162E-01	3.265E+02	2.193E-02	1.153E+04	8.978E-01
Acetone	8.904E-01	3.686E+02	2.476E-02	1.302E+04	9.794E-01
Acrylonitrile - HAP/VOC	7.321E-01	3.317E+02	2.229E-02	1.171E+04	8.053E-01
Benzene - No or Unknown Co-disposal - HAP/VOC	1.598E-01	4.918E+01	3.304E-03	1.737E+03	1.758E-01
Benzene - Co-disposal - HAP/VOC	1.882E+00	5.792E+02	3.892E-02	2.045E+04	2.070E+00
Bromodichloromethane - VOC	1.650E-02	2.422E+00	1.627E-04	8.554E+01	1.816E-02
Butane - VOC	6.364E-01	2.633E+02	1.769E-02	9.297E+03	7.001E-01
Carbon disulfide - HAP/VOC	1.367E+00	4.318E+02	2.901E-02	1.525E+04	1.504E+00
Carbon monoxide	8.588E+00	7.372E+03	4.953E-01	2.603E+05	9.447E+00
Carbon tetrachloride - HAP/VOC	7.748E-03	1.211E+00	8.137E-05	4.277E+01	8.523E-03
Carbonyl sulfide - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chlorobenzene - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chlorodifluoromethane	#REF!	#REF!	#REF!	#REF!	#REF!
Chloroethane (ethyl chloride) - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chloroform - HAP/VOC	6.013E-03	1.211E+00	8.137E-05	4.277E+01	6.615E-03
Chloromethane - VOC	1.050E-02	5.002E+00	3.361E-04	1.767E+02	1.156E-02
Dichlorobenzene - (HAP for para isomer/VOC)	#REF!	#REF!	#REF!	#REF!	#REF!
Dichlorodifluoromethane	1.483E-02	2.949E+00	1.981E-04	1.041E+02	1.631E-02
Dichlorofluoromethane - VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Dichloromethane (methylene chloride) - HAP	#REF!	#REF!	#REF!	#REF!	#REF!
Dimethyl sulfide (methyl sulfide) - VOC	4.626E+00	1.790E+03	1.203E-01	6.322E+04	5.089E+00
Ethane	5.861E+01	4.686E+04	3.149E+00	1.655E+06	6.447E+01
Ethanol - VOC	2.896E+00	1.511E+03	1.015E-01	5.337E+04	3.186E+00
Ethyl mercaptan (ethanethiol) - VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Ethylbenzene - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Ethylene dibromide - HAP/VOC	9.464E-03	1.211E+00	8.137E-05	4.277E+01	1.041E-02
Fluorotrichloromethane - VOC	2.287E-01	4.002E+01	2.689E-03	1.413E+03	2.515E-01
Hexane - HAP/VOC	3.171E-01	8.846E+01	5.944E-03	3.124E+03	3.488E-01
Hydrogen sulfide	2.762E+01	1.948E+04	1.309E+00	6.880E+05	3.038E+01
Mercury (total) - HAP	1.274E-04	1.527E-02	1.026E-06	5.393E-01	1.402E-04
Methyl ethyl ketone - HAP/VOC	2.985E+00	9.952E+02	6.687E-02	3.514E+04	3.283E+00
Methyl isobutyl ketone - HAP/VOC	1.121E-01	2.691E+01	1.808E-03	9.502E+02	1.233E-01
Methyl mercaptan - VOC	3.476E+00	1.738E+03	1.167E-01	6.136E+04	3.824E+00
Pentane - VOC	5.214E-01	1.738E+02	1.167E-02	6.136E+03	5.736E-01
Perchloroethylene (tetrachloroethylene) - HAP	2.542E-01	3.686E+01	2.476E-03	1.302E+03	2.796E-01
Propane - VOC	1.062E+00	5.792E+02	3.892E-02	2.045E+04	1.168E+00
t-1,2-Dichloroethene - VOC	5.945E-01	1.474E+02	9.906E-03	5.207E+03	6.539E-01
Toluene - No or Unknown Co-disposal - HAP/VOC	2.704E+00	7.056E+02	4.741E-02	2.492E+04	2.974E+00
Toluene - Co-disposal - HAP/VOC	3.430E+01	8.951E+03	6.014E-01	3.161E+05	3.773E+01
Trichloroethylene (trichloroethene) - HAP/VOC	5.410E-02	9.899E+00	6.651E-04	3.496E+02	5.951E-02
Vinyl chloride - HAP/VOC	6.201E-02	2.385E+01	1.603E-03	8.424E+02	6.821E-02
Xylenes - HAP/VOC	2.146E+00	4.860E+02	3.265E-02	1.716E+04	2.361E+00
1,2-Dichloroethene cis	3.567E-01	8.846E+01	5.944E-03	3.124E+03	3.923E-01
1,2-Dichloroethylene	1.550E-01	3.844E+01	2.583E-03	1.357E+03	1.705E-01
2-Butanol	9.367E-01	3.038E+02	2.041E-02	1.073E+04	1.030E+00
Octane	4.378E-01	9.215E+01	6.191E-03	3.254E+03	4.816E-01
1,1,2-Trichloroethane	1.373E-01	2.475E+01	1.663E-03	8.740E+02	1.510E-01
1,2-Dibromoethane	4.114E-03	5.265E-01	3.538E-05	1.859E+01	4.526E-03
1,2-Dichloroethene trans	1.550E-01	3.844E+01	2.583E-03	1.357E+03	1.705E-01

Appendix 5A-S2-5.3a: Twin Creeks Landfill, Fugitive Odour Emission Assessment - Scenario 2 - End of Stage 2 (2037)

Sampling Result

Sampling Location	Odour Intensity from Sampling (OU/m^3) [1]
	Average
Old Landfill	546
New Landfill	23,185

Note:
[1] Average odour intensity was adopted in the modelling.

Gas Collection Efficiency

Landfill Area	Sources	Gas Collection Efficiency
Proposed Landfill	Interim Cover	75%
	Final Cover	90%
Old Landfill i.e. AREA5	Final Cover	75%
Current Landfill i.e. AREA1-AREA3	Partical Interim/Final Cover [1]	79%

Note:
[1] Collection efficiency based on weighted average of total landfill area under interim or final cover.

Summary of Odour Emissions for Scenario 2

Source ID	Source Description	Area (m^2)	Odour Flux Rate ($OU/s/m^2$)	Emission Rate (OU/s)	LandGEM Gas Generation (m^3/yr)	Fugitive LFG Emissions (m^3/s)	Odour Intensity (OU/m^3)
AREA5	Old Landfill - Final Cover	275,424	**3.49E-05**	9.62E+00	2.225E+06	1.76E-02	**546**
	STAGE1 (Total Area) - Vertical Expansion, Stage 1	378,390	-	-	4.449E+07	-	-
ver	STAGE1 (Area Covered by STAGE3) - Interim Cover **Emitted through STAGE3 based on the size of the landfill areas*	172,852	-	-	2.032E+07	3.26E-01	**23,185**
STAGE1FC	Area not Covered by STAGE3 - Final Cover	205,538	**3.07E-02**	6.31E+03	2.417E+07	2.72E-01	**23,185**
STAGE2	Vertical Expansion, Stage 2 - Interim Cover	366,429	**4.85E-02**	1.78E+04	5.265E+07	7.66E-01	**23,185**
STAGE3	Vertical Expansion, Stage 3 **Emissions are from Stage 1*	147,145	**5.13E-02**	7.55E+03	-	3.26E-01	**23,185**
AREA1	Current Landfill - Partial Cover **Emitted through STAGE1FC, STAGE2, STAGE3 based on the size of the landfill areas*	-	-	-	3.330E+07	2.20E-01	**23,185**
AREA2		-	-	-	3.743E+07	2.48E-01	**23,185**
AREA3		-	-	-	3.640E+07	2.41E-01	**23,185**

Sample Calculation for AREA5

2.22E+06 m^3	1 yr	100 - 75	%	546 OU	1
1 yr	31,536,000 s	1		1 m^3	275,424 m^2

= 3.49E-05 $OU/s/m^2$

Appendix 5A-S3: Source Summary Table, Scenario 3

RWDI# 2101750

Twin Creeks Environmental Centre

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (°C)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
FLARE5	POINT	Landfill Gas Flare 5 - RNG Plant Startup	41.67	871	3.66	3.97	15.24	N/A	429140	4757490	Benzene	71-43-2	1.15E-04	N/A	24, Annual	EC	Average	2%
											Vinyl Chloride (Chloroethylene)	75-01-4	4.45E-05	N/A	24	EC	Average	1%
											1,2-Dichloroethane	107-06-2	3.68E-05	N/A	24	EC	Average	1%
											Nitrogen Oxides (NOx)	10102-44-0	5.96E-01	N/A	1, 24	EC	Average	7%
											Particulate Matter (PM)	PM	2.25E-01	N/A	24	EC	Average	<1%
											Sulphur Dioxide (SO2)	7446-09-5	3.53E-01	N/A	1, Annual	EC	Average	13%
											Dioxins and Furans	DF	2.08E-11	N/A	24	EF	Marginal	12%
											Total Reduced Sulphur (TRS)	TRS	1.78E-02	N/A	10-minute, 24	EC	Marginal	15%
											Hydrogen Sulfide	7783-06-4	1.78E-02	N/A	10-minute, 24	EC	Average	17%
FLARE6	POINT	Landfill Gas Flare 6 - RNG Plant Startup	41.67	871	3.66	3.97	15.24	N/A	429149	4757490	Benzene	71-43-2	1.15E-04	N/A	24, Annual	EC	Average	2%
											Vinyl Chloride (Chloroethylene)	75-01-4	4.45E-05	N/A	24	EC	Average	1%
											1,2-Dichloroethane	107-06-2	3.68E-05	N/A	24	EC	Average	1%
											Nitrogen Oxides (NOx)	10102-44-0	5.96E-01	N/A	1, 24	EC	Average	7%
											Particulate Matter (PM)	PM	2.25E-01	N/A	24	EC	Average	<1%
											Sulphur Dioxide (SO2)	7446-09-5	3.53E-01	N/A	1, Annual	EC	Average	13%
											Dioxins and Furans	DF	2.08E-11	N/A	24	EF	Marginal	12%
											Total Reduced Sulphur (TRS)	TRS	1.78E-02	N/A	10-minute, 24	EC	Marginal	15%
											Hydrogen Sulfide	7783-06-4	1.78E-02	N/A	10-minute, 24	EC	Average	17%
RNG_TO1	POINT	RNG Plant Pre-Treatment Thermal Oxidizer	2.51	816	1.22	2.15	15.24	N/A	429116	4757455	Benzene	71-43-2	4.24E-05	N/A	24, Annual	EC	Marginal	<1%
											1,2-Dichloroethane	107-06-2	6.14E-06	N/A	24	EC	Marginal	<1%
											Vinyl Chloride	75-01-4	1.78E-05	N/A	24	EC	Marginal	<1%
											Total Reduced Sulphur (TRS)	TRS	9.13E-04	N/A	10-minute, 24	EC	Marginal	<1%
											Oxides of Nitrogen	10102-44-0	1.30E-01	N/A	1, 24	EC	Marginal	2%
											Sulphur Dioxide	7446-09-5	9.13E-02	N/A	1, Annual	EC	Marginal	3%
											Dioxins and Furans	DF	3.58E-12	N/A	24	EF	Marginal	2%
											Particulate Matter	PM	4.65E-03	N/A	24	EC	Marginal	<1%
RNG_TO2	POINT	RNG Plant Main Thermal Oxidizer	18.03	816	2.90	2.74	15.24	N/A	429124	4757456	Benzene	71-43-2	1.24E-05	N/A	24, Annual	EC	Marginal	<1%
											1,2-Dichloroethane	107-06-2	4.04E-05	N/A	24	EC	Marginal	2%
											Vinyl Chloride	75-01-4	9.36E-05	N/A	24	EC	Marginal	3%
											Total Reduced Sulphur (TRS)	TRS	3.08E-04	N/A	10-minute, 24	EC	Marginal	<1%
											Oxides of Nitrogen	10102-44-0	1.20E+00	N/A	1, 24	EC	Marginal	15%
											Sulphur Dioxide	7446-09-5	3.08E-02	N/A	1, Annual	EC	Marginal	1%
											Dioxins and Furans	DF	2.54E-11	N/A	24	EF	Marginal	15%
											Particulate Matter	PM	7.71E-02	N/A	24	EC	Marginal	<1%
FLARE5BP	POINT	Landfill Gas Flare 5 - Thermal Oxidizer Bypass Scenario	37.15	871	3.66	3.54	15.24	N/A	429140	4757490	Benzene	71-43-2	2.46E-04	N/A	24, Annual	EC	Marginal	4%
											1,2-Dichloroethane	107-06-2	3.56E-05	N/A	24	EC	Marginal	1%
											Vinyl Chloride	75-01-4	1.03E-04	N/A	24	EC	Marginal	3%
											Total Reduced Sulphur (TRS)	TRS	5.29E-03	N/A	10-minute, 24	EC	Marginal	4%
											Oxides of Nitrogen	10102-44-0	5.78E-01	N/A	1, 24	EC	Marginal	7%
											Sulphur Dioxide	7446-09-5	2.65E-01	N/A	1, Annual	EC	Marginal	10%
											Dioxins and Furans	DF	1.04E-11	N/A	24	EF	Marginal	6%
											Particulate Matter	PM	2.18E-01	N/A	24	EC	Marginal	<1%
FLARE6BP	POINT	Landfill Gas Flare 6 - Thermal Oxidizer Bypass Scenario	37.15	871	3.66	3.54	15.24	N/A	429149	4757490	Benzene	71-43-2	1.01E-05	N/A	24, Annual	EC	Marginal	<1%
											1,2-Dichloroethane	107-06-2	3.30E-05	N/A	24	EC	Marginal	1%
											Vinyl Chloride	75-01-4	7.64E-05	N/A	24	EC	Marginal	2%
											Total Reduced Sulphur (TRS)	TRS	2.51E-04	N/A	10-minute, 24	EC	Marginal	<1%
											Oxides of Nitrogen	10102-44-0	5.78E-01	N/A	1, 24	EC	Marginal	7%
											Sulphur Dioxide	7446-09-5	1.26E-02	N/A	1, Annual	EC	Marginal	<1%
											Dioxins and Furans	DF	1.04E-11	N/A	24	EF	Marginal	6%
											Particulate Matter	PM	2.18E-01	N/A	24	EC	Marginal	<1%
AMINE	POINT-CAP	Amine Reboiler	0.59	204	0.39	5.00	4.92	1.87	429070	4757462	Nitrogen Oxides (NOx)	10102-44-0	8.99E-02	N/A	1, 24	EF	Average	1%
											Particulate Matter	PM	3.28E-03	N/A	24	EF	Average	<1%
GEN4	POINT	RNG Plant 360 kW Emergency Diesel Generator	0.48	491	0.15	26.50	2.15	N/A	429125	4757401	Nitrogen Oxides	10102-44-0	5.26E-01	N/A	1, 24	EF	Above-Average	7%
											Particulate Matter	PM	3.01E-02	N/A	24	EF	Above-Average	<1%
											Sulphur Dioxide	7446-09-5	1.26E-01	N/A	1, Annual	EF	Above-Average	5%
L4	POINT-HOR	Passive Exhaust Louvre Serving SBR and Aeration Tanks	1.96	25	1.38	1.31	2.13	N/A	429013	4757497	Benzene	71-43-2	1.43E-04	N/A	24, Annual	EC	Average	2%
											Vinyl Chloride (Chloroethylene)	75-01-4	3.09E-04	N/A	24	EC	Average	9%
											1,2-Dichloroethane	107-06-2	1.21E-04	N/A	24	EC	Average	5%
											Ammonia	7664-41-7	1.39E-02	N/A	24	EC	Average	40%
											Odour	ODOUR	4.76E+02	N/A	10-minute	EC	Average	2%
L3	POINT-HOR	Passive Exhaust Louvre Serving SBR and Aeration Tanks	1.96	25	1.38	1.31	2.13	N/A	429013	4757490	Benzene	71-43-2	1.43E-04	N/A	24, Annual	EC	Average	2%
											Vinyl Chloride (Chloroethylene)	75-01-4	3.09E-04	N/A	24	EC	Average	9%
											1,2-Dichloroethane	107-06-2	1.21E-04	N/A	24	EC	Average	5%
											Ammonia	7664-41-7	1.39E-02	N/A	24	EC	Average	40%
											Odour	ODOUR	4.76E+02	N/A	10-minute	EC	Average	2%

Appendix 5A-S3: Source Summary Table, Scenario 3

Twin Creeks Environmental Centre

RWDI# 2101750

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (°C)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
EF_2	POINT	Process Exhaust Fan Serving RO System Area	1.71	25	0.51	8.37	3.96	N/A	429073	4757502	Benzene	71-43-2	2.55E-04	N/A	24, Annual	EC	Average	4%
											Vinyl Chloride (Chloroethylene)	75-01-4	2.59E-04	N/A	24	EC	Average	8%
											1,2-Dichloroethane	107-06-2	2.39E-04	N/A	24	EC	Average	9%
											Ammonia	7664-41-7	9.49E-06	N/A	24	EC	Average	<1%
											Odour	ODOUR	3.59E+00	N/A	10-minute	EC	Average	<1%
SD_1	POINT-CAP	Slurry Dryer Exhaust	0.24	25	0.30	3.34	5.00	N/A	429057	4757483	Benzene	71-43-2	6.40E-04	N/A	24, Annual	EC	Average	10%
											Vinyl Chloride (Chloroethylene)	75-01-4	6.40E-04	N/A	24	EC	Average	19%
											1,2-Dichloroethane	107-06-2	6.40E-04	N/A	24	EC	Average	25%
											Ammonia	7664-41-7	4.40E-04	N/A	24	EC	Average	1%
											Odour	ODOUR	2.36E+01	N/A	10-minute	EC	Average	<1%
GEN1	POINT	1,000 kW Emergency Diesel Generator Serving Landfill Gas Plant	3.56	477	0.25	72.52	3.60	0.00	429119	4757554	Nitrogen Oxides	10102-44-0	2.72E-01	N/A	1, 24	EF	Above-Average	3%
											Particulate Matter	PM	4.53E-02	N/A	24	EF	Above-Average	<1%
											Sulphur Dioxide	7446-09-5	4.53E-02	N/A	1, Annual	EF	Above-Average	2%
GEN2	POINT	50 kW Diesel Generator Serving Leachate Pumps	0.24	477	0.10	30.56	3.60	0.00	429246	4757604	Nitrogen Oxides	10102-44-0	7.05E-02	N/A	1, 24	EF	Marginal	<1%
											Particulate Matter	PM	2.32E-02	N/A	24	EF	Marginal	<1%
											Sulphur Dioxide	7446-09-5	2.16E-02	N/A	1, Annual	EF	Marginal	<1%
GEN3	POINT	250 kW Emergency Diesel Generator Serving the Maintenance Offices	0.97	477	0.15	54.89	3.60	0.00	428415	4758689	Nitrogen Oxides	10102-44-0	3.53E-01	N/A	1, 24	EF	Marginal	4%
											Particulate Matter	PM	1.16E-01	N/A	24	EF	Marginal	<1%
											Sulphur Dioxide	7446-09-5	1.08E-01	N/A	1, Annual	EF	Marginal	4%
FLARE1	POINT	Landfill Gas Flare (Based on Full Load)	61.30	950	3.70	5.70	15.20	N/A	429117	4757504	Benzene	71-43-2	1.26E-04	N/A	24, Annual	EC	Average	2%
											Vinyl Chloride (Chloroethylene)	75-01-4	4.91E-05	N/A	24	EC	Average	1%
											1,2-Dichloroethane	107-06-2	4.06E-05	N/A	24	EC	Above-Average	2%
											Nitrogen Oxides	10102-44-0	6.57E-01	N/A	1, 24	EF	Average	8%
											Particulate Matter	PM	2.48E-01	N/A	24	EF	Average	<1%
											Sulphur Dioxide	7446-09-5	3.89E-01	N/A	1, Annual	EC	Marginal	14%
											Dioxins and Furans	DF	2.29E-11	N/A	24	EF	Marginal	13%
											Total Reduced Sulphur (TRS)	TRS	1.97E-02	N/A	10-minute, 24	EC	Marginal	17%
											Hydrogen Sulfide	7783-06-4	1.97E-02	N/A	10-minute, 24	EC	Above-Average	19%
FLARE2	POINT	Landfill Gas Flare (Based on Full Load)	61.30	950	3.70	5.70	15.20	N/A	429154	4757504	Benzene	71-43-2	1.26E-04	N/A	24, Annual	EC	Average	2%
											Vinyl Chloride (Chloroethylene)	75-01-4	4.91E-05	N/A	24	EC	Average	1%
											1,2-Dichloroethane	107-06-2	4.06E-05	N/A	24	EC	Above-Average	2%
											Nitrogen Oxides	10102-44-0	6.57E-01	N/A	1, 24	EF	Average	8%
											Particulate Matter	PM	2.48E-01	N/A	24	EF	Average	<1%
											Sulphur Dioxide	7446-09-5	3.89E-01	N/A	1, Annual	EC	Marginal	14%
											Dioxins and Furans	DF	2.29E-11	N/A	24	EF	Marginal	13%
											Total Reduced Sulphur (TRS)	TRS	1.97E-02	N/A	10-minute, 24	EC	Marginal	17%
											Hydrogen Sulfide	7783-06-4	1.97E-02	N/A	10-minute, 24	EC	Above-Average	19%
FLARE3	POINT	Proposed Landfill Gas Flare (Based on Full Load)	61.30	950	3.70	5.70	15.20	N/A	429142	4757504	Benzene	71-43-2	1.26E-04	N/A	24, Annual	EC	Average	2%
											Vinyl Chloride (Chloroethylene)	75-01-4	4.91E-05	N/A	24	EC	Average	1%
											1,2-Dichloroethane	107-06-2	4.06E-05	N/A	24	EC	Above-Average	2%
											Nitrogen Oxides	10102-44-0	6.57E-01	N/A	1, 24	EF	Average	8%
											Particulate Matter	PM	2.48E-01	N/A	24	EF	Average	<1%
											Sulphur Dioxide	7446-09-5	3.89E-01	N/A	1, Annual	EC	Marginal	14%
											Dioxins and Furans	DF	2.29E-11	N/A	24	EF	Marginal	13%
											Total Reduced Sulphur (TRS)	TRS	1.97E-02	N/A	10-minute, 24	EC	Marginal	17%
											Hydrogen Sulfide	7783-06-4	1.97E-02	N/A	10-minute, 24	EC	Above-Average	19%
FLARE4	POINT	Proposed Landfill Gas Flare (Based on Full Load)	25.79	950	3.20	3.21	12.19	N/A	429129	4757504	Benzene	71-43-2	5.73E-05	N/A	24, Annual	EC	Average	<1%
											Vinyl Chloride (Chloroethylene)	75-01-4	2.22E-05	N/A	24	EC	Average	<1%
											1,2-Dichloroethane	107-06-2	1.84E-05	N/A	24	EC	Above-Average	<1%
											Nitrogen Oxides	10102-44-0	2.98E-01	N/A	1, 24	EF	Average	4%
											Particulate Matter	PM	1.12E-01	N/A	24	EF	Average	<1%
											Sulphur Dioxide	7446-09-5	1.76E-01	N/A	1, Annual	EC	Marginal	6%
											Dioxins and Furans	DF	1.04E-11	N/A	24	EF	Marginal	6%
											Total Reduced Sulphur (TRS)	TRS	8.92E-03	N/A	10-minute, 24	EC	Marginal	8%
											Hydrogen Sulfide	7783-06-4	8.92E-03	N/A	10-minute, 24	EC	Above-Average	8%
AREA1	AREA	Expansion Landfill Phases 1 Through 3 Approximate Area = 244,004 m^2 (Emissions Based on Year 2042)	N/A	N/A	N/A	N/A	N/A	N/A	428626	4757721	Benzene	71-43-2	4.25E-05	1.48E-09	24, Annual	EC	Average	<1%
											Vinyl Chloride (Chloroethylene)	75-01-4	1.40E-04	5.74E-10	24	EC	Average	4%
											1,2-Dichloroethane	107-06-2	1.16E-04	4.75E-10	24	EC	Above-Average	4%
											Total Reduced Sulphur (TRS)	TRS	0.00E+00	0.00E+00	10-minute, 24	EC	Marginal	<1%
											Hydrogen Sulfide	7783-06-4	0.00E+00	0.00E+00	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	0.00E+00	0.00E+00	10-minute	ST	Average	<1%

Appendix 5A-S3: Source Summary Table, Scenario 3

Twin Creeks Environmental Centre

RWDI# 2101750

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (°C)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
AREA2	AREA	Expansion Landfill Phases 4 Through 5 Approximate Area = 165,611 m^2 (Emissions Based on Year 2042)	N/A	N/A	N/A	N/A	N/A	N/A	428634	4758149	Benzene	71-43-2	4.50E-04	2.72E-09	24, Annual	EC	Average	7%
											Vinyl Chloride (Chloroethylene)	75-01-4	1.75E-04	1.05E-09	24	EC	Average	5%
											1,2-Dichloroethane	107-06-2	1.45E-04	8.73E-10	24	EC	Above-Average	6%
											Total Reduced Sulphur (TRS)	TRS	0.00E+00	0.00E+00	10-minute, 24	EC	Marginal	<1%
											Hydrogen Sulfide	7783-06-4	0.00E+00	0.00E+00	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	0.00E+00	0.00E+00	10-minute	ST	Average	<1%
AREA3	AREA	Expansion Landfill Phases 6 Through 7 Approximate Area = 179,092 m^2 (Emissions Based on Year 2042)	N/A	N/A	N/A	N/A	N/A	N/A	428637	4758461	Benzene	71-43-2	4.80E-04	2.68E-09	24, Annual	EC	Average	8%
											Vinyl Chloride (Chloroethylene)	75-01-4	1.86E-04	1.04E-09	24	EC	Average	5%
											1,2-Dichloroethane	107-06-2	1.54E-04	8.62E-10	24	EC	Above-Average	6%
											Total Reduced Sulphur (TRS)	TRS	0.00E+00	0.00E+00	10-minute, 24	EC	Marginal	<1%
											Hydrogen Sulfide	7783-06-4	0.00E+00	0.00E+00	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	0.00E+00	0.00E+00	10-minute	ST	Average	<1%
AREA4	AREA	Expansion Landfill Phases 8 Through 9 Approximate Area = 99,012 m^2 (Emissions Based on Year 2042)	N/A	N/A	N/A	N/A	N/A	N/A	429027	4758463	Benzene	71-43-2	0.00E+00	0.00E+00	24, Annual	EC	Average	<1%
											Vinyl Chloride (Chloroethylene)	75-01-4	0.00E+00	0.00E+00	24	EC	Average	<1%
											1,2-Dichloroethane	107-06-2	0.00E+00	0.00E+00	24	EC	Above-Average	<1%
											Total Reduced Sulphur (TRS)	TRS	0.00E+00	0.00E+00	10-minute, 24	EC	Marginal	<1%
											Hydrogen Sulfide	7783-06-4	0.00E+00	0.00E+00	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	0.00E+00	0.00E+00	10-minute	ST	Average	<1%
AREA5	AREA	Existing Landfill Approximate Area = 208,263 m^2 (Emissions Based on Year 2042)	N/A	N/A	N/A	N/A	N/A	N/A	429208	4757609	Benzene	71-43-2	5.26E-05	1.91E-10	24, Annual	EC	Average	<1%
											Vinyl Chloride (Chloroethylene)	75-01-4	2.04E-05	7.41E-11	24	EC	Average	<1%
											1,2-Dichloroethane	107-06-2	1.69E-05	6.14E-11	24	EC	Above-Average	<1%
											Total Reduced Sulphur (TRS)	TRS	2.95E-03	1.07E-08	10-minute, 24	EC	Marginal	3%
											Hydrogen Sulfide	7783-06-4	9.95E-04	3.61E-09	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	7.88E+00	2.86E-05	10-minute	ST	Average	<1%
STAGE1	AREA	Vertical Expansion Landfill Approximate Area = 378,390 m2 (Emissions Based on Year 2042)	N/A	N/A	N/A	N/A	N/A	N/A	428515	4758837	Benzene	71-43-2	4.14E-04	1.10E-09	24, Annual	EC	Average	7%
											Vinyl Chloride (Chloroethylene)	75-01-4	1.61E-04	4.25E-10	24	EC	Average	5%
											1,2-Dichloroethane	107-06-2	1.33E-04	3.52E-10	24	EC	Above-Average	5%
											Total Reduced Sulphur (TRS)	TRS	0.00E+00	0.00E+00	10-minute, 24	EC	Marginal	<1%
											Hydrogen Sulfide	7783-06-4	0.00E+00	0.00E+00	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	0.00E+00	0.00E+00	10-minute	ST	Average	<1%
STAGE1FC	AREA	Vertical Expansion Landfill, Stage 1 area not covered by Stage 3 Approximate Area = 205,538 m2	N/A	N/A	N/A	N/A	N/A	N/A	428508	4757867	Total Reduced Sulphur (TRS)	TRS	8.81E-04	4.29E-09	10-minute, 24	EC	Marginal	<1%
											Hydrogen Sulfide	7783-06-4	3.04E-04	1.48E-09	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	4.15E+03	2.02E-02	10-minute	EC	Average	13%
STAGE2	AREA	Vertical Expansion Landfill, Stage 2 Approximate Area = 366,429 m2 (Emissions Based on Year 2042)	N/A	N/A	N/A	N/A	N/A	N/A	428878	4758835	Benzene	71-43-2	7.91E-04	2.16E-09	24, Annual	EC	Average	13%
											Vinyl Chloride (Chloroethylene)	75-01-4	3.07E-04	8.37E-10	24	EC	Average	9%
											1,2-Dichloroethane	107-06-2	2.54E-04	6.94E-10	24	EC	Above-Average	10%
											Total Reduced Sulphur (TRS)	TRS	0.00E+00	0.00E+00	10-minute, 24	EC	Marginal	<1%
											Hydrogen Sulfide	7783-06-4	0.00E+00	0.00E+00	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	0.00E+00	0.00E+00	10-minute	ST	Average	<1%
STAGE2FC	AREA	Vertical Expansion Landfill, Stage 2 area not covered by Stage 4 Approximate Area = 210,645 m2	N/A	N/A	N/A	N/A	N/A	N/A	428876	4757705	Total Reduced Sulphur (TRS)	TRS	9.03E-04	4.29E-09	10-minute, 24	EC	Marginal	<1%
											Hydrogen Sulfide	7783-06-4	3.11E-04	1.48E-09	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	4.48E+03	2.13E-02	10-minute	EC	Average	15%
STAGE3	AREA	Vertical Expansion Landfill, Stage 3 Approximate Area = 147,144 m2 (Emissions Based on Year 2042)	N/A	N/A	N/A	N/A	N/A	N/A	428650	4758699	Benzene	71-43-2	2.41E-04	1.64E-09	24, Annual	EC	Average	4%
											Vinyl Chloride (Chloroethylene)	75-01-4	9.36E-05	6.36E-10	24	EC	Average	3%
											1,2-Dichloroethane	107-06-2	7.76E-05	5.27E-10	24	EC	Above-Average	3%
											Total Reduced Sulphur (TRS)	TRS	6.31E-04	4.29E-09	10-minute, 24	EC	Marginal	<1%
											Hydrogen Sulfide	7783-06-4	2.17E-04	1.48E-09	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	5.03E+03	3.42E-02	10-minute	ST	Average	16%
STAGE4	AREA	Vertical Expansion Landfill, Stage 4 Approximate Area = 181,496 m2 (Emissions Based on Year 2042)	N/A	N/A	N/A	N/A	N/A	N/A	428847	4758701	Benzene	71-43-2	7.71E-04	4.25E-09	24, Annual	EC	Average	12%
											Vinyl Chloride (Chloroethylene)	75-01-4	2.99E-04	1.65E-09	24	EC	Average	9%
											1,2-Dichloroethane	107-06-2	2.48E-04	1.36E-09	24	EC	Above-Average	9%
											Total Reduced Sulphur (TRS)	TRS	1.95E-03	1.07E-08	10-minute, 24	EC	Marginal	2%
											Hydrogen Sulfide	7783-06-4	6.70E-04	3.69E-09	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	1.17E+04	6.45E-02	10-minute	ST	Average	38%
DC_WF	VOLUME	Daily Cover Dropped at Working Face	N/A	N/A	N/A	N/A	N/A	N/A	429118	4758694	Particulate Matter	PM	Variable [4]	N/A	24	EF	Average	N/A
											PM10	PM10	Variable [4]	N/A	24	EF	Average	N/A
											PM2.5	PM25	Variable [4]	N/A	24	EF	Average	N/A
DC_SS	VOLUME	Daily Cover Dropped at Soil Stockpile	N/A	N/A	N/A	N/A	N/A	N/A	429308	4757217	Particulate Matter	PM	Variable [4]	N/A	24	EF	Average	N/A
											PM10	PM10	Variable [4]	N/A	24	EF	Average	N/A
											PM2.5	PM25	Variable [4]	N/A	24	EF	Average	N/A
CDA1	VOLUME	Compost Material Dropped at Compost Diversion Area 1 (North)	N/A	N/A	N/A	N/A	N/A	N/A	429524	4757510	Particulate Matter	PM	Variable [4]	N/A	24	EF	Average	N/A
											PM10	PM10	Variable [4]	N/A	24	EF	Average	N/A
											PM2.5	PM25	Variable [4]	N/A	24	EF	Average	N/A

Appendix 5A-S3: Source Summary Table, Scenario 3

Twin Creeks Environmental Centre

RWDI# 2101750

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (°C)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
CDA2	VOLUME	Compost Material Dropped at Compost Diversion Area 2 (South)	N/A	N/A	N/A	N/A	N/A	N/A	429536	4757510	Particulate Matter	PM	Variable [4]	N/A	24	EF	Average	N/A
											PM10	PM10	Variable [4]	N/A	24	EF	Average	N/A
											PM2.5	PM25	Variable [4]	N/A	24	EF	Average	N/A
CDA	AREA	Compost Diversion Area	N/A	N/A	N/A	N/A	N/A	N/A	429513	4757452	Odour	ODOUR	4.47E+03	8.10E-01	10-minute	EF	Average	14%
CS_WF	VOLUME	Contaminated Soil Dropped at Working Face	N/A	N/A	N/A	N/A	N/A	N/A	429105	4758699	Particulate Matter	PM	Variable [4]	N/A	24	EF	Average	N/A
											PM10	PM10	Variable [4]	N/A	24	EF	Average	N/A
											PM2.5	PM25	Variable [4]	N/A	24	EF	Average	N/A
WIND_SS	AREA	Wind Erosion at Soil Stockpile	N/A	N/A	N/A	N/A	N/A	N/A	429216	4757189	Particulate Matter	PM	N/A	Variable [4]	24	EF	Average	N/A
											PM10	PM10	N/A	Variable [4]	24	EF	Average	N/A
											PM2.5	PM25	N/A	Variable [4]	24	EF	Average	N/A
WIND_WF	AREA	Wind Erosion at Working Face	N/A	N/A	N/A	N/A	N/A	N/A	429100	4758643	Particulate Matter	PM	N/A	Variable [4]	24	EF	Average	N/A
											PM10	PM10	N/A	Variable [4]	24	EF	Average	N/A
											PM2.5	PM25	N/A	Variable [4]	24	EF	Average	N/A
WIND_CDA	AREA	Wind Rrosion at Compost Diversion Area	N/A	N/A	N/A	N/A	N/A	N/A	429513	4757452	Particulate Matter	PM	N/A	Variable	24	EF	Average	N/A
											PM10	PM10	N/A	Variable	24	EF	Average	N/A
											PM2.5	PM25	N/A	Variable	24	EF	Average	N/A
FC_CAP	AREA	Final Cap Construction Clay Drop-off	N/A	N/A	N/A	N/A	N/A	N/A	429030	4758695	Particulate Matter	PM	N/A	Variable [4]	24	EF	Average	N/A
											PM10	PM10	N/A	Variable [4]	24	EF	Average	N/A
											PM2.5	PM25	N/A	Variable [4]	24	EF	Average	N/A
FC_SS	AREA	Final Cap Clay Storage Pile Truck Loading	N/A	N/A	N/A	N/A	N/A	N/A	429278	4757247	Particulate Matter	PM	N/A	Variable [4]	24	EF	Average	N/A
											PM10	PM10	N/A	Variable [4]	24	EF	Average	N/A
											PM2.5	PM25	N/A	Variable [4]	24	EF	Average	N/A
WIND_CAP	AREA	Wind Erosion at the Final Cap Construction Area	N/A	N/A	N/A	N/A	N/A	N/A	429022	4758752	Particulate Matter	PM	N/A	Variable [4]	24	EF	Average	N/A
											PM10	PM10	N/A	Variable [4]	24	EF	Average	N/A
											PM2.5	PM25	N/A	Variable [4]	24	EF	Average	N/A
MH5AB	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429468	4758257	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH4A	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429461	4758000	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH3SA	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429461	4757794	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH16	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429423	4757612	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH6AB	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429198	4758220	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
SUMP	AREA	Leachate Maintenance Sump	N/A	N/A	N/A	N/A	N/A	N/A	429247	4758070	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH3SF	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429334	4757819	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH18	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429266	4757613	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
CONSOIL	AREA	Contaminated Soil Pile	N/A	N/A	N/A	N/A	N/A	N/A	429109	4758698	Vinyl Chloride (Chloroethylene)	75-01-4	7.34E-07	3.67E-08	24	ST	Average	<1%
											1,2-Dichloroethane	107-06-2	1.59E-05	7.97E-07	24	ST	Average	<1%
											Benzene	71-43-2	6.76E-04	3.38E-05	24, Annual	ST	Average	11%
											Odour	ODOUR	1.53E+00	7.65E-02	10-minute	ST	Average	<1%
WF	AREA	Working Face / Scrape Down Area	N/A	N/A	N/A	N/A	N/A	N/A	429100	4758643	Odour	ODOUR	N/A	Variable [5]	10-minute	ST	Average	N/A
DOZE1	VOLUME	Cat Dozers at Working Face, Dugitive Dust	N/A	N/A	N/A	N/A	N/A	N/A	429131	4758672	Particulate Matter	PM	3.33E+00	N/A	24	EC	Average	6%
											PM10	PM10	9.84E-01	N/A	24	EC	Average	7%
											PM2.5	PM25	3.50E-01	N/A	24	EC	Average	15%
DOZE2	VOLUME	Cat Dozers at Working Face, Tailpipe	N/A	N/A	N/A	N/A	N/A	N/A	429131	4758672	Particulate Matter	PM	8.00E-04	N/A	24	EC	Average	<1%
											PM10	PM10	8.00E-04	N/A	24	EC	Average	<1%
											PM2.5	PM25	7.76E-04	N/A	24	EC	Average	<1%
											Benzene	71-43-2	4.95E-05	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	7.78E-04	N/A	24	EC	Average	2%
											Nitrogen Dioxide	NO2	2.10E-02	N/A	24	EC	Average	7%
											Nitrogen Oxides	10102-44-0	2.10E-02	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	2.53E-04	N/A	1, Annual	EC	Average	<1%
DOZE3	VOLUME	Cat Dozers at Soil Stockpile, Fugitive Dust	N/A	N/A	N/A	N/A	N/A	N/A	429314	4757233	Particulate Matter	PM	2.73E+00	N/A	24	EC	Average	5%
											PM10	PM10	8.65E-01	N/A	24	EC	Average	6%
											PM2.5	PM25	2.87E-01	N/A	24	EC	Average	12%
DOZE4	VOLUME	Cat Dozers at Soil Stockpile, Tailpipe	N/A	N/A	N/A	N/A	N/A	N/A	429314	4757233	Particulate Matter	PM	2.15E-04	N/A	24	EC	Average	<1%
											PM10	PM10	2.15E-04	N/A	24	EC	Average	<1%
											PM2.5	PM25	2.09E-04	N/A	24	EC	Average	<1%
											Benzene	71-43-2	1.37E-05	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	2.26E-04	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	5.88E-03	N/A	24	EC	Average	2%
											Nitrogen Oxides	10102-44-0	5.88E-03	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	7.33E-05	N/A	1, Annual	EC	Average	<1%
DOZE1CAP	VOLUME	Cat Dozers at Working Face, Dugitive Dust	N/A	N/A	N/A	N/A	N/A	N/A	429059	4758666	Particulate Matter	PM	5.67E+00	N/A	24	EC	Average	10%
											PM10	PM10	2.04E+00	N/A	24	EC	Average	14%
											PM2.5	PM25	5.96E-01	N/A	24	EC	Average	26%

Appendix 5A-S3: Source Summary Table, Scenario 3

Twin Creeks Environmental Centre

RWDI# 2101750

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (°C)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
DOZE2CAP	VOLUME	Cat Dozers at Working Face, Tailpipe	N/A	N/A	N/A	N/A	N/A	N/A	429059	4758666	Particulate Matter	PM	1.43E-04	N/A	24	EC	Average	<1%
											PM10	PM10	1.43E-04	N/A	24	EC	Average	<1%
											PM2.5	PM25	1.39E-04	N/A	24	EC	Average	<1%
											Benzene	71-43-2	1.08E-05	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	1.19E-04	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	3.25E-03	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	3.86E-05	N/A	1, Annual	EC	Average	<1%
DOZE2SS	VOLUME	Cat Dozers at Soil Stockpile, Tailpipe	N/A	N/A	N/A	N/A	N/A	N/A	429460	4757232	Particulate Matter	PM	2.87E-04	N/A	24	EC	Average	<1%
											PM10	PM10	2.87E-04	N/A	24	EC	Average	<1%
											PM2.5	PM25	2.78E-04	N/A	24	EC	Average	<1%
											Benzene	71-43-2	1.67E-05	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	3.33E-04	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	8.51E-03	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	1.08E-04	N/A	1, Annual	EC	Average	<1%
IDLE01	VOLUME	Trucks Idling at the Scale House	N/A	N/A	N/A	N/A	N/A	N/A	428420	4758417	Particulate Matter	PM	1.20E-04	N/A	24	EC	Average	<1%
											PM10	PM10	1.20E-04	N/A	24	EC	Average	<1%
											PM2.5	PM25	1.10E-04	N/A	24	EC	Average	<1%
											Benzene	71-43-2	6.30E-07	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	2.13E-04	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.09E-02	N/A	24	EC	Average	4%
											Nitrogen Oxides	10102-44-0	2.74E-02	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	1.20E-05	N/A	1, Annual	EC	Average	<1%
IDLE02	VOLUME	Trucks Idling at the Working Face	N/A	N/A	N/A	N/A	N/A	N/A	429122	4758680	Particulate Matter	PM	1.20E-04	N/A	24	EC	Average	<1%
											PM10	PM10	1.20E-04	N/A	24	EC	Average	<1%
											PM2.5	PM25	1.10E-04	N/A	24	EC	Average	<1%
											Benzene	71-43-2	6.30E-07	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	2.13E-04	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.09E-02	N/A	24	EC	Average	4%
											Nitrogen Oxides	10102-44-0	2.74E-02	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	1.20E-05	N/A	1, Annual	EC	Average	<1%
PR01	LINE_VOLUME	Main Entrance Road	N/A	N/A	N/A	N/A	N/A	N/A	428277	4758638	Particulate Matter	PM	8.40E-02 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	3.84E-02 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	5.79E-03 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	2.16E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	2.13E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.89E-02 [6]	N/A	24	EC	Average	6%
											Nitrogen Oxides	10102-44-0	4.75E-02 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	2.95E-05 [6]	N/A	1, Annual	EC	Average	<1%
PR01Z	LINE_VOLUME	Main Entrance Road, onsite equipment	N/A	N/A	N/A	N/A	N/A	N/A	428277	4758638	Particulate Matter	PM	9.47E-03 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	3.04E-03 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	5.06E-04 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	9.42E-07 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	2.87E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.33E-03 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	3.35E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	3.39E-06 [6]	N/A	1, Annual	EC	Average	<1%
UR02Z	LINE_VOLUME	Access road to compost diversion area (CDA)	N/A	N/A	N/A	N/A	N/A	N/A	429167	4757583	Particulate Matter	PM	1.15E+00 [6]	N/A	24	EC	Average	2%
											PM10	PM10	3.47E-01 [6]	N/A	24	EC	Average	2%
											PM2.5	PM25	3.48E-02 [6]	N/A	24	EC	Average	1%
											Benzene	71-43-2	1.89E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	4.84E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.74E-03 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	4.38E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	5.47E-06 [6]	N/A	1, Annual	EC	Average	<1%
PR04A	LINE_VOLUME	Entrance to Scale House	N/A	N/A	N/A	N/A	N/A	N/A	428404	4758633	Particulate Matter	PM	1.09E-01 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	4.66E-02 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	7.14E-03 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	2.55E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	2.51E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	2.23E-02 [6]	N/A	24	EC	Average	8%
											Nitrogen Oxides	10102-44-0	5.61E-02 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	3.48E-05 [6]	N/A	1, Annual	EC	Average	<1%

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (°C)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
PR04AZ	LINE_VOLUME	Entrance to Scale House, onsite equipment	N/A	N/A	N/A	N/A	N/A	N/A	428404	4758633	Particulate Matter	PM	1.25E-02 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	3.76E-03 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	6.39E-04 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	1.11E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	3.39E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.57E-03 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	3.94E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	4.00E-06 [6]	N/A	1, Annual	EC	Average	<1%
BR06	LINE_VOLUME	Across LF to WF southern section	N/A	N/A	N/A	N/A	N/A	N/A	428755	4757734	Particulate Matter	PM	1.25E+01 [6]	N/A	24	EC	Average	22%
											PM10	PM10	2.90E+00 [6]	N/A	24	EC	Average	20%
											PM2.5	PM25	2.93E-01 [6]	N/A	24	EC	Average	13%
											Benzene	71-43-2	6.33E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	6.24E-04 [6]	N/A	24	EC	Average	2%
											Nitrogen Dioxide	NO2	5.54E-02 [6]	N/A	24	EC	Average	19%
											Nitrogen Oxides	10102-44-0	1.39E-01 [6]	N/A	1, 24	EC	Average	2%
											Sulphur Dioxide	7446-09-5	8.64E-05 [6]	N/A	1, Annual	EC	Average	<1%
BR06Z	LINE_VOLUME	Across LF to WF southern section, onsite equipment	N/A	N/A	N/A	N/A	N/A	N/A	428755	4757734	Particulate Matter	PM	1.29E+00 [6]	N/A	24	EC	Average	2%
											PM10	PM10	2.93E-01 [6]	N/A	24	EC	Average	2%
											PM2.5	PM25	2.94E-02 [6]	N/A	24	EC	Average	1%
											Benzene	71-43-2	8.45E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	1.68E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	2.84E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	4.35E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	5.44E-05 [6]	N/A	1, Annual	EC	Average	<1%
BR06Y	LINE_VOLUME	Across LF to WF southern section, final cap construction truc	N/A	N/A	N/A	N/A	N/A	N/A	428755	4757734	Particulate Matter	PM	1.65E+00 [6]	N/A	24	EC	Average	3%
											PM10	PM10	3.74E-01 [6]	N/A	24	EC	Average	3%
											PM2.5	PM25	3.75E-02 [6]	N/A	24	EC	Average	2%
											Benzene	71-43-2	8.55E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	1.71E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	4.37E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	5.55E-05 [6]	N/A	1, Annual	EC	Average	<1%
PR08Z	LINE_VOLUME	WF to SS/LTF	N/A	N/A	N/A	N/A	N/A	N/A	428750	4757727	Particulate Matter	PM	1.16E-01 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	1.77E-02 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	4.00E-03 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	5.65E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	1.28E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.98E-03 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	7.14E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	3.26E-05 [6]	N/A	1, Annual	EC	Average	<1%
PR08Y	LINE_VOLUME	WF to SS/LTF, final cap construction trucks	N/A	N/A	N/A	N/A	N/A	N/A	428750	4757727	Particulate Matter	PM	6.16E-02 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	8.03E-03 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	2.00E-03 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	4.34E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	8.68E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	2.22E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	2.82E-05 [6]	N/A	1, Annual	EC	Average	<1%
UR09AZ	LINE_VOLUME	WF to SS, to CDA turn off	N/A	N/A	N/A	N/A	N/A	N/A	429039	4757671	Particulate Matter	PM	1.60E+00 [6]	N/A	24	EC	Average	3%
											PM10	PM10	4.83E-01 [6]	N/A	24	EC	Average	3%
											PM2.5	PM25	4.84E-02 [6]	N/A	24	EC	Average	2%
											Benzene	71-43-2	3.89E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	8.31E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	8.85E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	3.73E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	2.18E-05 [6]	N/A	1, Annual	EC	Average	<1%
UR09AY	LINE_VOLUME	WF to SS, to CDA turn off, final cap construction trucks	N/A	N/A	N/A	N/A	N/A	N/A	429039	4757671	Particulate Matter	PM	9.65E-01 [6]	N/A	24	EC	Average	2%
											PM10	PM10	2.90E-01 [6]	N/A	24	EC	Average	2%
											PM2.5	PM25	2.91E-02 [6]	N/A	24	EC	Average	1%
											Benzene	71-43-2	2.99E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	5.97E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	1.53E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	1.94E-05 [6]	N/A	1, Annual	EC	Average	<1%

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (°C)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
UR09BZ	LINE_VOLUME	WF to SS, after CDA turnoff	N/A	N/A	N/A	N/A	N/A	N/A	429164	4757579	Particulate Matter	PM	7.01E-01 [6]	N/A	24	EC	Average	1%
											PM10	PM10	2.11E-01 [6]	N/A	24	EC	Average	1%
											PM2.5	PM25	2.11E-02 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	2.48E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	4.95E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	1.27E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	1.61E-05 [6]	N/A	1, Annual	EC	Average	<1%
UR09BY	LINE_VOLUME	WF to SS, after CDA turnoff, final cap construction trucks	N/A	N/A	N/A	N/A	N/A	N/A	429164	4757579	Particulate Matter	PM	9.09E-01 [6]	N/A	24	EC	Average	2%
											PM10	PM10	2.73E-01 [6]	N/A	24	EC	Average	2%
											PM2.5	PM25	2.74E-02 [6]	N/A	24	EC	Average	1%
											Benzene	71-43-2	2.53E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	5.05E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	1.29E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	1.64E-05 [6]	N/A	1, Annual	EC	Average	<1%
UR11Z	LINE_VOLUME	Across SS	N/A	N/A	N/A	N/A	N/A	N/A	429160	4757399	Particulate Matter	PM	9.51E-01 [6]	N/A	24	EC	Average	2%
											PM10	PM10	2.86E-01 [6]	N/A	24	EC	Average	2%
											PM2.5	PM25	2.87E-02 [6]	N/A	24	EC	Average	1%
											Benzene	71-43-2	3.36E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	6.72E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	1.72E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	2.18E-05 [6]	N/A	1, Annual	EC	Average	<1%
UR11Y	LINE_VOLUME	Across SS, final cap construction trucks	N/A	N/A	N/A	N/A	N/A	N/A	429160	4757399	Particulate Matter	PM	1.23E+00 [6]	N/A	24	EC	Average	2%
											PM10	PM10	3.71E-01 [6]	N/A	24	EC	Average	3%
											PM2.5	PM25	3.71E-02 [6]	N/A	24	EC	Average	2%
											Benzene	71-43-2	3.43E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	6.86E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	1.75E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	2.23E-05 [6]	N/A	1, Annual	EC	Average	<1%
UR12	LINE_VOLUME	Across LF to WF northern section	N/A	N/A	N/A	N/A	N/A	N/A	429512	4757267	Particulate Matter	PM	1.19E+01 [6]	N/A	24	EC	Average	21%
											PM10	PM10	2.76E+00 [6]	N/A	24	EC	Average	19%
											PM2.5	PM25	2.79E-01 [6]	N/A	24	EC	Average	12%
											Benzene	71-43-2	6.03E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	5.94E-04 [6]	N/A	24	EC	Average	2%
											Nitrogen Dioxide	NO2	5.28E-02 [6]	N/A	24	EC	Average	18%
											Nitrogen Oxides	10102-44-0	1.33E-01 [6]	N/A	1, 24	EC	Average	2%
											Sulphur Dioxide	7446-09-5	8.23E-05 [6]	N/A	1, Annual	EC	Average	<1%
UR12Z	LINE_VOLUME	Across LF to WF northern section, onsite equipment	N/A	N/A	N/A	N/A	N/A	N/A	429512	4757267	Particulate Matter	PM	1.23E+00 [6]	N/A	24	EC	Average	2%
											PM10	PM10	2.79E-01 [6]	N/A	24	EC	Average	2%
											PM2.5	PM25	2.80E-02 [6]	N/A	24	EC	Average	1%
											Benzene	71-43-2	8.05E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	1.60E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	2.70E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	4.14E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	5.18E-05 [6]	N/A	1, Annual	EC	Average	<1%
UR12Y	LINE_VOLUME	Across LF to WF northern section, final cap construction truc	N/A	N/A	N/A	N/A	N/A	N/A	429512	4757267	Particulate Matter	PM	1.57E+00 [6]	N/A	24	EC	Average	3%
											PM10	PM10	3.56E-01 [6]	N/A	24	EC	Average	2%
											PM2.5	PM25	3.57E-02 [6]	N/A	24	EC	Average	2%
											Benzene	71-43-2	8.14E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	1.63E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	4.16E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	5.28E-05 [6]	N/A	1, Annual	EC	Average	<1%
PR13Z	LINE_VOLUME	WF to LTF	N/A	N/A	N/A	N/A	N/A	N/A	429035	4757669	Particulate Matter	PM	7.23E-03 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	1.48E-03 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	2.89E-04 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	0.00E+00 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	3.71E-06 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	3.70E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	9.29E-04 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	5.34E-07 [6]	N/A	1, Annual	EC	Average	<1%

Appendix 5A-S3: Source Summary Table, Scenario 3

Twin Creeks Environmental Centre

RWDI# 2101750

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (°C)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
PR14Z	LINE_VOLUME	WF to LTF	N/A	N/A	N/A	N/A	N/A	N/A	429077	4757516	Particulate Matter	PM	2.66E-03 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	5.45E-04 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	1.06E-04 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	0.00E+00 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	1.36E-06 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.36E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	3.42E-04 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	1.96E-07 [6]	N/A	1, Annual	EC	Average	<1%
UR17Z	LINE_VOLUME	Across CDA	N/A	N/A	N/A	N/A	N/A	N/A	429514	4757517	Particulate Matter	PM	1.90E+00 [6]	N/A	24	EC	Average	3%
											PM10	PM10	5.71E-01 [6]	N/A	24	EC	Average	4%
											PM2.5	PM25	5.72E-02 [6]	N/A	24	EC	Average	2%
											Benzene	71-43-2	5.40E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	5.93E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	1.63E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	1.93E-05 [6]	N/A	1, Annual	EC	Average	<1%
UR18Z	LINE_VOLUME	Across WF, onsite equipment	N/A	N/A	N/A	N/A	N/A	N/A	429144	4758670	Particulate Matter	PM	2.10E+00 [6]	N/A	24	EC	Average	4%
											PM10	PM10	6.40E-01 [6]	N/A	24	EC	Average	4%
											PM2.5	PM25	6.41E-02 [6]	N/A	24	EC	Average	3%
											Benzene	71-43-2	6.03E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	7.18E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	2.10E-06 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	1.95E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	2.33E-05 [6]	N/A	1, Annual	EC	Average	<1%
PR04B	LINE_VOLUME	Scale House to WF	N/A	N/A	N/A	N/A	N/A	N/A	428477	4758211	Particulate Matter	PM	3.40E-01 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	1.35E-01 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	2.11E-02 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	7.15E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	7.04E-04 [6]	N/A	24	EC	Average	2%
											Nitrogen Dioxide	NO2	6.26E-02 [6]	N/A	24	EC	Average	21%
											Nitrogen Oxides	10102-44-0	1.57E-01 [6]	N/A	1, 24	EC	Average	2%
											Sulphur Dioxide	7446-09-5	9.76E-05 [6]	N/A	1, Annual	EC	Average	<1%
PR04BZ	LINE_VOLUME	Scale House to WF, onsite equipment	N/A	N/A	N/A	N/A	N/A	N/A	428477	4758211	Particulate Matter	PM	4.00E-02 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	1.12E-02 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	1.94E-03 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	3.11E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	9.47E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	4.39E-03 [6]	N/A	24	EC	Average	1%
											Nitrogen Oxides	10102-44-0	1.10E-02 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	1.12E-05 [6]	N/A	1, Annual	EC	Average	<1%
PR04C	LINE_VOLUME	Exit Road from WF	N/A	N/A	N/A	N/A	N/A	N/A	428477	4758211	Particulate Matter	PM	1.05E-01 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	4.16E-02 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	6.51E-03 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	2.20E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	2.17E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.93E-02 [6]	N/A	24	EC	Average	7%
											Nitrogen Oxides	10102-44-0	4.85E-02 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	3.01E-05 [6]	N/A	1, Annual	EC	Average	<1%
PR04CZ	LINE_VOLUME	Exit Road from WF, onsite equipment	N/A	N/A	N/A	N/A	N/A	N/A	428477	4758211	Particulate Matter	PM	1.24E-02 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	3.45E-03 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	6.00E-04 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	9.59E-07 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	2.92E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.35E-03 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	3.41E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	3.45E-06 [6]	N/A	1, Annual	EC	Average	<1%
MH17	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429326	4757612	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
LW6	AREA	Leachate Monitoring Well	N/A	N/A	N/A	N/A	N/A	N/A	429295	4757641	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
LW5	AREA	Leachate Monitoring Well	N/A	N/A	N/A	N/A	N/A	N/A	429414	4757638	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH3SB	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429460	4757818	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH3SD	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429216	4757819	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH3SC	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429211	4757771	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH3SE	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429326	4757780	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH4B	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429448	4758128	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
LW4	AREA	Leachate Monitoring Well	N/A	N/A	N/A	N/A	N/A	N/A	429414	4758056	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%

Appendix 5A-S3: Source Summary Table, Scenario 3

RWDI# 2101750

Twin Creeks Environmental Centre

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (°C)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
LW3	AREA	Leachate Monitoring Well	N/A	N/A	N/A	N/A	N/A	N/A	429437	4758227	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH8AB	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429215	4758370	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH10	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429205	4758622	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH12AB	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429195	4758697	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH7AB	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429471	4758461	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
LW2	AREA	Leachate Monitoring Well	N/A	N/A	N/A	N/A	N/A	N/A	429451	4758527	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH9AB	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429473	4758617	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH11AB	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429473	4758632	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
LW1	AREA	Leachate Monitoring Well	N/A	N/A	N/A	N/A	N/A	N/A	429457	4758703	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
Total		Total of All Listed Sources									Benzene	71-43-2	6.28E-03					100%
											Vinyl Chloride (Chloroethylene)	75-01-4	3.45E-03					100%
											1,2-Dichloroethane	107-06-2	2.61E-03					100%
											Ammonia	7664-41-7	3.44E-02					100%
											Nitrogen Oxides	10102-44-0	8.00E+00					100%
											Particulate Matter	PM	5.63E+01					100%
											Sulphur Dioxide	7446-09-5	2.75E+00					100%
											Hydrogen Sulfide	7783-06-4	1.06E-01					100%
											Total Reduced Sulphur (TRS)	TRS	1.18E-01					100%
											PM10	PM10	1.46E+01					100%
											PM2.5	PM25	2.33E+00					100%
											Odour	ODOUR	3.08E+04					100%
											Dioxins and Furans	DF	1.70E-10					100%
											Nitrogen Dioxide	NO2	2.94E-01					100%

Notes:

[1] Emission Estimating Technique Short-Forms are V-ST (Validated Source Test), ST (Source Test), EF (Emission Factor), MB (Mass Balance), and EC (Engineering Calculation).

[2] Data Quality Categories: Highest; Above-Average; Average; and Marginal.

[3] For Odour, the units are OU/s and $OU/m^2/s$ for emission rate and flux rate.

[4] Material handling and wind erosion emissions vary by time of day depending on wind conditions in each hour. Hourly emission rates have been applied during modelling.

[5] Odour emissions from the active working face vary depending on the time of day. From 6 a.m. to 9 a.m. the active face is freshly uncovered waste as the daily cover is stripped and new waste is deposited. By 9 a.m. the entire active face has been covered by at least 1 foot to 1 metre of new waste. After 9 a.m. the emission factor for new waste at the active face is applied.

[6] Roadway traffic varies by time of day. The maximum emission rate (g/s) for the entire road segment is shown in this table; hourly emissions rates have been applied during modelling.

Appendix 5A-S3-5.1a: On-Site Mobile Equipment Emissions - Fugitive Dust (AM)

Project #2101750

Twin Creeks Environmental Centre - Preferred Alternative

UNPAVED ROAD SECTIONS - AP-42 Section 13.2.2
PAVED ROAD SECTIONS - AP-42 Section 13.2.1

Paved Roads: $E = k\,(sL)^{0.91}\,(W)^{1.02}$
Unpaved Roads - Industrial: $E = 281.9\,k\,(s / 12)^{a}\,(W / 3)^{b}$
Unpaved Roads - Public: $E = 281.9\,k\,(s / 12)^{a}\,(S / 30)^{d} / (M / 0.5)^{c} - C$

E particulate emission factor (g/VKT)
k particle size multiplier (see below)
sL road surface silt loading (g/m^2)
W average weight of the vehicles traveling the road (US short tons)
s surface material silt content (%)
C emission factor for 1980's vehicle fleet exhaust, brake wear and tire wear
M surface material moisture content (%)
S mean vehicle speed (mph)
a,b,c,d constants (see below)

Route ID [1]	Route Description	Traffic Passes			Segment Length [2]	Road Surface [3]	Roadway Type [4]	Mean Vehicle Speed		Average Vehicle Weight [5]	Surface Material Moisture Content [6]	Surface Silt Content [7]	Road Surface Silt Loading [8]	Base AP-42 Emission Factor			Base Emission Rate			Additional Control Efficiency Applied	Final Controlled Emission Rate					
		Hourly	Daily	Annual										TSP	PM_{10}	$PM_{2.5}$	TSP	PM_{10}	$PM_{2.5}$		TSP	Data Quality Rating	PM_{10}	Data Quality Rating	$PM_{2.5}$	Data Quality Rating
		(#/h)	(#/d)	(#/a)	(m)			(km/h)	(mph)	(tons)	(%)	(%)	(g/m^2)	(g/VKT)	(g/VKT)	(g/VKT)	(g/s)	(g/s)	(g/s)	(%)	(g/s)		(g/s)		(g/s)	
PR01	Main Entrance Road	1	1	1	206	Paved	Industrial	10	6	30.2	--	--	0.63	1.0E+02	1.3E+01	3.2E+00	5.8E-03	7.5E-04	1.8E-04	90%	5.8E-04	--	7.5E-05	--	1.8E-05	--
PR01Z	Main Entrance Road, onsite equipment	1	1	1	206	Paved	Industrial	10	6	30.2	--	--	0.63	1.0E+02	1.3E+01	3.2E+00	5.8E-03	7.5E-04	1.8E-04	90%	5.8E-04	--	7.5E-05	--	1.8E-05	--
UR02Z	Access road to compost diversion area (CDA)	1	1	1	414	Unpaved	Industrial	10	6	15.5	--	43.1%	--	9.3E+03	2.8E+03	2.8E+02	1.1E+00	3.2E-01	3.2E-02	90%	1.1E-01	--	3.2E-02	--	3.2E-03	--
PR04A	Entrance to Scale House	1	1	1	487	Paved	Industrial	10	6	34.9	--	--	0.63	1.2E+02	1.5E+01	3.7E+00	1.6E-02	2.1E-03	5.0E-04	90%	1.6E-03	--	2.1E-04	--	5.0E-05	--
PR04AZ	Entrance to Scale House, onsite equipment	1	1	1	487	Paved	Industrial	10	6	34.9	--	--	0.63	1.2E+02	1.5E+01	3.7E+00	1.6E-02	2.1E-03	5.0E-04	90%	1.6E-03	--	2.1E-04	--	5.0E-05	--
BR06	Across LF to WF southern section	1	1	1	603	Unpaved	Industrial	10	6	41.1	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	1.4E+00	3.1E-01	3.1E-02	90%	1.4E-01	--	3.1E-02	--	3.1E-03	--
BR06Z	Across LF to WF southern section, onsite equipment	1	1	1	603	Unpaved	Industrial	10	6	41.1	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	1.4E+00	3.1E-01	3.1E-02	90%	1.4E-01	--	3.1E-02	--	3.1E-03	--
BR06Y	Across LF to WF southern section, final cap construction trucks	1	1	1	603	Unpaved	Industrial	10	6	41.1	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	1.4E+00	3.1E-01	3.1E-02	90%	1.4E-01	--	3.1E-02	--	3.1E-03	--
PR08Z	WF to SS/LTF	1	1	1	307	Paved	Industrial	10	6	37.1	--	--	3.53	6.0E+02	7.8E+01	1.9E+01	5.1E-02	6.6E-03	1.6E-03	90%	5.1E-03	--	6.6E-04	--	1.6E-04	--
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	1	307	Paved	Industrial	10	6	37.1	--	--	3.53	6.0E+02	7.8E+01	1.9E+01	5.1E-02	6.6E-03	1.6E-03	90%	5.1E-03	--	6.6E-04	--	1.6E-04	--
UR09AZ	WF to SS, to CDA turn off	1	1	1	211	Unpaved	Industrial	10	6	36.7	--	43.1%	--	1.4E+04	4.1E+03	4.1E+02	8.0E-01	2.4E-01	2.4E-02	90%	8.0E-02	--	2.4E-02	--	2.4E-03	--
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	1	211	Unpaved	Industrial	10	6	36.7	--	43.1%	--	1.4E+04	4.1E+03	4.1E+02	8.0E-01	2.4E-01	2.4E-02	90%	8.0E-02	--	2.4E-02	--	2.4E-03	--
UR09BZ	WF to SS, after CDA turnoff	1	1	1	179	Unpaved	Industrial	10	6	46.5	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	7.6E-01	2.3E-01	2.3E-02	90%	7.6E-02	--	2.3E-02	--	2.3E-03	--
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	1	179	Unpaved	Industrial	10	6	46.5	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	7.6E-01	2.3E-01	2.3E-02	90%	7.6E-02	--	2.3E-02	--	2.3E-03	--
UR11Z	Across SS	1	1	1	242	Unpaved	Industrial	10	6	46.5	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	1.0E+00	3.1E-01	3.1E-02	90%	1.0E-01	--	3.1E-02	--	3.1E-03	--
UR11Y	Across SS, final cap construction trucks	1	1	1	242	Unpaved	Industrial	10	6	46.5	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	1.0E+00	3.1E-01	3.1E-02	90%	1.0E-01	--	3.1E-02	--	3.1E-03	--
UR12	Across LF to WF northern section	1	1	1	575	Unpaved	Industrial	10	6	41.1	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	1.3E+00	3.0E-01	3.0E-02	90%	1.3E-01	--	3.0E-02	--	3.0E-03	--
UR12Z	Across LF to WF northern section, onsite equipment	1	1	1	575	Unpaved	Industrial	10	6	41.1	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	1.3E+00	3.0E-01	3.0E-02	90%	1.3E-01	--	3.0E-02	--	3.0E-03	--
UR12Y	Across LF to WF northern section, final cap construction trucks	1	1	1	575	Unpaved	Industrial	10	6	41.1	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	1.3E+00	3.0E-01	3.0E-02	90%	1.3E-01	--	3.0E-02	--	3.0E-03	--
PR13Z	WF to LTF	1	1	1	165	Paved	Industrial	10	6	44.3	--	--	3.53	7.2E+02	9.3E+01	2.3E+01	3.3E-02	4.3E-03	1.0E-03	90%	3.3E-03	--	4.3E-04	--	1.0E-04	--
PR14Z	WF to LTF	1	1	1	61	Paved	Industrial	10	6	44.3	--	--	3.53	7.2E+02	9.3E+01	2.3E+01	1.2E-02	1.6E-03	3.8E-04	90%	1.2E-03	--	1.6E-04	--	3.8E-05	--
UR17Z	Across CDA	1	1	1	90	Unpaved	Industrial	10	6	36.4	--	43.1%	--	1.4E+04	4.1E+03	4.1E+02	3.4E-01	1.0E-01	1.0E-02	90%	3.4E-02	--	1.0E-02	--	1.0E-03	--
UR18Z	Across WF, onsite equipment	1	1	1	45	Unpaved	Industrial	10	6	36.4	--	44.7%	--	1.4E+04	4.2E+03	4.2E+02	1.7E-01	5.3E-02	5.3E-03	90%	1.7E-02	--	5.3E-03	--	5.3E-04	--
PR04B	Scale House to WF	1	1	1	681	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	2.6E-02	3.4E-03	8.2E-04	90%	2.6E-03	--	3.4E-04	--	8.2E-05	--
PR04BZ	Scale House to WF, onsite equipment	1	1	1	681	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	2.6E-02	3.4E-03	8.2E-04	90%	2.6E-03	--	3.4E-04	--	8.2E-05	--
PR04C	Exit Road from WF	1	1	1	420	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	1.6E-02	2.1E-03	5.1E-04	90%	1.6E-03	--	2.1E-04	--	5.1E-05	--
PR04CZ	Exit Road from WF, onsite equipment	1	1	1	420	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	1.6E-02	2.1E-03	5.1E-04	90%	1.6E-03	--	2.1E-04	--	5.1E-05	--

Constants for Mobile Emission Equations

Roadway Type	Contaminant	k	a	b	c	d	Quality
Paved Roads:	**$PM_{2.5}$**	0.15	-	-	-	-	-
	PM_{10}	0.62	-	-	-	-	-
	TSP	4.79	-	-	-	-	-
Unpaved Roads - Industrial:	**$PM_{2.5}$**	0.15	0.9	0.45	-	-	C
	PM_{10}	1.5	0.9	0.45	-	-	B
	TSP	7.32	0.6	0.45	-	-	B
Unpaved Roads - Public:	**$PM_{2.5}$**	0.18	1	-	0.2	0.5	C
	PM_{10}	1.8	1	-	0.2	0.5	B
	TSP	8.96	1	-	0.49	0.2	B

[1] Route ID numbers provided on site plan.
[2] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.
[3] Paved surfaces include asphalt, concrete, and recycled asphalt (if it forms a relatively consistent surface).
[4] Publicly accessible and dominated by light vehicles, or industrial, and dominated by heavy vehicles.
[5] The average vehicle weight reflects the average of the empty and loaded vehicle weight, for travel in both directions.
[6] Required only for publicly accessible unpaved roads.
[7] Required only for unpaved roads (public and industrial).
[8] Required only for industrial paved roads.

Sample calculation for uncontrolled TSP emission factor for Source PR01: Main Entrance Road

EF = 281.9 x (4.9) x [(0% / 12)]^(0.7) x [(36.6087628865979 tons) / 3]^(0.45) = 102 g TSP / vehicle kilometer travelled (vkt)

Sample calculation for TSP emission rate for Source PR01: Main Entrance Road

$$\frac{1 \text{ vehicles}}{1 \text{ h}} \times \frac{206 \text{ m}}{1000 \text{ m}} \times \frac{1 \text{ km}}{1 \text{ vehicle km}} \times \frac{102 \text{ g}_{TSP}}{3600 \text{ s}} \times \frac{1 \text{ h}}{1 \text{ g}_{TSP}} \times \frac{0.1 \text{ g}_{TSP\ uncontrolled}}{1 \text{ g}_{TSP}} = 5.8E\text{-}04 \text{ g}_{TSP} / \text{s}$$

Comments

Appendix 5A-S3-5.1a: On-Site Mobile Equipment Emissions - Fugitive Dust (MD)

Project #2101750

Twin Creeks Environmental Centre - Preferred Alternative

UNPAVED ROAD SECTIONS - AP-42 Section 13.2.2
PAVED ROAD SECTIONS - AP-42 Section 13.2.1

Paved Roads: $E = k\,(sL)^{0.91}\,(W)^{1.02}$
Unpaved Roads - Industrial: $E = 281.9\,k\,(s / 12)^{a}\,(W / 3)^{b}$
Unpaved Roads - Public: $E = 281.9\,k\,(s / 12)^{a}\,(S / 30)^{d} / (M / 0.5)^{c} - C$

E particulate emission factor (g/VKT)
k particle size multiplier (see below)
sL road surface silt loading (g/m^2)
W average weight of the vehicles traveling the road (US short tons)
s surface material silt content (%)
C emission factor for 1980's vehicle fleet exhaust, brake wear and tire wear
M surface material moisture content (%)
S mean vehicle speed (mph)
a,b,c,d constants (see below)

Route ID [1]	Route Description	Traffic Passes [2]			Segment Length [2]	Road Surface [3]	Roadway Type [4]	Mean Vehicle Speed		Average Vehicle Weight [5]	Surface Material Moisture Content [6]	Surface Silt Content [7]	Road Surface Silt Loading [8]	Base AP-42 Emission Factor			Base Emission Rate			Additional Control Efficiency Applied	Final Controlled Emission Rate					
		Hourly	Daily	Annual										TSP	PM_{10}	$PM_{2.5}$	TSP	PM_{10}	$PM_{2.5}$		TSP	Data Quality Rating	PM_{10}	Data Quality Rating	$PM_{2.5}$	Data Quality Rating
		(#/h)	(#/d)	(#/a)	(m)			(km/h)	(mph)	(tons)	(%)	(%)	(g/m^2)	(g/VKT)	(g/VKT)	(g/VKT)	(g/s)	(g/s)	(g/s)	(%)	(g/s)		(g/s)		(g/s)	
PR01	Main Entrance Road	1	1	1	206	Paved	Industrial	10	6	30.2	--	--	0.63	1.0E+02	1.3E+01	3.2E+00	5.8E-03	7.5E-04	1.8E-04	90%	5.8E-04	--	7.5E-05	--	1.8E-05	--
PR01Z	Main Entrance Road, onsite equipment	1	1	1	206	Paved	Industrial	10	6	30.2	--	--	0.63	1.0E+02	1.3E+01	3.2E+00	5.8E-03	7.5E-04	1.8E-04	90%	5.8E-04	--	7.5E-05	--	1.8E-05	--
UR02Z	Access road to compost diversion area (CDA)	1	1	1	414	Unpaved	Industrial	10	6	15.5	--	43.1%	--	9.3E+03	2.8E+03	2.8E+02	1.1E+00	3.2E-01	3.2E-02	90%	1.1E-01	--	3.2E-02	--	3.2E-03	--
PR04A	Entrance to Scale House	1	1	1	487	Paved	Industrial	10	6	34.9	--	--	0.63	1.2E+02	1.5E+01	3.7E+00	1.6E-02	2.1E-03	5.0E-04	90%	1.6E-03	--	2.1E-04	--	5.0E-05	--
PR04AZ	Entrance to Scale House, onsite equipment	1	1	1	487	Paved	Industrial	10	6	34.9	--	--	0.63	1.2E+02	1.5E+01	3.7E+00	1.6E-02	2.1E-03	5.0E-04	90%	1.6E-03	--	2.1E-04	--	5.0E-05	--
BR06	Across LF to WF southern section	1	1	1	603	Unpaved	Industrial	10	6	41.1	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	1.4E+00	3.1E-01	3.1E-02	90%	1.4E-01	--	3.1E-02	--	3.1E-03	--
BR06Z	Across LF to WF southern section, onsite equipment	1	1	1	603	Unpaved	Industrial	10	6	41.1	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	1.4E+00	3.1E-01	3.1E-02	90%	1.4E-01	--	3.1E-02	--	3.1E-03	--
BR06Y	Across LF to WF southern section, final cap construction trucks	1	1	1	603	Unpaved	Industrial	10	6	41.1	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	1.4E+00	3.1E-01	3.1E-02	90%	1.4E-01	--	3.1E-02	--	3.1E-03	--
PR08Z	WF to SS/LTF	1	1	1	307	Paved	Industrial	10	6	37.1	--	--	3.53	6.0E+02	7.8E+01	1.9E+01	5.1E-02	6.6E-03	1.6E-03	90%	5.1E-03	--	6.6E-04	--	1.6E-04	--
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	1	307	Paved	Industrial	10	6	37.1	--	--	3.53	6.0E+02	7.8E+01	1.9E+01	5.1E-02	6.6E-03	1.6E-03	90%	5.1E-03	--	6.6E-04	--	1.6E-04	--
UR09AZ	WF to SS, to CDA turn off	1	1	1	211	Unpaved	Industrial	10	6	36.7	--	43.1%	--	1.4E+04	4.1E+03	4.1E+02	8.0E-01	2.4E-01	2.4E-02	90%	8.0E-02	--	2.4E-02	--	2.4E-03	--
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	1	211	Unpaved	Industrial	10	6	36.7	--	43.1%	--	1.4E+04	4.1E+03	4.1E+02	8.0E-01	2.4E-01	2.4E-02	90%	8.0E-02	--	2.4E-02	--	2.4E-03	--
UR09BZ	WF to SS, after CDA turnoff	1	1	1	179	Unpaved	Industrial	10	6	46.5	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	7.6E-01	2.3E-01	2.3E-02	90%	7.6E-02	--	2.3E-02	--	2.3E-03	--
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	1	179	Unpaved	Industrial	10	6	46.5	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	7.6E-01	2.3E-01	2.3E-02	90%	7.6E-02	--	2.3E-02	--	2.3E-03	--
UR11Z	Across SS	1	1	1	242	Unpaved	Industrial	10	6	46.5	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	1.0E+00	3.1E-01	3.1E-02	90%	1.0E-01	--	3.1E-02	--	3.1E-03	--
UR11Y	Across SS, final cap construction trucks	1	1	1	242	Unpaved	Industrial	10	6	46.5	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	1.0E+00	3.1E-01	3.1E-02	90%	1.0E-01	--	3.1E-02	--	3.1E-03	--
UR12	Across LF to WF northern section	1	1	1	575	Unpaved	Industrial	10	6	41.1	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	1.3E+00	3.0E-01	3.0E-02	90%	1.3E-01	--	3.0E-02	--	3.0E-03	--
UR12Z	Across LF to WF northern section, onsite equipment	1	1	1	575	Unpaved	Industrial	10	6	41.1	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	1.3E+00	3.0E-01	3.0E-02	90%	1.3E-01	--	3.0E-02	--	3.0E-03	--
UR12Y	Across LF to WF northern section, final cap construction trucks	1	1	1	575	Unpaved	Industrial	10	6	41.1	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	1.3E+00	3.0E-01	3.0E-02	90%	1.3E-01	--	3.0E-02	--	3.0E-03	--
PR13Z	WF to LTF	1	1	1	165	Paved	Industrial	10	6	44.3	--	--	3.53	7.2E+02	9.3E+01	2.3E+01	3.3E-02	4.3E-03	1.0E-03	90%	3.3E-03	--	4.3E-04	--	1.0E-04	--
PR14Z	WF to LTF	1	1	1	61	Paved	Industrial	10	6	44.3	--	--	3.53	7.2E+02	9.3E+01	2.3E+01	1.2E-02	1.6E-03	3.8E-04	90%	1.2E-03	--	1.6E-04	--	3.8E-05	--
UR17Z	Across CDA	1	1	1	90	Unpaved	Industrial	10	6	36.4	--	43.1%	--	1.4E+04	4.1E+03	4.1E+02	3.4E-01	1.0E-01	1.0E-02	90%	3.4E-02	--	1.0E-02	--	1.0E-03	--
UR18Z	Across WF, onsite equipment	1	1	1	45	Unpaved	Industrial	10	6	36.4	--	44.7%	--	1.4E+04	4.2E+03	4.2E+02	1.7E-01	5.3E-02	5.3E-03	90%	1.7E-02	--	5.3E-03	--	5.3E-04	--
PR04B	Scale House to WF	1	1	1	681	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	2.6E-02	3.4E-03	8.2E-04	90%	2.6E-03	--	3.4E-04	--	8.2E-05	--
PR04BZ	Scale House to WF, onsite equipment	1	1	1	681	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	2.6E-02	3.4E-03	8.2E-04	90%	2.6E-03	--	3.4E-04	--	8.2E-05	--
PR04C	Exit Road from WF	1	1	1	420	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	1.6E-02	2.1E-03	5.1E-04	90%	1.6E-03	--	2.1E-04	--	5.1E-05	--
PR04CZ	Exit Road from WF, onsite equipment	1	1	1	420	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	1.6E-02	2.1E-03	5.1E-04	90%	1.6E-03	--	2.1E-04	--	5.1E-05	--

Constants for Mobile Emission Equations

Roadway Type	Contaminant	k	a	b	c	d	Quality
Paved Roads:	**$PM_{2.5}$**	0.15	-	-	-	-	-
	PM_{10}	0.62	-	-	-	-	-
	TSP	4.79	-	-	-	-	-
Unpaved Roads - Industrial:	**$PM_{2.5}$**	0.15	0.9	0.45	-	-	C
	PM_{10}	1.5	0.9	0.45	-	-	B
	TSP	7.32	0.6	0.45	-	-	B
Unpaved Roads - Public:	**$PM_{2.5}$**	0.18	1	-	0.2	0.5	C
	PM_{10}	1.8	1	-	0.2	0.5	B
	TSP	8.96	1	-	0.49	0.2	B

[1] Route ID numbers provided on site plan.
[2] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.
[3] Paved surfaces include asphalt, concrete, and recycled asphalt (if it forms a relatively consistent surface).
[4] Publicly accessible and dominated by light vehicles, or industrial, and dominated by heavy vehicles.
[5] The average vehicle weight reflects the average of the empty and loaded vehicle weight, for travel in both directions.
[6] Required only for publicly accessible unpaved roads.
[7] Required only for unpaved roads (public and industrial).
[8] Required only for industrial paved roads.

Sample calculation for uncontrolled TSP emission factor for Source PR01: Main Entrance Road

EF = 281.9 x (4.9) x [(0% / 12)]^(0.7) x [(36.6087628865979 tons) / 3]^(0.45) = 102 g TSP / vehicle kilometer travelled (vkt)

Sample calculation for TSP emission rate for Source PR01: Main Entrance Road

$$\frac{1 \text{ vehicles}}{1 \text{ h}} \times \frac{206 \text{ m}}{1000 \text{ m}} \times \frac{1 \text{ km}}{1 \text{ vehicle km}} \times \frac{102 \text{ g}_{TSP}}{3600 \text{ s}} \times \frac{1 \text{ h}}{1 \text{ g}_{TSP}} \times \frac{0.1 \text{ g}_{TSP\ uncontrolled}}{1 \text{ g}_{TSP}} = 5.8E\text{-}04 \text{ g}_{TSP} / \text{s}$$

Comments

Appendix 5A-S3-5.1a: On-Site Mobile Equipment Emissions - Fugitive Dust (PM)

Project #2101750

Twin Creeks Environmental Centre - Preferred Alternative

UNPAVED ROAD SECTIONS - AP-42 Section 13.2.2
PAVED ROAD SECTIONS - AP-42 Section 13.2.1

Paved Roads: $E = k\,(sL)^{0.91}\,(W)^{1.02}$
Unpaved Roads - Industrial: $E = 281.9\,k\,(s / 12)^{a}\,(W / 3)^{b}$
Unpaved Roads - Public: $E = 281.9\,k\,(s / 12)^{a}\,(S / 30)^{d} / (M / 0.5)^{c} - C$

E particulate emission factor (g/VKT)
k particle size multiplier (see below)
sL road surface silt loading (g/m^2)
W average weight of the vehicles traveling the road (US short tons)
s surface material silt content (%)
C emission factor for 1980's vehicle fleet exhaust, brake wear and tire wear
M surface material moisture content (%)
S mean vehicle speed (mph)
a,b,c,d constants (see below)

			0.13739	0.00066

Route ID [1]	Route Description	Traffic Passes [2] Hourly (#/h)	Daily (#/d)	Annual (#/a)	Segment Length [2] (m)	Road Surface [3]	Roadway Type [4]	Mean Vehicle Speed (km/h)	(mph)	Average Vehicle Weight [5] (tons)	Surface Material Moisture Content [6] (%)	Surface Silt Content [7] (%)	Road Surface Silt Loading [8] (g/m^2)	Base AP-42 Emission Factor TSP (g/VKT)	PM_{10} (g/VKT)	$PM_{2.5}$ (g/VKT)	Base Emission Rate TSP (g/s)	PM_{10} (g/s)	$PM_{2.5}$ (g/s)	Additional Control Efficiency Applied (%)	Final Controlled Emission Rate TSP (g/s)	Data Quality Rating	PM_{10} (g/s)	Data Quality Rating	$PM_{2.5}$ (g/s)	Data Quality Rating
PR01	Main Entrance Road	1	1	1	206	Paved	Industrial	10	6	30.2	--	--	0.63	1.0E+02	1.3E+01	3.2E+00	5.8E-03	7.5E-04	1.8E-04	90%	5.8E-04	--	7.5E-05	--	1.8E-05	--
PR01Z	Main Entrance Road, onsite equipment	1	1	1	206	Paved	Industrial	10	6	30.2	--	--	0.63	1.0E+02	1.3E+01	3.2E+00	5.8E-03	7.5E-04	1.8E-04	90%	5.8E-04	--	7.5E-05	--	1.8E-05	--
UR02Z	Access road to compost diversion area (CDA)	1	1	1	414	Unpaved	Industrial	10	6	15.5	--	43.1%	--	9.3E+03	2.8E+03	2.8E+02	1.1E+00	3.2E-01	3.2E-02	90%	1.1E-01	--	3.2E-02	--	3.2E-03	--
PR04A	Entrance to Scale House	1	1	1	487	Paved	Industrial	10	6	34.9	--	--	0.63	1.2E+02	1.5E+01	3.7E+00	1.6E-02	2.1E-03	5.0E-04	90%	1.6E-03	--	2.1E-04	--	5.0E-05	--
PR04AZ	Entrance to Scale House, onsite equipment	1	1	1	487	Paved	Industrial	10	6	34.9	--	--	0.63	1.2E+02	1.5E+01	3.7E+00	1.6E-02	2.1E-03	5.0E-04	90%	1.6E-03	--	2.1E-04	--	5.0E-05	--
BR06	Across LF to WF southern section	1	1	1	603	Unpaved	Industrial	10	6	41.1	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	1.4E+00	3.1E-01	3.1E-02	90%	1.4E-01	--	3.1E-02	--	3.1E-03	--
BR06Z	Across LF to WF southern section, onsite equipment	1	1	1	603	Unpaved	Industrial	10	6	41.1	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	1.4E+00	3.1E-01	3.1E-02	90%	1.4E-01	--	3.1E-02	--	3.1E-03	--
BR06Y	Across LF to WF southern section, final cap construction trucks	1	1	1	603	Unpaved	Industrial	10	6	41.1	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	1.4E+00	3.1E-01	3.1E-02	90%	1.4E-01	--	3.1E-02	--	3.1E-03	--
PR08Z	WF to SS/LTF	1	1	1	307	Paved	Industrial	10	6	37.1	--	--	3.53	6.0E+02	7.8E+01	1.9E+01	5.1E-02	6.6E-03	1.6E-03	90%	5.1E-03	--	6.6E-04	--	1.6E-04	--
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	1	307	Paved	Industrial	10	6	37.1	--	--	3.53	6.0E+02	7.8E+01	1.9E+01	5.1E-02	6.6E-03	1.6E-03	90%	5.1E-03	--	6.6E-04	--	1.6E-04	--
UR09AZ	WF to SS, to CDA turn off	1	1	1	211	Unpaved	Industrial	10	6	36.7	--	43.1%	--	1.4E+04	4.1E+03	4.1E+02	8.0E-01	2.4E-01	2.4E-02	90%	8.0E-02	--	2.4E-02	--	2.4E-03	--
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	1	211	Unpaved	Industrial	10	6	36.7	--	43.1%	--	1.4E+04	4.1E+03	4.1E+02	8.0E-01	2.4E-01	2.4E-02	90%	8.0E-02	--	2.4E-02	--	2.4E-03	--
UR09BZ	WF to SS, after CDA turnoff	1	1	1	179	Unpaved	Industrial	10	6	46.5	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	7.6E-01	2.3E-01	2.3E-02	90%	7.6E-02	--	2.3E-02	--	2.3E-03	--
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	1	179	Unpaved	Industrial	10	6	46.5	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	7.6E-01	2.3E-01	2.3E-02	90%	7.6E-02	--	2.3E-02	--	2.3E-03	--
UR11Z	Across SS	1	1	1	242	Unpaved	Industrial	10	6	46.5	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	1.0E+00	3.1E-01	3.1E-02	90%	1.0E-01	--	3.1E-02	--	3.1E-03	--
UR11Y	Across SS, final cap construction trucks	1	1	1	242	Unpaved	Industrial	10	6	46.5	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	1.0E+00	3.1E-01	3.1E-02	90%	1.0E-01	--	3.1E-02	--	3.1E-03	--
UR12	Across LF to WF northern section	1	1	1	575	Unpaved	Industrial	10	6	41.1	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	1.3E+00	3.0E-01	3.0E-02	90%	1.3E-01	--	3.0E-02	--	3.0E-03	--
UR12Z	Across LF to WF northern section, onsite equipment	1	1	1	575	Unpaved	Industrial	10	6	41.1	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	1.3E+00	3.0E-01	3.0E-02	90%	1.3E-01	--	3.0E-02	--	3.0E-03	--
UR12Y	Across LF to WF northern section, final cap construction trucks	1	1	1	575	Unpaved	Industrial	10	6	41.1	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	1.3E+00	3.0E-01	3.0E-02	90%	1.3E-01	--	3.0E-02	--	3.0E-03	--
PR13Z	WF to LTF	1	1	1	165	Paved	Industrial	10	6	44.3	--	--	3.53	7.2E+02	9.3E+01	2.3E+01	3.3E-02	4.3E-03	1.0E-03	90%	3.3E-03	--	4.3E-04	--	1.0E-04	--
PR14Z	WF to LTF	1	1	1	61	Paved	Industrial	10	6	44.3	--	--	3.53	7.2E+02	9.3E+01	2.3E+01	1.2E-02	1.6E-03	3.8E-04	90%	1.2E-03	--	1.6E-04	--	3.8E-05	--
UR17Z	Across CDA	1	1	1	90	Unpaved	Industrial	10	6	36.4	--	43.1%	--	1.4E+04	4.1E+03	4.1E+02	3.4E-01	1.0E-01	1.0E-02	90%	3.4E-02	--	1.0E-02	--	1.0E-03	--
UR18Z	Across WF, onsite equipment	1	1	1	45	Unpaved	Industrial	10	6	36.4	--	44.7%	--	1.4E+04	4.2E+03	4.2E+02	1.7E-01	5.3E-02	5.3E-03	90%	1.7E-02	--	5.3E-03	--	5.3E-04	--
PR04B	Scale House to WF	1	1	1	681	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	2.6E-02	3.4E-03	8.2E-04	90%	2.6E-03	--	3.4E-04	--	8.2E-05	--
PR04BZ	Scale House to WF, onsite equipment	1	1	1	681	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	2.6E-02	3.4E-03	8.2E-04	90%	2.6E-03	--	3.4E-04	--	8.2E-05	--
PR04C	Exit Road from WF	1	1	1	420	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	1.6E-02	2.1E-03	5.1E-04	90%	1.6E-03	--	2.1E-04	--	5.1E-05	--
PR04CZ	Exit Road from WF, onsite equipment	1	1	1	420	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	1.6E-02	2.1E-03	5.1E-04	90%	1.6E-03	--	2.1E-04	--	5.1E-05	--

Constants for Mobile Emission Equations

Roadway Type	Contaminant	k	a	b	c	d	Quality
Paved Roads:	**$PM_{2.5}$**	0.15	-	-	-	-	-
	PM_{10}	0.62	-	-	-	-	-
	TSP	4.79	-	-	-	-	-
Unpaved Roads - Industrial:	**$PM_{2.5}$**	0.15	0.9	0.45	-	-	C
	PM_{10}	1.5	0.9	0.45	-	-	B
	TSP	7.32	0.6	0.45	-	-	B
Unpaved Roads - Public:	**$PM_{2.5}$**	0.18	1	-	0.2	0.5	C
	PM_{10}	1.8	1	-	0.2	0.5	B
	TSP	8.96	1	-	0.49	0.2	B

[1] Route ID numbers provided on site plan.
[2] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.
[3] Paved surfaces include asphalt, concrete, and recycled asphalt (if it forms a relatively consistent surface).
[4] Publicly accessible and dominated by light vehicles, or industrial, and dominated by heavy vehicles.
[5] The average vehicle weight reflects the average of the empty and loaded vehicle weight, for travel in both directions.
[6] Required only for publicly accessible unpaved roads.
[7] Required only for unpaved roads (public and industrial).
[8] Required only for industrial paved roads.

Sample calculation for uncontrolled TSP emission factor for Source PR01: Main Entrance Road

EF = 281.9 x (4.9) x [(0% / 12)]^(0.7) x [(36.6087628865979 tons) / 3]^(0.45) = 102 g TSP / vehicle kilometer travelled (vkt)

Sample calculation for TSP emission rate for Source PR01: Main Entrance Road

$$\frac{1 \text{ vehicles}}{1 \text{ h}} \times \frac{206 \text{ m}}{1000 \text{ m}} \times \frac{1 \text{ km}}{1 \text{ vehicle km}} \times \frac{102 \text{ g}_{TSP}}{3600 \text{ s}} \times \frac{1 \text{ h}}{1 \text{ g}_{TSP}} \times \frac{0.1 \text{ g}_{TSP\ uncontrolled}}{1 \text{ g}_{TSP}} = 5.8E\text{-}04 \text{ g}_{TSP} / \text{s}$$

Comments

Appendix 5A-S3-5.1b: Vehicle Emission Rates - Tailpipe Emissions, AM

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	PM TSP PM (g/vkt)	PM TSP PM (g/h)	PM10 PM10 (g/vkt)	PM10 PM10 (g/h)	PM25 PM25 (g/vkt)	PM25 PM25 (g/h)	71-43-2 Benzene 71-43-2 (g/vkt)	71-43-2 Benzene 71-43-2 (g/h)	7664-41-7 Ammonia 7664-41-7 (g/vkt)	7664-41-7 Ammonia 7664-41-7 (g/h)	NO2 Nitrogen Dioxide NO2 (g/vkt)	NO2 Nitrogen Dioxide NO2 (g/h)	10102-44-0 Nitrogen Oxides 10102-44-0 (g/vkt)	10102-44-0 Nitrogen Oxides 10102-44-0 (g/h)
							Tailpipe Emission Factor [5]													
Mobile Equipment																				
PR01	Main Entrance Road	1	1	206	10	100%	6.14E+00	0.00E+00	6.14E+00	0.00E+00	8.06E-01	0.00E+00	4.19E-04	0.00E+00	4.13E-02	0.00E+00	3.67E+00	0.00E+00	9.23E+00	0.00E+00
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	0.00E+00	5.91E-01	0.00E+00	5.91E-01	0.00E+00	7.78E-02	0.00E+00	2.67E-04	0.00E+00	8.14E-03	0.00E+00	3.77E-01	0.00E+00	9.48E-01
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	0.00E+00	8.77E-01	0.00E+00	8.77E-01	0.00E+00	1.16E-01	0.00E+00	6.37E-04	0.00E+00	1.63E-02	0.00E+00	5.86E-01	0.00E+00	1.47E+00
PR03	Road to CDA	0	0	0	10	100%	6.14E+00	0.00E+00	6.14E+00	0.00E+00	8.06E-01	0.00E+00	4.19E-04	0.00E+00	4.13E-02	0.00E+00	3.67E+00	0.00E+00	9.23E+00	0.00E+00
PR04A	Entrance to Scale House	1	1	487	10	100%	6.14E+00	5.84E-01	6.14E+00	5.84E-01	8.06E-01	7.79E-02	4.19E-04	1.56E-03	4.13E-02	2.27E-02	3.67E+00	5.77E-01	9.23E+00	1.46E+00
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	0.00E+00	1.40E+00	0.00E+00	1.40E+00	0.00E+00	1.84E-01	0.00E+00	6.31E-04	0.00E+00	1.92E-02	0.00E+00	8.91E-01	0.00E+00	2.24E+00
BR06	Across LF to WF southern section	1	1	603	10	100%	6.14E+00	0.00E+00	6.14E+00	0.00E+00	8.06E-01	0.00E+00	4.19E-04	0.00E+00	4.13E-02	0.00E+00	3.67E+00	0.00E+00	9.23E+00	0.00E+00
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	0.00E+00	6.63E-02	0.00E+00	6.63E-02	0.00E+00	5.51E-02	0.00E+00	3.23E-03	0.00E+00	6.45E-02	0.00E+00	1.09E-02	0.00E+00	1.67E+00
BR06Y	Across LF to WF southern section, final cap construction truck	1	1	603	10	100%	0.00E+00	4.42E-02	0.00E+00	4.42E-02	0.00E+00	4.29E-02	0.00E+00	2.56E-03	0.00E+00	5.12E-02	0.00E+00	0.00E+00	0.00E+00	1.31E+00
PR08Z	WF to SS/LTF	1	1	307	10	100%	0.00E+00	5.21E-01	0.00E+00	5.21E-01	0.00E+00	7.86E-02	0.00E+00	9.28E-04	0.00E+00	2.10E-02	0.00E+00	3.24E-01	0.00E+00	1.17E+00
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	0.00E+00	2.25E-02	0.00E+00	2.25E-02	0.00E+00	2.18E-02	0.00E+00	1.30E-03	0.00E+00	2.60E-02	0.00E+00	0.00E+00	0.00E+00	6.66E-01
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	0.00E+00	2.49E-01	0.00E+00	2.49E-01	0.00E+00	4.04E-02	0.00E+00	7.03E-04	0.00E+00	1.50E-02	0.00E+00	1.60E-01	0.00E+00	6.73E-01
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	0.00E+00	1.55E-02	0.00E+00	1.55E-02	0.00E+00	1.50E-02	0.00E+00	8.97E-04	0.00E+00	1.79E-02	0.00E+00	0.00E+00	0.00E+00	4.58E-01
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	0.00E+00	1.66E-02	0.00E+00	1.66E-02	0.00E+00	1.61E-02	0.00E+00	9.63E-04	0.00E+00	1.92E-02	0.00E+00	0.00E+00	0.00E+00	4.92E-01
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	0.00E+00	1.31E-02	0.00E+00	1.31E-02	0.00E+00	1.27E-02	0.00E+00	7.59E-04	0.00E+00	1.52E-02	0.00E+00	0.00E+00	0.00E+00	3.88E-01
UR11Z	Across SS	1	1	242	10	100%	0.00E+00	2.25E-02	0.00E+00	2.25E-02	0.00E+00	2.19E-02	0.00E+00	1.31E-03	0.00E+00	2.61E-02	0.00E+00	0.00E+00	0.00E+00	6.68E-01
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	0.00E+00	1.77E-02	0.00E+00	1.77E-02	0.00E+00	1.72E-02	0.00E+00	1.03E-03	0.00E+00	2.06E-02	0.00E+00	0.00E+00	0.00E+00	5.26E-01
UR12	Across LF to WF northern section	1	1	575	10	100%	6.14E+00	0.00E+00	6.14E+00	0.00E+00	8.06E-01	0.00E+00	4.19E-04	0.00E+00	4.13E-02	0.00E+00	3.67E+00	0.00E+00	9.23E+00	0.00E+00
UR12Z	Across LF to WF northern section, onsite equipment	1	1	575	10	100%	0.00E+00	6.31E-02	0.00E+00	6.31E-02	0.00E+00	5.25E-02	0.00E+00	3.08E-03	0.00E+00	6.14E-02	0.00E+00	1.04E-02	0.00E+00	1.59E+00
UR12Y	Across LF to WF northern section, final cap construction truck	1	1	575	10	100%	0.00E+00	4.21E-02	0.00E+00	4.21E-02	0.00E+00	4.08E-02	0.00E+00	2.44E-03	0.00E+00	4.88E-02	0.00E+00	0.00E+00	0.00E+00	1.25E+00
PR13Z	WF to LTF	1	1	165	10	100%	0.00E+00	1.13E+00	0.00E+00	1.13E+00	0.00E+00	1.49E-01	0.00E+00	0.00E+00	0.00E+00	6.67E-03	0.00E+00	6.66E-01	0.00E+00	1.67E+00
PR14Z	WF to LTF	1	1	61	10	100%	0.00E+00	4.16E-01	0.00E+00	4.16E-01	0.00E+00	5.46E-02	0.00E+00	0.00E+00	0.00E+00	2.45E-03	0.00E+00	2.45E-01	0.00E+00	6.15E-01
PR15	Entrance to CDA	0	0	0	10	100%	6.14E+00	0.00E+00	6.14E+00	0.00E+00	8.06E-01	0.00E+00	4.19E-04	0.00E+00	4.13E-02	0.00E+00	3.67E+00	0.00E+00	9.23E+00	0.00E+00
UR16Z	Access to Tire Shred Storage Area	0	0	193	10	100%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
UR17Z	Across CDA	1	1	90	10	100%	0.00E+00	4.63E-03	0.00E+00	4.63E-03	0.00E+00	4.49E-03	0.00E+00	3.49E-04	0.00E+00	3.83E-03	0.00E+00	0.00E+00	0.00E+00	1.05E-01
UR18	Across WF	0	0	0	10	100%	6.14E+00	0.00E+00	6.14E+00	0.00E+00	8.06E-01	0.00E+00	4.19E-04	0.00E+00	4.13E-02	0.00E+00	3.67E+00	0.00E+00	9.23E+00	0.00E+00
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	0.00E+00	2.51E-03	0.00E+00	2.51E-03	0.00E+00	2.38E-03	0.00E+00	1.79E-04	0.00E+00	2.13E-03	0.00E+00	6.25E-05	0.00E+00	5.79E-02
PR04B	Scale House to WF	1	1	681	10	100%	6.14E+00	8.17E-01	6.14E+00	8.17E-01	8.06E-01	1.09E-01	4.19E-04	2.18E-03	4.13E-02	3.17E-02	3.67E+00	8.07E-01	9.23E+00	2.04E+00
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	0.00E+00	1.95E+00	0.00E+00	1.95E+00	0.00E+00	2.57E-01	0.00E+00	8.83E-04	0.00E+00	2.69E-02	0.00E+00	1.25E+00	0.00E+00	3.14E+00
PR04C	Exit Road from WF	1	1	420	10	100%	6.14E+00	5.04E-01	6.14E+00	5.04E-01	8.06E-01	6.73E-02	4.19E-04	1.34E-03	4.13E-02	1.96E-02	3.67E+00	4.98E-01	9.23E+00	1.26E+00
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	0.00E+00	1.21E+00	0.00E+00	1.21E+00	0.00E+00	1.59E-01	0.00E+00	5.45E-04	0.00E+00	1.66E-02	0.00E+00	7.70E-01	0.00E+00	1.94E+00
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	--	--	--	--	--	--	--	--	--	--	--	--	--	--
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	--	--	--	--	--	--	--	--	--	--	--	--	--	--
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	0.00E+00	2.88E+00	0.00E+00	2.88E+00	0.00E+00	2.79E+00	0.00E+00	1.78E-01	0.00E+00	2.80E+00	0.00E+00	0.00E+00	0.00E+00	7.57E+01
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	0.00E+00	7.75E-01	0.00E+00	7.75E-01	0.00E+00	7.51E-01	0.00E+00	4.94E-02	0.00E+00	8.13E-01	0.00E+00	0.00E+00	0.00E+00	2.12E+01
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	0.00E+00	5.16E-01	0.00E+00	5.16E-01	0.00E+00	5.00E-01	0.00E+00	3.89E-02	0.00E+00	4.27E-01	0.00E+00	0.00E+00	0.00E+00	1.17E+01
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	0.00E+00	1.03E+00	0.00E+00	1.03E+00	0.00E+00	1.00E+00	0.00E+00	6.00E-02	0.00E+00	1.20E+00	0.00E+00	0.00E+00	0.00E+00	3.06E+01

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes). For idling, this is the number of trucks idling per hour.

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Emissions are input on either a vehicle distance or operation time basis.

[5] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S3-5.1b: Vehicle Emission Rates - Tailpipe Emissions, AM

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	7446-09-5 Sulphur Dioxide 7446-09-5 (g/vkt)	7446-09-5 Sulphur Dioxide 7446-09-5 (g/h)	124-38-9 Carbon Dioxide 124-38-9 (g/vkt)	124-38-9 Carbon Dioxide 124-38-9 (g/h)	74-82-8 Methane 74-82-8 (g/vkt)	74-82-8 Methane 74-82-8 (g/h)	10024-97-2 Nitrous Oxide 10024-97-2 (g/vkt)	10024-97-2 Nitrous Oxide 10024-97-2 (g/h)	Source ID	TSP PM (g/s)
Mobile Equipment															**Mobile Equipment**	
PR01	Main Entrance Road	1	1	206	10	100%	5.73E-03	0.00E+00	1.68E+03	0.00E+00	4.78E-02	0.00E+00	9.79E-03	0.00E+00	PR01	3.51E-04
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	0.00E+00	9.61E-04	0.00E+00	2.39E+02	0.00E+00	6.68E-03	0.00E+00	1.69E-03	PR01Z	1.64E-04
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	0.00E+00	1.84E-03	0.00E+00	4.34E+02	0.00E+00	1.21E-02	0.00E+00	3.28E-03	UR02Z	2.44E-04
PR03	Road to CDA	0	0	0	10	100%	5.73E-03	0.00E+00	1.68E+03	0.00E+00	4.78E-02	0.00E+00	9.79E-03	0.00E+00	PR03	0.00E+00
PR04A	Entrance to Scale House	1	1	487	10	100%	5.73E-03	2.41E-03	1.68E+03	5.72E+02	4.78E-02	1.85E-02	9.79E-03	4.90E-03	PR04A	8.29E-04
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	0.00E+00	2.27E-03	0.00E+00	5.64E+02	0.00E+00	1.58E-02	0.00E+00	4.00E-03	PR04AZ	3.88E-04
BR06	Across LF to WF southern section	1	1	603	10	100%	5.73E-03	0.00E+00	1.68E+03	0.00E+00	4.78E-02	0.00E+00	9.79E-03	0.00E+00	BR06	1.03E-03
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	0.00E+00	2.08E-02	0.00E+00	7.91E+03	0.00E+00	5.66E-03	0.00E+00	9.24E-05	BR06Z	1.84E-05
BR06Y	Across LF to WF southern section, final cap construction truck	1	1	603	10	100%	0.00E+00	1.66E-02	0.00E+00	6.32E+03	0.00E+00	4.25E-03	0.00E+00	0.00E+00	BR06Y	1.23E-05
PR08Z	WF to SS/LTF	1	1	307	10	100%	0.00E+00	5.36E-03	0.00E+00	1.93E+03	0.00E+00	6.91E-03	0.00E+00	1.46E-03	PR08Z	1.45E-04
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	0.00E+00	8.45E-03	0.00E+00	3.21E+03	0.00E+00	2.16E-03	0.00E+00	0.00E+00	PR08Y	6.24E-06
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	0.00E+00	3.94E-03	0.00E+00	1.42E+03	0.00E+00	4.19E-03	0.00E+00	8.96E-04	UR09AZ	6.91E-05
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	0.00E+00	5.82E-03	0.00E+00	2.21E+03	0.00E+00	1.49E-03	0.00E+00	0.00E+00	UR09AY	4.29E-06
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	0.00E+00	6.25E-03	0.00E+00	2.37E+03	0.00E+00	1.60E-03	0.00E+00	0.00E+00	UR09BZ	4.61E-06
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	0.00E+00	4.92E-03	0.00E+00	1.87E+03	0.00E+00	1.26E-03	0.00E+00	0.00E+00	UR09BY	3.63E-06
UR11Z	Across SS	1	1	242	10	100%	0.00E+00	8.48E-03	0.00E+00	3.22E+03	0.00E+00	2.17E-03	0.00E+00	0.00E+00	UR11Z	6.26E-06
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	0.00E+00	6.68E-03	0.00E+00	2.54E+03	0.00E+00	1.71E-03	0.00E+00	0.00E+00	UR11Y	4.93E-06
UR12	Across LF to WF northern section	1	1	575	10	100%	5.73E-03	0.00E+00	1.68E+03	0.00E+00	4.78E-02	0.00E+00	9.79E-03	0.00E+00	UR12	9.79E-04
UR12Z	Across LF to WF northern section, onsite equipment	1	1	575	10	100%	0.00E+00	1.99E-02	0.00E+00	7.53E+03	0.00E+00	5.39E-03	0.00E+00	8.80E-05	UR12Z	1.75E-05
UR12Y	Across LF to WF northern section, final cap construction truck	1	1	575	10	100%	0.00E+00	1.58E-02	0.00E+00	6.02E+03	0.00E+00	4.05E-03	0.00E+00	0.00E+00	UR12Y	1.17E-05
PR13Z	WF to LTF	1	1	165	10	100%	0.00E+00	9.62E-04	0.00E+00	2.88E+02	0.00E+00	8.11E-03	0.00E+00	1.60E-03	PR13Z	3.14E-04
PR14Z	WF to LTF	1	1	61	10	100%	0.00E+00	3.54E-04	0.00E+00	1.06E+02	0.00E+00	2.98E-03	0.00E+00	5.90E-04	PR14Z	1.16E-04
PR15	Entrance to CDA	0	0	0	10	100%	5.73E-03	0.00E+00	1.68E+03	0.00E+00	4.78E-02	0.00E+00	9.79E-03	0.00E+00	PR15	0.00E+00
UR16Z	Access to Tire Shred Storage Area	0	0	193	10	100%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	UR16Z	0.00E+00
UR17Z	Across CDA	1	1	90	10	100%	0.00E+00	1.25E-03	0.00E+00	4.72E+02	0.00E+00	5.65E-04	0.00E+00	0.00E+00	UR17Z	1.28E-06
UR18	Across WF	0	0	0	10	100%	5.73E-03	0.00E+00	1.68E+03	0.00E+00	4.78E-02	0.00E+00	9.79E-03	0.00E+00	UR18	0.00E+00
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	0.00E+00	6.93E-04	0.00E+00	2.62E+02	0.00E+00	2.92E-04	0.00E+00	5.31E-07	UR18Z	6.96E-07
PR04B	Scale House to WF	1	1	681	10	100%	5.73E-03	3.37E-03	1.68E+03	8.00E+02	4.78E-02	2.58E-02	9.79E-03	6.86E-03	PR04B	1.16E-03
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	0.00E+00	3.18E-03	0.00E+00	7.89E+02	0.00E+00	2.21E-02	0.00E+00	5.59E-03	PR04BZ	5.43E-04
PR04C	Exit Road from WF	1	1	420	10	100%	5.73E-03	2.08E-03	1.68E+03	4.94E+02	4.78E-02	1.59E-02	9.79E-03	4.24E-03	PR04C	7.16E-04
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	0.00E+00	1.96E-03	0.00E+00	4.87E+02	0.00E+00	1.36E-02	0.00E+00	3.45E-03	PR04CZ	3.35E-04
															0	
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	--	--	--	--	--	--	--	--	IDLE01	6.01E-05
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	--	--	--	--	--	--	--	--	IDLE02	6.01E-05
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	0.00E+00	9.10E-01	0.00E+00	3.45E+05	0.00E+00	2.93E-01	0.00E+00	0.00E+00	DOZE2	8.00E-04
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	0.00E+00	2.64E-01	0.00E+00	1.00E+05	0.00E+00	8.12E-02	0.00E+00	0.00E+00	DOZE4	2.15E-04
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	0.00E+00	1.39E-01	0.00E+00	5.26E+04	0.00E+00	6.30E-02	0.00E+00	0.00E+00	DOZE2CAP	1.43E-04
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	0.00E+00	3.89E-01	0.00E+00	1.48E+05	0.00E+00	9.95E-02	0.00E+00	0.00E+00	DOZE2SS	2.87E-04

[1] ID should reflect Source ID or Route ID, as appropriate.

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[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Emissions are input on either a vehicle distance or operation time basis.

[5] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S3-5.1b: Vehicle Emission Rates - Tailpipe Emissions, AM

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Tailpipe Emission Rate PM10 PM10 (g/s)	PM2.5 PM25 (g/s)	Benzene 71-43-2 (g/s)	Ammonia 7664-41-7 (g/s)	Nitrogen Dioxide NO2 (g/s)	Nitrogen Oxides 10102-44-0 (g/s)
Mobile Equipment												
PR01	Main Entrance Road	1	1	206	10	100%	3.51E-04	4.61E-05	2.40E-08	2.36E-06	2.10E-04	5.28E-04
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	1.64E-04	2.16E-05	7.42E-08	2.26E-06	1.05E-04	2.63E-04
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	2.44E-04	3.21E-05	1.77E-07	4.52E-06	1.63E-04	4.10E-04
PR03	Road to CDA	0	0	0	10	100%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PR04A	Entrance to Scale House	1	1	487	10	100%	8.29E-04	1.09E-04	5.67E-08	5.59E-06	4.96E-04	1.25E-03
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	3.88E-04	5.11E-05	1.75E-07	5.35E-06	2.48E-04	6.23E-04
BR06	Across LF to WF southern section	1	1	603	10	100%	1.03E-03	1.35E-04	7.03E-08	6.92E-06	6.15E-04	1.55E-03
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	1.84E-05	1.53E-05	8.98E-07	1.79E-05	3.02E-06	4.63E-04
BR06Y	Across LF to WF southern section, final cap construction truck	1	1	603	10	100%	1.23E-05	1.19E-05	7.12E-07	1.42E-05	0.00E+00	3.64E-04
PR08Z	WF to SS/LTF	1	1	307	10	100%	1.45E-04	2.18E-05	2.58E-07	5.82E-06	9.01E-05	3.26E-04
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	6.24E-06	6.05E-06	3.62E-07	7.23E-06	0.00E+00	1.85E-04
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	6.91E-05	1.12E-05	1.95E-07	4.17E-06	4.44E-05	1.87E-04
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	4.29E-06	4.17E-06	2.49E-07	4.98E-06	0.00E+00	1.27E-04
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	4.61E-06	4.47E-06	2.68E-07	5.35E-06	0.00E+00	1.37E-04
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	3.63E-06	3.52E-06	2.11E-07	4.21E-06	0.00E+00	1.08E-04
UR11Z	Across SS	1	1	242	10	100%	6.26E-06	6.07E-06	3.63E-07	7.25E-06	0.00E+00	1.86E-04
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	4.93E-06	4.78E-06	2.86E-07	5.71E-06	0.00E+00	1.46E-04
UR12	Across LF to WF northern section	1	1	575	10	100%	9.79E-04	1.29E-04	6.69E-08	6.60E-06	5.86E-04	1.47E-03
UR12Z	Across LF to WF northern section, onsite equipment	1	1	575	10	100%	1.75E-05	1.46E-05	8.56E-07	1.71E-05	2.88E-06	4.41E-04
UR12Y	Across LF to WF northern section, final cap construction truck	1	1	575	10	100%	1.17E-05	1.13E-05	6.78E-07	1.36E-05	0.00E+00	3.47E-04
PR13Z	WF to LTF	1	1	165	10	100%	3.14E-04	4.13E-05	0.00E+00	1.85E-06	1.85E-04	4.65E-04
PR14Z	WF to LTF	1	1	61	10	100%	1.16E-04	1.52E-05	0.00E+00	6.81E-07	6.80E-05	1.71E-04
PR15	Entrance to CDA	0	0	0	10	100%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
UR16Z	Access to Tire Shred Storage Area	0	0	193	10	100%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
UR17Z	Across CDA	1	1	90	10	100%	1.28E-06	1.25E-06	9.69E-08	1.06E-06	0.00E+00	2.92E-05
UR18	Across WF	0	0	0	10	100%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	6.96E-07	6.61E-07	4.97E-08	5.92E-07	1.73E-08	1.61E-05
PR04B	Scale House to WF	1	1	681	10	100%	1.16E-03	1.52E-04	7.93E-08	7.81E-06	6.94E-04	1.74E-03
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	5.43E-04	7.15E-05	2.45E-07	7.48E-06	3.46E-04	8.71E-04
PR04C	Exit Road from WF	1	1	420	10	100%	7.16E-04	9.40E-05	4.90E-08	4.82E-06	4.29E-04	1.08E-03
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	3.35E-04	4.41E-05	1.51E-07	4.62E-06	2.14E-04	5.38E-04
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	6.01E-05	5.52E-05	3.15E-07	1.07E-04	5.46E-03	1.37E-02
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	6.01E-05	5.52E-05	3.15E-07	1.07E-04	5.46E-03	1.37E-02
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	8.00E-04	7.76E-04	4.95E-05	7.78E-04	0.00E+00	2.10E-02
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	2.15E-04	2.09E-04	1.37E-05	2.26E-04	0.00E+00	5.88E-03
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	1.43E-04	1.39E-04	1.08E-05	1.19E-04	0.00E+00	3.25E-03
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	2.87E-04	2.78E-04	1.67E-05	3.33E-04	0.00E+00	8.51E-03

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes). For idling, this is the number of trucks idling per hour.

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Emissions are input on either a vehicle distance or operation time basis.

[5] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S3-5.1b: Vehicle Emission Rates - Tailpipe Emissions, AM

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Sulphur Dioxide 7446-09-5 (g/s)	Carbon Dioxide 124-38-9 (g/s)	Methane 74-82-8 (g/s)	Nitrous Oxide 10024-97-2 (g/s)	Tailpipe + Fugitive Emission Rate [6] TSP PM (g/s)	PM10 PM10 (g/s)	PM2.5 PM2.5 (g/s)	Ratio Tail TSP PM (g/s)
Mobile Equipment														
PR01	Main Entrance Road	1	1	206	10	100%	3.27E-07	9.59E-02	2.73E-06	5.60E-07	9.32E-04	4.26E-04	6.43E-05	3.76E-01
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	2.67E-07	6.63E-02	1.86E-06	4.70E-07	7.45E-04	2.39E-04	3.98E-05	2.20E-01
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	5.11E-07	1.20E-01	3.37E-06	9.11E-07	1.07E-01	3.24E-02	3.25E-03	2.27E-03
PR03	Road to CDA	0	0	0	10	100%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	n/a
PR04A	Entrance to Scale House	1	1	487	10	100%	7.74E-07	2.27E-01	6.46E-06	1.32E-06	2.42E-03	1.04E-03	1.59E-04	3.43E-01
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	6.31E-07	1.57E-01	4.39E-06	1.11E-06	1.98E-03	5.94E-04	1.01E-04	1.96E-01
BR06	Across LF to WF southern section	1	1	603	10	100%	9.59E-07	2.81E-01	8.01E-06	1.64E-06	1.38E-01	3.22E-02	3.25E-03	7.43E-03
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	5.79E-06	2.20E+00	1.57E-06	2.57E-08	1.37E-01	3.12E-02	3.13E-03	1.34E-04
BR06Y	Across LF to WF southern section, final cap construction truck	1	1	603	10	100%	4.62E-06	1.75E+00	1.18E-06	0.00E+00	1.37E-01	3.12E-02	3.13E-03	8.93E-05
PR08Z	WF to SS/LTF	1	1	307	10	100%	1.49E-06	5.35E-01	1.92E-06	4.04E-07	5.27E-03	8.08E-04	1.82E-04	2.74E-02
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	2.35E-06	8.92E-01	6.00E-07	0.00E+00	5.13E-03	6.70E-04	1.67E-04	1.22E-03
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	1.09E-06	3.95E-01	1.16E-06	2.49E-07	8.04E-02	2.42E-02	2.43E-03	8.58E-04
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	1.62E-06	6.14E-01	4.13E-07	0.00E+00	8.04E-02	2.42E-02	2.42E-03	5.34E-05
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	1.74E-06	6.59E-01	4.44E-07	0.00E+00	7.57E-02	2.28E-02	2.28E-03	6.09E-05
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	1.37E-06	5.19E-01	3.50E-07	0.00E+00	7.57E-02	2.28E-02	2.28E-03	4.80E-05
UR11Z	Across SS	1	1	242	10	100%	2.36E-06	8.95E-01	6.02E-07	0.00E+00	1.03E-01	3.09E-02	3.10E-03	6.09E-05
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	1.86E-06	7.05E-01	4.74E-07	0.00E+00	1.03E-01	3.09E-02	3.09E-03	4.80E-05
UR12	Across LF to WF northern section	1	1	575	10	100%	9.14E-07	2.68E-01	7.63E-06	1.56E-06	1.32E-01	3.07E-02	3.10E-03	7.43E-03
UR12Z	Across LF to WF northern section, onsite equipment	1	1	575	10	100%	5.52E-06	2.09E+00	1.50E-06	2.44E-08	1.31E-01	2.97E-02	2.98E-03	1.34E-04
UR12Y	Across LF to WF northern section, final cap construction truck	1	1	575	10	100%	4.40E-06	1.67E+00	1.13E-06	0.00E+00	1.31E-01	2.97E-02	2.98E-03	8.93E-05
PR13Z	WF to LTF	1	1	165	10	100%	2.67E-07	8.01E-02	2.25E-06	4.45E-07	3.61E-03	7.41E-04	1.45E-04	8.70E-02
PR14Z	WF to LTF	1	1	61	10	100%	9.82E-08	2.95E-02	8.29E-07	1.64E-07	1.33E-03	2.73E-04	5.32E-05	8.70E-02
PR15	Entrance to CDA	0	0	0	10	100%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	n/a
UR16Z	Access to Tire Shred Storage Area	0	0	193	10	100%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	n/a
UR17Z	Across CDA	1	1	90	10	100%	3.46E-07	1.31E-01	1.57E-07	0.00E+00	3.41E-02	1.02E-02	1.03E-03	3.77E-05
UR18	Across WF	0	0	0	10	100%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	n/a
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	1.92E-07	7.29E-02	8.12E-08	1.47E-10	1.73E-02	5.28E-03	5.28E-04	4.01E-05
PR04B	Scale House to WF	1	1	681	10	100%	1.08E-06	3.17E-01	9.04E-06	1.85E-06	3.78E-03	1.50E-03	2.34E-04	3.07E-01
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	8.83E-07	2.19E-01	6.14E-06	1.55E-06	3.16E-03	8.82E-04	1.53E-04	1.72E-01
PR04C	Exit Road from WF	1	1	420	10	100%	6.69E-07	1.96E-01	5.58E-06	1.14E-06	2.33E-03	9.25E-04	1.45E-04	3.07E-01
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	5.45E-07	1.35E-01	3.79E-06	9.59E-07	1.95E-03	5.44E-04	9.47E-05	1.72E-01
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	6.01E-06	1.75E+00	8.44E-05	2.70E-05	6.01E-05	6.01E-05	5.52E-05	n/a
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	6.01E-06	1.75E+00	8.44E-05	2.70E-05	6.01E-05	6.01E-05	5.52E-05	n/a
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	2.53E-04	9.59E+01	8.15E-05	0.00E+00	8.00E-04	8.00E-04	7.76E-04	1.00E+00
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	7.33E-05	2.78E+01	2.26E-05	0.00E+00	2.15E-04	2.15E-04	2.09E-04	1.00E+00
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	3.86E-05	1.46E+01	1.75E-05	0.00E+00	1.43E-04	1.43E-04	1.39E-04	1.00E+00
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	1.08E-04	4.10E+01	2.76E-05	0.00E+00	2.87E-04	2.87E-04	2.78E-04	1.00E+00

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes). For idling, this is the number of trucks idling per hour.

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Emissions are input on either a vehicle distance or operation time basis.

[5] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S3-5.1b: Vehicle Emission Rates - Tailpipe Emissions, AM

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	ipe : Total Emission Rate PM10 PM10 (g/s)	PM2.5 PM2.5 (g/s)	Source ID	# of Volume Sources g/hr	# of Volume Sources g/vkt	TSP PM	PM10 PM10	PM2.5 PM25
Mobile Equipment									**Mobile Equipment**					
PR01	Main Entrance Road	1	1	206	10	100%	8.23E-01	7.17E-01	PR01	11	11	8.47E-05	3.87E-05	5.84E-06
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	6.86E-01	5.43E-01	PR01Z	11	11	6.78E-05	2.18E-05	3.62E-06
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	7.51E-03	9.88E-03	UR02Z	48	48	2.24E-03	6.76E-04	6.78E-05
PR03	Road to CDA	0	0	0	10	100%	n/a	n/a	PR03	26	26	0.00E+00	0.00E+00	0.00E+00
PR04A	Entrance to Scale House	1	1	487	10	100%	8.01E-01	6.86E-01	PR04A	57	57	4.25E-05	1.82E-05	2.78E-06
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	6.53E-01	5.06E-01	PR04AZ	57	57	3.47E-05	1.04E-05	1.77E-06
BR06	Across LF to WF southern section	1	1	603	10	100%	3.19E-02	4.15E-02	BR06	70	70	1.98E-03	4.60E-04	4.64E-05
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	5.90E-04	4.89E-03	BR06Z	70	70	1.96E-03	4.45E-04	4.47E-05
BR06Y	Across LF to WF southern section, final cap construction truck	1	1	603	10	100%	3.94E-04	3.81E-03	BR06Y	70	70	1.96E-03	4.45E-04	4.47E-05
PR08Z	WF to SS/LTF	1	1	307	10	100%	1.79E-01	1.20E-01	PR08Z	36	36	1.46E-04	2.24E-05	5.06E-06
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	9.32E-03	3.63E-02	PR08Y	36	36	1.43E-04	1.86E-05	4.63E-06
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	2.85E-03	4.63E-03	UR09AZ	25	25	3.22E-03	9.70E-04	9.72E-05
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	1.78E-04	1.72E-03	UR09AY	25	25	3.22E-03	9.67E-04	9.69E-05
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	2.03E-04	1.96E-03	UR09BZ	21	21	3.61E-03	1.08E-03	1.09E-04
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	1.60E-04	1.55E-03	UR09BY	21	21	3.61E-03	1.08E-03	1.09E-04
UR11Z	Across SS	1	1	242	10	100%	2.03E-04	1.96E-03	UR11Z	28	28	3.67E-03	1.10E-03	1.11E-04
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	1.60E-04	1.55E-03	UR11Y	28	28	3.67E-03	1.10E-03	1.11E-04
UR12	Across LF to WF northern section	1	1	575	10	100%	3.19E-02	4.15E-02	UR12	67	67	1.97E-03	4.58E-04	4.62E-05
UR12Z	Across LF to WF northern section, onsite equipment	1	1	575	10	100%	5.90E-04	4.89E-03	UR12Z	67	67	1.95E-03	4.43E-04	4.45E-05
UR12Y	Across LF to WF northern section, final cap construction truck	1	1	575	10	100%	3.94E-04	3.81E-03	UR12Y	67	67	1.95E-03	4.43E-04	4.45E-05
PR13Z	WF to LTF	1	1	165	10	100%	4.24E-01	2.85E-01	PR13Z	19	19	1.90E-04	3.90E-05	7.61E-06
PR14Z	WF to LTF	1	1	61	10	100%	4.24E-01	2.85E-01	PR14Z	7	7	1.90E-04	3.90E-05	7.60E-06
PR15	Entrance to CDA	0	0	0	10	100%	n/a	n/a	PR15	10	10	0.00E+00	0.00E+00	0.00E+00
UR16Z	Access to Tire Shred Storage Area	0	0	193	10	100%	n/a	n/a	UR16Z	22	22	0.00E+00	0.00E+00	0.00E+00
UR17Z	Across CDA	1	1	90	10	100%	1.25E-04	1.22E-03	UR17Z	10	10	3.41E-03	1.02E-03	1.03E-04
UR18	Across WF	0	0	0	10	100%	n/a	n/a	UR18	5	5	0.00E+00	0.00E+00	0.00E+00
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	1.32E-04	1.25E-03	UR18Z	5	5	3.47E-03	1.06E-03	1.06E-04
PR04B	Scale House to WF	1	1	681	10	100%	7.74E-01	6.50E-01	PR04B	79	79	4.78E-05	1.90E-05	2.97E-06
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	6.16E-01	4.66E-01	PR04BZ	79	79	4.00E-05	1.12E-05	1.94E-06
PR04C	Exit Road from WF	1	1	420	10	100%	7.74E-01	6.50E-01	PR04C	49	49	4.76E-05	1.89E-05	2.95E-06
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	6.16E-01	4.66E-01	PR04CZ	49	49	3.98E-05	1.11E-05	1.93E-06
									0					
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	n/a	n/a	IDLE01	1	1	1.20E-04	1.20E-04	1.10E-04
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	n/a	n/a	IDLE02	1	1	1.20E-04	1.20E-04	1.10E-04
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	1.00E+00	1.00E+00	DOZE2	1	1	8.00E-04	8.00E-04	7.76E-04
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	1.00E+00	1.00E+00	DOZE4	1	1	2.15E-04	2.15E-04	2.09E-04
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	1.00E+00	1.00E+00	DOZE2CAP	1	1	1.43E-04	1.43E-04	1.39E-04
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	1.00E+00	1.00E+00	DOZE2SS	1	1	2.87E-04	2.87E-04	2.78E-04

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes). For idling, this is the number of trucks idling per hour.

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Emissions are input on either a vehicle distance or operation time basis.

[5] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S3-5.1b: Vehicle Emission Rates - Tailpipe Emissions, AM

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Emission rate per volume source (g/s) Benzene 71-43-2	Ammonia 7664-41-7	Nitrogen Dioxide NO2	Nitrogen Oxides 10102-44-0	Sulphur Dioxide 7446-09-5	Carbon Dioxide 124-38-9	Methane 74-82-8	Nitrous Oxide 10024-97-2
Mobile Equipment														
PR01	Main Entrance Road	1	1	206	10	100%	2.18E-09	2.15E-07	1.91E-05	4.80E-05	2.98E-08	8.72E-03	2.48E-07	5.09E-08
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	6.74E-09	2.06E-07	9.52E-06	2.39E-05	2.43E-08	6.03E-03	1.69E-07	4.27E-08
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	3.69E-09	9.43E-08	3.39E-06	8.53E-06	1.07E-08	2.51E-03	7.01E-08	1.90E-08
PR03	Road to CDA	0	0	0	10	100%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PR04A	Entrance to Scale House	1	1	487	10	100%	9.94E-10	9.80E-08	8.71E-06	2.19E-05	1.36E-08	3.98E-03	1.13E-07	2.32E-08
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	3.08E-09	9.38E-08	4.34E-06	1.09E-05	1.11E-08	2.75E-03	7.70E-08	1.95E-08
BR06	Across LF to WF southern section	1	1	603	10	100%	1.00E-09	9.89E-08	8.79E-06	2.21E-05	1.37E-08	4.01E-03	1.14E-07	2.34E-08
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	1.28E-08	2.56E-07	4.31E-08	6.61E-06	8.27E-08	3.14E-02	2.25E-08	3.67E-10
BR06Y	Across LF to WF southern section, final cap construction truck	1	1	603	10	100%	1.02E-08	2.03E-07	0.00E+00	5.20E-06	6.60E-08	2.51E-02	1.69E-08	0.00E+00
PR08Z	WF to SS/LTF	1	1	307	10	100%	7.16E-09	1.62E-07	2.50E-06	9.05E-06	4.13E-08	1.49E-02	5.33E-08	1.12E-08
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	1.01E-08	2.01E-07	0.00E+00	5.14E-06	6.52E-08	2.48E-02	1.67E-08	0.00E+00
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	7.81E-09	1.67E-07	1.78E-06	7.48E-06	4.37E-08	1.58E-02	4.65E-08	9.96E-09
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	9.97E-09	1.99E-07	0.00E+00	5.09E-06	6.47E-08	2.46E-02	1.65E-08	0.00E+00
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	1.27E-08	2.55E-07	0.00E+00	6.51E-06	8.27E-08	3.14E-02	2.11E-08	0.00E+00
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	1.00E-08	2.01E-07	0.00E+00	5.13E-06	6.51E-08	2.47E-02	1.66E-08	0.00E+00
UR11Z	Across SS	1	1	242	10	100%	1.30E-08	2.59E-07	0.00E+00	6.63E-06	8.41E-08	3.20E-02	2.15E-08	0.00E+00
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	1.02E-08	2.04E-07	0.00E+00	5.22E-06	6.63E-08	2.52E-02	1.69E-08	0.00E+00
UR12	Across LF to WF northern section	1	1	575	10	100%	9.99E-10	9.85E-08	8.75E-06	2.20E-05	1.36E-08	3.99E-03	1.14E-07	2.33E-08
UR12Z	Across LF to WF northern section, onsite equipment	1	1	575	10	100%	1.28E-08	2.55E-07	4.29E-08	6.58E-06	8.23E-08	3.12E-02	2.24E-08	3.65E-10
UR12Y	Across LF to WF northern section, final cap construction truck	1	1	575	10	100%	1.01E-08	2.02E-07	0.00E+00	5.17E-06	6.57E-08	2.50E-02	1.68E-08	0.00E+00
PR13Z	WF to LTF	1	1	165	10	100%	0.00E+00	9.75E-08	9.74E-06	2.45E-05	1.41E-08	4.22E-03	1.19E-07	2.34E-08
PR14Z	WF to LTF	1	1	61	10	100%	0.00E+00	9.73E-08	9.72E-06	2.44E-05	1.40E-08	4.21E-03	1.18E-07	2.34E-08
PR15	Entrance to CDA	0	0	0	10	100%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
UR16Z	Access to Tire Shred Storage Area	0	0	193	10	100%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
UR17Z	Across CDA	1	1	90	10	100%	9.69E-09	1.06E-07	0.00E+00	2.92E-06	3.46E-08	1.31E-02	1.57E-08	0.00E+00
UR18	Across WF	0	0	0	10	100%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	9.94E-09	1.18E-07	3.47E-09	3.22E-06	3.85E-08	1.46E-02	1.62E-08	2.95E-11
PR04B	Scale House to WF	1	1	681	10	100%	1.00E-09	9.89E-08	8.79E-06	2.21E-05	1.37E-08	4.01E-03	1.14E-07	2.34E-08
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	3.10E-09	9.47E-08	4.38E-06	1.10E-05	1.12E-08	2.77E-03	7.77E-08	1.97E-08
PR04C	Exit Road from WF	1	1	420	10	100%	9.99E-10	9.85E-08	8.75E-06	2.20E-05	1.36E-08	4.00E-03	1.14E-07	2.33E-08
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	3.09E-09	9.42E-08	4.36E-06	1.10E-05	1.11E-08	2.76E-03	7.73E-08	1.96E-08
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	6.30E-07	2.13E-04	1.09E-02	2.74E-02	1.20E-05	3.50E+00	1.69E-04	5.41E-05
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	6.30E-07	2.13E-04	1.09E-02	2.74E-02	1.20E-05	3.50E+00	1.69E-04	5.41E-05
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	4.95E-05	7.78E-04	0.00E+00	2.10E-02	2.53E-04	9.59E+01	8.15E-05	0.00E+00
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	1.37E-05	2.26E-04	0.00E+00	5.88E-03	7.33E-05	2.78E+01	2.26E-05	0.00E+00
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	1.08E-05	1.19E-04	0.00E+00	3.25E-03	3.86E-05	1.46E+01	1.75E-05	0.00E+00
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	1.67E-05	3.33E-04	0.00E+00	8.51E-03	1.08E-04	4.10E+01	2.76E-05	0.00E+00

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes). For idling, this is the number of trucks idling per hour.

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Emissions are input on either a vehicle distance or operation time basis.

[5] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S3-5.1b: Vehicle Emission Rates - Tailpipe Emissions, MD

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Tailpipe Emission Factor [5], [7] TSP PM (g/vkt)	TSP PM (g/h)	PM10 PM10 (g/vkt)	PM10 PM10 (g/h)	PM2.5 PM25 (g/vkt)	PM2.5 PM25 (g/h)	Benzene 71-43-2 (g/vkt)	Benzene 71-43-2 (g/h)	Ammonia 7664-41-7 (g/vkt)	Ammonia 7664-41-7 (g/h)	Nitrogen Dioxide NO2 (g/vkt)	Nitrogen Dioxide NO2 (g/h)	Nitrogen Oxides 10102-44-0 (g/vkt)	Nitrogen Oxides 10102-44-0 (g/h)
Mobile Equipment																				
PR01	Main Entrance Road	1	1	206	10	100%	3.65E+00	0.00E+00	3.65E+00	0.00E+00	4.80E-01	0.00E+00	1.37E-03	0.00E+00	4.15E-02	0.00E+00	2.33E+00	0.00E+00	5.85E+00	0.00E+00
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	0.00E+00	5.91E-01	0.00E+00	5.91E-01	0.00E+00	7.78E-02	0.00E+00	2.67E-04	0.00E+00	8.14E-03	0.00E+00	3.77E-01	0.00E+00	9.48E-01
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	0.00E+00	8.77E-01	0.00E+00	8.77E-01	0.00E+00	1.16E-01	0.00E+00	6.37E-04	0.00E+00	1.63E-02	0.00E+00	5.86E-01	0.00E+00	1.47E+00
PR03	Road to CDA	0	0	0	10	100%	3.65E+00	0.00E+00	3.65E+00	0.00E+00	4.80E-01	0.00E+00	1.37E-03	0.00E+00	4.15E-02	0.00E+00	2.33E+00	0.00E+00	5.85E+00	0.00E+00
PR04A	Entrance to Scale House	1	1	487	10	100%	3.65E+00	5.84E-01	3.65E+00	5.84E-01	4.80E-01	7.79E-02	1.37E-03	1.56E-03	4.15E-02	2.27E-02	2.33E+00	5.77E-01	5.85E+00	1.46E+00
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	0.00E+00	1.40E+00	0.00E+00	1.40E+00	0.00E+00	1.84E-01	0.00E+00	6.31E-04	0.00E+00	1.92E-02	0.00E+00	8.91E-01	0.00E+00	2.24E+00
BR06	Across LF to WF southern section	1	1	603	10	100%	3.65E+00	0.00E+00	3.65E+00	0.00E+00	4.80E-01	0.00E+00	1.37E-03	0.00E+00	4.15E-02	0.00E+00	2.33E+00	0.00E+00	5.85E+00	0.00E+00
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	0.00E+00	6.63E-02	0.00E+00	6.63E-02	0.00E+00	5.51E-02	0.00E+00	3.23E-03	0.00E+00	6.45E-02	0.00E+00	1.09E-02	0.00E+00	1.67E+00
BR06Y	Across LF to WF southern section, final cap construction truc	1	1	603	10	100%	0.00E+00	4.42E-02	0.00E+00	4.42E-02	0.00E+00	4.29E-02	0.00E+00	2.56E-03	0.00E+00	5.12E-02	0.00E+00	0.00E+00	0.00E+00	1.31E+00
PR08Z	WF to SS/LTF	1	1	307	10	100%	0.00E+00	5.21E-01	0.00E+00	5.21E-01	0.00E+00	7.86E-02	0.00E+00	9.28E-04	0.00E+00	2.10E-02	0.00E+00	3.24E-01	0.00E+00	1.17E+00
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	0.00E+00	2.25E-02	0.00E+00	2.25E-02	0.00E+00	2.18E-02	0.00E+00	1.30E-03	0.00E+00	2.60E-02	0.00E+00	0.00E+00	0.00E+00	6.66E-01
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	0.00E+00	2.49E-01	0.00E+00	2.49E-01	0.00E+00	4.04E-02	0.00E+00	7.03E-04	0.00E+00	1.50E-02	0.00E+00	1.60E-01	0.00E+00	6.73E-01
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	0.00E+00	1.55E-02	0.00E+00	1.55E-02	0.00E+00	1.50E-02	0.00E+00	8.97E-04	0.00E+00	1.79E-02	0.00E+00	0.00E+00	0.00E+00	4.58E-01
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	0.00E+00	1.66E-02	0.00E+00	1.66E-02	0.00E+00	1.61E-02	0.00E+00	9.63E-04	0.00E+00	1.92E-02	0.00E+00	0.00E+00	0.00E+00	4.92E-01
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	0.00E+00	1.31E-02	0.00E+00	1.31E-02	0.00E+00	1.27E-02	0.00E+00	7.59E-04	0.00E+00	1.52E-02	0.00E+00	0.00E+00	0.00E+00	3.88E-01
UR11Z	Across SS	1	1	242	10	100%	0.00E+00	2.25E-02	0.00E+00	2.25E-02	0.00E+00	2.19E-02	0.00E+00	1.31E-03	0.00E+00	2.61E-02	0.00E+00	0.00E+00	0.00E+00	6.68E-01
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	0.00E+00	1.77E-02	0.00E+00	1.77E-02	0.00E+00	1.72E-02	0.00E+00	1.03E-03	0.00E+00	2.06E-02	0.00E+00	0.00E+00	0.00E+00	5.26E-01
UR12	Across LF to WF northern section	1	1	575	10	100%	3.65E+00	0.00E+00	3.65E+00	0.00E+00	4.80E-01	0.00E+00	1.37E-03	0.00E+00	4.15E-02	0.00E+00	2.33E+00	0.00E+00	5.85E+00	0.00E+00
UR12Z	Across LF to WF northern section, onsite equipment	1	1	575	10	100%	0.00E+00	6.31E-02	0.00E+00	6.31E-02	0.00E+00	5.25E-02	0.00E+00	3.08E-03	0.00E+00	6.14E-02	0.00E+00	1.04E-02	0.00E+00	1.59E+00
UR12Y	Across LF to WF northern section, final cap construction truc	1	1	575	10	100%	0.00E+00	4.21E-02	0.00E+00	4.21E-02	0.00E+00	4.08E-02	0.00E+00	2.44E-03	0.00E+00	4.88E-02	0.00E+00	0.00E+00	0.00E+00	1.25E+00
PR13Z	WF to LTF	1	1	165	10	100%	0.00E+00	1.13E+00	0.00E+00	1.13E+00	0.00E+00	1.49E-01	0.00E+00	0.00E+00	0.00E+00	6.67E-03	0.00E+00	6.66E-01	0.00E+00	1.67E+00
PR14Z	WF to LTF	1	1	61	10	100%	0.00E+00	4.16E-01	0.00E+00	4.16E-01	0.00E+00	5.46E-02	0.00E+00	0.00E+00	0.00E+00	2.45E-03	0.00E+00	2.45E-01	0.00E+00	6.15E-01
PR15	Entrance to CDA	0	0	0	10	100%	3.65E+00	0.00E+00	3.65E+00	0.00E+00	4.80E-01	0.00E+00	1.37E-03	0.00E+00	4.15E-02	0.00E+00	2.33E+00	0.00E+00	5.85E+00	0.00E+00
UR16Z	Access to Tire Shred Storage Area	0	0	193	10	100%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
UR17Z	Across CDA	1	1	90	10	100%	0.00E+00	4.63E-03	0.00E+00	4.63E-03	0.00E+00	4.49E-03	0.00E+00	3.49E-04	0.00E+00	3.83E-03	0.00E+00	0.00E+00	0.00E+00	1.05E-01
UR18	Across WF	0	0	0	10	100%	3.65E+00	0.00E+00	3.65E+00	0.00E+00	4.80E-01	0.00E+00	1.37E-03	0.00E+00	4.15E-02	0.00E+00	2.33E+00	0.00E+00	5.85E+00	0.00E+00
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	0.00E+00	2.51E-03	0.00E+00	2.51E-03	0.00E+00	2.38E-03	0.00E+00	1.79E-04	0.00E+00	2.13E-03	0.00E+00	6.25E-05	0.00E+00	5.79E-02
PR04B	Scale House to WF	1	1	681	10	100%	3.65E+00	8.17E-01	3.65E+00	8.17E-01	4.80E-01	1.09E-01	1.37E-03	2.18E-03	4.15E-02	3.17E-02	2.33E+00	8.07E-01	5.85E+00	2.04E+00
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	0.00E+00	1.95E+00	0.00E+00	1.95E+00	0.00E+00	2.57E-01	0.00E+00	8.83E-04	0.00E+00	2.69E-02	0.00E+00	1.25E+00	0.00E+00	3.14E+00
PR04C	Exit Road from WF	1	1	420	10	100%	3.65E+00	5.04E-01	3.65E+00	5.04E-01	4.80E-01	6.73E-02	1.37E-03	1.34E-03	4.15E-02	1.96E-02	2.33E+00	4.98E-01	5.85E+00	1.26E+00
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	0.00E+00	1.21E+00	0.00E+00	1.21E+00	0.00E+00	1.59E-01	0.00E+00	5.45E-04	0.00E+00	1.66E-02	0.00E+00	7.70E-01	0.00E+00	1.94E+00
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	--	--	--	--	--	--	--	--	--	--	--	--	--	--
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	--	--	--	--	--	--	--	--	--	--	--	--	--	--
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	0.00E+00	2.88E+00	0.00E+00	2.88E+00	0.00E+00	2.79E+00	0.00E+00	1.78E-01	0.00E+00	2.80E+00	0.00E+00	0.00E+00	0.00E+00	7.57E+01
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	0.00E+00	7.75E-01	0.00E+00	7.75E-01	0.00E+00	7.51E-01	0.00E+00	4.94E-02	0.00E+00	8.13E-01	0.00E+00	0.00E+00	0.00E+00	2.12E+01
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	0.00E+00	5.16E-01	0.00E+00	5.16E-01	0.00E+00	5.00E-01	0.00E+00	3.89E-02	0.00E+00	4.27E-01	0.00E+00	0.00E+00	0.00E+00	1.17E+01
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	0.00E+00	1.03E+00	0.00E+00	1.03E+00	0.00E+00	1.00E+00	0.00E+00	6.00E-02	0.00E+00	1.20E+00	0.00E+00	0.00E+00	0.00E+00	3.06E+01

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes)

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

[5] Emissions are input on either a vehicle distance or power rating basis. Load factor applies only to emissions based on power ratings.

[6] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S3-5.1b: Vehicle Emission Rates - Tailpipe Emissions, MD

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Sulphur Dioxide 7446-09-5 (g/vkt)	Sulphur Dioxide 7446-09-5 (g/h)	Carbon Dioxide 124-38-9 (g/vkt)	Carbon Dioxide 124-38-9 (g/h)	Methane 74-82-8 (g/vkt)	Methane 74-82-8 (g/h)	Nitrous Oxide 10024-97-2 (g/vkt)	Nitrous Oxide 10024-97-2 (g/h)	Source ID	Tailpipe Emission Rate TSP PM (g/s)	PM10 PM10 (g/s)	PM2.5 PM25 (g/s)	Benzene 71-43-2 (g/s)	Ammonia 7664-41-7 (g/s)	Nitrogen Dioxide NO2 (g/s)	Nitrogen Oxides 10102-44-0 (g/s)
Mobile Equipment															**Mobile Equipment**							
PR01	Main Entrance Road	1	1	206	10	100%	5.08E-03	0.00E+00	1.34E+03	0.00E+00	3.87E-02	0.00E+00	9.11E-03	0.00E+00	PR01	2.1E-04	2.1E-04	2.7E-05	7.8E-08	2.4E-06	1.3E-04	3.3E-04
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	0.00E+00	9.61E-04	0.00E+00	2.39E+02	0.00E+00	6.68E-03	0.00E+00	1.69E-03	PR01Z	1.6E-04	1.6E-04	2.2E-05	7.4E-08	2.3E-06	1.0E-04	2.6E-04
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	0.00E+00	1.84E-03	0.00E+00	4.34E+02	0.00E+00	1.21E-02	0.00E+00	3.28E-03	UR02Z	2.4E-04	2.4E-04	3.2E-05	1.8E-07	4.5E-06	1.6E-04	4.1E-04
PR03	Road to CDA	0	0	0	10	100%	5.08E-03	0.00E+00	1.34E+03	0.00E+00	3.87E-02	0.00E+00	9.11E-03	0.00E+00	PR03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
PR04A	Entrance to Scale House	1	1	487	10	100%	5.08E-03	2.41E-03	1.34E+03	5.72E+02	3.87E-02	1.85E-02	9.11E-03	4.90E-03	PR04A	4.9E-04	4.9E-04	6.5E-05	1.9E-07	5.6E-06	3.1E-04	7.9E-04
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	0.00E+00	2.27E-03	0.00E+00	5.64E+02	0.00E+00	1.58E-02	0.00E+00	4.00E-03	PR04AZ	3.9E-04	3.9E-04	5.1E-05	1.8E-07	5.3E-06	2.5E-04	6.2E-04
BR06	Across LF to WF southern section	1	1	603	10	100%	5.08E-03	0.00E+00	1.34E+03	0.00E+00	3.87E-02	0.00E+00	9.11E-03	0.00E+00	BR06	6.1E-04	6.1E-04	8.0E-05	2.3E-07	7.0E-06	3.9E-04	9.8E-04
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	0.00E+00	2.08E-02	0.00E+00	7.91E+03	0.00E+00	5.66E-03	0.00E+00	9.24E-05	BR06Z	1.8E-05	1.8E-05	1.5E-05	9.0E-07	1.8E-05	3.0E-06	4.6E-04
BR06Y	Across LF to WF southern section, final cap construction truc	1	1	603	10	100%	0.00E+00	1.66E-02	0.00E+00	6.32E+03	0.00E+00	4.25E-03	0.00E+00	0.00E+00	BR06Y	1.2E-05	1.2E-05	1.2E-05	7.1E-07	1.4E-05	0.0E+00	3.6E-04
PR08Z	WF to SS/LTF	1	1	307	10	100%	0.00E+00	5.36E-03	0.00E+00	1.93E+03	0.00E+00	6.91E-03	0.00E+00	1.46E-03	PR08Z	1.4E-04	1.4E-04	2.2E-05	2.6E-07	5.8E-06	9.0E-05	3.3E-04
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	0.00E+00	8.45E-03	0.00E+00	3.21E+03	0.00E+00	2.16E-03	0.00E+00	0.00E+00	PR08Y	6.2E-06	6.2E-06	6.1E-06	3.6E-07	7.2E-06	0.0E+00	1.8E-04
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	0.00E+00	3.94E-03	0.00E+00	1.42E+03	0.00E+00	4.19E-03	0.00E+00	8.96E-04	UR09AZ	6.9E-05	6.9E-05	1.1E-05	2.0E-07	4.2E-06	4.4E-05	1.9E-04
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	0.00E+00	5.82E-03	0.00E+00	2.21E+03	0.00E+00	1.49E-03	0.00E+00	0.00E+00	UR09AY	4.3E-06	4.3E-06	4.2E-06	2.5E-07	5.0E-06	0.0E+00	1.3E-04
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	0.00E+00	6.25E-03	0.00E+00	2.37E+03	0.00E+00	1.60E-03	0.00E+00	0.00E+00	UR09BZ	4.6E-06	4.6E-06	4.5E-06	2.7E-07	5.3E-06	0.0E+00	1.4E-04
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	0.00E+00	4.92E-03	0.00E+00	1.87E+03	0.00E+00	1.26E-03	0.00E+00	0.00E+00	UR09BY	3.6E-06	3.6E-06	3.5E-06	2.1E-07	4.2E-06	0.0E+00	1.1E-04
UR11Z	Across SS	1	1	242	10	100%	0.00E+00	8.48E-03	0.00E+00	3.22E+03	0.00E+00	2.17E-03	0.00E+00	0.00E+00	UR11Z	6.3E-06	6.3E-06	6.1E-06	3.6E-07	7.3E-06	0.0E+00	1.9E-04
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	0.00E+00	6.68E-03	0.00E+00	2.54E+03	0.00E+00	1.71E-03	0.00E+00	0.00E+00	UR11Y	4.9E-06	4.9E-06	4.8E-06	2.9E-07	5.7E-06	0.0E+00	1.5E-04
UR12	Across LF to WF northern section	1	1	575	10	100%	5.08E-03	0.00E+00	1.34E+03	0.00E+00	3.87E-02	0.00E+00	9.11E-03	0.00E+00	UR12	5.8E-04	5.8E-04	7.7E-05	2.2E-07	6.6E-06	3.7E-04	9.3E-04
UR12Z	Across LF to WF northern section, onsite equipment	1	1	575	10	100%	0.00E+00	1.99E-02	0.00E+00	7.53E+03	0.00E+00	5.39E-03	0.00E+00	8.80E-05	UR12Z	1.8E-05	1.8E-05	1.5E-05	8.6E-07	1.7E-05	2.9E-06	4.4E-04
UR12Y	Across LF to WF northern section, final cap construction truc	1	1	575	10	100%	0.00E+00	1.58E-02	0.00E+00	6.02E+03	0.00E+00	4.05E-03	0.00E+00	0.00E+00	UR12Y	1.2E-05	1.2E-05	1.1E-05	6.8E-07	1.4E-05	0.0E+00	3.5E-04
PR13Z	WF to LTF	1	1	165	10	100%	0.00E+00	9.62E-04	0.00E+00	2.88E+02	0.00E+00	8.11E-03	0.00E+00	1.60E-03	PR13Z	3.1E-04	3.1E-04	4.1E-05	0.0E+00	1.9E-06	1.8E-04	4.6E-04
PR14Z	WF to LTF	1	1	61	10	100%	0.00E+00	3.54E-04	0.00E+00	1.06E+02	0.00E+00	2.98E-03	0.00E+00	5.90E-04	PR14Z	1.2E-04	1.2E-04	1.5E-05	0.0E+00	6.8E-07	6.8E-05	1.7E-04
PR15	Entrance to CDA	0	0	0	10	100%	5.08E-03	0.00E+00	1.34E+03	0.00E+00	3.87E-02	0.00E+00	9.11E-03	0.00E+00	PR15	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
UR16Z	Access to Tire Shred Storage Area	0	0	193	10	100%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	UR16Z	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
UR17Z	Across CDA	1	1	90	10	100%	0.00E+00	1.25E-03	0.00E+00	4.72E+02	0.00E+00	5.65E-04	0.00E+00	0.00E+00	UR17Z	1.3E-06	1.3E-06	1.2E-06	9.7E-08	1.1E-06	0.0E+00	2.9E-05
UR18	Across WF	0	0	0	10	100%	5.08E-03	0.00E+00	1.34E+03	0.00E+00	3.87E-02	0.00E+00	9.11E-03	0.00E+00	UR18	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	0.00E+00	6.93E-04	0.00E+00	2.62E+02	0.00E+00	2.92E-04	0.00E+00	5.31E-07	UR18Z	7.0E-07	7.0E-07	6.6E-07	5.0E-08	5.9E-07	1.7E-08	1.6E-05
PR04B	Scale House to WF	1	1	681	10	100%	5.08E-03	3.37E-03	1.34E+03	8.00E+02	3.87E-02	2.58E-02	9.11E-03	6.86E-03	PR04B	6.9E-04	6.9E-04	9.1E-05	2.6E-07	7.9E-06	4.4E-04	1.1E-03
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	0.00E+00	3.18E-03	0.00E+00	7.89E+02	0.00E+00	2.21E-02	0.00E+00	5.59E-03	PR04BZ	5.4E-04	5.4E-04	7.1E-05	2.5E-07	7.5E-06	3.5E-04	8.7E-04
PR04C	Exit Road from WF	1	1	420	10	100%	5.08E-03	2.08E-03	1.34E+03	4.94E+02	3.87E-02	1.59E-02	9.11E-03	4.24E-03	PR04C	4.3E-04	4.3E-04	5.6E-05	1.6E-07	4.8E-06	2.7E-04	6.8E-04
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	0.00E+00	1.96E-03	0.00E+00	4.87E+02	0.00E+00	1.36E-02	0.00E+00	3.45E-03	PR04CZ	3.4E-04	3.4E-04	4.4E-05	1.5E-07	4.6E-06	2.1E-04	5.4E-04
															0							
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	--	--	--	--	--	--	--	--	IDLE01	3.5E-05	3.5E-05	3.3E-05	1.1E-06	1.0E-04	3.5E-03	8.8E-03
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	--	--	--	--	--	--	--	--	IDLE02	3.5E-05	3.5E-05	3.3E-05	1.1E-06	1.0E-04	3.5E-03	8.8E-03
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	0.00E+00	9.10E-01	0.00E+00	3.45E+05	0.00E+00	2.93E-01	0.00E+00	0.00E+00	DOZE2	8.0E-04	8.0E-04	7.8E-04	5.0E-05	7.8E-04	0.0E+00	2.1E-02
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	0.00E+00	2.64E-01	0.00E+00	1.00E+05	0.00E+00	8.12E-02	0.00E+00	0.00E+00	DOZE4	2.2E-04	2.2E-04	2.1E-04	1.4E-05	2.3E-04	0.0E+00	5.9E-03
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	0.00E+00	1.39E-01	0.00E+00	5.26E+04	0.00E+00	6.30E-02	0.00E+00	0.00E+00	DOZE2CAP	1.4E-04	1.4E-04	1.4E-04	1.1E-05	1.2E-04	0.0E+00	3.3E-03
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	0.00E+00	3.89E-01	0.00E+00	1.48E+05	0.00E+00	9.95E-02	0.00E+00	0.00E+00	DOZE2SS	2.9E-04	2.9E-04	2.8E-04	1.7E-05	3.3E-04	0.0E+00	8.5E-03

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes)

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

[5] Emissions are input on either a vehicle distance or power rating basis. Load factor applies only to emissions based on p

[6] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S3-5.1b: Vehicle Emission Rates - Tailpipe Emissions, MD

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Tailpipe + Fugitive Emission Rate [6] Sulphur Dioxide 7446-09-5 (g/s)	Carbon Dioxide 124-38-9 (g/s)	Methane 74-82-8 (g/s)	Nitrous Oxide 10024-97-2 (g/s)	Tailpipe + Fugitive Emission Rate [6] TSP PM (g/s)	PM10 PM10 (g/s)	PM2.5 PM2.5 (g/s)	Ratio Tailpipe : Total Emission Rate TSP PM (g/s)	PM10 PM10 (g/s)	PM2.5 PM2.5 (g/s)	Source ID	# of Volume Sources g/hr	# of Volume Sources g/vkt	TSP PM	PM10 PM10
Mobile Equipment																	**Mobile Equipment**				
PR01	Main Entrance Road	1	1	206	10	100%	2.9E-07	7.6E-02	2.2E-06	5.2E-07	7.90E-04	2.84E-04	4.56E-05	2.64E-01	7.35E-01	6.01E-01	PR01	11	11	7.2E-05	2.6E-05
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	2.7E-07	6.6E-02	1.9E-06	4.7E-07	7.45E-04	2.39E-04	3.98E-05	2.20E-01	6.86E-01	5.43E-01	PR01Z	11	11	6.8E-05	2.2E-05
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	5.1E-07	1.2E-01	3.4E-06	9.1E-07	1.07E-01	3.24E-02	3.25E-03	2.27E-03	7.51E-03	9.88E-03	UR02Z	48	48	2.2E-03	6.8E-04
PR03	Road to CDA	0	0	0	10	100%	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.00E+00	0.00E+00	0.00E+00	n/a	n/a	n/a	PR03	26	26	0.0E+00	0.0E+00
PR04A	Entrance to Scale House	1	1	487	10	100%	6.9E-07	1.8E-01	5.2E-06	1.2E-06	2.08E-03	6.99E-04	1.15E-04	2.36E-01	7.05E-01	5.65E-01	PR04A	57	57	3.7E-05	1.2E-05
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	6.3E-07	1.6E-01	4.4E-06	1.1E-06	1.98E-03	5.94E-04	1.01E-04	1.96E-01	6.53E-01	5.06E-01	PR04AZ	57	57	3.5E-05	1.0E-05
BR06	Across LF to WF southern section	1	1	603	10	100%	8.5E-07	2.2E-01	6.5E-06	1.5E-06	1.38E-01	3.18E-02	3.20E-03	4.43E-03	1.92E-02	2.51E-02	BR06	70	70	2.0E-03	4.5E-04
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	5.8E-06	2.2E+00	1.6E-06	2.6E-08	1.37E-01	3.12E-02	3.13E-03	1.34E-04	5.90E-04	4.89E-03	BR06Z	70	70	2.0E-03	4.5E-04
BR06Y	Across LF to WF southern section, final cap construction truc	1	1	603	10	100%	4.6E-06	1.8E+00	1.2E-06	0.0E+00	1.37E-01	3.12E-02	3.13E-03	8.93E-05	3.94E-04	3.81E-03	BR06Y	70	70	2.0E-03	4.5E-04
PR08Z	WF to SS/LTF	1	1	307	10	100%	1.5E-06	5.4E-01	1.9E-06	4.0E-07	5.27E-03	8.08E-04	1.82E-04	2.74E-02	1.79E-01	1.20E-01	PR08Z	36	36	1.5E-04	2.2E-05
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	2.3E-06	8.9E-01	6.0E-07	0.0E+00	5.13E-03	6.70E-04	1.67E-04	1.22E-03	9.32E-03	3.63E-02	PR08Y	36	36	1.4E-04	1.9E-05
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	1.1E-06	4.0E-01	1.2E-06	2.5E-07	8.04E-02	2.42E-02	2.43E-03	8.58E-04	2.85E-03	4.63E-03	UR09AZ	25	25	3.2E-03	9.7E-04
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	1.6E-06	6.1E-01	4.1E-07	0.0E+00	8.04E-02	2.42E-02	2.42E-03	5.34E-05	1.78E-04	1.72E-03	UR09AY	25	25	3.2E-03	9.7E-04
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	1.7E-06	6.6E-01	4.4E-07	0.0E+00	7.57E-02	2.28E-02	2.28E-03	6.09E-05	2.03E-04	1.96E-03	UR09BZ	21	21	3.6E-03	1.1E-03
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	1.4E-06	5.2E-01	3.5E-07	0.0E+00	7.57E-02	2.28E-02	2.28E-03	4.80E-05	1.60E-04	1.55E-03	UR09BY	21	21	3.6E-03	1.1E-03
UR11Z	Across SS	1	1	242	10	100%	2.4E-06	8.9E-01	6.0E-07	0.0E+00	1.03E-01	3.09E-02	3.10E-03	6.09E-05	2.03E-04	1.96E-03	UR11Z	28	28	3.7E-03	1.1E-03
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	1.9E-06	7.0E-01	4.7E-07	0.0E+00	1.03E-01	3.09E-02	3.09E-03	4.80E-05	1.60E-04	1.55E-03	UR11Y	28	28	3.7E-03	1.1E-03
UR12	Across LF to WF northern section	1	1	575	10	100%	8.1E-07	2.1E-01	6.2E-06	1.5E-06	1.31E-01	3.03E-02	3.04E-03	4.43E-03	1.92E-02	2.51E-02	UR12	67	67	2.0E-03	4.5E-04
UR12Z	Across LF to WF northern section, onsite equipment	1	1	575	10	100%	5.5E-06	2.1E+00	1.5E-06	2.4E-08	1.31E-01	2.97E-02	2.98E-03	1.34E-04	5.90E-04	4.89E-03	UR12Z	67	67	2.0E-03	4.4E-04
UR12Y	Across LF to WF northern section, final cap construction truc	1	1	575	10	100%	4.4E-06	1.7E+00	1.1E-06	0.0E+00	1.31E-01	2.97E-02	2.98E-03	8.93E-05	3.94E-04	3.81E-03	UR12Y	67	67	2.0E-03	4.4E-04
PR13Z	WF to LTF	1	1	165	10	100%	2.7E-07	8.0E-02	2.3E-06	4.5E-07	3.61E-03	7.41E-04	1.45E-04	8.70E-02	4.24E-01	2.85E-01	PR13Z	19	19	1.9E-04	3.9E-05
PR14Z	WF to LTF	1	1	61	10	100%	9.8E-08	2.9E-02	8.3E-07	1.6E-07	1.33E-03	2.73E-04	5.32E-05	8.70E-02	4.24E-01	2.85E-01	PR14Z	7	7	1.9E-04	3.9E-05
PR15	Entrance to CDA	0	0	0	10	100%	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.00E+00	0.00E+00	0.00E+00	n/a	n/a	n/a	PR15	10	10	0.0E+00	0.0E+00
UR16Z	Access to Tire Shred Storage Area	0	0	193	10	100%	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.00E+00	0.00E+00	0.00E+00	n/a	n/a	n/a	UR16Z	22	22	0.0E+00	0.0E+00
UR17Z	Across CDA	1	1	90	10	100%	3.5E-07	1.3E-01	1.6E-07	0.0E+00	3.41E-02	1.02E-02	1.03E-03	3.77E-05	1.25E-04	1.22E-03	UR17Z	10	10	3.4E-03	1.0E-03
UR18	Across WF	0	0	0	10	100%	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.00E+00	0.00E+00	0.00E+00	n/a	n/a	n/a	UR18	5	5	0.0E+00	0.0E+00
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	1.9E-07	7.3E-02	8.1E-08	1.5E-10	1.73E-02	5.28E-03	5.28E-04	4.01E-05	1.32E-04	1.25E-03	UR18Z	5	5	3.5E-03	1.1E-03
PR04B	Scale House to WF	1	1	681	10	100%	9.6E-07	2.5E-01	7.3E-06	1.7E-06	3.31E-03	1.03E-03	1.73E-04	2.09E-01	6.71E-01	5.25E-01	PR04B	79	79	4.2E-05	1.3E-05
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	8.8E-07	2.2E-01	6.1E-06	1.6E-06	3.16E-03	8.82E-04	1.53E-04	1.72E-01	6.16E-01	4.66E-01	PR04BZ	79	79	4.0E-05	1.1E-05
PR04C	Exit Road from WF	1	1	420	10	100%	5.9E-07	1.6E-01	4.5E-06	1.1E-06	2.04E-03	6.35E-04	1.07E-04	2.09E-01	6.71E-01	5.25E-01	PR04C	49	49	4.2E-05	1.3E-05
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	5.5E-07	1.4E-01	3.8E-06	9.6E-07	1.95E-03	5.44E-04	9.47E-05	1.72E-01	6.16E-01	4.66E-01	PR04CZ	49	49	4.0E-05	1.1E-05
																	0				
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	5.9E-06	1.5E+00	6.6E-05	2.5E-05	3.55E-05	3.55E-05	3.26E-05	n/a	n/a	n/a	IDLE01	1	1	7.1E-05	7.1E-05
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	5.9E-06	1.5E+00	6.6E-05	2.5E-05	3.55E-05	3.55E-05	3.26E-05	n/a	n/a	n/a	IDLE02	1	1	7.1E-05	7.1E-05
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	2.5E-04	9.6E+01	8.1E-05	0.0E+00	8.00E-04	8.00E-04	7.76E-04	1.00E+00	1.00E+00	1.00E+00	DOZE2	1	1	8.0E-04	8.0E-04
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	7.3E-05	2.8E+01	2.3E-05	0.0E+00	2.15E-04	2.15E-04	2.09E-04	1.00E+00	1.00E+00	1.00E+00	DOZE4	1	1	2.2E-04	2.2E-04
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	3.9E-05	1.5E+01	1.7E-05	0.0E+00	1.43E-04	1.43E-04	1.39E-04	1.00E+00	1.00E+00	1.00E+00	DOZE2CAP	1	1	1.4E-04	1.4E-04
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	1.1E-04	4.1E+01	2.8E-05	0.0E+00	2.87E-04	2.87E-04	2.78E-04	1.00E+00	1.00E+00	1.00E+00	DOZE2SS	1	1	2.9E-04	2.9E-04

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes)

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

[5] Emissions are input on either a vehicle distance or power rating basis. Load factor applies only to emissions based on p

[6] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S3-5.1b: Vehicle Emission Rates - Tailpipe Emissions, MD

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Emission rate per volume source PM2.5 PM25	Benzene 71-43-2	Ammonia 7664-41-7	Nitrogen Dioxide NO2	Nitrogen Oxides 10102-44-0	Sulphur Dioxide 7446-09-5	Carbon Dioxide 124-38-9	Methane 74-82-8	Nitrous Oxide 10024-97-2
Mobile Equipment															
PR01	Main Entrance Road	1	1	206	10	100%	4.1E-06	7.1E-09	2.2E-07	1.2E-05	3.0E-05	2.6E-08	6.9E-03	2.0E-07	4.7E-08
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	3.6E-06	6.7E-09	2.1E-07	9.5E-06	2.4E-05	2.4E-08	6.0E-03	1.7E-07	4.3E-08
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	6.8E-05	3.7E-09	9.4E-08	3.4E-06	8.5E-06	1.1E-08	2.5E-03	7.0E-08	1.9E-08
PR03	Road to CDA	0	0	0	10	100%	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
PR04A	Entrance to Scale House	1	1	487	10	100%	2.0E-06	3.3E-09	9.8E-08	5.5E-06	1.4E-05	1.2E-08	3.2E-03	9.2E-08	2.2E-08
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	1.8E-06	3.1E-09	9.4E-08	4.3E-06	1.1E-05	1.1E-08	2.7E-03	7.7E-08	1.9E-08
BR06	Across LF to WF southern section	1	1	603	10	100%	4.6E-05	3.3E-09	9.9E-08	5.6E-06	1.4E-05	1.2E-08	3.2E-03	9.3E-08	2.2E-08
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	4.5E-05	1.3E-08	2.6E-07	4.3E-08	6.6E-06	8.3E-08	3.1E-02	2.2E-08	3.7E-10
BR06Y	Across LF to WF southern section, final cap construction truc	1	1	603	10	100%	4.5E-05	1.0E-08	2.0E-07	0.0E+00	5.2E-06	6.6E-08	2.5E-02	1.7E-08	0.0E+00
PR08Z	WF to SS/LTF	1	1	307	10	100%	5.1E-06	7.2E-09	1.6E-07	2.5E-06	9.1E-06	4.1E-08	1.5E-02	5.3E-08	1.1E-08
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	4.6E-06	1.0E-08	2.0E-07	0.0E+00	5.1E-06	6.5E-08	2.5E-02	1.7E-08	0.0E+00
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	9.7E-05	7.8E-09	1.7E-07	1.8E-06	7.5E-06	4.4E-08	1.6E-02	4.7E-08	1.0E-08
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	9.7E-05	1.0E-08	2.0E-07	0.0E+00	5.1E-06	6.5E-08	2.5E-02	1.7E-08	0.0E+00
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	1.1E-04	1.3E-08	2.5E-07	0.0E+00	6.5E-06	8.3E-08	3.1E-02	2.1E-08	0.0E+00
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	1.1E-04	1.0E-08	2.0E-07	0.0E+00	5.1E-06	6.5E-08	2.5E-02	1.7E-08	0.0E+00
UR11Z	Across SS	1	1	242	10	100%	1.1E-04	1.3E-08	2.6E-07	0.0E+00	6.6E-06	8.4E-08	3.2E-02	2.2E-08	0.0E+00
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	1.1E-04	1.0E-08	2.0E-07	0.0E+00	5.2E-06	6.6E-08	2.5E-02	1.7E-08	0.0E+00
UR12	Across LF to WF northern section	1	1	575	10	100%	4.5E-05	3.3E-09	9.9E-08	5.5E-06	1.4E-05	1.2E-08	3.2E-03	9.2E-08	2.2E-08
UR12Z	Across LF to WF northern section, onsite equipment	1	1	575	10	100%	4.5E-05	1.3E-08	2.5E-07	4.3E-08	6.6E-06	8.2E-08	3.1E-02	2.2E-08	3.6E-10
UR12Y	Across LF to WF northern section, final cap construction truc	1	1	575	10	100%	4.4E-05	1.0E-08	2.0E-07	0.0E+00	5.2E-06	6.6E-08	2.5E-02	1.7E-08	0.0E+00
PR13Z	WF to LTF	1	1	165	10	100%	7.6E-06	0.0E+00	9.8E-08	9.7E-06	2.4E-05	1.4E-08	4.2E-03	1.2E-07	2.3E-08
PR14Z	WF to LTF	1	1	61	10	100%	7.6E-06	0.0E+00	9.7E-08	9.7E-06	2.4E-05	1.4E-08	4.2E-03	1.2E-07	2.3E-08
PR15	Entrance to CDA	0	0	0	10	100%	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
UR16Z	Access to Tire Shred Storage Area	0	0	193	10	100%	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
UR17Z	Across CDA	1	1	90	10	100%	1.0E-04	9.7E-09	1.1E-07	0.0E+00	2.9E-06	3.5E-08	1.3E-02	1.6E-08	0.0E+00
UR18	Across WF	0	0	0	10	100%	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	1.1E-04	9.9E-09	1.2E-07	3.5E-09	3.2E-06	3.8E-08	1.5E-02	1.6E-08	2.9E-11
PR04B	Scale House to WF	1	1	681	10	100%	2.2E-06	3.3E-09	9.9E-08	5.6E-06	1.4E-05	1.2E-08	3.2E-03	9.3E-08	2.2E-08
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	1.9E-06	3.1E-09	9.5E-08	4.4E-06	1.1E-05	1.1E-08	2.8E-03	7.8E-08	2.0E-08
PR04C	Exit Road from WF	1	1	420	10	100%	2.2E-06	3.3E-09	9.9E-08	5.5E-06	1.4E-05	1.2E-08	3.2E-03	9.2E-08	2.2E-08
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	1.9E-06	3.1E-09	9.4E-08	4.4E-06	1.1E-05	1.1E-08	2.8E-03	7.7E-08	2.0E-08
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	6.5E-05	2.1E-06	2.1E-04	7.0E-03	1.8E-02	1.2E-05	3.0E+00	1.3E-04	5.0E-05
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	6.5E-05	2.1E-06	2.1E-04	7.0E-03	1.8E-02	1.2E-05	3.0E+00	1.3E-04	5.0E-05
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	7.8E-04	5.0E-05	7.8E-04	0.0E+00	2.1E-02	2.5E-04	9.6E+01	8.1E-05	0.0E+00
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	2.1E-04	1.4E-05	2.3E-04	0.0E+00	5.9E-03	7.3E-05	2.8E+01	2.3E-05	0.0E+00
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	1.4E-04	1.1E-05	1.2E-04	0.0E+00	3.3E-03	3.9E-05	1.5E+01	1.7E-05	0.0E+00
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	2.8E-04	1.7E-05	3.3E-04	0.0E+00	8.5E-03	1.1E-04	4.1E+01	2.8E-05	0.0E+00

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes)

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

[5] Emissions are input on either a vehicle distance or power rating basis. Load factor applies only to emissions based on p

[6] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S3-5.1b: Vehicle Emission Rates - Tailpipe Emissions, PM

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Tailpipe Emission Factor [5], [7] TSP PM (g/vkt)	TSP PM (g/h)	PM10 PM10 (g/vkt)	PM10 PM10 (g/h)	PM2.5 PM25 (g/vkt)	PM2.5 PM25 (g/h)	Benzene 71-43-2 (g/vkt)	Benzene 71-43-2 (g/h)	Ammonia 7664-41-7 (g/vkt)	Ammonia 7664-41-7 (g/h)	Nitrogen Dioxide NO2 (g/vkt)	Nitrogen Dioxide NO2 (g/h)	Nitrogen Oxides 10102-44-0 (g/vkt)	Nitrogen Oxides 10102-44-0 (g/h)
Mobile Equipment																				
PR01	Main Entrance Road	1	1	206	10	100%	4.87E+00	0.00E+00	4.87E+00	0.00E+00	6.40E-01	0.00E+00	3.72E-04	0.00E+00	3.85E-02	0.00E+00	2.88E+00	0.00E+00	7.24E+00	0.00E+00
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	0.00E+00	5.91E-01	0.00E+00	5.91E-01	0.00E+00	7.78E-02	0.00E+00	2.67E-04	0.00E+00	8.14E-03	0.00E+00	3.77E-01	0.00E+00	9.48E-01
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	0.00E+00	8.77E-01	0.00E+00	8.77E-01	0.00E+00	1.16E-01	0.00E+00	6.37E-04	0.00E+00	1.63E-02	0.00E+00	5.86E-01	0.00E+00	1.47E+00
PR04A	Entrance to Scale House	1	1	487	10	100%	4.87E+00	5.84E-01	4.87E+00	5.84E-01	6.40E-01	7.79E-02	3.72E-04	1.56E-03	3.85E-02	2.27E-02	2.88E+00	5.77E-01	7.24E+00	1.46E+00
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	0.00E+00	1.40E+00	0.00E+00	1.40E+00	0.00E+00	1.84E-01	0.00E+00	6.31E-04	0.00E+00	1.92E-02	0.00E+00	8.91E-01	0.00E+00	2.24E+00
BR06	Across LF to WF southern section	1	1	603	10	100%	4.87E+00	0.00E+00	4.87E+00	0.00E+00	6.40E-01	0.00E+00	3.72E-04	0.00E+00	3.85E-02	0.00E+00	2.88E+00	0.00E+00	7.24E+00	0.00E+00
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	0.00E+00	6.63E-02	0.00E+00	6.63E-02	0.00E+00	5.51E-02	0.00E+00	3.23E-03	0.00E+00	6.45E-02	0.00E+00	1.09E-02	0.00E+00	1.67E+00
BR06Y	Across LF to WF southern section, final cap construction truck	1	1	603	10	100%	0.00E+00	4.42E-02	0.00E+00	4.42E-02	0.00E+00	4.29E-02	0.00E+00	2.56E-03	0.00E+00	5.12E-02	0.00E+00	0.00E+00	0.00E+00	1.31E+00
PR08Z	WF to SS/LTF	1	1	307	10	100%	0.00E+00	5.21E-01	0.00E+00	5.21E-01	0.00E+00	7.86E-02	0.00E+00	9.28E-04	0.00E+00	2.10E-02	0.00E+00	3.24E-01	0.00E+00	1.17E+00
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	0.00E+00	2.25E-02	0.00E+00	2.25E-02	0.00E+00	2.18E-02	0.00E+00	1.30E-03	0.00E+00	2.60E-02	0.00E+00	0.00E+00	0.00E+00	6.66E-01
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	0.00E+00	2.49E-01	0.00E+00	2.49E-01	0.00E+00	4.04E-02	0.00E+00	7.03E-04	0.00E+00	1.50E-02	0.00E+00	1.60E-01	0.00E+00	6.73E-01
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	0.00E+00	1.55E-02	0.00E+00	1.55E-02	0.00E+00	1.50E-02	0.00E+00	8.97E-04	0.00E+00	1.79E-02	0.00E+00	0.00E+00	0.00E+00	4.58E-01
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	0.00E+00	1.66E-02	0.00E+00	1.66E-02	0.00E+00	1.61E-02	0.00E+00	9.63E-04	0.00E+00	1.92E-02	0.00E+00	0.00E+00	0.00E+00	4.92E-01
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	0.00E+00	1.31E-02	0.00E+00	1.31E-02	0.00E+00	1.27E-02	0.00E+00	7.59E-04	0.00E+00	1.52E-02	0.00E+00	0.00E+00	0.00E+00	3.88E-01
UR11Z	Across SS	1	1	242	10	100%	0.00E+00	2.25E-02	0.00E+00	2.25E-02	0.00E+00	2.19E-02	0.00E+00	1.31E-03	0.00E+00	2.61E-02	0.00E+00	0.00E+00	0.00E+00	6.68E-01
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	0.00E+00	1.77E-02	0.00E+00	1.77E-02	0.00E+00	1.72E-02	0.00E+00	1.03E-03	0.00E+00	2.06E-02	0.00E+00	0.00E+00	0.00E+00	5.26E-01
UR12	Across LF to WF northern section	1	1	575	10	100%	4.87E+00	0.00E+00	4.87E+00	0.00E+00	6.40E-01	0.00E+00	3.72E-04	0.00E+00	3.85E-02	0.00E+00	2.88E+00	0.00E+00	7.24E+00	0.00E+00
UR12Z	Across LF to WF northern section, onsite equipment	1	1	575	10	100%	0.00E+00	6.31E-02	0.00E+00	6.31E-02	0.00E+00	5.25E-02	0.00E+00	3.08E-03	0.00E+00	6.14E-02	0.00E+00	1.04E-02	0.00E+00	1.59E+00
UR12Y	Across LF to WF northern section, final cap construction truck	1	1	575	10	100%	0.00E+00	4.21E-02	0.00E+00	4.21E-02	0.00E+00	4.08E-02	0.00E+00	2.44E-03	0.00E+00	4.88E-02	0.00E+00	0.00E+00	0.00E+00	1.25E+00
PR13Z	WF to LTF	1	1	165	10	100%	0.00E+00	1.13E+00	0.00E+00	1.13E+00	0.00E+00	1.49E-01	0.00E+00	0.00E+00	0.00E+00	6.67E-03	0.00E+00	6.66E-01	0.00E+00	1.67E+00
PR14Z	WF to LTF	1	1	61	10	100%	0.00E+00	4.16E-01	0.00E+00	4.16E-01	0.00E+00	5.46E-02	0.00E+00	0.00E+00	0.00E+00	2.45E-03	0.00E+00	2.45E-01	0.00E+00	6.15E-01
UR17Z	Across CDA	1	1	90	10	100%	0.00E+00	4.63E-03	0.00E+00	4.63E-03	0.00E+00	4.49E-03	0.00E+00	3.49E-04	0.00E+00	3.83E-03	0.00E+00	0.00E+00	0.00E+00	1.05E-01
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	0.00E+00	2.51E-03	0.00E+00	2.51E-03	0.00E+00	2.38E-03	0.00E+00	1.79E-04	0.00E+00	2.13E-03	0.00E+00	6.25E-05	0.00E+00	5.79E-02
PR04B	Scale House to WF	1	1	681	10	100%	4.87E+00	8.17E-01	4.87E+00	8.17E-01	6.40E-01	1.09E-01	3.72E-04	2.18E-03	3.85E-02	3.17E-02	2.88E+00	8.07E-01	7.24E+00	2.04E+00
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	0.00E+00	1.95E+00	0.00E+00	1.95E+00	0.00E+00	2.57E-01	0.00E+00	8.83E-04	0.00E+00	2.69E-02	0.00E+00	1.25E+00	0.00E+00	3.14E+00
PR04C	Exit Road from WF	1	1	420	10	100%	4.87E+00	5.04E-01	4.87E+00	5.04E-01	6.40E-01	6.73E-02	3.72E-04	1.34E-03	3.85E-02	1.96E-02	2.88E+00	4.98E-01	7.24E+00	1.26E+00
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	0.00E+00	1.21E+00	0.00E+00	1.21E+00	0.00E+00	1.59E-01	0.00E+00	5.45E-04	0.00E+00	1.66E-02	0.00E+00	7.70E-01	0.00E+00	1.94E+00
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	--	--	--	--	--	--	--	--	--	--	--	--	--	--
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	--	--	--	--	--	--	--	--	--	--	--	--	--	--
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	0.00E+00	2.88E+00	0.00E+00	2.88E+00	0.00E+00	2.79E+00	0.00E+00	1.78E-01	0.00E+00	2.80E+00	0.00E+00	0.00E+00	0.00E+00	7.57E+01
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	0.00E+00	7.75E-01	0.00E+00	7.75E-01	0.00E+00	7.51E-01	0.00E+00	4.94E-02	0.00E+00	8.13E-01	0.00E+00	0.00E+00	0.00E+00	2.12E+01
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	0.00E+00	5.16E-01	0.00E+00	5.16E-01	0.00E+00	5.00E-01	0.00E+00	3.89E-02	0.00E+00	4.27E-01	0.00E+00	0.00E+00	0.00E+00	1.17E+01
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	0.00E+00	1.03E+00	0.00E+00	1.03E+00	0.00E+00	1.00E+00	0.00E+00	6.00E-02	0.00E+00	1.20E+00	0.00E+00	0.00E+00	0.00E+00	3.06E+01

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes)

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

[5] Emissions are input on either a vehicle distance or power rating basis. Load factor applies only to emissions based on power ratings.

[6] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S3-5.1b: Vehicle Emission Rates - Tailpipe Emissions, PM

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Sulphur Dioxide 7446-09-5 (g/vkt)	Sulphur Dioxide 7446-09-5 (g/h)	Carbon Dioxide 124-38-9 (g/vkt)	Carbon Dioxide 124-38-9 (g/h)	Methane 74-82-8 (g/vkt)	Methane 74-82-8 (g/h)	Nitrous Oxide 10024-97-2 (g/vkt)	Nitrous Oxide 10024-97-2 (g/h)	Source ID
Mobile Equipment															**Mobile Equipment**
PR01	Main Entrance Road	1	1	206	10	100%	5.10E-03	0.00E+00	1.40E+03	0.00E+00	3.83E-02	0.00E+00	8.47E-03	0.00E+00	PR01
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	0.00E+00	9.61E-04	0.00E+00	2.39E+02	0.00E+00	6.68E-03	0.00E+00	1.69E-03	PR01Z
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	0.00E+00	1.84E-03	0.00E+00	4.34E+02	0.00E+00	1.21E-02	0.00E+00	3.28E-03	UR02Z
PR04A	Entrance to Scale House	1	1	487	10	100%	5.10E-03	2.41E-03	1.40E+03	5.72E+02	3.83E-02	1.85E-02	8.47E-03	4.90E-03	PR04A
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	0.00E+00	2.27E-03	0.00E+00	5.64E+02	0.00E+00	1.58E-02	0.00E+00	4.00E-03	PR04AZ
BR06	Across LF to WF southern section	1	1	603	10	100%	5.10E-03	0.00E+00	1.40E+03	0.00E+00	3.83E-02	0.00E+00	8.47E-03	0.00E+00	BR06
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	0.00E+00	2.08E-02	0.00E+00	7.91E+03	0.00E+00	5.66E-03	0.00E+00	9.24E-05	BR06Z
BR06Y	Across LF to WF southern section, final cap construction truck	1	1	603	10	100%	0.00E+00	1.66E-02	0.00E+00	6.32E+03	0.00E+00	4.25E-03	0.00E+00	0.00E+00	BR06Y
PR08Z	WF to SS/LTF	1	1	307	10	100%	0.00E+00	5.36E-03	0.00E+00	1.93E+03	0.00E+00	6.91E-03	0.00E+00	1.46E-03	PR08Z
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	0.00E+00	8.45E-03	0.00E+00	3.21E+03	0.00E+00	2.16E-03	0.00E+00	0.00E+00	PR08Y
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	0.00E+00	3.94E-03	0.00E+00	1.42E+03	0.00E+00	4.19E-03	0.00E+00	8.96E-04	UR09AZ
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	0.00E+00	5.82E-03	0.00E+00	2.21E+03	0.00E+00	1.49E-03	0.00E+00	0.00E+00	UR09AY
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	0.00E+00	6.25E-03	0.00E+00	2.37E+03	0.00E+00	1.60E-03	0.00E+00	0.00E+00	UR09BZ
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	0.00E+00	4.92E-03	0.00E+00	1.87E+03	0.00E+00	1.26E-03	0.00E+00	0.00E+00	UR09BY
UR11Z	Across SS	1	1	242	10	100%	0.00E+00	8.48E-03	0.00E+00	3.22E+03	0.00E+00	2.17E-03	0.00E+00	0.00E+00	UR11Z
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	0.00E+00	6.68E-03	0.00E+00	2.54E+03	0.00E+00	1.71E-03	0.00E+00	0.00E+00	UR11Y
UR12	Across LF to WF northern section	1	1	575	10	100%	5.10E-03	0.00E+00	1.40E+03	0.00E+00	3.83E-02	0.00E+00	8.47E-03	0.00E+00	UR12
UR12Z	Across LF to WF northern section, onsite equipment	1	1	575	10	100%	0.00E+00	1.99E-02	0.00E+00	7.53E+03	0.00E+00	5.39E-03	0.00E+00	8.80E-05	UR12Z
UR12Y	Across LF to WF northern section, final cap construction truck	1	1	575	10	100%	0.00E+00	1.58E-02	0.00E+00	6.02E+03	0.00E+00	4.05E-03	0.00E+00	0.00E+00	UR12Y
PR13Z	WF to LTF	1	1	165	10	100%	0.00E+00	9.62E-04	0.00E+00	2.88E+02	0.00E+00	8.11E-03	0.00E+00	1.60E-03	PR13Z
PR14Z	WF to LTF	1	1	61	10	100%	0.00E+00	3.54E-04	0.00E+00	1.06E+02	0.00E+00	2.98E-03	0.00E+00	5.90E-04	PR14Z
UR17Z	Across CDA	1	1	90	10	100%	0.00E+00	1.25E-03	0.00E+00	4.72E+02	0.00E+00	5.65E-04	0.00E+00	0.00E+00	UR17Z
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	0.00E+00	6.93E-04	0.00E+00	2.62E+02	0.00E+00	2.92E-04	0.00E+00	5.31E-07	UR18Z
PR04B	Scale House to WF	1	1	681	10	100%	5.10E-03	3.37E-03	1.40E+03	8.00E+02	3.83E-02	2.58E-02	8.47E-03	6.86E-03	PR04B
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	0.00E+00	3.18E-03	0.00E+00	7.89E+02	0.00E+00	2.21E-02	0.00E+00	5.59E-03	PR04BZ
PR04C	Exit Road from WF	1	1	420	10	100%	5.10E-03	2.08E-03	1.40E+03	4.94E+02	3.83E-02	1.59E-02	8.47E-03	4.24E-03	PR04C
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	0.00E+00	1.96E-03	0.00E+00	4.87E+02	0.00E+00	1.36E-02	0.00E+00	3.45E-03	PR04CZ
															0
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	--	--	--	--	--	--	--	--	IDLE01
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	--	--	--	--	--	--	--	--	IDLE02
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	0.00E+00	9.10E-01	0.00E+00	3.45E+05	0.00E+00	2.93E-01	0.00E+00	0.00E+00	DOZE2
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	0.00E+00	2.64E-01	0.00E+00	1.00E+05	0.00E+00	8.12E-02	0.00E+00	0.00E+00	DOZE4
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	0.00E+00	1.39E-01	0.00E+00	5.26E+04	0.00E+00	6.30E-02	0.00E+00	0.00E+00	DOZE2CAP
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	0.00E+00	3.89E-01	0.00E+00	1.48E+05	0.00E+00	9.95E-02	0.00E+00	0.00E+00	DOZE2SS

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes)

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

[5] Emissions are input on either a vehicle distance or power rating basis. Load factor applies only to emissions based on power ratings.

[6] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S3-5.1b: Vehicle Emission Rates - Tailpipe Emissions, PM

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Tailpipe Emission Rate TSP PM (g/s)	PM10 PM10 (g/s)	PM2.5 PM25 (g/s)	Benzene 71-43-2 (g/s)	Ammonia 7664-41-7 (g/s)	Nitrogen Dioxide NO2 (g/s)
Mobile Equipment												
PR01	Main Entrance Road	1	1	206	10	100%	2.8E-04	2.8E-04	3.7E-05	2.1E-08	2.2E-06	1.6E-04
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	1.6E-04	1.6E-04	2.2E-05	7.4E-08	2.3E-06	1.0E-04
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	2.4E-04	2.4E-04	3.2E-05	1.8E-07	4.5E-06	1.6E-04
PR04A	Entrance to Scale House	1	1	487	10	100%	6.6E-04	6.6E-04	8.6E-05	5.0E-08	5.2E-06	3.9E-04
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	3.9E-04	3.9E-04	5.1E-05	1.8E-07	5.3E-06	2.5E-04
BR06	Across LF to WF southern section	1	1	603	10	100%	8.2E-04	8.2E-04	1.1E-04	6.2E-08	6.5E-06	4.8E-04
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	1.8E-05	1.8E-05	1.5E-05	9.0E-07	1.8E-05	3.0E-06
BR06Y	Across LF to WF southern section, final cap construction truck	1	1	603	10	100%	1.2E-05	1.2E-05	1.2E-05	7.1E-07	1.4E-05	0.0E+00
PR08Z	WF to SS/LTF	1	1	307	10	100%	1.4E-04	1.4E-04	2.2E-05	2.6E-07	5.8E-06	9.0E-05
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	6.2E-06	6.2E-06	6.1E-06	3.6E-07	7.2E-06	0.0E+00
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	6.9E-05	6.9E-05	1.1E-05	2.0E-07	4.2E-06	4.4E-05
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	4.3E-06	4.3E-06	4.2E-06	2.5E-07	5.0E-06	0.0E+00
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	4.6E-06	4.6E-06	4.5E-06	2.7E-07	5.3E-06	0.0E+00
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	3.6E-06	3.6E-06	3.5E-06	2.1E-07	4.2E-06	0.0E+00
UR11Z	Across SS	1	1	242	10	100%	6.3E-06	6.3E-06	6.1E-06	3.6E-07	7.3E-06	0.0E+00
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	4.9E-06	4.9E-06	4.8E-06	2.9E-07	5.7E-06	0.0E+00
UR12	Across LF to WF northern section	1	1	575	10	100%	7.8E-04	7.8E-04	1.0E-04	5.9E-08	6.1E-06	4.6E-04
UR12Z	Across LF to WF northern section, onsite equipment	1	1	575	10	100%	1.8E-05	1.8E-05	1.5E-05	8.6E-07	1.7E-05	2.9E-06
UR12Y	Across LF to WF northern section, final cap construction truck	1	1	575	10	100%	1.2E-05	1.2E-05	1.1E-05	6.8E-07	1.4E-05	0.0E+00
PR13Z	WF to LTF	1	1	165	10	100%	3.1E-04	3.1E-04	4.1E-05	0.0E+00	1.9E-06	1.8E-04
PR14Z	WF to LTF	1	1	61	10	100%	1.2E-04	1.2E-04	1.5E-05	0.0E+00	6.8E-07	6.8E-05
UR17Z	Across CDA	1	1	90	10	100%	1.3E-06	1.3E-06	1.2E-06	9.7E-08	1.1E-06	0.0E+00
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	7.0E-07	7.0E-07	6.6E-07	5.0E-08	5.9E-07	1.7E-08
PR04B	Scale House to WF	1	1	681	10	100%	9.2E-04	9.2E-04	1.2E-04	7.0E-08	7.3E-06	5.4E-04
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	5.4E-04	5.4E-04	7.1E-05	2.5E-07	7.5E-06	3.5E-04
PR04C	Exit Road from WF	1	1	420	10	100%	5.7E-04	5.7E-04	7.5E-05	4.3E-08	4.5E-06	3.4E-04
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	3.4E-04	3.4E-04	4.4E-05	1.5E-07	4.6E-06	2.1E-04
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	4.8E-05	4.8E-05	4.5E-05	3.4E-07	9.6E-05	4.3E-03
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	4.8E-05	4.8E-05	4.5E-05	3.4E-07	9.6E-05	4.3E-03
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	8.0E-04	8.0E-04	7.8E-04	5.0E-05	7.8E-04	0.0E+00
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	2.2E-04	2.2E-04	2.1E-04	1.4E-05	2.3E-04	0.0E+00
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	1.4E-04	1.4E-04	1.4E-04	1.1E-05	1.2E-04	0.0E+00
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	2.9E-04	2.9E-04	2.8E-04	1.7E-05	3.3E-04	0.0E+00

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes)

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

[5] Emissions are input on either a vehicle distance or power rating basis. Load factor applies only to emissions based on power ratings.

[6] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S3-5.1b: Vehicle Emission Rates - Tailpipe Emissions, PM

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Nitrogen Oxides 10102-44-0 (g/s)	Sulphur Dioxide 7446-09-5 (g/s)	Carbon Dioxide 124-38-9 (g/s)	Methane 74-82-8 (g/s)	Nitrous Oxide 10024-97-2 (g/s)	Tailpipe + Fugitive Emission Rate [6] TSP PM (g/s)	PM10 PM10 (g/s)	PM2.5 PM2.5 (g/s)
Mobile Equipment														
PR01	Main Entrance Road	1	1	206	10	100%	4.1E-04	2.9E-07	8.0E-02	2.2E-06	4.8E-07	8.6E-04	3.5E-04	5.5E-05
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	2.6E-04	2.7E-07	6.6E-02	1.9E-06	4.7E-07	7.5E-04	2.4E-04	4.0E-05
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	4.1E-04	5.1E-07	1.2E-01	3.4E-06	9.1E-07	1.1E-01	3.2E-02	3.3E-03
PR04A	Entrance to Scale House	1	1	487	10	100%	9.8E-04	6.9E-07	1.9E-01	5.2E-06	1.1E-06	2.2E-03	8.6E-04	1.4E-04
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	6.2E-04	6.3E-07	1.6E-01	4.4E-06	1.1E-06	2.0E-03	5.9E-04	1.0E-04
BR06	Across LF to WF southern section	1	1	603	10	100%	1.2E-03	8.5E-07	2.3E-01	6.4E-06	1.4E-06	1.4E-01	3.2E-02	3.2E-03
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	4.6E-04	5.8E-06	2.2E+00	1.6E-06	2.6E-08	1.4E-01	3.1E-02	3.1E-03
BR06Y	Across LF to WF southern section, final cap construction truck	1	1	603	10	100%	3.6E-04	4.6E-06	1.8E+00	1.2E-06	0.0E+00	1.4E-01	3.1E-02	3.1E-03
PR08Z	WF to SS/LTF	1	1	307	10	100%	3.3E-04	1.5E-06	5.4E-01	1.9E-06	4.0E-07	5.3E-03	8.1E-04	1.8E-04
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	1.8E-04	2.3E-06	8.9E-01	6.0E-07	0.0E+00	5.1E-03	6.7E-04	1.7E-04
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	1.9E-04	1.1E-06	4.0E-01	1.2E-06	2.5E-07	8.0E-02	2.4E-02	2.4E-03
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	1.3E-04	1.6E-06	6.1E-01	4.1E-07	0.0E+00	8.0E-02	2.4E-02	2.4E-03
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	1.4E-04	1.7E-06	6.6E-01	4.4E-07	0.0E+00	7.6E-02	2.3E-02	2.3E-03
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	1.1E-04	1.4E-06	5.2E-01	3.5E-07	0.0E+00	7.6E-02	2.3E-02	2.3E-03
UR11Z	Across SS	1	1	242	10	100%	1.9E-04	2.4E-06	8.9E-01	6.0E-07	0.0E+00	1.0E-01	3.1E-02	3.1E-03
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	1.5E-04	1.9E-06	7.0E-01	4.7E-07	0.0E+00	1.0E-01	3.1E-02	3.1E-03
UR12	Across LF to WF northern section	1	1	575	10	100%	1.2E-03	8.1E-07	2.2E-01	6.1E-06	1.4E-06	1.3E-01	3.0E-02	3.1E-03
UR12Z	Across LF to WF northern section, onsite equipment	1	1	575	10	100%	4.4E-04	5.5E-06	2.1E+00	1.5E-06	2.4E-08	1.3E-01	3.0E-02	3.0E-03
UR12Y	Across LF to WF northern section, final cap construction truck	1	1	575	10	100%	3.5E-04	4.4E-06	1.7E+00	1.1E-06	0.0E+00	1.3E-01	3.0E-02	3.0E-03
PR13Z	WF to LTF	1	1	165	10	100%	4.6E-04	2.7E-07	8.0E-02	2.3E-06	4.5E-07	3.6E-03	7.4E-04	1.4E-04
PR14Z	WF to LTF	1	1	61	10	100%	1.7E-04	9.8E-08	2.9E-02	8.3E-07	1.6E-07	1.3E-03	2.7E-04	5.3E-05
UR17Z	Across CDA	1	1	90	10	100%	2.9E-05	3.5E-07	1.3E-01	1.6E-07	0.0E+00	3.4E-02	1.0E-02	1.0E-03
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	1.6E-05	1.9E-07	7.3E-02	8.1E-08	1.5E-10	1.7E-02	5.3E-03	5.3E-04
PR04B	Scale House to WF	1	1	681	10	100%	1.4E-03	9.6E-07	2.6E-01	7.2E-06	1.6E-06	3.5E-03	1.3E-03	2.0E-04
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	8.7E-04	8.8E-07	2.2E-01	6.1E-06	1.6E-06	3.2E-03	8.8E-04	1.5E-04
PR04C	Exit Road from WF	1	1	420	10	100%	8.4E-04	6.0E-07	1.6E-01	4.5E-06	9.9E-07	2.2E-03	7.8E-04	1.3E-04
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	5.4E-04	5.5E-07	1.4E-01	3.8E-06	9.6E-07	2.0E-03	5.4E-04	9.5E-05
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	1.1E-02	5.8E-06	1.5E+00	6.7E-05	2.3E-05	4.8E-05	4.8E-05	4.5E-05
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	1.1E-02	5.8E-06	1.5E+00	6.7E-05	2.3E-05	4.8E-05	4.8E-05	4.5E-05
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	2.1E-02	2.5E-04	9.6E+01	8.1E-05	0.0E+00	8.0E-04	8.0E-04	7.8E-04
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	5.9E-03	7.3E-05	2.8E+01	2.3E-05	0.0E+00	2.2E-04	2.2E-04	2.1E-04
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	3.3E-03	3.9E-05	1.5E+01	1.7E-05	0.0E+00	1.4E-04	1.4E-04	1.4E-04
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	8.5E-03	1.1E-04	4.1E+01	2.8E-05	0.0E+00	2.9E-04	2.9E-04	2.8E-04

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes)

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

[5] Emissions are input on either a vehicle distance or power rating basis. Load factor applies only to emissions based on power ratings.

[6] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S3-5.1b: Vehicle Emission Rates - Tailpipe Emissions, PM

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Ratio Tailpipe : Total Emission Rate TSP PM (g/s)	PM10 PM10 (g/s)	PM2.5 PM2.5 (g/s)	Source ID	# of Volume Sources g/hr	# of Volume Sources g/vkt	TSP PM	PM10 PM10
Mobile Equipment										**Mobile Equipment**				
PR01	Main Entrance Road	1	1	206	10	100%	3.24E-01	7.87E-01	6.68E-01	PR01	11	11	7.8E-05	3.2E-05
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	2.20E-01	6.86E-01	5.43E-01	PR01Z	11	11	6.8E-05	2.2E-05
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	2.27E-03	7.51E-03	9.88E-03	UR02Z	48	48	2.2E-03	6.8E-04
PR04A	Entrance to Scale House	1	1	487	10	100%	2.93E-01	7.62E-01	6.34E-01	PR04A	57	57	3.9E-05	1.5E-05
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	1.96E-01	6.53E-01	5.06E-01	PR04AZ	57	57	3.5E-05	1.0E-05
BR06	Across LF to WF southern section	1	1	603	10	100%	5.90E-03	2.55E-02	3.33E-02	BR06	70	70	2.0E-03	4.6E-04
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	1.34E-04	5.90E-04	4.89E-03	BR06Z	70	70	2.0E-03	4.5E-04
BR06Y	Across LF to WF southern section, final cap construction truck	1	1	603	10	100%	8.93E-05	3.94E-04	3.81E-03	BR06Y	70	70	2.0E-03	4.5E-04
PR08Z	WF to SS/LTF	1	1	307	10	100%	2.74E-02	1.79E-01	1.20E-01	PR08Z	36	36	1.5E-04	2.2E-05
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	1.22E-03	9.32E-03	3.63E-02	PR08Y	36	36	1.4E-04	1.9E-05
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	8.58E-04	2.85E-03	4.63E-03	UR09AZ	25	25	3.2E-03	9.7E-04
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	5.34E-05	1.78E-04	1.72E-03	UR09AY	25	25	3.2E-03	9.7E-04
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	6.09E-05	2.03E-04	1.96E-03	UR09BZ	21	21	3.6E-03	1.1E-03
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	4.80E-05	1.60E-04	1.55E-03	UR09BY	21	21	3.6E-03	1.1E-03
UR11Z	Across SS	1	1	242	10	100%	6.09E-05	2.03E-04	1.96E-03	UR11Z	28	28	3.7E-03	1.1E-03
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	4.80E-05	1.60E-04	1.55E-03	UR11Y	28	28	3.7E-03	1.1E-03
UR12	Across LF to WF northern section	1	1	575	10	100%	5.90E-03	2.55E-02	3.33E-02	UR12	67	67	2.0E-03	4.5E-04
UR12Z	Across LF to WF northern section, onsite equipment	1	1	575	10	100%	1.34E-04	5.90E-04	4.89E-03	UR12Z	67	67	2.0E-03	4.4E-04
UR12Y	Across LF to WF northern section, final cap construction truck	1	1	575	10	100%	8.93E-05	3.94E-04	3.81E-03	UR12Y	67	67	2.0E-03	4.4E-04
PR13Z	WF to LTF	1	1	165	10	100%	8.70E-02	4.24E-01	2.85E-01	PR13Z	19	19	1.9E-04	3.9E-05
PR14Z	WF to LTF	1	1	61	10	100%	8.70E-02	4.24E-01	2.85E-01	PR14Z	7	7	1.9E-04	3.9E-05
UR17Z	Across CDA	1	1	90	10	100%	3.77E-05	1.25E-04	1.22E-03	UR17Z	10	10	3.4E-03	1.0E-03
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	4.01E-05	1.32E-04	1.25E-03	UR18Z	5	5	3.5E-03	1.1E-03
PR04B	Scale House to WF	1	1	681	10	100%	2.60E-01	7.31E-01	5.96E-01	PR04B	79	79	4.5E-05	1.6E-05
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	1.72E-01	6.16E-01	4.66E-01	PR04BZ	79	79	4.0E-05	1.1E-05
PR04C	Exit Road from WF	1	1	420	10	100%	2.60E-01	7.31E-01	5.96E-01	PR04C	49	49	4.5E-05	1.6E-05
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	1.72E-01	6.16E-01	4.66E-01	PR04CZ	49	49	4.0E-05	1.1E-05
										0				
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	n/a	n/a	n/a	IDLE01	1	1	9.7E-05	9.7E-05
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	n/a	n/a	n/a	IDLE02	1	1	9.7E-05	9.7E-05
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	1.00E+00	1.00E+00	1.00E+00	DOZE2	1	1	8.0E-04	8.0E-04
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	1.00E+00	1.00E+00	1.00E+00	DOZE4	1	1	2.2E-04	2.2E-04
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	1.00E+00	1.00E+00	1.00E+00	DOZE2CAP	1	1	1.4E-04	1.4E-04
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	1.00E+00	1.00E+00	1.00E+00	DOZE2SS	1	1	2.9E-04	2.9E-04

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes)

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

[5] Emissions are input on either a vehicle distance or power rating basis. Load factor applies only to emissions based on power ratings.

[6] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S3-5.1b: Vehicle Emission Rates - Tailpipe Emissions, PM

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Emission rate per volume source: PM2.5 PM25	Benzene 71-43-2	Ammonia 7664-41-7	Nitrogen Dioxide NO2	Nitrogen Oxides 10102-44-0	Sulphur Dioxide 7446-09-5	Carbon Dioxide 124-38-9	Methane 74-82-8	Nitrous Oxide 10024-97-2
Mobile Equipment															
PR01	Main Entrance Road	1	1	206	10	100%	5.0E-06	1.9E-09	2.0E-07	1.5E-05	3.8E-05	2.7E-08	7.3E-03	2.0E-07	4.4E-08
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	3.6E-06	6.7E-09	2.1E-07	9.5E-06	2.4E-05	2.4E-08	6.0E-03	1.7E-07	4.3E-08
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	6.8E-05	3.7E-09	9.4E-08	3.4E-06	8.5E-06	1.1E-08	2.5E-03	7.0E-08	1.9E-08
PR04A	Entrance to Scale House	1	1	487	10	100%	2.4E-06	8.8E-10	9.1E-08	6.8E-06	1.7E-05	1.2E-08	3.3E-03	9.1E-08	2.0E-08
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	1.8E-06	3.1E-09	9.4E-08	4.3E-06	1.1E-05	1.1E-08	2.7E-03	7.7E-08	1.9E-08
BR06	Across LF to WF southern section	1	1	603	10	100%	4.6E-05	8.9E-10	9.2E-08	6.9E-06	1.7E-05	1.2E-08	3.4E-03	9.2E-08	2.0E-08
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	4.5E-05	1.3E-08	2.6E-07	4.3E-08	6.6E-06	8.3E-08	3.1E-02	2.2E-08	3.7E-10
BR06Y	Across LF to WF southern section, final cap construction truck	1	1	603	10	100%	4.5E-05	1.0E-08	2.0E-07	0.0E+00	5.2E-06	6.6E-08	2.5E-02	1.7E-08	0.0E+00
PR08Z	WF to SS/LTF	1	1	307	10	100%	5.1E-06	7.2E-09	1.6E-07	2.5E-06	9.1E-06	4.1E-08	1.5E-02	5.3E-08	1.1E-08
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	4.6E-06	1.0E-08	2.0E-07	0.0E+00	5.1E-06	6.5E-08	2.5E-02	1.7E-08	0.0E+00
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	9.7E-05	7.8E-09	1.7E-07	1.8E-06	7.5E-06	4.4E-08	1.6E-02	4.7E-08	1.0E-08
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	9.7E-05	1.0E-08	2.0E-07	0.0E+00	5.1E-06	6.5E-08	2.5E-02	1.7E-08	0.0E+00
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	1.1E-04	1.3E-08	2.5E-07	0.0E+00	6.5E-06	8.3E-08	3.1E-02	2.1E-08	0.0E+00
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	1.1E-04	1.0E-08	2.0E-07	0.0E+00	5.1E-06	6.5E-08	2.5E-02	1.7E-08	0.0E+00
UR11Z	Across SS	1	1	242	10	100%	1.1E-04	1.3E-08	2.6E-07	0.0E+00	6.6E-06	8.4E-08	3.2E-02	2.2E-08	0.0E+00
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	1.1E-04	1.0E-08	2.0E-07	0.0E+00	5.2E-06	6.6E-08	2.5E-02	1.7E-08	0.0E+00
UR12	Across LF to WF northern section	1	1	575	10	100%	4.6E-05	8.9E-10	9.2E-08	6.9E-06	1.7E-05	1.2E-08	3.3E-03	9.1E-08	2.0E-08
UR12Z	Across LF to WF northern section, onsite equipment	1	1	575	10	100%	4.5E-05	1.3E-08	2.5E-07	4.3E-08	6.6E-06	8.2E-08	3.1E-02	2.2E-08	3.6E-10
UR12Y	Across LF to WF northern section, final cap construction truck	1	1	575	10	100%	4.4E-05	1.0E-08	2.0E-07	0.0E+00	5.2E-06	6.6E-08	2.5E-02	1.7E-08	0.0E+00
PR13Z	WF to LTF	1	1	165	10	100%	7.6E-06	0.0E+00	9.8E-08	9.7E-06	2.4E-05	1.4E-08	4.2E-03	1.2E-07	2.3E-08
PR14Z	WF to LTF	1	1	61	10	100%	7.6E-06	0.0E+00	9.7E-08	9.7E-06	2.4E-05	1.4E-08	4.2E-03	1.2E-07	2.3E-08
UR17Z	Across CDA	1	1	90	10	100%	1.0E-04	9.7E-09	1.1E-07	0.0E+00	2.9E-06	3.5E-08	1.3E-02	1.6E-08	0.0E+00
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	1.1E-04	9.9E-09	1.2E-07	3.5E-09	3.2E-06	3.8E-08	1.5E-02	1.6E-08	2.9E-11
PR04B	Scale House to WF	1	1	681	10	100%	2.6E-06	8.9E-10	9.2E-08	6.9E-06	1.7E-05	1.2E-08	3.4E-03	9.2E-08	2.0E-08
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	1.9E-06	3.1E-09	9.5E-08	4.4E-06	1.1E-05	1.1E-08	2.8E-03	7.8E-08	2.0E-08
PR04C	Exit Road from WF	1	1	420	10	100%	2.6E-06	8.9E-10	9.2E-08	6.9E-06	1.7E-05	1.2E-08	3.3E-03	9.1E-08	2.0E-08
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	1.9E-06	3.1E-09	9.4E-08	4.4E-06	1.1E-05	1.1E-08	2.8E-03	7.7E-08	2.0E-08
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	8.9E-05	6.8E-07	1.9E-04	8.6E-03	2.2E-02	1.2E-05	3.0E+00	1.3E-04	4.7E-05
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	8.9E-05	6.8E-07	1.9E-04	8.6E-03	2.2E-02	1.2E-05	3.0E+00	1.3E-04	4.7E-05
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	7.8E-04	5.0E-05	7.8E-04	0.0E+00	2.1E-02	2.5E-04	9.6E+01	8.1E-05	0.0E+00
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	2.1E-04	1.4E-05	2.3E-04	0.0E+00	5.9E-03	7.3E-05	2.8E+01	2.3E-05	0.0E+00
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	1.4E-04	1.1E-05	1.2E-04	0.0E+00	3.3E-03	3.9E-05	1.5E+01	1.7E-05	0.0E+00
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	2.8E-04	1.7E-05	3.3E-04	0.0E+00	8.5E-03	1.1E-04	4.1E+01	2.8E-05	0.0E+00

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes)

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

[5] Emissions are input on either a vehicle distance or power rating basis. Load factor applies only to emissions based on power ratings.

[6] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S3-5.1c: Average Vehicle Weights

Calculation of total Vehicles and Conversion of counts to Peak Daily. [1]
Vehicle type distribution assumed to remain the same.
This only affects off-site vehicles; on-site / non variable vehicle traffic remains the same.

Road	Vehicle Type	Vehicle Weight (tons)	Vehicles Total	Mean Vehicle Weight (tons)	Vehicles Total (based on peak hourly)	Total Off-site Vehicles	Off-Site Vehicle Distribution	Peak Daily Vehicles (NOT passes)	Average Vehicle Weight based on Peak Daily	Peak Hourly Vehicles AM	Vehicles MD	Vehicles PM
PR01	Residential Packers	26.0	28.9	30.2	45.5	474.6	9.6%	28.9	30.2	8.9	34.3	2.3
	Roll-offs	21.2	50.6		79.6		16.8%	50.6		15.5	60.1	4.0
	Transfer Trailers	44.3	221.1		347.4		73.2%	221.1		160.6	109.5	77.3
	Small Vehicles	2.2	63.4					63.4		0.0	35.4	28.0
	Contaminated Soil Vehicles	44.3	1.4		2.1		0.5%	1.4		1.0	0.7	0.5
PR01Z	Leachate Tankers	44.3	12.0	30.2				12.0		3.0	5.0	4.0
	Compost Truck 1	2.8	24.0					24.0		6.0	10.0	8.0
	Compost Truck 2	18.9	25.0					25.0		6.3	10.4	8.3
	Compost Truck Tri-Axle	30.3	15.0					15.0		3.8	6.3	5.0
UR02Z	Compost Truck 1	2.8	24.0	15.5				24.0		6.0	10.0	8.0
	Compost Truck 2	18.9	25.0					25.0		6.3	10.4	8.3
	Compost Truck Tri-Axle	30.3	15.0					15.0		3.8	6.3	5.0
PR03	NO TRUCKS	--	0.0	0				0.0		--	--	--
PR04A	Residential Packers	26.0	14.5	34.9	22.7	237.3	9.6%	14.5	34.9	4.4	17.2	1.1
	Roll-offs	21.2	25.3		39.8		16.8%	25.3		7.8	30.0	2.0
	Transfer Trailers	44.3	110.5		173.7		73.2%	110.5		80.3	54.7	38.7
	Contaminated Soil Vehicles	44.3	0.7		1.1		0.5%	0.7		0.5	0.3	0.2
	On-Site Roll Off	21.2	0.5					0.5		0.1	0.2	0.2
PR04AZ	Leachate Tankers	44.3	6.0	34.9				6.0		1.5	2.5	2.0
	Compost Truck 1	2.8	12.0					12.0		3.0	5.0	4.0
	Compost Truck 2	18.9	12.5					12.5		3.1	5.2	4.2
	Compost Truck Tri-Axle	30.3	7.5					7.5		1.9	3.1	2.5
PR04B	Residential Packers	26.0	28.9	34.9	45.5	474.6	9.6%	28.9	34.9	8.9	34.3	2.3
	Roll-offs	21.2	50.6		79.6		16.8%	50.6		15.5	60.1	4.0
	Transfer Trailers	44.3	221.1		347.4		73.2%	221.1		160.6	109.5	77.3
	Contaminated Soil Vehicles	44.3	1.4		2.1		0.5%	1.4		1.0	0.7	0.5
	On-Site Roll Off	21.2	1.0					1.0		0.3	0.4	0.4
PR04BZ	Leachate Tankers	44.3	12.0	34.9				12.0		3.0	5.0	4.0
	Compost Truck 1	2.8	24.0					24.0		6.0	10.0	8.0
	Compost Truck 2	18.9	25.0					25.0		6.3	10.4	8.3
	Compost Truck Tri-Axle	30.3	15.0					15.0		3.8	6.3	5.0
PR04C	Residential Packers	26.0	14.5	34.9	22.7	237.3	9.6%	14.5	34.9	4.4	17.2	1.1
	Roll-offs	21.2	25.3		39.8		16.8%	25.3		7.8	30.0	2.0
	Transfer Trailers	44.3	110.5		173.7		73.2%	110.5		80.3	54.7	38.7
	Contaminated Soil Vehicles	44.3	0.7		1.1		0.5%	0.7		0.5	0.3	0.2
	On-Site Roll Off	21.2	0.5					0.5		0.1	0.2	0.2
PR04CZ	Leachate Tankers	44.3	6.0	34.9				6.0		1.5	2.5	2.0
	Compost Truck 1	2.8	12.0					12.0		3.0	5.0	4.0
	Compost Truck 2	18.9	12.5					12.5		3.1	5.2	4.2
	Compost Truck Tri-Axle	30.3	7.5					7.5		1.9	3.1	2.5

BR06	Residential Packers	26.0	28.9	41.1	45.5	474.6	9.6%	28.9	41.1																
	Roll-offs	21.2	50.6		79.6		16.8%	50.6																	
	Transfer Trailers	44.3	221.1		347.4		73.2%	221.1																	
	Contaminated Soil Vehicles	44.3	1.4		2.1		0.5%	1.4																	
BR06Z	Cat D400 Articulated Truck	36.4	64.8	41.1				64.8																	
	On-Site Roll Off	21.2	1.0					1.0																	
BR06Y	Final Cap Construction Trucks	55.7	72.0	41.1				72.0																	
PR08Z	Leachate Tankers	44.3	12.0	37.1				12.0																	
	Cat D400 Articulated Truck	36.4	64.8					64.8																	
	Compost Truck 1	2.8	24.0					24.0																	
	Compost Truck 2	18.9	25.0					25.0																	
	Compost Truck Tri-Axle	30.3	15.0					15.0																	
PR08Y	Final Cap Construction Trucks	55.7	72.0	37.1				72.0																	
UR09AZ	Cat D400 Articulated Truck	36.4	64.8	36.7				64.8																	
	Compost Truck 1	2.8	24.0					24.0																	
	Compost Truck 2	18.9	25.0					25.0																	
	Compost Truck Tri-Axle	30.3	15.0					15.0																	
UR09AY	Final Cap Construction Trucks	55.7	72.0	36.7				72.0																	
UR09BZ	Cat D400 Articulated Truck	36.4	64.8	46.5				64.8																	
UR09BY	Final Cap Construction Trucks	55.7	72.0	46.5				72.0																	
UR11Z	Cat D400 Articulated Truck	36.4	64.8	46.5				64.8																	
UR11Y	Final Cap Construction Trucks	55.7	72.0	46.5				72.0																	
UR12	Residential Packers	26.0	28.9	41.1	45.5	474.6	9.6%	28.9	41.1																
	Roll-offs	21.2	50.6		79.6		16.8%	50.6																	
	Transfer Trailers	44.3	221.1		347.4		73.2%	221.1																	
	Contaminated Soil Vehicles	44.3	1.4		2.1		0.5%	1.4																	
UR12Z	Cat D400 Articulated Truck	36.4	64.8	41.1				64.8																	
	On-Site Roll Off	21.2	1.0					1.0																	
UR12Y	Final Cap Construction Trucks	55.7	72.0	41.1				72.0																	
PR13Z	Leachate Tankers	44.3	12.0	44.3				12.0																	
PR14Z	Leachate Tankers	44.3	12.0	44.3				12.0																	
PR15	NO TRUCKS	--	0.0	0				0.0																	
UR16Z	NO TRUCKS	--	0.0	0				0.0																	
UR17Z	Cat 950F Rubber-Tired Loader	36.4	390.2	36.4				390.2																	
UR18	NO TRUCKS	--	0.0	0				0.0																	
UR18Z	Cat 836G Compactor	36.4	1566.0	36.4				1566.0																	
	Cat D8R Dozer	36.4	0.0					0.0																	
	Cat D400 Articulated Truck	36.4	64.8					64.8																	
	Cat D6R Dozer	36.4	0.0					0.0																	
	Tracked Loader	36.4	783.0					783.0																	
	On-Site Roll Off	21.2	1.0					1.0																	

8.9	34.3	2.3
15.5	60.1	4.0
160.6	109.5	77.3
1.0	0.7	0.5
18.5	23.1	23.1
0.3	0.4	0.4
18.0	30.0	24.0
3.0	5.0	4.0
18.5	23.1	23.1
6.0	10.0	8.0
6.3	10.4	8.3
3.8	6.3	5.0
18.0	30.0	24.0
18.5	23.1	23.1
6.0	10.0	8.0
6.3	10.4	8.3
3.8	6.3	5.0
18.0	30.0	24.0
18.5	23.1	23.1
18.0	30.0	24.0
18.5	23.1	23.1
18.0	30.0	24.0
8.9	34.3	2.3
15.5	60.1	4.0
160.6	109.5	77.3
1.0	0.7	0.5
18.5	23.1	23.1
0.3	0.4	0.4
18.0	30.0	24.0
3.0	5.0	4.0
3.0	5.0	4.0
--	--	--
--	--	--
111.5	139.4	139.4
--	--	--
447.4	559.3	559.3
0.0	0.0	0.0
18.5	23.1	23.1
0.0	0.0	0.0
223.7	279.6	279.6
0.3	0.4	0.4

Notes:

[1] The maximum daily off-site vehicle count was 302 trucks based on HDR analysis of 2022 weigh scale data. A distribution of this traffic by hour of day was determined using additional weigh scale data analysis that provided maximum hourly volumes. The maximum traffic count was distributed by hour-of-day based on percentage of each hourly volume of the total. Off-site traffic counts after 5pm were assumed.

Hour of Day	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
Percent of Daily Off-site Traffic	0%	0%	0%	0%	0%	0%	0%	15%	11%	10%	13%	13%	15%	10%	9%	3%	1%	1%	1%	0%	0%	0%	0%	0%

Old Landfill - Existing Conditions Area 5 - Vinyl Chloride Concentration (Year 2042)

Year	Waste Acceptance Years (Inclusive)	LANDGEM Emission Rate (Mg/yr)	Biodegradable Portion	Corrected Concentration for Biodegradable Portion (Mg/year)	Emission Rate (g/s)	Assumed Landfill Area (m^2)	Emission Rate ($g/m^2/s$)	Gas Collection Coverage (%)	Gas Collection Efficiency (%)	Flare Destruction Efficiency (%)	Mound Emission Rate (Controlled) (g/m2/s)	Flare Emission (g/s)
2042	1972-2004	2.14E-03	100%	2.14E-03	6.80E-05	275,424	2.47E-10	100%	70%	98%	7.41E-11	9.52E-07

Sample Calculations

Calculation of g/s Emission Rate = LANDGEM Emission Rate * 1,000,000 (g/Mg) / 365 (days/yr) / 24 (hr/day) / 3,600 (s/hr)
= 0.002 Mg/yr * 1,000,000 / 365 / 24 / 3,600
= 6.80E-05 g/s

Calculation of $g/m^2/s$ Emission Flux Rate = Emission Rate / Landfill Area
= 6.80E-05 g/s/ 275424.2 m2
= 2.47E-10 g/m2/s

Calculation of Mound Emission Rate (Controlled) ($g/m^2/s$) = Emission Flux Rate * (1 - Gas Collection Efficiency)
= 2.47E-10 g/m2/s * (1 - 0.7)
= 7.41E-11 g/m2/s

Calculation of Total Flare Emission Rate (g/s) = Emission Rate * Gas Collection Efficiency * (1 - Flare Destruction Efficiency)
= 6.80E-05 g/s * 0.7 * (1-0.98)
= 9.52E-07 g/s

Appendix 5A-S3-5.2a1: NMOC Emissions from the Old Landfill (Year 2042) RWDI# 2101750

Twin Creeks Environmental Centre

Modelled Source: AREA5

Emissions rates calculated relative to the Vinyl Chloride emission rate.

Compound	CAS Number	Molecular Weight (g/mol)	Average Concentration In Raw LFG (ppm)	Note	Total AREA5 Flux Rate ($g/m^2/s$)	Total AREA5 Emission Rate [1] (g/s)
Vinyl Chloride	75-01-4	62.5	0.45	[2]	7.41E-11	2.04E-05
1,2-Dichloroethane	107-06-2	99.0	0.24	[2]	6.14E-11	1.69E-05
Benzene	71-43-2	78.1	0.93	[2]	1.91E-10	5.26E-05

Notes:

[1] Based on a source area of 275,424 m^2

[2] Concentrations based on the landfill gas sampling report dated July 13, 2023.

[3] Concentrations from the US EPA *User's Manual - Landfill Gas Emissions Model Version 2.0*, 1998.

[4] Emissions of Total Reduced Sulphurs (TRS) are based on the total of all sulphur compounds.

[5] Laboratory reported Total Reduced Sulfur as H_2S.

Sample Calculation

$$\text{Calculation of Benzene Emission Flux Rate} = \frac{\text{Vinyl Chloride Emission Flux Rate} * \text{Benzene Concentration in LFG} * \text{Molecular Weight of Benzene}}{\text{Vinyl Chloride Concentration in LFG} * \text{Molecular Weight of Vinyl Chloride}}$$

$$= \frac{7.41\text{E-}11\ g/m^2/s * 0.93\ ppm * 78.1\ g/mol}{0.45\ ppm * 62.5\ g/mol}$$

$$= 1.91\text{E-}10\ g/m^2/s$$

Expansion Landfill Phases 1 Through 7 - (Year 2042)

Year	Waste Acceptance Years (Inclusive)	Scenario [2]	LANDGEM Emission Rate (Mg/yr) [3]	Emission Rate (g/s)	Approximate Landfill Area (m^2)	Emission Flux Rate ($g/m^2/s$)	Gas Collection Coverage (%)	Gas Collection Efficiency (%)	Flare Destruction Efficiency (%)	Mound Emission Rate (Controlled) ($g/m^2/s$)
2042	2005-2019	Phases 1 to 3	3.21E-02	1.02E-03	244,004	4.17E-09	100%	86%	98%	5.74E-10
2042	2005-2019	Phases 1 to 3 Final	2.41E-02	7.63E-04	183,003	4.17E-09	100%	90%	n/a	n/a
2042	2005-2019	Phases 1 to 3 Interim	8.03E-03	2.54E-04	61,001	4.17E-09	100%	75%	n/a	n/a
2042	2020-2024	Phases 4 to 5	3.61E-02	1.14E-03	165,611	6.91E-09	100%	85%	98%	1.05E-09
2042	2020-2024	Phases 4 to 5 Final	2.35E-02	7.44E-04	107,647	6.91E-09	100%	90%	n/a	n/a
2042	2020-2024	Phases 4 to 5 Interim	1.26E-02	4.01E-04	57,964	6.91E-09	100%	75%	n/a	n/a
2042	2025-2028 [1]	Phases 6 to 7	3.51E-02	1.11E-03	179,092	6.21E-09	100%	83%	98%	1.04E-09
2042	2025-2028 [1]	Phases 6 to 7 Final	1.93E-02	6.12E-04	98,501	6.21E-09	100%	90%	n/a	n/a
2042	2025-2028 [1]	Phases 6 to 7 Interim	1.58E-02	5.01E-04	80,591	6.21E-09	100%	75%	n/a	n/a
2042	n/a [1]	Phases 8 to 9	0.00E+00	0.00E+00	99,012	0.00E+00	100%	0%	98%	0.00E+00
2042	2005-2028	Total Emissions	1.03E-01	3.28E-03	6.88E+05	1.73E-08	100%	85%	98%	2.67E-09

Notes:
[1] The planned start of filling for the Vertical Expansion is 2028 when elevation 265.7 masl is reached. The side slopes would be filled/increased first so that final cover can then be applied on the completed side slopes. Waste quantities for 2028 to 2031 that had been assigned to Expansion Landfill Phases 6 through 9 in the Existing Conditions assessment have been reassigned to Vertical Expansion Stage 1 and Stage 2.

[2] At the end of Vertical Expansion Stage 4, filling in the areas represented by Vertical Expansion Stage 1, Stage 2, and Stage 3, is complete, Stage 4 is in progress, and this has covered the areas of the Expansion Landfill Phases 1 to 7. The type of cover used for the Vertical Expansion Stages is assumed to influence the landfill gas collection efficiency of the underlying Expansion Landfill Phases. Vertical Expansion Stage 2 has been split into two areas; Stage 2 Interim is the area of Stage 2 where filling will continue as Stage 4 progresses, and Stage 2 Final is the outer edge of Stage 2 where no further filling is expected to occur. It is estimated that 75% of the underlying Expansion Landfill Phases 1 to 3 will be under Stage 2 Final, and 25% will be under Stage 1 Interim. Gas collection efficiency for areas under interim cover has been applied to Expansion Landfill Phases 1 to 3 Interim, and landfill gas collection efficiency for areas under final cover has been applied to Expansion Landfill Phases 1 to 3 Final. A similar approach was used for the other Expansion landfill phases, and it is estimated that 65% and 55% of Expansion Landfill Phases 4 to 5 and Phases 6 to 7, respectively, are under final cover.
[3] The LANDGEM Emission Rate for Phases 1 to 3 has been scaled for Phases 1 to 3 Final and Phases 1 to 3 Interim based on percent of total Phases 1 to 3 area. A similar approach was used to scale LANDGEM emission rates for Phases 4 to 5 and Phases 6 to 7.
[4] An aggregate Gas Collection Efficiency has been calculated for Phases 1 to 3 based on the weighted average of emission rate and collection efficiency for Phases 1 to 3 Final and Phases 1 to 3 Interim. Mound Emission Rate is considered for the whole of Phases 1 to 3 based on this calculated collection efficiency and is not reported separately for Phases 1 to 3 Final and Phases 1 to 3 Interim. A similar approach was used for Phases 4 to 5 and Phases 6 to 7.

Sample Calculations

Calculation of Emission Rate (Phases 1 to 3) = LANDGEM Emission Rate * 1,000,000 (g/Mg) / 365 (days/yr) / 24 (hr/day) / 3,600 (s/hr)
= 3.21E-02 Mg/yr * 1,000,000 / 365 / 24 / 3,600
= 1.02E-03 g/s

Calculation of Emission Flux Rate (Phases 1 to 3) = Emission Rate / Landfill Area
= 1.02E-03 g/s/ 244,004 m^2
= 4.17E-09 $g/m^2/s$

Calculation of Landfill Gas Collection Efficiency (CE) (Phases 1 to 3) = ((ER Phase 1 to 3 Final * CE Phase 1 to 3 Final) + (ER Phase 1 to 3 Interim * CE Phase 1 to 3 Interim))/Total ER
((7.63E-04 * 0.9) + (2.54E-04 * 0.75)) / 1.02E-03 %
= 86%

Calculation of Mound Emission Rate (Controlled) (Phases 1 to 3) = Emission Flux Rate * (1 - Gas Collection Efficiency)
= 4.17E-09 $g/m^2/s$ * (1 - 0.86)
= 5.74E-10 $g/m^2/s$

Calculation of Total Flare Emission Rate (Phases 1 to 3) = Emission Rate * Gas Collection Efficiency * (1 - Flare Destruction Efficiency)
= 1.02E-03 g/s * 0.86 * (1 - 0.98)
= 1.76E-05 g/s

Modelled Source: AREA1
Emissions rates calculated relative to the Vinyl Chloride emission rate.

Compound	CAS Number	Molecular Weight (g/mol)	Average Concentration In Raw LFG (ppm)	Note	Total AREA1 Flux Rate ($g/m^2/s$)	Total AREA1 Emission Rate [1] (g/s)	Flare Emission Rate from Phases 1 Through 3 (g/s)
Vinyl Chloride	75-01-4	62.50	0.45	[2]	5.74E-10	1.40E-04	1.76E-05
1,2-Dichloroethane	107-06-2	98.96	0.24	[2]	4.75E-10	1.16E-04	1.45E-05
Benzene	71-43-2	78.13	0.93	[2]	1.48E-09	3.61E-04	4.53E-05

Notes:
[1] Based on a source area of 244,004 m^2
[2] Concentrations based on the landfill gas sampling report dated July 13, 2023.
[3] Concentrations from the US EPA *User's Manual - Landfill Gas Emissions Model Version 2.0*, 1998.
[4] Emissions of Total Reduced Sulphurs (TRS) are based on the total of all sulphur compounds.
[5] Laboratory reported Total Reduced Sulfur as H_2S.

Sample Calculation

Calculation of Benzene Emission Flux Rate = $\frac{\text{Vinyl Chloride Emission Flux Rate * Benzene Concentration in LFG * Molecular Weight of Benzene}}{\text{Vinyl Chloride Concentration in LFG * Molecular Weight of Vinyl Chloride}}$

= $\frac{\text{5.74E-10 g/m²/s * 0.93 ppm * 78.13 g/mo}}{\text{0.45 ppm * 62.50 g/mol}}$

= 1.48E-09 g/m²/s

Modelled Source: AREA2
Emissions rates calculated relative to the Vinyl Chloride emission rate.

Compound	CAS Number	Molecular Weight (g/mol)	Average Concentration In Raw LFG (ppm)	Note	Total AREA2 Flux Rate ($g/m^2/s$)	Total AREA2 Emission Rate [1] (g/s)	Flare Emission Rate from Phases 4 Through 6 (g/s)
Vinyl Chloride	75-01-4	62.50	0.45	[2]	1.05E-09	1.75E-04	1.94E-05
1,2-Dichloroethane	107-06-2	98.96	0.24	[2]	8.73E-10	1.45E-04	1.61E-05
Benzene	71-43-2	78.13	0.93	[2]	2.72E-09	4.50E-04	5.00E-05

Notes:
[1] Based on a source area of 165,611 m^2
[2] Concentrations based on the landfill gas sampling report dated July 13, 2023.
[3] Concentrations from the US EPA *User's Manual - Landfill Gas Emissions Model Version 2.0*, 1998.
[4] Emissions of Total Reduced Sulphurs (TRS) are based on the total of all sulphur compounds.
[5] Laboratory reported Total Reduced Sulfur as H_2S.

Sample Calculation

Calculation of Benzene Emission Flux Rate = $\frac{\text{Vinyl Chloride Emission Flux Rate * Benzene Concentration in LFG * Molecular Weight of Benzene}}{\text{Vinyl Chloride Concentration in LFG * Molecular Weight of Vinyl Chloride}}$

= $\frac{\text{1.05E-09 g/m²/s * 0.93 ppm * 78.13 g/mol}}{\text{0.45 ppm * 62.50 g/mol}}$

= 2.72E-09 g/m²/s

Appendix 5A-S3-5.2b3: NMOC Emissions from the Expansion Landfill Phases 6 Through 7 (Year 2042)

RWDI# 2101750

Twin Creeks Environmental Centre

Modelled Source: AREA3

Emissions rates calculated relative to the Vinyl Chloride emission rate.

Compound	CAS Number	Molecular Weight (g/mol)	Average Concentration In Raw LFG (ppm)	Note	Total AREA3 Flux Rate ($g/m^2/s$)	Total AREA3 Emission Rate [1] (g/s)	Flare Emission Rate from Phases 7 Through 9 (g/s)
Vinyl Chloride	75-01-4	62.50	0.45	[2]	1.04E-09	1.86E-04	1.85E-05
1,2-Dichloroethane	107-06-2	98.96	0.24	[2]	8.62E-10	1.54E-04	1.53E-05
Benzene	71-43-2	78.13	0.93	[2]	2.68E-09	4.80E-04	4.78E-05

Notes:

[1] Based on a source area of 179,092 m^2

[2] Concentrations based on the landfill gas sampling report dated July 13, 2023.

[3] Concentrations from the US EPA *User's Manual - Landfill Gas Emissions Model Version 2.0*, 1998.

[4] Emissions of Total Reduced Sulphurs (TRS) are based on the total of all sulphur compounds.

[5] Laboratory reported Total Reduced Sulfur as H_2S.

Sample Calculation

Calculation of Benzene Emission Flux Rate = $\frac{\text{Vinyl Chloride Emission Flux Rate} * \text{Benzene Concentration in LFG} * \text{Molecular Weight of Benzene}}{\text{Vinyl Chloride Concentration in LFG} * \text{Molecular Weight of Vinyl Chloride}}$

= $\frac{1.04\text{E-}09\ g/m^2/s * 0.93\ ppm * 78.13\ g/mol}{0.45\ ppm * 62.50\ g/mol}$

= 2.68E-09 $g/m^2/s$

Appendix 5A-S3-5.2b4: NMOC Emissions from the Expansion Landfill Phases 8 Through 9 (Year 2042)

Twin Creeks Environmental Centre RWDI# 2101750

Modelled Source: AREA4
Emissions rates calculated relative to the Vinyl Chloride emission rate.

Compound	CAS Number	Molecular Weight (g/mol)	Average Concentration In Raw LFG (ppm)	Note	Total AREA4 Flux Rate ($g/m^2/s$)	Total AREA4 Emission Rate [1] (g/s)
Vinyl Chloride	75-01-4	62.50	0.45	[2]	0.00E+00	0.00E+00
1,2-Dichloroethane	107-06-2	98.96	0.24	[2]	0.00E+00	0.00E+00
Benzene	71-43-2	78.13	0.93	[2]	0.00E+00	0.00E+00

Notes:
[1] Based on a source area of 99,012 m^2
[2] Concentrations based on the landfill gas sampling report dated July 13, 2023.
[3] Concentrations from the US EPA *User's Manual - Landfill Gas Emissions Model Version 2.0*, 1998.
[4] Emissions of Total Reduced Sulphurs (TRS) are based on the total of all sulphur compounds.
[5] Laboratory reported Total Reduced Sulfur as H_2S.

Sample Calculation

Calculation of Benzene Emission Flux Rate = $\frac{\text{Vinyl Chloride Emission Flux Rate} * \text{Benzene Concentration in LFG} * \text{Molecular Weight of Benzene}}{\text{Vinyl Chloride Concentration in LFG} * \text{Molecular Weight of Vinyl Chloride}}$

= $\frac{0.00\text{E+00 g/m}^2\text{/s} * 0.93 \text{ ppm} * 78.13 \text{ g/mol}}{0.45 \text{ ppm} * 62.50 \text{ g/mol}}$

= 0.00E+00 $g/m^2/s$

Vertical Expansion Landfill End of Stage 4 - (Year 2042)

Year	Waste Acceptance Years (Inclusive)	Scenario [1]	LANDGEM Emission Rate (Mg/yr) [2]	Emission Rate (g/s)	Approximate Landfill Area (m^2)	Emission Flux Rate ($g/m^2/s$)	Gas Collection Coverage (%)	Gas Collection Efficiency (%) [3]	Flare Destruction Efficiency (%)	Mound Emission Rate (Controlled) ($g/m^2/s$)
2042	2028-2034	Stage 1	5.07E-02	1.61E-03	378,390	4.25E-09	100%	90%	98%	4.25E-10
2042	2028-2034	Stage 1 Final	5.07E-02	1.61E-03	378,390	4.25E-09	100%	90%	n/a	n/a
2042	2028-2034	Stage 1 Interim	0.00E+00	0.00E+00	0	0.00E+00	100%	75%	n/a	n/a
2042	2028-2037	Stage 2	5.55E-02	1.76E-03	366,429	4.80E-09	100%	83%	98%	8.37E-10
2042	2028-2037	Stage 2 Final	2.80E-02	8.88E-04	184,934	4.80E-09	100%	90%	n/a	n/a
2042	2028-2037	Stage 2 Interim	2.75E-02	8.72E-04	181,496	4.80E-09	100%	75%	n/a	n/a
2042	2037-2039	Stage 3	2.95E-02	9.36E-04	147,145	6.36E-09	100%	90%	98%	6.36E-10
2042	2039-2042	Stage 4	3.77E-02	1.20E-03	181,496	6.59E-09	100%	75%	98%	1.65E-09
2042	2028-2042	Total Emissions	1.73E-01	5.50E-03	1.07E+06	2.20E-08	100%	84%	98%	3.55E-09

Notes:
[1] At the end of Stage 4, filling in the areas represented by Stage 1, Stage 2,and Stage 3 is complete, and Stage 4 is in progress. Stage 2 has been split into two areas; Stage 2 Interim is the area of Stage 4 where filling continues, and Stage 2 Final is the outer edge of Stage 2 where no further filling is expected to occur. Gas collection efficiency for areas under interim cover has been applied to Stage 2 Interim, and landfill gas collection efficiency for areas under final cover has been applied to Stage 2 Final.

[2] The LANDGEM Emission Rate for Stage 1 has been scaled for Stage 1 Final and Stage 1 Interim based on percent of total Stage 1 area. A similar approach was used for Stage 2.

[3] An aggregate Gas Collection Efficiency has been calculated for Stage 1 based on the weighted average of emission rate and collection efficiency for Stage 1 Final and Stage 1 Interim. Mound Emission Rate is considered for the whole of Stage 1 based on this calculated collection efficiency and is not reported separately for Stage 1 Final and Stage 1 Interim. A similar approach was used for Stage 2.

Sample Calculations

Calculation of Emission Rate (Stage 1) = LANDGEM Emission Rate * 1,000,000 (g/Mg) / 365 (days/yr) / 24 (hr/day) / 3,600 (s/hr)
= 5.07E-02 Mg/yr * 1,000,000 / 365 / 24 / 3,600
= 1.61E-03 g/s

Calculation of Emission Flux Rate (Stage 1) = Emission Rate / Landfill Area
= 1.61E-03 g/s/ 378,390 m^2
= 4.25E-09 $g/m^2/s$

Calculation of Landfill Gas Collection Efficiency (CE) (Stage 1) = ((ER Stage 1 Final * CE Stage 1 Final) + (ER Stage 1 Interim * CE Stage 1 Interim))/Total ER
((1.61E-03 * 0.9) + (0.00E+00 * 0.75)) / 1.61E-03 %
= 90%

Calculation of Mound Emission Rate (Controlled) (Stage 1) = Emission Flux Rate * (1 - Gas Collection Efficiency)
= 4.25E-09 $g/m^2/s$ * (1 - 0.90)
= 4.25E-10 $g/m^2/s$

Calculation of Total Flare Emission Rate (Stage 1) = Emission Rate * Gas Collection Efficiency * (1 - Flare Destruction Efficiency)
= 1.61E-03 g/s * 0.90 * (1 - 0.98)
= 2.89E-05 g/s

Appendix 5A-S3-5.2c1: NMOC Emissions from the Vertical Expansion Landfill Stage 1 (Year 2042) RWDI# 2101750

Twin Creeks Environmental Centre

Modelled Source: STAGE1

Emissions rates calculated relative to the Vinyl Chloride emission rate.

Compound	CAS Number	Molecular Weight (g/mol)	Average Concentration In Raw LFG (ppm)	Note	Total STAGE1 Flux Rate ($g/m^2/s$)	Total STAGE1 Emission Rate [1] (g/s)
Vinyl Chloride	75-01-4	62.50	0.45	[2]	4.25E-10	1.61E-04
1,2-Dichloroethane	107-06-2	98.96	0.24	[2]	3.52E-10	1.33E-04
Benzene	71-43-2	78.13	0.93	[2]	1.10E-09	4.14E-04

Notes:

[1] Based on a source area of 378,390 m^2

[2] Concentrations based on the landfill gas sampling report dated July 13, 2023.

[3] Concentrations from the US EPA *User's Manual - Landfill Gas Emissions Model Version 2.0*, 1998.

[4] Emissions of Total Reduced Sulphurs (TRS) are based on the total of all sulphur compounds.

[5] Laboratory reported Total Reduced Sulfur as H_2S.

Sample Calculation

Calculation of Benzene Emission Flux Rate = $\frac{\text{Vinyl Chloride Emission Flux Rate * Benzene Concentration in LFG * Molecular Weight of Benzene}}{\text{Vinyl Chloride Concentration in LFG * Molecular Weight of Vinyl Chloride}}$

= $\frac{\text{4.25E-10 g/m²/s * 0.93 ppm * 78.13 g/mol}}{\text{0.45 ppm * 62.50 g/mol}}$

= 1.10E-09 g/m²/s

Appendix 5A-S3-5.2c2: NMOC Emissions from the Vertical Expansion Landfill Stage 2 (Year 2042) RWDI# 2101750

Twin Creeks Environmental Centre

Modelled Source: STAGE2

Emissions rates calculated relative to the Vinyl Chloride emission rate.

Compound	CAS Number	Molecular Weight (g/mol)	Average Concentration In Raw LFG (ppm)	Note	Total STAGE2 Flux Rate ($g/m^2/s$)	Total STAGE2 Emission Rate [1] (g/s)
Vinyl Chloride	75-01-4	62.50	0.45	[2]	8.37E-10	3.07E-04
1,2-Dichloroethane	107-06-2	98.96	0.24	[2]	6.94E-10	2.54E-04
Benzene	71-43-2	78.13	0.93	[2]	2.16E-09	7.91E-04

Notes:

[1] Based on a source area of 366,429 m^2

[2] Concentrations based on the landfill gas sampling report dated July 13, 2023.

[3] Concentrations from the US EPA *User's Manual - Landfill Gas Emissions Model Version 2.0*, 1998.

[4] Emissions of Total Reduced Sulphurs (TRS) are based on the total of all sulphur compounds.

[5] Laboratory reported Total Reduced Sulfur as H_2S.

Sample Calculation

Calculation of Benzene Emission Flux Rate = $\frac{\text{Vinyl Chloride Emission Flux Rate * Benzene Concentration in LFG * Molecular Weight of Benzene}}{\text{Vinyl Chloride Concentration in LFG * Molecular Weight of Vinyl Chloride}}$

= $\frac{\text{8.37E-10 g/m²/s * 0.93 ppm * 78.13 g/mol}}{\text{0.45 ppm * 62.50 g/mol}}$

= 2.16E-09 g/m²/s

Appendix 5A-S3-5.2c3: NMOC Emissions from the Vertical Expansion Landfill Stage 3 (Year 2042) RWDI# 2101750

Twin Creeks Environmental Centre

Modelled Source: STAGE3

Emissions rates calculated relative to the Vinyl Chloride emission rate.

Compound	CAS Number	Molecular Weight (g/mol)	Average Concentration In Raw LFG (ppm)	Note	Total STAGE3 Flux Rate ($g/m^2/s$)	Total STAGE3 Emission Rate [1] (g/s)
Vinyl Chloride	75-01-4	62.50	0.45	[2]	6.36E-10	9.36E-05
1,2-Dichloroethane	107-06-2	98.96	0.24	[2]	5.27E-10	7.76E-05
Benzene	71-43-2	78.13	0.93	[2]	1.64E-09	2.41E-04

Notes:

[1] Based on a source area of 147,145 m^2

[2] Concentrations based on the landfill gas sampling report dated July 13, 2023.

[3] Concentrations from the US EPA *User's Manual - Landfill Gas Emissions Model Version 2.0*, 1998.

[4] Emissions of Total Reduced Sulphurs (TRS) are based on the total of all sulphur compounds.

[5] Laboratory reported Total Reduced Sulfur as H_2S.

Sample Calculation

Calculation of Benzene Emission Flux Rate = $\frac{\text{Vinyl Chloride Emission Flux Rate * Benzene Concentration in LFG * Molecular Weight of Benzene}}{\text{Vinyl Chloride Concentration in LFG * Molecular Weight of Vinyl Chloride}}$

= $\frac{\text{6.36E-10 g/m²/s * 0.93 ppm * 78.13 g/mol}}{\text{0.45 ppm * 62.50 g/mol}}$

= 1.64E-09 g/m²/s

Appendix 5A-S3-5.2c4: NMOC Emissions from the Vertical Expansion Landfill Stage 4 (Year 2042) RWDI# 2101750

Twin Creeks Environmental Centre

Modelled Source: STAGE4

Emissions rates calculated relative to the Vinyl Chloride emission rate.

Compound	CAS Number	Molecular Weight (g/mol)	Average Concentration In Raw LFG (ppm)	Note	Total STAGE4 Flux Rate ($g/m^2/s$)	Total STAGE4 Emission Rate [1] (g/s)
Vinyl Chloride	75-01-4	62.50	0.45	[2]	1.65E-09	2.99E-04
1,2-Dichloroethane	107-06-2	98.96	0.24	[2]	1.36E-09	2.48E-04
Benzene	71-43-2	78.13	0.93	[2]	4.25E-09	7.71E-04

Notes:

[1] Based on a source area of 181,496 m^2

[2] Concentrations based on the landfill gas sampling report dated July 13, 2023.

[3] Concentrations from the US EPA *User's Manual - Landfill Gas Emissions Model Version 2.0*, 1998.

[4] Emissions of Total Reduced Sulphurs (TRS) are based on the total of all sulphur compounds.

[5] Laboratory reported Total Reduced Sulfur as H_2S.

Sample Calculation

Calculation of Benzene Emission Flux Rate = $\frac{\text{Vinyl Chloride Emission Flux Rate * Benzene Concentration in LFG * Molecular Weight of Benzene}}{\text{Vinyl Chloride Concentration in LFG * Molecular Weight of Vinyl Chloride}}$

= $\frac{\text{1.65E-09 g/m²/s * 0.93 ppm * 78.13 g/mol}}{\text{0.45 ppm * 62.50 g/mol}}$

= 4.25E-09 g/m²/s

USER INPUTS

Landfill Name or Identifier: Twin Creeks Environmental Centre

Clear ALL Non-Parameter Inputs/Selections

1: PROVIDE LANDFILL CHARACTERISTICS

Landfill Open Year	1972	
Landfill Closure Year	2005	
Have Model Calculate Closure Year?	○ Yes ◉ No	
Waste Design Capacity		megagrams

Restore Default Model Parameters

2: DETERMINE MODEL PARAMETERS

Methane Generation Rate, k (*year*$^{-1}$)
User-specified
User-specified k value should be based on site-specific data and determined by EPA Method 2E.
User-specified value: 0.040

Potential Methane Generation Capacity, L_o (*m*^{3}/*Mg*)
User-specified
User-specified Lo value should be based on site-specific data and determined by waste type and composition.
User-specified value: 125

NMOC Concentration (*ppmv as hexane*)
User-specified
User-specified value: 595

Methane Content (*% by volume*)
User-specified
User-specified value: 52

3: SELECT GASES/POLLUTANTS

Gas / Pollutant #1 #REF!
Total landfill gas

Gas / Pollutant #2
Methane

Gas / Pollutant #3
Carbon dioxide

Gas / Pollutant #4
NMOC

Edit Existing or Add New Pollutant Parameters

Restore Default Pollutant Parameters

Description/Comments:

Modelling of existing landfill Area 5. Values based on MECP Interim Guide.

4: ENTER WASTE ACCEPTANCE RATES

Input Units: Mg/year

Year	Input Units *(Mg/year)*	Calculated Units *(short tons/year)*
1972	9,979	10,977
1973	9,979	10,977
1974	9,979	10,977
1975	9,979	10,977
1976	9,979	10,977
1977	9,979	10,977
1978	9,979	10,977
1979	9,979	10,977
1980	9,979	10,977
1981	9,979	10,977
1982	9,979	10,977
1983	9,979	10,977
1984	9,979	10,977
1985	9,979	10,977
1986	9,979	10,977
1987	9,979	10,977
1988	9,979	10,977
1989	9,979	10,977
1990	9,979	10,977
1991	9,979	10,977
1992	9,979	10,977
1993	9,979	10,977
1994	69,605	76,566
1995	55,074	60,581
1996	43,328	47,661
1997	57,497	63,247
1998	57,903	63,693
1999	58,599	64,459
2000	53,819	59,201
2001	191,426	210,569
2002	108,441	119,285
2003	86,909	95,600
2004	98,516	108,368
2005		
2006		
2007		
2008		
2009		
2010		
2011		

4: ENTER WASTE ACCEPTANCE RATES

Input Units: Mg/year

Year	Input Units *(Mg/year)*	Calculated Units *(short tons/year)*
2012		
2013		
2014		
2015		
2016		
2017		
2018		
2019		
2020		
2021		
2022		
2023		
2024		
2025		
2026		
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2046		
2047		
2048		
2049		
2050		
2051		

INVENTORY

Landfill Name or Identifier: Twin Creeks Environmental Centre

Enter year of emissions inventory: 2042

Gas / Pollutant	Emission Rate				
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(ft^3/year)*	*(short tons/year)*
Total landfill gas	2.299E+03	1.821E+06	1.224E+02	6.432E+07	2.529E+03
Methane	6.319E+02	9.471E+05	6.364E+01	3.345E+07	6.951E+02
Carbon dioxide	1.600E+03	8.743E+05	5.874E+01	3.088E+07	1.760E+03
NMOC	3.885E+00	1.084E+03	7.282E-02	3.827E+04	4.273E+00
1,1,1-Trichloroethane (methyl chloroform) - HAP	2.324E-04	4.189E-02	2.815E-06	1.479E+00	2.557E-04
1,1,2,2-Tetrachloroethane - HAP/VOC	2.925E-04	4.189E-02	2.815E-06	1.479E+00	3.217E-04
1,1-Dichloroethane (ethylidene dichloride) - HAP/VOC	1.724E-04	4.189E-02	2.815E-06	1.479E+00	1.897E-04
1,1-Dichloroethene (vinylidene chloride) - HAP/VOC	1.469E-04	3.643E-02	2.448E-06	1.286E+00	1.616E-04
1,2-Dichloroethane (ethylene dichloride) - HAP/VOC	1.777E-03	4.317E-01	2.900E-05	1.524E+01	1.954E-03
1,2-Dichloropropane (propylene dichloride) - HAP/VOC	5.821E-04	1.239E-01	8.322E-06	4.374E+00	6.403E-04
2-Propanol (isopropyl alcohol) - VOC	2.823E-02	1.129E+01	7.588E-04	3.988E+02	3.106E-02
Acetone	3.080E-02	1.275E+01	8.567E-04	4.503E+02	3.388E-02
Acrylonitrile - HAP/VOC	2.532E-02	1.147E+01	7.710E-04	4.052E+02	2.786E-02
Benzene - No or Unknown Co-disposal - HAP/VOC	5.528E-03	1.701E+00	1.143E-04	6.008E+01	6.081E-03
Benzene - Co-disposal - HAP/VOC	6.509E-02	2.004E+01	1.346E-03	7.076E+02	7.160E-02
Bromodichloromethane - VOC	5.709E-04	8.379E-02	5.630E-06	2.959E+00	6.280E-04
Butane - VOC	2.202E-02	9.107E+00	6.119E-04	3.216E+02	2.422E-02
Carbon disulfide - HAP/VOC	4.729E-02	1.494E+01	1.004E-03	5.275E+02	5.202E-02
Carbon monoxide	2.971E-01	2.550E+02	1.713E-02	9.005E+03	3.268E-01
Carbon tetrachloride - HAP/VOC	2.680E-04	4.189E-02	2.815E-06	1.479E+00	2.948E-04
Carbonyl sulfide - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chlorobenzene - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chlorodifluoromethane	#REF!	#REF!	#REF!	#REF!	#REF!
Chloroethane (ethyl chloride) - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chloroform - HAP/VOC	2.080E-04	4.189E-02	2.815E-06	1.479E+00	2.288E-04
Chloromethane - VOC	3.634E-04	1.730E-01	1.163E-05	6.111E+00	3.997E-04
Dichlorobenzene - (HAP for para isomer/VOC)	#REF!	#REF!	#REF!	#REF!	#REF!
Dichlorodifluoromethane	5.130E-04	1.020E-01	6.853E-06	3.602E+00	5.643E-04
Dichlorofluoromethane - VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Dichloromethane (methylene chloride) - HAP	#REF!	#REF!	#REF!	#REF!	#REF!
Dimethyl sulfide (methyl sulfide) - VOC	1.600E-01	6.193E+01	4.161E-03	2.187E+03	1.760E-01
Ethane	2.027E+00	1.621E+03	1.089E-01	5.725E+04	2.230E+00
Ethanol - VOC	1.002E-01	5.227E+01	3.512E-03	1.846E+03	1.102E-01
Ethyl mercaptan (ethanethiol) - VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Ethylbenzene - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Ethylene dibromide - HAP/VOC	3.274E-04	4.189E-02	2.815E-06	1.479E+00	3.601E-04
Fluorotrichloromethane - VOC	7.910E-03	1.384E+00	9.301E-05	4.889E+01	8.701E-03
Hexane - HAP/VOC	1.097E-02	3.060E+00	2.056E-04	1.081E+02	1.207E-02
Hydrogen sulfide	9.553E-01	6.739E+02	4.528E-02	2.380E+04	1.051E+00
Mercury (total) - HAP	4.407E-06	5.282E-04	3.549E-08	1.865E-02	4.848E-06
Methyl ethyl ketone - HAP/VOC	1.032E-01	3.442E+01	2.313E-03	1.216E+03	1.136E-01
Methyl isobutyl ketone - HAP/VOC	3.877E-03	9.307E-01	6.254E-05	3.287E+01	4.265E-03
Methyl mercaptan - VOC	1.203E-01	6.011E+01	4.039E-03	2.123E+03	1.323E-01
Pentane - VOC	1.804E-02	6.011E+00	4.039E-04	2.123E+02	1.984E-02
Perchloroethylene (tetrachloroethylene) - HAP	8.794E-03	1.275E+00	8.567E-05	4.503E+01	9.673E-03
Propane - VOC	3.674E-02	2.004E+01	1.346E-03	7.076E+02	4.042E-02
t-1,2-Dichloroethene - VOC	2.056E-02	5.100E+00	3.427E-04	1.801E+02	2.262E-02
Toluene - No or Unknown Co-disposal - HAP/VOC	9.353E-02	2.441E+01	1.640E-03	8.619E+02	1.029E-01
Toluene - Co-disposal - HAP/VOC	1.187E+00	3.096E+02	2.080E-02	1.094E+04	1.305E+00
Trichloroethylene (trichloroethene) - HAP/VOC	1.871E-03	3.424E-01	2.301E-05	1.209E+01	2.058E-03
Vinyl chloride - HAP/VOC	2.145E-03	8.251E-01	5.544E-05	2.914E+01	2.359E-03
Xylenes - HAP/VOC	7.423E-02	1.681E+01	1.130E-03	5.937E+02	8.166E-02
1,2-Dichloroethene cis	1.234E-02	3.060E+00	2.056E-04	1.081E+02	1.357E-02
1,2-Dichloroethylene	5.362E-03	1.330E+00	8.934E-05	4.696E+01	5.898E-03
2-Butanol	3.240E-02	1.051E+01	7.061E-04	3.711E+02	3.564E-02
Octane	1.514E-02	3.187E+00	2.142E-04	1.126E+02	1.666E-02
1,1,2-Trichloroethane	4.750E-03	8.561E-01	5.752E-05	3.023E+01	5.225E-03
1,2-Dibromoethane	1.423E-04	1.821E-02	1.224E-06	6.432E-01	1.566E-04
1,2-Dichloroethene trans	5.361E-03	1.330E+00	8.934E-05	4.696E+01	5.897E-03

USER INPUTS

Landfill Name or Identifier: Twin Creeks Environmental Centre

Clear ALL Non-Parameter Inputs/Selections

1: PROVIDE LANDFILL CHARACTERISTICS

Landfill Open Year	1972	
Landfill Closure Year	2020	
Have Model Calculate Closure Year?	○ Yes ◉ No	
Waste Design Capacity		megagrams

Restore Default Model Parameters

2: DETERMINE MODEL PARAMETERS

Methane Generation Rate, k (*year*$^{-1}$)
User-specified
User-specified value: 0.040
User-specified k value should be based on site-specific data and determined by EPA Method 2E.

Potential Methane Generation Capacity, L_o (*m*^{3}/*Mg*)
User-specified
User-specified value: 125
User-specified Lo value should be based on site-specific data and determined by waste type and composition.

NMOC Concentration (*ppmv as hexane*)
User-specified
User-specified value: 595

Methane Content (*% by volume*)
User-specified
User-specified value: 52

3: SELECT GASES/POLLUTANTS

Gas / Pollutant #1 #REF!
Total landfill gas

Gas / Pollutant #2
Methane

Gas / Pollutant #3
Carbon dioxide

Gas / Pollutant #4
NMOC

Edit Existing or Add New Pollutant Parameters

Restore Default Pollutant Parameters

Description/Comments:

Modelling of existing landfill Area 1. Values based on MECP Interim Guide.

4: ENTER WASTE ACCEPTANCE RATES

Input Units: Mg/year

Year	Input Units *(Mg/year)*	Calculated Units *(short tons/year)*
1972		0
1973		0
1974		0
1975		0
1976		0
1977		0
1978		0
1979		0
1980		0
1981		0
1982		0
1983		0
1984		0
1985		0
1986		0
1987		0
1988		0
1989		0
1990		0
1991		0
1992		0
1993		0
1994		0
1995		0
1996		0
1997		0
1998		0
1999		0
2000		0
2001		0
2002		0
2003		0
2004		0
2005	218,455	240,301
2006	298,090	327,899
2007	304,043	334,447
2008	283,591	311,950
2009	169,803	186,783
2010	311,006	342,107
2011	429,041	471,945

4: ENTER WASTE ACCEPTANCE RATES

Input Units: Mg/year

Year	Input Units *(Mg/year)*	Calculated Units *(short tons/year)*
2012	528,571	581,428
2013	452,641	497,905
2014	470,377	517,415
2015	533,326	586,659
2016	678,031	745,834
2017	820,360	902,396
2018	1,324,830	1,457,313
2019	1,417,281	1,559,009
2020		
2021		
2022		
2023		
2024		
2025		
2026		
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INVENTORY

Landfill Name or Identifier: Twin Creeks Environmental Centre

Enter year of emissions inventory: 2042

Gas / Pollutant	Emission Rate				
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(ft^3/year)*	*(short tons/year)*
Total landfill gas	3.441E+04	2.726E+07	1.832E+03	9.627E+08	3.785E+04
Methane	9.457E+03	1.418E+07	9.525E+02	5.006E+08	1.040E+04
Carbon dioxide	2.395E+04	1.309E+07	8.792E+02	4.621E+08	2.635E+04
NMOC	5.814E+01	1.622E+04	1.090E+00	5.728E+05	6.396E+01
1,1,1-Trichloroethane (methyl chloroform) - HAP	3.479E-03	6.270E-01	4.213E-05	2.214E+01	3.827E-03
1,1,2,2-Tetrachloroethane - HAP/VOC	4.377E-03	6.270E-01	4.213E-05	2.214E+01	4.815E-03
1,1-Dichloroethane (ethylidene dichloride) - HAP/VOC	2.581E-03	6.270E-01	4.213E-05	2.214E+01	2.839E-03
1,1-Dichloroethene (vinylidene chloride) - HAP/VOC	2.198E-03	5.452E-01	3.663E-05	1.925E+01	2.418E-03
1,2-Dichloroethane (ethylene dichloride) - HAP/VOC	2.659E-02	6.461E+00	4.341E-04	2.282E+02	2.925E-02
1,2-Dichloropropane (propylene dichloride) - HAP/VOC	8.712E-03	1.854E+00	1.246E-04	6.547E+01	9.583E-03
2-Propanol (isopropyl alcohol) - VOC	4.226E-01	1.690E+02	1.136E-02	5.969E+03	4.648E-01
Acetone	4.610E-01	1.908E+02	1.282E-02	6.739E+03	5.071E-01
Acrylonitrile - HAP/VOC	3.790E-01	1.717E+02	1.154E-02	6.065E+03	4.169E-01
Benzene - No or Unknown Co-disposal - HAP/VOC	8.274E-02	2.546E+01	1.711E-03	8.992E+02	9.102E-02
Benzene - Co-disposal - HAP/VOC	9.742E-01	2.999E+02	2.015E-02	1.059E+04	1.072E+00
Bromodichloromethane - VOC	8.545E-03	1.254E+00	8.426E-05	4.429E+01	9.400E-03
Butane - VOC	3.295E-01	1.363E+02	9.158E-03	4.814E+03	3.625E-01
Carbon disulfide - HAP/VOC	7.078E-01	2.235E+02	1.502E-02	7.894E+03	7.786E-01
Carbon monoxide	4.446E+00	3.817E+03	2.564E-01	1.348E+05	4.891E+00
Carbon tetrachloride - HAP/VOC	4.012E-03	6.270E-01	4.213E-05	2.214E+01	4.413E-03
Carbonyl sulfide - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chlorobenzene - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chlorodifluoromethane	#REF!	#REF!	#REF!	#REF!	#REF!
Chloroethane (ethyl chloride) - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chloroform - HAP/VOC	3.113E-03	6.270E-01	4.213E-05	2.214E+01	3.425E-03
Chloromethane - VOC	5.439E-03	2.590E+00	1.740E-04	9.146E+01	5.983E-03
Dichlorobenzene - (HAP for para isomer/VOC)	#REF!	#REF!	#REF!	#REF!	#REF!
Dichlorodifluoromethane	7.677E-03	1.527E+00	1.026E-04	5.391E+01	8.445E-03
Dichlorofluoromethane - VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Dichloromethane (methylene chloride) - HAP	#REF!	#REF!	#REF!	#REF!	#REF!
Dimethyl sulfide (methyl sulfide) - VOC	2.395E+00	9.269E+02	6.228E-02	3.273E+04	2.635E+00
Ethane	3.035E+01	2.426E+04	1.630E+00	8.568E+05	3.338E+01
Ethanol - VOC	1.500E+00	7.824E+02	5.257E-02	2.763E+04	1.650E+00
Ethyl mercaptan (ethanethiol) - VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Ethylbenzene - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Ethylene dibromide - HAP/VOC	4.900E-03	6.270E-01	4.213E-05	2.214E+01	5.390E-03
Fluorotrichloromethane - VOC	1.184E-01	2.072E+01	1.392E-03	7.317E+02	1.302E-01
Hexane - HAP/VOC	1.642E-01	4.580E+01	3.077E-03	1.617E+03	1.806E-01
Hydrogen sulfide	1.430E+01	1.009E+04	6.777E-01	3.562E+05	1.573E+01
Mercury (total) - HAP	6.597E-05	7.906E-03	5.312E-07	2.792E-01	7.256E-05
Methyl ethyl ketone - HAP/VOC	1.545E+00	5.152E+02	3.462E-02	1.820E+04	1.700E+00
Methyl isobutyl ketone - HAP/VOC	5.803E-02	1.393E+01	9.360E-04	4.920E+02	6.384E-02
Methyl mercaptan - VOC	1.800E+00	8.996E+02	6.045E-02	3.177E+04	1.980E+00
Pentane - VOC	2.700E-01	8.996E+01	6.045E-03	3.177E+03	2.970E-01
Perchloroethylene (tetrachloroethylene) - HAP	1.316E-01	1.908E+01	1.282E-03	6.739E+02	1.448E-01
Propane - VOC	5.499E-01	2.999E+02	2.015E-02	1.059E+04	6.049E-01
t-1,2-Dichloroethene - VOC	3.078E-01	7.633E+01	5.129E-03	2.696E+03	3.385E-01
Toluene - No or Unknown Co-disposal - HAP/VOC	1.400E+00	3.653E+02	2.454E-02	1.290E+04	1.540E+00
Toluene - Co-disposal - HAP/VOC	1.776E+01	4.634E+03	3.114E-01	1.637E+05	1.953E+01
Trichloroethylene (trichloroethene) - HAP/VOC	2.801E-02	5.125E+00	3.444E-04	1.810E+02	3.081E-02
Vinyl chloride - HAP/VOC	3.210E-02	1.235E+01	8.298E-04	4.361E+02	3.531E-02
Xylenes - HAP/VOC	1.111E+00	2.516E+02	1.691E-02	8.886E+03	1.222E+00
1,2-Dichloroethene cis	1.847E-01	4.580E+01	3.077E-03	1.617E+03	2.031E-01
1,2-Dichloroethylene	8.025E-02	1.990E+01	1.337E-03	7.028E+02	8.827E-02
2-Butanol	4.849E-01	1.573E+02	1.057E-02	5.555E+03	5.334E-01
Octane	2.267E-01	4.771E+01	3.205E-03	1.685E+03	2.493E-01
1,1,2-Trichloroethane	7.109E-02	1.281E+01	8.609E-04	4.525E+02	7.820E-02
1,2-Dibromoethane	2.130E-03	2.726E-01	1.832E-05	9.627E+00	2.343E-03
1,2-Dichloroethene trans	8.024E-02	1.990E+01	1.337E-03	7.028E+02	8.826E-02

USER INPUTS

Landfill Name or Identifier: Twin Creeks Environmental Centre

Clear ALL Non-Parameter Inputs/Selections

1: PROVIDE LANDFILL CHARACTERISTICS

Landfill Open Year	1972	
Landfill Closure Year	2025	
Have Model Calculate Closure Year?	○ Yes ◉ No	
Waste Design Capacity		megagrams

Restore Default Model Parameters

2: DETERMINE MODEL PARAMETERS

Methane Generation Rate, k (*year*$^{-1}$)
User-specified
User-specified value: 0.040
User-specified k value should be based on site-specific data and determined by EPA Method 2E.

Potential Methane Generation Capacity, L_o (*m*^{3}/*Mg*)
User-specified
User-specified value: 125
User-specified Lo value should be based on site-specific data and determined by waste type and composition.

NMOC Concentration (*ppmv as hexane*)
User-specified
User-specified value: 595

Methane Content (*% by volume*)
User-specified
User-specified value: 52

3: SELECT GASES/POLLUTANTS

Gas / Pollutant #1 #REF!
Total landfill gas

Gas / Pollutant #2
Methane

Gas / Pollutant #3
Carbon dioxide

Gas / Pollutant #4
NMOC

Edit Existing or Add New Pollutant Parameters

Restore Default Pollutant Parameters

Description/Comments:

Modelling of existing landfill Area 2. Values based on MECP Interim Guide.

4: ENTER WASTE ACCEPTANCE RATES

Input Units: Mg/year

Year	Input Units *(Mg/year)*	Calculated Units *(short tons/year)*
1972		0
1973		0
1974		0
1975		0
1976		0
1977		0
1978		0
1979		0
1980		0
1981		0
1982		0
1983		0
1984		0
1985		0
1986		0
1987		0
1988		0
1989		0
1990		0
1991		0
1992		0
1993		0
1994		0
1995		0
1996		0
1997		0
1998		0
1999		0
2000		0
2001		0
2002		0
2003		0
2004		0
2005		0
2006		0
2007		0
2008		0
2009		0
2010		0
2011		0

4: ENTER WASTE ACCEPTANCE RATES

Input Units: Mg/year

Year	Input Units *(Mg/year)*	Calculated Units *(short tons/year)*
2012		0
2013		0
2014		0
2015		0
2016		0
2017		0
2018		0
2019		0
2020	1,330,444	1,463,488
2021	1,399,849	1,539,834
2022	1,391,172	1,530,290
2023	1,400,000	1,540,000
2024	1,400,000	1,540,000
2025		
2026		
2027		
2028		
2029		
2030		
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2050		
2051		

INVENTORY

Landfill Name or Identifier: Twin Creeks Environmental Centre

Enter year of emissions inventory: 2042

Gas / Pollutant	Emission Rate				
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(ft^3/year)*	*(short tons/year)*
Total landfill gas	3.868E+04	3.064E+07	2.059E+03	1.082E+09	4.255E+04
Methane	1.063E+04	1.594E+07	1.071E+03	5.627E+08	1.169E+04
Carbon dioxide	2.693E+04	1.471E+07	9.883E+02	5.195E+08	2.962E+04
NMOC	6.536E+01	1.823E+04	1.225E+00	6.439E+05	7.189E+01
1,1,1-Trichloroethane (methyl chloroform) - HAP	3.911E-03	7.048E-01	4.736E-05	2.489E+01	4.302E-03
1,1,2,2-Tetrachloroethane - HAP/VOC	4.921E-03	7.048E-01	4.736E-05	2.489E+01	5.413E-03
1,1-Dichloroethane (ethylidene dichloride) - HAP/VOC	2.901E-03	7.048E-01	4.736E-05	2.489E+01	3.191E-03
1,1-Dichloroethene (vinylidene chloride) - HAP/VOC	2.471E-03	6.129E-01	4.118E-05	2.164E+01	2.718E-03
1,2-Dichloroethane (ethylene dichloride) - HAP/VOC	2.989E-02	7.263E+00	4.880E-04	2.565E+02	3.288E-02
1,2-Dichloropropane (propylene dichloride) - HAP/VOC	9.793E-03	2.084E+00	1.400E-04	7.359E+01	1.077E-02
2-Propanol (isopropyl alcohol) - VOC	4.750E-01	1.900E+02	1.277E-02	6.710E+03	5.225E-01
Acetone	5.182E-01	2.145E+02	1.441E-02	7.575E+03	5.700E-01
Acrylonitrile - HAP/VOC	4.261E-01	1.931E+02	1.297E-02	6.818E+03	4.687E-01
Benzene - No or Unknown Co-disposal - HAP/VOC	9.301E-02	2.862E+01	1.923E-03	1.011E+03	1.023E-01
Benzene - Co-disposal - HAP/VOC	1.095E+00	3.371E+02	2.265E-02	1.190E+04	1.205E+00
Bromodichloromethane - VOC	9.605E-03	1.410E+00	9.471E-05	4.978E+01	1.057E-02
Butane - VOC	3.704E-01	1.532E+02	1.029E-02	5.411E+03	4.074E-01
Carbon disulfide - HAP/VOC	7.957E-01	2.513E+02	1.688E-02	8.874E+03	8.752E-01
Carbon monoxide	4.998E+00	4.290E+03	2.883E-01	1.515E+05	5.498E+00
Carbon tetrachloride - HAP/VOC	4.509E-03	7.048E-01	4.736E-05	2.489E+01	4.960E-03
Carbonyl sulfide - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chlorobenzene - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chlorodifluoromethane	#REF!	#REF!	#REF!	#REF!	#REF!
Chloroethane (ethyl chloride) - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chloroform - HAP/VOC	3.500E-03	7.048E-01	4.736E-05	2.489E+01	3.850E-03
Chloromethane - VOC	6.114E-03	2.911E+00	1.956E-04	1.028E+02	6.725E-03
Dichlorobenzene - (HAP for para isomer/VOC)	#REF!	#REF!	#REF!	#REF!	#REF!
Dichlorodifluoromethane	8.630E-03	1.716E+00	1.153E-04	6.060E+01	9.493E-03
Dichlorofluoromethane - VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Dichloromethane (methylene chloride) - HAP	#REF!	#REF!	#REF!	#REF!	#REF!
Dimethyl sulfide (methyl sulfide) - VOC	2.692E+00	1.042E+03	7.001E-02	3.679E+04	2.962E+00
Ethane	3.411E+01	2.727E+04	1.832E+00	9.632E+05	3.752E+01
Ethanol - VOC	1.686E+00	8.795E+02	5.909E-02	3.106E+04	1.854E+00
Ethyl mercaptan (ethanethiol) - VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Ethylbenzene - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Ethylene dibromide - HAP/VOC	5.508E-03	7.048E-01	4.736E-05	2.489E+01	6.059E-03
Fluorotrichloromethane - VOC	1.331E-01	2.329E+01	1.565E-03	8.225E+02	1.464E-01
Hexane - HAP/VOC	1.845E-01	5.148E+01	3.459E-03	1.818E+03	2.030E-01
Hydrogen sulfide	1.607E+01	1.134E+04	7.618E-01	4.004E+05	1.768E+01
Mercury (total) - HAP	7.415E-05	8.887E-03	5.971E-07	3.138E-01	8.157E-05
Methyl ethyl ketone - HAP/VOC	1.737E+00	5.792E+02	3.891E-02	2.045E+04	1.911E+00
Methyl isobutyl ketone - HAP/VOC	6.524E-02	1.566E+01	1.052E-03	5.530E+02	7.176E-02
Methyl mercaptan - VOC	2.023E+00	1.011E+03	6.795E-02	3.571E+04	2.225E+00
Pentane - VOC	3.035E-01	1.011E+02	6.795E-03	3.571E+03	3.338E-01
Perchloroethylene (tetrachloroethylene) - HAP	1.480E-01	2.145E+01	1.441E-03	7.575E+02	1.628E-01
Propane - VOC	6.182E-01	3.371E+02	2.265E-02	1.190E+04	6.800E-01
t-1,2-Dichloroethene - VOC	3.460E-01	8.580E+01	5.765E-03	3.030E+03	3.806E-01
Toluene - No or Unknown Co-disposal - HAP/VOC	1.574E+00	4.106E+02	2.759E-02	1.450E+04	1.731E+00
Toluene - Co-disposal - HAP/VOC	1.996E+01	5.210E+03	3.500E-01	1.840E+05	2.196E+01
Trichloroethylene (trichloroethene) - HAP/VOC	3.148E-02	5.761E+00	3.871E-04	2.035E+02	3.463E-02
Vinyl chloride - HAP/VOC	3.609E-02	1.388E+01	9.327E-04	4.902E+02	3.970E-02
Xylenes - HAP/VOC	1.249E+00	2.828E+02	1.900E-02	9.989E+03	1.374E+00
1,2-Dichloroethene cis	2.076E-01	5.148E+01	3.459E-03	1.818E+03	2.283E-01
1,2-Dichloroethylene	9.021E-02	2.237E+01	1.503E-03	7.900E+02	9.923E-02
2-Butanol	5.451E-01	1.768E+02	1.188E-02	6.244E+03	5.996E-01
Octane	2.548E-01	5.363E+01	3.603E-03	1.894E+03	2.803E-01
1,1,2-Trichloroethane	7.991E-02	1.440E+01	9.677E-04	5.086E+02	8.791E-02
1,2-Dibromoethane	2.394E-03	3.064E-01	2.059E-05	1.082E+01	2.634E-03
1,2-Dichloroethene trans	9.020E-02	2.237E+01	1.503E-03	7.900E+02	9.922E-02

USER INPUTS

Landfill Name or Identifier: Twin Creeks Environmental Centre

Clear ALL Non-Parameter Inputs/Selections

1: PROVIDE LANDFILL CHARACTERISTICS

Landfill Open Year	1972	
Landfill Closure Year	2030	
Have Model Calculate Closure Year?	○ Yes ◉ No	
Waste Design Capacity		megagrams

Restore Default Model Parameters

2: DETERMINE MODEL PARAMETERS

Methane Generation Rate, k (*year*$^{-1}$)
User-specified
User-specified value: 0.040
User-specified k value should be based on site-specific data and determined by EPA Method 2E.

Potential Methane Generation Capacity, L_o (*m*^{3}/*Mg*)
User-specified
User-specified value: 125
User-specified Lo value should be based on site-specific data and determined by waste type and composition.

NMOC Concentration (*ppmv as hexane*)
User-specified
User-specified value: 595

Methane Content (*% by volume*)
User-specified
User-specified value: 52

3: SELECT GASES/POLLUTANTS

Gas / Pollutant #1 #REF!
Total landfill gas

Gas / Pollutant #2
Methane

Gas / Pollutant #3
Carbon dioxide

Gas / Pollutant #4
NMOC

Edit Existing or Add New Pollutant Parameters

Restore Default Pollutant Parameters

Description/Comments:

Modelling of existing landfill Area 3. Values based on MECP Interim Guide.

4: ENTER WASTE ACCEPTANCE RATES

Input Units: Mg/year

Year	Input Units *(Mg/year)*	Calculated Units *(short tons/year)*
1972		0
1973		0
1974		0
1975		0
1976		0
1977		0
1978		0
1979		0
1980		0
1981		0
1982		0
1983		0
1984		0
1985		0
1986		0
1987		0
1988		0
1989		0
1990		0
1991		0
1992		0
1993		0
1994		0
1995		0
1996		0
1997		0
1998		0
1999		0
2000		0
2001		0
2002		0
2003		0
2004		0
2005		0
2006		0
2007		0
2008		0
2009		0
2010		0
2011		0

4: ENTER WASTE ACCEPTANCE RATES

Input Units: Mg/year

Year	Input Units *(Mg/year)*	Calculated Units *(short tons/year)*
2012		0
2013		0
2014		0
2015		0
2016		0
2017		0
2018		0
2019		0
2020		0
2021		0
2022		0
2023		0
2024		0
2025	1,400,000	1,540,000
2026	1,400,000	1,540,000
2027	1,400,000	1,540,000
2028	700,000	770,000
2029		
2030		
2031		
2032		
2033		
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2050		
2051		

INVENTORY

Landfill Name or Identifier: Twin Creeks Environmental Centre

Enter year of emissions inventory: 2042

Gas / Pollutant	Emission Rate				
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(ft^3/year)*	*(short tons/year)*
Total landfill gas	3.762E+04	2.980E+07	2.002E+03	1.052E+09	4.138E+04
Methane	1.034E+04	1.550E+07	1.041E+03	5.473E+08	1.137E+04
Carbon dioxide	2.619E+04	1.431E+07	9.612E+02	5.052E+08	2.880E+04
NMOC	6.356E+01	1.773E+04	1.191E+00	6.262E+05	6.992E+01
1,1,1-Trichloroethane (methyl chloroform) - HAP	3.803E-03	6.855E-01	4.606E-05	2.421E+01	4.184E-03
1,1,2,2-Tetrachloroethane - HAP/VOC	4.785E-03	6.855E-01	4.606E-05	2.421E+01	5.264E-03
1,1-Dichloroethane (ethylidene dichloride) - HAP/VOC	2.822E-03	6.855E-01	4.606E-05	2.421E+01	3.104E-03
1,1-Dichloroethene (vinylidene chloride) - HAP/VOC	2.403E-03	5.961E-01	4.005E-05	2.105E+01	2.644E-03
1,2-Dichloroethane (ethylene dichloride) - HAP/VOC	2.907E-02	7.063E+00	4.746E-04	2.494E+02	3.198E-02
1,2-Dichloropropane (propylene dichloride) - HAP/VOC	9.524E-03	2.027E+00	1.362E-04	7.157E+01	1.048E-02
2-Propanol (isopropyl alcohol) - VOC	4.620E-01	1.848E+02	1.242E-02	6.525E+03	5.082E-01
Acetone	5.040E-01	2.086E+02	1.402E-02	7.367E+03	5.544E-01
Acrylonitrile - HAP/VOC	4.144E-01	1.878E+02	1.262E-02	6.631E+03	4.558E-01
Benzene - No or Unknown Co-disposal - HAP/VOC	9.046E-02	2.784E+01	1.870E-03	9.830E+02	9.950E-02
Benzene - Co-disposal - HAP/VOC	1.065E+00	3.278E+02	2.203E-02	1.158E+04	1.172E+00
Bromodichloromethane - VOC	9.342E-03	1.371E+00	9.211E-05	4.841E+01	1.028E-02
Butane - VOC	3.602E-01	1.490E+02	1.001E-02	5.262E+03	3.962E-01
Carbon disulfide - HAP/VOC	7.738E-01	2.444E+02	1.642E-02	8.630E+03	8.512E-01
Carbon monoxide	4.861E+00	4.172E+03	2.803E-01	1.473E+05	5.347E+00
Carbon tetrachloride - HAP/VOC	4.385E-03	6.855E-01	4.606E-05	2.421E+01	4.824E-03
Carbonyl sulfide - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chlorobenzene - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chlorodifluoromethane	#REF!	#REF!	#REF!	#REF!	#REF!
Chloroethane (ethyl chloride) - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chloroform - HAP/VOC	3.404E-03	6.855E-01	4.606E-05	2.421E+01	3.744E-03
Chloromethane - VOC	5.946E-03	2.831E+00	1.902E-04	9.999E+01	6.540E-03
Dichlorobenzene - (HAP for para isomer/VOC)	#REF!	#REF!	#REF!	#REF!	#REF!
Dichlorodifluoromethane	8.393E-03	1.669E+00	1.121E-04	5.894E+01	9.232E-03
Dichlorofluoromethane - VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Dichloromethane (methylene chloride) - HAP	#REF!	#REF!	#REF!	#REF!	#REF!
Dimethyl sulfide (methyl sulfide) - VOC	2.618E+00	1.013E+03	6.808E-02	3.578E+04	2.880E+00
Ethane	3.317E+01	2.652E+04	1.782E+00	9.367E+05	3.649E+01
Ethanol - VOC	1.639E+00	8.553E+02	5.747E-02	3.021E+04	1.803E+00
Ethyl mercaptan (ethanethiol) - VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Ethylbenzene - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Ethylene dibromide - HAP/VOC	5.356E-03	6.855E-01	4.606E-05	2.421E+01	5.892E-03
Fluorotrichloromethane - VOC	1.294E-01	2.265E+01	1.522E-03	7.999E+02	1.424E-01
Hexane - HAP/VOC	1.795E-01	5.007E+01	3.364E-03	1.768E+03	1.974E-01
Hydrogen sulfide	1.563E+01	1.103E+04	7.409E-01	3.894E+05	1.719E+01
Mercury (total) - HAP	7.211E-05	8.643E-03	5.807E-07	3.052E-01	7.933E-05
Methyl ethyl ketone - HAP/VOC	1.689E+00	5.633E+02	3.785E-02	1.989E+04	1.858E+00
Methyl isobutyl ketone - HAP/VOC	6.344E-02	1.523E+01	1.023E-03	5.378E+02	6.979E-02
Methyl mercaptan - VOC	1.968E+00	9.835E+02	6.608E-02	3.473E+04	2.164E+00
Pentane - VOC	2.951E-01	9.835E+01	6.608E-03	3.473E+03	3.246E-01
Perchloroethylene (tetrachloroethylene) - HAP	1.439E-01	2.086E+01	1.402E-03	7.367E+02	1.583E-01
Propane - VOC	6.012E-01	3.278E+02	2.203E-02	1.158E+04	6.613E-01
t-1,2-Dichloroethene - VOC	3.365E-01	8.345E+01	5.607E-03	2.947E+03	3.701E-01
Toluene - No or Unknown Co-disposal - HAP/VOC	1.530E+00	3.994E+02	2.683E-02	1.410E+04	1.683E+00
Toluene - Co-disposal - HAP/VOC	1.941E+01	5.066E+03	3.404E-01	1.789E+05	2.136E+01
Trichloroethylene (trichloroethene) - HAP/VOC	3.062E-02	5.603E+00	3.765E-04	1.979E+02	3.368E-02
Vinyl chloride - HAP/VOC	3.510E-02	1.350E+01	9.071E-04	4.768E+02	3.860E-02
Xylenes - HAP/VOC	1.215E+00	2.751E+02	1.848E-02	9.714E+03	1.336E+00
1,2-Dichloroethene cis	2.019E-01	5.007E+01	3.364E-03	1.768E+03	2.221E-01
1,2-Dichloroethylene	8.773E-02	2.176E+01	1.462E-03	7.683E+02	9.650E-02
2-Butanol	5.301E-01	1.720E+02	1.155E-02	6.073E+03	5.832E-01
Octane	2.478E-01	5.215E+01	3.504E-03	1.842E+03	2.726E-01
1,1,2-Trichloroethane	7.772E-02	1.401E+01	9.411E-04	4.947E+02	8.549E-02
1,2-Dibromoethane	2.329E-03	2.980E-01	2.002E-05	1.052E+01	2.562E-03
1,2-Dichloroethene trans	8.772E-02	2.176E+01	1.462E-03	7.683E+02	9.649E-02

USER INPUTS

Landfill Name or Identifier: Twin Creeks Environmental Centre

Clear ALL Non-Parameter Inputs/Selections

1: PROVIDE LANDFILL CHARACTERISTICS

Landfill Open Year	1972	
Landfill Closure Year	2035	
Have Model Calculate Closure Year?	○ Yes ◉ No	
Waste Design Capacity		megagrams

Restore Default Model Parameters

2: DETERMINE MODEL PARAMETERS

Methane Generation Rate, k (*year*$^{-1}$)
User-specified
User-specified value: 0.040
User-specified k value should be based on site-specific data and determined by EPA Method 2E.

Potential Methane Generation Capacity, L_o (*m*^{3}/*Mg*)
User-specified
User-specified value: 125
User-specified Lo value should be based on site-specific data and determined by waste type and composition.

NMOC Concentration (*ppmv as hexane*)
User-specified
User-specified value: 595

Methane Content (*% by volume*)
User-specified
User-specified value: 44

3: SELECT GASES/POLLUTANTS

Gas / Pollutant #1 #REF!
Total landfill gas

Gas / Pollutant #2
Methane

Gas / Pollutant #3
Carbon dioxide

Gas / Pollutant #4
NMOC

Edit Existing or Add New Pollutant Parameters

Restore Default Pollutant Parameters

Description/Comments:

Modelling of existing landfill Area 2. Values based on MECP Interim Guide.

4: ENTER WASTE ACCEPTANCE RATES

Input Units: Mg/year

Year	Input Units *(Mg/year)*	Calculated Units *(short tons/year)*
1972		0
1973		0
1974		0
1975		0
1976		0
1977		0
1978		0
1979		0
1980		0
1981		0
1982		0
1983		0
1984		0
1985		0
1986		0
1987		0
1988		0
1989		0
1990		0
1991		0
1992		0
1993		0
1994		0
1995		0
1996		0
1997		0
1998		0
1999		0
2000		0
2001		0
2002		0
2003		0
2004		0
2005		0
2006		0
2007		0
2008		0
2009		0
2010		0
2011		0

4: ENTER WASTE ACCEPTANCE RATES

Input Units: Mg/year

Year	Input Units *(Mg/year)*	Calculated Units *(short tons/year)*
2012		0
2013		0
2014		0
2015		0
2016		0
2017		0
2018		0
2019		0
2020		0
2021		0
2022		0
2023		0
2024		0
2025		0
2026		0
2027		0
2028	350,000	385,000
2029	700,000	770,000
2030	700,000	770,000
2031	700,000	770,000
2032	1,400,000	1,540,000
2033	1,400,000	1,540,000
2034	400,000	440,000
2035		
2036		
2037		
2038		
2039		
2040		
2041		
2042		
2043		
2044		
2045		
2046		
2047		
2048		
2049		
2050		
2051		

INVENTORY

Landfill Name or Identifier: Twin Creeks Environmental Centre

Enter year of emissions inventory: 2042

Gas / Pollutant	Emission Rate				
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(ft^3/year)*	*(short tons/year)*
Total landfill gas	5.204E+04	4.305E+07	2.893E+03	1.520E+09	5.724E+04
Methane	1.264E+04	1.894E+07	1.273E+03	6.689E+08	1.390E+04
Carbon dioxide	4.413E+04	2.411E+07	1.620E+03	8.514E+08	4.854E+04
NMOC	9.182E+01	2.561E+04	1.721E+00	9.046E+05	1.010E+02
1,1,1-Trichloroethane (methyl chloroform) - HAP	5.494E-03	9.901E-01	6.653E-05	3.497E+01	6.043E-03
1,1,2,2-Tetrachloroethane - HAP/VOC	6.913E-03	9.901E-01	6.653E-05	3.497E+01	7.604E-03
1,1-Dichloroethane (ethylidene dichloride) - HAP/VOC	4.076E-03	9.901E-01	6.653E-05	3.497E+01	4.483E-03
1,1-Dichloroethene (vinylidene chloride) - HAP/VOC	3.472E-03	8.610E-01	5.785E-05	3.041E+01	3.819E-03
1,2-Dichloroethane (ethylene dichloride) - HAP/VOC	4.200E-02	1.020E+01	6.855E-04	3.603E+02	4.619E-02
1,2-Dichloropropane (propylene dichloride) - HAP/VOC	1.376E-02	2.927E+00	1.967E-04	1.034E+02	1.513E-02
2-Propanol (isopropyl alcohol) - VOC	6.673E-01	2.669E+02	1.793E-02	9.426E+03	7.340E-01
Acetone	7.280E-01	3.013E+02	2.025E-02	1.064E+04	8.008E-01
Acrylonitrile - HAP/VOC	5.985E-01	2.712E+02	1.822E-02	9.578E+03	6.584E-01
Benzene - No or Unknown Co-disposal - HAP/VOC	1.307E-01	4.021E+01	2.702E-03	1.420E+03	1.437E-01
Benzene - Co-disposal - HAP/VOC	1.538E+00	4.735E+02	3.182E-02	1.672E+04	1.692E+00
Bromodichloromethane - VOC	1.349E-02	1.980E+00	1.331E-04	6.993E+01	1.484E-02
Butane - VOC	5.203E-01	2.152E+02	1.446E-02	7.602E+03	5.724E-01
Carbon disulfide - HAP/VOC	1.118E+00	3.530E+02	2.372E-02	1.247E+04	1.230E+00
Carbon monoxide	7.022E+00	6.027E+03	4.050E-01	2.128E+05	7.724E+00
Carbon tetrachloride - HAP/VOC	6.335E-03	9.901E-01	6.653E-05	3.497E+01	6.968E-03
Carbonyl sulfide - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chlorobenzene - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chlorodifluoromethane	#REF!	#REF!	#REF!	#REF!	#REF!
Chloroethane (ethyl chloride) - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chloroform - HAP/VOC	4.916E-03	9.901E-01	6.653E-05	3.497E+01	5.408E-03
Chloromethane - VOC	8.589E-03	4.090E+00	2.748E-04	1.444E+02	9.447E-03
Dichlorobenzene - (HAP for para isomer/VOC)	#REF!	#REF!	#REF!	#REF!	#REF!
Dichlorodifluoromethane	1.212E-02	2.411E+00	1.620E-04	8.514E+01	1.334E-02
Dichlorofluoromethane - VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Dichloromethane (methylene chloride) - HAP	#REF!	#REF!	#REF!	#REF!	#REF!
Dimethyl sulfide (methyl sulfide) - VOC	3.782E+00	1.464E+03	9.835E-02	5.169E+04	4.161E+00
Ethane	4.792E+01	3.831E+04	2.574E+00	1.353E+06	5.271E+01
Ethanol - VOC	2.368E+00	1.236E+03	8.302E-02	4.363E+04	2.605E+00
Ethyl mercaptan (ethanethiol) - VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Ethylbenzene - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Ethylene dibromide - HAP/VOC	7.737E-03	9.901E-01	6.653E-05	3.497E+01	8.511E-03
Fluorotrichloromethane - VOC	1.870E-01	3.272E+01	2.198E-03	1.155E+03	2.056E-01
Hexane - HAP/VOC	2.592E-01	7.232E+01	4.859E-03	2.554E+03	2.852E-01
Hydrogen sulfide	2.258E+01	1.593E+04	1.070E+00	5.625E+05	2.484E+01
Mercury (total) - HAP	1.042E-04	1.248E-02	8.388E-07	4.409E-01	1.146E-04
Methyl ethyl ketone - HAP/VOC	2.440E+00	8.136E+02	5.467E-02	2.873E+04	2.684E+00
Methyl isobutyl ketone - HAP/VOC	9.164E-02	2.200E+01	1.478E-03	7.769E+02	1.008E-01
Methyl mercaptan - VOC	2.842E+00	1.421E+03	9.545E-02	5.017E+04	3.126E+00
Pentane - VOC	4.263E-01	1.421E+02	9.545E-03	5.017E+03	4.690E-01
Perchloroethylene (tetrachloroethylene) - HAP	2.079E-01	3.013E+01	2.025E-03	1.064E+03	2.286E-01
Propane - VOC	8.684E-01	4.735E+02	3.182E-02	1.672E+04	9.552E-01
t-1,2-Dichloroethene - VOC	4.860E-01	1.205E+02	8.099E-03	4.257E+03	5.346E-01
Toluene - No or Unknown Co-disposal - HAP/VOC	2.211E+00	5.769E+02	3.876E-02	2.037E+04	2.432E+00
Toluene - Co-disposal - HAP/VOC	2.804E+01	7.318E+03	4.917E-01	2.585E+05	3.085E+01
Trichloroethylene (trichloroethene) - HAP/VOC	4.423E-02	8.093E+00	5.438E-04	2.858E+02	4.865E-02
Vinyl chloride - HAP/VOC	5.070E-02	1.950E+01	1.310E-03	6.887E+02	5.576E-02
Xylenes - HAP/VOC	1.754E+00	3.974E+02	2.670E-02	1.403E+04	1.930E+00
1,2-Dichloroethene cis	2.916E-01	7.232E+01	4.859E-03	2.554E+03	3.208E-01
1,2-Dichloroethylene	1.267E-01	3.143E+01	2.112E-03	1.110E+03	1.394E-01
2-Butanol	7.658E-01	2.484E+02	1.669E-02	8.772E+03	8.424E-01
Octane	3.579E-01	7.534E+01	5.062E-03	2.661E+03	3.937E-01
1,1,2-Trichloroethane	1.123E-01	2.023E+01	1.359E-03	7.145E+02	1.235E-01
1,2-Dibromoethane	3.364E-03	4.305E-01	2.893E-05	1.520E+01	3.700E-03
1,2-Dichloroethene trans	1.267E-01	3.143E+01	2.112E-03	1.110E+03	1.394E-01

USER INPUTS

Landfill Name or Identifier: Twin Creeks Environmental Centre

Clear ALL Non-Parameter Inputs/Selections

1: PROVIDE LANDFILL CHARACTERISTICS

Landfill Open Year	1972	
Landfill Closure Year	2038	
Have Model Calculate Closure Year?	○ Yes ◉ No	
Waste Design Capacity		megagrams

Restore Default Model Parameters

2: DETERMINE MODEL PARAMETERS

Methane Generation Rate, k (*year*$^{-1}$)
User-specified
User-specified value: 0.040
User-specified k value should be based on site-specific data and determined by EPA Method 2E.

Potential Methane Generation Capacity, L_o (*m*^{3}/*Mg*)
User-specified
User-specified value: 125
User-specified Lo value should be based on site-specific data and determined by waste type and composition.

NMOC Concentration (*ppmv as hexane*)
User-specified
User-specified value: 595

Methane Content (*% by volume*)
User-specified
User-specified value: 52

3: SELECT GASES/POLLUTANTS

Gas / Pollutant #1 #REF!
Total landfill gas

Gas / Pollutant #2
Methane

Gas / Pollutant #3
Carbon dioxide

Gas / Pollutant #4
NMOC

Edit Existing or Add New Pollutant Parameters

Restore Default Pollutant Parameters

Description/Comments:

Modelling of existing landfill Area 2. Values based on MECP Interim Guide.

4: ENTER WASTE ACCEPTANCE RATES

Input Units: Mg/year

Year	Input Units *(Mg/year)*	Calculated Units *(short tons/year)*
1972		0
1973		0
1974		0
1975		0
1976		0
1977		0
1978		0
1979		0
1980		0
1981		0
1982		0
1983		0
1984		0
1985		0
1986		0
1987		0
1988		0
1989		0
1990		0
1991		0
1992		0
1993		0
1994		0
1995		0
1996		0
1997		0
1998		0
1999		0
2000		0
2001		0
2002		0
2003		0
2004		0
2005		0
2006		0
2007		0
2008		0
2009		0
2010		0
2011		0

4: ENTER WASTE ACCEPTANCE RATES

Input Units: Mg/year

Year	Input Units *(Mg/year)*	Calculated Units *(short tons/year)*
2012		0
2013		0
2014		0
2015		0
2016		0
2017		0
2018		0
2019		0
2020		0
2021		0
2022		0
2023		0
2024		0
2025		0
2026		0
2027		0
2028	350,000	385,000
2029	700,000	770,000
2030	700,000	770,000
2031	700,000	770,000
2032	0	0
2033	0	0
2034	1,000,000	1,100,000
2035	1,400,000	1,540,000
2036	1,400,000	1,540,000
2037	500,000	550,000
2038		
2039		
2040		
2041		
2042		
2043		
2044		
2045		
2046		
2047		
2048		
2049		
2050		
2051		

INVENTORY

Landfill Name or Identifier: Twin Creeks Environmental Centre

Enter year of emissions inventory: 2042

Gas / Pollutant	Emission Rate				
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(ft^3/year)*	*(short tons/year)*
Total landfill gas	5.949E+04	4.713E+07	3.167E+03	1.665E+09	6.544E+04
Methane	1.635E+04	2.451E+07	1.647E+03	8.656E+08	1.799E+04
Carbon dioxide	4.141E+04	2.262E+07	1.520E+03	7.990E+08	4.556E+04
NMOC	1.005E+02	2.804E+04	1.884E+00	9.904E+05	1.106E+02
1,1,1-Trichloroethane (methyl chloroform) - HAP	6.015E-03	1.084E+00	7.284E-05	3.828E+01	6.617E-03
1,1,2,2-Tetrachloroethane - HAP/VOC	7.568E-03	1.084E+00	7.284E-05	3.828E+01	8.325E-03
1,1-Dichloroethane (ethylidene dichloride) - HAP/VOC	4.463E-03	1.084E+00	7.284E-05	3.828E+01	4.909E-03
1,1-Dichloroethene (vinylidene chloride) - HAP/VOC	3.801E-03	9.427E-01	6.334E-05	3.329E+01	4.181E-03
1,2-Dichloroethane (ethylene dichloride) - HAP/VOC	4.598E-02	1.117E+01	7.506E-04	3.945E+02	5.058E-02
1,2-Dichloropropane (propylene dichloride) - HAP/VOC	1.506E-02	3.205E+00	2.154E-04	1.132E+02	1.657E-02
2-Propanol (isopropyl alcohol) - VOC	7.306E-01	2.922E+02	1.963E-02	1.032E+04	8.037E-01
Acetone	7.970E-01	3.299E+02	2.217E-02	1.165E+04	8.767E-01
Acrylonitrile - HAP/VOC	6.553E-01	2.969E+02	1.995E-02	1.049E+04	7.209E-01
Benzene - No or Unknown Co-disposal - HAP/VOC	1.431E-01	4.402E+01	2.958E-03	1.555E+03	1.574E-01
Benzene - Co-disposal - HAP/VOC	1.684E+00	5.185E+02	3.484E-02	1.831E+04	1.853E+00
Bromodichloromethane - VOC	1.477E-02	2.168E+00	1.457E-04	7.657E+01	1.625E-02
Butane - VOC	5.697E-01	2.357E+02	1.583E-02	8.323E+03	6.267E-01
Carbon disulfide - HAP/VOC	1.224E+00	3.865E+02	2.597E-02	1.365E+04	1.346E+00
Carbon monoxide	7.688E+00	6.599E+03	4.434E-01	2.330E+05	8.456E+00
Carbon tetrachloride - HAP/VOC	6.936E-03	1.084E+00	7.284E-05	3.828E+01	7.629E-03
Carbonyl sulfide - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chlorobenzene - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chlorodifluoromethane	#REF!	#REF!	#REF!	#REF!	#REF!
Chloroethane (ethyl chloride) - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chloroform - HAP/VOC	5.383E-03	1.084E+00	7.284E-05	3.828E+01	5.921E-03
Chloromethane - VOC	9.403E-03	4.478E+00	3.009E-04	1.581E+02	1.034E-02
Dichlorobenzene - (HAP for para isomer/VOC)	#REF!	#REF!	#REF!	#REF!	#REF!
Dichlorodifluoromethane	1.327E-02	2.640E+00	1.773E-04	9.321E+01	1.460E-02
Dichlorofluoromethane - VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Dichloromethane (methylene chloride) - HAP	#REF!	#REF!	#REF!	#REF!	#REF!
Dimethyl sulfide (methyl sulfide) - VOC	4.141E+00	1.603E+03	1.077E-01	5.659E+04	4.555E+00
Ethane	5.247E+01	4.195E+04	2.819E+00	1.481E+06	5.771E+01
Ethanol - VOC	2.593E+00	1.353E+03	9.089E-02	4.777E+04	2.852E+00
Ethyl mercaptan (ethanethiol) - VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Ethylbenzene - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Ethylene dibromide - HAP/VOC	8.472E-03	1.084E+00	7.284E-05	3.828E+01	9.319E-03
Fluorotrichloromethane - VOC	2.047E-01	3.582E+01	2.407E-03	1.265E+03	2.252E-01
Hexane - HAP/VOC	2.838E-01	7.919E+01	5.320E-03	2.796E+03	3.122E-01
Hydrogen sulfide	2.472E+01	1.744E+04	1.172E+00	6.159E+05	2.719E+01
Mercury (total) - HAP	1.141E-04	1.367E-02	9.184E-07	4.827E-01	1.255E-04
Methyl ethyl ketone - HAP/VOC	2.672E+00	8.908E+02	5.985E-02	3.146E+04	2.939E+00
Methyl isobutyl ketone - HAP/VOC	1.003E-01	2.409E+01	1.618E-03	8.506E+02	1.104E-01
Methyl mercaptan - VOC	3.112E+00	1.555E+03	1.045E-01	5.493E+04	3.423E+00
Pentane - VOC	4.668E-01	1.555E+02	1.045E-02	5.493E+03	5.134E-01
Perchloroethylene (tetrachloroethylene) - HAP	2.276E-01	3.299E+01	2.217E-03	1.165E+03	2.503E-01
Propane - VOC	9.508E-01	5.185E+02	3.484E-02	1.831E+04	1.046E+00
t-1,2-Dichloroethene - VOC	5.321E-01	1.320E+02	8.867E-03	4.661E+03	5.853E-01
Toluene - No or Unknown Co-disposal - HAP/VOC	2.420E+00	6.316E+02	4.244E-02	2.230E+04	2.662E+00
Toluene - Co-disposal - HAP/VOC	3.070E+01	8.013E+03	5.384E-01	2.830E+05	3.377E+01
Trichloroethylene (trichloroethene) - HAP/VOC	4.843E-02	8.861E+00	5.954E-04	3.129E+02	5.327E-02
Vinyl chloride - HAP/VOC	5.550E-02	2.135E+01	1.435E-03	7.540E+02	6.106E-02
Xylenes - HAP/VOC	1.921E+00	4.350E+02	2.923E-02	1.536E+04	2.113E+00
1,2-Dichloroethene cis	3.193E-01	7.919E+01	5.320E-03	2.796E+03	3.512E-01
1,2-Dichloroethylene	1.387E-01	3.441E+01	2.312E-03	1.215E+03	1.526E-01
2-Butanol	8.384E-01	2.720E+02	1.827E-02	9.604E+03	9.223E-01
Octane	3.919E-01	8.248E+01	5.542E-03	2.913E+03	4.311E-01
1,1,2-Trichloroethane	1.229E-01	2.215E+01	1.488E-03	7.823E+02	1.352E-01
1,2-Dibromoethane	3.683E-03	4.713E-01	3.167E-05	1.665E+01	4.051E-03
1,2-Dichloroethene trans	1.387E-01	3.441E+01	2.312E-03	1.215E+03	1.526E-01

USER INPUTS

Landfill Name or Identifier: Twin Creeks Environmental Centre

Clear ALL Non-Parameter Inputs/Selections

1: PROVIDE LANDFILL CHARACTERISTICS

Landfill Open Year	1972	
Landfill Closure Year	2040	
Have Model Calculate Closure Year?	○ Yes ◉ No	
Waste Design Capacity		*megagrams*

Restore Default Model Parameters

2: DETERMINE MODEL PARAMETERS

Methane Generation Rate, k (*year*$^{-1}$)
User-specified
User-specified value: 0.040
User-specified k value should be based on site-specific data and determined by EPA Method 2E.

Potential Methane Generation Capacity, L_o (*m*^{3}/*Mg*)
User-specified
User-specified value: 125
User-specified Lo value should be based on site-specific data and determined by waste type and composition.

NMOC Concentration (*ppmv as hexane*)
User-specified
User-specified value: 595

Methane Content (*% by volume*)
User-specified
User-specified value: 52

3: SELECT GASES/POLLUTANTS

Gas / Pollutant #1 #REF!
Total landfill gas

Gas / Pollutant #2
Methane

Gas / Pollutant #3
Carbon dioxide

Gas / Pollutant #4
NMOC

Edit Existing or Add New Pollutant Parameters

Restore Default Pollutant Parameters

Description/Comments:

Modelling of existing landfill Area 2. Values based on MECP Interim Guide.

4: ENTER WASTE ACCEPTANCE RATES

Input Units: Mg/year

Year	Input Units *(Mg/year)*	Calculated Units *(short tons/year)*
1972		0
1973		0
1974		0
1975		0
1976		0
1977		0
1978		0
1979		0
1980		0
1981		0
1982		0
1983		0
1984		0
1985		0
1986		0
1987		0
1988		0
1989		0
1990		0
1991		0
1992		0
1993		0
1994		0
1995		0
1996		0
1997		0
1998		0
1999		0
2000		0
2001		0
2002		0
2003		0
2004		0
2005		0
2006		0
2007		0
2008		0
2009		0
2010		0
2011		0

4: ENTER WASTE ACCEPTANCE RATES

Input Units: Mg/year

Year	Input Units *(Mg/year)*	Calculated Units *(short tons/year)*
2012		0
2013		0
2014		0
2015		0
2016		0
2017		0
2018		0
2019		0
2020		0
2021		0
2022		0
2023		0
2024		0
2025		0
2026		0
2027		0
2028		0
2029		0
2030		0
2031		0
2032		0
2033		0
2034		0
2035		0
2036		0
2037	900,000	990,000
2038	1,400,000	1,540,000
2039	700,000	770,000
2040		
2041		
2042		
2043		
2044		
2045		
2046		
2047		
2048		
2049		
2050		
2051		

INVENTORY

Landfill Name or Identifier: Twin Creeks Environmental Centre

Enter year of emissions inventory: 2042

Gas / Pollutant	Emission Rate				
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(ft^3/year)*	*(short tons/year)*
Total landfill gas	3.165E+04	2.507E+07	1.685E+03	8.855E+08	3.481E+04
Methane	8.698E+03	1.304E+07	8.760E+02	4.604E+08	9.568E+03
Carbon dioxide	2.203E+04	1.204E+07	8.086E+02	4.250E+08	2.423E+04
NMOC	5.348E+01	1.492E+04	1.002E+00	5.268E+05	5.882E+01
1,1,1-Trichloroethane (methyl chloroform) - HAP	3.200E-03	5.767E-01	3.875E-05	2.037E+01	3.520E-03
1,1,2,2-Tetrachloroethane - HAP/VOC	4.026E-03	5.767E-01	3.875E-05	2.037E+01	4.429E-03
1,1-Dichloroethane (ethylidene dichloride) - HAP/VOC	2.374E-03	5.767E-01	3.875E-05	2.037E+01	2.611E-03
1,1-Dichloroethene (vinylidene chloride) - HAP/VOC	2.022E-03	5.015E-01	3.369E-05	1.771E+01	2.224E-03
1,2-Dichloroethane (ethylene dichloride) - HAP/VOC	2.446E-02	5.942E+00	3.993E-04	2.099E+02	2.690E-02
1,2-Dichloropropane (propylene dichloride) - HAP/VOC	8.013E-03	1.705E+00	1.146E-04	6.021E+01	8.814E-03
2-Propanol (isopropyl alcohol) - VOC	3.887E-01	1.555E+02	1.044E-02	5.490E+03	4.275E-01
Acetone	4.240E-01	1.755E+02	1.179E-02	6.198E+03	4.664E-01
Acrylonitrile - HAP/VOC	3.486E-01	1.580E+02	1.061E-02	5.578E+03	3.835E-01
Benzene - No or Unknown Co-disposal - HAP/VOC	7.610E-02	2.342E+01	1.573E-03	8.270E+02	8.371E-02
Benzene - Co-disposal - HAP/VOC	8.960E-01	2.758E+02	1.853E-02	9.740E+03	9.856E-01
Bromodichloromethane - VOC	7.859E-03	1.153E+00	7.749E-05	4.073E+01	8.645E-03
Butane - VOC	3.031E-01	1.254E+02	8.423E-03	4.427E+03	3.334E-01
Carbon disulfide - HAP/VOC	6.510E-01	2.056E+02	1.381E-02	7.261E+03	7.161E-01
Carbon monoxide	4.089E+00	3.510E+03	2.359E-01	1.240E+05	4.498E+00
Carbon tetrachloride - HAP/VOC	3.690E-03	5.767E-01	3.875E-05	2.037E+01	4.058E-03
Carbonyl sulfide - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chlorobenzene - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chlorodifluoromethane	#REF!	#REF!	#REF!	#REF!	#REF!
Chloroethane (ethyl chloride) - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chloroform - HAP/VOC	2.863E-03	5.767E-01	3.875E-05	2.037E+01	3.150E-03
Chloromethane - VOC	5.002E-03	2.382E+00	1.600E-04	8.412E+01	5.502E-03
Dichlorobenzene - (HAP for para isomer/VOC)	#REF!	#REF!	#REF!	#REF!	#REF!
Dichlorodifluoromethane	7.061E-03	1.404E+00	9.434E-05	4.959E+01	7.767E-03
Dichlorofluoromethane - VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Dichloromethane (methylene chloride) - HAP	#REF!	#REF!	#REF!	#REF!	#REF!
Dimethyl sulfide (methyl sulfide) - VOC	2.203E+00	8.525E+02	5.728E-02	3.011E+04	2.423E+00
Ethane	2.791E+01	2.232E+04	1.499E+00	7.881E+05	3.070E+01
Ethanol - VOC	1.379E+00	7.196E+02	4.835E-02	2.541E+04	1.517E+00
Ethyl mercaptan (ethanethiol) - VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Ethylbenzene - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Ethylene dibromide - HAP/VOC	4.506E-03	5.767E-01	3.875E-05	2.037E+01	4.957E-03
Fluorotrichloromethane - VOC	1.089E-01	1.906E+01	1.280E-03	6.729E+02	1.198E-01
Hexane - HAP/VOC	1.510E-01	4.212E+01	2.830E-03	1.488E+03	1.661E-01
Hydrogen sulfide	1.315E+01	9.277E+03	6.233E-01	3.276E+05	1.447E+01
Mercury (total) - HAP	6.067E-05	7.271E-03	4.886E-07	2.568E-01	6.674E-05
Methyl ethyl ketone - HAP/VOC	1.421E+00	4.739E+02	3.184E-02	1.674E+04	1.563E+00
Methyl isobutyl ketone - HAP/VOC	5.338E-02	1.281E+01	8.609E-04	4.525E+02	5.871E-02
Methyl mercaptan - VOC	1.655E+00	8.274E+02	5.559E-02	2.922E+04	1.821E+00
Pentane - VOC	2.483E-01	8.274E+01	5.559E-03	2.922E+03	2.731E-01
Perchloroethylene (tetrachloroethylene) - HAP	1.211E-01	1.755E+01	1.179E-03	6.198E+02	1.332E-01
Propane - VOC	5.058E-01	2.758E+02	1.853E-02	9.740E+03	5.564E-01
t-1,2-Dichloroethene - VOC	2.831E-01	7.020E+01	4.717E-03	2.479E+03	3.114E-01
Toluene - No or Unknown Co-disposal - HAP/VOC	1.287E+00	3.360E+02	2.257E-02	1.187E+04	1.416E+00
Toluene - Co-disposal - HAP/VOC	1.633E+01	4.262E+03	2.864E-01	1.505E+05	1.797E+01
Trichloroethylene (trichloroethene) - HAP/VOC	2.576E-02	4.714E+00	3.167E-04	1.665E+02	2.834E-02
Vinyl chloride - HAP/VOC	2.953E-02	1.136E+01	7.632E-04	4.011E+02	3.248E-02
Xylenes - HAP/VOC	1.022E+00	2.314E+02	1.555E-02	8.173E+03	1.124E+00
1,2-Dichloroethene cis	1.698E-01	4.212E+01	2.830E-03	1.488E+03	1.868E-01
1,2-Dichloroethylene	7.381E-02	1.830E+01	1.230E-03	6.464E+02	8.119E-02
2-Butanol	4.460E-01	1.447E+02	9.721E-03	5.109E+03	4.906E-01
Octane	2.085E-01	4.388E+01	2.948E-03	1.550E+03	2.293E-01
1,1,2-Trichloroethane	6.539E-02	1.178E+01	7.918E-04	4.162E+02	7.192E-02
1,2-Dibromoethane	1.959E-03	2.507E-01	1.685E-05	8.855E+00	2.155E-03
1,2-Dichloroethene trans	7.380E-02	1.830E+01	1.230E-03	6.464E+02	8.118E-02

USER INPUTS

Landfill Name or Identifier: Twin Creeks Environmental Centre

Clear ALL Non-Parameter Inputs/Selections

1: PROVIDE LANDFILL CHARACTERISTICS

Landfill Open Year	1972	
Landfill Closure Year	2043	
Have Model Calculate Closure Year?	○ Yes ◉ No	
Waste Design Capacity		megagrams

Restore Default Model Parameters

2: DETERMINE MODEL PARAMETERS

Methane Generation Rate, k (*year*$^{-1}$)
User-specified
User-specified value: 0.040
User-specified k value should be based on site-specific data and determined by EPA Method 2E.

Potential Methane Generation Capacity, L_o (*m*^{3}/*Mg*)
User-specified
User-specified value: 125
User-specified Lo value should be based on site-specific data and determined by waste type and composition.

NMOC Concentration (*ppmv as hexane*)
User-specified
User-specified value: 595

Methane Content (*% by volume*)
User-specified
User-specified value: 52

3: SELECT GASES/POLLUTANTS

Gas / Pollutant #1 #REF!
Total landfill gas

Gas / Pollutant #2
Methane

Gas / Pollutant #3
Carbon dioxide

Gas / Pollutant #4
NMOC

Edit Existing or Add New Pollutant Parameters

Restore Default Pollutant Parameters

Description/Comments:

Modelling of existing landfill Area 2. Values based on MECP Interim Guide.

4: ENTER WASTE ACCEPTANCE RATES

Input Units: Mg/year

Year	Input Units *(Mg/year)*	Calculated Units *(short tons/year)*
1972		0
1973		0
1974		0
1975		0
1976		0
1977		0
1978		0
1979		0
1980		0
1981		0
1982		0
1983		0
1984		0
1985		0
1986		0
1987		0
1988		0
1989		0
1990		0
1991		0
1992		0
1993		0
1994		0
1995		0
1996		0
1997		0
1998		0
1999		0
2000		0
2001		0
2002		0
2003		0
2004		0
2005		0
2006		0
2007		0
2008		0
2009		0
2010		0
2011		0

4: ENTER WASTE ACCEPTANCE RATES

Input Units: Mg/year

Year	Input Units *(Mg/year)*	Calculated Units *(short tons/year)*
2012		0
2013		0
2014		0
2015		0
2016		0
2017		0
2018		0
2019		0
2020		0
2021		0
2022		0
2023		0
2024		0
2025		0
2026		0
2027		0
2028		0
2029		0
2030		0
2031		0
2032		0
2033		0
2034		0
2035		0
2036		0
2037		0
2038		0
2039	700,000	770,000
2040	1,400,000	1,540,000
2041	1,400,000	1,540,000
2042	300,000	330,000
2043		
2044		
2045		
2046		
2047		
2048		
2049		
2050		
2051		

INVENTORY

Landfill Name or Identifier: Twin Creeks Environmental Centre

Enter year of emissions inventory: 2042

Gas / Pollutant	Emission Rate				
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(ft^3/year)*	*(short tons/year)*
Total landfill gas	4.043E+04	3.203E+07	2.152E+03	1.131E+09	4.447E+04
Methane	1.111E+04	1.666E+07	1.119E+03	5.882E+08	1.222E+04
Carbon dioxide	2.814E+04	1.537E+07	1.033E+03	5.429E+08	3.096E+04
NMOC	6.831E+01	1.906E+04	1.280E+00	6.730E+05	7.514E+01
1,1,1-Trichloroethane (methyl chloroform) - HAP	4.087E-03	7.367E-01	4.950E-05	2.602E+01	4.496E-03
1,1,2,2-Tetrachloroethane - HAP/VOC	5.143E-03	7.367E-01	4.950E-05	2.602E+01	5.657E-03
1,1-Dichloroethane (ethylidene dichloride) - HAP/VOC	3.032E-03	7.367E-01	4.950E-05	2.602E+01	3.336E-03
1,1-Dichloroethene (vinylidene chloride) - HAP/VOC	2.583E-03	6.406E-01	4.304E-05	2.262E+01	2.841E-03
1,2-Dichloroethane (ethylene dichloride) - HAP/VOC	3.124E-02	7.591E+00	5.100E-04	2.681E+02	3.437E-02
1,2-Dichloropropane (propylene dichloride) - HAP/VOC	1.024E-02	2.178E+00	1.463E-04	7.691E+01	1.126E-02
2-Propanol (isopropyl alcohol) - VOC	4.965E-01	1.986E+02	1.334E-02	7.013E+03	5.461E-01
Acetone	5.416E-01	2.242E+02	1.506E-02	7.918E+03	5.958E-01
Acrylonitrile - HAP/VOC	4.453E-01	2.018E+02	1.356E-02	7.126E+03	4.898E-01
Benzene - No or Unknown Co-disposal - HAP/VOC	9.721E-02	2.992E+01	2.010E-03	1.056E+03	1.069E-01
Benzene - Co-disposal - HAP/VOC	1.145E+00	3.523E+02	2.367E-02	1.244E+04	1.259E+00
Bromodichloromethane - VOC	1.004E-02	1.473E+00	9.899E-05	5.203E+01	1.104E-02
Butane - VOC	3.871E-01	1.601E+02	1.076E-02	5.656E+03	4.258E-01
Carbon disulfide - HAP/VOC	8.316E-01	2.626E+02	1.765E-02	9.275E+03	9.148E-01
Carbon monoxide	5.224E+00	4.484E+03	3.013E-01	1.584E+05	5.746E+00
Carbon tetrachloride - HAP/VOC	4.713E-03	7.367E-01	4.950E-05	2.602E+01	5.184E-03
Carbonyl sulfide - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chlorobenzene - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chlorodifluoromethane	#REF!	#REF!	#REF!	#REF!	#REF!
Chloroethane (ethyl chloride) - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chloroform - HAP/VOC	3.658E-03	7.367E-01	4.950E-05	2.602E+01	4.024E-03
Chloromethane - VOC	6.390E-03	3.043E+00	2.044E-04	1.075E+02	7.029E-03
Dichlorobenzene - (HAP for para isomer/VOC)	#REF!	#REF!	#REF!	#REF!	#REF!
Dichlorodifluoromethane	9.020E-03	1.794E+00	1.205E-04	6.334E+01	9.922E-03
Dichlorofluoromethane - VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Dichloromethane (methylene chloride) - HAP	#REF!	#REF!	#REF!	#REF!	#REF!
Dimethyl sulfide (methyl sulfide) - VOC	2.814E+00	1.089E+03	7.317E-02	3.846E+04	3.096E+00
Ethane	3.565E+01	2.851E+04	1.915E+00	1.007E+06	3.922E+01
Ethanol - VOC	1.762E+00	9.192E+02	6.176E-02	3.246E+04	1.938E+00
Ethyl mercaptan (ethanethiol) - VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Ethylbenzene - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Ethylene dibromide - HAP/VOC	5.757E-03	7.367E-01	4.950E-05	2.602E+01	6.332E-03
Fluorotrichloromethane - VOC	1.391E-01	2.434E+01	1.636E-03	8.596E+02	1.530E-01
Hexane - HAP/VOC	1.929E-01	5.381E+01	3.615E-03	1.900E+03	2.122E-01
Hydrogen sulfide	1.680E+01	1.185E+04	7.962E-01	4.185E+05	1.848E+01
Mercury (total) - HAP	7.750E-05	9.288E-03	6.241E-07	3.280E-01	8.525E-05
Methyl ethyl ketone - HAP/VOC	1.816E+00	6.053E+02	4.067E-02	2.138E+04	1.997E+00
Methyl isobutyl ketone - HAP/VOC	6.818E-02	1.637E+01	1.100E-03	5.780E+02	7.500E-02
Methyl mercaptan - VOC	2.115E+00	1.057E+03	7.102E-02	3.733E+04	2.326E+00
Pentane - VOC	3.172E-01	1.057E+02	7.102E-03	3.733E+03	3.489E-01
Perchloroethylene (tetrachloroethylene) - HAP	1.546E-01	2.242E+01	1.506E-03	7.918E+02	1.701E-01
Propane - VOC	6.461E-01	3.523E+02	2.367E-02	1.244E+04	7.107E-01
t-1,2-Dichloroethene - VOC	3.616E-01	8.968E+01	6.026E-03	3.167E+03	3.978E-01
Toluene - No or Unknown Co-disposal - HAP/VOC	1.645E+00	4.292E+02	2.884E-02	1.516E+04	1.809E+00
Toluene - Co-disposal - HAP/VOC	2.086E+01	5.445E+03	3.658E-01	1.923E+05	2.295E+01
Trichloroethylene (trichloroethene) - HAP/VOC	3.291E-02	6.021E+00	4.046E-04	2.126E+02	3.620E-02
Vinyl chloride - HAP/VOC	3.772E-02	1.451E+01	9.749E-04	5.124E+02	4.149E-02
Xylenes - HAP/VOC	1.305E+00	2.956E+02	1.986E-02	1.044E+04	1.436E+00
1,2-Dichloroethene cis	2.170E-01	5.381E+01	3.615E-03	1.900E+03	2.387E-01
1,2-Dichloroethylene	9.428E-02	2.338E+01	1.571E-03	8.257E+02	1.037E-01
2-Butanol	5.697E-01	1.848E+02	1.242E-02	6.526E+03	6.267E-01
Octane	2.663E-01	5.605E+01	3.766E-03	1.979E+03	2.929E-01
1,1,2-Trichloroethane	8.352E-02	1.505E+01	1.011E-03	5.316E+02	9.188E-02
1,2-Dibromoethane	2.503E-03	3.203E-01	2.152E-05	1.131E+01	2.753E-03
1,2-Dichloroethene trans	9.427E-02	2.338E+01	1.571E-03	8.257E+02	1.037E-01

Appendix 5A-S3-5.3a: Twin Creeks Landfill, Fugitive Odour Emission Assessment - Scenario 3 - End of Stage 4 (2042)

Sampling Result

Sampling Location	Odour Intensity from Sampling (OU/m^3) [1]
	Average
Old Landfill	546
New Landfill	23,185

Note:
[1] Average odour intensity was adopted in the modelling.

Gas Collection Efficiency

Landfill Area	Sources	Gas Collection Efficiency
Current Landfill and Proposed Landfill	Interim Cover	75%
	Final Cover	90%
Old Landfill, i.e. AREA5	Final Cover	75%
Current Landfill i.e. AREA1-AREA3	Partical Interim/Final Cover [1]	86%

Note:
[1] Collection efficiency based on weighted average of total landfill area under interim or final cover.

Summary of Odour Emissions for Scenario 3

Source ID	Source Description	Area (m^2)	Odour Flux Rate ($OU/s/m^2$)	Emission Rate (OU/s)	LandGEM Gas Generation (m^3/yr)	Fugitive LFG Emissions (m^3/s)	Odour Intensity (OU/m^3)
AREA5	Old Landfill - Final Cover	275,424	**2.86E-05**	7.88E+00	1.821E+06	1.44E-02	**546**
	STAGE1 (Total Area) - Vertical Expansion, Stage 1	378,390	-	-	4.305E+07	-	-
	STAGE1 (Area Covered by STAGE3) - Interim Cover **Emitted through STAGE3 based on the size of the landfill areas*	172,852	-	-	1.967E+07	6.24E-02	**23,185**
STAGE1FC	Area not Covered by STAGE3 - Final Cover	205,538	**2.02E-02**	4.15E+03	2.338E+07	1.79E-01	**23,185**
	STAGE2 (Total Area) - Vertical Expansion, Stage 2	366,429	-	-	4.713E+07	-	-
ver	STAGE2 (Area Covered by STAGE4) - Interim Cover **Emitted through STAGE4 based on the size of the landfill areas*	155,784	-	-	2.004E+07	1.59E-01	**23,185**
STAGE2FC	Area not Covered by STAGE4 - Final Cover	210,645	**2.13E-02**	4.48E+03	2.710E+07	1.933E-01	**23,185**
STAGE3	Vertical Expansion, Stage 3 - Final Cover	147,145	**3.42E-02**	5.03E+03	2.507E+07	2.169E-01	**23,185**
STAGE4	Vertical Expansion, Stage 4 - Interim Cover	181,496	**6.45E-02**	1.17E+04	3.203E+07	5.05E-01	**23,185**
AREA1	**Emitted through STAGE1FC, STAGE2FC, STAGE3 and STAGE4 based on the size of the landfill areas*	-	-	-	2.726E+07	1.18E-01	**23,185**
AREA2		-	-	-	3.064E+07	1.33E-01	**23,185**
AREA3		-	-	-	2.980E+07	1.29E-01	**23,185**

Sample Calculation for AREA5

1.82E+06 m^3	1 yr	100 - 75	%	546 OU	1
1 yr	31,536,000 s	1		1 m^3	275,424 m^2

= 2.86E-05 $OU/s/m^2$

Appendix 5A-S4: Source Summary Table, Scenario 4

Twin Creeks Environmental Centre

RWDI# 2101750

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (°C)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
FLARE5	POINT	Landfill Gas Flare 5 - RNG Plant Startup	41.67	871	3.66	3.97	15.24	N/A	429140	4757490	Benzene	71-43-2	1.15E-04	N/A	24, Annual	EC	Average	4%
											Vinyl Chloride (Chloroethylene)	75-01-4	4.45E-05	N/A	24	EC	Average	2%
											1,2-Dichloroethane	107-06-2	3.68E-05	N/A	24	EC	Average	2%
											Nitrogen Oxides (NOx)	10102-44-0	5.96E-01	N/A	1, 24	EC	Average	8%
											Particulate Matter (PM)	PM	2.25E-01	N/A	24	EC	Average	11%
											Sulphur Dioxide (SO2)	7446-09-5	3.53E-01	N/A	1, Annual	EC	Average	13%
											Dioxins and Furans	DF	2.08E-11	N/A	24	EF	Marginal	12%
											Total Reduced Sulphur (TRS)	TRS	1.78E-02	N/A	10-minute, 24	EC	Marginal	15%
											Hydrogen Sulfide	7783-06-4	1.78E-02	N/A	10-minute, 24	EC	Average	17%
FLARE6	POINT	Landfill Gas Flare 6 - RNG Plant Startup	41.67	871	3.66	3.97	15.24	N/A	429149	4757490	Benzene	71-43-2	1.15E-04	N/A	24, Annual	EC	Average	4%
											Vinyl Chloride (Chloroethylene)	75-01-4	4.45E-05	N/A	24	EC	Average	2%
											1,2-Dichloroethane	107-06-2	3.68E-05	N/A	24	EC	Average	2%
											Nitrogen Oxides (NOx)	10102-44-0	5.96E-01	N/A	1, 24	EC	Average	8%
											Particulate Matter (PM)	PM	2.25E-01	N/A	24	EC	Average	11%
											Sulphur Dioxide (SO2)	7446-09-5	3.53E-01	N/A	1, Annual	EC	Average	13%
											Dioxins and Furans	DF	2.08E-11	N/A	24	EF	Marginal	12%
											Total Reduced Sulphur (TRS)	TRS	1.78E-02	N/A	10-minute, 24	EC	Marginal	15%
											Hydrogen Sulfide	7783-06-4	1.78E-02	N/A	10-minute, 24	EC	Average	17%
RNG_TO1	POINT	RNG Plant Pre-Treatment Thermal Oxidizer	2.51	816	1.22	2.15	15.24	N/A	429116	4757455	Benzene	71-43-2	4.24E-05	N/A	24, Annual	EC	Marginal	1%
											1,2-Dichloroethane	107-06-2	6.14E-06	N/A	24	EC	Marginal	<1%
											Vinyl Chloride	75-01-4	1.78E-05	N/A	24	EC	Marginal	<1%
											Total Reduced Sulphur (TRS)	TRS	9.13E-04	N/A	10-minute, 24	EC	Marginal	<1%
											Oxides of Nitrogen	10102-44-0	1.30E-01	N/A	1, 24	EC	Marginal	2%
											Sulphur Dioxide	7446-09-5	9.13E-02	N/A	1, Annual	EC	Marginal	3%
											Dioxins and Furans	DF	3.58E-12	N/A	24	EF	Marginal	2%
											Particulate Matter	PM	4.65E-03	N/A	24	EC	Marginal	<1%
RNG_TO2	POINT	RNG Plant Main Thermal Oxidizer	18.03	816	2.90	2.74	15.24	N/A	429124	4757456	Benzene	71-43-2	1.24E-05	N/A	24, Annual	EC	Marginal	<1%
											1,2-Dichloroethane	107-06-2	4.04E-05	N/A	24	EC	Marginal	2%
											Vinyl Chloride	75-01-4	9.36E-05	N/A	24	EC	Marginal	4%
											Total Reduced Sulphur (TRS)	TRS	3.08E-04	N/A	10-minute, 24	EC	Marginal	<1%
											Oxides of Nitrogen	10102-44-0	1.20E+00	N/A	1, 24	EC	Marginal	17%
											Sulphur Dioxide	7446-09-5	3.08E-02	N/A	1, Annual	EC	Marginal	1%
											Dioxins and Furans	DF	2.54E-11	N/A	24	EF	Marginal	15%
											Particulate Matter	PM	7.71E-02	N/A	24	EC	Marginal	4%
FLARE5BP	POINT	Landfill Gas Flare 5 - Thermal Oxidizer Bypass Scenario	37.15	871	3.66	3.54	15.24	N/A	429140	4757490	Benzene	71-43-2	2.46E-04	N/A	24, Annual	EC	Marginal	8%
											1,2-Dichloroethane	107-06-2	3.56E-05	N/A	24	EC	Marginal	2%
											Vinyl Chloride	75-01-4	1.03E-04	N/A	24	EC	Marginal	4%
											Total Reduced Sulphur (TRS)	TRS	5.29E-03	N/A	10-minute, 24	EC	Marginal	5%
											Oxides of Nitrogen	10102-44-0	5.78E-01	N/A	1, 24	EC	Marginal	8%
											Sulphur Dioxide	7446-09-5	2.65E-01	N/A	1, Annual	EC	Marginal	10%
											Dioxins and Furans	DF	1.04E-11	N/A	24	EF	Marginal	6%
											Particulate Matter	PM	2.18E-01	N/A	24	EC	Marginal	11%
FLARE6BP	POINT	Landfill Gas Flare 6 - Thermal Oxidizer Bypass Scenario	37.15	871	3.66	3.54	15.24	N/A	429149	4757490	Benzene	71-43-2	1.01E-05	N/A	24, Annual	EC	Marginal	<1%
											1,2-Dichloroethane	107-06-2	3.30E-05	N/A	24	EC	Marginal	2%
											Vinyl Chloride	75-01-4	7.64E-05	N/A	24	EC	Marginal	3%
											Total Reduced Sulphur (TRS)	TRS	2.51E-04	N/A	10-minute, 24	EC	Marginal	<1%
											Oxides of Nitrogen	10102-44-0	5.78E-01	N/A	1, 24	EC	Marginal	8%
											Sulphur Dioxide	7446-09-5	1.26E-02	N/A	1, Annual	EC	Marginal	<1%
											Dioxins and Furans	DF	1.04E-11	N/A	24	EF	Marginal	6%
											Particulate Matter	PM	2.18E-01	N/A	24	EC	Marginal	11%
AMINE	POINT-CAP	Amine Reboiler	0.59	204	0.39	5.00	4.92	1.87	429070	4757462	Nitrogen Oxides (NOx)	10102-44-0	8.99E-02	N/A	1, 24	EF	Average	1%
											Particulate Matter	PM	3.28E-03	N/A	24	EF	Average	<1%
GEN4	POINT	RNG Plant 360 kW Emergency Diesel Generator	0.48	491	0.15	26.50	2.15	N/A	429125	4757401	Nitrogen Oxides	10102-44-0	5.26E-01	N/A	1, 24	EF	Above-Average	7%
											Particulate Matter	PM	3.01E-02	N/A	24	EF	Above-Average	1%
											Sulphur Dioxide	7446-09-5	1.26E-01	N/A	1, Annual	EF	Above-Average	5%
L4	POINT-HOR	Passive Exhaust Louvre Serving SBR and Aeration Tanks	1.96	25	1.38	1.31	2.13	N/A	429013	4757497	Benzene	71-43-2	1.43E-04	N/A	24, Annual	EC	Average	5%
											Vinyl Chloride (Chloroethylene)	75-01-4	3.09E-04	N/A	24	EC	Average	12%
											1,2-Dichloroethane	107-06-2	1.21E-04	N/A	24	EC	Average	7%
											Ammonia	7664-41-7	1.39E-02	N/A	24	EC	Average	49%
											Odour	ODOUR	4.76E+02	N/A	10-minute	EC	Average	3%
L3	POINT-HOR	Passive Exhaust Louvre Serving SBR and Aeration Tanks	1.96	25	1.38	1.31	2.13	N/A	429013	4757490	Benzene	71-43-2	1.43E-04	N/A	24, Annual	EC	Average	5%
											Vinyl Chloride (Chloroethylene)	75-01-4	3.09E-04	N/A	24	EC	Average	12%
											1,2-Dichloroethane	107-06-2	1.21E-04	N/A	24	EC	Average	7%
											Ammonia	7664-41-7	1.39E-02	N/A	24	EC	Average	49%
											Odour	ODOUR	4.76E+02	N/A	10-minute	EC	Average	3%

Appendix 5A-S4: Source Summary Table, Scenario 4

Twin Creeks Environmental Centre

RWDI# 2101750

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (°C)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
EF_2	POINT	Process Exhaust Fan Serving RO System Area	1.71	25	0.51	8.37	3.96	N/A	429073	4757502	Benzene	71-43-2	2.55E-04	N/A	24, Annual	EC	Average	8%
											Vinyl Chloride (Chloroethylene)	75-01-4	2.59E-04	N/A	24	EC	Average	10%
											1,2-Dichloroethane	107-06-2	2.39E-04	N/A	24	EC	Average	13%
											Ammonia	7664-41-7	9.49E-06	N/A	24	EC	Average	<1%
											Odour	ODOUR	3.59E+00	N/A	10-minute	EC	Average	<1%
SD_1	POINT-CAP	Slurry Dryer Exhaust	0.24	25	0.30	3.34	5.00	N/A	429057	4757483	Benzene	71-43-2	6.40E-04	N/A	24, Annual	EC	Average	21%
											Vinyl Chloride (Chloroethylene)	75-01-4	6.40E-04	N/A	24	EC	Average	25%
											1,2-Dichloroethane	107-06-2	6.40E-04	N/A	24	EC	Average	35%
											Ammonia	7664-41-7	4.40E-04	N/A	24	EC	Average	2%
											Odour	ODOUR	2.36E+01	N/A	10-minute	EC	Average	<1%
GEN1	POINT	1,000 kW Emergency Diesel Generator Serving Landfill Gas Plant	3.56	477	0.25	72.52	3.60	0.00	429119	4757554	Nitrogen Oxides	10102-44-0	2.72E-01	N/A	1, 24	EF	Above-Average	4%
											Particulate Matter	PM	4.53E-02	N/A	24	EF	Above-Average	2%
											Sulphur Dioxide	7446-09-5	4.53E-02	N/A	1, Annual	EF	Above-Average	2%
GEN2	POINT	50 kW Diesel Generator Serving Leachate Pumps	0.24	477	0.10	30.56	3.60	0.00	429246	4757604	Nitrogen Oxides	10102-44-0	7.05E-02	N/A	1, 24	EF	Marginal	<1%
											Particulate Matter	PM	2.32E-02	N/A	24	EF	Marginal	1%
											Sulphur Dioxide	7446-09-5	2.16E-02	N/A	1, Annual	EF	Marginal	<1%
GEN3	POINT	250 kW Emergency Diesel Generator Serving the Maintenance Offices	0.97	477	0.15	54.89	3.60	0.00	428415	4758689	Nitrogen Oxides	10102-44-0	3.53E-01	N/A	1, 24	EF	Marginal	5%
											Particulate Matter	PM	1.16E-01	N/A	24	EF	Marginal	6%
											Sulphur Dioxide	7446-09-5	1.08E-01	N/A	1, Annual	EF	Marginal	4%
FLARE1	POINT	Landfill Gas Flare (Based on Full Load)	61.30	950	3.70	5.70	15.20	N/A	429117	4757504	Benzene	71-43-2	1.26E-04	N/A	24, Annual	EC	Average	4%
											Vinyl Chloride (Chloroethylene)	75-01-4	4.91E-05	N/A	24	EC	Average	2%
											1,2-Dichloroethane	107-06-2	4.06E-05	N/A	24	EC	Above-Average	2%
											Nitrogen Oxides	10102-44-0	6.57E-01	N/A	1, 24	EF	Average	9%
											Particulate Matter	PM	2.48E-01	N/A	24	EF	Average	12%
											Sulphur Dioxide	7446-09-5	3.89E-01	N/A	1, Annual	EC	Marginal	14%
											Dioxins and Furans	DF	2.29E-11	N/A	24	EF	Marginal	13%
											Total Reduced Sulphur (TRS)	TRS	1.97E-02	N/A	10-minute, 24	EC	Marginal	17%
											Hydrogen Sulfide	7783-06-4	1.97E-02	N/A	10-minute, 24	EC	Above-Average	19%
FLARE2	POINT	Landfill Gas Flare (Based on Full Load)	61.30	950	3.70	5.70	15.20	N/A	429154	4757504	Benzene	71-43-2	1.26E-04	N/A	24, Annual	EC	Average	4%
											Vinyl Chloride (Chloroethylene)	75-01-4	4.91E-05	N/A	24	EC	Average	2%
											1,2-Dichloroethane	107-06-2	4.06E-05	N/A	24	EC	Above-Average	2%
											Nitrogen Oxides	10102-44-0	6.57E-01	N/A	1, 24	EF	Average	9%
											Particulate Matter	PM	2.48E-01	N/A	24	EF	Average	12%
											Sulphur Dioxide	7446-09-5	3.89E-01	N/A	1, Annual	EC	Marginal	14%
											Dioxins and Furans	DF	2.29E-11	N/A	24	EF	Marginal	13%
											Total Reduced Sulphur (TRS)	TRS	1.97E-02	N/A	10-minute, 24	EC	Marginal	17%
											Hydrogen Sulfide	7783-06-4	1.97E-02	N/A	10-minute, 24	EC	Above-Average	19%
FLARE3	POINT	Proposed Landfill Gas Flare (Based on Full Load)	61.30	950	3.70	5.70	15.20	N/A	429142	4757504	Benzene	71-43-2	1.26E-04	N/A	24, Annual	EC	Average	4%
											Vinyl Chloride (Chloroethylene)	75-01-4	4.91E-05	N/A	24	EC	Average	2%
											1,2-Dichloroethane	107-06-2	4.06E-05	N/A	24	EC	Above-Average	2%
											Nitrogen Oxides	10102-44-0	6.57E-01	N/A	1, 24	EF	Average	9%
											Particulate Matter	PM	2.48E-01	N/A	24	EF	Average	12%
											Sulphur Dioxide	7446-09-5	3.89E-01	N/A	1, Annual	EC	Marginal	14%
											Dioxins and Furans	DF	2.29E-11	N/A	24	EF	Marginal	13%
											Total Reduced Sulphur (TRS)	TRS	1.97E-02	N/A	10-minute, 24	EC	Marginal	17%
											Hydrogen Sulfide	7783-06-4	1.97E-02	N/A	10-minute, 24	EC	Above-Average	19%
FLARE4	POINT	Proposed Landfill Gas Flare (Based on Full Load)	25.79	950	3.20	3.21	12.19	N/A	429129	4757504	Benzene	71-43-2	5.73E-05	N/A	24, Annual	EC	Average	2%
											Vinyl Chloride (Chloroethylene)	75-01-4	2.22E-05	N/A	24	EC	Average	<1%
											1,2-Dichloroethane	107-06-2	1.84E-05	N/A	24	EC	Above-Average	1%
											Nitrogen Oxides	10102-44-0	2.98E-01	N/A	1, 24	EF	Average	4%
											Particulate Matter	PM	1.12E-01	N/A	24	EF	Average	6%
											Sulphur Dioxide	7446-09-5	1.76E-01	N/A	1, Annual	EC	Marginal	6%
											Dioxins and Furans	DF	1.04E-11	N/A	24	EF	Marginal	6%
											Total Reduced Sulphur (TRS)	TRS	8.92E-03	N/A	10-minute, 24	EC	Marginal	8%
											Hydrogen Sulfide	7783-06-4	8.92E-03	N/A	10-minute, 24	EC	Above-Average	8%
AREA1	AREA	Expansion Landfill Phases 1 Through 3 Approximate Area = 244,004 m^2 (Emissions Based on Year 2042)	N/A	N/A	N/A	N/A	N/A	N/A	428626	4757721	Benzene	71-43-2	5.80E-05	1.08E-09	24, Annual	EC	Average	2%
											Vinyl Chloride (Chloroethylene)	75-01-4	1.02E-04	4.17E-10	24	EC	Average	4%
											1,2-Dichloroethane	107-06-2	8.43E-05	3.46E-10	24	EC	Above-Average	5%
											Total Reduced Sulphur (TRS)	TRS	0.00E+00	0.00E+00	10-minute, 24	EC	Marginal	<1%
											Hydrogen Sulfide	7783-06-4	0.00E+00	0.00E+00	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	2.00E+03	8.21E-03	10-minute	ST	Average	15%

Appendix 5A-S4: Source Summary Table, Scenario 4

Twin Creeks Environmental Centre

RWDI# 2101750

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (°C)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
AREA2	AREA	Expansion Landfill Phases 4 Through 5 Approximate Area = 165,611 m^2 (Emissions Based on Year 2042)	N/A	N/A	N/A	N/A	N/A	N/A	428634	4758149	Benzene	71-43-2	2.95E-04	1.78E-09	24, Annual	EC	Average	10%
											Vinyl Chloride (Chloroethylene)	75-01-4	1.14E-04	6.91E-10	24	EC	Average	5%
											1,2-Dichloroethane	107-06-2	9.48E-05	5.72E-10	24	EC	Above-Average	5%
											Total Reduced Sulphur (TRS)	TRS	0.00E+00	0.00E+00	10-minute, 24	EC	Marginal	<1%
											Hydrogen Sulfide	7783-06-4	0.00E+00	0.00E+00	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	2.25E+03	1.36E-02	10-minute	ST	Average	16%
AREA3	AREA	Expansion Landfill Phases 6 Through 7 Approximate Area = 179,092 m^2 (Emissions Based on Year 2042)	N/A	N/A	N/A	N/A	N/A	N/A	428637	4758461	Benzene	71-43-2	3.64E-04	2.03E-09	24, Annual	EC	Average	12%
											Vinyl Chloride (Chloroethylene)	75-01-4	1.41E-04	7.89E-10	24	EC	Average	6%
											1,2-Dichloroethane	107-06-2	1.17E-04	6.53E-10	24	EC	Above-Average	6%
											Total Reduced Sulphur (TRS)	TRS	0.00E+00	0.00E+00	10-minute, 24	EC	Marginal	<1%
											Hydrogen Sulfide	7783-06-4	0.00E+00	0.00E+00	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	2.78E+03	1.55E-02	10-minute	ST	Average	20%
AREA4	AREA	Expansion Landfill Phases 8 Through 9 Approximate Area = 99,012 m^2 (Emissions Based on Year 2042)	N/A	N/A	N/A	N/A	N/A	N/A	429027	4758463	Benzene	71-43-2	1.67E-04	1.69E-09	24, Annual	EC	Average	5%
											Vinyl Chloride (Chloroethylene)	75-01-4	6.49E-05	6.55E-10	24	EC	Average	3%
											1,2-Dichloroethane	107-06-2	5.38E-05	5.43E-10	24	EC	Above-Average	3%
											Total Reduced Sulphur (TRS)	TRS	0.00E+00	0.00E+00	10-minute, 24	EC	Marginal	<1%
											Hydrogen Sulfide	7783-06-4	0.00E+00	0.00E+00	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	1.28E+03	1.29E-02	10-minute	ST	Average	9%
AREA5	AREA	Existing Landfill Approximate Area = 208,263 m^2 (Emissions Based on Year 2042)	N/A	N/A	N/A	N/A	N/A	N/A	429208	4757609	Benzene	71-43-2	5.26E-05	1.91E-10	24, Annual	EC	Average	2%
											Vinyl Chloride (Chloroethylene)	75-01-4	2.04E-05	7.41E-11	24	EC	Average	<1%
											1,2-Dichloroethane	107-06-2	1.69E-05	6.14E-11	24	EC	Above-Average	<1%
											Total Reduced Sulphur (TRS)	TRS	2.95E-03	1.07E-08	10-minute, 24	EC	Marginal	3%
											Hydrogen Sulfide	7783-06-4	9.95E-04	3.61E-09	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	7.88E+00	2.86E-05	10-minute	ST	Average	<1%
STAGE1	AREA	Vertical Expansion Landfill Approximate Area = 378,390 m2 (Emissions Based on Year 2042)	N/A	N/A	N/A	N/A	N/A	N/A	428515	4758837	Benzene	71-43-2	0.00E+00	0.00E+00	24, Annual	EC	Average	<1%
											Vinyl Chloride (Chloroethylene)	75-01-4	0.00E+00	0.00E+00	24	EC	Average	<1%
											1,2-Dichloroethane	107-06-2	0.00E+00	0.00E+00	24	EC	Above-Average	<1%
											Total Reduced Sulphur (TRS)	TRS	1.62E-03	4.29E-09	10-minute, 24	EC	Marginal	1%
											Hydrogen Sulfide	7783-06-4	5.59E-04	1.48E-09	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	0.00E+00	0.00E+00	10-minute	ST	Average	<1%
STAGE1FC	AREA	Vertical Expansion Landfill, Stage 1 area not covered by Stage 3 Approximate Area = 205,538 m2	N/A	N/A	N/A	N/A	N/A	N/A	428508	4757867	Total Reduced Sulphur (TRS)	TRS	0.00E+00	0.00E+00	10-minute, 24	EC	Marginal	<1%
											Hydrogen Sulfide	7783-06-4	0.00E+00	0.00E+00	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	0.00E+00	0.00E+00	10-minute	EC	Average	<1%
STAGE2	AREA	Vertical Expansion Landfill, Stage 2 Approximate Area = 366,429 m2 (Emissions Based on Year 2042)	N/A	N/A	N/A	N/A	N/A	N/A	428878	4758835	Benzene	71-43-2	0.00E+00	0.00E+00	24, Annual	EC	Average	<1%
											Vinyl Chloride (Chloroethylene)	75-01-4	0.00E+00	0.00E+00	24	EC	Average	<1%
											1,2-Dichloroethane	107-06-2	0.00E+00	0.00E+00	24	EC	Above-Average	<1%
											Total Reduced Sulphur (TRS)	TRS	1.57E-03	4.29E-09	10-minute, 24	EC	Marginal	1%
											Hydrogen Sulfide	7783-06-4	5.41E-04	1.48E-09	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	0.00E+00	0.00E+00	10-minute	ST	Average	<1%
STAGE2FC	AREA	Vertical Expansion Landfill, Stage 2 area not covered by Stage 4 Approximate Area = 210,645 m2	N/A	N/A	N/A	N/A	N/A	N/A	428876	4757705	Total Reduced Sulphur (TRS)	TRS	0.00E+00	0.00E+00	10-minute, 24	EC	Marginal	<1%
											Hydrogen Sulfide	7783-06-4	0.00E+00	0.00E+00	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	0.00E+00	0.00E+00	10-minute	EC	Average	<1%
STAGE3	AREA	Vertical Expansion Landfill, Stage 3 Approximate Area = 147,144 m2 (Emissions Based on Year 2042)	N/A	N/A	N/A	N/A	N/A	N/A	428650	4758699	Benzene	71-43-2	0.00E+00	0.00E+00	24, Annual	EC	Average	<1%
											Vinyl Chloride (Chloroethylene)	75-01-4	0.00E+00	0.00E+00	24	EC	Average	<1%
											1,2-Dichloroethane	107-06-2	0.00E+00	0.00E+00	24	EC	Above-Average	<1%
											Total Reduced Sulphur (TRS)	TRS	0.00E+00	0.00E+00	10-minute, 24	EC	Marginal	<1%
											Hydrogen Sulfide	7783-06-4	0.00E+00	0.00E+00	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	0.00E+00	0.00E+00	10-minute	ST	Average	<1%
STAGE4	AREA	Vertical Expansion Landfill, Stage 4 Approximate Area = 181,496 m2 (Emissions Based on Year 2042)	N/A	N/A	N/A	N/A	N/A	N/A	428847	4758701	Benzene	71-43-2	0.00E+00	0.00E+00	24, Annual	EC	Average	<1%
											Vinyl Chloride (Chloroethylene)	75-01-4	0.00E+00	0.00E+00	24	EC	Average	<1%
											1,2-Dichloroethane	107-06-2	0.00E+00	0.00E+00	24	EC	Above-Average	<1%
											Total Reduced Sulphur (TRS)	TRS	0.00E+00	0.00E+00	10-minute, 24	EC	Marginal	<1%
											Hydrogen Sulfide	7783-06-4	0.00E+00	0.00E+00	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	0.00E+00	0.00E+00	10-minute	ST	Average	<1%
DC_WF	VOLUME	Daily Cover Dropped at Working Face	N/A	N/A	N/A	N/A	N/A	N/A	429118	4758694	Particulate Matter	PM	Variable [4]	N/A	24	EF	Average	N/A
											PM10	PM10	Variable [4]	N/A	24	EF	Average	N/A
											PM2.5	PM25	Variable [4]	N/A	24	EF	Average	N/A
DC_SS	VOLUME	Daily Cover Dropped at Soil Stockpile	N/A	N/A	N/A	N/A	N/A	N/A	429308	4757217	Particulate Matter	PM	Variable [4]	N/A	24	EF	Average	N/A
											PM10	PM10	Variable [4]	N/A	24	EF	Average	N/A
											PM2.5	PM25	Variable [4]	N/A	24	EF	Average	N/A
CDA1	VOLUME	Compost Material Dropped at Compost Diversion Area 1 (North)	N/A	N/A	N/A	N/A	N/A	N/A	429524	4757510	Particulate Matter	PM	Variable [4]	N/A	24	EF	Average	N/A
											PM10	PM10	Variable [4]	N/A	24	EF	Average	N/A
											PM2.5	PM25	Variable [4]	N/A	24	EF	Average	N/A

Appendix 5A-S4: Source Summary Table, Scenario 4

Twin Creeks Environmental Centre

RWDI# 2101750

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (°C)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
CDA2	VOLUME	Compost Material Dropped at Compost Diversion Area 2 (South)	N/A	N/A	N/A	N/A	N/A	N/A	429536	4757510	Particulate Matter	PM	Variable [4]	N/A	24	EF	Average	N/A
											PM10	PM10	Variable [4]	N/A	24	EF	Average	N/A
											PM2.5	PM25	Variable [4]	N/A	24	EF	Average	N/A
CDA	AREA	Compost Diversion Area	N/A	N/A	N/A	N/A	N/A	N/A	429513	4757452	Odour	ODOUR	4.47E+03	8.10E-01	10-minute	EF	Average	32%
CS_WF	VOLUME	Contaminated Soil Dropped at Working Face	N/A	N/A	N/A	N/A	N/A	N/A	429105	4758699	Particulate Matter	PM	Variable [4]	N/A	24	EF	Average	N/A
											PM10	PM10	Variable [4]	N/A	24	EF	Average	N/A
											PM2.5	PM25	Variable [4]	N/A	24	EF	Average	N/A
WIND_SS	AREA	Wind Erosion at Soil Stockpile	N/A	N/A	N/A	N/A	N/A	N/A	429216	4757189	Particulate Matter	PM	N/A	Variable [4]	24	EF	Average	N/A
											PM10	PM10	N/A	Variable [4]	24	EF	Average	N/A
											PM2.5	PM25	N/A	Variable [4]	24	EF	Average	N/A
WIND_WF	AREA	Wind Erosion at Working Face	N/A	N/A	N/A	N/A	N/A	N/A	429100	4758643	Particulate Matter	PM	N/A	Variable [4]	24	EF	Average	N/A
											PM10	PM10	N/A	Variable [4]	24	EF	Average	N/A
											PM2.5	PM25	N/A	Variable [4]	24	EF	Average	N/A
WIND_CDA	AREA	Wind Rrosion at Compost Diversion Area	N/A	N/A	N/A	N/A	N/A	N/A	429513	4757452	Particulate Matter	PM	N/A	Variable	24	EF	Average	N/A
											PM10	PM10	N/A	Variable	24	EF	Average	N/A
											PM2.5	PM25	N/A	Variable	24	EF	Average	N/A
FC_CAP	AREA	Final Cap Construction Clay Drop-off	N/A	N/A	N/A	N/A	N/A	N/A	429030	4758695	Particulate Matter	PM	N/A	Variable [4]	24	EF	Average	N/A
											PM10	PM10	N/A	Variable [4]	24	EF	Average	N/A
											PM2.5	PM25	N/A	Variable [4]	24	EF	Average	N/A
FC_SS	AREA	Final Cap Clay Storage Pile Truck Loading	N/A	N/A	N/A	N/A	N/A	N/A	429278	4757247	Particulate Matter	PM	N/A	Variable [4]	24	EF	Average	N/A
											PM10	PM10	N/A	Variable [4]	24	EF	Average	N/A
											PM2.5	PM25	N/A	Variable [4]	24	EF	Average	N/A
WIND_CAP	AREA	Wind Erosion at the Final Cap Construction Area	N/A	N/A	N/A	N/A	N/A	N/A	429022	4758752	Particulate Matter	PM	N/A	Variable [4]	24	EF	Average	N/A
											PM10	PM10	N/A	Variable [4]	24	EF	Average	N/A
											PM2.5	PM25	N/A	Variable [4]	24	EF	Average	N/A
MH5AB	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429468	4758257	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH4A	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429461	4758000	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH3SA	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429461	4757794	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH16	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429423	4757612	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH6AB	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429198	4758220	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
SUMP	AREA	Leachate Maintenance Sump	N/A	N/A	N/A	N/A	N/A	N/A	429247	4758070	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH3SF	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429334	4757819	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH18	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429266	4757613	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
CONSOIL	AREA	Contaminated Soil Pile	N/A	N/A	N/A	N/A	N/A	N/A	429109	4758698	Vinyl Chloride (Chloroethylene)	75-01-4	0.00E+00	0.00E+00	24	ST	Average	<1%
											1,2-Dichloroethane	107-06-2	0.00E+00	0.00E+00	24	ST	Average	<1%
											Benzene	71-43-2	0.00E+00	0.00E+00	24, Annual	ST	Average	<1%
											Odour	ODOUR	1.53E+00	7.65E-02	10-minute	ST	Average	<1%
WF	AREA	Working Face / Scrape Down Area	N/A	N/A	N/A	N/A	N/A	N/A	429100	4758643	Odour	ODOUR	N/A	Variable [5]	10-minute	ST	Average	N/A
DOZE1	VOLUME	Cat Dozers at Working Face, Dugitive Dust	N/A	N/A	N/A	N/A	N/A	N/A	429131	4758672	Particulate Matter	PM	0.00E+00	N/A	24	EC	Average	<1%
											PM10	PM10	0.00E+00	N/A	24	EC	Average	0%
											PM2.5	PM25	0.00E+00	N/A	24	EC	Average	0%
DOZE2	VOLUME	Cat Dozers at Working Face, Tailpipe	N/A	N/A	N/A	N/A	N/A	N/A	429131	4758672	Particulate Matter	PM	0.00E+00	N/A	24	EC	Average	<1%
											PM10	PM10	0.00E+00	N/A	24	EC	Average	0%
											PM2.5	PM25	0.00E+00	N/A	24	EC	Average	0%
											Benzene	71-43-2	0.00E+00	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	0.00E+00	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00	N/A	24	EC	Average	0%
											Nitrogen Oxides	10102-44-0	0.00E+00	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	0.00E+00	N/A	1, Annual	EC	Average	<1%
DOZE3	VOLUME	Cat Dozers at Soil Stockpile, Fugitive Dust	N/A	N/A	N/A	N/A	N/A	N/A	429314	4757233	Particulate Matter	PM	0.00E+00	N/A	24	EC	Average	<1%
											PM10	PM10	0.00E+00	N/A	24	EC	Average	0%
											PM2.5	PM25	0.00E+00	N/A	24	EC	Average	0%
DOZE4	VOLUME	Cat Dozers at Soil Stockpile, Tailpipe	N/A	N/A	N/A	N/A	N/A	N/A	429314	4757233	Particulate Matter	PM	0.00E+00	N/A	24	EC	Average	<1%
											PM10	PM10	0.00E+00	N/A	24	EC	Average	0%
											PM2.5	PM25	0.00E+00	N/A	24	EC	Average	0%
											Benzene	71-43-2	0.00E+00	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	0.00E+00	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00	N/A	24	EC	Average	0%
											Nitrogen Oxides	10102-44-0	0.00E+00	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	0.00E+00	N/A	1, Annual	EC	Average	<1%
DOZE1CAP	VOLUME	Cat Dozers at Working Face, Dugitive Dust	N/A	N/A	N/A	N/A	N/A	N/A	429059	4758666	Particulate Matter	PM	0.00E+00	N/A	24	EC	Average	<1%
											PM10	PM10	0.00E+00	N/A	24	EC	Average	0%
											PM2.5	PM25	0.00E+00	N/A	24	EC	Average	0%

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (°C)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
DOZE2CAP	VOLUME	Cat Dozers at Working Face, Tailpipe	N/A	N/A	N/A	N/A	N/A	N/A	429059	4758666	Particulate Matter	PM	0.00E+00	N/A	24	EC	Average	<1%
											PM10	PM10	0.00E+00	N/A	24	EC	Average	0%
											PM2.5	PM25	0.00E+00	N/A	24	EC	Average	0%
											Benzene	71-43-2	0.00E+00	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	0.00E+00	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00	N/A	24	EC	Average	0%
											Nitrogen Oxides	10102-44-0	0.00E+00	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	0.00E+00	N/A	1, Annual	EC	Average	<1%
DOZE2SS	VOLUME	Cat Dozers at Soil Stockpile, Tailpipe	N/A	N/A	N/A	N/A	N/A	N/A	429460	4757232	Particulate Matter	PM	0.00E+00	N/A	24	EC	Average	<1%
											PM10	PM10	0.00E+00	N/A	24	EC	Average	0%
											PM2.5	PM25	0.00E+00	N/A	24	EC	Average	0%
											Benzene	71-43-2	0.00E+00	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	0.00E+00	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00	N/A	24	EC	Average	0%
											Nitrogen Oxides	10102-44-0	0.00E+00	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	0.00E+00	N/A	1, Annual	EC	Average	<1%
IDLE01	VOLUME	Trucks Idling at the Scale House	N/A	N/A	N/A	N/A	N/A	N/A	428420	4758417	Particulate Matter	PM	0.00E+00	N/A	24	EC	Average	<1%
											PM10	PM10	0.00E+00	N/A	24	EC	Average	0%
											PM2.5	PM25	0.00E+00	N/A	24	EC	Average	0%
											Benzene	71-43-2	0.00E+00	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	0.00E+00	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00	N/A	24	EC	Average	0%
											Nitrogen Oxides	10102-44-0	0.00E+00	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	0.00E+00	N/A	1, Annual	EC	Average	<1%
IDLE02	VOLUME	Trucks Idling at the Working Face	N/A	N/A	N/A	N/A	N/A	N/A	429122	4758680	Particulate Matter	PM	0.00E+00	N/A	24	EC	Average	<1%
											PM10	PM10	0.00E+00	N/A	24	EC	Average	0%
											PM2.5	PM25	0.00E+00	N/A	24	EC	Average	0%
											Benzene	71-43-2	0.00E+00	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	0.00E+00	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00	N/A	24	EC	Average	0%
											Nitrogen Oxides	10102-44-0	0.00E+00	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	0.00E+00	N/A	1, Annual	EC	Average	<1%
PR01	LINE_VOLUME	Main Entrance Road	N/A	N/A	N/A	N/A	N/A	N/A	428277	4758638	Particulate Matter	PM	0.00E+00 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	0.00E+00 [6]	N/A	24	EC	Average	0%
											PM2.5	PM25	0.00E+00 [6]	N/A	24	EC	Average	0%
											Benzene	71-43-2	0.00E+00 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	0%
											Nitrogen Oxides	10102-44-0	0.00E+00 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	0.00E+00 [6]	N/A	1, Annual	EC	Average	<1%
PR01Z	LINE_VOLUME	Main Entrance Road, onsite equipment	N/A	N/A	N/A	N/A	N/A	N/A	428277	4758638	Particulate Matter	PM	0.00E+00 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	0.00E+00 [6]	N/A	24	EC	Average	0%
											PM2.5	PM25	0.00E+00 [6]	N/A	24	EC	Average	0%
											Benzene	71-43-2	0.00E+00 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	0%
											Nitrogen Oxides	10102-44-0	0.00E+00 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	0.00E+00 [6]	N/A	1, Annual	EC	Average	<1%
UR02Z	LINE_VOLUME	Access road to compost diversion area (CDA)	N/A	N/A	N/A	N/A	N/A	N/A	429167	4757583	Particulate Matter	PM	0.00E+00 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	0.00E+00 [6]	N/A	24	EC	Average	0%
											PM2.5	PM25	0.00E+00 [6]	N/A	24	EC	Average	0%
											Benzene	71-43-2	0.00E+00 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	0%
											Nitrogen Oxides	10102-44-0	0.00E+00 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	0.00E+00 [6]	N/A	1, Annual	EC	Average	<1%
PR04A	LINE_VOLUME	Entrance to Scale House	N/A	N/A	N/A	N/A	N/A	N/A	428404	4758633	Particulate Matter	PM	0.00E+00 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	0.00E+00 [6]	N/A	24	EC	Average	0%
											PM2.5	PM25	0.00E+00 [6]	N/A	24	EC	Average	0%
											Benzene	71-43-2	0.00E+00 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	0%
											Nitrogen Oxides	10102-44-0	0.00E+00 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	0.00E+00 [6]	N/A	1, Annual	EC	Average	<1%

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (°C)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
PR04AZ	LINE_VOLUME	Entrance to Scale House, onsite equipment	N/A	N/A	N/A	N/A	N/A	N/A	428404	4758633	Particulate Matter	PM	0.00E+00 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	0.00E+00 [6]	N/A	24	EC	Average	0%
											PM2.5	PM25	0.00E+00 [6]	N/A	24	EC	Average	0%
											Benzene	71-43-2	0.00E+00 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	0%
											Nitrogen Oxides	10102-44-0	0.00E+00 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	0.00E+00 [6]	N/A	1, Annual	EC	Average	<1%
BR06	LINE_VOLUME	Across LF to WF southern section	N/A	N/A	N/A	N/A	N/A	N/A	428755	4757734	Particulate Matter	PM	0.00E+00 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	0.00E+00 [6]	N/A	24	EC	Average	0%
											PM2.5	PM25	0.00E+00 [6]	N/A	24	EC	Average	0%
											Benzene	71-43-2	0.00E+00 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	0%
											Nitrogen Oxides	10102-44-0	0.00E+00 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	0.00E+00 [6]	N/A	1, Annual	EC	Average	<1%
BR06Z	LINE_VOLUME	Across LF to WF southern section, onsite equipment	N/A	N/A	N/A	N/A	N/A	N/A	428755	4757734	Particulate Matter	PM	0.00E+00 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	0.00E+00 [6]	N/A	24	EC	Average	0%
											PM2.5	PM25	0.00E+00 [6]	N/A	24	EC	Average	0%
											Benzene	71-43-2	0.00E+00 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	0%
											Nitrogen Oxides	10102-44-0	0.00E+00 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	0.00E+00 [6]	N/A	1, Annual	EC	Average	<1%
BR06Y	LINE_VOLUME	Across LF to WF southern section, final cap construction truc	N/A	N/A	N/A	N/A	N/A	N/A	428755	4757734	Particulate Matter	PM	0.00E+00 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	0.00E+00 [6]	N/A	24	EC	Average	0%
											PM2.5	PM25	0.00E+00 [6]	N/A	24	EC	Average	0%
											Benzene	71-43-2	0.00E+00 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	0%
											Nitrogen Oxides	10102-44-0	0.00E+00 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	0.00E+00 [6]	N/A	1, Annual	EC	Average	<1%
PR08Z	LINE_VOLUME	WF to SS/LTF	N/A	N/A	N/A	N/A	N/A	N/A	428750	4757727	Particulate Matter	PM	0.00E+00 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	0.00E+00 [6]	N/A	24	EC	Average	0%
											PM2.5	PM25	0.00E+00 [6]	N/A	24	EC	Average	0%
											Benzene	71-43-2	0.00E+00 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	0%
											Nitrogen Oxides	10102-44-0	0.00E+00 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	0.00E+00 [6]	N/A	1, Annual	EC	Average	<1%
PR08Y	LINE_VOLUME	WF to SS/LTF, final cap construction trucks	N/A	N/A	N/A	N/A	N/A	N/A	428750	4757727	Particulate Matter	PM	0.00E+00 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	0.00E+00 [6]	N/A	24	EC	Average	0%
											PM2.5	PM25	0.00E+00 [6]	N/A	24	EC	Average	0%
											Benzene	71-43-2	0.00E+00 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	0%
											Nitrogen Oxides	10102-44-0	0.00E+00 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	0.00E+00 [6]	N/A	1, Annual	EC	Average	<1%
UR09AZ	LINE_VOLUME	WF to SS, to CDA turn off	N/A	N/A	N/A	N/A	N/A	N/A	429039	4757671	Particulate Matter	PM	0.00E+00 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	0.00E+00 [6]	N/A	24	EC	Average	0%
											PM2.5	PM25	0.00E+00 [6]	N/A	24	EC	Average	0%
											Benzene	71-43-2	0.00E+00 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	0%
											Nitrogen Oxides	10102-44-0	0.00E+00 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	0.00E+00 [6]	N/A	1, Annual	EC	Average	<1%
UR09AY	LINE_VOLUME	WF to SS, to CDA turn off, final cap construction trucks	N/A	N/A	N/A	N/A	N/A	N/A	429039	4757671	Particulate Matter	PM	0.00E+00 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	0.00E+00 [6]	N/A	24	EC	Average	0%
											PM2.5	PM25	0.00E+00 [6]	N/A	24	EC	Average	0%
											Benzene	71-43-2	0.00E+00 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	0%
											Nitrogen Oxides	10102-44-0	0.00E+00 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	0.00E+00 [6]	N/A	1, Annual	EC	Average	<1%

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (°C)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
UR09BZ	LINE_VOLUME	WF to SS, after CDA turnoff	N/A	N/A	N/A	N/A	N/A	N/A	429164	4757579	Particulate Matter	PM	0.00E+00 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	0.00E+00 [6]	N/A	24	EC	Average	0%
											PM2.5	PM25	0.00E+00 [6]	N/A	24	EC	Average	0%
											Benzene	71-43-2	0.00E+00 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	0%
											Nitrogen Oxides	10102-44-0	0.00E+00 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	0.00E+00 [6]	N/A	1, Annual	EC	Average	<1%
UR09BY	LINE_VOLUME	WF to SS, after CDA turnoff, final cap construction trucks	N/A	N/A	N/A	N/A	N/A	N/A	429164	4757579	Particulate Matter	PM	0.00E+00 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	0.00E+00 [6]	N/A	24	EC	Average	0%
											PM2.5	PM25	0.00E+00 [6]	N/A	24	EC	Average	0%
											Benzene	71-43-2	0.00E+00 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	0%
											Nitrogen Oxides	10102-44-0	0.00E+00 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	0.00E+00 [6]	N/A	1, Annual	EC	Average	<1%
UR11Z	LINE_VOLUME	Across SS	N/A	N/A	N/A	N/A	N/A	N/A	429160	4757399	Particulate Matter	PM	0.00E+00 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	0.00E+00 [6]	N/A	24	EC	Average	0%
											PM2.5	PM25	0.00E+00 [6]	N/A	24	EC	Average	0%
											Benzene	71-43-2	0.00E+00 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	0%
											Nitrogen Oxides	10102-44-0	0.00E+00 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	0.00E+00 [6]	N/A	1, Annual	EC	Average	<1%
UR11Y	LINE_VOLUME	Across SS, final cap construction trucks	N/A	N/A	N/A	N/A	N/A	N/A	429160	4757399	Particulate Matter	PM	0.00E+00 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	0.00E+00 [6]	N/A	24	EC	Average	0%
											PM2.5	PM25	0.00E+00 [6]	N/A	24	EC	Average	0%
											Benzene	71-43-2	0.00E+00 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	0%
											Nitrogen Oxides	10102-44-0	0.00E+00 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	0.00E+00 [6]	N/A	1, Annual	EC	Average	<1%
UR12	LINE_VOLUME	Across LF to WF northern section	N/A	N/A	N/A	N/A	N/A	N/A	429512	4757267	Particulate Matter	PM	0.00E+00 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	0.00E+00 [6]	N/A	24	EC	Average	0%
											PM2.5	PM25	0.00E+00 [6]	N/A	24	EC	Average	0%
											Benzene	71-43-2	0.00E+00 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	0%
											Nitrogen Oxides	10102-44-0	0.00E+00 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	0.00E+00 [6]	N/A	1, Annual	EC	Average	<1%
UR12Z	LINE_VOLUME	Across LF to WF northern section, onsite equipment	N/A	N/A	N/A	N/A	N/A	N/A	429512	4757267	Particulate Matter	PM	0.00E+00 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	0.00E+00 [6]	N/A	24	EC	Average	0%
											PM2.5	PM25	0.00E+00 [6]	N/A	24	EC	Average	0%
											Benzene	71-43-2	0.00E+00 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	0%
											Nitrogen Oxides	10102-44-0	0.00E+00 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	0.00E+00 [6]	N/A	1, Annual	EC	Average	<1%
UR12Y	LINE_VOLUME	Across LF to WF northern section, final cap construction truc	N/A	N/A	N/A	N/A	N/A	N/A	429512	4757267	Particulate Matter	PM	0.00E+00 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	0.00E+00 [6]	N/A	24	EC	Average	0%
											PM2.5	PM25	0.00E+00 [6]	N/A	24	EC	Average	0%
											Benzene	71-43-2	0.00E+00 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	0%
											Nitrogen Oxides	10102-44-0	0.00E+00 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	0.00E+00 [6]	N/A	1, Annual	EC	Average	<1%
PR13Z	LINE_VOLUME	WF to LTF	N/A	N/A	N/A	N/A	N/A	N/A	429035	4757669	Particulate Matter	PM	0.00E+00 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	0.00E+00 [6]	N/A	24	EC	Average	0%
											PM2.5	PM25	0.00E+00 [6]	N/A	24	EC	Average	0%
											Benzene	71-43-2	0.00E+00 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	0%
											Nitrogen Oxides	10102-44-0	0.00E+00 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	0.00E+00 [6]	N/A	1, Annual	EC	Average	<1%

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (°C)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
PR14Z	LINE_VOLUME	WF to LTF	N/A	N/A	N/A	N/A	N/A	N/A	429077	4757516	Particulate Matter	PM	0.00E+00 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	0.00E+00 [6]	N/A	24	EC	Average	0%
											PM2.5	PM25	0.00E+00 [6]	N/A	24	EC	Average	0%
											Benzene	71-43-2	0.00E+00 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	0%
											Nitrogen Oxides	10102-44-0	0.00E+00 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	0.00E+00 [6]	N/A	1, Annual	EC	Average	<1%
UR17Z	LINE_VOLUME	Across CDA	N/A	N/A	N/A	N/A	N/A	N/A	429514	4757517	Particulate Matter	PM	0.00E+00 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	0.00E+00 [6]	N/A	24	EC	Average	0%
											PM2.5	PM25	0.00E+00 [6]	N/A	24	EC	Average	0%
											Benzene	71-43-2	0.00E+00 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	0%
											Nitrogen Oxides	10102-44-0	0.00E+00 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	0.00E+00 [6]	N/A	1, Annual	EC	Average	<1%
UR18Z	LINE_VOLUME	Across WF, onsite equipment	N/A	N/A	N/A	N/A	N/A	N/A	429144	4758670	Particulate Matter	PM	0.00E+00 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	0.00E+00 [6]	N/A	24	EC	Average	0%
											PM2.5	PM25	0.00E+00 [6]	N/A	24	EC	Average	0%
											Benzene	71-43-2	0.00E+00 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	0%
											Nitrogen Oxides	10102-44-0	0.00E+00 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	0.00E+00 [6]	N/A	1, Annual	EC	Average	<1%
PR04B	LINE_VOLUME	Scale House to WF	N/A	N/A	N/A	N/A	N/A	N/A	428477	4758211	Particulate Matter	PM	0.00E+00 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	0.00E+00 [6]	N/A	24	EC	Average	0%
											PM2.5	PM25	0.00E+00 [6]	N/A	24	EC	Average	0%
											Benzene	71-43-2	0.00E+00 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	0%
											Nitrogen Oxides	10102-44-0	0.00E+00 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	0.00E+00 [6]	N/A	1, Annual	EC	Average	<1%
PR04BZ	LINE_VOLUME	Scale House to WF, onsite equipment	N/A	N/A	N/A	N/A	N/A	N/A	428477	4758211	Particulate Matter	PM	0.00E+00 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	0.00E+00 [6]	N/A	24	EC	Average	0%
											PM2.5	PM25	0.00E+00 [6]	N/A	24	EC	Average	0%
											Benzene	71-43-2	0.00E+00 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	0%
											Nitrogen Oxides	10102-44-0	0.00E+00 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	0.00E+00 [6]	N/A	1, Annual	EC	Average	<1%
PR04C	LINE_VOLUME	Exit Road from WF	N/A	N/A	N/A	N/A	N/A	N/A	428477	4758211	Particulate Matter	PM	0.00E+00 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	0.00E+00 [6]	N/A	24	EC	Average	0%
											PM2.5	PM25	0.00E+00 [6]	N/A	24	EC	Average	0%
											Benzene	71-43-2	0.00E+00 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	0%
											Nitrogen Oxides	10102-44-0	0.00E+00 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	0.00E+00 [6]	N/A	1, Annual	EC	Average	<1%
PR04CZ	LINE_VOLUME	Exit Road from WF, onsite equipment	N/A	N/A	N/A	N/A	N/A	N/A	428477	4758211	Particulate Matter	PM	0.00E+00 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	0.00E+00 [6]	N/A	24	EC	Average	0%
											PM2.5	PM25	0.00E+00 [6]	N/A	24	EC	Average	0%
											Benzene	71-43-2	0.00E+00 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	0%
											Nitrogen Oxides	10102-44-0	0.00E+00 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	0.00E+00 [6]	N/A	1, Annual	EC	Average	<1%
MH17	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429326	4757612	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
LW6	AREA	Leachate Monitoring Well	N/A	N/A	N/A	N/A	N/A	N/A	429295	4757641	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
LW5	AREA	Leachate Monitoring Well	N/A	N/A	N/A	N/A	N/A	N/A	429414	4757638	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH3SB	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429460	4757818	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH3SD	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429216	4757819	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH3SC	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429211	4757771	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH3SE	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429326	4757780	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH4B	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429448	4758128	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
LW4	AREA	Leachate Monitoring Well	N/A	N/A	N/A	N/A	N/A	N/A	429414	4758056	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%

Appendix 5A-S4: Source Summary Table, Scenario 4

RWDI# 2101750

Twin Creeks Environmental Centre

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (°C)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
LW3	AREA	Leachate Monitoring Well	N/A	N/A	N/A	N/A	N/A	N/A	429437	4758227	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH8AB	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429215	4758370	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH10	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429205	4758622	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH12AB	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429195	4758697	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH7AB	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429471	4758461	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
LW2	AREA	Leachate Monitoring Well	N/A	N/A	N/A	N/A	N/A	N/A	429451	4758527	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH9AB	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429473	4758617	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH11AB	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429473	4758632	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
LW1	AREA	Leachate Monitoring Well	N/A	N/A	N/A	N/A	N/A	N/A	429457	4758703	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
Total		Total of All Listed Sources									Benzene	71-43-2	3.09E-03					100%
											Vinyl Chloride (Chloroethylene)	75-01-4	2.51E-03					100%
											1,2-Dichloroethane	107-06-2	1.82E-03					100%
											Ammonia	7664-41-7	2.83E-02					100%
											Nitrogen Oxides	10102-44-0	7.26E+00					100%
											Particulate Matter	PM	2.04E+00					100%
											Sulphur Dioxide	7446-09-5	2.75E+00					100%
											Hydrogen Sulfide	7783-06-4	1.06E-01					100%
											Total Reduced Sulphur (TRS)	TRS	1.17E-01					100%
											PM10	PM10	2.04E+00					100%
											PM2.5	PM25	2.04E+00					100%
											Odour	ODOUR	1.38E+04					100%
											Dioxins and Furans	DF	1.70E-10					100%
											Nitrogen Dioxide	NO2	0.00E+00					100%

Notes:

[1] Emission Estimating Technique Short-Forms are V-ST (Validated Source Test), ST (Source Test), EF (Emission Factor), MB (Mass Balance), and EC (Engineering Calculation).

[2] Data Quality Categories: Highest; Above-Average; Average; and Marginal.

[3] For Odour, the units are OU/s and $OU/m^2/s$ for emission rate and flux rate.

[4] Material handling and wind erosion emissions vary by time of day depending on wind conditions in each hour. Hourly emission rates have been applied during modelling.

[5] Odour emissions from the active working face vary depending on the time of day. From 6 a.m. to 9 a.m. the active face is freshly uncovered waste as the daily cover is stripped and new waste is deposited. By 9 a.m. the entire active face has been covered by at least 1 foot to 1 metre of new waste. After 9 a.m. the emission factor for new waste at the active face is applied.

[6] Roadway traffic varies by time of day. The maximum emission rate (g/s) for the entire road segment is shown in this table; hourly emissions rates have been applied during modelling.

Appendix 5A-S4-5.1a: On-Site Mobile Equipment Emissions - Fugitive Dust, All Time Periods

Project #2101750

Twin Creeks Environmental Centre - Preferred Alternative

UNPAVED ROAD SECTIONS - AP-42 Section 13.2.2
PAVED ROAD SECTIONS - AP-42 Section 13.2.1

Paved Roads: $E = k\,(sL)^{0.91}\,(W)^{1.02}$
Unpaved Roads - Industrial: $E = 281.9\,k\,(s / 12)^{a}\,(W / 3)^{b}$
Unpaved Roads - Public: $E = 281.9\,k\,(s / 12)^{a}\,(S / 30)^{d} / (M / 0.5)^{c} - C$

E particulate emission factor (g/VKT)
k particle size multiplier (see below)
sL road surface silt loading (g/m^2)
W average weight of the vehicles traveling the road (US short tons)
s surface material silt content (%)
C emission factor for 1980's vehicle fleet exhaust, brake wear and tire wear
M surface material moisture content (%)
S mean vehicle speed (mph)
a,b,c,d constants (see below)

Route ID [1]	Route Description	Traffic Passes			Segment Length [2]	Road Surface [3]	Roadway Type [4]	Mean Vehicle Speed		Average Vehicle Weight [5]	Surface Material Moisture Content [6]	Surface Silt Content [7]	Road Surface Silt Loading [8]	Base AP-42 Emission Factor			Base Emission Rate			Additional Control Efficiency Applied	Final Controlled Emission Rate					
		Hourly	Daily	Annual										TSP	PM_{10}	$PM_{2.5}$	TSP	PM_{10}	$PM_{2.5}$		TSP	Data Quality Rating	PM_{10}	Data Quality Rating	$PM_{2.5}$	Data Quality Rating
		(#/h)	(#/d)	(#/a)	(m)			(km/h)	(mph)	(tons)	(%)	(%)	(g/m^2)	(g/VKT)	(g/VKT)	(g/VKT)	(g/s)	(g/s)	(g/s)	(%)	(g/s)		(g/s)		(g/s)	
PR01	Main Entrance Road	0	0	0	206	Paved	Industrial	10	6	0.0	--	--	0.63	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	90%	0.0E+00	--	0.0E+00	--	0.0E+00	--
PR01Z	Main Entrance Road, onsite equipment	0	0	0	206	Paved	Industrial	10	6	0.0	--	--	0.63	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	90%	0.0E+00	--	0.0E+00	--	0.0E+00	--
UR02Z	Access road to compost diversion area (CDA)	0	0	0	414	Unpaved	Industrial	10	6	0.0	--	43.1%	--	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	90%	0.0E+00	--	0.0E+00	--	0.0E+00	--
PR04A	Entrance to Scale House	0	0	0	487	Paved	Industrial	10	6	0.0	--	--	0.63	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	90%	0.0E+00	--	0.0E+00	--	0.0E+00	--
PR04AZ	Entrance to Scale House, onsite equipment	0	0	0	487	Paved	Industrial	10	6	0.0	--	--	0.63	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	90%	0.0E+00	--	0.0E+00	--	0.0E+00	--
BR06	Across LF to WF southern section	0	0	0	603	Unpaved	Industrial	10	6	0.0	--	16.8%	--	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	90%	0.0E+00	--	0.0E+00	--	0.0E+00	--
BR06Z	Across LF to WF southern section, onsite equipment	0	0	0	603	Unpaved	Industrial	10	6	0.0	--	16.8%	--	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	90%	0.0E+00	--	0.0E+00	--	0.0E+00	--
BR06Y	Across LF to WF southern section, final cap construction trucks	0	0	0	603	Unpaved	Industrial	10	6	0.0	--	16.8%	--	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	90%	0.0E+00	--	0.0E+00	--	0.0E+00	--
PR08Z	WF to SS/LTF	0	0	0	307	Paved	Industrial	10	6	0.0	--	--	3.53	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	90%	0.0E+00	--	0.0E+00	--	0.0E+00	--
PR08Y	WF to SS/LTF, final cap construction trucks	0	0	0	307	Paved	Industrial	10	6	0.0	--	--	3.53	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	90%	0.0E+00	--	0.0E+00	--	0.0E+00	--
UR09AZ	WF to SS, to CDA turn off	0	0	0	211	Unpaved	Industrial	10	6	0.0	--	43.1%	--	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	90%	0.0E+00	--	0.0E+00	--	0.0E+00	--
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	0	0	0	211	Unpaved	Industrial	10	6	0.0	--	43.1%	--	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	90%	0.0E+00	--	0.0E+00	--	0.0E+00	--
UR09BZ	WF to SS, after CDA turnoff	0	0	0	179	Unpaved	Industrial	10	6	0.0	--	43.1%	--	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	90%	0.0E+00	--	0.0E+00	--	0.0E+00	--
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	0	0	0	179	Unpaved	Industrial	10	6	0.0	--	43.1%	--	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	90%	0.0E+00	--	0.0E+00	--	0.0E+00	--
UR11Z	Across SS	0	0	0	242	Unpaved	Industrial	10	6	0.0	--	43.1%	--	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	90%	0.0E+00	--	0.0E+00	--	0.0E+00	--
UR11Y	Across SS, final cap construction trucks	0	0	0	242	Unpaved	Industrial	10	6	0.0	--	43.1%	--	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	90%	0.0E+00	--	0.0E+00	--	0.0E+00	--
UR12	Across LF to WF northern section	0	0	0	575	Unpaved	Industrial	10	6	0.0	--	16.8%	--	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	90%	0.0E+00	--	0.0E+00	--	0.0E+00	--
UR12Z	Across LF to WF northern section, onsite equipment	0	0	0	575	Unpaved	Industrial	10	6	0.0	--	16.8%	--	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	90%	0.0E+00	--	0.0E+00	--	0.0E+00	--
UR12Y	Across LF to WF northern section, final cap construction trucks	0	0	0	575	Unpaved	Industrial	10	6	0.0	--	16.8%	--	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	90%	0.0E+00	--	0.0E+00	--	0.0E+00	--
PR13Z	WF to LTF	0	0	0	165	Paved	Industrial	10	6	0.0	--	--	3.53	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	90%	0.0E+00	--	0.0E+00	--	0.0E+00	--
PR14Z	WF to LTF	0	0	0	61	Paved	Industrial	10	6	0.0	--	--	3.53	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	90%	0.0E+00	--	0.0E+00	--	0.0E+00	--
UR17Z	Across CDA	0	0	0	90	Unpaved	Industrial	10	6	0.0	--	43.1%	--	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	90%	0.0E+00	--	0.0E+00	--	0.0E+00	--
UR18Z	Across WF, onsite equipment	0	0	0	45	Unpaved	Industrial	10	6	0.0	--	44.7%	--	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	90%	0.0E+00	--	0.0E+00	--	0.0E+00	--
PR04B	Scale House to WF	0	0	0	681	Paved	Industrial	10	6	0.0	--	--	0.75	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	90%	0.0E+00	--	0.0E+00	--	0.0E+00	--
PR04BZ	Scale House to WF, onsite equipment	0	0	0	681	Paved	Industrial	10	6	0.0	--	--	0.75	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	90%	0.0E+00	--	0.0E+00	--	0.0E+00	--
PR04C	Exit Road from WF	0	0	0	420	Paved	Industrial	10	6	0.0	--	--	0.75	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	90%	0.0E+00	--	0.0E+00	--	0.0E+00	--
PR04CZ	Exit Road from WF, onsite equipment	0	0	0	420	Paved	Industrial	10	6	0.0	--	--	0.75	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	90%	0.0E+00	--	0.0E+00	--	0.0E+00	--

Constants for Mobile Emission Equations

Roadway Type	Contaminant	k	a	b	c	d	Quality
Paved Roads:	**$PM_{2.5}$**	0.15	-	-	-	-	-
	PM_{10}	0.62	-	-	-	-	-
	TSP	4.79	-	-	-	-	-
Unpaved Roads - Industrial:	**$PM_{2.5}$**	0.15	0.9	0.45	-	-	C
	PM_{10}	1.5	0.9	0.45	-	-	B
	TSP	7.32	0.6	0.45	-	-	B
Unpaved Roads - Public:	**$PM_{2.5}$**	0.18	1	-	0.2	0.5	C
	PM_{10}	1.8	1	-	0.2	0.5	B
	TSP	8.96	1	-	0.49	0.2	B

[1] Route ID numbers provided on site plan.
[2] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.
[3] Paved surfaces include asphalt, concrete, and recycled asphalt (if it forms a relatively consistent surface).
[4] Publicly accessible and dominated by light vehicles, or industrial, and dominated by heavy vehicles.
[5] The average vehicle weight reflects the average of the empty and loaded vehicle weight, for travel in both directions.
[6] Required only for publicly accessible unpaved roads.
[7] Required only for unpaved roads (public and industrial).
[8] Required only for industrial paved roads.

Sample calculation for uncontrolled TSP emission factor for Source PR01: Main Entrance Road

EF = 281.9 x (4.9) x [(0% / 12)]^(0.7) x [(36.6087628865979 tons) / 3]^(0.45) = 0 g TSP / vehicle kilometer travelled (vkt)

Sample calculation for TSP emission rate for Source PR01: Main Entrance Road

$$\frac{0 \text{ vehicles}}{1 \text{ h}} \times \frac{206 \text{ m}}{1000 \text{ m}} \times \frac{1 \text{ km}}{1 \text{ vehicle km}} \times \frac{0 \text{ } g_{TSP}}{3600 \text{ s}} \times \frac{1 \text{ h}}{1 \text{ } g_{TSP}} \times \frac{0.1 \text{ } g_{TSP\ uncontrolled}}{1 \text{ } g_{TSP}} = 0.0E+00 \text{ } g_{TSP} / s$$

Comments

Old Landfill - Existing Conditions Area 5 - Vinyl Chloride Concentration (Year 2042)

Year	Waste Acceptance Years (Inclusive)	LANDGEM Emission Rate (Mg/yr)	Biodegradable Portion	Corrected Concentration for Biodegradable Portion (Mg/year)	Emission Rate (g/s)	Assumed Landfill Area (m^2)	Emission Rate ($g/m^2/s$)	Gas Collection Coverage (%)	Gas Collection Efficiency (%)	Flare Destruction Efficiency (%)	Mound Emission Rate (Controlled) (g/m2/s)	Flare Emission (g/s)
2042	1972-2004	2.14E-03	100%	2.14E-03	6.80E-05	275,424	2.47E-10	100%	70%	98%	7.41E-11	9.52E-07

Sample Calculations

Calculation of g/s Emission Rate = LANDGEM Emission Rate * 1,000,000 (g/Mg) / 365 (days/yr) / 24 (hr/day) / 3,600 (s/hr)
= 0.002 Mg/yr * 1,000,000 / 365 / 24 / 3,600
= 6.80E-05 g/s

Calculation of $g/m^2/s$ Emission Flux Rate = Emission Rate / Landfill Area
= 6.80E-05 g/s/ 275424.2 m2
= 2.47E-10 g/m2/s

Calculation of Mound Emission Rate (Controlled) ($g/m^2/s$) = Emission Flux Rate * (1 - Gas Collection Efficiency)
= 2.47E-10 g/m2/s * (1 - 0.7)
= 7.41E-11 g/m2/s

Calculation of Total Flare Emission Rate (g/s) = Emission Rate * Gas Collection Efficiency * (1 - Flare Destruction Efficiency)
= 6.80E-05 g/s * 0.7 * (1-0.98)
= 9.52E-07 g/s

Appendix 5A-S4-5.2a1: NMOC Emissions from the Old Landfill (Year 2042) RWDI# 2101750

Twin Creeks Environmental Centre

Modelled Source: AREA5

Emissions rates calculated relative to the Vinyl Chloride emission rate.

Compound	CAS Number	Molecular Weight (g/mol)	Average Concentration In Raw LFG (ppm)	Note	Total AREA5 Flux Rate ($g/m^2/s$)	Total AREA5 Emission Rate [1] (g/s)
Vinyl Chloride	75-01-4	62.5	0.45	[2]	7.41E-11	2.04E-05
1,2-Dichloroethane	107-06-2	99.0	0.24	[2]	6.14E-11	1.69E-05
Benzene	71-43-2	78.1	0.93	[2]	1.91E-10	5.26E-05

Notes:

[1] Based on a source area of 275,424 m^2

[2] Concentrations based on the landfill gas sampling report dated July 13, 2023.

[3] Concentrations from the US EPA *User's Manual - Landfill Gas Emissions Model Version 2.0*, 1998.

[4] Emissions of Total Reduced Sulphurs (TRS) are based on the total of all sulphur compounds.

[5] Laboratory reported Total Reduced Sulfur as H_2S.

Sample Calculation

$$\text{Calculation of Benzene Emission Flux Rate} = \frac{\text{Vinyl Chloride Emission Flux Rate} * \text{Benzene Concentration in LFG} * \text{Molecular Weight of Benzene}}{\text{Vinyl Chloride Concentration in LFG} * \text{Molecular Weight of Vinyl Chloride}}$$

$$= \frac{7.41\text{E-}11\ g/m^2/s * 0.93\ ppm * 78.1\ g/mol}{0.45\ ppm * 62.5\ g/mol}$$

$$= 1.91\text{E-}10\ g/m^2/s$$

Appendix 5A-S4-5.2b: Vinyl Chloride Emissions

RWDI# 2101750

Twin Creeks Environmental Centre

Expansion Landfill Phases 1 Through 7 - (Year 2042)

Year	Waste Acceptance Years (Inclusive)	Scenario	LANDGEM Emission Rate (Mg/yr)	Emission Rate (g/s)	Approximate Landfill Area (m^2)	Emission Flux Rate ($g/m^2/s$)	Gas Collection Coverage (%)	Gas Collection Efficiency (%)	Flare Destruction Efficiency (%)	Mound Emission Rate (Controlled) ($g/m^2/s$)
2042	2005-2019	Phases 1 to 3	3.21E-02	1.02E-03	244,004	4.17E-09	100%	90%	98%	4.17E-10
2042	2020-2024	Phases 4 to 5	3.61E-02	1.14E-03	165,611	6.91E-09	100%	90%	98%	6.91E-10
2042	2025-2029	Phases 6 to 7	4.45E-02	1.41E-03	179,092	7.89E-09	100%	90%	98%	7.89E-10
2042	2030-2031	Phases 8 to 9	2.05E-02	6.49E-04	99,012	6.55E-09	100%	90%	98%	6.55E-10
2042	2005-2028	Total Emissions	1.33E-01	4.22E-03	687,719	2.55E-08	100%	90%	98%	2.55E-09

Notes:
[1] CDR indicates landfill gas collection efficiency for areas under final cover is 90%.

Sample Calculations

Calculation of Emission Rate (Phases 1 to 3) = LANDGEM Emission Rate * 1,000,000 (g/Mg) / 365 (days/yr) / 24 (hr/day) / 3,600 (s/hr)
= 3.21E-02 Mg/yr * 1,000,000 / 365 / 24 / 3,600
= 1.02E-03 g/s

Calculation of Emission Flux Rate (Phases 1 to 3) = Emission Rate / Landfill Area
= 1.02E-03 g/s/ 244,004 m^2
= 4.17E-09 $g/m^2/s$

Calculation of Mound Emission Rate (Controlled) (Phases 1 to 3) = Emission Flux Rate * (1 - Gas Collection Efficiency)
= 4.17E-09 $g/m^2/s$ * (1 - 0.90)
= 4.17E-10 $g/m^2/s$

Calculation of Total Flare Emission Rate (Phases 1 to 3) = Emission Rate * Gas Collection Efficiency * (1 - Flare Destruction Efficiency)
= 1.02E-03 g/s * 0.90 * (1 - 0.98)
= 1.83E-05 g/s

Modelled Source: AREA1
Emissions rates calculated relative to the Vinyl Chloride emission rate.

Compound	CAS Number	Molecular Weight (g/mol)	Average Concentration In Raw LFG (ppm)	Note	Total AREA1 Flux Rate ($g/m^2/s$)	Total AREA1 Emission Rate [1] (g/s)	Flare Emission Rate from Phases 1 Through 3 (g/s)
Vinyl Chloride	75-01-4	62.50	0.45	[2]	4.17E-10	1.02E-04	1.83E-05
1,2-Dichloroethane	107-06-2	98.96	0.24	[2]	3.46E-10	8.43E-05	1.52E-05
Benzene	71-43-2	78.13	0.93	[2]	1.08E-09	2.62E-04	4.72E-05

Notes:
[1] Based on a source area of 244,004 m^2
[2] Concentrations based on the landfill gas sampling report dated July 13, 2023.
[3] Concentrations from the US EPA *User's Manual - Landfill Gas Emissions Model Version 2.0*, 1998.
[4] Emissions of Total Reduced Sulphurs (TRS) are based on the total of all sulphur compounds.
[5] Laboratory reported Total Reduced Sulfur as H_2S.

Sample Calculation

$$\text{Calculation of Benzene Emission Flux Rate} = \frac{\text{Vinyl Chloride Emission Flux Rate} * \text{Benzene Concentration in LFG} * \text{Molecular Weight of Benzene}}{\text{Vinyl Chloride Concentration in LFG} * \text{Molecular Weight of Vinyl Chloride}}$$

$$= \frac{4.17\text{E-}10\ g/m^2/s * 0.93\ ppm * 78.13\ g/mo}{0.45\ ppm * 62.50\ g/mol}$$

$$= 1.08\text{E-}09\ g/m^2/s$$

Modelled Source: AREA2
Emissions rates calculated relative to the Vinyl Chloride emission rate.

Compound	CAS Number	Molecular Weight (g/mol)	Average Concentration In Raw LFG (ppm)	Note	Total AREA2 Flux Rate ($g/m^2/s$)	Total AREA2 Emission Rate [1] (g/s)	Flare Emission Rate from Phases 4 Through 6 (g/s)
Vinyl Chloride	75-01-4	62.50	0.45	[2]	6.91E-10	1.14E-04	2.06E-05
1,2-Dichloroethane	107-06-2	98.96	0.24	[2]	5.72E-10	9.48E-05	1.71E-05
Benzene	71-43-2	78.13	0.93	[2]	1.78E-09	2.95E-04	5.31E-05

Notes:
[1] Based on a source area of 165,611 m^2
[2] Concentrations based on the landfill gas sampling report dated July 13, 2023.
[3] Concentrations from the US EPA *User's Manual - Landfill Gas Emissions Model Version 2.0*, 1998.
[4] Emissions of Total Reduced Sulphurs (TRS) are based on the total of all sulphur compounds.
[5] Laboratory reported Total Reduced Sulfur as H_2S.

Sample Calculation

Calculation of Benzene Emission Flux Rate = $\frac{\text{Vinyl Chloride Emission Flux Rate} * \text{Benzene Concentration in LFG} * \text{Molecular Weight of Benzene}}{\text{Vinyl Chloride Concentration in LFG} * \text{Molecular Weight of Vinyl Chloride}}$

= $\frac{6.91E\text{-}10\ g/m^2/s * 0.93\ ppm * 78.13\ g/mol}{0.45\ ppm * 62.50\ g/mol}$

= 1.78E-09 $g/m^2/s$

Appendix 5A-S4-5.2b3: NMOC Emissions from the Expansion Landfill Phases 6 Through 7 (Year 2042)

RWDI# 2101750

Twin Creeks Environmental Centre

Modelled Source: AREA3
Emissions rates calculated relative to the Vinyl Chloride emission rate.

Compound	CAS Number	Molecular Weight (g/mol)	Average Concentration In Raw LFG (ppm)	Note	Total AREA3 Flux Rate ($g/m^2/s$)	Total AREA3 Emission Rate [1] (g/s)	Flare Emission Rate from Phases 7 Through 9 (g/s)
Vinyl Chloride	75-01-4	62.50	0.45	[2]	7.89E-10	1.41E-04	2.54E-05
1,2-Dichloroethane	107-06-2	98.96	0.24	[2]	6.53E-10	1.17E-04	2.11E-05
Benzene	71-43-2	78.13	0.93	[2]	2.03E-09	3.64E-04	6.55E-05

Notes:
[1] Based on a source area of 179,092 m^2
[2] Concentrations based on the landfill gas sampling report dated July 13, 2023.
[3] Concentrations from the US EPA *User's Manual - Landfill Gas Emissions Model Version 2.0* , 1998.
[4] Emissions of Total Reduced Sulphurs (TRS) are based on the total of all sulphur compounds.
[5] Laboratory reported Total Reduced Sulfur as H_2S.

Sample Calculation

Calculation of Benzene Emission Flux Rate = $\frac{\text{Vinyl Chloride Emission Flux Rate * Benzene Concentration in LFG * Molecular Weight of Benzene}}{\text{Vinyl Chloride Concentration in LFG * Molecular Weight of Vinyl Chloride}}$

= $\frac{\text{7.89E-10 g/m²/s * 0.93 ppm * 78.13 g/mol}}{\text{0.45 ppm * 62.50 g/mol}}$

= 2.03E-09 g/m²/s

Appendix 5A-S4-5.2b4: NMOC Emissions from the Expansion Landfill Phases 8 Through 9 (Year 2042)

Twin Creeks Environmental Centre RWDI# 2101750

Modelled Source: AREA4
Emissions rates calculated relative to the Vinyl Chloride emission rate.

Compound	CAS Number	Molecular Weight (g/mol)	Average Concentration In Raw LFG (ppm)	Note	Total AREA4 Flux Rate ($g/m^2/s$)	Total AREA4 Emission Rate [1] (g/s)
Vinyl Chloride	75-01-4	62.50	0.45	[2]	6.55E-10	6.49E-05
1,2-Dichloroethane	107-06-2	98.96	0.24	[2]	5.43E-10	5.38E-05
Benzene	71-43-2	78.13	0.93	[2]	1.69E-09	1.67E-04

Notes:
[1] Based on a source area of 99,012 m^2
[2] Concentrations based on the landfill gas sampling report dated July 13, 2023.
[3] Concentrations from the US EPA *User's Manual - Landfill Gas Emissions Model Version 2.0*, 1998.
[4] Emissions of Total Reduced Sulphurs (TRS) are based on the total of all sulphur compounds.
[5] Laboratory reported Total Reduced Sulfur as H_2S.

Sample Calculation

Calculation of Benzene Emission Flux Rate = $\frac{\text{Vinyl Chloride Emission Flux Rate * Benzene Concentration in LFG * Molecular Weight of Benzene}}{\text{Vinyl Chloride Concentration in LFG * Molecular Weight of Vinyl Chloride}}$

= $\frac{\text{6.55E-10 g/m²/s * 0.93 ppm * 78.13 g/mol}}{\text{0.45 ppm * 62.50 g/mol}}$

= 1.69E-09 g/m²/s

Vertical Expansion Landfill - (Year 2042)

Year	Waste Acceptance Years (Inclusive)	Scenario	LANDGEM Emission Rate (Mg/yr)	Emission Rate (g/s)	Approximate Landfill Area (m^2)	Emission Flux Rate ($g/m^2/s$)	Gas Collection Coverage (%)	Gas Collection Efficiency (%)	Flare Destruction Efficiency (%)	Mound Emission Rate (Controlled) ($g/m^2/s$)
2042	2028-2034	Stage 1	0.00E+00	0.00E+00	378,390	0.00E+00	100%	90%	98%	0.00E+00
2042	2028-2037	Stage 2	0.00E+00	0.00E+00	366,429	0.00E+00	100%	90%	98%	0.00E+00
2042	2037-2039	Stage 3	0.00E+00	0.00E+00	147,145	0.00E+00	100%	90%	98%	0.00E+00
2042	2039-2042	Stage 4	0.00E+00	0.00E+00	181,496	0.00E+00	100%	90%	98%	0.00E+00
2042	2028-2042	Total Emissions	0.00E+00	0.00E+00	1.07E+06	0.00E+00	100%	90%	98%	0.00E+00

Sample Calculations

Calculation of Emission Rate (Stage 1) = LANDGEM Emission Rate * 1,000,000 (g/Mg) / 365 (days/yr) / 24 (hr/day) / 3,600 (s/hr)
= 0.00E+00 Mg/yr * 1,000,000 / 365 / 24 / 3,600
= 0.00E+00 g/s

Calculation of Emission Flux Rate (Stage 1) = Emission Rate / Landfill Area
= 0.00E+00 g/s/ 378,390 m^2
= 0.00E+00 $g/m^2/s$

Calculation of Mound Emission Rate (Controlled) (Stage 1) = Emission Flux Rate * (1 - Gas Collection Efficiency)
= 0.00E+00 $g/m^2/s$ * (1 - 0.90)
= 0.00E+00 $g/m^2/s$

Calculation of Total Flare Emission Rate (Stage 1) = Emission Rate * Gas Collection Efficiency * (1 - Flare Destruction Efficiency)
= 0.00E+00 g/s * 0.90 * (1 - 0.98)
= 0.00E+00 g/s

USER INPUTS

Landfill Name or Identifier: Twin Creeks Environmental Centre

Clear ALL Non-Parameter Inputs/Selections

1: PROVIDE LANDFILL CHARACTERISTICS

Landfill Open Year	1972	
Landfill Closure Year	2005	
Have Model Calculate Closure Year?	○ Yes ◉ No	
Waste Design Capacity		megagrams

Restore Default Model Parameters

2: DETERMINE MODEL PARAMETERS

Methane Generation Rate, k (*year*$^{-1}$)
User-specified
User-specified k value should be based on site-specific data and determined by EPA Method 2E.
User-specified value: 0.040

Potential Methane Generation Capacity, L_o (*m*^{3}/*Mg*)
User-specified
User-specified Lo value should be based on site-specific data and determined by waste type and composition.
User-specified value: 125

NMOC Concentration (*ppmv as hexane*)
User-specified
User-specified value: 595

Methane Content (*% by volume*)
User-specified
User-specified value: 52

3: SELECT GASES/POLLUTANTS

Gas / Pollutant #1 #REF!
Total landfill gas

Gas / Pollutant #2
Methane

Gas / Pollutant #3
Carbon dioxide

Gas / Pollutant #4
NMOC

Edit Existing or Add New Pollutant Parameters

Restore Default Pollutant Parameters

Description/Comments:

Modelling of existing landfill Area 5. Values based on MECP Interim Guide.

4: ENTER WASTE ACCEPTANCE RATES

Input Units: Mg/year

Year	Input Units *(Mg/year)*	Calculated Units *(short tons/year)*
1972	9,979	10,977
1973	9,979	10,977
1974	9,979	10,977
1975	9,979	10,977
1976	9,979	10,977
1977	9,979	10,977
1978	9,979	10,977
1979	9,979	10,977
1980	9,979	10,977
1981	9,979	10,977
1982	9,979	10,977
1983	9,979	10,977
1984	9,979	10,977
1985	9,979	10,977
1986	9,979	10,977
1987	9,979	10,977
1988	9,979	10,977
1989	9,979	10,977
1990	9,979	10,977
1991	9,979	10,977
1992	9,979	10,977
1993	9,979	10,977
1994	69,605	76,566
1995	55,074	60,581
1996	43,328	47,661
1997	57,497	63,247
1998	57,903	63,693
1999	58,599	64,459
2000	53,819	59,201
2001	191,426	210,569
2002	108,441	119,285
2003	86,909	95,600
2004	98,516	108,368
2005		
2006		
2007		
2008		
2009		
2010		
2011		

4: ENTER WASTE ACCEPTANCE RATES

Input Units: Mg/year

Year	Input Units *(Mg/year)*	Calculated Units *(short tons/year)*
2012		
2013		
2014		
2015		
2016		
2017		
2018		
2019		
2020		
2021		
2022		
2023		
2024		
2025		
2026		
2027		
2028		
2029		
2030		
2031		
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2033		
2034		
2035		
2036		
2037		
2038		
2039		
2040		
2041		
2042		
2043		
2044		
2045		
2046		
2047		
2048		
2049		
2050		
2051		

INVENTORY

Landfill Name or Identifier: Twin Creeks Environmental Centre

Enter year of emissions inventory: 2042

Gas / Pollutant	Emission Rate				
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(ft^3/year)*	*(short tons/year)*
Total landfill gas	2.299E+03	1.821E+06	1.224E+02	6.432E+07	2.529E+03
Methane	6.319E+02	9.471E+05	6.364E+01	3.345E+07	6.951E+02
Carbon dioxide	1.600E+03	8.743E+05	5.874E+01	3.088E+07	1.760E+03
NMOC	3.885E+00	1.084E+03	7.282E-02	3.827E+04	4.273E+00
1,1,1-Trichloroethane (methyl chloroform) - HAP	2.324E-04	4.189E-02	2.815E-06	1.479E+00	2.557E-04
1,1,2,2-Tetrachloroethane - HAP/VOC	2.925E-04	4.189E-02	2.815E-06	1.479E+00	3.217E-04
1,1-Dichloroethane (ethylidene dichloride) - HAP/VOC	1.724E-04	4.189E-02	2.815E-06	1.479E+00	1.897E-04
1,1-Dichloroethene (vinylidene chloride) - HAP/VOC	1.469E-04	3.643E-02	2.448E-06	1.286E+00	1.616E-04
1,2-Dichloroethane (ethylene dichloride) - HAP/VOC	1.777E-03	4.317E-01	2.900E-05	1.524E+01	1.954E-03
1,2-Dichloropropane (propylene dichloride) - HAP/VOC	5.821E-04	1.239E-01	8.322E-06	4.374E+00	6.403E-04
2-Propanol (isopropyl alcohol) - VOC	2.823E-02	1.129E+01	7.588E-04	3.988E+02	3.106E-02
Acetone	3.080E-02	1.275E+01	8.567E-04	4.503E+02	3.388E-02
Acrylonitrile - HAP/VOC	2.532E-02	1.147E+01	7.710E-04	4.052E+02	2.786E-02
Benzene - No or Unknown Co-disposal - HAP/VOC	5.528E-03	1.701E+00	1.143E-04	6.008E+01	6.081E-03
Benzene - Co-disposal - HAP/VOC	6.509E-02	2.004E+01	1.346E-03	7.076E+02	7.160E-02
Bromodichloromethane - VOC	5.709E-04	8.379E-02	5.630E-06	2.959E+00	6.280E-04
Butane - VOC	2.202E-02	9.107E+00	6.119E-04	3.216E+02	2.422E-02
Carbon disulfide - HAP/VOC	4.729E-02	1.494E+01	1.004E-03	5.275E+02	5.202E-02
Carbon monoxide	2.971E-01	2.550E+02	1.713E-02	9.005E+03	3.268E-01
Carbon tetrachloride - HAP/VOC	2.680E-04	4.189E-02	2.815E-06	1.479E+00	2.948E-04
Carbonyl sulfide - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chlorobenzene - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chlorodifluoromethane	#REF!	#REF!	#REF!	#REF!	#REF!
Chloroethane (ethyl chloride) - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chloroform - HAP/VOC	2.080E-04	4.189E-02	2.815E-06	1.479E+00	2.288E-04
Chloromethane - VOC	3.634E-04	1.730E-01	1.163E-05	6.111E+00	3.997E-04
Dichlorobenzene - (HAP for para isomer/VOC)	#REF!	#REF!	#REF!	#REF!	#REF!
Dichlorodifluoromethane	5.130E-04	1.020E-01	6.853E-06	3.602E+00	5.643E-04
Dichlorofluoromethane - VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Dichloromethane (methylene chloride) - HAP	#REF!	#REF!	#REF!	#REF!	#REF!
Dimethyl sulfide (methyl sulfide) - VOC	1.600E-01	6.193E+01	4.161E-03	2.187E+03	1.760E-01
Ethane	2.027E+00	1.621E+03	1.089E-01	5.725E+04	2.230E+00
Ethanol - VOC	1.002E-01	5.227E+01	3.512E-03	1.846E+03	1.102E-01
Ethyl mercaptan (ethanethiol) - VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Ethylbenzene - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Ethylene dibromide - HAP/VOC	3.274E-04	4.189E-02	2.815E-06	1.479E+00	3.601E-04
Fluorotrichloromethane - VOC	7.910E-03	1.384E+00	9.301E-05	4.889E+01	8.701E-03
Hexane - HAP/VOC	1.097E-02	3.060E+00	2.056E-04	1.081E+02	1.207E-02
Hydrogen sulfide	9.553E-01	6.739E+02	4.528E-02	2.380E+04	1.051E+00
Mercury (total) - HAP	4.407E-06	5.282E-04	3.549E-08	1.865E-02	4.848E-06
Methyl ethyl ketone - HAP/VOC	1.032E-01	3.442E+01	2.313E-03	1.216E+03	1.136E-01
Methyl isobutyl ketone - HAP/VOC	3.877E-03	9.307E-01	6.254E-05	3.287E+01	4.265E-03
Methyl mercaptan - VOC	1.203E-01	6.011E+01	4.039E-03	2.123E+03	1.323E-01
Pentane - VOC	1.804E-02	6.011E+00	4.039E-04	2.123E+02	1.984E-02
Perchloroethylene (tetrachloroethylene) - HAP	8.794E-03	1.275E+00	8.567E-05	4.503E+01	9.673E-03
Propane - VOC	3.674E-02	2.004E+01	1.346E-03	7.076E+02	4.042E-02
t-1,2-Dichloroethene - VOC	2.056E-02	5.100E+00	3.427E-04	1.801E+02	2.262E-02
Toluene - No or Unknown Co-disposal - HAP/VOC	9.353E-02	2.441E+01	1.640E-03	8.619E+02	1.029E-01
Toluene - Co-disposal - HAP/VOC	1.187E+00	3.096E+02	2.080E-02	1.094E+04	1.305E+00
Trichloroethylene (trichloroethene) - HAP/VOC	1.871E-03	3.424E-01	2.301E-05	1.209E+01	2.058E-03
Vinyl chloride - HAP/VOC	2.145E-03	8.251E-01	5.544E-05	2.914E+01	2.359E-03
Xylenes - HAP/VOC	7.423E-02	1.681E+01	1.130E-03	5.937E+02	8.166E-02
1,2-Dichloroethene cis	1.234E-02	3.060E+00	2.056E-04	1.081E+02	1.357E-02
1,2-Dichloroethylene	5.362E-03	1.330E+00	8.934E-05	4.696E+01	5.898E-03
2-Butanol	3.240E-02	1.051E+01	7.061E-04	3.711E+02	3.564E-02
Octane	1.514E-02	3.187E+00	2.142E-04	1.126E+02	1.666E-02
1,1,2-Trichloroethane	4.750E-03	8.561E-01	5.752E-05	3.023E+01	5.225E-03
1,2-Dibromoethane	1.423E-04	1.821E-02	1.224E-06	6.432E-01	1.566E-04
1,2-Dichloroethene trans	5.361E-03	1.330E+00	8.934E-05	4.696E+01	5.897E-03

USER INPUTS

Landfill Name or Identifier: Twin Creeks Environmental Centre

Clear ALL Non-Parameter Inputs/Selections

1: PROVIDE LANDFILL CHARACTERISTICS

Landfill Open Year	1972	
Landfill Closure Year	2020	
Have Model Calculate Closure Year?	○ Yes ◉ No	
Waste Design Capacity		megagrams

Restore Default Model Parameters

2: DETERMINE MODEL PARAMETERS

Methane Generation Rate, k (*year*$^{-1}$)
User-specified
User-specified k value should be based on site-specific data and determined by EPA Method 2E.
User-specified value: 0.040

Potential Methane Generation Capacity, L_o (*m*^{3}/*Mg*)
User-specified
User-specified Lo value should be based on site-specific data and determined by waste type and composition.
User-specified value: 125

NMOC Concentration (*ppmv as hexane*)
User-specified
User-specified value: 595

Methane Content (*% by volume*)
User-specified
User-specified value: 52

3: SELECT GASES/POLLUTANTS

Gas / Pollutant #1 #REF!
Total landfill gas

Gas / Pollutant #2
Methane

Gas / Pollutant #3
Carbon dioxide

Gas / Pollutant #4
NMOC

Edit Existing or Add New Pollutant Parameters

Restore Default Pollutant Parameters

Description/Comments:

Modelling of existing landfill Area 1. Values based on MECP Interim Guide.

4: ENTER WASTE ACCEPTANCE RATES

Input Units: Mg/year

Year	Input Units *(Mg/year)*	Calculated Units *(short tons/year)*
1972		0
1973		0
1974		0
1975		0
1976		0
1977		0
1978		0
1979		0
1980		0
1981		0
1982		0
1983		0
1984		0
1985		0
1986		0
1987		0
1988		0
1989		0
1990		0
1991		0
1992		0
1993		0
1994		0
1995		0
1996		0
1997		0
1998		0
1999		0
2000		0
2001		0
2002		0
2003		0
2004		0
2005	218,455	240,301
2006	298,090	327,899
2007	304,043	334,447
2008	283,591	311,950
2009	169,803	186,783
2010	311,006	342,107
2011	429,041	471,945

4: ENTER WASTE ACCEPTANCE RATES

Input Units: Mg/year

Year	Input Units *(Mg/year)*	Calculated Units *(short tons/year)*
2012	528,571	581,428
2013	452,641	497,905
2014	470,377	517,415
2015	533,326	586,659
2016	678,031	745,834
2017	820,360	902,396
2018	1,324,830	1,457,313
2019	1,417,281	1,559,009
2020		
2021		
2022		
2023		
2024		
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2049		
2050		
2051		

INVENTORY

Landfill Name or Identifier: Twin Creeks Environmental Centre

Enter year of emissions inventory: 2042

Gas / Pollutant	Emission Rate				
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(ft^3/year)*	*(short tons/year)*
Total landfill gas	3.441E+04	2.726E+07	1.832E+03	9.627E+08	3.785E+04
Methane	9.457E+03	1.418E+07	9.525E+02	5.006E+08	1.040E+04
Carbon dioxide	2.395E+04	1.309E+07	8.792E+02	4.621E+08	2.635E+04
NMOC	5.814E+01	1.622E+04	1.090E+00	5.728E+05	6.396E+01
1,1,1-Trichloroethane (methyl chloroform) - HAP	3.479E-03	6.270E-01	4.213E-05	2.214E+01	3.827E-03
1,1,2,2-Tetrachloroethane - HAP/VOC	4.377E-03	6.270E-01	4.213E-05	2.214E+01	4.815E-03
1,1-Dichloroethane (ethylidene dichloride) - HAP/VOC	2.581E-03	6.270E-01	4.213E-05	2.214E+01	2.839E-03
1,1-Dichloroethene (vinylidene chloride) - HAP/VOC	2.198E-03	5.452E-01	3.663E-05	1.925E+01	2.418E-03
1,2-Dichloroethane (ethylene dichloride) - HAP/VOC	2.659E-02	6.461E+00	4.341E-04	2.282E+02	2.925E-02
1,2-Dichloropropane (propylene dichloride) - HAP/VOC	8.712E-03	1.854E+00	1.246E-04	6.547E+01	9.583E-03
2-Propanol (isopropyl alcohol) - VOC	4.226E-01	1.690E+02	1.136E-02	5.969E+03	4.648E-01
Acetone	4.610E-01	1.908E+02	1.282E-02	6.739E+03	5.071E-01
Acrylonitrile - HAP/VOC	3.790E-01	1.717E+02	1.154E-02	6.065E+03	4.169E-01
Benzene - No or Unknown Co-disposal - HAP/VOC	8.274E-02	2.546E+01	1.711E-03	8.992E+02	9.102E-02
Benzene - Co-disposal - HAP/VOC	9.742E-01	2.999E+02	2.015E-02	1.059E+04	1.072E+00
Bromodichloromethane - VOC	8.545E-03	1.254E+00	8.426E-05	4.429E+01	9.400E-03
Butane - VOC	3.295E-01	1.363E+02	9.158E-03	4.814E+03	3.625E-01
Carbon disulfide - HAP/VOC	7.078E-01	2.235E+02	1.502E-02	7.894E+03	7.786E-01
Carbon monoxide	4.446E+00	3.817E+03	2.564E-01	1.348E+05	4.891E+00
Carbon tetrachloride - HAP/VOC	4.012E-03	6.270E-01	4.213E-05	2.214E+01	4.413E-03
Carbonyl sulfide - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chlorobenzene - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chlorodifluoromethane	#REF!	#REF!	#REF!	#REF!	#REF!
Chloroethane (ethyl chloride) - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chloroform - HAP/VOC	3.113E-03	6.270E-01	4.213E-05	2.214E+01	3.425E-03
Chloromethane - VOC	5.439E-03	2.590E+00	1.740E-04	9.146E+01	5.983E-03
Dichlorobenzene - (HAP for para isomer/VOC)	#REF!	#REF!	#REF!	#REF!	#REF!
Dichlorodifluoromethane	7.677E-03	1.527E+00	1.026E-04	5.391E+01	8.445E-03
Dichlorofluoromethane - VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Dichloromethane (methylene chloride) - HAP	#REF!	#REF!	#REF!	#REF!	#REF!
Dimethyl sulfide (methyl sulfide) - VOC	2.395E+00	9.269E+02	6.228E-02	3.273E+04	2.635E+00
Ethane	3.035E+01	2.426E+04	1.630E+00	8.568E+05	3.338E+01
Ethanol - VOC	1.500E+00	7.824E+02	5.257E-02	2.763E+04	1.650E+00
Ethyl mercaptan (ethanethiol) - VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Ethylbenzene - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Ethylene dibromide - HAP/VOC	4.900E-03	6.270E-01	4.213E-05	2.214E+01	5.390E-03
Fluorotrichloromethane - VOC	1.184E-01	2.072E+01	1.392E-03	7.317E+02	1.302E-01
Hexane - HAP/VOC	1.642E-01	4.580E+01	3.077E-03	1.617E+03	1.806E-01
Hydrogen sulfide	1.430E+01	1.009E+04	6.777E-01	3.562E+05	1.573E+01
Mercury (total) - HAP	6.597E-05	7.906E-03	5.312E-07	2.792E-01	7.256E-05
Methyl ethyl ketone - HAP/VOC	1.545E+00	5.152E+02	3.462E-02	1.820E+04	1.700E+00
Methyl isobutyl ketone - HAP/VOC	5.803E-02	1.393E+01	9.360E-04	4.920E+02	6.384E-02
Methyl mercaptan - VOC	1.800E+00	8.996E+02	6.045E-02	3.177E+04	1.980E+00
Pentane - VOC	2.700E-01	8.996E+01	6.045E-03	3.177E+03	2.970E-01
Perchloroethylene (tetrachloroethylene) - HAP	1.316E-01	1.908E+01	1.282E-03	6.739E+02	1.448E-01
Propane - VOC	5.499E-01	2.999E+02	2.015E-02	1.059E+04	6.049E-01
t-1,2-Dichloroethene - VOC	3.078E-01	7.633E+01	5.129E-03	2.696E+03	3.385E-01
Toluene - No or Unknown Co-disposal - HAP/VOC	1.400E+00	3.653E+02	2.454E-02	1.290E+04	1.540E+00
Toluene - Co-disposal - HAP/VOC	1.776E+01	4.634E+03	3.114E-01	1.637E+05	1.953E+01
Trichloroethylene (trichloroethene) - HAP/VOC	2.801E-02	5.125E+00	3.444E-04	1.810E+02	3.081E-02
Vinyl chloride - HAP/VOC	3.210E-02	1.235E+01	8.298E-04	4.361E+02	3.531E-02
Xylenes - HAP/VOC	1.111E+00	2.516E+02	1.691E-02	8.886E+03	1.222E+00
1,2-Dichloroethene cis	1.847E-01	4.580E+01	3.077E-03	1.617E+03	2.031E-01
1,2-Dichloroethylene	8.025E-02	1.990E+01	1.337E-03	7.028E+02	8.827E-02
2-Butanol	4.849E-01	1.573E+02	1.057E-02	5.555E+03	5.334E-01
Octane	2.267E-01	4.771E+01	3.205E-03	1.685E+03	2.493E-01
1,1,2-Trichloroethane	7.109E-02	1.281E+01	8.609E-04	4.525E+02	7.820E-02
1,2-Dibromoethane	2.130E-03	2.726E-01	1.832E-05	9.627E+00	2.343E-03
1,2-Dichloroethene trans	8.024E-02	1.990E+01	1.337E-03	7.028E+02	8.826E-02

USER INPUTS

Landfill Name or Identifier: Twin Creeks Environmental Centre

Clear ALL Non-Parameter Inputs/Selections

1: PROVIDE LANDFILL CHARACTERISTICS

Landfill Open Year	1972	
Landfill Closure Year	2025	
Have Model Calculate Closure Year?	○ Yes ◉ No	
Waste Design Capacity		megagrams

Restore Default Model Parameters

2: DETERMINE MODEL PARAMETERS

Methane Generation Rate, k (*year*$^{-1}$)
User-specified
User-specified value: 0.040
User-specified k value should be based on site-specific data and determined by EPA Method 2E.

Potential Methane Generation Capacity, L_o (*m*^{3}/*Mg*)
User-specified
User-specified value: 125
User-specified Lo value should be based on site-specific data and determined by waste type and composition.

NMOC Concentration (*ppmv as hexane*)
User-specified
User-specified value: 595

Methane Content (*% by volume*)
User-specified
User-specified value: 52

3: SELECT GASES/POLLUTANTS

Gas / Pollutant #1 #REF!
Total landfill gas

Gas / Pollutant #2
Methane

Gas / Pollutant #3
Carbon dioxide

Gas / Pollutant #4
NMOC

Edit Existing or Add New Pollutant Parameters

Restore Default Pollutant Parameters

Description/Comments:

Modelling of existing landfill Area 2. Values based on MECP Interim Guide.

4: ENTER WASTE ACCEPTANCE RATES

Input Units: *Mg/year*

Year	Input Units *(Mg/year)*	Calculated Units *(short tons/year)*
1972		0
1973		0
1974		0
1975		0
1976		0
1977		0
1978		0
1979		0
1980		0
1981		0
1982		0
1983		0
1984		0
1985		0
1986		0
1987		0
1988		0
1989		0
1990		0
1991		0
1992		0
1993		0
1994		0
1995		0
1996		0
1997		0
1998		0
1999		0
2000		0
2001		0
2002		0
2003		0
2004		0
2005		0
2006		0
2007		0
2008		0
2009		0
2010		0
2011		0

4: ENTER WASTE ACCEPTANCE RATES

Input Units: *Mg/year*

Year	Input Units *(Mg/year)*	Calculated Units *(short tons/year)*
2012		0
2013		0
2014		0
2015		0
2016		0
2017		0
2018		0
2019		0
2020	1,330,444	1,463,488
2021	1,399,849	1,539,834
2022	1,391,172	1,530,290
2023	1,400,000	1,540,000
2024	1,400,000	1,540,000
2025		
2026		
2027		
2028		
2029		
2030		
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2050		
2051		

INVENTORY

Landfill Name or Identifier: Twin Creeks Environmental Centre

Enter year of emissions inventory: 2042

Gas / Pollutant	Emission Rate				
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(ft^3/year)*	*(short tons/year)*
Total landfill gas	3.868E+04	3.064E+07	2.059E+03	1.082E+09	4.255E+04
Methane	1.063E+04	1.594E+07	1.071E+03	5.627E+08	1.169E+04
Carbon dioxide	2.693E+04	1.471E+07	9.883E+02	5.195E+08	2.962E+04
NMOC	6.536E+01	1.823E+04	1.225E+00	6.439E+05	7.189E+01
1,1,1-Trichloroethane (methyl chloroform) - HAP	3.911E-03	7.048E-01	4.736E-05	2.489E+01	4.302E-03
1,1,2,2-Tetrachloroethane - HAP/VOC	4.921E-03	7.048E-01	4.736E-05	2.489E+01	5.413E-03
1,1-Dichloroethane (ethylidene dichloride) - HAP/VOC	2.901E-03	7.048E-01	4.736E-05	2.489E+01	3.191E-03
1,1-Dichloroethene (vinylidene chloride) - HAP/VOC	2.471E-03	6.129E-01	4.118E-05	2.164E+01	2.718E-03
1,2-Dichloroethane (ethylene dichloride) - HAP/VOC	2.989E-02	7.263E+00	4.880E-04	2.565E+02	3.288E-02
1,2-Dichloropropane (propylene dichloride) - HAP/VOC	9.793E-03	2.084E+00	1.400E-04	7.359E+01	1.077E-02
2-Propanol (isopropyl alcohol) - VOC	4.750E-01	1.900E+02	1.277E-02	6.710E+03	5.225E-01
Acetone	5.182E-01	2.145E+02	1.441E-02	7.575E+03	5.700E-01
Acrylonitrile - HAP/VOC	4.261E-01	1.931E+02	1.297E-02	6.818E+03	4.687E-01
Benzene - No or Unknown Co-disposal - HAP/VOC	9.301E-02	2.862E+01	1.923E-03	1.011E+03	1.023E-01
Benzene - Co-disposal - HAP/VOC	1.095E+00	3.371E+02	2.265E-02	1.190E+04	1.205E+00
Bromodichloromethane - VOC	9.605E-03	1.410E+00	9.471E-05	4.978E+01	1.057E-02
Butane - VOC	3.704E-01	1.532E+02	1.029E-02	5.411E+03	4.074E-01
Carbon disulfide - HAP/VOC	7.957E-01	2.513E+02	1.688E-02	8.874E+03	8.752E-01
Carbon monoxide	4.998E+00	4.290E+03	2.883E-01	1.515E+05	5.498E+00
Carbon tetrachloride - HAP/VOC	4.509E-03	7.048E-01	4.736E-05	2.489E+01	4.960E-03
Carbonyl sulfide - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chlorobenzene - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chlorodifluoromethane	#REF!	#REF!	#REF!	#REF!	#REF!
Chloroethane (ethyl chloride) - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chloroform - HAP/VOC	3.500E-03	7.048E-01	4.736E-05	2.489E+01	3.850E-03
Chloromethane - VOC	6.114E-03	2.911E+00	1.956E-04	1.028E+02	6.725E-03
Dichlorobenzene - (HAP for para isomer/VOC)	#REF!	#REF!	#REF!	#REF!	#REF!
Dichlorodifluoromethane	8.630E-03	1.716E+00	1.153E-04	6.060E+01	9.493E-03
Dichlorofluoromethane - VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Dichloromethane (methylene chloride) - HAP	#REF!	#REF!	#REF!	#REF!	#REF!
Dimethyl sulfide (methyl sulfide) - VOC	2.692E+00	1.042E+03	7.001E-02	3.679E+04	2.962E+00
Ethane	3.411E+01	2.727E+04	1.832E+00	9.632E+05	3.752E+01
Ethanol - VOC	1.686E+00	8.795E+02	5.909E-02	3.106E+04	1.854E+00
Ethyl mercaptan (ethanethiol) - VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Ethylbenzene - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Ethylene dibromide - HAP/VOC	5.508E-03	7.048E-01	4.736E-05	2.489E+01	6.059E-03
Fluorotrichloromethane - VOC	1.331E-01	2.329E+01	1.565E-03	8.225E+02	1.464E-01
Hexane - HAP/VOC	1.845E-01	5.148E+01	3.459E-03	1.818E+03	2.030E-01
Hydrogen sulfide	1.607E+01	1.134E+04	7.618E-01	4.004E+05	1.768E+01
Mercury (total) - HAP	7.415E-05	8.887E-03	5.971E-07	3.138E-01	8.157E-05
Methyl ethyl ketone - HAP/VOC	1.737E+00	5.792E+02	3.891E-02	2.045E+04	1.911E+00
Methyl isobutyl ketone - HAP/VOC	6.524E-02	1.566E+01	1.052E-03	5.530E+02	7.176E-02
Methyl mercaptan - VOC	2.023E+00	1.011E+03	6.795E-02	3.571E+04	2.225E+00
Pentane - VOC	3.035E-01	1.011E+02	6.795E-03	3.571E+03	3.338E-01
Perchloroethylene (tetrachloroethylene) - HAP	1.480E-01	2.145E+01	1.441E-03	7.575E+02	1.628E-01
Propane - VOC	6.182E-01	3.371E+02	2.265E-02	1.190E+04	6.800E-01
t-1,2-Dichloroethene - VOC	3.460E-01	8.580E+01	5.765E-03	3.030E+03	3.806E-01
Toluene - No or Unknown Co-disposal - HAP/VOC	1.574E+00	4.106E+02	2.759E-02	1.450E+04	1.731E+00
Toluene - Co-disposal - HAP/VOC	1.996E+01	5.210E+03	3.500E-01	1.840E+05	2.196E+01
Trichloroethylene (trichloroethene) - HAP/VOC	3.148E-02	5.761E+00	3.871E-04	2.035E+02	3.463E-02
Vinyl chloride - HAP/VOC	3.609E-02	1.388E+01	9.327E-04	4.902E+02	3.970E-02
Xylenes - HAP/VOC	1.249E+00	2.828E+02	1.900E-02	9.989E+03	1.374E+00
1,2-Dichloroethene cis	2.076E-01	5.148E+01	3.459E-03	1.818E+03	2.283E-01
1,2-Dichloroethylene	9.021E-02	2.237E+01	1.503E-03	7.900E+02	9.923E-02
2-Butanol	5.451E-01	1.768E+02	1.188E-02	6.244E+03	5.996E-01
Octane	2.548E-01	5.363E+01	3.603E-03	1.894E+03	2.803E-01
1,1,2-Trichloroethane	7.991E-02	1.440E+01	9.677E-04	5.086E+02	8.791E-02
1,2-Dibromoethane	2.394E-03	3.064E-01	2.059E-05	1.082E+01	2.634E-03
1,2-Dichloroethene trans	9.020E-02	2.237E+01	1.503E-03	7.900E+02	9.922E-02

USER INPUTS

Landfill Name or Identifier: Twin Creeks Environmental Centre

Clear ALL Non-Parameter Inputs/Selections

1: PROVIDE LANDFILL CHARACTERISTICS

Landfill Open Year	1972	
Landfill Closure Year	2030	
Have Model Calculate Closure Year?	○ Yes ◉ No	
Waste Design Capacity		megagrams

Restore Default Model Parameters

2: DETERMINE MODEL PARAMETERS

Methane Generation Rate, k (*year*$^{-1}$)
User-specified
User-specified value: 0.040
User-specified k value should be based on site-specific data and determined by EPA Method 2E.

Potential Methane Generation Capacity, L_o (*m*^{3}/*Mg*)
User-specified
User-specified value: 125
User-specified Lo value should be based on site-specific data and determined by waste type and composition.

NMOC Concentration (*ppmv as hexane*)
User-specified
User-specified value: 595

Methane Content (*% by volume*)
User-specified
User-specified value: 52

3: SELECT GASES/POLLUTANTS

Gas / Pollutant #1 #REF!
Total landfill gas

Gas / Pollutant #2
Methane

Gas / Pollutant #3
Carbon dioxide

Gas / Pollutant #4
NMOC

Edit Existing or Add New Pollutant Parameters

Restore Default Pollutant Parameters

Description/Comments:

Modelling of existing landfill Area 3. Values based on MECP Interim Guide.

4: ENTER WASTE ACCEPTANCE RATES

Input Units: Mg/year

Year	Input Units *(Mg/year)*	Calculated Units *(short tons/year)*
1972		0
1973		0
1974		0
1975		0
1976		0
1977		0
1978		0
1979		0
1980		0
1981		0
1982		0
1983		0
1984		0
1985		0
1986		0
1987		0
1988		0
1989		0
1990		0
1991		0
1992		0
1993		0
1994		0
1995		0
1996		0
1997		0
1998		0
1999		0
2000		0
2001		0
2002		0
2003		0
2004		0
2005		0
2006		0
2007		0
2008		0
2009		0
2010		0
2011		0

4: ENTER WASTE ACCEPTANCE RATES

Input Units: *Mg/year*

Year	Input Units *(Mg/year)*	Calculated Units *(short tons/year)*
2012		0
2013		0
2014		0
2015		0
2016		0
2017		0
2018		0
2019		0
2020		0
2021		0
2022		0
2023		0
2024		0
2025	1,400,000	1,540,000
2026	1,400,000	1,540,000
2027	1,400,000	1,540,000
2028	1,400,000	1,540,000
2029	1,400,000	1,540,000
2030		
2031		
2032		
2033		
2034		
2035		
2036		
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2050		
2051		

INVENTORY

Landfill Name or Identifier: Twin Creeks Environmental Centre

Enter year of emissions inventory: 2042

Gas / Pollutant	Emission Rate				
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(ft^3/year)*	*(short tons/year)*
Total landfill gas	4.774E+04	3.782E+07	2.541E+03	1.336E+09	5.251E+04
Methane	1.312E+04	1.967E+07	1.322E+03	6.946E+08	1.443E+04
Carbon dioxide	3.323E+04	1.816E+07	1.220E+03	6.412E+08	3.656E+04
NMOC	8.067E+01	2.251E+04	1.512E+00	7.948E+05	8.874E+01
1,1,1-Trichloroethane (methyl chloroform) - HAP	4.827E-03	8.699E-01	5.845E-05	3.072E+01	5.310E-03
1,1,2,2-Tetrachloroethane - HAP/VOC	6.073E-03	8.699E-01	5.845E-05	3.072E+01	6.681E-03
1,1-Dichloroethane (ethylidene dichloride) - HAP/VOC	3.581E-03	8.699E-01	5.845E-05	3.072E+01	3.939E-03
1,1-Dichloroethene (vinylidene chloride) - HAP/VOC	3.050E-03	7.565E-01	5.083E-05	2.671E+01	3.355E-03
1,2-Dichloroethane (ethylene dichloride) - HAP/VOC	3.690E-02	8.964E+00	6.023E-04	3.166E+02	4.059E-02
1,2-Dichloropropane (propylene dichloride) - HAP/VOC	1.209E-02	2.572E+00	1.728E-04	9.083E+01	1.330E-02
2-Propanol (isopropyl alcohol) - VOC	5.863E-01	2.345E+02	1.576E-02	8.282E+03	6.449E-01
Acetone	6.396E-01	2.648E+02	1.779E-02	9.350E+03	7.036E-01
Acrylonitrile - HAP/VOC	5.259E-01	2.383E+02	1.601E-02	8.415E+03	5.785E-01
Benzene - No or Unknown Co-disposal - HAP/VOC	1.148E-01	3.533E+01	2.374E-03	1.248E+03	1.263E-01
Benzene - Co-disposal - HAP/VOC	1.352E+00	4.161E+02	2.796E-02	1.469E+04	1.487E+00
Bromodichloromethane - VOC	1.186E-02	1.740E+00	1.169E-04	6.144E+01	1.304E-02
Butane - VOC	4.572E-01	1.891E+02	1.271E-02	6.679E+03	5.029E-01
Carbon disulfide - HAP/VOC	9.821E-01	3.102E+02	2.084E-02	1.095E+04	1.080E+00
Carbon monoxide	6.169E+00	5.295E+03	3.558E-01	1.870E+05	6.786E+00
Carbon tetrachloride - HAP/VOC	5.566E-03	8.699E-01	5.845E-05	3.072E+01	6.122E-03
Carbonyl sulfide - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chlorobenzene - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chlorodifluoromethane	#REF!	#REF!	#REF!	#REF!	#REF!
Chloroethane (ethyl chloride) - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chloroform - HAP/VOC	4.320E-03	8.699E-01	5.845E-05	3.072E+01	4.752E-03
Chloromethane - VOC	7.546E-03	3.593E+00	2.414E-04	1.269E+02	8.301E-03
Dichlorobenzene - (HAP for para isomer/VOC)	#REF!	#REF!	#REF!	#REF!	#REF!
Dichlorodifluoromethane	1.065E-02	2.118E+00	1.423E-04	7.480E+01	1.172E-02
Dichlorofluoromethane - VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Dichloromethane (methylene chloride) - HAP	#REF!	#REF!	#REF!	#REF!	#REF!
Dimethyl sulfide (methyl sulfide) - VOC	3.323E+00	1.286E+03	8.641E-02	4.542E+04	3.656E+00
Ethane	4.210E+01	3.366E+04	2.262E+00	1.189E+06	4.631E+01
Ethanol - VOC	2.081E+00	1.086E+03	7.294E-02	3.834E+04	2.289E+00
Ethyl mercaptan (ethanethiol) - VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Ethylbenzene - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Ethylene dibromide - HAP/VOC	6.798E-03	8.699E-01	5.845E-05	3.072E+01	7.478E-03
Fluorotrichloromethane - VOC	1.643E-01	2.875E+01	1.931E-03	1.015E+03	1.807E-01
Hexane - HAP/VOC	2.278E-01	6.354E+01	4.270E-03	2.244E+03	2.505E-01
Hydrogen sulfide	1.984E+01	1.399E+04	9.403E-01	4.942E+05	2.182E+01
Mercury (total) - HAP	9.152E-05	1.097E-02	7.370E-07	3.874E-01	1.007E-04
Methyl ethyl ketone - HAP/VOC	2.144E+00	7.149E+02	4.803E-02	2.525E+04	2.358E+00
Methyl isobutyl ketone - HAP/VOC	8.052E-02	1.933E+01	1.299E-03	6.826E+02	8.857E-02
Methyl mercaptan - VOC	2.497E+00	1.248E+03	8.387E-02	4.408E+04	2.747E+00
Pentane - VOC	3.746E-01	1.248E+02	8.387E-03	4.408E+03	4.120E-01
Perchloroethylene (tetrachloroethylene) - HAP	1.826E-01	2.648E+01	1.779E-03	9.350E+02	2.009E-01
Propane - VOC	7.630E-01	4.161E+02	2.796E-02	1.469E+04	8.393E-01
t-1,2-Dichloroethene - VOC	4.270E-01	1.059E+02	7.116E-03	3.740E+03	4.697E-01
Toluene - No or Unknown Co-disposal - HAP/VOC	1.942E+00	5.068E+02	3.405E-02	1.790E+04	2.136E+00
Toluene - Co-disposal - HAP/VOC	2.464E+01	6.430E+03	4.320E-01	2.271E+05	2.710E+01
Trichloroethylene (trichloroethene) - HAP/VOC	3.886E-02	7.111E+00	4.778E-04	2.511E+02	4.275E-02
Vinyl chloride - HAP/VOC	4.454E-02	1.713E+01	1.151E-03	6.051E+02	4.900E-02
Xylenes - HAP/VOC	1.542E+00	3.491E+02	2.346E-02	1.233E+04	1.696E+00
1,2-Dichloroethene cis	2.562E-01	6.354E+01	4.270E-03	2.244E+03	2.818E-01
1,2-Dichloroethylene	1.113E-01	2.761E+01	1.855E-03	9.751E+02	1.225E-01
2-Butanol	6.728E-01	2.182E+02	1.466E-02	7.707E+03	7.401E-01
Octane	3.145E-01	6.619E+01	4.447E-03	2.338E+03	3.459E-01
1,1,2-Trichloroethane	9.864E-02	1.778E+01	1.194E-03	6.278E+02	1.085E-01
1,2-Dibromoethane	2.955E-03	3.782E-01	2.541E-05	1.336E+01	3.251E-03
1,2-Dichloroethene trans	1.113E-01	2.761E+01	1.855E-03	9.751E+02	1.225E-01

USER INPUTS

Landfill Name or Identifier: Twin Creeks Environmental Centre

Clear ALL Non-Parameter Inputs/Selections

1: PROVIDE LANDFILL CHARACTERISTICS

Landfill Open Year	1972	
Landfill Closure Year	2032	
Have Model Calculate Closure Year?	○ Yes ◉ No	
Waste Design Capacity		megagrams

Restore Default Model Parameters

2: DETERMINE MODEL PARAMETERS

Methane Generation Rate, k (*year*$^{-1}$)
User-specified
User-specified value: 0.040
User-specified k value should be based on site-specific data and determined by EPA Method 2E.

Potential Methane Generation Capacity, L_o (*m*^{3}/*Mg*)
User-specified
User-specified value: 125
User-specified Lo value should be based on site-specific data and determined by waste type and composition.

NMOC Concentration (*ppmv as hexane*)
User-specified
User-specified value: 595

Methane Content (*% by volume*)
User-specified
User-specified value: 52

3: SELECT GASES/POLLUTANTS

Gas / Pollutant #1 #REF!
Total landfill gas

Gas / Pollutant #2
Methane

Gas / Pollutant #3
Carbon dioxide

Gas / Pollutant #4
NMOC

Edit Existing or Add New Pollutant Parameters

Restore Default Pollutant Parameters

Description/Comments:

Modelling of existing landfill Area 4. Values based on MECP Interim Guide.

4: ENTER WASTE ACCEPTANCE RATES

Input Units: Mg/year

Year	Input Units *(Mg/year)*	Calculated Units *(short tons/year)*
1972		0
1973		0
1974		0
1975		0
1976		0
1977		0
1978		0
1979		0
1980		0
1981		0
1982		0
1983		0
1984		0
1985		0
1986		0
1987		0
1988		0
1989		0
1990		0
1991		0
1992		0
1993		0
1994		0
1995		0
1996		0
1997		0
1998		0
1999		0
2000		0
2001		0
2002		0
2003		0
2004		0
2005		0
2006		0
2007		0
2008		0
2009		0
2010		0
2011		0

4: ENTER WASTE ACCEPTANCE RATES

Input Units: Mg/year

Year	Input Units *(Mg/year)*	Calculated Units *(short tons/year)*
2012		0
2013		0
2014		0
2015		0
2016		0
2017		0
2018		0
2019		0
2020		0
2021		0
2022		0
2023		0
2024		0
2025		0
2026		0
2027		0
2028		0
2029		0
2030	1,400,000	1,540,000
2031	1,400,000	1,540,000
2032		
2033		
2034		
2035		
2036		
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2051		

INVENTORY

Landfill Name or Identifier: Twin Creeks Environmental Centre

Enter year of emissions inventory: 2042

Gas / Pollutant	Emission Rate				
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(ft^3/year)*	*(short tons/year)*
Total landfill gas	2.193E+04	1.738E+07	1.168E+03	6.137E+08	2.413E+04
Methane	6.029E+03	9.037E+06	6.072E+02	3.191E+08	6.632E+03
Carbon dioxide	1.527E+04	8.342E+06	5.605E+02	2.946E+08	1.680E+04
NMOC	3.706E+01	1.034E+04	6.948E-01	3.652E+05	4.077E+01
1,1,1-Trichloroethane (methyl chloroform) - HAP	2.218E-03	3.997E-01	2.686E-05	1.412E+01	2.440E-03
1,1,2,2-Tetrachloroethane - HAP/VOC	2.791E-03	3.997E-01	2.686E-05	1.412E+01	3.070E-03
1,1-Dichloroethane (ethylidene dichloride) - HAP/VOC	1.645E-03	3.997E-01	2.686E-05	1.412E+01	1.810E-03
1,1-Dichloroethene (vinylidene chloride) - HAP/VOC	1.401E-03	3.476E-01	2.335E-05	1.227E+01	1.542E-03
1,2-Dichloroethane (ethylene dichloride) - HAP/VOC	1.695E-02	4.119E+00	2.767E-04	1.455E+02	1.865E-02
1,2-Dichloropropane (propylene dichloride) - HAP/VOC	5.554E-03	1.182E+00	7.940E-05	4.173E+01	6.109E-03
2-Propanol (isopropyl alcohol) - VOC	2.694E-01	1.077E+02	7.240E-03	3.805E+03	2.963E-01
Acetone	2.939E-01	1.217E+02	8.174E-03	4.296E+03	3.233E-01
Acrylonitrile - HAP/VOC	2.416E-01	1.095E+02	7.356E-03	3.867E+03	2.658E-01
Benzene - No or Unknown Co-disposal - HAP/VOC	5.275E-02	1.623E+01	1.091E-03	5.732E+02	5.802E-02
Benzene - Co-disposal - HAP/VOC	6.211E-01	1.912E+02	1.284E-02	6.751E+03	6.832E-01
Bromodichloromethane - VOC	5.447E-03	7.994E-01	5.371E-05	2.823E+01	5.992E-03
Butane - VOC	2.101E-01	8.689E+01	5.838E-03	3.069E+03	2.311E-01
Carbon disulfide - HAP/VOC	4.512E-01	1.425E+02	9.575E-03	5.033E+03	4.964E-01
Carbon monoxide	2.835E+00	2.433E+03	1.635E-01	8.592E+04	3.118E+00
Carbon tetrachloride - HAP/VOC	2.557E-03	3.997E-01	2.686E-05	1.412E+01	2.813E-03
Carbonyl sulfide - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chlorobenzene - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chlorodifluoromethane	#REF!	#REF!	#REF!	#REF!	#REF!
Chloroethane (ethyl chloride) - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Chloroform - HAP/VOC	1.985E-03	3.997E-01	2.686E-05	1.412E+01	2.183E-03
Chloromethane - VOC	3.467E-03	1.651E+00	1.109E-04	5.830E+01	3.814E-03
Dichlorobenzene - (HAP for para isomer/VOC)	#REF!	#REF!	#REF!	#REF!	#REF!
Dichlorodifluoromethane	4.894E-03	9.732E-01	6.539E-05	3.437E+01	5.384E-03
Dichlorofluoromethane - VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Dichloromethane (methylene chloride) - HAP	#REF!	#REF!	#REF!	#REF!	#REF!
Dimethyl sulfide (methyl sulfide) - VOC	1.527E+00	5.909E+02	3.970E-02	2.087E+04	1.680E+00
Ethane	1.934E+01	1.547E+04	1.039E+00	5.462E+05	2.128E+01
Ethanol - VOC	9.559E-01	4.988E+02	3.351E-02	1.761E+04	1.052E+00
Ethyl mercaptan (ethanethiol) - VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Ethylbenzene - HAP/VOC	#REF!	#REF!	#REF!	#REF!	#REF!
Ethylene dibromide - HAP/VOC	3.124E-03	3.997E-01	2.686E-05	1.412E+01	3.436E-03
Fluorotrichloromethane - VOC	7.547E-02	1.321E+01	8.874E-04	4.664E+02	8.302E-02
Hexane - HAP/VOC	1.047E-01	2.920E+01	1.962E-03	1.031E+03	1.151E-01
Hydrogen sulfide	9.115E+00	6.430E+03	4.320E-01	2.271E+05	1.003E+01
Mercury (total) - HAP	4.205E-05	5.040E-03	3.386E-07	1.780E-01	4.626E-05
Methyl ethyl ketone - HAP/VOC	9.851E-01	3.285E+02	2.207E-02	1.160E+04	1.084E+00
Methyl isobutyl ketone - HAP/VOC	3.700E-02	8.881E+00	5.967E-04	3.136E+02	4.070E-02
Methyl mercaptan - VOC	1.147E+00	5.735E+02	3.853E-02	2.025E+04	1.262E+00
Pentane - VOC	1.721E-01	5.735E+01	3.853E-03	2.025E+03	1.893E-01
Perchloroethylene (tetrachloroethylene) - HAP	8.391E-02	1.217E+01	8.174E-04	4.296E+02	9.230E-02
Propane - VOC	3.506E-01	1.912E+02	1.284E-02	6.751E+03	3.856E-01
t-1,2-Dichloroethene - VOC	1.962E-01	4.866E+01	3.269E-03	1.718E+03	2.158E-01
Toluene - No or Unknown Co-disposal - HAP/VOC	8.924E-01	2.329E+02	1.565E-02	8.224E+03	9.816E-01
Toluene - Co-disposal - HAP/VOC	1.132E+01	2.954E+03	1.985E-01	1.043E+05	1.245E+01
Trichloroethylene (trichloroethene) - HAP/VOC	1.785E-02	3.267E+00	2.195E-04	1.154E+02	1.964E-02
Vinyl chloride - HAP/VOC	2.047E-02	7.873E+00	5.290E-04	2.780E+02	2.251E-02
Xylenes - HAP/VOC	7.083E-01	1.604E+02	1.078E-02	5.665E+03	7.791E-01
1,2-Dichloroethene cis	1.177E-01	2.920E+01	1.962E-03	1.031E+03	1.295E-01
1,2-Dichloroethylene	5.116E-02	1.269E+01	8.524E-04	4.480E+02	5.627E-02
2-Butanol	3.091E-01	1.003E+02	6.738E-03	3.541E+03	3.401E-01
Octane	1.445E-01	3.041E+01	2.043E-03	1.074E+03	1.589E-01
1,1,2-Trichloroethane	4.532E-02	8.168E+00	5.488E-04	2.885E+02	4.985E-02
1,2-Dibromoethane	1.358E-03	1.738E-01	1.168E-05	6.137E+00	1.494E-03
1,2-Dichloroethene trans	5.115E-02	1.269E+01	8.524E-04	4.480E+02	5.627E-02

Appendix 5A-S4-5.3a: Twin Creeks Landfill, Fugitive Odour Emission Assessment - Scenario 4 - No-Build (2042)

Sampling Result

Sampling Location	Odour Intensity from Sampling (OU/m^3) [1]
	Average
Old Landfill	546
New Landfill	23,185

Note:
[1] Average odour intensity was adopted in the modelling.

Gas Collection Efficiency

Landfill Area	Sources	Gas Collection
Current Landfill i.e. AREA1-AREA3	Interim Cover	75%
	Final Cover	90%
Old Landfill i.e. AREA5	Final Cover	75%

Summary of Odour Emissions for Scenario 4

Source ID	Source Description	Area (m^2)	Odour Flux Rate ($OU/s/m^2$)	Emission Rate (OU/s)	LandGEM Gas Generation (m^3/yr)	Fugitive LFG Emissions (m^3/s)	Odour Intensity (OU/m^3)
AREA5	Old Landfill - Final Cover	275,424	**2.86E-05**	7.88E+00	1.821E+06	1.44E-02	**546**
AREA1	Current Landfill - Final Cover	244,004	**8.21E-03**	2.00E+03	2.726E+07	8.64E-02	**23,185**
AREA2	Current Landfill - Final Cover	165,611	**1.36E-02**	2.25E+03	3.064E+07	9.72E-02	**23,185**
AREA3	Current Landfill - Final Cover	179,092	**1.55E-02**	2.78E+03	3.782E+07	1.20E-01	**23,185**
AREA4	Current Landfill - Final Cover	99,012	**1.29E-02**	1.28E+03	1.738E+07	5.51E-02	**23,185**

Sample Calculation for AREA5

1.82E+06 m^3	1 yr	100 - 75	%	546 OU	1
1 yr	31,536,000 s	1		1 m^3	275,424 m^2

= 2.86E-05 $OU/s/m^2$

Appendix 5A-S1-M: Source Summary Table, Scenario 1 with Mitigation Applied

RWDI# 2101750

Twin Creeks Environmental Centre

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (ºC)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
FLARE5	POINT	Landfill Gas Flare 5 - RNG Plant Startup	41.67	871	3.66	3.97	15.24	N/A	429140	4757490	Benzene	71-43-2	1.15E-04	N/A	24, Annual	EC	Average	2%
											Vinyl Chloride (Chloroethylene)	75-01-4	4.45E-05	N/A	24	EC	Average	1%
											1,2-Dichloroethane	107-06-2	3.68E-05	N/A	24	EC	Average	1%
											Nitrogen Oxides (NOx)	10102-44-0	5.96E-01	N/A	1, 24	EC	Average	7%
											Particulate Matter (PM)	PM	2.25E-01	N/A	24	EC	Average	<1%
											Sulphur Dioxide (SO2)	7446-09-5	3.53E-01	N/A	1, Annual	EC	Average	13%
											Dioxins and Furans	DF	2.08E-11	N/A	24	EF	Marginal	12%
											Total Reduced Sulphur (TRS)	TRS	1.78E-02	N/A	10-minute, 24	EC	Marginal	15%
											Hydrogen Sulfide	7783-06-4	1.78E-02	N/A	10-minute, 24	EC	Average	17%
FLARE6	POINT	Landfill Gas Flare 6 - RNG Plant Startup	41.67	871	3.66	3.97	15.24	N/A	429149	4757490	Benzene	71-43-2	1.15E-04	N/A	24, Annual	EC	Average	2%
											Vinyl Chloride (Chloroethylene)	75-01-4	4.45E-05	N/A	24	EC	Average	1%
											1,2-Dichloroethane	107-06-2	3.68E-05	N/A	24	EC	Average	1%
											Nitrogen Oxides (NOx)	10102-44-0	5.96E-01	N/A	1, 24	EC	Average	7%
											Particulate Matter (PM)	PM	2.25E-01	N/A	24	EC	Average	<1%
											Sulphur Dioxide (SO2)	7446-09-5	3.53E-01	N/A	1, Annual	EC	Average	13%
											Dioxins and Furans	DF	2.08E-11	N/A	24	EF	Marginal	12%
											Total Reduced Sulphur (TRS)	TRS	1.78E-02	N/A	10-minute, 24	EC	Marginal	15%
											Hydrogen Sulfide	7783-06-4	1.78E-02	N/A	10-minute, 24	EC	Average	17%
RNG_TO1	POINT	RNG Plant Pre-Treatment Thermal Oxidizer	2.51	816	1.22	2.15	15.24	N/A	429116	4757455	Benzene	71-43-2	4.24E-05	N/A	24, Annual	EC	Marginal	<1%
											1,2-Dichloroethane	107-06-2	6.14E-06	N/A	24	EC	Marginal	<1%
											Vinyl Chloride	75-01-4	1.78E-05	N/A	24	EC	Marginal	<1%
											Total Reduced Sulphur (TRS)	TRS	9.13E-04	N/A	10-minute, 24	EC	Marginal	<1%
											Oxides of Nitrogen	10102-44-0	1.30E-01	N/A	1, 24	EC	Marginal	2%
											Sulphur Dioxide	7446-09-5	9.13E-02	N/A	1, Annual	EC	Marginal	3%
											Dioxins and Furans	DF	3.58E-12	N/A	24	EF	Marginal	2%
											Particulate Matter	PM	4.65E-03	N/A	24	EC	Marginal	<1%
RNG_TO2	POINT	RNG Plant Main Thermal Oxidizer	18.03	816	2.90	2.74	15.24	N/A	429124	4757456	Benzene	71-43-2	1.24E-05	N/A	24, Annual	EC	Marginal	<1%
											1,2-Dichloroethane	107-06-2	4.04E-05	N/A	24	EC	Marginal	1%
											Vinyl Chloride	75-01-4	9.36E-05	N/A	24	EC	Marginal	2%
											Total Reduced Sulphur (TRS)	TRS	3.08E-04	N/A	10-minute, 24	EC	Marginal	<1%
											Oxides of Nitrogen	10102-44-0	1.20E+00	N/A	1, 24	EC	Marginal	15%
											Sulphur Dioxide	7446-09-5	3.08E-02	N/A	1, Annual	EC	Marginal	1%
											Dioxins and Furans	DF	2.54E-11	N/A	24	EF	Marginal	15%
											Particulate Matter	PM	7.71E-02	N/A	24	EC	Marginal	<1%
FLARE5BP	POINT	Landfill Gas Flare 5 - Thermal Oxidizer Bypass Scenario	37.15	871	3.66	3.54	15.24	N/A	429140	4757490	Benzene	71-43-2	2.46E-04	N/A	24, Annual	EC	Marginal	3%
											1,2-Dichloroethane	107-06-2	3.56E-05	N/A	24	EC	Marginal	1%
											Vinyl Chloride	75-01-4	1.03E-04	N/A	24	EC	Marginal	3%
											Total Reduced Sulphur (TRS)	TRS	5.29E-03	N/A	10-minute, 24	EC	Marginal	4%
											Oxides of Nitrogen	10102-44-0	5.78E-01	N/A	1, 24	EC	Marginal	7%
											Sulphur Dioxide	7446-09-5	2.65E-01	N/A	1, Annual	EC	Marginal	10%
											Dioxins and Furans	DF	1.04E-11	N/A	24	EF	Marginal	6%
											Particulate Matter	PM	2.18E-01	N/A	24	EC	Marginal	<1%
FLARE6BP	POINT	Landfill Gas Flare 6 - Thermal Oxidizer Bypass Scenario	37.15	871	3.66	3.54	15.24	N/A	429149	4757490	Benzene	71-43-2	1.01E-05	N/A	24, Annual	EC	Marginal	<1%
											1,2-Dichloroethane	107-06-2	3.30E-05	N/A	24	EC	Marginal	1%
											Vinyl Chloride	75-01-4	7.64E-05	N/A	24	EC	Marginal	2%
											Total Reduced Sulphur (TRS)	TRS	2.51E-04	N/A	10-minute, 24	EC	Marginal	<1%
											Oxides of Nitrogen	10102-44-0	5.78E-01	N/A	1, 24	EC	Marginal	7%
											Sulphur Dioxide	7446-09-5	1.26E-02	N/A	1, Annual	EC	Marginal	<1%
											Dioxins and Furans	DF	1.04E-11	N/A	24	EF	Marginal	6%
											Particulate Matter	PM	2.18E-01	N/A	24	EC	Marginal	<1%
AMINE	POINT-CAP	Amine Reboiler	0.59	204	0.39	5.00	4.92	1.87	429070	4757462	Nitrogen Oxides (NOx)	10102-44-0	8.99E-02	N/A	1, 24	EF	Average	1%
											Particulate Matter	PM	3.28E-03	N/A	24	EF	Average	<1%
GEN4	POINT	RNG Plant 360 kW Emergency Diesel Generator	0.48	491	0.15	26.50	2.15	N/A	429125	4757401	Nitrogen Oxides	10102-44-0	5.26E-01	N/A	1, 24	EF	Above-Average	6%
											Particulate Matter	PM	3.01E-02	N/A	24	EF	Above-Average	<1%
											Sulphur Dioxide	7446-09-5	1.26E-01	N/A	1, Annual	EF	Above-Average	5%
L4	POINT-HOR	Passive Exhaust Louvre Serving SBR and Aeration Tanks	1.96	25	1.38	1.31	2.13	N/A	429013	4757497	Benzene	71-43-2	1.43E-04	N/A	24, Annual	EC	Average	2%
											Vinyl Chloride (Chloroethylene)	75-01-4	3.09E-04	N/A	24	EC	Average	8%
											1,2-Dichloroethane	107-06-2	1.21E-04	N/A	24	EC	Average	4%
											Ammonia	7664-41-7	1.39E-02	N/A	24	EC	Average	40%
											Odour	ODOUR	4.76E+02	N/A	10-minute	EC	Average	1%
L3	POINT-HOR	Passive Exhaust Louvre Serving SBR and Aeration Tanks	1.96	25	1.38	1.31	2.13	N/A	429013	4757490	Benzene	71-43-2	1.43E-04	N/A	24, Annual	EC	Average	2%
											Vinyl Chloride (Chloroethylene)	75-01-4	3.09E-04	N/A	24	EC	Average	8%
											1,2-Dichloroethane	107-06-2	1.21E-04	N/A	24	EC	Average	4%
											Ammonia	7664-41-7	1.39E-02	N/A	24	EC	Average	40%
											Odour	ODOUR	4.76E+02	N/A	10-minute	EC	Average	1%

Appendix 5A-S1-M: Source Summary Table, Scenario 1 with Mitigation Applied

RWDI# 2101750

Twin Creeks Environmental Centre

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (ºC)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
EF_2	POINT	Process Exhaust Fan Serving RO System Area	1.71	25	0.51	8.37	3.96	N/A	429073	4757502	Benzene	71-43-2	2.55E-04	N/A	24, Annual	EC	Average	3%
											Vinyl Chloride (Chloroethylene)	75-01-4	2.59E-04	N/A	24	EC	Average	7%
											1,2-Dichloroethane	107-06-2	2.39E-04	N/A	24	EC	Average	8%
											Ammonia	7664-41-7	9.49E-06	N/A	24	EC	Average	<1%
											Odour	ODOUR	3.59E+00	N/A	10-minute	EC	Average	<1%
SD_1	POINT-CAP	Slurry Dryer Exhaust	0.24	25	0.30	3.34	5.00	N/A	429057	4757483	Benzene	71-43-2	6.40E-04	N/A	24, Annual	EC	Average	9%
											Vinyl Chloride (Chloroethylene)	75-01-4	6.40E-04	N/A	24	EC	Average	16%
											1,2-Dichloroethane	107-06-2	6.40E-04	N/A	24	EC	Average	21%
											Ammonia	7664-41-7	4.40E-04	N/A	24	EC	Average	1%
											Odour	ODOUR	2.36E+01	N/A	10-minute	EC	Average	<1%
GEN1	POINT	1,000 kW Emergency Diesel Generator Serving Landfill Gas Plant	3.56	477	0.25	72.52	3.60	0.00	429119	4757554	Nitrogen Oxides	10102-44-0	2.72E-01	N/A	1, 24	EF	Above-Average	3%
											Particulate Matter	PM	4.53E-02	N/A	24	EF	Above-Average	<1%
											Sulphur Dioxide	7446-09-5	4.53E-02	N/A	1, Annual	EF	Above-Average	2%
GEN2	POINT	50 kW Diesel Generator Serving Leachate Pumps	0.24	477	0.10	30.56	3.60	0.00	429246	4757604	Nitrogen Oxides	10102-44-0	7.05E-02	N/A	1, 24	EF	Marginal	<1%
											Particulate Matter	PM	2.32E-02	N/A	24	EF	Marginal	<1%
											Sulphur Dioxide	7446-09-5	2.16E-02	N/A	1, Annual	EF	Marginal	<1%
GEN3	POINT	250 kW Emergency Diesel Generator Serving the Maintenance Offices	0.97	477	0.15	54.89	3.60	0.00	428415	4758689	Nitrogen Oxides	10102-44-0	3.53E-01	N/A	1, 24	EF	Marginal	4%
											Particulate Matter	PM	1.16E-01	N/A	24	EF	Marginal	<1%
											Sulphur Dioxide	7446-09-5	1.08E-01	N/A	1, Annual	EF	Marginal	4%
FLARE1	POINT	Landfill Gas Flare (Based on Full Load)	61.30	950	3.70	5.70	15.20	N/A	429117	4757504	Benzene	71-43-2	1.26E-04	N/A	24, Annual	EC	Average	2%
											Vinyl Chloride (Chloroethylene)	75-01-4	4.91E-05	N/A	24	EC	Average	1%
											1,2-Dichloroethane	107-06-2	4.06E-05	N/A	24	EC	Above-Average	1%
											Nitrogen Oxides	10102-44-0	6.57E-01	N/A	1, 24	EF	Average	8%
											Particulate Matter	PM	2.48E-01	N/A	24	EF	Average	<1%
											Sulphur Dioxide	7446-09-5	3.89E-01	N/A	1, Annual	EC	Marginal	14%
											Dioxins and Furans	DF	2.29E-11	N/A	24	EF	Marginal	13%
											Total Reduced Sulphur (TRS)	TRS	1.97E-02	N/A	10-minute, 24	EC	Marginal	16%
											Hydrogen Sulfide	7783-06-4	1.97E-02	N/A	10-minute, 24	EC	Above-Average	18%
FLARE2	POINT	Landfill Gas Flare (Based on Full Load)	61.30	950	3.70	5.70	15.20	N/A	429154	4757504	Benzene	71-43-2	1.26E-04	N/A	24, Annual	EC	Average	2%
											Vinyl Chloride (Chloroethylene)	75-01-4	4.91E-05	N/A	24	EC	Average	1%
											1,2-Dichloroethane	107-06-2	4.06E-05	N/A	24	EC	Above-Average	1%
											Nitrogen Oxides	10102-44-0	6.57E-01	N/A	1, 24	EF	Average	8%
											Particulate Matter	PM	2.48E-01	N/A	24	EF	Average	<1%
											Sulphur Dioxide	7446-09-5	3.89E-01	N/A	1, Annual	EC	Marginal	14%
											Dioxins and Furans	DF	2.29E-11	N/A	24	EF	Marginal	13%
											Total Reduced Sulphur (TRS)	TRS	1.97E-02	N/A	10-minute, 24	EC	Marginal	16%
											Hydrogen Sulfide	7783-06-4	1.97E-02	N/A	10-minute, 24	EC	Above-Average	18%
FLARE3	POINT	Proposed Landfill Gas Flare (Based on Full Load)	61.30	950	3.70	5.70	15.20	N/A	429142	4757504	Benzene	71-43-2	1.26E-04	N/A	24, Annual	EC	Average	2%
											Vinyl Chloride (Chloroethylene)	75-01-4	4.91E-05	N/A	24	EC	Average	1%
											1,2-Dichloroethane	107-06-2	4.06E-05	N/A	24	EC	Above-Average	1%
											Nitrogen Oxides	10102-44-0	6.57E-01	N/A	1, 24	EF	Average	8%
											Particulate Matter	PM	2.48E-01	N/A	24	EF	Average	<1%
											Sulphur Dioxide	7446-09-5	3.89E-01	N/A	1, Annual	EC	Marginal	14%
											Dioxins and Furans	DF	2.29E-11	N/A	24	EF	Marginal	13%
											Total Reduced Sulphur (TRS)	TRS	1.97E-02	N/A	10-minute, 24	EC	Marginal	16%
											Hydrogen Sulfide	7783-06-4	1.97E-02	N/A	10-minute, 24	EC	Above-Average	18%
FLARE4	POINT	Proposed Landfill Gas Flare (Based on Full Load)	25.79	950	3.20	3.21	12.19	N/A	429129	4757504	Benzene	71-43-2	5.73E-05	N/A	24, Annual	EC	Average	<1%
											Vinyl Chloride (Chloroethylene)	75-01-4	2.22E-05	N/A	24	EC	Average	<1%
											1,2-Dichloroethane	107-06-2	1.84E-05	N/A	24	EC	Above-Average	<1%
											Nitrogen Oxides	10102-44-0	2.98E-01	N/A	1, 24	EF	Average	4%
											Particulate Matter	PM	1.12E-01	N/A	24	EF	Average	<1%
											Sulphur Dioxide	7446-09-5	1.76E-01	N/A	1, Annual	EC	Marginal	6%
											Dioxins and Furans	DF	1.04E-11	N/A	24	EF	Marginal	6%
											Total Reduced Sulphur (TRS)	TRS	8.92E-03	N/A	10-minute, 24	EC	Marginal	7%
											Hydrogen Sulfide	7783-06-4	8.92E-03	N/A	10-minute, 24	EC	Above-Average	8%
AREA1	AREA	Expansion Landfill Phases 1 Through 3 Approximate Area = 244,004 m^2 (Emissions Based on Year 2033)	N/A	N/A	N/A	N/A	N/A	N/A	428626	4757721	Benzene	71-43-2	5.20E-05	3.70E-09	24, Annual	EC	Average	<1%
											Vinyl Chloride (Chloroethylene)	75-01-4	3.50E-04	1.44E-09	24	EC	Average	9%
											1,2-Dichloroethane	107-06-2	2.90E-04	1.19E-09	24	EC	Above-Average	10%
											Total Reduced Sulphur (TRS)	TRS	0.00E+00	0.00E+00	10-minute, 24	EC	Marginal	<1%
											Hydrogen Sulfide	7783-06-4	0.00E+00	0.00E+00	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	0.00E+00	0.00E+00	10-minute	ST	Average	<1%

Appendix 5A-S1-M: Source Summary Table, Scenario 1 with Mitigation Applied

RWDI# 2101750

Twin Creeks Environmental Centre

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (ºC)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
AREA2	AREA	Expansion Landfill Phases 4 Through 5 Approximate Area = 165,611 m^2 (Emissions Based on Year 2033)	N/A	N/A	N/A	N/A	N/A	N/A	428634	4758149	Benzene	71-43-2	1.02E-03	6.13E-09	24, Annual	EC	Average	14%
											Vinyl Chloride (Chloroethylene)	75-01-4	3.94E-04	2.38E-09	24	EC	Average	10%
											1,2-Dichloroethane	107-06-2	3.26E-04	1.97E-09	24	EC	Above-Average	11%
											Total Reduced Sulphur (TRS)	TRS	0.00E+00	0.00E+00	10-minute, 24	EC	Marginal	<1%
											Hydrogen Sulfide	7783-06-4	0.00E+00	0.00E+00	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	0.00E+00	0.00E+00	10-minute	ST	Average	<1%
AREA3	AREA	Expansion Landfill Phases 6 Through 7 Approximate Area = 179,092 m^2 (Emissions Based on Year 2033)	N/A	N/A	N/A	N/A	N/A	N/A	428637	4758461	Benzene	71-43-2	9.87E-04	5.51E-09	24, Annual	EC	Average	13%
											Vinyl Chloride (Chloroethylene)	75-01-4	3.83E-04	2.14E-09	24	EC	Average	10%
											1,2-Dichloroethane	107-06-2	3.17E-04	1.77E-09	24	EC	Above-Average	10%
											Total Reduced Sulphur (TRS)	TRS	0.00E+00	0.00E+00	10-minute, 24	EC	Marginal	<1%
											Hydrogen Sulfide	7783-06-4	0.00E+00	0.00E+00	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	0.00E+00	0.00E+00	10-minute	ST	Average	<1%
AREA4	AREA	Expansion Landfill Phases 8 Through 9 Approximate Area = 99,012 m^2 (Emissions Based on Year 2033)	N/A	N/A	N/A	N/A	N/A	N/A	429027	4758463	Benzene	71-43-2	0.00E+00	0.00E+00	24, Annual	EC	Average	<1%
											Vinyl Chloride (Chloroethylene)	75-01-4	0.00E+00	0.00E+00	24	EC	Average	<1%
											1,2-Dichloroethane	107-06-2	0.00E+00	0.00E+00	24	EC	Above-Average	<1%
											Total Reduced Sulphur (TRS)	TRS	0.00E+00	0.00E+00	10-minute, 24	EC	Marginal	<1%
											Hydrogen Sulfide	7783-06-4	0.00E+00	0.00E+00	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	0.00E+00	0.00E+00	10-minute	ST	Average	<1%
AREA5	AREA	Existing Landfill Approximate Area = 208,263 m^2 (Emissions Based on Year 2033)	N/A	N/A	N/A	N/A	N/A	N/A	429208	4757609	Benzene	71-43-2	7.24E-05	2.63E-10	24, Annual	EC	Average	<1%
											Vinyl Chloride (Chloroethylene)	75-01-4	2.81E-05	1.02E-10	24	EC	Average	<1%
											1,2-Dichloroethane	107-06-2	2.33E-05	8.45E-11	24	EC	Above-Average	<1%
											Total Reduced Sulphur (TRS)	TRS	2.95E-03	1.07E-08	10-minute, 24	EC	Marginal	2%
											Hydrogen Sulfide	7783-06-4	9.95E-04	3.61E-09	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	1.08E+01	3.94E-05	10-minute	ST	Average	<1%
STAGE1	AREA	Vertical Expansion Landfill Approximate Area = 378,390 m2 (Emissions Based on Year 2034)	N/A	N/A	N/A	N/A	N/A	N/A	428515	4758837	Benzene	71-43-2	1.11E-03	2.94E-09	24, Annual	EC	Average	15%
											Vinyl Chloride (Chloroethylene)	75-01-4	4.31E-04	1.14E-09	24	EC	Average	11%
											1,2-Dichloroethane	107-06-2	3.57E-04	9.44E-10	24	EC	Above-Average	12%
											Total Reduced Sulphur (TRS)	TRS	4.06E-03	1.07E-08	10-minute, 24	EC	Marginal	3%
											Hydrogen Sulfide	7783-06-4	1.40E-03	3.69E-09	10-minute, 24	EC	Above-Average	1%
											Odour	ODOUR	1.98E+04	5.23E-02	10-minute	ST	Average	47%
STAGE1FC	AREA	Vertical Expansion Landfill, Stage 1 area not covered by Stage 3 Approximate Area = 205,538 m2	N/A	N/A	N/A	N/A	N/A	N/A	428508	4757867	Total Reduced Sulphur (TRS)	TRS	0.00E+00	0.00E+00	10-minute, 24	EC	Marginal	<1%
											Hydrogen Sulfide	7783-06-4	0.00E+00	0.00E+00	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	0.00E+00	0.00E+00	10-minute	EC	Average	<1%
STAGE2	AREA	Vertical Expansion Landfill, Stage 2 Approximate Area = 366,429 m2 (Emissions Based on Year 2034)	N/A	N/A	N/A	N/A	N/A	N/A	428878	4758835	Benzene	71-43-2	8.01E-04	2.19E-09	24, Annual	EC	Average	11%
											Vinyl Chloride (Chloroethylene)	75-01-4	3.11E-04	8.48E-10	24	EC	Average	8%
											1,2-Dichloroethane	107-06-2	2.57E-04	7.03E-10	24	EC	Above-Average	8%
											Total Reduced Sulphur (TRS)	TRS	3.93E-03	1.07E-08	10-minute, 24	EC	Marginal	3%
											Hydrogen Sulfide	7783-06-4	1.35E-03	3.69E-09	10-minute, 24	EC	Above-Average	1%
											Odour	ODOUR	1.70E+04	4.65E-02	10-minute	ST	Average	40%
STAGE2FC	AREA	Vertical Expansion Landfill, Stage 2 area not covered by Stage 4 Approximate Area = 210,645 m2	N/A	N/A	N/A	N/A	N/A	N/A	428876	4757705	Total Reduced Sulphur (TRS)	TRS	0.00E+00	0.00E+00	10-minute, 24	EC	Marginal	<1%
											Hydrogen Sulfide	7783-06-4	0.00E+00	0.00E+00	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	0.00E+00	0.00E+00	10-minute	EC	Average	<1%
STAGE3	AREA	Vertical Expansion Landfill, Stage 3 Approximate Area = 147,144 m2 (Emissions Based on Year 2034)	N/A	N/A	N/A	N/A	N/A	N/A	428650	4758699	Benzene	71-43-2	0.00E+00	0.00E+00	24, Annual	EC	Average	<1%
											Vinyl Chloride (Chloroethylene)	75-01-4	0.00E+00	0.00E+00	24	EC	Average	<1%
											1,2-Dichloroethane	107-06-2	0.00E+00	0.00E+00	24	EC	Above-Average	<1%
											Total Reduced Sulphur (TRS)	TRS	0.00E+00	0.00E+00	10-minute, 24	EC	Marginal	<1%
											Hydrogen Sulfide	7783-06-4	0.00E+00	0.00E+00	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	0.00E+00	0.00E+00	10-minute	ST	Average	<1%
STAGE4	AREA	Vertical Expansion Landfill, Stage 4 Approximate Area = 181,496 m2 (Emissions Based on Year 2034)	N/A	N/A	N/A	N/A	N/A	N/A	428847	4758701	Benzene	71-43-2	0.00E+00	0.00E+00	24, Annual	EC	Average	<1%
											Vinyl Chloride (Chloroethylene)	75-01-4	0.00E+00	0.00E+00	24	EC	Average	<1%
											1,2-Dichloroethane	107-06-2	0.00E+00	0.00E+00	24	EC	Above-Average	<1%
											Total Reduced Sulphur (TRS)	TRS	0.00E+00	0.00E+00	10-minute, 24	EC	Marginal	<1%
											Hydrogen Sulfide	7783-06-4	0.00E+00	0.00E+00	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	0.00E+00	0.00E+00	10-minute	ST	Average	<1%
DC_WF	VOLUME	Daily Cover Dropped at Working Face	N/A	N/A	N/A	N/A	N/A	N/A	428541	4758823	Particulate Matter	PM	Variable [4]	N/A	24	EF	Average	N/A
											PM10	PM10	Variable [4]	N/A	24	EF	Average	N/A
											PM2.5	PM25	Variable [4]	N/A	24	EF	Average	N/A
DC_SS	VOLUME	Daily Cover Dropped at Soil Stockpile	N/A	N/A	N/A	N/A	N/A	N/A	429308	4757217	Particulate Matter	PM	Variable [4]	N/A	24	EF	Average	N/A
											PM10	PM10	Variable [4]	N/A	24	EF	Average	N/A
											PM2.5	PM25	Variable [4]	N/A	24	EF	Average	N/A
CDA1	VOLUME	Compost Material Dropped at Compost Diversion Area 1 (North)	N/A	N/A	N/A	N/A	N/A	N/A	429524	4757510	Particulate Matter	PM	Variable [4]	N/A	24	EF	Average	N/A
											PM10	PM10	Variable [4]	N/A	24	EF	Average	N/A
											PM2.5	PM25	Variable [4]	N/A	24	EF	Average	N/A

Appendix 5A-S1-M: Source Summary Table, Scenario 1 with Mitigation Applied

RWDI# 2101750

Twin Creeks Environmental Centre

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (ºC)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
CDA2	VOLUME	Compost Material Dropped at Compost Diversion Area 2 (South)	N/A	N/A	N/A	N/A	N/A	N/A	429536	4757510	Particulate Matter	PM	Variable [4]	N/A	24	EF	Average	N/A
											PM10	PM10	Variable [4]	N/A	24	EF	Average	N/A
											PM2.5	PM25	Variable [4]	N/A	24	EF	Average	N/A
CDA	AREA	Compost Diversion Area	N/A	N/A	N/A	N/A	N/A	N/A	429513	4757452	Odour	ODOUR	4.47E+03	8.10E-01	10-minute	EF	Average	11%
CS_WF	VOLUME	Contaminated Soil Dropped at Working Face	N/A	N/A	N/A	N/A	N/A	N/A	428528	4758827	Particulate Matter	PM	Variable [4]	N/A	24	EF	Average	N/A
											PM10	PM10	Variable [4]	N/A	24	EF	Average	N/A
											PM2.5	PM25	Variable [4]	N/A	24	EF	Average	N/A
WIND_SS	AREA	Wind Erosion at Soil Stockpile	N/A	N/A	N/A	N/A	N/A	N/A	429216	4757189	Particulate Matter	PM	N/A	Variable [4]	24	EF	Average	N/A
											PM10	PM10	N/A	Variable [4]	24	EF	Average	N/A
											PM2.5	PM25	N/A	Variable [4]	24	EF	Average	N/A
WIND_WF	AREA	Wind Erosion at Working Face	N/A	N/A	N/A	N/A	N/A	N/A	428523	4758772	Particulate Matter	PM	N/A	Variable [4]	24	EF	Average	N/A
											PM10	PM10	N/A	Variable [4]	24	EF	Average	N/A
											PM2.5	PM25	N/A	Variable [4]	24	EF	Average	N/A
WIND_CDA	AREA	Wind Rrosion at Compost Diversion Area	N/A	N/A	N/A	N/A	N/A	N/A	429513	4757452	Particulate Matter	PM	N/A	Variable	24	EF	Average	N/A
											PM10	PM10	N/A	Variable	24	EF	Average	N/A
											PM2.5	PM25	N/A	Variable	24	EF	Average	N/A
FC_CAP	AREA	Final Cap Construction Clay Drop-off	N/A	N/A	N/A	N/A	N/A	N/A	429030	4758695	Particulate Matter	PM	N/A	Variable [4]	24	EF	Average	N/A
											PM10	PM10	N/A	Variable [4]	24	EF	Average	N/A
											PM2.5	PM25	N/A	Variable [4]	24	EF	Average	N/A
FC_SS	AREA	Final Cap Clay Storage Pile Truck Loading	N/A	N/A	N/A	N/A	N/A	N/A	429278	4757247	Particulate Matter	PM	N/A	Variable [4]	24	EF	Average	N/A
											PM10	PM10	N/A	Variable [4]	24	EF	Average	N/A
											PM2.5	PM25	N/A	Variable [4]	24	EF	Average	N/A
WIND_CAP	AREA	Wind Erosion at the Final Cap Construction Area	N/A	N/A	N/A	N/A	N/A	N/A	429022	4758628	Particulate Matter	PM	N/A	Variable [4]	24	EF	Average	N/A
											PM10	PM10	N/A	Variable [4]	24	EF	Average	N/A
											PM2.5	PM25	N/A	Variable [4]	24	EF	Average	N/A
MH5AB	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429468	4758257	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH4A	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429461	4758000	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH3SA	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429461	4757794	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH16	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429423	4757612	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH6AB	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429198	4758220	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
SUMP	AREA	Leachate Maintenance Sump	N/A	N/A	N/A	N/A	N/A	N/A	429247	4758070	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH3SF	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429334	4757819	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH18	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429266	4757613	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
CONSOIL	AREA	Contaminated Soil Pile	N/A	N/A	N/A	N/A	N/A	N/A	428532	4758826	Vinyl Chloride (Chloroethylene)	75-01-4	7.34E-07	3.67E-08	24	ST	Average	<1%
											1,2-Dichloroethane	107-06-2	1.59E-05	7.97E-07	24	ST	Average	<1%
											Benzene	71-43-2	6.76E-04	3.38E-05	24, Annual	ST	Average	9%
											Odour	ODOUR	1.53E+00	7.65E-02	10-minute	ST	Average	<1%
WF	AREA	Working Face / Scrape Down Area	N/A	N/A	N/A	N/A	N/A	N/A	428523	4758772	Odour	ODOUR	N/A	Variable [5]	10-minute	ST	Average	N/A
DOZE1	VOLUME	Cat Dozers at Working Face, Dugitive Dust	N/A	N/A	N/A	N/A	N/A	N/A	428554	4758801	Particulate Matter	PM	3.33E+00	N/A	24	EC	Average	7%
											PM10	PM10	9.84E-01	N/A	24	EC	Average	8%
											PM2.5	PM25	3.50E-01	N/A	24	EC	Average	16%
DOZE2	VOLUME	Cat Dozers at Working Face, Tailpipe	N/A	N/A	N/A	N/A	N/A	N/A	428554	4758801	Particulate Matter	PM	2.03E-03	N/A	24	EC	Average	<1%
											PM10	PM10	2.03E-03	N/A	24	EC	Average	<1%
											PM2.5	PM25	1.97E-03	N/A	24	EC	Average	<1%
											Benzene	71-43-2	1.29E-04	N/A	24, Annual	EC	Average	2%
											Ammonia	7664-41-7	7.78E-04	N/A	24	EC	Average	2%
											Nitrogen Dioxide	NO2	3.56E-02	N/A	24	EC	Average	11%
											Nitrogen Oxides	10102-44-0	3.56E-02	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	2.55E-04	N/A	1, Annual	EC	Average	<1%
DOZE3	VOLUME	Cat Dozers at Soil Stockpile, Fugitive Dust	N/A	N/A	N/A	N/A	N/A	N/A	429314	4757233	Particulate Matter	PM	2.73E+00	N/A	24	EC	Average	6%
											PM10	PM10	8.65E-01	N/A	24	EC	Average	7%
											PM2.5	PM25	2.87E-01	N/A	24	EC	Average	13%
DOZE4	VOLUME	Cat Dozers at Soil Stockpile, Tailpipe	N/A	N/A	N/A	N/A	N/A	N/A	429314	4757233	Particulate Matter	PM	4.81E-04	N/A	24	EC	Average	<1%
											PM10	PM10	4.81E-04	N/A	24	EC	Average	<1%
											PM2.5	PM25	4.66E-04	N/A	24	EC	Average	<1%
											Benzene	71-43-2	3.40E-05	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	2.26E-04	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	8.72E-03	N/A	24	EC	Average	3%
											Nitrogen Oxides	10102-44-0	8.72E-03	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	7.37E-05	N/A	1, Annual	EC	Average	<1%
DOZE1CAP	VOLUME	Cat Dozers at Working Face, Dugitive Dust	N/A	N/A	N/A	N/A	N/A	N/A	429059	4758666	Particulate Matter	PM	5.67E+00	N/A	24	EC	Average	12%
											PM10	PM10	2.04E+00	N/A	24	EC	Average	16%
											PM2.5	PM25	5.96E-01	N/A	24	EC	Average	27%

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (ºC)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
DOZE2CAP	VOLUME	Cat Dozers at Working Face, Tailpipe	N/A	N/A	N/A	N/A	N/A	N/A	429059	4758666	Particulate Matter	PM	6.74E-04	N/A	24	EC	Average	<1%
											PM10	PM10	6.74E-04	N/A	24	EC	Average	<1%
											PM2.5	PM25	6.54E-04	N/A	24	EC	Average	<1%
											Benzene	71-43-2	5.13E-05	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	1.19E-04	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	8.92E-03	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	3.94E-05	N/A	1, Annual	EC	Average	<1%
DOZE2SS	VOLUME	Cat Dozers at Soil Stockpile, Tailpipe	N/A	N/A	N/A	N/A	N/A	N/A	429460	4757232	Particulate Matter	PM	2.88E-04	N/A	24	EC	Average	<1%
											PM10	PM10	2.88E-04	N/A	24	EC	Average	<1%
											PM2.5	PM25	2.79E-04	N/A	24	EC	Average	<1%
											Benzene	71-43-2	1.67E-05	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	3.33E-04	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	8.51E-03	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	1.08E-04	N/A	1, Annual	EC	Average	<1%
IDLE01	VOLUME	Trucks Idling at the Scale House	N/A	N/A	N/A	N/A	N/A	N/A	428420	4758417	Particulate Matter	PM	3.05E-04	N/A	24	EC	Average	<1%
											PM10	PM10	3.05E-04	N/A	24	EC	Average	<1%
											PM2.5	PM25	2.81E-04	N/A	24	EC	Average	<1%
											Benzene	71-43-2	3.31E-06	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	2.13E-04	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.04E-02	N/A	24	EC	Average	3%
											Nitrogen Oxides	10102-44-0	2.75E-02	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	1.28E-05	N/A	1, Annual	EC	Average	<1%
IDLE02	VOLUME	Trucks Idling at the Working Face	N/A	N/A	N/A	N/A	N/A	N/A	428545	4758809	Particulate Matter	PM	3.05E-04	N/A	24	EC	Average	<1%
											PM10	PM10	3.05E-04	N/A	24	EC	Average	<1%
											PM2.5	PM25	2.81E-04	N/A	24	EC	Average	<1%
											Benzene	71-43-2	3.31E-06	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	2.13E-04	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.04E-02	N/A	24	EC	Average	3%
											Nitrogen Oxides	10102-44-0	2.75E-02	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	1.28E-05	N/A	1, Annual	EC	Average	<1%
PR01	LINE_VOLUME	Main Entrance Road	N/A	N/A	N/A	N/A	N/A	N/A	428277	4758638	Particulate Matter	PM	6.04E-02 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	3.76E-02 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	5.48E-03 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	7.89E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	2.13E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.85E-02 [6]	N/A	24	EC	Average	6%
											Nitrogen Oxides	10102-44-0	4.99E-02 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	3.17E-05 [6]	N/A	1, Annual	EC	Average	<1%
PR01Z	LINE_VOLUME	Main Entrance Road, onsite equipment	N/A	N/A	N/A	N/A	N/A	N/A	428277	4758638	Particulate Matter	PM	6.16E-03 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	2.95E-03 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	4.59E-04 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	1.89E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	2.88E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.29E-03 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	3.59E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	3.63E-06 [6]	N/A	1, Annual	EC	Average	<1%
UR02Z	LINE_VOLUME	Access road to compost diversion area (CDA)	N/A	N/A	N/A	N/A	N/A	N/A	429167	4757583	Particulate Matter	PM	1.15E+00 [6]	N/A	24	EC	Average	2%
											PM10	PM10	3.48E-01 [6]	N/A	24	EC	Average	3%
											PM2.5	PM25	3.49E-02 [6]	N/A	24	EC	Average	2%
											Benzene	71-43-2	3.59E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	4.86E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.69E-03 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	4.78E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	5.85E-06 [6]	N/A	1, Annual	EC	Average	<1%
PR04A	LINE_VOLUME	Entrance to Scale House	N/A	N/A	N/A	N/A	N/A	N/A	428404	4758633	Particulate Matter	PM	7.61E-02 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	4.50E-02 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	6.62E-03 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	9.32E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	2.51E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	2.18E-02 [6]	N/A	24	EC	Average	7%
											Nitrogen Oxides	10102-44-0	5.89E-02 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	3.74E-05 [6]	N/A	1, Annual	EC	Average	<1%

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (ºC)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
PR04AZ	LINE_VOLUME	Entrance to Scale House, onsite equipment	N/A	N/A	N/A	N/A	N/A	N/A	428404	4758633	Particulate Matter	PM	7.95E-03 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	3.56E-03 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	5.63E-04 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	2.23E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	3.40E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.53E-03 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	4.23E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	4.28E-06 [6]	N/A	1, Annual	EC	Average	<1%
BR06	LINE_VOLUME	Across LF to WF southern section	N/A	N/A	N/A	N/A	N/A	N/A	428755	4757734	Particulate Matter	PM	1.11E+00 [6]	N/A	24	EC	Average	2%
											PM10	PM10	2.31E-01 [6]	N/A	24	EC	Average	2%
											PM2.5	PM25	4.53E-02 [6]	N/A	24	EC	Average	2%
											Benzene	71-43-2	2.31E-05 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	6.24E-04 [6]	N/A	24	EC	Average	2%
											Nitrogen Dioxide	NO2	5.42E-02 [6]	N/A	24	EC	Average	16%
											Nitrogen Oxides	10102-44-0	1.46E-01 [6]	N/A	1, 24	EC	Average	2%
											Sulphur Dioxide	7446-09-5	9.29E-05 [6]	N/A	1, Annual	EC	Average	<1%
BR06Z	LINE_VOLUME	Across LF to WF southern section, onsite equipment	N/A	N/A	N/A	N/A	N/A	N/A	428755	4757734	Particulate Matter	PM	9.30E-02 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	1.22E-02 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	3.04E-03 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	7.49E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	1.48E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	2.70E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	3.84E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	4.78E-05 [6]	N/A	1, Annual	EC	Average	<1%
BR06Y	LINE_VOLUME	Across LF to WF southern section, final cap construction truc	N/A	N/A	N/A	N/A	N/A	N/A	428755	4757734	Particulate Matter	PM	1.35E-01 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	1.76E-02 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	4.34E-03 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	7.49E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	1.50E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	3.83E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	4.86E-05 [6]	N/A	1, Annual	EC	Average	<1%
PR08Z	LINE_VOLUME	WF to SS/LTF	N/A	N/A	N/A	N/A	N/A	N/A	428750	4757727	Particulate Matter	PM	5.71E-02 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	1.06E-02 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	2.24E-03 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	6.54E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	1.17E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.92E-03 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	7.24E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	2.96E-05 [6]	N/A	1, Annual	EC	Average	<1%
PR08Y	LINE_VOLUME	WF to SS/LTF, final cap construction trucks	N/A	N/A	N/A	N/A	N/A	N/A	428750	4757727	Particulate Matter	PM	3.08E-02 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	4.05E-03 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	1.03E-03 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	3.81E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	7.60E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	1.94E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	2.47E-05 [6]	N/A	1, Annual	EC	Average	<1%
UR09AZ	LINE_VOLUME	WF to SS, to CDA turn off	N/A	N/A	N/A	N/A	N/A	N/A	429039	4757671	Particulate Matter	PM	1.51E+00 [6]	N/A	24	EC	Average	3%
											PM10	PM10	4.56E-01 [6]	N/A	24	EC	Average	4%
											PM2.5	PM25	4.57E-02 [6]	N/A	24	EC	Average	2%
											Benzene	71-43-2	4.40E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	7.61E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	8.59E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	3.74E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	1.97E-05 [6]	N/A	1, Annual	EC	Average	<1%
UR09AY	LINE_VOLUME	WF to SS, to CDA turn off, final cap construction trucks	N/A	N/A	N/A	N/A	N/A	N/A	429039	4757671	Particulate Matter	PM	9.65E-01 [6]	N/A	24	EC	Average	2%
											PM10	PM10	2.90E-01 [6]	N/A	24	EC	Average	2%
											PM2.5	PM25	2.91E-02 [6]	N/A	24	EC	Average	1%
											Benzene	71-43-2	2.62E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	5.23E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	1.34E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	1.70E-05 [6]	N/A	1, Annual	EC	Average	<1%

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (ºC)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
UR09BZ	LINE_VOLUME	WF to SS, after CDA turnoff	N/A	N/A	N/A	N/A	N/A	N/A	429164	4757579	Particulate Matter	PM	6.19E-01 [6]	N/A	24	EC	Average	1%
											PM10	PM10	1.86E-01 [6]	N/A	24	EC	Average	1%
											PM2.5	PM25	1.87E-02 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	2.18E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	4.35E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	1.11E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	1.41E-05 [6]	N/A	1, Annual	EC	Average	<1%
UR09BY	LINE_VOLUME	WF to SS, after CDA turnoff, final cap construction trucks	N/A	N/A	N/A	N/A	N/A	N/A	429164	4757579	Particulate Matter	PM	9.14E-01 [6]	N/A	24	EC	Average	2%
											PM10	PM10	2.75E-01 [6]	N/A	24	EC	Average	2%
											PM2.5	PM25	2.75E-02 [6]	N/A	24	EC	Average	1%
											Benzene	71-43-2	2.22E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	4.43E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	1.13E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	1.44E-05 [6]	N/A	1, Annual	EC	Average	<1%
UR11Z	LINE_VOLUME	Across SS	N/A	N/A	N/A	N/A	N/A	N/A	429160	4757399	Particulate Matter	PM	8.40E-01 [6]	N/A	24	EC	Average	2%
											PM10	PM10	2.53E-01 [6]	N/A	24	EC	Average	2%
											PM2.5	PM25	2.53E-02 [6]	N/A	24	EC	Average	1%
											Benzene	71-43-2	2.95E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	5.90E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	1.51E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	1.92E-05 [6]	N/A	1, Annual	EC	Average	<1%
UR11Y	LINE_VOLUME	Across SS, final cap construction trucks	N/A	N/A	N/A	N/A	N/A	N/A	429160	4757399	Particulate Matter	PM	1.24E+00 [6]	N/A	24	EC	Average	3%
											PM10	PM10	3.73E-01 [6]	N/A	24	EC	Average	3%
											PM2.5	PM25	3.73E-02 [6]	N/A	24	EC	Average	2%
											Benzene	71-43-2	3.01E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	6.01E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	1.54E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	1.95E-05 [6]	N/A	1, Annual	EC	Average	<1%
UR12	LINE_VOLUME	Across LF to WF northern section	N/A	N/A	N/A	N/A	N/A	N/A	429512	4757267	Particulate Matter	PM	1.81E+01 [6]	N/A	24	EC	Average	37%
											PM10	PM10	4.21E+00 [6]	N/A	24	EC	Average	33%
											PM2.5	PM25	4.27E-01 [6]	N/A	24	EC	Average	19%
											Benzene	71-43-2	3.35E-05 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	9.03E-04 [6]	N/A	24	EC	Average	3%
											Nitrogen Dioxide	NO2	7.85E-02 [6]	N/A	24	EC	Average	24%
											Nitrogen Oxides	10102-44-0	2.12E-01 [6]	N/A	1, 24	EC	Average	3%
											Sulphur Dioxide	7446-09-5	1.34E-04 [6]	N/A	1, Annual	EC	Average	<1%
UR12Z	LINE_VOLUME	Across LF to WF northern section, onsite equipment	N/A	N/A	N/A	N/A	N/A	N/A	429512	4757267	Particulate Matter	PM	1.65E+00 [6]	N/A	24	EC	Average	3%
											PM10	PM10	3.74E-01 [6]	N/A	24	EC	Average	3%
											PM2.5	PM25	3.76E-02 [6]	N/A	24	EC	Average	2%
											Benzene	71-43-2	1.08E-05 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	2.14E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	3.90E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	5.56E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	6.93E-05 [6]	N/A	1, Annual	EC	Average	<1%
UR12Y	LINE_VOLUME	Across LF to WF northern section, final cap construction truc	N/A	N/A	N/A	N/A	N/A	N/A	429512	4757267	Particulate Matter	PM	2.39E+00 [6]	N/A	24	EC	Average	5%
											PM10	PM10	5.42E-01 [6]	N/A	24	EC	Average	4%
											PM2.5	PM25	5.44E-02 [6]	N/A	24	EC	Average	2%
											Benzene	71-43-2	1.08E-05 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	2.17E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	5.54E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	7.04E-05 [6]	N/A	1, Annual	EC	Average	<1%
PR13Z	LINE_VOLUME	WF to LTF	N/A	N/A	N/A	N/A	N/A	N/A	429035	4757669	Particulate Matter	PM	3.96E-03 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	1.09E-03 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	1.94E-04 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	8.28E-08 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	3.70E-06 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	3.62E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	9.70E-04 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	5.75E-07 [6]	N/A	1, Annual	EC	Average	<1%

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (ºC)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
PR14Z	LINE_VOLUME	WF to LTF	N/A	N/A	N/A	N/A	N/A	N/A	429077	4757516	Particulate Matter	PM	1.46E-03 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	4.02E-04 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	7.12E-05 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	3.04E-08 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	1.36E-06 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.33E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	3.57E-04 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	2.12E-07 [6]	N/A	1, Annual	EC	Average	<1%
UR17Z	LINE_VOLUME	Across CDA	N/A	N/A	N/A	N/A	N/A	N/A	429514	4757517	Particulate Matter	PM	1.90E+00 [6]	N/A	24	EC	Average	4%
											PM10	PM10	5.71E-01 [6]	N/A	24	EC	Average	4%
											PM2.5	PM25	5.74E-02 [6]	N/A	24	EC	Average	3%
											Benzene	71-43-2	2.57E-05 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	5.93E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	4.46E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	1.97E-05 [6]	N/A	1, Annual	EC	Average	<1%
UR18Z	LINE_VOLUME	Across WF, onsite equipment	N/A	N/A	N/A	N/A	N/A	N/A	428567	4758798	Particulate Matter	PM	2.08E+00 [6]	N/A	24	EC	Average	4%
											PM10	PM10	6.34E-01 [6]	N/A	24	EC	Average	5%
											PM2.5	PM25	6.37E-02 [6]	N/A	24	EC	Average	3%
											Benzene	71-43-2	2.62E-05 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	7.02E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	2.00E-06 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	4.74E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	2.32E-05 [6]	N/A	1, Annual	EC	Average	<1%
PR04B	LINE_VOLUME	Scale House to WF	N/A	N/A	N/A	N/A	N/A	N/A	428477	4758211	Particulate Matter	PM	2.31E-01 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	1.28E-01 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	1.91E-02 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	2.61E-05 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	7.04E-04 [6]	N/A	24	EC	Average	2%
											Nitrogen Dioxide	NO2	6.12E-02 [6]	N/A	24	EC	Average	18%
											Nitrogen Oxides	10102-44-0	1.65E-01 [6]	N/A	1, 24	EC	Average	2%
											Sulphur Dioxide	7446-09-5	1.05E-04 [6]	N/A	1, Annual	EC	Average	<1%
PR04BZ	LINE_VOLUME	Scale House to WF, onsite equipment	N/A	N/A	N/A	N/A	N/A	N/A	428477	4758211	Particulate Matter	PM	2.47E-02 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	1.03E-02 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	1.65E-03 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	6.24E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	9.51E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	4.27E-03 [6]	N/A	24	EC	Average	1%
											Nitrogen Oxides	10102-44-0	1.18E-02 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	1.20E-05 [6]	N/A	1, Annual	EC	Average	<1%
PR04C	LINE_VOLUME	Exit Road from WF	N/A	N/A	N/A	N/A	N/A	N/A	428477	4758211	Particulate Matter	PM	7.12E-02 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	3.96E-02 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	5.89E-03 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	8.05E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	2.17E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.89E-02 [6]	N/A	24	EC	Average	6%
											Nitrogen Oxides	10102-44-0	5.09E-02 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	3.23E-05 [6]	N/A	1, Annual	EC	Average	<1%
PR04CZ	LINE_VOLUME	Exit Road from WF, onsite equipment	N/A	N/A	N/A	N/A	N/A	N/A	428477	4758211	Particulate Matter	PM	7.63E-03 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	3.18E-03 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	5.10E-04 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	1.92E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	2.93E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.32E-03 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	3.66E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	3.70E-06 [6]	N/A	1, Annual	EC	Average	<1%
MH17	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429326	4757612	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
LW6	AREA	Leachate Monitoring Well	N/A	N/A	N/A	N/A	N/A	N/A	429295	4757641	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
LW5	AREA	Leachate Monitoring Well	N/A	N/A	N/A	N/A	N/A	N/A	429414	4757638	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH3SB	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429460	4757818	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH3SD	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429216	4757819	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH3SC	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429211	4757771	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH3SE	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429326	4757780	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH4B	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429448	4758128	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
LW4	AREA	Leachate Monitoring Well	N/A	N/A	N/A	N/A	N/A	N/A	429414	4758056	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%

Appendix 5A-S1-M: Source Summary Table, Scenario 1 with Mitigation Applied

RWDI# 2101750

Twin Creeks Environmental Centre

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (ºC)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
LW3	AREA	Leachate Monitoring Well	N/A	N/A	N/A	N/A	N/A	N/A	429437	4758227	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH8AB	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429215	4758370	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH10	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429205	4758622	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH12AB	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429195	4758697	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH7AB	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429471	4758461	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
LW2	AREA	Leachate Monitoring Well	N/A	N/A	N/A	N/A	N/A	N/A	429451	4758527	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH9AB	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429473	4758617	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH11AB	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429473	4758632	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
LW1	AREA	Leachate Monitoring Well	N/A	N/A	N/A	N/A	N/A	N/A	429457	4758703	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
Total		Total of All Listed Sources									Benzene	71-43-2	7.35E-03					100%
											Vinyl Chloride (Chloroethylene)	75-01-4	3.97E-03					100%
											1,2-Dichloroethane	107-06-2	3.04E-03					100%
											Ammonia	7664-41-7	3.47E-02					100%
											Nitrogen Oxides	10102-44-0	8.14E+00					100%
											Particulate Matter	PM	4.90E+01					100%
											Sulphur Dioxide	7446-09-5	2.75E+00					100%
											Hydrogen Sulfide	7783-06-4	1.07E-01					100%
											Total Reduced Sulphur (TRS)	TRS	1.21E-01					100%
											PM10	PM10	1.30E+01					100%
											PM2.5	PM25	2.19E+00					100%
											Odour	ODOUR	4.23E+04					100%
											Dioxins and Furans	DF	1.70E-10					100%
											Nitrogen Dioxide	NO2	3.32E-01					100%

Notes:

[1] Emission Estimating Technique Short-Forms are V-ST (Validated Source Test), ST (Source Test), EF (Emission Factor), MB (Mass Balance), and EC (Engineering Calculation).

[2] Data Quality Categories: Highest; Above-Average; Average; and Marginal.

[3] For Odour, the units are OU/s and $OU/m^2/s$ for emission rate and flux rate.

[4] Material handling and wind erosion emissions vary by time of day depending on wind conditions in each hour. Hourly emission rates have been applied during modelling.

[5] Odour emissions from the active working face vary depending on the time of day. From 6 a.m. to 9 a.m. the active face is freshly uncovered waste as the daily cover is stripped and new waste is deposited. By 9 a.m. the entire active face has been covered by at least 1 foot to 1 metre of new waste. After 9 a.m. the emission factor for new waste at the active face is applied.

[6] Roadway traffic varies by time of day. The maximum emission rate (g/s) for the entire road segment is shown in this table; hourly emissions rates have been applied during modelling.

Appendix 5A-S1-M-5.1a: On-Site Mobile Equipment Emissions Spreadsheet, Mitigation Applied - Fugitive Dust (AM)

Project #2101750

Twin Creeks Environmental Centre - Preferred Alternative

UNPAVED ROAD SECTIONS - AP-42 Section 13.2.2

PAVED ROAD SECTIONS - AP-42 Section 13.2.1

Paved Roads:	$E = k\,(sL)^{0.91}\,(W)^{1.02}$
Unpaved Roads - Industrial:	$E = 281.9\,k\,(s / 12)^{a}\,(W / 3)^{b}$
Unpaved Roads - Public:	$E = 281.9\,k\,(s / 12)^{a}\,(S / 30)^{d} / (M / 0.5)^{c} - C$

E particulate emission factor (g/VKT) — **W** average weight of the vehicles traveling the road (US short tons) — **M** surface material moisture content (%)
k particle size multiplier (see below) — **s** surface material silt content (%) — **S** mean vehicle speed (mph)
sL road surface silt loading (g/m^2) — **C** emission factor for 1980's vehicle fleet exhaust, brake wear and tire wear — **a,b,c,d** constants (see below)

Route ID [1]	Route Description	Traffic Passes			Segment Length [2]	Road Surface [3]	Roadway Type [4]	Mean Vehicle Speed		Average Vehicle Weight [5]	Surface Material Moisture Content [6]	Surface Silt Content [7]	Road Surface Silt Loading [8]	Base AP-42 Emission Factor			Base Emission Rate			Additional Control Efficiency Applied	Final Controlled Emission Rate					
		Hourly	Daily	Annual										TSP	PM_{10}	$PM_{2.5}$	TSP	PM_{10}	$PM_{2.5}$		TSP	Data Quality Rating	PM_{10}	Data Quality Rating	$PM_{2.5}$	Data Quality Rating
		(#/h)	(#/d)	(#/a)	(m)			(km/h)	(mph)	(tons)	(%)	(%)	(g/m^2)	(g/VKT)	(g/VKT)	(g/VKT)	(g/s)	(g/s)	(g/s)	(%)	(g/s)		(g/s)		(g/s)	
PR01	Main Entrance Road	1	1	1	206	Paved	Industrial	10	6	30.2	--	--	0.63	1.0E+02	1.3E+01	3.2E+00	5.8E-03	7.5E-04	1.8E-04	95%	2.9E-04	--	3.8E-05	--	9.1E-06	--
PR01Z	Main Entrance Road, onsite equipment	1	1	1	206	Paved	Industrial	10	6	30.2	--	--	0.63	1.0E+02	1.3E+01	3.2E+00	5.8E-03	7.5E-04	1.8E-04	95%	2.9E-04	--	3.8E-05	--	9.1E-06	--
UR02Z	Access road to compost diversion area (CDA)	1	1	1	414	Unpaved	Industrial	10	6	15.5	--	43.1%	--	9.3E+03	2.8E+03	2.8E+02	1.1E+00	3.2E-01	3.2E-02	90%	1.1E-01	--	3.2E-02	--	3.2E-03	--
PR04A	Entrance to Scale House	1	1	1	487	Paved	Industrial	10	6	34.9	--	--	0.63	1.2E+02	1.5E+01	3.7E+00	1.6E-02	2.1E-03	5.0E-04	95%	8.0E-04	--	1.0E-04	--	2.5E-05	--
PR04AZ	Entrance to Scale House, onsite equipment	1	1	1	487	Paved	Industrial	10	6	34.9	--	--	0.63	1.2E+02	1.5E+01	3.7E+00	1.6E-02	2.1E-03	5.0E-04	95%	8.0E-04	--	1.0E-04	--	2.5E-05	--
BR06	Across LF to WF southern section	1	1	1	603	Paved	Industrial	10	6	41.2	--	--	3.53	6.7E+02	8.7E+01	2.1E+01	1.1E-01	1.5E-02	3.5E-03	90%	1.1E-02	--	1.5E-03	--	3.5E-04	--
BR06Z	Across LF to WF southern section, onsite equipment	1	1	1	603	Paved	Industrial	10	6	41.2	--	--	3.53	6.7E+02	8.7E+01	2.1E+01	1.1E-01	1.5E-02	3.5E-03	90%	1.1E-02	--	1.5E-03	--	3.5E-04	--
BR06Y	Across LF to WF southern section, final cap construction trucks	1	1	1	603	Paved	Industrial	10	6	41.2	--	--	3.53	6.7E+02	8.7E+01	2.1E+01	1.1E-01	1.5E-02	3.5E-03	90%	1.1E-02	--	1.5E-03	--	3.5E-04	--
PR08Z	WF to SS/LTF	1	1	1	307	Paved	Industrial	10	6	37.1	--	--	3.53	6.0E+02	7.8E+01	1.9E+01	5.1E-02	6.6E-03	1.6E-03	95%	2.6E-03	--	3.3E-04	--	8.0E-05	--
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	1	307	Paved	Industrial	10	6	37.1	--	--	3.53	6.0E+02	7.8E+01	1.9E+01	5.1E-02	6.6E-03	1.6E-03	95%	2.6E-03	--	3.3E-04	--	8.0E-05	--
UR09AZ	WF to SS, to CDA turn off	1	1	1	211	Unpaved	Industrial	10	6	36.7	--	43.1%	--	1.4E+04	4.1E+03	4.1E+02	8.0E-01	2.4E-01	2.4E-02	90%	8.0E-02	--	2.4E-02	--	2.4E-03	--
UR09AY	WF to SS, to CDA turn off	1	1	1	211	Unpaved	Industrial	10	6	36.7	--	43.1%	--	1.4E+04	4.1E+03	4.1E+02	8.0E-01	2.4E-01	2.4E-02	90%	8.0E-02	--	2.4E-02	--	2.4E-03	--
UR09BZ	WF to SS, after CDA turnoff	1	1	1	179	Unpaved	Industrial	10	6	47.2	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	7.6E-01	2.3E-01	2.3E-02	90%	7.6E-02	--	2.3E-02	--	2.3E-03	--
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	1	179	Unpaved	Industrial	10	6	47.2	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	7.6E-01	2.3E-01	2.3E-02	90%	7.6E-02	--	2.3E-02	--	2.3E-03	--
UR11Z	Across SS	1	1	1	242	Unpaved	Industrial	10	6	47.2	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	1.0E+00	3.1E-01	3.1E-02	90%	1.0E-01	--	3.1E-02	--	3.1E-03	--
UR11Y	Across SS, final cap construction trucks	1	1	1	242	Unpaved	Industrial	10	6	47.2	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	1.0E+00	3.1E-01	3.1E-02	90%	1.0E-01	--	3.1E-02	--	3.1E-03	--
UR12	Across LF to WF northern section	1	1	1	873	Unpaved	Industrial	10	6	41.2	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	2.0E+00	4.5E-01	4.5E-02	90%	2.0E-01	--	4.5E-02	--	4.5E-03	--
UR12Z	Across LF to WF northern section, onsite equipment	1	1	1	873	Unpaved	Industrial	10	6	41.2	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	2.0E+00	4.5E-01	4.5E-02	90%	2.0E-01	--	4.5E-02	--	4.5E-03	--
UR12Y	Across LF to WF northern section, final cap construction trucks	1	1	1	873	Unpaved	Industrial	10	6	41.2	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	2.0E+00	4.5E-01	4.5E-02	90%	2.0E-01	--	4.5E-02	--	4.5E-03	--
PR13Z	WF to LTF	1	1	1	165	Paved	Industrial	10	6	44.3	--	--	3.53	7.2E+02	9.3E+01	2.3E+01	3.3E-02	4.3E-03	1.0E-03	95%	1.6E-03	--	2.1E-04	--	5.2E-05	--
PR14Z	WF to LTF	1	1	1	61	Paved	Industrial	10	6	44.3	--	--	3.53	7.2E+02	9.3E+01	2.3E+01	1.2E-02	1.6E-03	3.8E-04	95%	6.1E-04	--	7.9E-05	--	1.9E-05	--
UR17Z	Across CDA	1	1	1	90	Unpaved	Industrial	10	6	36.4	--	43.1%	--	1.4E+04	4.1E+03	4.1E+02	3.4E-01	1.0E-01	1.0E-02	90%	3.4E-02	--	1.0E-02	--	1.0E-03	--
UR18Z	Across WF, onsite equipment	1	1	1	45	Unpaved	Industrial	10	6	36.4	--	44.7%	--	1.4E+04	4.2E+03	4.2E+02	1.7E-01	5.3E-02	5.3E-03	90%	1.7E-02	--	5.3E-03	--	5.3E-04	--
PR04B	Scale House to WF	1	1	1	681	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	2.6E-02	3.4E-03	8.2E-04	95%	1.3E-03	--	1.7E-04	--	4.1E-05	--
PR04BZ	Scale House to WF, onsite equipment	1	1	1	681	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	2.6E-02	3.4E-03	8.2E-04	95%	1.3E-03	--	1.7E-04	--	4.1E-05	--
PR04C	Exit Road from WF	1	1	1	420	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	1.6E-02	2.1E-03	5.1E-04	95%	8.1E-04	--	1.0E-04	--	2.5E-05	--
PR04CZ	Exit Road from WF, onsite equipment	1	1	1	420	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	1.6E-02	2.1E-03	5.1E-04	95%	8.1E-04	--	1.0E-04	--	2.5E-05	--

Constants for Mobile Emission Equations

Roadway Type	Contaminant	k	a	b	c	d	Quality
Paved Roads:	**$PM_{2.5}$**	0.15	-	-	-	-	-
	PM_{10}	0.62	-	-	-	-	-
	TSP	4.79	-	-	-	-	-
Unpaved Roads - Industrial:	**$PM_{2.5}$**	0.15	0.9	0.45	-	-	C
	PM_{10}	1.5	0.9	0.45	-	-	B
	TSP	7.32	0.6	0.45	-	-	B
Unpaved Roads - Public:	**$PM_{2.5}$**	0.18	1	-	0.2	0.5	C
	PM_{10}	1.8	1	-	0.2	0.5	B
	TSP	8.96	1	-	0.49	0.2	B

[1] Route ID numbers provided on site plan.
[2] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.
[3] Paved surfaces include asphalt, concrete, and recycled asphalt (if it forms a relatively consistent surface).
[4] Publicly accessible and dominated by light vehicles, or industrial, and dominated by heavy vehicles.
[5] The average vehicle weight reflects the average of the empty and loaded vehicle weight, for travel in both directions.
[6] Required only for publicly accessible unpaved roads.
[7] Required only for unpaved roads (public and industrial).
[8] Required only for industrial paved roads.

Sample calculation for uncontrolled TSP emission factor for Source PR01: Main Entrance Road

EF = 281.9 x (4.9) x [(0% / 12)]^(0.7) x [(36.6087628865979 tons) / 3]^(0.45) = 102 g TSP / vehicle kilometer travelled (vkt)

Sample calculation for TSP emission rate for Source PR01: Main Entrance Road

$$\frac{1 \text{ vehicles}}{1 \text{ h}} \times \frac{206 \text{ m}}{1 \text{ km}} \times \frac{1 \text{ km}}{1000 \text{ m}} \times \frac{102 \text{ } g_{TSP}}{1 \text{ vehicle km}} \times \frac{1 \text{ h}}{3600 \text{ s}} \times \frac{0.05 \text{ } g_{TSP\ uncontrolled}}{1 \text{ } g_{TSP}} = 2.9E\text{-}04 \text{ } g_{TSP} / \text{s}$$

Comments

Appendix 5A-S1-M-5.1a: On-Site Mobile Equipment Emissions Spreadsheet, Mitigation Applied - Fugitive Dust (MD)

Project #2101750

Twin Creeks Environmental Centre - Preferred Alternative

UNPAVED ROAD SECTIONS - AP-42 Section 13.2.2

PAVED ROAD SECTIONS - AP-42 Section 13.2.1

Paved Roads:	$E = k\,(sL)^{0.91}\,(W)^{1.02}$
Unpaved Roads - Industrial:	$E = 281.9\,k\,(s/12)^{a}\,(W/3)^{b}$
Unpaved Roads - Public:	$E = 281.9\,k\,(s/12)^{a}\,(S/30)^{d}\,/\,(M/0.5)^{c} - C$

E particulate emission factor (g/VKT)
k particle size multiplier (see below)
sL road surface silt loading (g/m^2)
W average weight of the vehicles traveling the road (US short tons)
s surface material silt content (%)
C emission factor for 1980's vehicle fleet exhaust, brake wear and tire wear
M surface material moisture content (%)
S mean vehicle speed (mph)
a,b,c,d constants (see below)

Route ID [1]	Route Description	Traffic Passes			Segment Length [2]	Road Surface [3]	Roadway Type [4]	Mean Vehicle Speed		Average Vehicle Weight [5]	Surface Material Moisture Content [6]	Surface Silt Content [7]	Road Surface Silt Loading [8]	Base AP-42 Emission Factor			Base Emission Rate			Additional Control Efficiency Applied	Final Controlled Emission Rate					
		Hourly	Daily	Annual										TSP	PM_{10}	$PM_{2.5}$	TSP	PM_{10}	$PM_{2.5}$		TSP	Data Quality Rating	PM_{10}	Data Quality Rating	$PM_{2.5}$	Data Quality Rating
		(#/h)	(#/d)	(#/a)	(m)			(km/h)	(mph)	(tons)	(%)	(%)	(g/m^2)	(g/VKT)	(g/VKT)	(g/VKT)	(g/s)	(g/s)	(g/s)	(%)	(g/s)		(g/s)		(g/s)	
PR01	Main Entrance Road	1	1	1	206	Paved	Industrial	10	6	30.2	--	--	0.63	1.0E+02	1.3E+01	3.2E+00	5.8E-03	7.5E-04	1.8E-04	95%	2.9E-04	--	3.8E-05	--	9.1E-06	--
PR01Z	Main Entrance Road, onsite equipment	1	1	1	206	Paved	Industrial	10	6	30.2	--	--	0.63	1.0E+02	1.3E+01	3.2E+00	5.8E-03	7.5E-04	1.8E-04	95%	2.9E-04	--	3.8E-05	--	9.1E-06	--
UR02Z	Access road to compost diversion area (CDA)	1	1	1	414	Unpaved	Industrial	10	6	15.5	--	43.1%	--	9.3E+03	2.8E+03	2.8E+02	1.1E+00	3.2E-01	3.2E-02	90%	1.1E-01	--	3.2E-02	--	3.2E-03	--
PR04A	Entrance to Scale House	1	1	1	487	Paved	Industrial	10	6	34.9	--	--	0.63	1.2E+02	1.5E+01	3.7E+00	1.6E-02	2.1E-03	5.0E-04	95%	8.0E-04	--	1.0E-04	--	2.5E-05	--
PR04AZ	Entrance to Scale House, onsite equipment	1	1	1	487	Paved	Industrial	10	6	34.9	--	--	0.63	1.2E+02	1.5E+01	3.7E+00	1.6E-02	2.1E-03	5.0E-04	95%	8.0E-04	--	1.0E-04	--	2.5E-05	--
BR06	Across LF to WF southern section	1	1	1	603	Paved	Industrial	10	6	41.2	--	--	3.53	6.7E+02	8.7E+01	2.1E+01	1.1E-01	1.5E-02	3.5E-03	90%	1.1E-02	--	1.5E-03	--	3.5E-04	--
BR06Z	Across LF to WF southern section, onsite equipment	1	1	1	603	Paved	Industrial	10	6	41.2	--	--	3.53	6.7E+02	8.7E+01	2.1E+01	1.1E-01	1.5E-02	3.5E-03	90%	1.1E-02	--	1.5E-03	--	3.5E-04	--
BR06Y	Across LF to WF southern section, final cap construction trucks	1	1	1	603	Paved	Industrial	10	6	41.2	--	--	3.53	6.7E+02	8.7E+01	2.1E+01	1.1E-01	1.5E-02	3.5E-03	90%	1.1E-02	--	1.5E-03	--	3.5E-04	--
PR08Z	WF to SS/LTF	1	1	1	307	Paved	Industrial	10	6	37.1	--	--	3.53	6.0E+02	7.8E+01	1.9E+01	5.1E-02	6.6E-03	1.6E-03	95%	2.6E-03	--	3.3E-04	--	8.0E-05	--
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	1	307	Paved	Industrial	10	6	37.1	--	--	3.53	6.0E+02	7.8E+01	1.9E+01	5.1E-02	6.6E-03	1.6E-03	95%	2.6E-03	--	3.3E-04	--	8.0E-05	--
UR09AZ	WF to SS, to CDA turn off	1	1	1	211	Unpaved	Industrial	10	6	36.7	--	43.1%	--	1.4E+04	4.1E+03	4.1E+02	8.0E-01	2.4E-01	2.4E-02	90%	8.0E-02	--	2.4E-02	--	2.4E-03	--
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	1	211	Unpaved	Industrial	10	6	36.7	--	43.1%	--	1.4E+04	4.1E+03	4.1E+02	8.0E-01	2.4E-01	2.4E-02	90%	8.0E-02	--	2.4E-02	--	2.4E-03	--
UR09BZ	WF to SS, after CDA turnoff	1	1	1	179	Unpaved	Industrial	10	6	47.2	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	7.6E-01	2.3E-01	2.3E-02	90%	7.6E-02	--	2.3E-02	--	2.3E-03	--
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	1	179	Unpaved	Industrial	10	6	47.2	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	7.6E-01	2.3E-01	2.3E-02	90%	7.6E-02	--	2.3E-02	--	2.3E-03	--
UR11Z	Across SS	1	1	1	242	Unpaved	Industrial	10	6	47.2	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	1.0E+00	3.1E-01	3.1E-02	90%	1.0E-01	--	3.1E-02	--	3.1E-03	--
UR11Y	Across SS, final cap construction trucks	1	1	1	242	Unpaved	Industrial	10	6	47.2	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	1.0E+00	3.1E-01	3.1E-02	90%	1.0E-01	--	3.1E-02	--	3.1E-03	--
UR12	Across LF to WF northern section	1	1	1	873	Unpaved	Industrial	10	6	41.2	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	2.0E+00	4.5E-01	4.5E-02	90%	2.0E-01	--	4.5E-02	--	4.5E-03	--
UR12Z	Across LF to WF northern section, onsite equipment	1	1	1	873	Unpaved	Industrial	10	6	41.2	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	2.0E+00	4.5E-01	4.5E-02	90%	2.0E-01	--	4.5E-02	--	4.5E-03	--
UR12Y	Across LF to WF northern section, final cap construction trucks	1	1	1	873	Unpaved	Industrial	10	6	41.2	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	2.0E+00	4.5E-01	4.5E-02	90%	2.0E-01	--	4.5E-02	--	4.5E-03	--
PR13Z	WF to LTF	1	1	1	165	Paved	Industrial	10	6	44.3	--	--	3.53	7.2E+02	9.3E+01	2.3E+01	3.3E-02	4.3E-03	1.0E-03	95%	1.6E-03	--	2.1E-04	--	5.2E-05	--
PR14Z	WF to LTF	1	1	1	61	Paved	Industrial	10	6	44.3	--	--	3.53	7.2E+02	9.3E+01	2.3E+01	1.2E-02	1.6E-03	3.8E-04	95%	6.1E-04	--	7.9E-05	--	1.9E-05	--
UR17Z	Across CDA	1	1	1	90	Unpaved	Industrial	10	6	36.4	--	43.1%	--	1.4E+04	4.1E+03	4.1E+02	3.4E-01	1.0E-01	1.0E-02	90%	3.4E-02	--	1.0E-02	--	1.0E-03	--
UR18Z	Across WF, onsite equipment	1	1	1	45	Unpaved	Industrial	10	6	36.4	--	44.7%	--	1.4E+04	4.2E+03	4.2E+02	1.7E-01	5.3E-02	5.3E-03	90%	1.7E-02	--	5.3E-03	--	5.3E-04	--
PR04B	Scale House to WF	1	1	1	681	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	2.6E-02	3.4E-03	8.2E-04	95%	1.3E-03	--	1.7E-04	--	4.1E-05	--
PR04BZ	Scale House to WF, onsite equipment	1	1	1	681	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	2.6E-02	3.4E-03	8.2E-04	95%	1.3E-03	--	1.7E-04	--	4.1E-05	--
PR04C	Exit Road from WF	1	1	1	420	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	1.6E-02	2.1E-03	5.1E-04	95%	8.1E-04	--	1.0E-04	--	2.5E-05	--
PR04CZ	Exit Road from WF, onsite equipment	1	1	1	420	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	1.6E-02	2.1E-03	5.1E-04	95%	8.1E-04	--	1.0E-04	--	2.5E-05	--

Constants for Mobile Emission Equations

Roadway Type	Contaminant	k	a	b	c	d	Quality
Paved Roads:	**$PM_{2.5}$**	0.15	-	-	-	-	-
	PM_{10}	0.62	-	-	-	-	-
	TSP	4.79	-	-	-	-	-
Unpaved Roads - Industrial:	**$PM_{2.5}$**	0.15	0.9	0.45	-	-	C
	PM_{10}	1.5	0.9	0.45	-	-	B
	TSP	7.32	0.6	0.45	-	-	B
Unpaved Roads - Public:	**$PM_{2.5}$**	0.18	1	-	0.2	0.5	C
	PM_{10}	1.8	1	-	0.2	0.5	B
	TSP	8.96	1	-	0.49	0.2	B

[1] Route ID numbers provided on site plan.
[2] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.
[3] Paved surfaces include asphalt, concrete, and recycled asphalt (if it forms a relatively consistent surface).
[4] Publicly accessible and dominated by light vehicles, or industrial, and dominated by heavy vehicles.
[5] The average vehicle weight reflects the average of the empty and loaded vehicle weight, for travel in both directions.
[6] Required only for publicly accessible unpaved roads.
[7] Required only for unpaved roads (public and industrial).
[8] Required only for industrial paved roads.

Sample calculation for uncontrolled TSP emission factor for Source PR01: Main Entrance Road

EF = 281.9 x (4.9) x [(0% / 12)]^(0.7) x [(36.6087628865979 tons) / 3]^(0.45) = 102 g TSP / vehicle kilometer travelled (vkt)

Sample calculation for TSP emission rate for Source PR01: Main Entrance Road

$$\frac{1 \text{ vehicles}}{1 \text{ h}} \times \frac{206 \text{ m}}{1 \text{ km}} \times \frac{1 \text{ km}}{1000 \text{ m}} \times \frac{102 \text{ } g_{TSP}}{1 \text{ vehicle km}} \times \frac{1 \text{ h}}{3600 \text{ s}} \times \frac{0.05 \text{ } g_{TSP\ uncontrolled}}{1 \text{ } g_{TSP}} = 2.9E\text{-}04 \text{ } g_{TSP} / \text{s}$$

Comments

Appendix 5A-S1-M-5.1a: On-Site Mobile Equipment Emissions Spreadsheet, Mitigation Applied - Fugitive Dust (PM)

Project #2101750

Twin Creeks Environmental Centre - Preferred Alternative

UNPAVED ROAD SECTIONS - AP-42 Section 13.2.2

PAVED ROAD SECTIONS - AP-42 Section 13.2.1

Paved Roads:	$E = k\,(sL)^{0.91}\,(W)^{1.02}$
Unpaved Roads - Industrial:	$E = 281.9\,k\,(s/12)^{a}\,(W/3)^{b}$
Unpaved Roads - Public:	$E = 281.9\,k\,(s/12)^{a}\,(S/30)^{d}\,/\,(M/0.5)^{c} - C$

E particulate emission factor (g/VKT) — **W** average weight of the vehicles traveling the road (US short tons) — **M** surface material moisture content (%)
k particle size multiplier (see below) — **s** surface material silt content (%) — **S** mean vehicle speed (mph)
sL road surface silt loading (g/m^2) — **C** emission factor for 1980's vehicle fleet exhaust, brake wear and tire wear — **a,b,c,d** constants (see below)

Route ID [1]	Route Description	Traffic Passes			Segment Length [2]	Road Surface [3]	Roadway Type [4]	Mean Vehicle Speed		Average Vehicle Weight [5]	Surface Material Moisture Content [6]	Surface Silt Content [7]	Road Surface Silt Loading [8]	Base AP-42 Emission Factor			Base Emission Rate			Additional Control Efficiency Applied	Final Controlled Emission Rate					
		Hourly	Daily	Annual										TSP	PM_{10}	$PM_{2.5}$	TSP	PM_{10}	$PM_{2.5}$		TSP	Data Quality Rating	PM_{10}	Data Quality Rating	$PM_{2.5}$	Data Quality Rating
		(#/h)	(#/d)	(#/a)	(m)			(km/h)	(mph)	(tons)	(%)	(%)	(g/m^2)	(g/VKT)	(g/VKT)	(g/VKT)	(g/s)	(g/s)	(g/s)	(%)	(g/s)		(g/s)		(g/s)	
PR01	Main Entrance Road	1	1	1	206	Paved	Industrial	10	6	30.2	--	--	0.63	1.0E+02	1.3E+01	3.2E+00	5.8E-03	7.5E-04	1.8E-04	95%	2.9E-04	--	3.8E-05	--	9.1E-06	--
PR01Z	Main Entrance Road, onsite equipment	1	1	1	206	Paved	Industrial	10	6	30.2	--	--	0.63	1.0E+02	1.3E+01	3.2E+00	5.8E-03	7.5E-04	1.8E-04	95%	2.9E-04	--	3.8E-05	--	9.1E-06	--
UR02Z	Access road to compost diversion area (CDA)	1	1	1	414	Unpaved	Industrial	10	6	15.5	--	43.1%	--	9.3E+03	2.8E+03	2.8E+02	1.1E+00	3.2E-01	3.2E-02	90%	1.1E-01	--	3.2E-02	--	3.2E-03	--
PR04A	Entrance to Scale House	1	1	1	487	Paved	Industrial	10	6	34.9	--	--	0.63	1.2E+02	1.5E+01	3.7E+00	1.6E-02	2.1E-03	5.0E-04	95%	8.0E-04	--	1.0E-04	--	2.5E-05	--
PR04AZ	Entrance to Scale House, onsite equipment	1	1	1	487	Paved	Industrial	10	6	34.9	--	--	0.63	1.2E+02	1.5E+01	3.7E+00	1.6E-02	2.1E-03	5.0E-04	95%	8.0E-04	--	1.0E-04	--	2.5E-05	--
BR06	Across LF to WF southern section	1	1	1	603	Paved	Industrial	10	6	41.2	--	--	3.53	6.7E+02	8.7E+01	2.1E+01	1.1E-01	1.5E-02	3.5E-03	90%	1.1E-02	--	1.5E-03	--	3.5E-04	--
BR06Z	Across LF to WF southern section, onsite equipment	1	1	1	603	Paved	Industrial	10	6	41.2	--	--	3.53	6.7E+02	8.7E+01	2.1E+01	1.1E-01	1.5E-02	3.5E-03	90%	1.1E-02	--	1.5E-03	--	3.5E-04	--
BR06Y	Across LF to WF southern section, final cap construction trucks	1	1	1	603	Paved	Industrial	10	6	41.2	--	--	3.53	6.7E+02	8.7E+01	2.1E+01	1.1E-01	1.5E-02	3.5E-03	90%	1.1E-02	--	1.5E-03	--	3.5E-04	--
PR08Z	WF to SS/LTF	1	1	1	307	Paved	Industrial	10	6	37.1	--	--	3.53	6.0E+02	7.8E+01	1.9E+01	5.1E-02	6.6E-03	1.6E-03	95%	2.6E-03	--	3.3E-04	--	8.0E-05	--
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	1	307	Paved	Industrial	10	6	37.1	--	--	3.53	6.0E+02	7.8E+01	1.9E+01	5.1E-02	6.6E-03	1.6E-03	95%	2.6E-03	--	3.3E-04	--	8.0E-05	--
UR09AZ	WF to SS, to CDA turn off	1	1	1	211	Unpaved	Industrial	10	6	36.7	--	43.1%	--	1.4E+04	4.1E+03	4.1E+02	8.0E-01	2.4E-01	2.4E-02	90%	8.0E-02	--	2.4E-02	--	2.4E-03	--
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	1	211	Unpaved	Industrial	10	6	36.7	--	43.1%	--	1.4E+04	4.1E+03	4.1E+02	8.0E-01	2.4E-01	2.4E-02	90%	8.0E-02	--	2.4E-02	--	2.4E-03	--
UR09BZ	WF to SS, after CDA turnoff	1	1	1	179	Unpaved	Industrial	10	6	47.2	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	7.6E-01	2.3E-01	2.3E-02	90%	7.6E-02	--	2.3E-02	--	2.3E-03	--
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	1	179	Unpaved	Industrial	10	6	47.2	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	7.6E-01	2.3E-01	2.3E-02	90%	7.6E-02	--	2.3E-02	--	2.3E-03	--
UR11Z	Across SS	1	1	1	242	Unpaved	Industrial	10	6	47.2	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	1.0E+00	3.1E-01	3.1E-02	90%	1.0E-01	--	3.1E-02	--	3.1E-03	--
UR11Y	Across SS, final cap construction trucks	1	1	1	242	Unpaved	Industrial	10	6	47.2	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	1.0E+00	3.1E-01	3.1E-02	90%	1.0E-01	--	3.1E-02	--	3.1E-03	--
UR12	Across LF to WF northern section	1	1	1	873	Unpaved	Industrial	10	6	41.2	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	2.0E+00	4.5E-01	4.5E-02	90%	2.0E-01	--	4.5E-02	--	4.5E-03	--
UR12Z	Across LF to WF northern section, onsite equipment	1	1	1	873	Unpaved	Industrial	10	6	41.2	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	2.0E+00	4.5E-01	4.5E-02	90%	2.0E-01	--	4.5E-02	--	4.5E-03	--
UR12Y	Across LF to WF northern section, final cap construction trucks	1	1	1	873	Unpaved	Industrial	10	6	41.2	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	2.0E+00	4.5E-01	4.5E-02	90%	2.0E-01	--	4.5E-02	--	4.5E-03	--
PR13Z	WF to LTF	1	1	1	165	Paved	Industrial	10	6	44.3	--	--	3.53	7.2E+02	9.3E+01	2.3E+01	3.3E-02	4.3E-03	1.0E-03	95%	1.6E-03	--	2.1E-04	--	5.2E-05	--
PR14Z	WF to LTF	1	1	1	61	Paved	Industrial	10	6	44.3	--	--	3.53	7.2E+02	9.3E+01	2.3E+01	1.2E-02	1.6E-03	3.8E-04	95%	6.1E-04	--	7.9E-05	--	1.9E-05	--
UR17Z	Across CDA	1	1	1	90	Unpaved	Industrial	10	6	36.4	--	43.1%	--	1.4E+04	4.1E+03	4.1E+02	3.4E-01	1.0E-01	1.0E-02	90%	3.4E-02	--	1.0E-02	--	1.0E-03	--
UR18Z	Across WF, onsite equipment	1	1	1	45	Unpaved	Industrial	10	6	36.4	--	44.7%	--	1.4E+04	4.2E+03	4.2E+02	1.7E-01	5.3E-02	5.3E-03	90%	1.7E-02	--	5.3E-03	--	5.3E-04	--
PR04B	Scale House to WF	1	1	1	681	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	2.6E-02	3.4E-03	8.2E-04	95%	1.3E-03	--	1.7E-04	--	4.1E-05	--
PR04BZ	Scale House to WF, onsite equipment	1	1	1	681	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	2.6E-02	3.4E-03	8.2E-04	95%	1.3E-03	--	1.7E-04	--	4.1E-05	--
PR04C	Exit Road from WF	1	1	1	420	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	1.6E-02	2.1E-03	5.1E-04	95%	8.1E-04	--	1.0E-04	--	2.5E-05	--
PR04CZ	Exit Road from WF, onsite equipment	1	1	1	420	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	1.6E-02	2.1E-03	5.1E-04	95%	8.1E-04	--	1.0E-04	--	2.5E-05	--

Constants for Mobile Emission Equations

Roadway Type	Contaminant	k	a	b	c	d	Quality
Paved Roads:	**$PM_{2.5}$**	0.15	-	-	-	-	-
	PM_{10}	0.62	-	-	-	-	-
	TSP	4.79	-	-	-	-	-
Unpaved Roads - Industrial:	**$PM_{2.5}$**	0.15	0.9	0.45	-	-	C
	PM_{10}	1.5	0.9	0.45	-	-	B
	TSP	7.32	0.6	0.45	-	-	B
Unpaved Roads - Public:	**$PM_{2.5}$**	0.18	1	-	0.2	0.5	C
	PM_{10}	1.8	1	-	0.2	0.5	B
	TSP	8.96	1	-	0.49	0.2	B

[1] Route ID numbers provided on site plan.
[2] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.
[3] Paved surfaces include asphalt, concrete, and recycled asphalt (if it forms a relatively consistent surface).
[4] Publicly accessible and dominated by light vehicles, or industrial, and dominated by heavy vehicles.
[5] The average vehicle weight reflects the average of the empty and loaded vehicle weight, for travel in both directions.
[6] Required only for publicly accessible unpaved roads.
[7] Required only for unpaved roads (public and industrial).
[8] Required only for industrial paved roads.

Sample calculation for uncontrolled TSP emission factor for Source PR01: Main Entrance Road

EF = 281.9 x (4.9) x [(0% / 12)]^(0.7) x [(36.6087628865979 tons) / 3]^(0.45) = 102 g TSP / vehicle kilometer travelled (vkt)

Sample calculation for TSP emission rate for Source PR01: Main Entrance Road

$$\frac{1 \text{ vehicles}}{1 \text{ h}} \times \frac{206 \text{ m}}{1 \text{ km}} \times \frac{1 \text{ km}}{1000 \text{ m}} \times \frac{102 \text{ } g_{TSP}}{1 \text{ vehicle km}} \times \frac{1 \text{ h}}{3600 \text{ s}} \times \frac{0.05 \text{ } g_{TSP\ uncontrolled}}{1 \text{ } g_{TSP}} = 2.9E\text{-}04 \text{ } g_{TSP} / \text{s}$$

Comments

Appendix 5A-S1-M-5.1b: Vehicle Emission Rates - Tailpipe Emissions, Mitigation Applied, AM

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Tailpipe Emission Factor [5] TSP PM (g/vkt)	TSP PM (g/h)	PM10 PM10 (g/vkt)	PM10 PM10 (g/h)	PM2.5 PM25 (g/vkt)	PM2.5 PM25 (g/h)	Benzene 71-43-2 (g/vkt)	Benzene 71-43-2 (g/h)	Ammonia 7664-41-7 (g/vkt)	Ammonia 7664-41-7 (g/h)	Nitrogen Dioxide NO2 (g/vkt)	Nitrogen Dioxide NO2 (g/h)	Nitrogen Oxides 10102-44-0 (g/vkt)	Nitrogen Oxides 10102-44-0 (g/h)
Mobile Equipment																				
PR01	Main Entrance Road	1	1	206	10	100%	6.63E+00	0.00E+00	6.63E+00	0.00E+00	9.05E-01	0.00E+00	1.53E-03	0.00E+00	4.13E-02	0.00E+00	3.59E+00	0.00E+00	9.68E+00	0.00E+00
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	0.00E+00	7.00E-01	0.00E+00	7.00E-01	0.00E+00	9.75E-02	0.00E+00	5.36E-04	0.00E+00	8.17E-03	0.00E+00	3.67E-01	0.00E+00	1.02E+00
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	0.00E+00	1.11E+00	0.00E+00	1.11E+00	0.00E+00	1.56E-01	0.00E+00	1.21E-03	0.00E+00	1.64E-02	0.00E+00	5.69E-01	0.00E+00	1.61E+00
PR04A	Entrance to Scale House	1	1	487	10	100%	6.63E+00	1.16E+00	6.63E+00	1.16E+00	9.05E-01	1.74E-01	1.53E-03	2.77E-03	4.13E-02	2.28E-02	3.59E+00	5.48E-01	9.68E+00	1.71E+00
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	0.00E+00	1.66E+00	0.00E+00	1.66E+00	0.00E+00	2.30E-01	0.00E+00	1.27E-03	0.00E+00	1.93E-02	0.00E+00	8.67E-01	0.00E+00	2.41E+00
BR06	Across LF to WF southern section	1	1	603	10	100%	6.63E+00	0.00E+00	6.63E+00	0.00E+00	9.05E-01	0.00E+00	1.53E-03	0.00E+00	4.13E-02	0.00E+00	3.59E+00	0.00E+00	9.68E+00	0.00E+00
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	0.00E+00	8.01E-02	0.00E+00	8.01E-02	0.00E+00	5.73E-02	0.00E+00	3.26E-03	0.00E+00	6.44E-02	0.00E+00	1.17E-02	0.00E+00	1.67E+00
BR06Y	Across LF to WF southern section, final cap construction truck	1	1	603	10	100%	0.00E+00	3.88E-02	0.00E+00	3.88E-02	0.00E+00	3.76E-02	0.00E+00	2.25E-03	0.00E+00	4.49E-02	0.00E+00	0.00E+00	0.00E+00	1.15E+00
PR08Z	WF to SS/LTF	1	1	307	10	100%	0.00E+00	6.46E-01	0.00E+00	6.46E-01	0.00E+00	9.92E-02	0.00E+00	1.13E-03	0.00E+00	2.03E-02	0.00E+00	3.33E-01	0.00E+00	1.25E+00
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	0.00E+00	1.97E-02	0.00E+00	1.97E-02	0.00E+00	1.91E-02	0.00E+00	1.14E-03	0.00E+00	2.28E-02	0.00E+00	0.00E+00	0.00E+00	5.83E-01
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	0.00E+00	3.29E-01	0.00E+00	3.29E-01	0.00E+00	5.34E-02	0.00E+00	8.42E-04	0.00E+00	1.46E-02	0.00E+00	1.65E-01	0.00E+00	7.17E-01
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	0.00E+00	1.36E-02	0.00E+00	1.36E-02	0.00E+00	1.32E-02	0.00E+00	7.86E-04	0.00E+00	1.57E-02	0.00E+00	0.00E+00	0.00E+00	4.02E-01
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	0.00E+00	1.66E-02	0.00E+00	1.66E-02	0.00E+00	1.61E-02	0.00E+00	9.63E-04	0.00E+00	1.92E-02	0.00E+00	0.00E+00	0.00E+00	4.92E-01
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	0.00E+00	1.15E-02	0.00E+00	1.15E-02	0.00E+00	1.11E-02	0.00E+00	6.65E-04	0.00E+00	1.33E-02	0.00E+00	0.00E+00	0.00E+00	3.40E-01
UR11Z	Across SS	1	1	242	10	100%	0.00E+00	2.26E-02	0.00E+00	2.26E-02	0.00E+00	2.19E-02	0.00E+00	1.31E-03	0.00E+00	2.61E-02	0.00E+00	0.00E+00	0.00E+00	6.68E-01
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	0.00E+00	1.56E-02	0.00E+00	1.56E-02	0.00E+00	1.51E-02	0.00E+00	9.02E-04	0.00E+00	1.80E-02	0.00E+00	0.00E+00	0.00E+00	4.61E-01
UR12	Across LF to WF northern section	1	1	873	10	100%	6.63E+00	0.00E+00	6.63E+00	0.00E+00	9.05E-01	0.00E+00	1.53E-03	0.00E+00	4.13E-02	0.00E+00	3.59E+00	0.00E+00	9.68E+00	0.00E+00
UR12Z	Across LF to WF northern section, onsite equipment	1	1	873	10	100%	0.00E+00	1.16E-01	0.00E+00	1.16E-01	0.00E+00	8.30E-02	0.00E+00	4.72E-03	0.00E+00	9.33E-02	0.00E+00	1.70E-02	0.00E+00	2.42E+00
UR12Y	Across LF to WF northern section, final cap construction truck	1	1	873	10	100%	0.00E+00	5.62E-02	0.00E+00	5.62E-02	0.00E+00	5.45E-02	0.00E+00	3.25E-03	0.00E+00	6.50E-02	0.00E+00	0.00E+00	0.00E+00	1.66E+00
PR13Z	WF to LTF	1	1	165	10	100%	0.00E+00	1.20E+00	0.00E+00	1.20E+00	0.00E+00	1.62E-01	0.00E+00	1.49E-04	0.00E+00	6.66E-03	0.00E+00	6.52E-01	0.00E+00	1.75E+00
PR14Z	WF to LTF	1	1	61	10	100%	0.00E+00	4.40E-01	0.00E+00	4.40E-01	0.00E+00	5.97E-02	0.00E+00	5.48E-05	0.00E+00	2.45E-03	0.00E+00	2.40E-01	0.00E+00	6.42E-01
UR17Z	Across CDA	1	1	90	10	100%	0.00E+00	2.18E-02	0.00E+00	2.18E-02	0.00E+00	2.11E-02	0.00E+00	1.66E-03	0.00E+00	3.83E-03	0.00E+00	0.00E+00	0.00E+00	2.88E-01
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	0.00E+00	1.05E-02	0.00E+00	1.05E-02	0.00E+00	1.01E-02	0.00E+00	7.86E-04	0.00E+00	2.10E-03	0.00E+00	5.99E-05	0.00E+00	1.42E-01
PR04B	Scale House to WF	1	1	681	10	100%	6.63E+00	1.63E+00	6.63E+00	1.63E+00	9.05E-01	2.43E-01	1.53E-03	3.87E-03	4.13E-02	3.18E-02	3.59E+00	7.66E-01	9.68E+00	2.39E+00
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	0.00E+00	2.32E+00	0.00E+00	2.32E+00	0.00E+00	3.22E-01	0.00E+00	1.77E-03	0.00E+00	2.70E-02	0.00E+00	1.21E+00	0.00E+00	3.37E+00
PR04C	Exit Road from WF	1	1	420	10	100%	6.63E+00	1.00E+00	6.63E+00	1.00E+00	9.05E-01	1.50E-01	1.53E-03	2.39E-03	4.13E-02	1.97E-02	3.59E+00	4.73E-01	9.68E+00	1.47E+00
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	0.00E+00	1.43E+00	0.00E+00	1.43E+00	0.00E+00	1.99E-01	0.00E+00	1.09E-03	0.00E+00	1.67E-02	0.00E+00	7.49E-01	0.00E+00	2.08E+00
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	--	--	--	--	--	--	--	--	--	--	--	--	--	--
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	--	--	--	--	--	--	--	--	--	--	--	--	--	--
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	0.00E+00	7.31E+00	0.00E+00	7.31E+00	0.00E+00	7.09E+00	0.00E+00	4.65E-01	0.00E+00	2.80E+00	0.00E+00	0.00E+00	0.00E+00	1.28E+02
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	0.00E+00	1.73E+00	0.00E+00	1.73E+00	0.00E+00	1.68E+00	0.00E+00	1.22E-01	0.00E+00	8.13E-01	0.00E+00	0.00E+00	0.00E+00	3.14E+01
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	0.00E+00	2.43E+00	0.00E+00	2.43E+00	0.00E+00	2.35E+00	0.00E+00	1.85E-01	0.00E+00	4.27E-01	0.00E+00	0.00E+00	0.00E+00	3.21E+01
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	0.00E+00	1.04E+00	0.00E+00	1.04E+00	0.00E+00	1.00E+00	0.00E+00	6.00E-02	0.00E+00	1.20E+00	0.00E+00	0.00E+00	0.00E+00	3.06E+01

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes). For idling, this is the number of trucks idling per hour.

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Emissions are input on either a vehicle distance or operation time basis.

[5] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S1-M-5.1b: Vehicle Emission Rates - Tailpipe Emissions, Mitigation Applied, A

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Sulphur Dioxide 7446-09-5 (g/vkt)	Sulphur Dioxide 7446-09-5 (g/h)	Carbon Dioxide 124-38-9 (g/vkt)	Carbon Dioxide 124-38-9 (g/h)	Methane 74-82-8 (g/vkt)	Methane 74-82-8 (g/h)	Nitrous Oxide 10024-97-2 (g/vkt)	Nitrous Oxide 10024-97-2 (g/h)	Source ID	TSP PM (g/s)
Mobile Equipment															**Mobile Equipment**	
PR01	Main Entrance Road	1	1	206	10	100%	6.15E-03	0.00E+00	1.80E+03	0.00E+00	5.75E-02	0.00E+00	1.30E-02	0.00E+00	PR01	3.79E-04
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	0.00E+00	1.03E-03	0.00E+00	2.56E+02	0.00E+00	8.16E-03	0.00E+00	2.21E-03	PR01Z	1.95E-04
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	0.00E+00	1.97E-03	0.00E+00	4.64E+02	0.00E+00	1.49E-02	0.00E+00	4.28E-03	UR02Z	3.08E-04
PR04A	Entrance to Scale House	1	1	487	10	100%	6.15E-03	2.54E-03	1.80E+03	6.09E+02	5.75E-02	2.22E-02	1.30E-02	6.85E-03	PR04A	8.97E-04
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	0.00E+00	2.43E-03	0.00E+00	6.04E+02	0.00E+00	1.93E-02	0.00E+00	5.23E-03	PR04AZ	4.60E-04
BR06	Across LF to WF southern section	1	1	603	10	100%	6.15E-03	0.00E+00	1.80E+03	0.00E+00	5.75E-02	0.00E+00	1.30E-02	0.00E+00	BR06	1.11E-03
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	0.00E+00	2.08E-02	0.00E+00	7.90E+03	0.00E+00	5.78E-03	0.00E+00	1.47E-04	BR06Z	2.23E-05
BR06Y	Across LF to WF southern section, final cap construction truck	1	1	603	10	100%	0.00E+00	1.46E-02	0.00E+00	5.54E+03	0.00E+00	3.73E-03	0.00E+00	0.00E+00	BR06Y	1.08E-05
PR08Z	WF to SS/LTF	1	1	307	10	100%	0.00E+00	5.13E-03	0.00E+00	1.83E+03	0.00E+00	8.47E-03	0.00E+00	2.01E-03	PR08Z	1.80E-04
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	0.00E+00	7.41E-03	0.00E+00	2.81E+03	0.00E+00	1.89E-03	0.00E+00	0.00E+00	PR08Y	5.48E-06
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	0.00E+00	3.77E-03	0.00E+00	1.35E+03	0.00E+00	5.12E-03	0.00E+00	1.24E-03	UR09AZ	9.14E-05
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	0.00E+00	5.10E-03	0.00E+00	1.94E+03	0.00E+00	1.30E-03	0.00E+00	0.00E+00	UR09AY	3.77E-06
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	0.00E+00	6.25E-03	0.00E+00	2.37E+03	0.00E+00	1.60E-03	0.00E+00	0.00E+00	UR09BZ	4.62E-06
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	0.00E+00	4.31E-03	0.00E+00	1.64E+03	0.00E+00	1.10E-03	0.00E+00	0.00E+00	UR09BY	3.19E-06
UR11Z	Across SS	1	1	242	10	100%	0.00E+00	8.48E-03	0.00E+00	3.22E+03	0.00E+00	2.17E-03	0.00E+00	0.00E+00	UR11Z	6.27E-06
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	0.00E+00	5.85E-03	0.00E+00	2.22E+03	0.00E+00	1.50E-03	0.00E+00	0.00E+00	UR11Y	4.33E-06
UR12	Across LF to WF northern section	1	1	873	10	100%	6.15E-03	0.00E+00	1.80E+03	0.00E+00	5.75E-02	0.00E+00	1.30E-02	0.00E+00	UR12	1.61E-03
UR12Z	Across LF to WF northern section, onsite equipment	1	1	873	10	100%	0.00E+00	3.01E-02	0.00E+00	1.14E+04	0.00E+00	8.37E-03	0.00E+00	2.12E-04	UR12Z	3.22E-05
UR12Y	Across LF to WF northern section, final cap construction truck	1	1	873	10	100%	0.00E+00	2.11E-02	0.00E+00	8.02E+03	0.00E+00	5.40E-03	0.00E+00	0.00E+00	UR12Y	1.56E-05
PR13Z	WF to LTF	1	1	165	10	100%	0.00E+00	1.04E-03	0.00E+00	3.10E+02	0.00E+00	9.76E-03	0.00E+00	2.11E-03	PR13Z	3.32E-04
PR14Z	WF to LTF	1	1	61	10	100%	0.00E+00	3.81E-04	0.00E+00	1.14E+02	0.00E+00	3.59E-03	0.00E+00	7.76E-04	PR14Z	1.22E-04
UR17Z	Across CDA	1	1	90	10	100%	0.00E+00	1.27E-03	0.00E+00	4.72E+02	0.00E+00	2.53E-03	0.00E+00	0.00E+00	UR17Z	6.05E-06
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	0.00E+00	6.96E-04	0.00E+00	2.59E+02	0.00E+00	1.20E-03	0.00E+00	7.48E-07	UR18Z	2.92E-06
PR04B	Scale House to WF	1	1	681	10	100%	6.15E-03	3.55E-03	1.80E+03	8.52E+02	5.75E-02	3.11E-02	1.30E-02	9.58E-03	PR04B	1.25E-03
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	0.00E+00	3.40E-03	0.00E+00	8.46E+02	0.00E+00	2.70E-02	0.00E+00	7.31E-03	PR04BZ	6.43E-04
PR04C	Exit Road from WF	1	1	420	10	100%	6.15E-03	2.19E-03	1.80E+03	5.26E+02	5.75E-02	1.92E-02	1.30E-02	5.92E-03	PR04C	7.74E-04
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	0.00E+00	2.10E-03	0.00E+00	5.22E+02	0.00E+00	1.67E-02	0.00E+00	4.51E-03	PR04CZ	3.97E-04
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	--	--	--	--	--	--	--	--	IDLE01	1.53E-04
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	--	--	--	--	--	--	--	--	IDLE02	1.53E-04
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	0.00E+00	9.18E-01	0.00E+00	3.45E+05	0.00E+00	7.32E-01	0.00E+00	0.00E+00	DOZE2	2.03E-03
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	0.00E+00	2.65E-01	0.00E+00	1.00E+05	0.00E+00	1.91E-01	0.00E+00	0.00E+00	DOZE4	4.81E-04
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	0.00E+00	1.42E-01	0.00E+00	5.26E+04	0.00E+00	2.82E-01	0.00E+00	0.00E+00	DOZE2CAP	6.74E-04
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	0.00E+00	3.89E-01	0.00E+00	1.48E+05	0.00E+00	9.95E-02	0.00E+00	0.00E+00	DOZE2SS	2.88E-04

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes). For idling, this is the number of trucks idling per hour.

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Emissions are input on either a vehicle distance or operation time basis.

[5] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S1-M-5.1b: Vehicle Emission Rates - Tailpipe Emissions, Mitigation Applied, A

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Tailpipe Emission Rate PM10 PM10 (g/s)	PM2.5 PM25 (g/s)	Benzene 71-43-2 (g/s)	Ammonia 7664-41-7 (g/s)	Nitrogen Dioxide NO2 (g/s)	Nitrogen Oxides 10102-44-0 (g/s)
Mobile Equipment												
PR01	Main Entrance Road	1	1	206	10	100%	3.79E-04	5.17E-05	8.76E-08	2.36E-06	2.05E-04	5.54E-04
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	1.95E-04	2.71E-05	1.49E-07	2.27E-06	1.02E-04	2.83E-04
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	3.08E-04	4.33E-05	3.36E-07	4.54E-06	1.58E-04	4.46E-04
PR04A	Entrance to Scale House	1	1	487	10	100%	8.97E-04	1.22E-04	2.07E-07	5.58E-06	4.85E-04	1.31E-03
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	4.60E-04	6.40E-05	3.52E-07	5.36E-06	2.41E-04	6.69E-04
BR06	Across LF to WF southern section	1	1	603	10	100%	1.11E-03	1.52E-04	2.57E-07	6.92E-06	6.01E-04	1.62E-03
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	2.23E-05	1.59E-05	9.05E-07	1.79E-05	3.26E-06	4.64E-04
BR06Y	Across LF to WF southern section, final cap construction truck	1	1	603	10	100%	1.08E-05	1.05E-05	6.24E-07	1.25E-05	0.00E+00	3.19E-04
PR08Z	WF to SS/LTF	1	1	307	10	100%	1.80E-04	2.76E-05	3.15E-07	5.65E-06	9.25E-05	3.48E-04
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	5.48E-06	5.31E-06	3.17E-07	6.34E-06	0.00E+00	1.62E-04
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	9.14E-05	1.48E-05	2.34E-07	4.05E-06	4.57E-05	1.99E-04
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	3.77E-06	3.66E-06	2.18E-07	4.36E-06	0.00E+00	1.12E-04
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	4.62E-06	4.48E-06	2.68E-07	5.35E-06	0.00E+00	1.37E-04
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	3.19E-06	3.09E-06	1.85E-07	3.69E-06	0.00E+00	9.44E-05
UR11Z	Across SS	1	1	242	10	100%	6.27E-06	6.08E-06	3.63E-07	7.25E-06	0.00E+00	1.86E-04
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	4.33E-06	4.20E-06	2.51E-07	5.01E-06	0.00E+00	1.28E-04
UR12	Across LF to WF northern section	1	1	873	10	100%	1.61E-03	2.20E-04	3.72E-07	1.00E-05	8.71E-04	2.35E-03
UR12Z	Across LF to WF northern section, onsite equipment	1	1	873	10	100%	3.22E-05	2.30E-05	1.31E-06	2.59E-05	4.72E-06	6.72E-04
UR12Y	Across LF to WF northern section, final cap construction truck	1	1	873	10	100%	1.56E-05	1.51E-05	9.04E-07	1.81E-05	0.00E+00	4.62E-04
PR13Z	WF to LTF	1	1	165	10	100%	3.32E-04	4.51E-05	4.14E-08	1.85E-06	1.81E-04	4.85E-04
PR14Z	WF to LTF	1	1	61	10	100%	1.22E-04	1.66E-05	1.52E-08	6.81E-07	6.66E-05	1.78E-04
UR17Z	Across CDA	1	1	90	10	100%	6.05E-06	5.86E-06	4.60E-07	1.06E-06	0.00E+00	8.00E-05
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	2.92E-06	2.80E-06	2.18E-07	5.85E-07	1.66E-08	3.95E-05
PR04B	Scale House to WF	1	1	681	10	100%	1.25E-03	1.71E-04	2.90E-07	7.81E-06	6.79E-04	1.83E-03
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	6.43E-04	8.95E-05	4.92E-07	7.51E-06	3.37E-04	9.35E-04
PR04C	Exit Road from WF	1	1	420	10	100%	7.74E-04	1.06E-04	1.79E-07	4.82E-06	4.19E-04	1.13E-03
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	3.97E-04	5.53E-05	3.04E-07	4.63E-06	2.08E-04	5.77E-04
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	1.53E-04	1.40E-04	1.66E-06	1.07E-04	5.20E-03	1.38E-02
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	1.53E-04	1.40E-04	1.66E-06	1.07E-04	5.20E-03	1.38E-02
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	2.03E-03	1.97E-03	1.29E-04	7.78E-04	0.00E+00	3.56E-02
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	4.81E-04	4.66E-04	3.40E-05	2.26E-04	0.00E+00	8.72E-03
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	6.74E-04	6.54E-04	5.13E-05	1.19E-04	0.00E+00	8.92E-03
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	2.88E-04	2.79E-04	1.67E-05	3.33E-04	0.00E+00	8.51E-03

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes). For idling, this is the number of trucks idling per hour.

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Emissions are input on either a vehicle distance or operation time basis.

[5] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S1-M-5.1b: Vehicle Emission Rates - Tailpipe Emissions, Mitigation Applied, A

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Sulphur Dioxide 7446-09-5 (g/s)	Carbon Dioxide 124-38-9 (g/s)	Methane 74-82-8 (g/s)	Nitrous Oxide 10024-97-2 (g/s)	Tailpipe + Fugitive Emission Rate [6] TSP PM (g/s)	PM10 PM10 (g/s)	PM2.5 PM2.5 (g/s)	Ratio Tail TSP PM (g/s)
Mobile Equipment														
PR01	Main Entrance Road	1	1	206	10	100%	3.52E-07	1.03E-01	3.29E-06	7.42E-07	6.70E-04	4.17E-04	6.08E-05	5.66E-01
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	2.86E-07	7.10E-02	2.27E-06	6.14E-07	4.85E-04	2.32E-04	3.62E-05	4.01E-01
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	5.47E-07	1.29E-01	4.13E-06	1.19E-06	1.07E-01	3.25E-02	3.26E-03	2.87E-03
PR04A	Entrance to Scale House	1	1	487	10	100%	8.31E-07	2.43E-01	7.77E-06	1.75E-06	1.69E-03	1.00E-03	1.47E-04	5.30E-01
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	6.76E-07	1.68E-01	5.36E-06	1.45E-06	1.26E-03	5.63E-04	8.89E-05	3.66E-01
BR06	Across LF to WF southern section	1	1	603	10	100%	1.03E-06	3.01E-01	9.64E-06	2.18E-06	1.23E-02	2.56E-03	5.03E-04	9.01E-02
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	5.78E-06	2.19E+00	1.61E-06	4.07E-08	1.12E-02	1.47E-03	3.67E-04	1.98E-03
BR06Y	Across LF to WF southern section, final cap construction truck	1	1	603	10	100%	4.05E-06	1.54E+00	1.03E-06	0.00E+00	1.12E-02	1.46E-03	3.62E-04	9.60E-04
PR08Z	WF to SS/LTF	1	1	307	10	100%	1.42E-06	5.07E-01	2.35E-06	5.57E-07	2.74E-03	5.11E-04	1.08E-04	6.54E-02
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	2.06E-06	7.81E-01	5.26E-07	0.00E+00	2.57E-03	3.37E-04	8.56E-05	2.13E-03
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	1.05E-06	3.75E-01	1.42E-06	3.44E-07	8.05E-02	2.43E-02	2.43E-03	1.14E-03
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	1.42E-06	5.38E-01	3.62E-07	0.00E+00	8.04E-02	2.42E-02	2.42E-03	4.69E-05
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	1.74E-06	6.59E-01	4.44E-07	0.00E+00	7.62E-02	2.29E-02	2.30E-03	6.07E-05
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	1.20E-06	4.55E-01	3.06E-07	0.00E+00	7.62E-02	2.29E-02	2.29E-03	4.19E-05
UR11Z	Across SS	1	1	242	10	100%	2.36E-06	8.95E-01	6.02E-07	0.00E+00	1.03E-01	3.11E-02	3.11E-03	6.07E-05
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	1.63E-06	6.18E-01	4.16E-07	0.00E+00	1.03E-01	3.11E-02	3.11E-03	4.19E-05
UR12	Across LF to WF northern section	1	1	873	10	100%	1.49E-06	4.36E-01	1.40E-05	3.15E-06	2.01E-01	4.68E-02	4.74E-03	8.02E-03
UR12Z	Across LF to WF northern section, onsite equipment	1	1	873	10	100%	8.37E-06	3.18E+00	2.33E-06	5.90E-08	1.99E-01	4.52E-02	4.54E-03	1.62E-04
UR12Y	Across LF to WF northern section, final cap construction truck	1	1	873	10	100%	5.86E-06	2.23E+00	1.50E-06	0.00E+00	1.99E-01	4.52E-02	4.53E-03	7.83E-05
PR13Z	WF to LTF	1	1	165	10	100%	2.88E-07	8.60E-02	2.71E-06	5.86E-07	1.98E-03	5.46E-04	9.68E-05	1.68E-01
PR14Z	WF to LTF	1	1	61	10	100%	1.06E-07	3.16E-02	9.97E-07	2.15E-07	7.29E-04	2.01E-04	3.56E-05	1.68E-01
UR17Z	Across CDA	1	1	90	10	100%	3.53E-07	1.31E-01	7.02E-07	0.00E+00	3.41E-02	1.02E-02	1.03E-03	1.78E-04
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	1.93E-07	7.20E-02	3.34E-07	2.08E-10	1.73E-02	5.28E-03	5.30E-04	1.68E-04
PR04B	Scale House to WF	1	1	681	10	100%	1.16E-06	3.40E-01	1.09E-05	2.45E-06	2.56E-03	1.42E-03	2.12E-04	4.89E-01
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	9.45E-07	2.35E-01	7.49E-06	2.03E-06	1.95E-03	8.13E-04	1.30E-04	3.30E-01
PR04C	Exit Road from WF	1	1	420	10	100%	7.18E-07	2.10E-01	6.71E-06	1.52E-06	1.58E-03	8.79E-04	1.31E-04	4.89E-01
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	5.84E-07	1.45E-01	4.63E-06	1.25E-06	1.20E-03	5.02E-04	8.06E-05	3.30E-01
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	6.40E-06	1.86E+00	9.29E-05	3.59E-05	1.53E-04	1.53E-04	1.40E-04	n/a
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	6.40E-06	1.86E+00	9.29E-05	3.59E-05	1.53E-04	1.53E-04	1.40E-04	n/a
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	2.55E-04	9.59E+01	2.03E-04	0.00E+00	2.03E-03	2.03E-03	1.97E-03	1.00E+00
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	7.37E-05	2.78E+01	5.30E-05	0.00E+00	4.81E-04	4.81E-04	4.66E-04	1.00E+00
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	3.94E-05	1.46E+01	7.83E-05	0.00E+00	6.74E-04	6.74E-04	6.54E-04	1.00E+00
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	1.08E-04	4.10E+01	2.76E-05	0.00E+00	2.88E-04	2.88E-04	2.79E-04	1.00E+00

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes). For idling, this is the number of trucks idling per hour.

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Emissions are input on either a vehicle distance or operation time basis.

[5] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S1-M-5.1b: Vehicle Emission Rates - Tailpipe Emissions, Mitigation Applied, A

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	ipe : Total Emission Rate PM10 PM10 (g/s)	PM2.5 PM2.5 (g/s)	Source ID	# of Volume Sources g/hr	# of Volume Sources g/vkt	TSP PM	PM10 PM10	PM2.5 PM25
Mobile Equipment									**Mobile Equipment**					
PR01	Main Entrance Road	1	1	206	10	100%	9.10E-01	8.50E-01	PR01	11	11	6.09E-05	3.79E-05	5.53E-06
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	8.38E-01	7.48E-01	PR01Z	11	11	4.41E-05	2.11E-05	3.29E-06
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	9.46E-03	1.33E-02	UR02Z	48	48	2.24E-03	6.77E-04	6.80E-05
PR04A	Entrance to Scale House	1	1	487	10	100%	8.97E-01	8.31E-01	PR04A	57	57	2.97E-05	1.75E-05	2.58E-06
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	8.17E-01	7.20E-01	PR04AZ	57	57	2.20E-05	9.88E-06	1.56E-06
BR06	Across LF to WF southern section	1	1	603	10	100%	4.34E-01	3.01E-01	BR06	70	70	1.76E-04	3.66E-05	7.18E-06
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	1.51E-02	4.33E-02	BR06Z	70	70	1.61E-04	2.11E-05	5.25E-06
BR06Y	Across LF to WF southern section, final cap construction truck	1	1	603	10	100%	7.37E-03	2.89E-02	BR06Y	70	70	1.60E-04	2.09E-05	5.17E-06
PR08Z	WF to SS/LTF	1	1	307	10	100%	3.51E-01	2.56E-01	PR08Z	36	36	7.62E-05	1.42E-05	3.00E-06
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	1.62E-02	6.20E-02	PR08Y	36	36	7.14E-05	9.37E-06	2.38E-06
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	3.77E-03	6.10E-03	UR09AZ	25	25	3.22E-03	9.71E-04	9.73E-05
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	1.56E-04	1.51E-03	UR09AY	25	25	3.22E-03	9.67E-04	9.69E-05
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	2.02E-04	1.95E-03	UR09BZ	21	21	3.63E-03	1.09E-03	1.09E-04
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	1.39E-04	1.35E-03	UR09BY	21	21	3.63E-03	1.09E-03	1.09E-04
UR11Z	Across SS	1	1	242	10	100%	2.02E-04	1.95E-03	UR11Z	28	28	3.69E-03	1.11E-03	1.11E-04
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	1.39E-04	1.35E-03	UR11Y	28	28	3.69E-03	1.11E-03	1.11E-04
UR12	Across LF to WF northern section	1	1	873	10	100%	3.44E-02	4.64E-02	UR12	102	102	1.97E-03	4.59E-04	4.64E-05
UR12Z	Across LF to WF northern section, onsite equipment	1	1	873	10	100%	7.13E-04	5.08E-03	UR12Z	102	102	1.95E-03	4.43E-04	4.45E-05
UR12Y	Across LF to WF northern section, final cap construction truck	1	1	873	10	100%	3.45E-04	3.34E-03	UR12Y	102	102	1.95E-03	4.43E-04	4.44E-05
PR13Z	WF to LTF	1	1	165	10	100%	6.09E-01	4.66E-01	PR13Z	19	19	1.04E-04	2.87E-05	5.09E-06
PR14Z	WF to LTF	1	1	61	10	100%	6.09E-01	4.66E-01	PR14Z	7	7	1.04E-04	2.87E-05	5.09E-06
UR17Z	Across CDA	1	1	90	10	100%	5.90E-04	5.69E-03	UR17Z	10	10	3.41E-03	1.02E-03	1.03E-04
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	5.53E-04	5.29E-03	UR18Z	5	5	3.47E-03	1.06E-03	1.06E-04
PR04B	Scale House to WF	1	1	681	10	100%	8.81E-01	8.07E-01	PR04B	79	79	3.24E-05	1.80E-05	2.68E-06
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	7.92E-01	6.86E-01	PR04BZ	79	79	2.47E-05	1.03E-05	1.65E-06
PR04C	Exit Road from WF	1	1	420	10	100%	8.81E-01	8.07E-01	PR04C	49	49	3.23E-05	1.79E-05	2.67E-06
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	7.92E-01	6.86E-01	PR04CZ	49	49	2.46E-05	1.02E-05	1.64E-06
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	n/a	n/a	IDLE01	1	1	3.05E-04	3.05E-04	2.81E-04
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	n/a	n/a	IDLE02	1	1	3.05E-04	3.05E-04	2.81E-04
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	1.00E+00	1.00E+00	DOZE2	1	1	2.03E-03	2.03E-03	1.97E-03
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	1.00E+00	1.00E+00	DOZE4	1	1	4.81E-04	4.81E-04	4.66E-04
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	1.00E+00	1.00E+00	DOZE2CAP	1	1	6.74E-04	6.74E-04	6.54E-04
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	1.00E+00	1.00E+00	DOZE2SS	1	1	2.88E-04	2.88E-04	2.79E-04

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes). For idling, this is the number of trucks idling per hour.

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Emissions are input on either a vehicle distance or operation time basis.

[5] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S1-M-5.1b: Vehicle Emission Rates - Tailpipe Emissions, Mitigation Applied, A

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Emission rate per volume source (g/s) Benzene 71-43-2	Ammonia 7664-41-7	Nitrogen Dioxide NO2	Nitrogen Oxides 10102-44-0	Sulphur Dioxide 7446-09-5	Carbon Dioxide 124-38-9	Methane 74-82-8	Nitrous Oxide 10024-97-2
Mobile Equipment														
PR01	Main Entrance Road	1	1	206	10	100%	7.97E-09	2.15E-07	1.87E-05	5.03E-05	3.20E-08	9.35E-03	2.99E-07	6.75E-08
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	1.35E-08	2.06E-07	9.27E-06	2.57E-05	2.60E-08	6.46E-03	2.06E-07	5.58E-08
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	6.99E-09	9.47E-08	3.29E-06	9.30E-06	1.14E-08	2.69E-03	8.60E-08	2.48E-08
PR04A	Entrance to Scale House	1	1	487	10	100%	3.63E-09	9.80E-08	8.51E-06	2.30E-05	1.46E-08	4.27E-03	1.36E-07	3.08E-08
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	6.17E-09	9.41E-08	4.23E-06	1.17E-05	1.19E-08	2.95E-03	9.40E-08	2.55E-08
BR06	Across LF to WF southern section	1	1	603	10	100%	3.67E-09	9.89E-08	8.59E-06	2.32E-05	1.47E-08	4.31E-03	1.38E-07	3.11E-08
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	1.29E-08	2.56E-07	4.65E-08	6.63E-06	8.26E-08	3.13E-02	2.29E-08	5.82E-10
BR06Y	Across LF to WF southern section, final cap construction truck	1	1	603	10	100%	8.92E-09	1.78E-07	0.00E+00	4.56E-06	5.78E-08	2.20E-02	1.48E-08	0.00E+00
PR08Z	WF to SS/LTF	1	1	307	10	100%	8.74E-09	1.57E-07	2.57E-06	9.68E-06	3.96E-08	1.41E-02	6.54E-08	1.55E-08
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	8.81E-09	1.76E-07	0.00E+00	4.50E-06	5.72E-08	2.17E-02	1.46E-08	0.00E+00
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	9.36E-09	1.62E-07	1.83E-06	7.96E-06	4.18E-08	1.50E-02	5.69E-08	1.38E-08
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	8.73E-09	1.74E-07	0.00E+00	4.46E-06	5.67E-08	2.15E-02	1.45E-08	0.00E+00
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	1.27E-08	2.55E-07	0.00E+00	6.51E-06	8.27E-08	3.14E-02	2.11E-08	0.00E+00
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	8.80E-09	1.76E-07	0.00E+00	4.49E-06	5.71E-08	2.17E-02	1.46E-08	0.00E+00
UR11Z	Across SS	1	1	242	10	100%	1.30E-08	2.59E-07	0.00E+00	6.63E-06	8.41E-08	3.20E-02	2.15E-08	0.00E+00
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	8.95E-09	1.79E-07	0.00E+00	4.57E-06	5.81E-08	2.21E-02	1.48E-08	0.00E+00
UR12	Across LF to WF northern section	1	1	873	10	100%	3.65E-09	9.83E-08	8.54E-06	2.30E-05	1.46E-08	4.28E-03	1.37E-07	3.09E-08
UR12Z	Across LF to WF northern section, onsite equipment	1	1	873	10	100%	1.28E-08	2.54E-07	4.62E-08	6.59E-06	8.21E-08	3.11E-02	2.28E-08	5.78E-10
UR12Y	Across LF to WF northern section, final cap construction truck	1	1	873	10	100%	8.86E-09	1.77E-07	0.00E+00	4.53E-06	5.75E-08	2.18E-02	1.47E-08	0.00E+00
PR13Z	WF to LTF	1	1	165	10	100%	2.18E-09	9.74E-08	9.53E-06	2.55E-05	1.51E-08	4.53E-03	1.43E-07	3.08E-08
PR14Z	WF to LTF	1	1	61	10	100%	2.17E-09	9.72E-08	9.51E-06	2.55E-05	1.51E-08	4.52E-03	1.42E-07	3.08E-08
UR17Z	Across CDA	1	1	90	10	100%	4.60E-08	1.06E-07	0.00E+00	8.00E-06	3.53E-08	1.31E-02	7.02E-08	0.00E+00
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	4.37E-08	1.17E-07	3.33E-09	7.90E-06	3.87E-08	1.44E-02	6.68E-08	4.16E-11
PR04B	Scale House to WF	1	1	681	10	100%	3.67E-09	9.89E-08	8.59E-06	2.32E-05	1.47E-08	4.31E-03	1.38E-07	3.11E-08
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	6.23E-09	9.50E-08	4.27E-06	1.18E-05	1.20E-08	2.97E-03	9.48E-08	2.57E-08
PR04C	Exit Road from WF	1	1	420	10	100%	3.65E-09	9.84E-08	8.55E-06	2.31E-05	1.47E-08	4.29E-03	1.37E-07	3.09E-08
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	6.20E-09	9.46E-08	4.25E-06	1.18E-05	1.19E-08	2.96E-03	9.44E-08	2.56E-08
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	3.31E-06	2.13E-04	1.04E-02	2.75E-02	1.28E-05	3.72E+00	1.86E-04	7.17E-05
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	3.31E-06	2.13E-04	1.04E-02	2.75E-02	1.28E-05	3.72E+00	1.86E-04	7.17E-05
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	1.29E-04	7.78E-04	0.00E+00	3.56E-02	2.55E-04	9.59E+01	2.03E-04	0.00E+00
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	3.40E-05	2.26E-04	0.00E+00	8.72E-03	7.37E-05	2.78E+01	5.30E-05	0.00E+00
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	5.13E-05	1.19E-04	0.00E+00	8.92E-03	3.94E-05	1.46E+01	7.83E-05	0.00E+00
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	1.67E-05	3.33E-04	0.00E+00	8.51E-03	1.08E-04	4.10E+01	2.76E-05	0.00E+00

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes). For idling, this is the number of trucks idling per hour.

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Emissions are input on either a vehicle distance or operation time basis.

[5] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S1-M-5.1b: Vehicle Emission Rates - Tailpipe Emissions, Mitigation Applied, MD

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Tailpipe Emission Factor [5], [7] TSP PM (g/vkt)	TSP PM (g/h)	PM10 PM10 (g/vkt)	PM10 PM10 (g/h)	PM2.5 PM25 (g/vkt)	PM2.5 PM25 (g/h)	Benzene 71-43-2 (g/vkt)	Benzene 71-43-2 (g/h)	Ammonia 7664-41-7 (g/vkt)	Ammonia 7664-41-7 (g/h)	Nitrogen Dioxide NO2 (g/vkt)	Nitrogen Dioxide NO2 (g/h)	Nitrogen Oxides 10102-44-0 (g/vkt)	Nitrogen Oxides 10102-44-0 (g/h)
Mobile Equipment																				
PR01	Main Entrance Road	1	1	206	10	100%	4.30E+00	0.00E+00	4.30E+00	0.00E+00	5.96E-01	0.00E+00	2.85E-03	0.00E+00	4.16E-02	0.00E+00	2.26E+00	0.00E+00	6.26E+00	0.00E+00
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	0.00E+00	7.00E-01	0.00E+00	7.00E-01	0.00E+00	9.75E-02	0.00E+00	5.36E-04	0.00E+00	8.17E-03	0.00E+00	3.67E-01	0.00E+00	1.02E+00
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	0.00E+00	1.11E+00	0.00E+00	1.11E+00	0.00E+00	1.56E-01	0.00E+00	1.21E-03	0.00E+00	1.64E-02	0.00E+00	5.69E-01	0.00E+00	1.61E+00
PR04A	Entrance to Scale House	1	1	487	10	100%	4.30E+00	1.16E+00	4.30E+00	1.16E+00	5.96E-01	1.74E-01	2.85E-03	2.77E-03	4.16E-02	2.28E-02	2.26E+00	5.48E-01	6.26E+00	1.71E+00
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	0.00E+00	1.66E+00	0.00E+00	1.66E+00	0.00E+00	2.30E-01	0.00E+00	1.27E-03	0.00E+00	1.93E-02	0.00E+00	8.67E-01	0.00E+00	2.41E+00
BR06	Across LF to WF southern section	1	1	603	10	100%	4.30E+00	0.00E+00	4.30E+00	0.00E+00	5.96E-01	0.00E+00	2.85E-03	0.00E+00	4.16E-02	0.00E+00	2.26E+00	0.00E+00	6.26E+00	0.00E+00
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	0.00E+00	8.01E-02	0.00E+00	8.01E-02	0.00E+00	5.73E-02	0.00E+00	3.26E-03	0.00E+00	6.44E-02	0.00E+00	1.17E-02	0.00E+00	1.67E+00
BR06Y	Across LF to WF southern section, final cap construction truc	1	1	603	10	100%	0.00E+00	3.88E-02	0.00E+00	3.88E-02	0.00E+00	3.76E-02	0.00E+00	2.25E-03	0.00E+00	4.49E-02	0.00E+00	0.00E+00	0.00E+00	1.15E+00
PR08Z	WF to SS/LTF	1	1	307	10	100%	0.00E+00	6.46E-01	0.00E+00	6.46E-01	0.00E+00	9.92E-02	0.00E+00	1.13E-03	0.00E+00	2.03E-02	0.00E+00	3.33E-01	0.00E+00	1.25E+00
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	0.00E+00	1.97E-02	0.00E+00	1.97E-02	0.00E+00	1.91E-02	0.00E+00	1.14E-03	0.00E+00	2.28E-02	0.00E+00	0.00E+00	0.00E+00	5.83E-01
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	0.00E+00	3.29E-01	0.00E+00	3.29E-01	0.00E+00	5.34E-02	0.00E+00	8.42E-04	0.00E+00	1.46E-02	0.00E+00	1.65E-01	0.00E+00	7.17E-01
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	0.00E+00	1.36E-02	0.00E+00	1.36E-02	0.00E+00	1.32E-02	0.00E+00	7.86E-04	0.00E+00	1.57E-02	0.00E+00	0.00E+00	0.00E+00	4.02E-01
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	0.00E+00	1.66E-02	0.00E+00	1.66E-02	0.00E+00	1.61E-02	0.00E+00	9.63E-04	0.00E+00	1.92E-02	0.00E+00	0.00E+00	0.00E+00	4.92E-01
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	0.00E+00	1.15E-02	0.00E+00	1.15E-02	0.00E+00	1.11E-02	0.00E+00	6.65E-04	0.00E+00	1.33E-02	0.00E+00	0.00E+00	0.00E+00	3.40E-01
UR11Z	Across SS	1	1	242	10	100%	0.00E+00	2.26E-02	0.00E+00	2.26E-02	0.00E+00	2.19E-02	0.00E+00	1.31E-03	0.00E+00	2.61E-02	0.00E+00	0.00E+00	0.00E+00	6.68E-01
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	0.00E+00	1.56E-02	0.00E+00	1.56E-02	0.00E+00	1.51E-02	0.00E+00	9.02E-04	0.00E+00	1.80E-02	0.00E+00	0.00E+00	0.00E+00	4.61E-01
UR12	Across LF to WF northern section	1	1	873	10	100%	4.30E+00	0.00E+00	4.30E+00	0.00E+00	5.96E-01	0.00E+00	2.85E-03	0.00E+00	4.16E-02	0.00E+00	2.26E+00	0.00E+00	6.26E+00	0.00E+00
UR12Z	Across LF to WF northern section, onsite equipment	1	1	873	10	100%	0.00E+00	1.16E-01	0.00E+00	1.16E-01	0.00E+00	8.30E-02	0.00E+00	4.72E-03	0.00E+00	9.33E-02	0.00E+00	1.70E-02	0.00E+00	2.42E+00
UR12Y	Across LF to WF northern section, final cap construction truc	1	1	873	10	100%	0.00E+00	5.62E-02	0.00E+00	5.62E-02	0.00E+00	5.45E-02	0.00E+00	3.25E-03	0.00E+00	6.50E-02	0.00E+00	0.00E+00	0.00E+00	1.66E+00
PR13Z	WF to LTF	1	1	165	10	100%	0.00E+00	1.20E+00	0.00E+00	1.20E+00	0.00E+00	1.62E-01	0.00E+00	1.49E-04	0.00E+00	6.66E-03	0.00E+00	6.52E-01	0.00E+00	1.75E+00
PR14Z	WF to LTF	1	1	61	10	100%	0.00E+00	4.40E-01	0.00E+00	4.40E-01	0.00E+00	5.97E-02	0.00E+00	5.48E-05	0.00E+00	2.45E-03	0.00E+00	2.40E-01	0.00E+00	6.42E-01
UR17Z	Across CDA	1	1	90	10	100%	0.00E+00	2.18E-02	0.00E+00	2.18E-02	0.00E+00	2.11E-02	0.00E+00	1.66E-03	0.00E+00	3.83E-03	0.00E+00	0.00E+00	0.00E+00	2.88E-01
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	0.00E+00	1.05E-02	0.00E+00	1.05E-02	0.00E+00	1.01E-02	0.00E+00	7.86E-04	0.00E+00	2.10E-03	0.00E+00	5.99E-05	0.00E+00	1.42E-01
PR04B	Scale House to WF	1	1	681	10	100%	4.30E+00	1.63E+00	4.30E+00	1.63E+00	5.96E-01	2.43E-01	2.85E-03	3.87E-03	4.16E-02	3.18E-02	2.26E+00	7.66E-01	6.26E+00	2.39E+00
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	0.00E+00	2.32E+00	0.00E+00	2.32E+00	0.00E+00	3.22E-01	0.00E+00	1.77E-03	0.00E+00	2.70E-02	0.00E+00	1.21E+00	0.00E+00	3.37E+00
PR04C	Exit Road from WF	1	1	420	10	100%	4.30E+00	1.00E+00	4.30E+00	1.00E+00	5.96E-01	1.50E-01	2.85E-03	2.39E-03	4.16E-02	1.97E-02	2.26E+00	4.73E-01	6.26E+00	1.47E+00
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	0.00E+00	1.43E+00	0.00E+00	1.43E+00	0.00E+00	1.99E-01	0.00E+00	1.09E-03	0.00E+00	1.67E-02	0.00E+00	7.49E-01	0.00E+00	2.08E+00
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	--	--	--	--	--	--	--	--	--	--	--	--	--	--
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	--	--	--	--	--	--	--	--	--	--	--	--	--	--
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	0.00E+00	7.31E+00	0.00E+00	7.31E+00	0.00E+00	7.09E+00	0.00E+00	4.65E-01	0.00E+00	2.80E+00	0.00E+00	0.00E+00	0.00E+00	1.28E+02
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	0.00E+00	1.73E+00	0.00E+00	1.73E+00	0.00E+00	1.68E+00	0.00E+00	1.22E-01	0.00E+00	8.13E-01	0.00E+00	0.00E+00	0.00E+00	3.14E+01
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	0.00E+00	2.43E+00	0.00E+00	2.43E+00	0.00E+00	2.35E+00	0.00E+00	1.85E-01	0.00E+00	4.27E-01	0.00E+00	0.00E+00	0.00E+00	3.21E+01
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	0.00E+00	1.04E+00	0.00E+00	1.04E+00	0.00E+00	1.00E+00	0.00E+00	6.00E-02	0.00E+00	1.20E+00	0.00E+00	0.00E+00	0.00E+00	3.06E+01

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes)

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

[5] Emissions are input on either a vehicle distance or power rating basis. Load factor applies only to emissions based on power ratings.

[6] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S1-M-5.1b: Vehicle Emission Rates - Tailpipe Emissions, Mitigation Applied, M

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Sulphur Dioxide 7446-09-5 (g/vkt)	Sulphur Dioxide 7446-09-5 (g/h)	Carbon Dioxide 124-38-9 (g/vkt)	Carbon Dioxide 124-38-9 (g/h)	Methane 74-82-8 (g/vkt)	Methane 74-82-8 (g/h)	Nitrous Oxide 10024-97-2 (g/vkt)	Nitrous Oxide 10024-97-2 (g/h)	Source ID	Tailpipe Emission Rate TSP PM (g/s)	PM10 PM10 (g/s)	PM2.5 PM25 (g/s)	Benzene 71-43-2 (g/s)	Ammonia 7664-41-7 (g/s)	Nitrogen Dioxide NO2 (g/s)	Nitrogen Oxides 10102-44-0 (g/s)
Mobile Equipment															**Mobile Equipment**							
PR01	Main Entrance Road	1	1	206	10	100%	5.43E-03	0.00E+00	1.43E+03	0.00E+00	4.68E-02	0.00E+00	1.22E-02	0.00E+00	PR01	2.5E-04	2.5E-04	3.4E-05	1.6E-07	2.4E-06	1.3E-04	3.6E-04
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	0.00E+00	1.03E-03	0.00E+00	2.56E+02	0.00E+00	8.16E-03	0.00E+00	2.21E-03	PR01Z	1.9E-04	1.9E-04	2.7E-05	1.5E-07	2.3E-06	1.0E-04	2.8E-04
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	0.00E+00	1.97E-03	0.00E+00	4.64E+02	0.00E+00	1.49E-02	0.00E+00	4.28E-03	UR02Z	3.1E-04	3.1E-04	4.3E-05	3.4E-07	4.5E-06	1.6E-04	4.5E-04
PR04A	Entrance to Scale House	1	1	487	10	100%	5.43E-03	2.54E-03	1.43E+03	6.09E+02	4.68E-02	2.22E-02	1.22E-02	6.85E-03	PR04A	5.8E-04	5.8E-04	8.1E-05	3.8E-07	5.6E-06	3.1E-04	8.5E-04
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	0.00E+00	2.43E-03	0.00E+00	6.04E+02	0.00E+00	1.93E-02	0.00E+00	5.23E-03	PR04AZ	4.6E-04	4.6E-04	6.4E-05	3.5E-07	5.4E-06	2.4E-04	6.7E-04
BR06	Across LF to WF southern section	1	1	603	10	100%	5.43E-03	0.00E+00	1.43E+03	0.00E+00	4.68E-02	0.00E+00	1.22E-02	0.00E+00	BR06	7.2E-04	7.2E-04	1.0E-04	4.8E-07	7.0E-06	3.8E-04	1.0E-03
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	0.00E+00	2.08E-02	0.00E+00	7.90E+03	0.00E+00	5.78E-03	0.00E+00	1.47E-04	BR06Z	2.2E-05	2.2E-05	1.6E-05	9.1E-07	1.8E-05	3.3E-06	4.6E-04
BR06Y	Across LF to WF southern section, final cap construction truc	1	1	603	10	100%	0.00E+00	1.46E-02	0.00E+00	5.54E+03	0.00E+00	3.73E-03	0.00E+00	0.00E+00	BR06Y	1.1E-05	1.1E-05	1.0E-05	6.2E-07	1.2E-05	0.0E+00	3.2E-04
PR08Z	WF to SS/LTF	1	1	307	10	100%	0.00E+00	5.13E-03	0.00E+00	1.83E+03	0.00E+00	8.47E-03	0.00E+00	2.01E-03	PR08Z	1.8E-04	1.8E-04	2.8E-05	3.1E-07	5.6E-06	9.2E-05	3.5E-04
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	0.00E+00	7.41E-03	0.00E+00	2.81E+03	0.00E+00	1.89E-03	0.00E+00	0.00E+00	PR08Y	5.5E-06	5.5E-06	5.3E-06	3.2E-07	6.3E-06	0.0E+00	1.6E-04
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	0.00E+00	3.77E-03	0.00E+00	1.35E+03	0.00E+00	5.12E-03	0.00E+00	1.24E-03	UR09AZ	9.1E-05	9.1E-05	1.5E-05	2.3E-07	4.0E-06	4.6E-05	2.0E-04
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	0.00E+00	5.10E-03	0.00E+00	1.94E+03	0.00E+00	1.30E-03	0.00E+00	0.00E+00	UR09AY	3.8E-06	3.8E-06	3.7E-06	2.2E-07	4.4E-06	0.0E+00	1.1E-04
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	0.00E+00	6.25E-03	0.00E+00	2.37E+03	0.00E+00	1.60E-03	0.00E+00	0.00E+00	UR09BZ	4.6E-06	4.6E-06	4.5E-06	2.7E-07	5.3E-06	0.0E+00	1.4E-04
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	0.00E+00	4.31E-03	0.00E+00	1.64E+03	0.00E+00	1.10E-03	0.00E+00	0.00E+00	UR09BY	3.2E-06	3.2E-06	3.1E-06	1.8E-07	3.7E-06	0.0E+00	9.4E-05
UR11Z	Across SS	1	1	242	10	100%	0.00E+00	8.48E-03	0.00E+00	3.22E+03	0.00E+00	2.17E-03	0.00E+00	0.00E+00	UR11Z	6.3E-06	6.3E-06	6.1E-06	3.6E-07	7.3E-06	0.0E+00	1.9E-04
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	0.00E+00	5.85E-03	0.00E+00	2.22E+03	0.00E+00	1.50E-03	0.00E+00	0.00E+00	UR11Y	4.3E-06	4.3E-06	4.2E-06	2.5E-07	5.0E-06	0.0E+00	1.3E-04
UR12	Across LF to WF northern section	1	1	873	10	100%	5.43E-03	0.00E+00	1.43E+03	0.00E+00	4.68E-02	0.00E+00	1.22E-02	0.00E+00	UR12	1.0E-03	1.0E-03	1.4E-04	6.9E-07	1.0E-05	5.5E-04	1.5E-03
UR12Z	Across LF to WF northern section, onsite equipment	1	1	873	10	100%	0.00E+00	3.01E-02	0.00E+00	1.14E+04	0.00E+00	8.37E-03	0.00E+00	2.12E-04	UR12Z	3.2E-05	3.2E-05	2.3E-05	1.3E-06	2.6E-05	4.7E-06	6.7E-04
UR12Y	Across LF to WF northern section, final cap construction trucl	1	1	873	10	100%	0.00E+00	2.11E-02	0.00E+00	8.02E+03	0.00E+00	5.40E-03	0.00E+00	0.00E+00	UR12Y	1.6E-05	1.6E-05	1.5E-05	9.0E-07	1.8E-05	0.0E+00	4.6E-04
PR13Z	WF to LTF	1	1	165	10	100%	0.00E+00	1.04E-03	0.00E+00	3.10E+02	0.00E+00	9.76E-03	0.00E+00	2.11E-03	PR13Z	3.3E-04	3.3E-04	4.5E-05	4.1E-08	1.9E-06	1.8E-04	4.9E-04
PR14Z	WF to LTF	1	1	61	10	100%	0.00E+00	3.81E-04	0.00E+00	1.14E+02	0.00E+00	3.59E-03	0.00E+00	7.76E-04	PR14Z	1.2E-04	1.2E-04	1.7E-05	1.5E-08	6.8E-07	6.7E-05	1.8E-04
UR17Z	Across CDA	1	1	90	10	100%	0.00E+00	1.27E-03	0.00E+00	4.72E+02	0.00E+00	2.53E-03	0.00E+00	0.00E+00	UR17Z	6.0E-06	6.0E-06	5.9E-06	4.6E-07	1.1E-06	0.0E+00	8.0E-05
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	0.00E+00	6.96E-04	0.00E+00	2.59E+02	0.00E+00	1.20E-03	0.00E+00	7.48E-07	UR18Z	2.9E-06	2.9E-06	2.8E-06	2.2E-07	5.8E-07	1.7E-08	3.9E-05
PR04B	Scale House to WF	1	1	681	10	100%	5.43E-03	3.55E-03	1.43E+03	8.52E+02	4.68E-02	3.11E-02	1.22E-02	9.58E-03	PR04B	8.1E-04	8.1E-04	1.1E-04	5.4E-07	7.9E-06	4.3E-04	1.2E-03
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	0.00E+00	3.40E-03	0.00E+00	8.46E+02	0.00E+00	2.70E-02	0.00E+00	7.31E-03	PR04BZ	6.4E-04	6.4E-04	9.0E-05	4.9E-07	7.5E-06	3.4E-04	9.4E-04
PR04C	Exit Road from WF	1	1	420	10	100%	5.43E-03	2.19E-03	1.43E+03	5.26E+02	4.68E-02	1.92E-02	1.22E-02	5.92E-03	PR04C	5.0E-04	5.0E-04	7.0E-05	3.3E-07	4.9E-06	2.6E-04	7.3E-04
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	0.00E+00	2.10E-03	0.00E+00	5.22E+02	0.00E+00	1.67E-02	0.00E+00	4.51E-03	PR04CZ	4.0E-04	4.0E-04	5.5E-05	3.0E-07	4.6E-06	2.1E-04	5.8E-04
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	--	--	--	--	--	--	--	--	IDLE01	1.4E-04	1.4E-04	1.3E-04	2.8E-06	1.1E-04	3.3E-03	8.9E-03
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	--	--	--	--	--	--	--	--	IDLE02	1.4E-04	1.4E-04	1.3E-04	2.8E-06	1.1E-04	3.3E-03	8.9E-03
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	0.00E+00	9.18E-01	0.00E+00	3.45E+05	0.00E+00	7.32E-01	0.00E+00	0.00E+00	DOZE2	2.0E-03	2.0E-03	2.0E-03	1.3E-04	7.8E-04	0.0E+00	3.6E-02
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	0.00E+00	2.65E-01	0.00E+00	1.00E+05	0.00E+00	1.91E-01	0.00E+00	0.00E+00	DOZE4	4.8E-04	4.8E-04	4.7E-04	3.4E-05	2.3E-04	0.0E+00	8.7E-03
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	0.00E+00	1.42E-01	0.00E+00	5.26E+04	0.00E+00	2.82E-01	0.00E+00	0.00E+00	DOZE2CAP	6.7E-04	6.7E-04	6.5E-04	5.1E-05	1.2E-04	0.0E+00	8.9E-03
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	0.00E+00	3.89E-01	0.00E+00	1.48E+05	0.00E+00	9.95E-02	0.00E+00	0.00E+00	DOZE2SS	2.9E-04	2.9E-04	2.8E-04	1.7E-05	3.3E-04	0.0E+00	8.5E-03

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes)

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

[5] Emissions are input on either a vehicle distance or power rating basis. Load factor applies only to emissions based on p

[6] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S1-M-5.1b: Vehicle Emission Rates - Tailpipe Emissions, Mitigation Applied, M

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Sulphur Dioxide 7446-09-5 (g/s)	Carbon Dioxide 124-38-9 (g/s)	Methane 74-82-8 (g/s)	Nitrous Oxide 10024-97-2 (g/s)	Tailpipe + Fugitive Emission Rate [6] TSP PM (g/s)	PM10 PM10 (g/s)	PM2.5 PM2.5 (g/s)	Ratio Tailpipe : Total Emission Rate TSP PM (g/s)	PM10 PM10 (g/s)	PM2.5 PM2.5 (g/s)	Source ID	# of Volume Sources g/hr	# of Volume Sources g/vkt	TSP PM	PM10 PM10
Mobile Equipment																	**Mobile Equipment**				
PR01	Main Entrance Road	1	1	206	10	100%	3.1E-07	8.2E-02	2.7E-06	6.9E-07	5.36E-04	2.83E-04	4.32E-05	4.58E-01	8.67E-01	7.89E-01	PR01	11	11	4.9E-05	2.6E-05
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	2.9E-07	7.1E-02	2.3E-06	6.1E-07	4.85E-04	2.32E-04	3.62E-05	4.01E-01	8.38E-01	7.48E-01	PR01Z	11	11	4.4E-05	2.1E-05
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	5.5E-07	1.3E-01	4.1E-06	1.2E-06	1.07E-01	3.25E-02	3.26E-03	2.87E-03	9.46E-03	1.33E-02	UR02Z	48	48	2.2E-03	6.8E-04
PR04A	Entrance to Scale House	1	1	487	10	100%	7.3E-07	1.9E-01	6.3E-06	1.6E-06	1.38E-03	6.83E-04	1.06E-04	4.22E-01	8.49E-01	7.64E-01	PR04A	57	57	2.4E-05	1.2E-05
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	6.8E-07	1.7E-01	5.4E-06	1.5E-06	1.26E-03	5.63E-04	8.89E-05	3.66E-01	8.17E-01	7.20E-01	PR04AZ	57	57	2.2E-05	9.9E-06
BR06	Across LF to WF southern section	1	1	603	10	100%	9.1E-07	2.4E-01	7.8E-06	2.0E-06	1.19E-02	2.17E-03	4.51E-04	6.03E-02	3.31E-01	2.21E-01	BR06	70	70	1.7E-04	3.1E-05
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	5.8E-06	2.2E+00	1.6E-06	4.1E-08	1.12E-02	1.47E-03	3.67E-04	1.98E-03	1.51E-02	4.33E-02	BR06Z	70	70	1.6E-04	2.1E-05
BR06Y	Across LF to WF southern section, final cap construction truc	1	1	603	10	100%	4.0E-06	1.5E+00	1.0E-06	0.0E+00	1.12E-02	1.46E-03	3.62E-04	9.60E-04	7.37E-03	2.89E-02	BR06Y	70	70	1.6E-04	2.1E-05
PR08Z	WF to SS/LTF	1	1	307	10	100%	1.4E-06	5.1E-01	2.4E-06	5.6E-07	2.74E-03	5.11E-04	1.08E-04	6.54E-02	3.51E-01	2.56E-01	PR08Z	36	36	7.6E-05	1.4E-05
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	2.1E-06	7.8E-01	5.3E-07	0.0E+00	2.57E-03	3.37E-04	8.56E-05	2.13E-03	1.62E-02	6.20E-02	PR08Y	36	36	7.1E-05	9.4E-06
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	1.0E-06	3.7E-01	1.4E-06	3.4E-07	8.05E-02	2.43E-02	2.43E-03	1.14E-03	3.77E-03	6.10E-03	UR09AZ	25	25	3.2E-03	9.7E-04
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	1.4E-06	5.4E-01	3.6E-07	0.0E+00	8.04E-02	2.42E-02	2.42E-03	4.69E-05	1.56E-04	1.51E-03	UR09AY	25	25	3.2E-03	9.7E-04
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	1.7E-06	6.6E-01	4.4E-07	0.0E+00	7.62E-02	2.29E-02	2.30E-03	6.07E-05	2.02E-04	1.95E-03	UR09BZ	21	21	3.6E-03	1.1E-03
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	1.2E-06	4.6E-01	3.1E-07	0.0E+00	7.62E-02	2.29E-02	2.29E-03	4.19E-05	1.39E-04	1.35E-03	UR09BY	21	21	3.6E-03	1.1E-03
UR11Z	Across SS	1	1	242	10	100%	2.4E-06	8.9E-01	6.0E-07	0.0E+00	1.03E-01	3.11E-02	3.11E-03	6.07E-05	2.02E-04	1.95E-03	UR11Z	28	28	3.7E-03	1.1E-03
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	1.6E-06	6.2E-01	4.2E-07	0.0E+00	1.03E-01	3.11E-02	3.11E-03	4.19E-05	1.39E-04	1.35E-03	UR11Y	28	28	3.7E-03	1.1E-03
UR12	Across LF to WF northern section	1	1	873	10	100%	1.3E-06	3.5E-01	1.1E-05	2.9E-06	2.00E-01	4.62E-02	4.66E-03	5.20E-03	2.26E-02	3.10E-02	UR12	102	102	2.0E-03	4.5E-04
UR12Z	Across LF to WF northern section, onsite equipment	1	1	873	10	100%	8.4E-06	3.2E+00	2.3E-06	5.9E-08	1.99E-01	4.52E-02	4.54E-03	1.62E-04	7.13E-04	5.08E-03	UR12Z	102	102	2.0E-03	4.4E-04
UR12Y	Across LF to WF northern section, final cap construction trucl	1	1	873	10	100%	5.9E-06	2.2E+00	1.5E-06	0.0E+00	1.99E-01	4.52E-02	4.53E-03	7.83E-05	3.45E-04	3.34E-03	UR12Y	102	102	2.0E-03	4.4E-04
PR13Z	WF to LTF	1	1	165	10	100%	2.9E-07	8.6E-02	2.7E-06	5.9E-07	1.98E-03	5.46E-04	9.68E-05	1.68E-01	6.09E-01	4.66E-01	PR13Z	19	19	1.0E-04	2.9E-05
PR14Z	WF to LTF	1	1	61	10	100%	1.1E-07	3.2E-02	1.0E-06	2.2E-07	7.29E-04	2.01E-04	3.56E-05	1.68E-01	6.09E-01	4.66E-01	PR14Z	7	7	1.0E-04	2.9E-05
UR17Z	Across CDA	1	1	90	10	100%	3.5E-07	1.3E-01	7.0E-07	0.0E+00	3.41E-02	1.02E-02	1.03E-03	1.78E-04	5.90E-04	5.69E-03	UR17Z	10	10	3.4E-03	1.0E-03
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	1.9E-07	7.2E-02	3.3E-07	2.1E-10	1.73E-02	5.28E-03	5.30E-04	1.68E-04	5.53E-04	5.29E-03	UR18Z	5	5	3.5E-03	1.1E-03
PR04B	Scale House to WF	1	1	681	10	100%	1.0E-06	2.7E-01	8.9E-06	2.3E-06	2.12E-03	9.81E-04	1.54E-04	3.83E-01	8.27E-01	7.33E-01	PR04B	79	79	2.7E-05	1.2E-05
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	9.5E-07	2.3E-01	7.5E-06	2.0E-06	1.95E-03	8.13E-04	1.30E-04	3.30E-01	7.92E-01	6.86E-01	PR04BZ	79	79	2.5E-05	1.0E-05
PR04C	Exit Road from WF	1	1	420	10	100%	6.3E-07	1.7E-01	5.5E-06	1.4E-06	1.31E-03	6.06E-04	9.49E-05	3.83E-01	8.27E-01	7.33E-01	PR04C	49	49	2.7E-05	1.2E-05
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	5.8E-07	1.5E-01	4.6E-06	1.3E-06	1.20E-03	5.02E-04	8.06E-05	3.30E-01	7.92E-01	6.86E-01	PR04CZ	49	49	2.5E-05	1.0E-05
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	6.2E-06	1.6E+00	7.3E-05	3.4E-05	1.39E-04	1.39E-04	1.27E-04	1.00E+00	1.00E+00	1.00E+00	IDLE01	1	1	2.8E-04	2.8E-04
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	6.2E-06	1.6E+00	7.3E-05	3.4E-05	1.39E-04	1.39E-04	1.27E-04	1.00E+00	1.00E+00	1.00E+00	IDLE02	1	1	2.8E-04	2.8E-04
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	2.6E-04	9.6E+01	2.0E-04	0.0E+00	2.03E-03	2.03E-03	1.97E-03	1.00E+00	1.00E+00	1.00E+00	DOZE2	1	1	2.0E-03	2.0E-03
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	7.4E-05	2.8E+01	5.3E-05	0.0E+00	4.81E-04	4.81E-04	4.66E-04	1.00E+00	1.00E+00	1.00E+00	DOZE4	1	1	4.8E-04	4.8E-04
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	3.9E-05	1.5E+01	7.8E-05	0.0E+00	6.74E-04	6.74E-04	6.54E-04	1.00E+00	1.00E+00	1.00E+00	DOZE2CAP	1	1	6.7E-04	6.7E-04
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	1.1E-04	4.1E+01	2.8E-05	0.0E+00	2.88E-04	2.88E-04	2.79E-04	1.00E+00	1.00E+00	1.00E+00	DOZE2SS	1	1	2.9E-04	2.9E-04

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes)

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

[5] Emissions are input on either a vehicle distance or power rating basis. Load factor applies only to emissions based on p

[6] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

QA	tail	fug	tot	
PR01	0.00024554	0.00029065	5.4E-04	TRUE
PR01Z	0.00019457	0.00029065	4.9E-04	TRUE
UR02Z	0.00030762	0.10705183	1.1E-01	TRUE
PR03	0	0	0.0E+00	TRUE
PR04A	0.00058043	0.0007954	1.4E-03	TRUE
PR04AZ	0.00045994	0.0007954	1.3E-03	TRUE

Appendix 5A-S1-M-5.1b: Vehicle Emission Rates - Tailpipe Emissions, Mitigation Applied, M

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Emission rate per volume source: PM2.5 PM25	Benzene 71-43-2	Ammonia 7664-41-7	Nitrogen Dioxide NO2	Nitrogen Oxides 10102-44-0	Sulphur Dioxide 7446-09-5	Carbon Dioxide 124-38-9	Methane 74-82-8	Nitrous Oxide 10024-97-2
Mobile Equipment															
PR01	Main Entrance Road	1	1	206	10	100%	3.9E-06	1.5E-08	2.2E-07	1.2E-05	3.3E-05	2.8E-08	7.4E-03	2.4E-07	6.3E-08
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	3.3E-06	1.4E-08	2.1E-07	9.3E-06	2.6E-05	2.6E-08	6.5E-03	2.1E-07	5.6E-08
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	6.8E-05	7.0E-09	9.5E-08	3.3E-06	9.3E-06	1.1E-08	2.7E-03	8.6E-08	2.5E-08
PR04A	Entrance to Scale House	1	1	487	10	100%	1.9E-06	6.7E-09	9.9E-08	5.4E-06	1.5E-05	1.3E-08	3.4E-03	1.1E-07	2.9E-08
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	1.6E-06	6.2E-09	9.4E-08	4.2E-06	1.2E-05	1.2E-08	2.9E-03	9.4E-08	2.5E-08
BR06	Across LF to WF southern section	1	1	603	10	100%	6.4E-06	6.8E-09	1.0E-07	5.4E-06	1.5E-05	1.3E-08	3.4E-03	1.1E-07	2.9E-08
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	5.2E-06	1.3E-08	2.6E-07	4.7E-08	6.6E-06	8.3E-08	3.1E-02	2.3E-08	5.8E-10
BR06Y	Across LF to WF southern section, final cap construction truc	1	1	603	10	100%	5.2E-06	8.9E-09	1.8E-07	0.0E+00	4.6E-06	5.8E-08	2.2E-02	1.5E-08	0.0E+00
PR08Z	WF to SS/LTF	1	1	307	10	100%	3.0E-06	8.7E-09	1.6E-07	2.6E-06	9.7E-06	4.0E-08	1.4E-02	6.5E-08	1.5E-08
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	2.4E-06	8.8E-09	1.8E-07	0.0E+00	4.5E-06	5.7E-08	2.2E-02	1.5E-08	0.0E+00
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	9.7E-05	9.4E-09	1.6E-07	1.8E-06	8.0E-06	4.2E-08	1.5E-02	5.7E-08	1.4E-08
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	9.7E-05	8.7E-09	1.7E-07	0.0E+00	4.5E-06	5.7E-08	2.2E-02	1.4E-08	0.0E+00
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	1.1E-04	1.3E-08	2.5E-07	0.0E+00	6.5E-06	8.3E-08	3.1E-02	2.1E-08	0.0E+00
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	1.1E-04	8.8E-09	1.8E-07	0.0E+00	4.5E-06	5.7E-08	2.2E-02	1.5E-08	0.0E+00
UR11Z	Across SS	1	1	242	10	100%	1.1E-04	1.3E-08	2.6E-07	0.0E+00	6.6E-06	8.4E-08	3.2E-02	2.2E-08	0.0E+00
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	1.1E-04	9.0E-09	1.8E-07	0.0E+00	4.6E-06	5.8E-08	2.2E-02	1.5E-08	0.0E+00
UR12	Across LF to WF northern section	1	1	873	10	100%	4.6E-05	6.8E-09	9.9E-08	5.4E-06	1.5E-05	1.3E-08	3.4E-03	1.1E-07	2.9E-08
UR12Z	Across LF to WF northern section, onsite equipment	1	1	873	10	100%	4.4E-05	1.3E-08	2.5E-07	4.6E-08	6.6E-06	8.2E-08	3.1E-02	2.3E-08	5.8E-10
UR12Y	Across LF to WF northern section, final cap construction truc	1	1	873	10	100%	4.4E-05	8.9E-09	1.8E-07	0.0E+00	4.5E-06	5.7E-08	2.2E-02	1.5E-08	0.0E+00
PR13Z	WF to LTF	1	1	165	10	100%	5.1E-06	2.2E-09	9.7E-08	9.5E-06	2.6E-05	1.5E-08	4.5E-03	1.4E-07	3.1E-08
PR14Z	WF to LTF	1	1	61	10	100%	5.1E-06	2.2E-09	9.7E-08	9.5E-06	2.5E-05	1.5E-08	4.5E-03	1.4E-07	3.1E-08
UR17Z	Across CDA	1	1	90	10	100%	1.0E-04	4.6E-08	1.1E-07	0.0E+00	8.0E-06	3.5E-08	1.3E-02	7.0E-08	0.0E+00
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	1.1E-04	4.4E-08	1.2E-07	3.3E-09	7.9E-06	3.9E-08	1.4E-02	6.7E-08	4.2E-11
PR04B	Scale House to WF	1	1	681	10	100%	1.9E-06	6.8E-09	1.0E-07	5.4E-06	1.5E-05	1.3E-08	3.4E-03	1.1E-07	2.9E-08
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	1.7E-06	6.2E-09	9.5E-08	4.3E-06	1.2E-05	1.2E-08	3.0E-03	9.5E-08	2.6E-08
PR04C	Exit Road from WF	1	1	420	10	100%	1.9E-06	6.8E-09	9.9E-08	5.4E-06	1.5E-05	1.3E-08	3.4E-03	1.1E-07	2.9E-08
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	1.6E-06	6.2E-09	9.5E-08	4.2E-06	1.2E-05	1.2E-08	3.0E-03	9.4E-08	2.6E-08
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	2.5E-04	5.6E-06	2.1E-04	6.6E-03	1.8E-02	1.2E-05	3.2E+00	1.5E-04	6.7E-05
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	2.5E-04	5.6E-06	2.1E-04	6.6E-03	1.8E-02	1.2E-05	3.2E+00	1.5E-04	6.7E-05
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	2.0E-03	1.3E-04	7.8E-04	0.0E+00	3.6E-02	2.6E-04	9.6E+01	2.0E-04	0.0E+00
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	4.7E-04	3.4E-05	2.3E-04	0.0E+00	8.7E-03	7.4E-05	2.8E+01	5.3E-05	0.0E+00
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	6.5E-04	5.1E-05	1.2E-04	0.0E+00	8.9E-03	3.9E-05	1.5E+01	7.8E-05	0.0E+00
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	2.8E-04	1.7E-05	3.3E-04	0.0E+00	8.5E-03	1.1E-04	4.1E+01	2.8E-05	0.0E+00

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes)

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

[5] Emissions are input on either a vehicle distance or power rating basis. Load factor applies only to emissions based on p

[6] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S1-M-5.1b: Vehicle Emission Rates - Tailpipe Emissions, Mitigation Applied, PM

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Tailpipe Emission Factor [5], [7] TSP PM (g/vkt)	TSP PM (g/h)	PM10 PM10 (g/vkt)	PM10 PM10 (g/h)	PM2.5 PM25 (g/vkt)	PM2.5 PM25 (g/h)	Benzene 71-43-2 (g/vkt)	Benzene 71-43-2 (g/h)	Ammonia 7664-41-7 (g/vkt)	Ammonia 7664-41-7 (g/h)	Nitrogen Dioxide NO2 (g/vkt)	Nitrogen Dioxide NO2 (g/h)	Nitrogen Oxides 10102-44-0 (g/vkt)	Nitrogen Oxides 10102-44-0 (g/h)
Mobile Equipment																				
PR01	Main Entrance Road	1	1	206	10	100%	5.21E+00	0.00E+00	5.21E+00	0.00E+00	7.10E-01	0.00E+00	1.27E-03	0.00E+00	3.86E-02	0.00E+00	2.82E+00	0.00E+00	7.58E+00	0.00E+00
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	0.00E+00	7.00E-01	0.00E+00	7.00E-01	0.00E+00	9.75E-02	0.00E+00	5.36E-04	0.00E+00	8.17E-03	0.00E+00	3.67E-01	0.00E+00	1.02E+00
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	0.00E+00	1.11E+00	0.00E+00	1.11E+00	0.00E+00	1.56E-01	0.00E+00	1.21E-03	0.00E+00	1.64E-02	0.00E+00	5.69E-01	0.00E+00	1.61E+00
PR04A	Entrance to Scale House	1	1	487	10	100%	5.21E+00	1.16E+00	5.21E+00	1.16E+00	7.10E-01	1.74E-01	1.27E-03	2.77E-03	3.86E-02	2.28E-02	2.82E+00	5.48E-01	7.58E+00	1.71E+00
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	0.00E+00	1.66E+00	0.00E+00	1.66E+00	0.00E+00	2.30E-01	0.00E+00	1.27E-03	0.00E+00	1.93E-02	0.00E+00	8.67E-01	0.00E+00	2.41E+00
BR06	Across LF to WF southern section	1	1	603	10	100%	5.21E+00	0.00E+00	5.21E+00	0.00E+00	7.10E-01	0.00E+00	1.27E-03	0.00E+00	3.86E-02	0.00E+00	2.82E+00	0.00E+00	7.58E+00	0.00E+00
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	0.00E+00	8.01E-02	0.00E+00	8.01E-02	0.00E+00	5.73E-02	0.00E+00	3.26E-03	0.00E+00	6.44E-02	0.00E+00	1.17E-02	0.00E+00	1.67E+00
BR06Y	Across LF to WF southern section, final cap construction truck	1	1	603	10	100%	0.00E+00	3.88E-02	0.00E+00	3.88E-02	0.00E+00	3.76E-02	0.00E+00	2.25E-03	0.00E+00	4.49E-02	0.00E+00	0.00E+00	0.00E+00	1.15E+00
PR08Z	WF to SS/LTF	1	1	307	10	100%	0.00E+00	6.46E-01	0.00E+00	6.46E-01	0.00E+00	9.92E-02	0.00E+00	1.13E-03	0.00E+00	2.03E-02	0.00E+00	3.33E-01	0.00E+00	1.25E+00
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	0.00E+00	1.97E-02	0.00E+00	1.97E-02	0.00E+00	1.91E-02	0.00E+00	1.14E-03	0.00E+00	2.28E-02	0.00E+00	0.00E+00	0.00E+00	5.83E-01
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	0.00E+00	3.29E-01	0.00E+00	3.29E-01	0.00E+00	5.34E-02	0.00E+00	8.42E-04	0.00E+00	1.46E-02	0.00E+00	1.65E-01	0.00E+00	7.17E-01
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	0.00E+00	1.36E-02	0.00E+00	1.36E-02	0.00E+00	1.32E-02	0.00E+00	7.86E-04	0.00E+00	1.57E-02	0.00E+00	0.00E+00	0.00E+00	4.02E-01
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	0.00E+00	1.66E-02	0.00E+00	1.66E-02	0.00E+00	1.61E-02	0.00E+00	9.63E-04	0.00E+00	1.92E-02	0.00E+00	0.00E+00	0.00E+00	4.92E-01
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	0.00E+00	1.15E-02	0.00E+00	1.15E-02	0.00E+00	1.11E-02	0.00E+00	6.65E-04	0.00E+00	1.33E-02	0.00E+00	0.00E+00	0.00E+00	3.40E-01
UR11Z	Across SS	1	1	242	10	100%	0.00E+00	2.26E-02	0.00E+00	2.26E-02	0.00E+00	2.19E-02	0.00E+00	1.31E-03	0.00E+00	2.61E-02	0.00E+00	0.00E+00	0.00E+00	6.68E-01
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	0.00E+00	1.56E-02	0.00E+00	1.56E-02	0.00E+00	1.51E-02	0.00E+00	9.02E-04	0.00E+00	1.80E-02	0.00E+00	0.00E+00	0.00E+00	4.61E-01
UR12	Across LF to WF northern section	1	1	873	10	100%	5.21E+00	0.00E+00	5.21E+00	0.00E+00	7.10E-01	0.00E+00	1.27E-03	0.00E+00	3.86E-02	0.00E+00	2.82E+00	0.00E+00	7.58E+00	0.00E+00
UR12Z	Across LF to WF northern section, onsite equipment	1	1	873	10	100%	0.00E+00	1.16E-01	0.00E+00	1.16E-01	0.00E+00	8.30E-02	0.00E+00	4.72E-03	0.00E+00	9.33E-02	0.00E+00	1.70E-02	0.00E+00	2.42E+00
UR12Y	Across LF to WF northern section, final cap construction truck	1	1	873	10	100%	0.00E+00	5.62E-02	0.00E+00	5.62E-02	0.00E+00	5.45E-02	0.00E+00	3.25E-03	0.00E+00	6.50E-02	0.00E+00	0.00E+00	0.00E+00	1.66E+00
PR13Z	WF to LTF	1	1	165	10	100%	0.00E+00	1.20E+00	0.00E+00	1.20E+00	0.00E+00	1.62E-01	0.00E+00	1.49E-04	0.00E+00	6.66E-03	0.00E+00	6.52E-01	0.00E+00	1.75E+00
PR14Z	WF to LTF	1	1	61	10	100%	0.00E+00	4.40E-01	0.00E+00	4.40E-01	0.00E+00	5.97E-02	0.00E+00	5.48E-05	0.00E+00	2.45E-03	0.00E+00	2.40E-01	0.00E+00	6.42E-01
UR17Z	Across CDA	1	1	90	10	100%	0.00E+00	2.18E-02	0.00E+00	2.18E-02	0.00E+00	2.11E-02	0.00E+00	1.66E-03	0.00E+00	3.83E-03	0.00E+00	0.00E+00	0.00E+00	2.88E-01
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	0.00E+00	1.05E-02	0.00E+00	1.05E-02	0.00E+00	1.01E-02	0.00E+00	7.86E-04	0.00E+00	2.10E-03	0.00E+00	5.99E-05	0.00E+00	1.42E-01
PR04B	Scale House to WF	1	1	681	10	100%	5.21E+00	1.63E+00	5.21E+00	1.63E+00	7.10E-01	2.43E-01	1.27E-03	3.87E-03	3.86E-02	3.18E-02	2.82E+00	7.66E-01	7.58E+00	2.39E+00
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	0.00E+00	2.32E+00	0.00E+00	2.32E+00	0.00E+00	3.22E-01	0.00E+00	1.77E-03	0.00E+00	2.70E-02	0.00E+00	1.21E+00	0.00E+00	3.37E+00
PR04C	Exit Road from WF	1	1	420	10	100%	5.21E+00	1.00E+00	5.21E+00	1.00E+00	7.10E-01	1.50E-01	1.27E-03	2.39E-03	3.86E-02	1.97E-02	2.82E+00	4.73E-01	7.58E+00	1.47E+00
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	0.00E+00	1.43E+00	0.00E+00	1.43E+00	0.00E+00	1.99E-01	0.00E+00	1.09E-03	0.00E+00	1.67E-02	0.00E+00	7.49E-01	0.00E+00	2.08E+00
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	--	--	--	--	--	--	--	--	--	--	--	--	--	--
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	--	--	--	--	--	--	--	--	--	--	--	--	--	--
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	0.00E+00	7.31E+00	0.00E+00	7.31E+00	0.00E+00	7.09E+00	0.00E+00	4.65E-01	0.00E+00	2.80E+00	0.00E+00	0.00E+00	0.00E+00	1.28E+02
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	0.00E+00	1.73E+00	0.00E+00	1.73E+00	0.00E+00	1.68E+00	0.00E+00	1.22E-01	0.00E+00	8.13E-01	0.00E+00	0.00E+00	0.00E+00	3.14E+01
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	0.00E+00	2.43E+00	0.00E+00	2.43E+00	0.00E+00	2.35E+00	0.00E+00	1.85E-01	0.00E+00	4.27E-01	0.00E+00	0.00E+00	0.00E+00	3.21E+01
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	0.00E+00	1.04E+00	0.00E+00	1.04E+00	0.00E+00	1.00E+00	0.00E+00	6.00E-02	0.00E+00	1.20E+00	0.00E+00	0.00E+00	0.00E+00	3.06E+01

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes)

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

[5] Emissions are input on either a vehicle distance or power rating basis. Load factor applies only to emissions based on power ratings.

[6] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S1-M-5.1b: Vehicle Emission Rates - Tailpipe Emissions, Mitigation Applied, P

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Sulphur Dioxide 7446-09-5 (g/vkt)	Sulphur Dioxide 7446-09-5 (g/h)	Carbon Dioxide 124-38-9 (g/vkt)	Carbon Dioxide 124-38-9 (g/h)	Methane 74-82-8 (g/vkt)	Methane 74-82-8 (g/h)	Nitrous Oxide 10024-97-2 (g/vkt)	Nitrous Oxide 10024-97-2 (g/h)	Source ID
Mobile Equipment															**Mobile Equipment**
PR01	Main Entrance Road	1	1	206	10	100%	5.49E-03	0.00E+00	1.50E+03	0.00E+00	4.65E-02	0.00E+00	1.09E-02	0.00E+00	PR01
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	0.00E+00	1.03E-03	0.00E+00	2.56E+02	0.00E+00	8.16E-03	0.00E+00	2.21E-03	PR01Z
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	0.00E+00	1.97E-03	0.00E+00	4.64E+02	0.00E+00	1.49E-02	0.00E+00	4.28E-03	UR02Z
PR04A	Entrance to Scale House	1	1	487	10	100%	5.49E-03	2.54E-03	1.50E+03	6.09E+02	4.65E-02	2.22E-02	1.09E-02	6.85E-03	PR04A
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	0.00E+00	2.43E-03	0.00E+00	6.04E+02	0.00E+00	1.93E-02	0.00E+00	5.23E-03	PR04AZ
BR06	Across LF to WF southern section	1	1	603	10	100%	5.49E-03	0.00E+00	1.50E+03	0.00E+00	4.65E-02	0.00E+00	1.09E-02	0.00E+00	BR06
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	0.00E+00	2.08E-02	0.00E+00	7.90E+03	0.00E+00	5.78E-03	0.00E+00	1.47E-04	BR06Z
BR06Y	Across LF to WF southern section, final cap construction truck	1	1	603	10	100%	0.00E+00	1.46E-02	0.00E+00	5.54E+03	0.00E+00	3.73E-03	0.00E+00	0.00E+00	BR06Y
PR08Z	WF to SS/LTF	1	1	307	10	100%	0.00E+00	5.13E-03	0.00E+00	1.83E+03	0.00E+00	8.47E-03	0.00E+00	2.01E-03	PR08Z
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	0.00E+00	7.41E-03	0.00E+00	2.81E+03	0.00E+00	1.89E-03	0.00E+00	0.00E+00	PR08Y
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	0.00E+00	3.77E-03	0.00E+00	1.35E+03	0.00E+00	5.12E-03	0.00E+00	1.24E-03	UR09AZ
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	0.00E+00	5.10E-03	0.00E+00	1.94E+03	0.00E+00	1.30E-03	0.00E+00	0.00E+00	UR09AY
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	0.00E+00	6.25E-03	0.00E+00	2.37E+03	0.00E+00	1.60E-03	0.00E+00	0.00E+00	UR09BZ
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	0.00E+00	4.31E-03	0.00E+00	1.64E+03	0.00E+00	1.10E-03	0.00E+00	0.00E+00	UR09BY
UR11Z	Across SS	1	1	242	10	100%	0.00E+00	8.48E-03	0.00E+00	3.22E+03	0.00E+00	2.17E-03	0.00E+00	0.00E+00	UR11Z
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	0.00E+00	5.85E-03	0.00E+00	2.22E+03	0.00E+00	1.50E-03	0.00E+00	0.00E+00	UR11Y
UR12	Across LF to WF northern section	1	1	873	10	100%	5.49E-03	0.00E+00	1.50E+03	0.00E+00	4.65E-02	0.00E+00	1.09E-02	0.00E+00	UR12
UR12Z	Across LF to WF northern section, onsite equipment	1	1	873	10	100%	0.00E+00	3.01E-02	0.00E+00	1.14E+04	0.00E+00	8.37E-03	0.00E+00	2.12E-04	UR12Z
UR12Y	Across LF to WF northern section, final cap construction truck	1	1	873	10	100%	0.00E+00	2.11E-02	0.00E+00	8.02E+03	0.00E+00	5.40E-03	0.00E+00	0.00E+00	UR12Y
PR13Z	WF to LTF	1	1	165	10	100%	0.00E+00	1.04E-03	0.00E+00	3.10E+02	0.00E+00	9.76E-03	0.00E+00	2.11E-03	PR13Z
PR14Z	WF to LTF	1	1	61	10	100%	0.00E+00	3.81E-04	0.00E+00	1.14E+02	0.00E+00	3.59E-03	0.00E+00	7.76E-04	PR14Z
UR17Z	Across CDA	1	1	90	10	100%	0.00E+00	1.27E-03	0.00E+00	4.72E+02	0.00E+00	2.53E-03	0.00E+00	0.00E+00	UR17Z
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	0.00E+00	6.96E-04	0.00E+00	2.59E+02	0.00E+00	1.20E-03	0.00E+00	7.48E-07	UR18Z
PR04B	Scale House to WF	1	1	681	10	100%	5.49E-03	3.55E-03	1.50E+03	8.52E+02	4.65E-02	3.11E-02	1.09E-02	9.58E-03	PR04B
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	0.00E+00	3.40E-03	0.00E+00	8.46E+02	0.00E+00	2.70E-02	0.00E+00	7.31E-03	PR04BZ
PR04C	Exit Road from WF	1	1	420	10	100%	5.49E-03	2.19E-03	1.50E+03	5.26E+02	4.65E-02	1.92E-02	1.09E-02	5.92E-03	PR04C
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	0.00E+00	2.10E-03	0.00E+00	5.22E+02	0.00E+00	1.67E-02	0.00E+00	4.51E-03	PR04CZ
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	--	--	--	--	--	--	--	--	IDLE01
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	--	--	--	--	--	--	--	--	IDLE02
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	0.00E+00	9.18E-01	0.00E+00	3.45E+05	0.00E+00	7.32E-01	0.00E+00	0.00E+00	DOZE2
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	0.00E+00	2.65E-01	0.00E+00	1.00E+05	0.00E+00	1.91E-01	0.00E+00	0.00E+00	DOZE4
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	0.00E+00	1.42E-01	0.00E+00	5.26E+04	0.00E+00	2.82E-01	0.00E+00	0.00E+00	DOZE2CAP
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	0.00E+00	3.89E-01	0.00E+00	1.48E+05	0.00E+00	9.95E-02	0.00E+00	0.00E+00	DOZE2SS

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes)

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

[5] Emissions are input on either a vehicle distance or power rating basis. Load factor applies only to emissions based on power ratings.

[6] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S1-M-5.1b: Vehicle Emission Rates - Tailpipe Emissions, Mitigation Applied, P

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Tailpipe Emission Rate TSP PM (g/s)	PM10 PM10 (g/s)	PM2.5 PM25 (g/s)	Benzene 71-43-2 (g/s)	Ammonia 7664-41-7 (g/s)	Nitrogen Dioxide NO2 (g/s)
Mobile Equipment												
PR01	Main Entrance Road	1	1	206	10	100%	3.0E-04	3.0E-04	4.1E-05	7.3E-08	2.2E-06	1.6E-04
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	1.9E-04	1.9E-04	2.7E-05	1.5E-07	2.3E-06	1.0E-04
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	3.1E-04	3.1E-04	4.3E-05	3.4E-07	4.5E-06	1.6E-04
PR04A	Entrance to Scale House	1	1	487	10	100%	7.0E-04	7.0E-04	9.6E-05	1.7E-07	5.2E-06	3.8E-04
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	4.6E-04	4.6E-04	6.4E-05	3.5E-07	5.4E-06	2.4E-04
BR06	Across LF to WF southern section	1	1	603	10	100%	8.7E-04	8.7E-04	1.2E-04	2.1E-07	6.5E-06	4.7E-04
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	2.2E-05	2.2E-05	1.6E-05	9.1E-07	1.8E-05	3.3E-06
BR06Y	Across LF to WF southern section, final cap construction truck	1	1	603	10	100%	1.1E-05	1.1E-05	1.0E-05	6.2E-07	1.2E-05	0.0E+00
PR08Z	WF to SS/LTF	1	1	307	10	100%	1.8E-04	1.8E-04	2.8E-05	3.1E-07	5.6E-06	9.2E-05
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	5.5E-06	5.5E-06	5.3E-06	3.2E-07	6.3E-06	0.0E+00
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	9.1E-05	9.1E-05	1.5E-05	2.3E-07	4.0E-06	4.6E-05
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	3.8E-06	3.8E-06	3.7E-06	2.2E-07	4.4E-06	0.0E+00
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	4.6E-06	4.6E-06	4.5E-06	2.7E-07	5.3E-06	0.0E+00
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	3.2E-06	3.2E-06	3.1E-06	1.8E-07	3.7E-06	0.0E+00
UR11Z	Across SS	1	1	242	10	100%	6.3E-06	6.3E-06	6.1E-06	3.6E-07	7.3E-06	0.0E+00
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	4.3E-06	4.3E-06	4.2E-06	2.5E-07	5.0E-06	0.0E+00
UR12	Across LF to WF northern section	1	1	873	10	100%	1.3E-03	1.3E-03	1.7E-04	3.1E-07	9.4E-06	6.8E-04
UR12Z	Across LF to WF northern section, onsite equipment	1	1	873	10	100%	3.2E-05	3.2E-05	2.3E-05	1.3E-06	2.6E-05	4.7E-06
UR12Y	Across LF to WF northern section, final cap construction truck	1	1	873	10	100%	1.6E-05	1.6E-05	1.5E-05	9.0E-07	1.8E-05	0.0E+00
PR13Z	WF to LTF	1	1	165	10	100%	3.3E-04	3.3E-04	4.5E-05	4.1E-08	1.9E-06	1.8E-04
PR14Z	WF to LTF	1	1	61	10	100%	1.2E-04	1.2E-04	1.7E-05	1.5E-08	6.8E-07	6.7E-05
UR17Z	Across CDA	1	1	90	10	100%	6.0E-06	6.0E-06	5.9E-06	4.6E-07	1.1E-06	0.0E+00
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	2.9E-06	2.9E-06	2.8E-06	2.2E-07	5.8E-07	1.7E-08
PR04B	Scale House to WF	1	1	681	10	100%	9.9E-04	9.9E-04	1.3E-04	2.4E-07	7.3E-06	5.3E-04
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	6.4E-04	6.4E-04	9.0E-05	4.9E-07	7.5E-06	3.4E-04
PR04C	Exit Road from WF	1	1	420	10	100%	6.1E-04	6.1E-04	8.3E-05	1.5E-07	4.5E-06	3.3E-04
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	4.0E-04	4.0E-04	5.5E-05	3.0E-07	4.6E-06	2.1E-04
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	1.2E-04	1.2E-04	1.1E-04	1.4E-06	9.6E-05	4.1E-03
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	1.2E-04	1.2E-04	1.1E-04	1.4E-06	9.6E-05	4.1E-03
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	2.0E-03	2.0E-03	2.0E-03	1.3E-04	7.8E-04	0.0E+00
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	4.8E-04	4.8E-04	4.7E-04	3.4E-05	2.3E-04	0.0E+00
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	6.7E-04	6.7E-04	6.5E-04	5.1E-05	1.2E-04	0.0E+00
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	2.9E-04	2.9E-04	2.8E-04	1.7E-05	3.3E-04	0.0E+00

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[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

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[6] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S1-M-5.1b: Vehicle Emission Rates - Tailpipe Emissions, Mitigation Applied, P

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Nitrogen Oxides 10102-44-0 (g/s)	Sulphur Dioxide 7446-09-5 (g/s)	Carbon Dioxide 124-38-9 (g/s)	Methane 74-82-8 (g/s)	Nitrous Oxide 10024-97-2 (g/s)	Tailpipe + Fugitive Emission Rate [6] TSP PM (g/s)	PM10 PM10 (g/s)	PM2.5 PM2.5 (g/s)
Mobile Equipment														
PR01	Main Entrance Road	1	1	206	10	100%	4.3E-04	3.1E-07	8.6E-02	2.7E-06	6.2E-07	5.9E-04	3.4E-04	5.0E-05
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	2.8E-04	2.9E-07	7.1E-02	2.3E-06	6.1E-07	4.9E-04	2.3E-04	3.6E-05
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	4.5E-04	5.5E-07	1.3E-01	4.1E-06	1.2E-06	1.1E-01	3.3E-02	3.3E-03
PR04A	Entrance to Scale House	1	1	487	10	100%	1.0E-03	7.4E-07	2.0E-01	6.3E-06	1.5E-06	1.5E-03	8.1E-04	1.2E-04
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	6.7E-04	6.8E-07	1.7E-01	5.4E-06	1.5E-06	1.3E-03	5.6E-04	8.9E-05
BR06	Across LF to WF southern section	1	1	603	10	100%	1.3E-03	9.2E-07	2.5E-01	7.8E-06	1.8E-06	1.2E-02	2.3E-03	4.7E-04
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	4.6E-04	5.8E-06	2.2E+00	1.6E-06	4.1E-08	1.1E-02	1.5E-03	3.7E-04
BR06Y	Across LF to WF southern section, final cap construction truck	1	1	603	10	100%	3.2E-04	4.0E-06	1.5E+00	1.0E-06	0.0E+00	1.1E-02	1.5E-03	3.6E-04
PR08Z	WF to SS/LTF	1	1	307	10	100%	3.5E-04	1.4E-06	5.1E-01	2.4E-06	5.6E-07	2.7E-03	5.1E-04	1.1E-04
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	1.6E-04	2.1E-06	7.8E-01	5.3E-07	0.0E+00	2.6E-03	3.4E-04	8.6E-05
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	2.0E-04	1.0E-06	3.7E-01	1.4E-06	3.4E-07	8.0E-02	2.4E-02	2.4E-03
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	1.1E-04	1.4E-06	5.4E-01	3.6E-07	0.0E+00	8.0E-02	2.4E-02	2.4E-03
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	1.4E-04	1.7E-06	6.6E-01	4.4E-07	0.0E+00	7.6E-02	2.3E-02	2.3E-03
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	9.4E-05	1.2E-06	4.6E-01	3.1E-07	0.0E+00	7.6E-02	2.3E-02	2.3E-03
UR11Z	Across SS	1	1	242	10	100%	1.9E-04	2.4E-06	8.9E-01	6.0E-07	0.0E+00	1.0E-01	3.1E-02	3.1E-03
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	1.3E-04	1.6E-06	6.2E-01	4.2E-07	0.0E+00	1.0E-01	3.1E-02	3.1E-03
UR12	Across LF to WF northern section	1	1	873	10	100%	1.8E-03	1.3E-06	3.7E-01	1.1E-05	2.6E-06	2.0E-01	4.6E-02	4.7E-03
UR12Z	Across LF to WF northern section, onsite equipment	1	1	873	10	100%	6.7E-04	8.4E-06	3.2E+00	2.3E-06	5.9E-08	2.0E-01	4.5E-02	4.5E-03
UR12Y	Across LF to WF northern section, final cap construction truck	1	1	873	10	100%	4.6E-04	5.9E-06	2.2E+00	1.5E-06	0.0E+00	2.0E-01	4.5E-02	4.5E-03
PR13Z	WF to LTF	1	1	165	10	100%	4.9E-04	2.9E-07	8.6E-02	2.7E-06	5.9E-07	2.0E-03	5.5E-04	9.7E-05
PR14Z	WF to LTF	1	1	61	10	100%	1.8E-04	1.1E-07	3.2E-02	1.0E-06	2.2E-07	7.3E-04	2.0E-04	3.6E-05
UR17Z	Across CDA	1	1	90	10	100%	8.0E-05	3.5E-07	1.3E-01	7.0E-07	0.0E+00	3.4E-02	1.0E-02	1.0E-03
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	3.9E-05	1.9E-07	7.2E-02	3.3E-07	2.1E-10	1.7E-02	5.3E-03	5.3E-04
PR04B	Scale House to WF	1	1	681	10	100%	1.4E-03	1.0E-06	2.8E-01	8.8E-06	2.1E-06	2.3E-03	1.2E-03	1.8E-04
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	9.4E-04	9.5E-07	2.3E-01	7.5E-06	2.0E-06	2.0E-03	8.1E-04	1.3E-04
PR04C	Exit Road from WF	1	1	420	10	100%	8.9E-04	6.4E-07	1.8E-01	5.4E-06	1.3E-06	1.4E-03	7.1E-04	1.1E-04
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	5.8E-04	5.8E-07	1.5E-01	4.6E-06	1.3E-06	1.2E-03	5.0E-04	8.1E-05
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	1.1E-02	6.2E-06	1.6E+00	7.4E-05	3.0E-05	1.2E-04	1.2E-04	1.1E-04
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	1.1E-02	6.2E-06	1.6E+00	7.4E-05	3.0E-05	1.2E-04	1.2E-04	1.1E-04
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	3.6E-02	2.6E-04	9.6E+01	2.0E-04	0.0E+00	2.0E-03	2.0E-03	2.0E-03
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	8.7E-03	7.4E-05	2.8E+01	5.3E-05	0.0E+00	4.8E-04	4.8E-04	4.7E-04
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	8.9E-03	3.9E-05	1.5E+01	7.8E-05	0.0E+00	6.7E-04	6.7E-04	6.5E-04
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	8.5E-03	1.1E-04	4.1E+01	2.8E-05	0.0E+00	2.9E-04	2.9E-04	2.8E-04

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes)

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

[5] Emissions are input on either a vehicle distance or power rating basis. Load factor applies only to emissions based on power ratings.

[6] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S1-M-5.1b: Vehicle Emission Rates - Tailpipe Emissions, Mitigation Applied, P

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Ratio Tailpipe : Total Emission Rate TSP PM (g/s)	PM10 PM10 (g/s)	PM2.5 PM2.5 (g/s)	Source ID	# of Volume Sources g/hr	# of Volume Sources g/vkt	TSP PM	PM10 PM10
Mobile Equipment										**Mobile Equipment**				
PR01	Main Entrance Road	1	1	206	10	100%	5.06E-01	8.88E-01	8.17E-01	PR01	11	11	5.4E-05	3.1E-05
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	4.01E-01	8.38E-01	7.48E-01	PR01Z	11	11	4.4E-05	2.1E-05
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	2.87E-03	9.46E-03	1.33E-02	UR02Z	48	48	2.2E-03	6.8E-04
PR04A	Entrance to Scale House	1	1	487	10	100%	4.70E-01	8.72E-01	7.94E-01	PR04A	57	57	2.6E-05	1.4E-05
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	3.66E-01	8.17E-01	7.20E-01	PR04AZ	57	57	2.2E-05	9.9E-06
BR06	Across LF to WF southern section	1	1	603	10	100%	7.22E-02	3.75E-01	2.53E-01	BR06	70	70	1.7E-04	3.3E-05
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	1.98E-03	1.51E-02	4.33E-02	BR06Z	70	70	1.6E-04	2.1E-05
BR06Y	Across LF to WF southern section, final cap construction truck	1	1	603	10	100%	9.60E-04	7.37E-03	2.89E-02	BR06Y	70	70	1.6E-04	2.1E-05
PR08Z	WF to SS/LTF	1	1	307	10	100%	6.54E-02	3.51E-01	2.56E-01	PR08Z	36	36	7.6E-05	1.4E-05
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	2.13E-03	1.62E-02	6.20E-02	PR08Y	36	36	7.1E-05	9.4E-06
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	1.14E-03	3.77E-03	6.10E-03	UR09AZ	25	25	3.2E-03	9.7E-04
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	4.69E-05	1.56E-04	1.51E-03	UR09AY	25	25	3.2E-03	9.7E-04
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	6.07E-05	2.02E-04	1.95E-03	UR09BZ	21	21	3.6E-03	1.1E-03
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	4.19E-05	1.39E-04	1.35E-03	UR09BY	21	21	3.6E-03	1.1E-03
UR11Z	Across SS	1	1	242	10	100%	6.07E-05	2.02E-04	1.95E-03	UR11Z	28	28	3.7E-03	1.1E-03
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	4.19E-05	1.39E-04	1.35E-03	UR11Y	28	28	3.7E-03	1.1E-03
UR12	Across LF to WF northern section	1	1	873	10	100%	6.31E-03	2.72E-02	3.67E-02	UR12	102	102	2.0E-03	4.6E-04
UR12Z	Across LF to WF northern section, onsite equipment	1	1	873	10	100%	1.62E-04	7.13E-04	5.08E-03	UR12Z	102	102	2.0E-03	4.4E-04
UR12Y	Across LF to WF northern section, final cap construction truck	1	1	873	10	100%	7.83E-05	3.45E-04	3.34E-03	UR12Y	102	102	2.0E-03	4.4E-04
PR13Z	WF to LTF	1	1	165	10	100%	1.68E-01	6.09E-01	4.66E-01	PR13Z	19	19	1.0E-04	2.9E-05
PR14Z	WF to LTF	1	1	61	10	100%	1.68E-01	6.09E-01	4.66E-01	PR14Z	7	7	1.0E-04	2.9E-05
UR17Z	Across CDA	1	1	90	10	100%	1.78E-04	5.90E-04	5.69E-03	UR17Z	10	10	3.4E-03	1.0E-03
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	1.68E-04	5.53E-04	5.29E-03	UR18Z	5	5	3.5E-03	1.1E-03
PR04B	Scale House to WF	1	1	681	10	100%	4.30E-01	8.53E-01	7.66E-01	PR04B	79	79	2.9E-05	1.5E-05
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	3.30E-01	7.92E-01	6.86E-01	PR04BZ	79	79	2.5E-05	1.0E-05
PR04C	Exit Road from WF	1	1	420	10	100%	4.30E-01	8.53E-01	7.66E-01	PR04C	49	49	2.9E-05	1.5E-05
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	3.30E-01	7.92E-01	6.86E-01	PR04CZ	49	49	2.5E-05	1.0E-05
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	n/a	n/a	n/a	IDLE01	1	1	2.3E-04	2.3E-04
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	n/a	n/a	n/a	IDLE02	1	1	2.3E-04	2.3E-04
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	1.00E+00	1.00E+00	1.00E+00	DOZE2	1	1	2.0E-03	2.0E-03
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	1.00E+00	1.00E+00	1.00E+00	DOZE4	1	1	4.8E-04	4.8E-04
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	1.00E+00	1.00E+00	1.00E+00	DOZE2CAP	1	1	6.7E-04	6.7E-04
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	1.00E+00	1.00E+00	1.00E+00	DOZE2SS	1	1	2.9E-04	2.9E-04

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes)

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

[5] Emissions are input on either a vehicle distance or power rating basis. Load factor applies only to emissions based on power ratings.

[6] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S1-M-5.1b: Vehicle Emission Rates - Tailpipe Emissions, Mitigation Applied, P

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Emission rate per volume source: PM2.5 PM25	Benzene 71-43-2	Ammonia 7664-41-7	Nitrogen Dioxide NO2	Nitrogen Oxides 10102-44-0	Sulphur Dioxide 7446-09-5	Carbon Dioxide 124-38-9	Methane 74-82-8	Nitrous Oxide 10024-97-2
Mobile Equipment															
PR01	Main Entrance Road	1	1	206	10	100%	4.5E-06	6.6E-09	2.0E-07	1.5E-05	3.9E-05	2.9E-08	7.8E-03	2.4E-07	5.7E-08
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	3.3E-06	1.4E-08	2.1E-07	9.3E-06	2.6E-05	2.6E-08	6.5E-03	2.1E-07	5.6E-08
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	6.8E-05	7.0E-09	9.5E-08	3.3E-06	9.3E-06	1.1E-08	2.7E-03	8.6E-08	2.5E-08
PR04A	Entrance to Scale House	1	1	487	10	100%	2.1E-06	3.0E-09	9.1E-08	6.7E-06	1.8E-05	1.3E-08	3.6E-03	1.1E-07	2.6E-08
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	1.6E-06	6.2E-09	9.4E-08	4.2E-06	1.2E-05	1.2E-08	2.9E-03	9.4E-08	2.5E-08
BR06	Across LF to WF southern section	1	1	603	10	100%	6.7E-06	3.0E-09	9.2E-08	6.7E-06	1.8E-05	1.3E-08	3.6E-03	1.1E-07	2.6E-08
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	5.2E-06	1.3E-08	2.6E-07	4.7E-08	6.6E-06	8.3E-08	3.1E-02	2.3E-08	5.8E-10
BR06Y	Across LF to WF southern section, final cap construction truck	1	1	603	10	100%	5.2E-06	8.9E-09	1.8E-07	0.0E+00	4.6E-06	5.8E-08	2.2E-02	1.5E-08	0.0E+00
PR08Z	WF to SS/LTF	1	1	307	10	100%	3.0E-06	8.7E-09	1.6E-07	2.6E-06	9.7E-06	4.0E-08	1.4E-02	6.5E-08	1.5E-08
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	2.4E-06	8.8E-09	1.8E-07	0.0E+00	4.5E-06	5.7E-08	2.2E-02	1.5E-08	0.0E+00
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	9.7E-05	9.4E-09	1.6E-07	1.8E-06	8.0E-06	4.2E-08	1.5E-02	5.7E-08	1.4E-08
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	9.7E-05	8.7E-09	1.7E-07	0.0E+00	4.5E-06	5.7E-08	2.2E-02	1.4E-08	0.0E+00
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	1.1E-04	1.3E-08	2.5E-07	0.0E+00	6.5E-06	8.3E-08	3.1E-02	2.1E-08	0.0E+00
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	1.1E-04	8.8E-09	1.8E-07	0.0E+00	4.5E-06	5.7E-08	2.2E-02	1.5E-08	0.0E+00
UR11Z	Across SS	1	1	242	10	100%	1.1E-04	1.3E-08	2.6E-07	0.0E+00	6.6E-06	8.4E-08	3.2E-02	2.2E-08	0.0E+00
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	1.1E-04	9.0E-09	1.8E-07	0.0E+00	4.6E-06	5.8E-08	2.2E-02	1.5E-08	0.0E+00
UR12	Across LF to WF northern section	1	1	873	10	100%	4.6E-05	3.0E-09	9.2E-08	6.7E-06	1.8E-05	1.3E-08	3.6E-03	1.1E-07	2.6E-08
UR12Z	Across LF to WF northern section, onsite equipment	1	1	873	10	100%	4.4E-05	1.3E-08	2.5E-07	4.6E-08	6.6E-06	8.2E-08	3.1E-02	2.3E-08	5.8E-10
UR12Y	Across LF to WF northern section, final cap construction truck	1	1	873	10	100%	4.4E-05	8.9E-09	1.8E-07	0.0E+00	4.5E-06	5.7E-08	2.2E-02	1.5E-08	0.0E+00
PR13Z	WF to LTF	1	1	165	10	100%	5.1E-06	2.2E-09	9.7E-08	9.5E-06	2.6E-05	1.5E-08	4.5E-03	1.4E-07	3.1E-08
PR14Z	WF to LTF	1	1	61	10	100%	5.1E-06	2.2E-09	9.7E-08	9.5E-06	2.5E-05	1.5E-08	4.5E-03	1.4E-07	3.1E-08
UR17Z	Across CDA	1	1	90	10	100%	1.0E-04	4.6E-08	1.1E-07	0.0E+00	8.0E-06	3.5E-08	1.3E-02	7.0E-08	0.0E+00
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	1.1E-04	4.4E-08	1.2E-07	3.3E-09	7.9E-06	3.9E-08	1.4E-02	6.7E-08	4.2E-11
PR04B	Scale House to WF	1	1	681	10	100%	2.2E-06	3.0E-09	9.2E-08	6.7E-06	1.8E-05	1.3E-08	3.6E-03	1.1E-07	2.6E-08
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	1.7E-06	6.2E-09	9.5E-08	4.3E-06	1.2E-05	1.2E-08	3.0E-03	9.5E-08	2.6E-08
PR04C	Exit Road from WF	1	1	420	10	100%	2.2E-06	3.0E-09	9.2E-08	6.7E-06	1.8E-05	1.3E-08	3.6E-03	1.1E-07	2.6E-08
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	1.6E-06	6.2E-09	9.5E-08	4.2E-06	1.2E-05	1.2E-08	3.0E-03	9.4E-08	2.6E-08
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	2.1E-04	2.8E-06	1.9E-04	8.2E-03	2.2E-02	1.2E-05	3.2E+00	1.5E-04	6.0E-05
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	2.1E-04	2.8E-06	1.9E-04	8.2E-03	2.2E-02	1.2E-05	3.2E+00	1.5E-04	6.0E-05
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	2.0E-03	1.3E-04	7.8E-04	0.0E+00	3.6E-02	2.6E-04	9.6E+01	2.0E-04	0.0E+00
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	4.7E-04	3.4E-05	2.3E-04	0.0E+00	8.7E-03	7.4E-05	2.8E+01	5.3E-05	0.0E+00
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	6.5E-04	5.1E-05	1.2E-04	0.0E+00	8.9E-03	3.9E-05	1.5E+01	7.8E-05	0.0E+00
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	2.8E-04	1.7E-05	3.3E-04	0.0E+00	8.5E-03	1.1E-04	4.1E+01	2.8E-05	0.0E+00

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes)

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

[5] Emissions are input on either a vehicle distance or power rating basis. Load factor applies only to emissions based on power ratings.

[6] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S2-M: Source Summary Table, Scenario 2 with Mitigation Applied

RWDI# 2101750

Twin Creeks Environmental Centre

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (°C)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
FLARE5	POINT	Landfill Gas Flare 5 - RNG Plant Startup	41.67	871	3.66	3.97	15.24	N/A	429140	4757490	Benzene	71-43-2	1.15E-04	N/A	24, Annual	EC	Average	2%
											Vinyl Chloride (Chloroethylene)	75-01-4	4.45E-05	N/A	24	EC	Average	1%
											1,2-Dichloroethane	107-06-2	3.68E-05	N/A	24	EC	Average	1%
											Nitrogen Oxides (NOx)	10102-44-0	5.96E-01	N/A	1, 24	EC	Average	7%
											Particulate Matter (PM)	PM	2.25E-01	N/A	24	EC	Average	<1%
											Sulphur Dioxide (SO2)	7446-09-5	3.53E-01	N/A	1, Annual	EC	Average	13%
											Dioxins and Furans	DF	2.08E-11	N/A	24	EF	Marginal	12%
											Total Reduced Sulphur (TRS)	TRS	1.78E-02	N/A	10-minute, 24	EC	Marginal	15%
											Hydrogen Sulfide	7783-06-4	1.78E-02	N/A	10-minute, 24	EC	Average	17%
FLARE6	POINT	Landfill Gas Flare 6 - RNG Plant Startup	41.67	871	3.66	3.97	15.24	N/A	429149	4757490	Benzene	71-43-2	1.15E-04	N/A	24, Annual	EC	Average	2%
											Vinyl Chloride (Chloroethylene)	75-01-4	4.45E-05	N/A	24	EC	Average	1%
											1,2-Dichloroethane	107-06-2	3.68E-05	N/A	24	EC	Average	1%
											Nitrogen Oxides (NOx)	10102-44-0	5.96E-01	N/A	1, 24	EC	Average	7%
											Particulate Matter (PM)	PM	2.25E-01	N/A	24	EC	Average	<1%
											Sulphur Dioxide (SO2)	7446-09-5	3.53E-01	N/A	1, Annual	EC	Average	13%
											Dioxins and Furans	DF	2.08E-11	N/A	24	EF	Marginal	12%
											Total Reduced Sulphur (TRS)	TRS	1.78E-02	N/A	10-minute, 24	EC	Marginal	15%
											Hydrogen Sulfide	7783-06-4	1.78E-02	N/A	10-minute, 24	EC	Average	17%
RNG_TO1	POINT	RNG Plant Pre-Treatment Thermal Oxidizer	2.51	816	1.22	2.15	15.24	N/A	429116	4757455	Benzene	71-43-2	4.24E-05	N/A	24, Annual	EC	Marginal	<1%
											1,2-Dichloroethane	107-06-2	6.14E-06	N/A	24	EC	Marginal	<1%
											Vinyl Chloride	75-01-4	1.78E-05	N/A	24	EC	Marginal	<1%
											Total Reduced Sulphur (TRS)	TRS	9.13E-04	N/A	10-minute, 24	EC	Marginal	<1%
											Oxides of Nitrogen	10102-44-0	1.30E-01	N/A	1, 24	EC	Marginal	2%
											Sulphur Dioxide	7446-09-5	9.13E-02	N/A	1, Annual	EC	Marginal	3%
											Dioxins and Furans	DF	3.58E-12	N/A	24	EF	Marginal	2%
											Particulate Matter	PM	4.65E-03	N/A	24	EC	Marginal	<1%
RNG_TO2	POINT	RNG Plant Main Thermal Oxidizer	18.03	816	2.90	2.74	15.24	N/A	429124	4757456	Benzene	71-43-2	1.24E-05	N/A	24, Annual	EC	Marginal	<1%
											1,2-Dichloroethane	107-06-2	4.04E-05	N/A	24	EC	Marginal	1%
											Vinyl Chloride	75-01-4	9.36E-05	N/A	24	EC	Marginal	2%
											Total Reduced Sulphur (TRS)	TRS	3.08E-04	N/A	10-minute, 24	EC	Marginal	<1%
											Oxides of Nitrogen	10102-44-0	1.20E+00	N/A	1, 24	EC	Marginal	15%
											Sulphur Dioxide	7446-09-5	3.08E-02	N/A	1, Annual	EC	Marginal	1%
											Dioxins and Furans	DF	2.54E-11	N/A	24	EF	Marginal	15%
											Particulate Matter	PM	7.71E-02	N/A	24	EC	Marginal	<1%
FLARE5BP	POINT	Landfill Gas Flare 5 - Thermal Oxidizer Bypass Scenario	37.15	871	3.66	3.54	15.24	N/A	429140	4757490	Benzene	71-43-2	2.46E-04	N/A	24, Annual	EC	Marginal	4%
											1,2-Dichloroethane	107-06-2	3.56E-05	N/A	24	EC	Marginal	1%
											Vinyl Chloride	75-01-4	1.03E-04	N/A	24	EC	Marginal	3%
											Total Reduced Sulphur (TRS)	TRS	5.29E-03	N/A	10-minute, 24	EC	Marginal	4%
											Oxides of Nitrogen	10102-44-0	5.78E-01	N/A	1, 24	EC	Marginal	7%
											Sulphur Dioxide	7446-09-5	2.65E-01	N/A	1, Annual	EC	Marginal	10%
											Dioxins and Furans	DF	1.04E-11	N/A	24	EF	Marginal	6%
											Particulate Matter	PM	2.18E-01	N/A	24	EC	Marginal	<1%
FLARE6BP	POINT	Landfill Gas Flare 6 - Thermal Oxidizer Bypass Scenario	37.15	871	3.66	3.54	15.24	N/A	429149	4757490	Benzene	71-43-2	1.01E-05	N/A	24, Annual	EC	Marginal	<1%
											1,2-Dichloroethane	107-06-2	3.30E-05	N/A	24	EC	Marginal	1%
											Vinyl Chloride	75-01-4	7.64E-05	N/A	24	EC	Marginal	2%
											Total Reduced Sulphur (TRS)	TRS	2.51E-04	N/A	10-minute, 24	EC	Marginal	<1%
											Oxides of Nitrogen	10102-44-0	5.78E-01	N/A	1, 24	EC	Marginal	7%
											Sulphur Dioxide	7446-09-5	1.26E-02	N/A	1, Annual	EC	Marginal	<1%
											Dioxins and Furans	DF	1.04E-11	N/A	24	EF	Marginal	6%
											Particulate Matter	PM	2.18E-01	N/A	24	EC	Marginal	<1%
AMINE	POINT-CAP	Amine Reboiler	0.59	204	0.39	5.00	4.92	1.87	429070	4757462	Nitrogen Oxides (NOx)	10102-44-0	8.99E-02	N/A	1, 24	EF	Average	1%
											Particulate Matter	PM	3.28E-03	N/A	24	EF	Average	<1%
GEN4	POINT	RNG Plant 360 kW Emergency Diesel Generator	0.48	491	0.15	26.50	2.15	N/A	429125	4757401	Nitrogen Oxides	10102-44-0	5.26E-01	N/A	1, 24	EF	Above-Average	7%
											Particulate Matter	PM	3.01E-02	N/A	24	EF	Above-Average	<1%
											Sulphur Dioxide	7446-09-5	1.26E-01	N/A	1, Annual	EF	Above-Average	5%
L4	POINT-HOR	Passive Exhaust Louvre Serving SBR and Aeration Tanks	1.96	25	1.38	1.31	2.13	N/A	429013	4757497	Benzene	71-43-2	1.43E-04	N/A	24, Annual	EC	Average	2%
											Vinyl Chloride (Chloroethylene)	75-01-4	3.09E-04	N/A	24	EC	Average	8%
											1,2-Dichloroethane	107-06-2	1.21E-04	N/A	24	EC	Average	4%
											Ammonia	7664-41-7	1.39E-02	N/A	24	EC	Average	40%
											Odour	ODOUR	4.76E+02	N/A	10-minute	EC	Average	1%
L3	POINT-HOR	Passive Exhaust Louvre Serving SBR and Aeration Tanks	1.96	25	1.38	1.31	2.13	N/A	429013	4757490	Benzene	71-43-2	1.43E-04	N/A	24, Annual	EC	Average	2%
											Vinyl Chloride (Chloroethylene)	75-01-4	3.09E-04	N/A	24	EC	Average	8%
											1,2-Dichloroethane	107-06-2	1.21E-04	N/A	24	EC	Average	4%
											Ammonia	7664-41-7	1.39E-02	N/A	24	EC	Average	40%
											Odour	ODOUR	4.76E+02	N/A	10-minute	EC	Average	1%

Appendix 5A-S2-M: Source Summary Table, Scenario 2 with Mitigation Applied

RWDI# 2101750

Twin Creeks Environmental Centre

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (°C)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
EF_2	POINT	Process Exhaust Fan Serving RO System Area	1.71	25	0.51	8.37	3.96	N/A	429073	4757502	Benzene	71-43-2	2.55E-04	N/A	24, Annual	EC	Average	4%
											Vinyl Chloride (Chloroethylene)	75-01-4	2.59E-04	N/A	24	EC	Average	7%
											1,2-Dichloroethane	107-06-2	2.39E-04	N/A	24	EC	Average	8%
											Ammonia	7664-41-7	9.49E-06	N/A	24	EC	Average	<1%
											Odour	ODOUR	3.59E+00	N/A	10-minute	EC	Average	<1%
SD_1	POINT-CAP	Slurry Dryer Exhaust	0.24	25	0.30	3.34	5.00	N/A	429057	4757483	Benzene	71-43-2	6.40E-04	N/A	24, Annual	EC	Average	9%
											Vinyl Chloride (Chloroethylene)	75-01-4	6.40E-04	N/A	24	EC	Average	17%
											1,2-Dichloroethane	107-06-2	6.40E-04	N/A	24	EC	Average	22%
											Ammonia	7664-41-7	4.40E-04	N/A	24	EC	Average	1%
											Odour	ODOUR	2.36E+01	N/A	10-minute	EC	Average	<1%
GEN1	POINT	1,000 kW Emergency Diesel Generator Serving Landfill Gas Plant	3.56	477	0.25	72.52	3.60	0.00	429119	4757554	Nitrogen Oxides	10102-44-0	2.72E-01	N/A	1, 24	EF	Above-Average	3%
											Particulate Matter	PM	4.53E-02	N/A	24	EF	Above-Average	<1%
											Sulphur Dioxide	7446-09-5	4.53E-02	N/A	1, Annual	EF	Above-Average	2%
GEN2	POINT	50 kW Diesel Generator Serving Leachate Pumps	0.24	477	0.10	30.56	3.60	0.00	429246	4757604	Nitrogen Oxides	10102-44-0	7.05E-02	N/A	1, 24	EF	Marginal	<1%
											Particulate Matter	PM	2.32E-02	N/A	24	EF	Marginal	<1%
											Sulphur Dioxide	7446-09-5	2.16E-02	N/A	1, Annual	EF	Marginal	<1%
GEN3	POINT	250 kW Emergency Diesel Generator Serving the Maintenance Offices	0.97	477	0.15	54.89	3.60	0.00	428415	4758689	Nitrogen Oxides	10102-44-0	3.53E-01	N/A	1, 24	EF	Marginal	4%
											Particulate Matter	PM	1.16E-01	N/A	24	EF	Marginal	<1%
											Sulphur Dioxide	7446-09-5	1.08E-01	N/A	1, Annual	EF	Marginal	4%
FLARE1	POINT	Landfill Gas Flare (Based on Full Load)	61.30	950	3.70	5.70	15.20	N/A	429117	4757504	Benzene	71-43-2	1.26E-04	N/A	24, Annual	EC	Average	2%
											Vinyl Chloride (Chloroethylene)	75-01-4	4.91E-05	N/A	24	EC	Average	1%
											1,2-Dichloroethane	107-06-2	4.06E-05	N/A	24	EC	Above-Average	1%
											Nitrogen Oxides	10102-44-0	6.57E-01	N/A	1, 24	EF	Average	8%
											Particulate Matter	PM	2.48E-01	N/A	24	EF	Average	<1%
											Sulphur Dioxide	7446-09-5	3.89E-01	N/A	1, Annual	EC	Marginal	14%
											Dioxins and Furans	DF	2.29E-11	N/A	24	EF	Marginal	13%
											Total Reduced Sulphur (TRS)	TRS	1.97E-02	N/A	10-minute, 24	EC	Marginal	16%
											Hydrogen Sulfide	7783-06-4	1.97E-02	N/A	10-minute, 24	EC	Above-Average	18%
FLARE2	POINT	Landfill Gas Flare (Based on Full Load)	61.30	950	3.70	5.70	15.20	N/A	429154	4757504	Benzene	71-43-2	1.26E-04	N/A	24, Annual	EC	Average	2%
											Vinyl Chloride (Chloroethylene)	75-01-4	4.91E-05	N/A	24	EC	Average	1%
											1,2-Dichloroethane	107-06-2	4.06E-05	N/A	24	EC	Above-Average	1%
											Nitrogen Oxides	10102-44-0	6.57E-01	N/A	1, 24	EF	Average	8%
											Particulate Matter	PM	2.48E-01	N/A	24	EF	Average	<1%
											Sulphur Dioxide	7446-09-5	3.89E-01	N/A	1, Annual	EC	Marginal	14%
											Dioxins and Furans	DF	2.29E-11	N/A	24	EF	Marginal	13%
											Total Reduced Sulphur (TRS)	TRS	1.97E-02	N/A	10-minute, 24	EC	Marginal	16%
											Hydrogen Sulfide	7783-06-4	1.97E-02	N/A	10-minute, 24	EC	Above-Average	18%
FLARE3	POINT	Proposed Landfill Gas Flare (Based on Full Load)	61.30	950	3.70	5.70	15.20	N/A	429142	4757504	Benzene	71-43-2	1.26E-04	N/A	24, Annual	EC	Average	2%
											Vinyl Chloride (Chloroethylene)	75-01-4	4.91E-05	N/A	24	EC	Average	1%
											1,2-Dichloroethane	107-06-2	4.06E-05	N/A	24	EC	Above-Average	1%
											Nitrogen Oxides	10102-44-0	6.57E-01	N/A	1, 24	EF	Average	8%
											Particulate Matter	PM	2.48E-01	N/A	24	EF	Average	<1%
											Sulphur Dioxide	7446-09-5	3.89E-01	N/A	1, Annual	EC	Marginal	14%
											Dioxins and Furans	DF	2.29E-11	N/A	24	EF	Marginal	13%
											Total Reduced Sulphur (TRS)	TRS	1.97E-02	N/A	10-minute, 24	EC	Marginal	16%
											Hydrogen Sulfide	7783-06-4	1.97E-02	N/A	10-minute, 24	EC	Above-Average	18%
FLARE4	POINT	Proposed Landfill Gas Flare (Based on Full Load)	25.79	950	3.20	3.21	12.19	N/A	429129	4757504	Benzene	71-43-2	5.73E-05	N/A	24, Annual	EC	Average	<1%
											Vinyl Chloride (Chloroethylene)	75-01-4	2.22E-05	N/A	24	EC	Average	<1%
											1,2-Dichloroethane	107-06-2	1.84E-05	N/A	24	EC	Above-Average	<1%
											Nitrogen Oxides	10102-44-0	2.98E-01	N/A	1, 24	EF	Average	4%
											Particulate Matter	PM	1.12E-01	N/A	24	EF	Average	<1%
											Sulphur Dioxide	7446-09-5	1.76E-01	N/A	1, Annual	EC	Marginal	6%
											Dioxins and Furans	DF	1.04E-11	N/A	24	EF	Marginal	6%
											Total Reduced Sulphur (TRS)	TRS	8.92E-03	N/A	10-minute, 24	EC	Marginal	7%
											Hydrogen Sulfide	7783-06-4	8.92E-03	N/A	10-minute, 24	EC	Above-Average	8%
AREA1	AREA	Expansion Landfill Phases 1 Through 3 Approximate Area = 244,004 m^2 (Emissions Based on Year 2037)	N/A	N/A	N/A	N/A	N/A	N/A	428626	4757721	Benzene	71-43-2	4.71E-05	2.79E-09	24, Annual	EC	Average	<1%
											Vinyl Chloride (Chloroethylene)	75-01-4	2.64E-04	1.08E-09	24	EC	Average	7%
											1,2-Dichloroethane	107-06-2	2.19E-04	8.97E-10	24	EC	Above-Average	8%
											Total Reduced Sulphur (TRS)	TRS	0.00E+00	0.00E+00	10-minute, 24	EC	Marginal	<1%
											Hydrogen Sulfide	7783-06-4	0.00E+00	0.00E+00	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	0.00E+00	0.00E+00	10-minute	ST	Average	<1%

Appendix 5A-S2-M: Source Summary Table, Scenario 2 with Mitigation Applied

RWDI# 2101750

Twin Creeks Environmental Centre

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (°C)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
AREA2	AREA	Expansion Landfill Phases 4 Through 5 Approximate Area = 165,611 m^2 (Emissions Based on Year 2037)	N/A	N/A	N/A	N/A	N/A	N/A	428634	4758149	Benzene	71-43-2	9.01E-04	5.44E-09	24, Annual	EC	Average	13%
											Vinyl Chloride (Chloroethylene)	75-01-4	3.49E-04	2.11E-09	24	EC	Average	9%
											1,2-Dichloroethane	107-06-2	2.89E-04	1.75E-09	24	EC	Above-Average	10%
											Total Reduced Sulphur (TRS)	TRS	0.00E+00	0.00E+00	10-minute, 24	EC	Marginal	<1%
											Hydrogen Sulfide	7783-06-4	0.00E+00	0.00E+00	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	0.00E+00	0.00E+00	10-minute	ST	Average	<1%
AREA3	AREA	Expansion Landfill Phases 6 Through 7 Approximate Area = 179,092 m^2 (Emissions Based on Year 2037)	N/A	N/A	N/A	N/A	N/A	N/A	428637	4758461	Benzene	71-43-2	8.23E-04	4.60E-09	24, Annual	EC	Average	12%
											Vinyl Chloride (Chloroethylene)	75-01-4	3.19E-04	1.78E-09	24	EC	Average	8%
											1,2-Dichloroethane	107-06-2	2.65E-04	1.48E-09	24	EC	Above-Average	9%
											Total Reduced Sulphur (TRS)	TRS	0.00E+00	0.00E+00	10-minute, 24	EC	Marginal	<1%
											Hydrogen Sulfide	7783-06-4	0.00E+00	0.00E+00	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	0.00E+00	0.00E+00	10-minute	ST	Average	<1%
AREA4	AREA	Expansion Landfill Phases 8 Through 9 Approximate Area = 99,012 m^2 (Emissions Based on Year 2037)	N/A	N/A	N/A	N/A	N/A	N/A	429027	4758463	Benzene	71-43-2	0.00E+00	0.00E+00	24, Annual	EC	Average	<1%
											Vinyl Chloride (Chloroethylene)	75-01-4	0.00E+00	0.00E+00	24	EC	Average	<1%
											1,2-Dichloroethane	107-06-2	0.00E+00	0.00E+00	24	EC	Above-Average	<1%
											Total Reduced Sulphur (TRS)	TRS	0.00E+00	0.00E+00	10-minute, 24	EC	Marginal	<1%
											Hydrogen Sulfide	7783-06-4	0.00E+00	0.00E+00	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	0.00E+00	0.00E+00	10-minute	ST	Average	<1%
AREA5	AREA	Existing Landfill Approximate Area = 208,263 m^2 (Emissions Based on Year 2037)	N/A	N/A	N/A	N/A	N/A	N/A	429208	4757609	Benzene	71-43-2	6.42E-05	2.33E-10	24, Annual	EC	Average	<1%
											Vinyl Chloride (Chloroethylene)	75-01-4	2.49E-05	9.05E-11	24	EC	Average	<1%
											1,2-Dichloroethane	107-06-2	2.06E-05	7.50E-11	24	EC	Above-Average	<1%
											Total Reduced Sulphur (TRS)	TRS	2.95E-03	1.07E-08	10-minute, 24	EC	Marginal	2%
											Hydrogen Sulfide	7783-06-4	9.95E-04	3.61E-09	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	9.62E+00	3.49E-05	10-minute	ST	Average	<1%
STAGE1	AREA	Vertical Expansion Landfill Approximate Area = 378,390 m2 (Emissions Based on Year 2037)	N/A	N/A	N/A	N/A	N/A	N/A	428515	4758837	Benzene	71-43-2	6.78E-04	1.79E-09	24, Annual	EC	Average	10%
											Vinyl Chloride (Chloroethylene)	75-01-4	2.63E-04	6.95E-10	24	EC	Average	7%
											1,2-Dichloroethane	107-06-2	2.18E-04	5.76E-10	24	EC	Above-Average	8%
											Total Reduced Sulphur (TRS)	TRS	0.00E+00	0.00E+00	10-minute, 24	EC	Marginal	<1%
											Hydrogen Sulfide	7783-06-4	0.00E+00	0.00E+00	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	0.00E+00	0.00E+00	10-minute	ST	Average	<1%
STAGE1FC	AREA	Vertical Expansion Landfill, Stage 1 area not covered by Stage 3 Approximate Area = 205,538 m2	N/A	N/A	N/A	N/A	N/A	N/A	428508	4757867	Total Reduced Sulphur (TRS)	TRS	8.81E-04	4.29E-09	10-minute, 24	EC	Marginal	<1%
											Hydrogen Sulfide	7783-06-4	3.04E-04	1.48E-09	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	6.31E+03	3.07E-02	10-minute	EC	Average	17%
STAGE2	AREA	Vertical Expansion Landfill, Stage 2 Approximate Area = 366,429 m2 (Emissions Based on Year 2037)	N/A	N/A	N/A	N/A	N/A	N/A	428878	4758835	Benzene	71-43-2	1.27E-03	3.46E-09	24, Annual	EC	Average	18%
											Vinyl Chloride (Chloroethylene)	75-01-4	4.92E-04	1.34E-09	24	EC	Average	13%
											1,2-Dichloroethane	107-06-2	4.07E-04	1.11E-09	24	EC	Above-Average	14%
											Total Reduced Sulphur (TRS)	TRS	3.93E-03	1.07E-08	10-minute, 24	EC	Marginal	3%
											Hydrogen Sulfide	7783-06-4	1.35E-03	3.69E-09	10-minute, 24	EC	Above-Average	1%
											Odour	ODOUR	1.78E+04	4.85E-02	10-minute	ST	Average	48%
STAGE2FC	AREA	Vertical Expansion Landfill, Stage 2 area not covered by Stage 4 Approximate Area = 210,645 m2	N/A	N/A	N/A	N/A	N/A	N/A	428876	4757705	Total Reduced Sulphur (TRS)	TRS	0.00E+00	0.00E+00	10-minute, 24	EC	Marginal	<1%
											Hydrogen Sulfide	7783-06-4	0.00E+00	0.00E+00	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	0.00E+00	0.00E+00	10-minute	EC	Average	<1%
STAGE3	AREA	Vertical Expansion Landfill, Stage 3 Approximate Area = 147,144 m2 (Emissions Based on Year 2037)	N/A	N/A	N/A	N/A	N/A	N/A	428650	4758699	Benzene	71-43-2	0.00E+00	0.00E+00	24, Annual	EC	Average	<1%
											Vinyl Chloride (Chloroethylene)	75-01-4	0.00E+00	0.00E+00	24	EC	Average	<1%
											1,2-Dichloroethane	107-06-2	0.00E+00	0.00E+00	24	EC	Above-Average	<1%
											Total Reduced Sulphur (TRS)	TRS	1.58E-03	1.07E-08	10-minute, 24	EC	Marginal	1%
											Hydrogen Sulfide	7783-06-4	5.43E-04	3.69E-09	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	7.55E+03	5.13E-02	10-minute	ST	Average	20%
STAGE4	AREA	Vertical Expansion Landfill, Stage 4 Approximate Area = 181,496 m2 (Emissions Based on Year 2037)	N/A	N/A	N/A	N/A	N/A	N/A	428847	4758701	Benzene	71-43-2	0.00E+00	0.00E+00	24, Annual	EC	Average	<1%
											Vinyl Chloride (Chloroethylene)	75-01-4	0.00E+00	0.00E+00	24	EC	Average	<1%
											1,2-Dichloroethane	107-06-2	0.00E+00	0.00E+00	24	EC	Above-Average	<1%
											Total Reduced Sulphur (TRS)	TRS	0.00E+00	0.00E+00	10-minute, 24	EC	Marginal	<1%
											Hydrogen Sulfide	7783-06-4	0.00E+00	0.00E+00	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	0.00E+00	0.00E+00	10-minute	ST	Average	<1%
DC_WF	VOLUME	Daily Cover Dropped at Working Face	N/A	N/A	N/A	N/A	N/A	N/A	429243	4758818	Particulate Matter	PM	Variable [4]	N/A	24	EF	Average	N/A
											PM10	PM10	Variable [4]	N/A	24	EF	Average	N/A
											PM2.5	PM25	Variable [4]	N/A	24	EF	Average	N/A
DC_SS	VOLUME	Daily Cover Dropped at Soil Stockpile	N/A	N/A	N/A	N/A	N/A	N/A	429308	4757217	Particulate Matter	PM	Variable [4]	N/A	24	EF	Average	N/A
											PM10	PM10	Variable [4]	N/A	24	EF	Average	N/A
											PM2.5	PM25	Variable [4]	N/A	24	EF	Average	N/A
CDA1	VOLUME	Compost Material Dropped at Compost Diversion Area 1 (North)	N/A	N/A	N/A	N/A	N/A	N/A	429524	4757510	Particulate Matter	PM	Variable [4]	N/A	24	EF	Average	N/A
											PM10	PM10	Variable [4]	N/A	24	EF	Average	N/A
											PM2.5	PM25	Variable [4]	N/A	24	EF	Average	N/A

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (^oC)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
CDA2	VOLUME	Compost Material Dropped at Compost Diversion Area 2 (South)	N/A	N/A	N/A	N/A	N/A	N/A	429536	4757510	Particulate Matter	PM	Variable [4]	N/A	24	EF	Average	N/A
											PM10	PM10	Variable [4]	N/A	24	EF	Average	N/A
											PM2.5	PM25	Variable [4]	N/A	24	EF	Average	N/A
CDA	AREA	Compost Diversion Area	N/A	N/A	N/A	N/A	N/A	N/A	429513	4757452	Odour	ODOUR	4.47E+03	8.10E-01	10-minute	EF	Average	12%
CS_WF	VOLUME	Contaminated Soil Dropped at Working Face	N/A	N/A	N/A	N/A	N/A	N/A	429230	4758823	Particulate Matter	PM	Variable [4]	N/A	24	EF	Average	N/A
											PM10	PM10	Variable [4]	N/A	24	EF	Average	N/A
											PM2.5	PM25	Variable [4]	N/A	24	EF	Average	N/A
WIND_SS	AREA	Wind Erosion at Soil Stockpile	N/A	N/A	N/A	N/A	N/A	N/A	429216	4757189	Particulate Matter	PM	N/A	Variable [4]	24	EF	Average	N/A
											PM10	PM10	N/A	Variable [4]	24	EF	Average	N/A
											PM2.5	PM25	N/A	Variable [4]	24	EF	Average	N/A
WIND_WF	AREA	Wind Erosion at Working Face	N/A	N/A	N/A	N/A	N/A	N/A	429226	4758768	Particulate Matter	PM	N/A	Variable [4]	24	EF	Average	N/A
											PM10	PM10	N/A	Variable [4]	24	EF	Average	N/A
											PM2.5	PM25	N/A	Variable [4]	24	EF	Average	N/A
WIND_CDA	AREA	Wind Rrosion at Compost Diversion Area	N/A	N/A	N/A	N/A	N/A	N/A	429513	4757452	Particulate Matter	PM	N/A	Variable	24	EF	Average	N/A
											PM10	PM10	N/A	Variable	24	EF	Average	N/A
											PM2.5	PM25	N/A	Variable	24	EF	Average	N/A
FC_CAP	AREA	Final Cap Construction Clay Drop-off	N/A	N/A	N/A	N/A	N/A	N/A	429155	4758819	Particulate Matter	PM	N/A	Variable [4]	24	EF	Average	N/A
											PM10	PM10	N/A	Variable [4]	24	EF	Average	N/A
											PM2.5	PM25	N/A	Variable [4]	24	EF	Average	N/A
FC_SS	AREA	Final Cap Clay Storage Pile Truck Loading	N/A	N/A	N/A	N/A	N/A	N/A	429278	4757247	Particulate Matter	PM	N/A	Variable [4]	24	EF	Average	N/A
											PM10	PM10	N/A	Variable [4]	24	EF	Average	N/A
											PM2.5	PM25	N/A	Variable [4]	24	EF	Average	N/A
WIND_CAP	AREA	Wind Erosion at the Final Cap Construction Area	N/A	N/A	N/A	N/A	N/A	N/A	429147	4758752	Particulate Matter	PM	N/A	Variable [4]	24	EF	Average	N/A
											PM10	PM10	N/A	Variable [4]	24	EF	Average	N/A
											PM2.5	PM25	N/A	Variable [4]	24	EF	Average	N/A
MH5AB	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429468	4758257	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH4A	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429461	4758000	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH3SA	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429461	4757794	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH16	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429423	4757612	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH6AB	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429198	4758220	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
SUMP	AREA	Leachate Maintenance Sump	N/A	N/A	N/A	N/A	N/A	N/A	429247	4758070	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH3SF	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429334	4757819	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH18	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429266	4757613	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
CONSOIL	AREA	Contaminated Soil Pile	N/A	N/A	N/A	N/A	N/A	N/A	429235	4758822	Vinyl Chloride (Chloroethylene)	75-01-4	7.34E-07	3.67E-08	24	ST	Average	<1%
											1,2-Dichloroethane	107-06-2	1.59E-05	7.97E-07	24	ST	Average	<1%
											Benzene	71-43-2	6.76E-04	3.38E-05	24, Annual	ST	Average	10%
											Odour	ODOUR	1.53E+00	7.65E-02	10-minute	ST	Average	<1%
WF	AREA	Working Face / Scrape Down Area	N/A	N/A	N/A	N/A	N/A	N/A	429225	4758767	Odour	ODOUR	N/A	Variable [5]	10-minute	ST	Average	N/A
DOZE1	VOLUME	Cat Dozers at Working Face, Dugitive Dust	N/A	N/A	N/A	N/A	N/A	N/A	429257	4758797	Particulate Matter	PM	3.33E+00	N/A	24	EC	Average	7%
											PM10	PM10	9.84E-01	N/A	24	EC	Average	8%
											PM2.5	PM25	3.50E-01	N/A	24	EC	Average	16%
DOZE2	VOLUME	Cat Dozers at Working Face, Tailpipe	N/A	N/A	N/A	N/A	N/A	N/A	429257	4758797	Particulate Matter	PM	1.26E-03	N/A	24	EC	Average	<1%
											PM10	PM10	1.26E-03	N/A	24	EC	Average	<1%
											PM2.5	PM25	1.22E-03	N/A	24	EC	Average	<1%
											Benzene	71-43-2	8.45E-05	N/A	24, Annual	EC	Average	1%
											Ammonia	7664-41-7	7.78E-04	N/A	24	EC	Average	2%
											Nitrogen Dioxide	NO2	2.61E-02	N/A	24	EC	Average	8%
											Nitrogen Oxides	10102-44-0	2.61E-02	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	2.54E-04	N/A	1, Annual	EC	Average	<1%
DOZE3	VOLUME	Cat Dozers at Soil Stockpile, Fugitive Dust	N/A	N/A	N/A	N/A	N/A	N/A	429314	4757233	Particulate Matter	PM	2.73E+00	N/A	24	EC	Average	6%
											PM10	PM10	8.65E-01	N/A	24	EC	Average	7%
											PM2.5	PM25	2.87E-01	N/A	24	EC	Average	13%
DOZE4	VOLUME	Cat Dozers at Soil Stockpile, Tailpipe	N/A	N/A	N/A	N/A	N/A	N/A	429314	4757233	Particulate Matter	PM	3.26E-04	N/A	24	EC	Average	<1%
											PM10	PM10	3.26E-04	N/A	24	EC	Average	<1%
											PM2.5	PM25	3.16E-04	N/A	24	EC	Average	<1%
											Benzene	71-43-2	2.36E-05	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	2.26E-04	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	7.14E-03	N/A	24	EC	Average	2%
											Nitrogen Oxides	10102-44-0	7.14E-03	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	7.35E-05	N/A	1, Annual	EC	Average	<1%
DOZE1CAP	VOLUME	Cat Dozers at Working Face, Dugitive Dust	N/A	N/A	N/A	N/A	N/A	N/A	429185	4758790	Particulate Matter	PM	5.67E+00	N/A	24	EC	Average	12%
											PM10	PM10	2.04E+00	N/A	24	EC	Average	17%
											PM2.5	PM25	5.96E-01	N/A	24	EC	Average	28%

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (°C)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
DOZE2CAP	VOLUME	Cat Dozers at Working Face, Tailpipe	N/A	N/A	N/A	N/A	N/A	N/A	429185	4758790	Particulate Matter	PM	3.65E-04	N/A	24	EC	Average	<1%
											PM10	PM10	3.65E-04	N/A	24	EC	Average	<1%
											PM2.5	PM25	3.54E-04	N/A	24	EC	Average	<1%
											Benzene	71-43-2	3.06E-05	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	1.19E-04	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	5.76E-03	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	3.89E-05	N/A	1, Annual	EC	Average	<1%
DOZE2SS	VOLUME	Cat Dozers at Soil Stockpile, Tailpipe	N/A	N/A	N/A	N/A	N/A	N/A	429460	4757232	Particulate Matter	PM	2.86E-04	N/A	24	EC	Average	<1%
											PM10	PM10	2.86E-04	N/A	24	EC	Average	<1%
											PM2.5	PM25	2.78E-04	N/A	24	EC	Average	<1%
											Benzene	71-43-2	1.67E-05	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	3.33E-04	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	8.51E-03	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	1.08E-04	N/A	1, Annual	EC	Average	<1%
IDLE01	VOLUME	Trucks Idling at the Scale House	N/A	N/A	N/A	N/A	N/A	N/A	428420	4758417	Particulate Matter	PM	1.28E-04	N/A	24	EC	Average	<1%
											PM10	PM10	1.28E-04	N/A	24	EC	Average	<1%
											PM2.5	PM25	1.18E-04	N/A	24	EC	Average	<1%
											Benzene	71-43-2	1.23E-06	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	2.13E-04	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.08E-02	N/A	24	EC	Average	3%
											Nitrogen Oxides	10102-44-0	2.75E-02	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	1.24E-05	N/A	1, Annual	EC	Average	<1%
IDLE02	VOLUME	Trucks Idling at the Working Face	N/A	N/A	N/A	N/A	N/A	N/A	429247	4758805	Particulate Matter	PM	1.28E-04	N/A	24	EC	Average	<1%
											PM10	PM10	1.28E-04	N/A	24	EC	Average	<1%
											PM2.5	PM25	1.18E-04	N/A	24	EC	Average	<1%
											Benzene	71-43-2	1.23E-06	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	2.13E-04	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.08E-02	N/A	24	EC	Average	3%
											Nitrogen Oxides	10102-44-0	2.75E-02	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	1.24E-05	N/A	1, Annual	EC	Average	<1%
PR01	LINE_VOLUME	Main Entrance Road	N/A	N/A	N/A	N/A	N/A	N/A	428277	4758638	Particulate Matter	PM	6.02E-02 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	3.74E-02 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	5.28E-03 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	3.53E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	2.13E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.90E-02 [6]	N/A	24	EC	Average	6%
											Nitrogen Oxides	10102-44-0	4.86E-02 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	3.06E-05 [6]	N/A	1, Annual	EC	Average	<1%
PR01Z	LINE_VOLUME	Main Entrance Road, onsite equipment	N/A	N/A	N/A	N/A	N/A	N/A	428277	4758638	Particulate Matter	PM	6.14E-03 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	2.92E-03 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	4.36E-04 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	1.24E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	2.88E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.33E-03 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	3.45E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	3.52E-06 [6]	N/A	1, Annual	EC	Average	<1%
UR02Z	LINE_VOLUME	Access road to compost diversion area (CDA)	N/A	N/A	N/A	N/A	N/A	N/A	429167	4757583	Particulate Matter	PM	1.15E+00 [6]	N/A	24	EC	Average	2%
											PM10	PM10	3.48E-01 [6]	N/A	24	EC	Average	3%
											PM2.5	PM25	3.49E-02 [6]	N/A	24	EC	Average	2%
											Benzene	71-43-2	2.45E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	4.85E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.75E-03 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	4.56E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	5.67E-06 [6]	N/A	1, Annual	EC	Average	<1%
PR04A	LINE_VOLUME	Entrance to Scale House	N/A	N/A	N/A	N/A	N/A	N/A	428404	4758633	Particulate Matter	PM	7.77E-02 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	4.50E-02 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	6.44E-03 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	4.17E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	2.51E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	2.24E-02 [6]	N/A	24	EC	Average	7%
											Nitrogen Oxides	10102-44-0	5.73E-02 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	3.62E-05 [6]	N/A	1, Annual	EC	Average	<1%

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (°C)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
PR04AZ	LINE_VOLUME	Entrance to Scale House, onsite equipment	N/A	N/A	N/A	N/A	N/A	N/A	428404	4758633	Particulate Matter	PM	8.13E-03 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	3.55E-03 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	5.41E-04 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	1.45E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	3.37E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.56E-03 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	4.05E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	4.12E-06 [6]	N/A	1, Annual	EC	Average	<1%
BR06	LINE_VOLUME	South Ramp - Variable Traffic	N/A	N/A	N/A	N/A	N/A	N/A	428755	4757734	Particulate Matter	PM	1.11E+00 [6]	N/A	24	EC	Average	2%
											PM10	PM10	2.30E-01 [6]	N/A	24	EC	Average	2%
											PM2.5	PM25	4.47E-02 [6]	N/A	24	EC	Average	2%
											Benzene	71-43-2	1.03E-05 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	6.24E-04 [6]	N/A	24	EC	Average	2%
											Nitrogen Dioxide	NO2	5.56E-02 [6]	N/A	24	EC	Average	17%
											Nitrogen Oxides	10102-44-0	1.42E-01 [6]	N/A	1, 24	EC	Average	2%
											Sulphur Dioxide	7446-09-5	8.98E-05 [6]	N/A	1, Annual	EC	Average	<1%
BR06Z	LINE_VOLUME	South Ramp - Non-variable Traffic	N/A	N/A	N/A	N/A	N/A	N/A	428755	4757734	Particulate Matter	PM	9.77E-02 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	1.28E-02 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	3.19E-03 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	7.83E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	1.56E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	2.85E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	4.03E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	5.03E-05 [6]	N/A	1, Annual	EC	Average	<1%
BR06Y	LINE_VOLUME	South Ramp - Construction Traffic	N/A	N/A	N/A	N/A	N/A	N/A	428755	4757734	Particulate Matter	PM	1.35E-01 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	1.75E-02 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	4.34E-03 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	7.88E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	1.58E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	4.03E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	5.12E-05 [6]	N/A	1, Annual	EC	Average	<1%
PR08Z	LINE_VOLUME	WF to SS/LTF - Non-variable Traffic	N/A	N/A	N/A	N/A	N/A	N/A	428750	4757727	Particulate Matter	PM	5.81E-02 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	1.07E-02 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	2.25E-03 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	5.77E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	1.21E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.98E-03 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	7.14E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	3.07E-05 [6]	N/A	1, Annual	EC	Average	<1%
PR08Y	LINE_VOLUME	WF to SS/LTF - Construction Traffic	N/A	N/A	N/A	N/A	N/A	N/A	428750	4757727	Particulate Matter	PM	3.08E-02 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	4.05E-03 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	1.03E-03 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	4.01E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	8.01E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	2.05E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	2.60E-05 [6]	N/A	1, Annual	EC	Average	<1%
UR09AZ	LINE_VOLUME	WF to SS, to CDA turn off - Non-variable Traffic	N/A	N/A	N/A	N/A	N/A	N/A	429039	4757671	Particulate Matter	PM	1.55E+00 [6]	N/A	24	EC	Average	3%
											PM10	PM10	4.66E-01 [6]	N/A	24	EC	Average	4%
											PM2.5	PM25	4.67E-02 [6]	N/A	24	EC	Average	2%
											Benzene	71-43-2	3.95E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	7.87E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	8.88E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	3.70E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	2.04E-05 [6]	N/A	1, Annual	EC	Average	<1%
UR09AY	LINE_VOLUME	WF to SS, to CDA turnoff - Construction Traffic	N/A	N/A	N/A	N/A	N/A	N/A	429039	4757671	Particulate Matter	PM	9.65E-01 [6]	N/A	24	EC	Average	2%
											PM10	PM10	2.90E-01 [6]	N/A	24	EC	Average	2%
											PM2.5	PM25	4.67E-02 [6]	N/A	24	EC	Average	2%
											Benzene	71-43-2	3.95E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	7.87E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	8.88E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	3.70E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	2.04E-05 [6]	N/A	1, Annual	EC	Average	<1%

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (°C)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
UR09BZ	LINE_VOLUME	WF to SS, after CDA turnoff - Non-variable Traffic	N/A	N/A	N/A	N/A	N/A	N/A	429164	4757579	Particulate Matter	PM	6.50E-01 [6]	N/A	24	EC	Average	1%
											PM10	PM10	1.96E-01 [6]	N/A	24	EC	Average	2%
											PM2.5	PM25	1.96E-02 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	2.29E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	4.57E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	1.17E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	1.49E-05 [6]	N/A	1, Annual	EC	Average	<1%
UR09BY	LINE_VOLUME	WF to SS, after CDA turnoff - Construction Traffic	N/A	N/A	N/A	N/A	N/A	N/A	429164	4757579	Particulate Matter	PM	9.12E-01 [6]	N/A	24	EC	Average	2%
											PM10	PM10	2.74E-01 [6]	N/A	24	EC	Average	2%
											PM2.5	PM25	2.75E-02 [6]	N/A	24	EC	Average	1%
											Benzene	71-43-2	2.33E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	4.66E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	1.19E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	1.51E-05 [6]	N/A	1, Annual	EC	Average	<1%
UR11Z	LINE_VOLUME	Across SS - Variable Traffic	N/A	N/A	N/A	N/A	N/A	N/A	429160	4757399	Particulate Matter	PM	8.82E-01 [6]	N/A	24	EC	Average	2%
											PM10	PM10	2.65E-01 [6]	N/A	24	EC	Average	2%
											PM2.5	PM25	2.66E-02 [6]	N/A	24	EC	Average	1%
											Benzene	71-43-2	3.10E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	6.21E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	1.59E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	2.02E-05 [6]	N/A	1, Annual	EC	Average	<1%
UR11Y	LINE_VOLUME	Across SS - Construction Traffic	N/A	N/A	N/A	N/A	N/A	N/A	429160	4757399	Particulate Matter	PM	1.24E+00 [6]	N/A	24	EC	Average	3%
											PM10	PM10	3.72E-01 [6]	N/A	24	EC	Average	3%
											PM2.5	PM25	3.73E-02 [6]	N/A	24	EC	Average	2%
											Benzene	71-43-2	3.17E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	6.33E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	1.62E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	2.05E-05 [6]	N/A	1, Annual	EC	Average	<1%
UR12	LINE_VOLUME	Unpaved Road to working face - Variable Traffic	N/A	N/A	N/A	N/A	N/A	N/A	429512	4757267	Particulate Matter	PM	1.56E+01 [6]	N/A	24	EC	Average	34%
											PM10	PM10	3.63E+00 [6]	N/A	24	EC	Average	30%
											PM2.5	PM25	3.67E-01 [6]	N/A	24	EC	Average	17%
											Benzene	71-43-2	1.29E-05 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	7.78E-04 [6]	N/A	24	EC	Average	2%
											Nitrogen Dioxide	NO2	6.93E-02 [6]	N/A	24	EC	Average	22%
											Nitrogen Oxides	10102-44-0	1.78E-01 [6]	N/A	1, 24	EC	Average	2%
											Sulphur Dioxide	7446-09-5	1.12E-04 [6]	N/A	1, Annual	EC	Average	<1%
UR12Z	LINE_VOLUME	Unpaved Road to working face - Non-variable Traffic	N/A	N/A	N/A	N/A	N/A	N/A	429512	4757267	Particulate Matter	PM	1.49E+00 [6]	N/A	24	EC	Average	3%
											PM10	PM10	3.38E-01 [6]	N/A	24	EC	Average	3%
											PM2.5	PM25	3.40E-02 [6]	N/A	24	EC	Average	2%
											Benzene	71-43-2	9.76E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	1.94E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	3.55E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	5.03E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	6.27E-05 [6]	N/A	1, Annual	EC	Average	<1%
UR12Y	LINE_VOLUME	Unpaved Road to working face - Construction Traffic	N/A	N/A	N/A	N/A	N/A	N/A	429512	4757267	Particulate Matter	PM	2.06E+00 [6]	N/A	24	EC	Average	4%
											PM10	PM10	4.67E-01 [6]	N/A	24	EC	Average	4%
											PM2.5	PM25	4.68E-02 [6]	N/A	24	EC	Average	2%
											Benzene	71-43-2	9.83E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	1.96E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	5.03E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	6.38E-05 [6]	N/A	1, Annual	EC	Average	<1%
PR13Z	LINE_VOLUME	WF to LTF	N/A	N/A	N/A	N/A	N/A	N/A	429035	4757669	Particulate Matter	PM	3.96E-03 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	1.09E-03 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	1.90E-04 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	1.70E-08 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	3.70E-06 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	3.71E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	9.47E-04 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	5.56E-07 [6]	N/A	1, Annual	EC	Average	<1%

Appendix 5A-S2-M: Source Summary Table, Scenario 2 with Mitigation Applied

RWDI# 2101750

Twin Creeks Environmental Centre

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (^oC)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
PR14Z	LINE_VOLUME	WF to LTF	N/A	N/A	N/A	N/A	N/A	N/A	429077	4757516	Particulate Matter	PM	1.46E-03 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	4.00E-04 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	6.99E-05 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	6.25E-09 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	1.36E-06 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.36E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	3.48E-04 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	2.04E-07 [6]	N/A	1, Annual	EC	Average	<1%
UR17Z	LINE_VOLUME	Across CDA	N/A	N/A	N/A	N/A	N/A	N/A	429514	4757517	Particulate Matter	PM	1.90E+00 [6]	N/A	24	EC	Average	4%
											PM10	PM10	5.71E-01 [6]	N/A	24	EC	Average	5%
											PM2.5	PM25	5.73E-02 [6]	N/A	24	EC	Average	3%
											Benzene	71-43-2	1.53E-05 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	5.93E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	2.88E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	1.95E-05 [6]	N/A	1, Annual	EC	Average	<1%
UR18Z	LINE_VOLUME	Across WF, onsite equipment	N/A	N/A	N/A	N/A	N/A	N/A	429270	4758794	Particulate Matter	PM	2.09E+00 [6]	N/A	24	EC	Average	5%
											PM10	PM10	6.36E-01 [6]	N/A	24	EC	Average	5%
											PM2.5	PM25	6.38E-02 [6]	N/A	24	EC	Average	3%
											Benzene	71-43-2	1.59E-05 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	7.08E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	2.11E-06 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	3.18E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	2.32E-05 [6]	N/A	1, Annual	EC	Average	<1%
PR04B	LINE_VOLUME	Scale House to WF	N/A	N/A	N/A	N/A	N/A	N/A	428477	4758211	Particulate Matter	PM	2.30E-01 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	1.28E-01 [6]	N/A	24	EC	Average	1%
											PM2.5	PM25	1.84E-02 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	1.17E-05 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	7.04E-04 [6]	N/A	24	EC	Average	2%
											Nitrogen Dioxide	NO2	6.27E-02 [6]	N/A	24	EC	Average	20%
											Nitrogen Oxides	10102-44-0	1.61E-01 [6]	N/A	1, 24	EC	Average	2%
											Sulphur Dioxide	7446-09-5	1.01E-04 [6]	N/A	1, Annual	EC	Average	<1%
PR04BZ	LINE_VOLUME	Scale House to WF, onsite equipment	N/A	N/A	N/A	N/A	N/A	N/A	428477	4758211	Particulate Matter	PM	2.46E-02 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	1.02E-02 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	1.58E-03 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	4.08E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	9.49E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	4.40E-03 [6]	N/A	24	EC	Average	1%
											Nitrogen Oxides	10102-44-0	1.14E-02 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	1.16E-05 [6]	N/A	1, Annual	EC	Average	<1%
PR04C	LINE_VOLUME	Exit Road from WF	N/A	N/A	N/A	N/A	N/A	N/A	428477	4758211	Particulate Matter	PM	7.28E-02 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	3.96E-02 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	5.74E-03 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	3.60E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	2.17E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.93E-02 [6]	N/A	24	EC	Average	6%
											Nitrogen Oxides	10102-44-0	4.95E-02 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	3.13E-05 [6]	N/A	1, Annual	EC	Average	<1%
PR04CZ	LINE_VOLUME	Exit Road from WF, onsite equipment	N/A	N/A	N/A	N/A	N/A	N/A	428477	4758211	Particulate Matter	PM	7.86E-03 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	3.19E-03 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	4.95E-04 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	1.26E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	2.93E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.36E-03 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	3.52E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	3.58E-06 [6]	N/A	1, Annual	EC	Average	<1%
MH17	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429326	4757612	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
LW6	AREA	Leachate Monitoring Well	N/A	N/A	N/A	N/A	N/A	N/A	429295	4757641	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
LW5	AREA	Leachate Monitoring Well	N/A	N/A	N/A	N/A	N/A	N/A	429414	4757638	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH3SB	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429460	4757818	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH3SD	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429216	4757819	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH3SC	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429211	4757771	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH3SE	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429326	4757780	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH4B	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429448	4758128	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
LW4	AREA	Leachate Monitoring Well	N/A	N/A	N/A	N/A	N/A	N/A	429414	4758056	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%

Appendix 5A-S2-M: Source Summary Table, Scenario 2 with Mitigation Applied

RWDI# 2101750

Twin Creeks Environmental Centre

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (°C)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
LW3	AREA	Leachate Monitoring Well	N/A	N/A	N/A	N/A	N/A	N/A	429437	4758227	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH8AB	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429215	4758370	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH10	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429205	4758622	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH12AB	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429195	4758697	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH7AB	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429471	4758461	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
LW2	AREA	Leachate Monitoring Well	N/A	N/A	N/A	N/A	N/A	N/A	429451	4758527	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH9AB	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429473	4758617	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH11AB	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429473	4758632	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
LW1	AREA	Leachate Monitoring Well	N/A	N/A	N/A	N/A	N/A	N/A	429457	4758703	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
Total		Total of All Listed Sources									Benzene	71-43-2	6.92E-03					100%
											Vinyl Chloride (Chloroethylene)	75-01-4	3.78E-03					100%
											1,2-Dichloroethane	107-06-2	2.88E-03					100%
											Ammonia	7664-41-7	3.46E-02					100%
											Nitrogen Oxides	10102-44-0	8.07E+00					100%
											Particulate Matter	PM	4.62E+01					100%
											Sulphur Dioxide	7446-09-5	2.75E+00					100%
											Hydrogen Sulfide	7783-06-4	1.07E-01					100%
											Total Reduced Sulphur (TRS)	TRS	1.20E-01					100%
											PM10	PM10	1.23E+01					100%
											PM2.5	PM25	2.14E+00					100%
											Odour	ODOUR	3.71E+04					100%
											Dioxins and Furans	DF	1.70E-10					100%
											Nitrogen Dioxide	NO2	3.18E-01					100%

Notes:

[1] Emission Estimating Technique Short-Forms are V-ST (Validated Source Test), ST (Source Test), EF (Emission Factor), MB (Mass Balance), and EC (Engineering Calculation).

[2] Data Quality Categories: Highest; Above-Average; Average; and Marginal.

[3] For Odour, the units are OU/s and $OU/m^2/s$ for emission rate and flux rate.

[4] Material handling and wind erosion emissions vary by time of day depending on wind conditions in each hour. Hourly emission rates have been applied during modelling.

[5] Odour emissions from the active working face vary depending on the time of day. From 6 a.m. to 9 a.m. the active face is freshly uncovered waste as the daily cover is stripped and new waste is deposited. By 9 a.m. the entire active face has been covered by at least 1 foot to 1 metre of new waste. After 9 a.m. the emission factor for new waste at the active face is applied.

[6] Roadway traffic varies by time of day. The maximum emission rate (g/s) for the entire road segment is shown in this table; hourly emissions rates have been applied during modelling.

Appendix 5A-S2-M-5.1a: On-Site Mobile Equipment Emissions - Fugitive Dust, Mitigation Applied (AM)

Project #2101750

Twin Creeks Environmental Centre - Preferred Alternative

UNPAVED ROAD SECTIONS - AP-42 Section 13.2.2
PAVED ROAD SECTIONS - AP-42 Section 13.2.1

Paved Roads: $E = k\,(sL)^{0.91}\,(W)^{1.02}$
Unpaved Roads - Industrial: $E = 281.9\,k\,(s / 12)^{a}\,(W / 3)^{b}$
Unpaved Roads - Public: $E = 281.9\,k\,(s / 12)^{a}\,(S / 30)^{d} / (M / 0.5)^{c} - C$

E particulate emission factor (g/VKT)
k particle size multiplier (see below)
sL road surface silt loading (g/m^2)
W average weight of the vehicles traveling the road (US short tons)
s surface material silt content (%)
C emission factor for 1980's vehicle fleet exhaust, brake wear and tire wear
M surface material moisture content (%)
S mean vehicle speed (mph)
a,b,c,d constants (see below)

Route ID [1]	Route Description	Traffic Passes			Segment Length [2]	Road Surface [3]	Roadway Type [4]	Mean Vehicle Speed		Average Vehicle Weight [5]	Surface Material Moisture Content [6]	Surface Silt Content [7]	Road Surface Silt Loading [8]	Base AP-42 Emission Factor			Base Emission Rate			Additional Control Efficiency Applied	Final Controlled Emission Rate					
		Hourly	Daily	Annual										TSP	PM_{10}	$PM_{2.5}$	TSP	PM_{10}	$PM_{2.5}$		TSP	Data Quality Rating	PM_{10}	Data Quality Rating	$PM_{2.5}$	Data Quality Rating
		(#/h)	(#/d)	(#/a)	(m)			(km/h)	(mph)	(tons)	(%)	(%)	(g/m^2)	(g/VKT)	(g/VKT)	(g/VKT)	(g/s)	(g/s)	(g/s)	(%)	(g/s)		(g/s)		(g/s)	
PR01	Main Entrance Road	1	1	1	206	Paved	Industrial	10	6	30.2	--	--	0.63	1.0E+02	1.3E+01	3.2E+00	5.8E-03	7.5E-04	1.8E-04	95%	2.9E-04	--	3.8E-05	--	9.1E-06	--
PR01Z	Main Entrance Road, onsite equipment	1	1	1	206	Paved	Industrial	10	6	30.2	--	--	0.63	1.0E+02	1.3E+01	3.2E+00	5.8E-03	7.5E-04	1.8E-04	95%	2.9E-04	--	3.8E-05	--	9.1E-06	--
UR02Z	Access road to compost diversion area (CDA)	1	1	1	414	Unpaved	Industrial	10	6	15.5	--	43.1%	--	9.3E+03	2.8E+03	2.8E+02	1.1E+00	3.2E-01	3.2E-02	90%	1.1E-01	--	3.2E-02	--	3.2E-03	--
PR04A	Entrance to Scale House	1	1	1	487	Paved	Industrial	10	6	36.6	--	--	0.63	1.2E+02	1.6E+01	3.9E+00	1.7E-02	2.2E-03	5.2E-04	95%	8.3E-04	--	1.1E-04	--	2.6E-05	--
PR04AZ	Entrance to Scale House, onsite equipment	1	1	1	487	Paved	Industrial	10	6	36.6	--	--	0.63	1.2E+02	1.6E+01	3.9E+00	1.7E-02	2.2E-03	5.2E-04	95%	8.3E-04	--	1.1E-04	--	2.6E-05	--
BR06	South Ramp - Variable Traffic	1	1	1	603	Paved	Industrial	10	6	41.1	--	--	3.53	6.7E+02	8.7E+01	2.1E+01	1.1E-01	1.5E-02	3.5E-03	90%	1.1E-02	--	1.5E-03	--	3.5E-04	--
BR06Z	South Ramp - Non-variable Traffic	1	1	1	603	Paved	Industrial	10	6	41.1	--	--	3.53	6.7E+02	8.7E+01	2.1E+01	1.1E-01	1.5E-02	3.5E-03	90%	1.1E-02	--	1.5E-03	--	3.5E-04	--
BR06Y	South Ramp - Construction Traffic	1	1	1	603	Paved	Industrial	10	6	41.1	--	--	3.53	6.7E+02	8.7E+01	2.1E+01	1.1E-01	1.5E-02	3.5E-03	90%	1.1E-02	--	1.5E-03	--	3.5E-04	--
PR08Z	WF to SS/LTF - Non-variable Traffic	1	1	1	307	Paved	Industrial	10	6	37.1	--	--	3.53	6.0E+02	7.8E+01	1.9E+01	5.1E-02	6.6E-03	1.6E-03	95%	2.6E-03	--	3.3E-04	--	8.0E-05	--
PR08Y	WF to SS/LTF - Construction Traffic	1	1	1	307	Paved	Industrial	10	6	37.1	--	--	3.53	6.0E+02	7.8E+01	1.9E+01	5.1E-02	6.6E-03	1.6E-03	95%	2.6E-03	--	3.3E-04	--	8.0E-05	--
UR09AZ	WF to SS, to CDA turn off - Non-variable Traffic	1	1	1	211	Unpaved	Industrial	10	6	36.7	--	43.1%	--	1.4E+04	4.1E+03	4.1E+02	8.0E-01	2.4E-01	2.4E-02	90%	8.0E-02	--	2.4E-02	--	2.4E-03	--
UR09AY	WF to SS, to CDA turnoff - Construction Traffic	1	1	1	211	Unpaved	Industrial	10	6	36.7	--	43.1%	--	1.4E+04	4.1E+03	4.1E+02	8.0E-01	2.4E-01	2.4E-02	90%	8.0E-02	--	2.4E-02	--	2.4E-03	--
UR09BZ	WF to SS, after CDA turnoff - Non-variable Traffic	1	1	1	179	Unpaved	Industrial	10	6	46.9	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	7.6E-01	2.3E-01	2.3E-02	90%	7.6E-02	--	2.3E-02	--	2.3E-03	--
UR09BY	WF to SS, after CDA turnoff - Construction Traffic	1	1	1	179	Unpaved	Industrial	10	6	46.9	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	7.6E-01	2.3E-01	2.3E-02	90%	7.6E-02	--	2.3E-02	--	2.3E-03	--
UR11Z	Across SS - Variable Traffic	1	1	1	242	Unpaved	Industrial	10	6	46.9	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	1.0E+00	3.1E-01	3.1E-02	90%	1.0E-01	--	3.1E-02	--	3.1E-03	--
UR11Y	Across SS - Construction Traffic	1	1	1	242	Unpaved	Industrial	10	6	46.9	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	1.0E+00	3.1E-01	3.1E-02	90%	1.0E-01	--	3.1E-02	--	3.1E-03	--
UR12	Unpaved Road to working face - Variable Traffic	1	1	1	752	Unpaved	Industrial	10	6	41.1	--	16.8%		8.2E+03	1.9E+03	1.9E+02	1.7E+00	3.9E-01	3.9E-02	90%	1.7E-01	--	3.9E-02	--	3.9E-03	--
UR12Z	Unpaved Road to working face - Non-variable Traffic	1	1	1	752	Unpaved	Industrial	10	6	41.1	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	1.7E+00	3.9E-01	3.9E-02	90%	1.7E-01	--	3.9E-02	--	3.9E-03	--
UR12Y	Unpaved Road to working face - Construction Traffic	1	1	1	752	Unpaved	Industrial	10	6	41.1	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	1.7E+00	3.9E-01	3.9E-02	90%	1.7E-01	--	3.9E-02	--	3.9E-03	--
PR13Z	WF to LTF	1	1	1	165	Paved	Industrial	10	6	44.3	--	--	3.53	7.2E+02	9.3E+01	2.3E+01	3.3E-02	4.3E-03	1.0E-03	95%	1.6E-03	--	2.1E-04	--	5.2E-05	--
PR14Z	WF to LTF	1	1	1	61	Paved	Industrial	10	6	44.3	--	--	3.53	7.2E+02	9.3E+01	2.3E+01	1.2E-02	1.6E-03	3.8E-04	95%	6.1E-04	--	7.9E-05	--	1.9E-05	--
UR17Z	Across CDA	1	1	1	90	Unpaved	Industrial	10	6	36.4	--	43.1%	--	1.4E+04	4.1E+03	4.1E+02	3.4E-01	1.0E-01	1.0E-02	90%	3.4E-02	--	1.0E-02	--	1.0E-03	--
UR18Z	Across WF, onsite equipment	1	1	1	45	Unpaved	Industrial	10	6	36.4	--	44.7%	--	1.4E+04	4.2E+03	4.2E+02	1.7E-01	5.3E-02	5.3E-03	90%	1.7E-02	--	5.3E-03	--	5.3E-04	--
PR04B	Scale House to WF	1	1	1	681	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	2.6E-02	3.4E-03	8.2E-04	95%	1.3E-03	--	1.7E-04	--	4.1E-05	--
PR04BZ	Scale House to WF, onsite equipment	1	1	1	681	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	2.6E-02	3.4E-03	8.2E-04	95%	1.3E-03	--	1.7E-04	--	4.1E-05	--
PR04C	Exit Road from WF	1	1	1	420	Paved	Industrial	10	6	36.6	--	--	0.75	1.5E+02	1.9E+01	4.5E+00	1.7E-02	2.2E-03	5.3E-04	95%	8.5E-04	--	1.1E-04	--	2.7E-05	--
PR04CZ	Exit Road from WF, onsite equipment	1	1	1	420	Paved	Industrial	10	6	36.6	--	--	0.75	1.5E+02	1.9E+01	4.5E+00	1.7E-02	2.2E-03	5.3E-04	95%	8.5E-04	--	1.1E-04	--	2.7E-05	--

Constants for Mobile Emission Equations

Roadway Type	Contaminant	k	a	b	c	d	Quality
Paved Roads:	**$PM_{2.5}$**	0.15	-	-	-	-	-
	PM_{10}	0.62	-	-	-	-	-
	TSP	4.79	-	-	-	-	-
Unpaved Roads - Industrial:	**$PM_{2.5}$**	0.15	0.9	0.45	-	-	C
	PM_{10}	1.5	0.9	0.45	-	-	B
	TSP	7.32	0.6	0.45	-	-	B
Unpaved Roads - Public:	**$PM_{2.5}$**	0.18	1	-	0.2	0.5	C
	PM_{10}	1.8	1	-	0.2	0.5	B
	TSP	8.96	1	-	0.49	0.2	B

[1] Route ID numbers provided on site plan.
[2] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.
[3] Paved surfaces include asphalt, concrete, and recycled asphalt (if it forms a relatively consistent surface).
[4] Publicly accessible and dominated by light vehicles, or industrial, and dominated by heavy vehicles.
[5] The average vehicle weight reflects the average of the empty and loaded vehicle weight, for travel in both directions.
[6] Required only for publicly accessible unpaved roads.
[7] Required only for unpaved roads (public and industrial).
[8] Required only for industrial paved roads.

Sample calculation for uncontrolled TSP emission factor for Source PR01: Main Entrance Road

EF = 281.9 x (4.9) x [(0% / 12)]^(0.7) x [(36.6087628865979 tons) / 3]^(0.45) = 102 g TSP / vehicle kilometer travelled (vkt)

Sample calculation for TSP emission rate for Source PR01: Main Entrance Road

$$\frac{1 \text{ vehicles}}{1 \text{ h}} \times \frac{206 \text{ m}}{1 \text{ km}} \times \frac{1 \text{ km}}{1000 \text{ m}} \times \frac{102 \text{ } g_{TSP}}{1 \text{ vehicle km}} \times \frac{1 \text{ h}}{3600 \text{ s}} \times \frac{0.05 \text{ } g_{TSP\ uncontrolled}}{1 \text{ } g_{TSP}} = 2.9E\text{-}04 \text{ } g_{TSP} / \text{s}$$

Comments

Appendix 5A-S2-M-5.1a: On-Site Mobile Equipment Emissions - Fugitive Dust, Mitigation Applied (MD)

Project #2101750

Twin Creeks Environmental Centre - Preferred Alternative

UNPAVED ROAD SECTIONS - AP-42 Section 13.2.2
PAVED ROAD SECTIONS - AP-42 Section 13.2.1

Paved Roads: $E = k\,(sL)^{0.91}\,(W)^{1.02}$
Unpaved Roads - Industrial: $E = 281.9\,k\,(s / 12)^{a}\,(W / 3)^{b}$
Unpaved Roads - Public: $E = 281.9\,k\,(s / 12)^{a}\,(S / 30)^{d} / (M / 0.5)^{c} - C$

E particulate emission factor (g/VKT)
k particle size multiplier (see below)
sL road surface silt loading (g/m^2)
W average weight of the vehicles traveling the road (US short tons)
s surface material silt content (%)
C emission factor for 1980's vehicle fleet exhaust, brake wear and tire wear
M surface material moisture content (%)
S mean vehicle speed (mph)
a,b,c,d constants (see below)

Route ID [1]	Route Description	Traffic Passes [2]			Segment Length [2]	Road Surface [3]	Roadway Type [4]	Mean Vehicle Speed		Average Vehicle Weight [5]	Surface Material Moisture Content [6]	Surface Silt Content [7]	Road Surface Silt Loading [8]	Base AP-42 Emission Factor			Base Emission Rate			Additional Control Efficiency Applied	Final Controlled Emission Rate					
		Hourly	Daily	Annual										TSP	PM_{10}	$PM_{2.5}$	TSP	PM_{10}	$PM_{2.5}$		TSP	Data Quality Rating	PM_{10}	Data Quality Rating	$PM_{2.5}$	Data Quality Rating
		(#/h)	(#/d)	(#/a)	(m)			(km/h)	(mph)	(tons)	(%)	(%)	(g/m^2)	(g/VKT)	(g/VKT)	(g/VKT)	(g/s)	(g/s)	(g/s)	(%)	(g/s)		(g/s)		(g/s)	
PR01	Main Entrance Road	1	1	1	206	Paved	Industrial	10	6	30.2	--	--	0.63	1.0E+02	1.3E+01	3.2E+00	5.8E-03	7.5E-04	1.8E-04	95%	2.9E-04	--	3.8E-05	--	9.1E-06	--
PR01Z	Main Entrance Road, onsite equipment	1	1	1	206	Paved	Industrial	10	6	30.2	--	--	0.63	1.0E+02	1.3E+01	3.2E+00	5.8E-03	7.5E-04	1.8E-04	95%	2.9E-04	--	3.8E-05	--	9.1E-06	--
UR02Z	Access road to compost diversion area (CDA)	1	1	1	414	Unpaved	Industrial	10	6	15.5	--	43.1%	--	9.3E+03	2.8E+03	2.8E+02	1.1E+00	3.2E-01	3.2E-02	90%	1.1E-01	--	3.2E-02	--	3.2E-03	--
PR04A	Entrance to Scale House	1	1	1	487	Paved	Industrial	10	6	36.6	--	--	0.63	1.2E+02	1.6E+01	3.9E+00	1.7E-02	2.2E-03	5.2E-04	95%	8.3E-04	--	1.1E-04	--	2.6E-05	--
PR04AZ	Entrance to Scale House, onsite equipment	1	1	1	487	Paved	Industrial	10	6	36.6	--	--	0.63	1.2E+02	1.6E+01	3.9E+00	1.7E-02	2.2E-03	5.2E-04	95%	8.3E-04	--	1.1E-04	--	2.6E-05	--
BR06	South Ramp - Variable Traffic	1	1	1	603	Paved	Industrial	10	6	41.1	--	--	3.53	6.7E+02	8.7E+01	2.1E+01	1.1E-01	1.5E-02	3.5E-03	90%	1.1E-02	--	1.5E-03	--	3.5E-04	--
BR06Z	South Ramp - Non-variable Traffic	1	1	1	603	Paved	Industrial	10	6	41.1	--	--	3.53	6.7E+02	8.7E+01	2.1E+01	1.1E-01	1.5E-02	3.5E-03	90%	1.1E-02	--	1.5E-03	--	3.5E-04	--
BR06Y	South Ramp - Construction Traffic	1	1	1	603	Paved	Industrial	10	6	41.1	--	--	3.53	6.7E+02	8.7E+01	2.1E+01	1.1E-01	1.5E-02	3.5E-03	90%	1.1E-02	--	1.5E-03	--	3.5E-04	--
PR08Z	WF to SS/LTF - Non-variable Traffic	1	1	1	307	Paved	Industrial	10	6	37.1	--	--	3.53	6.0E+02	7.8E+01	1.9E+01	5.1E-02	6.6E-03	1.6E-03	95%	2.6E-03	--	3.3E-04	--	8.0E-05	--
PR08Y	WF to SS/LTF - Construction Traffic	1	1	1	307	Paved	Industrial	10	6	37.1	--	--	3.53	6.0E+02	7.8E+01	1.9E+01	5.1E-02	6.6E-03	1.6E-03	95%	2.6E-03	--	3.3E-04	--	8.0E-05	--
UR09AZ	WF to SS, to CDA turn off - Non-variable Traffic	1	1	1	211	Unpaved	Industrial	10	6	36.7	--	43.1%	--	1.4E+04	4.1E+03	4.1E+02	8.0E-01	2.4E-01	2.4E-02	90%	8.0E-02	--	2.4E-02	--	2.4E-03	--
UR09AY	WF to SS, to CDA turnoff - Construction Traffic	1	1	1	211	Unpaved	Industrial	10	6	36.7	--	43.1%	--	1.4E+04	4.1E+03	4.1E+02	8.0E-01	2.4E-01	2.4E-02	90%	8.0E-02	--	2.4E-02	--	2.4E-03	--
UR09BZ	WF to SS, after CDA turnoff - Non-variable Traffic	1	1	1	179	Unpaved	Industrial	10	6	46.9	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	7.6E-01	2.3E-01	2.3E-02	90%	7.6E-02	--	2.3E-02	--	2.3E-03	--
UR09BY	WF to SS, after CDA turnoff - Construction Traffic	1	1	1	179	Unpaved	Industrial	10	6	46.9	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	7.6E-01	2.3E-01	2.3E-02	90%	7.6E-02	--	2.3E-02	--	2.3E-03	--
UR11Z	Across SS - Variable Traffic	1	1	1	242	Unpaved	Industrial	10	6	46.9	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	1.0E+00	3.1E-01	3.1E-02	90%	1.0E-01	--	3.1E-02	--	3.1E-03	--
UR11Y	Across SS - Construction Traffic	1	1	1	242	Unpaved	Industrial	10	6	46.9	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	1.0E+00	3.1E-01	3.1E-02	90%	1.0E-01	--	3.1E-02	--	3.1E-03	--
UR12	Unpaved Road to working face - Variable Traffic	1	1	1	752	Unpaved	Industrial	10	6	41.1	--	16.8%		8.2E+03	1.9E+03	1.9E+02	1.7E+00	3.9E-01	3.9E-02	90%	1.7E-01	--	3.9E-02	--	3.9E-03	--
UR12Z	Unpaved Road to working face - Non-variable Traffic	1	1	1	752	Unpaved	Industrial	10	6	41.1	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	1.7E+00	3.9E-01	3.9E-02	90%	1.7E-01	--	3.9E-02	--	3.9E-03	--
UR12Y	Unpaved Road to working face - Construction Traffic	1	1	1	752	Unpaved	Industrial	10	6	41.1	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	1.7E+00	3.9E-01	3.9E-02	90%	1.7E-01	--	3.9E-02	--	3.9E-03	--
PR13Z	WF to LTF	1	1	1	165	Paved	Industrial	10	6	44.3	--	--	3.53	7.2E+02	9.3E+01	2.3E+01	3.3E-02	4.3E-03	1.0E-03	95%	1.6E-03	--	2.1E-04	--	5.2E-05	--
PR14Z	WF to LTF	1	1	1	61	Paved	Industrial	10	6	44.3	--	--	3.53	7.2E+02	9.3E+01	2.3E+01	1.2E-02	1.6E-03	3.8E-04	95%	6.1E-04	--	7.9E-05	--	1.9E-05	--
UR17Z	Across CDA	1	1	1	90	Unpaved	Industrial	10	6	36.4	--	43.1%	--	1.4E+04	4.1E+03	4.1E+02	3.4E-01	1.0E-01	1.0E-02	90%	3.4E-02	--	1.0E-02	--	1.0E-03	--
UR18Z	Across WF, onsite equipment	1	1	1	45	Unpaved	Industrial	10	6	36.4	--	44.7%	--	1.4E+04	4.2E+03	4.2E+02	1.7E-01	5.3E-02	5.3E-03	90%	1.7E-02	--	5.3E-03	--	5.3E-04	--
PR04B	Scale House to WF	1	1	1	681	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	2.6E-02	3.4E-03	8.2E-04	95%	1.3E-03	--	1.7E-04	--	4.1E-05	--
PR04BZ	Scale House to WF, onsite equipment	1	1	1	681	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	2.6E-02	3.4E-03	8.2E-04	95%	1.3E-03	--	1.7E-04	--	4.1E-05	--
PR04C	Exit Road from WF	1	1	1	420	Paved	Industrial	10	6	36.6	--	--	0.75	1.5E+02	1.9E+01	4.5E+00	1.7E-02	2.2E-03	5.3E-04	95%	8.5E-04	--	1.1E-04	--	2.7E-05	--
PR04CZ	Exit Road from WF, onsite equipment	1	1	1	420	Paved	Industrial	10	6	36.6	--	--	0.75	1.5E+02	1.9E+01	4.5E+00	1.7E-02	2.2E-03	5.3E-04	95%	8.5E-04	--	1.1E-04	--	2.7E-05	--

Constants for Mobile Emission Equations

Roadway Type	Contaminant	k	a	b	c	d	Quality
Paved Roads:	**$PM_{2.5}$**	0.15	-	-	-	-	-
	PM_{10}	0.62	-	-	-	-	-
	TSP	4.79	-	-	-	-	-
Unpaved Roads - Industrial:	**$PM_{2.5}$**	0.15	0.9	0.45	-	-	C
	PM_{10}	1.5	0.9	0.45	-	-	B
	TSP	7.32	0.6	0.45	-	-	B
Unpaved Roads - Public:	**$PM_{2.5}$**	0.18	1	-	0.2	0.5	C
	PM_{10}	1.8	1	-	0.2	0.5	B
	TSP	8.96	1	-	0.49	0.2	B

[1] Route ID numbers provided on site plan.
[2] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.
[3] Paved surfaces include asphalt, concrete, and recycled asphalt (if it forms a relatively consistent surface).
[4] Publicly accessible and dominated by light vehicles, or industrial, and dominated by heavy vehicles.
[5] The average vehicle weight reflects the average of the empty and loaded vehicle weight, for travel in both directions.
[6] Required only for publicly accessible unpaved roads.
[7] Required only for unpaved roads (public and industrial).
[8] Required only for industrial paved roads.

Sample calculation for uncontrolled TSP emission factor for Source PR01: Main Entrance Road

EF = 281.9 x (4.9) x [(0% / 12)]^(0.7) x [(36.6087628865979 tons) / 3]^(0.45) = 102 g TSP / vehicle kilometer travelled (vkt)

Sample calculation for TSP emission rate for Source PR01: Main Entrance Road

$$\frac{1 \text{ vehicles}}{1 \text{ h}} \times \frac{206 \text{ m}}{1 \text{ km}} \times \frac{1 \text{ km}}{1000 \text{ m}} \times \frac{102 \text{ } g_{TSP}}{1 \text{ vehicle km}} \times \frac{1 \text{ h}}{3600 \text{ s}} \times \frac{0.05 \text{ } g_{TSP\ uncontrolled}}{1 \text{ } g_{TSP}} = 2.9E\text{-}04 \text{ } g_{TSP} / \text{s}$$

Comments

Appendix 5A-S2-M-5.1a: On-Site Mobile Equipment Emissions - Fugitive Dust, Mitigation Applied (PM)

Project #2101750

Twin Creeks Environmental Centre - Preferred Alternative

UNPAVED ROAD SECTIONS - AP-42 Section 13.2.2
PAVED ROAD SECTIONS - AP-42 Section 13.2.1

Paved Roads:	$E = k\,(sL)^{0.91}\,(W)^{1.02}$
Unpaved Roads - Industrial:	$E = 281.9\,k\,(s / 12)^{a}\,(W / 3)^{b}$
Unpaved Roads - Public:	$E = 281.9\,k\,(s / 12)^{a}\,(S / 30)^{d} / (M / 0.5)^{c} - C$

E particulate emission factor (g/VKT)
k particle size multiplier (see below)
sL road surface silt loading (g/m^2)
W average weight of the vehicles traveling the road (US short tons)
s surface material silt content (%)
C emission factor for 1980's vehicle fleet exhaust, brake wear and tire wear
M surface material moisture content (%)
S mean vehicle speed (mph)
a,b,c,d constants (see below)

Route ID [1]	Route Description	Traffic Passes [2]			Segment Length [2]	Road Surface [3]	Roadway Type [4]	Mean Vehicle Speed		Average Vehicle Weight [5]	Surface Material Moisture Content [6]	Surface Silt Content [7]	Road Surface Silt Loading [8]	Base AP-42 Emission Factor			Base Emission Rate			Additional Control Efficiency Applied	Final Controlled Emission Rate					
		Hourly	Daily	Annual										TSP	PM_{10}	$PM_{2.5}$	TSP	PM_{10}	$PM_{2.5}$		TSP	Data Quality Rating	PM_{10}	Data Quality Rating	$PM_{2.5}$	Data Quality Rating
		(#/h)	(#/d)	(#/a)	(m)			(km/h)	(mph)	(tons)	(%)	(%)	(g/m^2)	(g/VKT)	(g/VKT)	(g/VKT)	(g/s)	(g/s)	(g/s)	(%)	(g/s)		(g/s)		(g/s)	
PR01	Main Entrance Road	1	1	1	206	Paved	Industrial	10	6	30.2	--	--	0.63	1.0E+02	1.3E+01	3.2E+00	5.8E-03	7.5E-04	1.8E-04	95%	2.9E-04	--	3.8E-05	--	9.1E-06	--
PR01Z	Main Entrance Road, onsite equipment	1	1	1	206	Paved	Industrial	10	6	30.2	--	--	0.63	1.0E+02	1.3E+01	3.2E+00	5.8E-03	7.5E-04	1.8E-04	95%	2.9E-04	--	3.8E-05	--	9.1E-06	--
UR02Z	Access road to compost diversion area (CDA)	1	1	1	414	Unpaved	Industrial	10	6	15.5	--	43.1%	--	9.3E+03	2.8E+03	2.8E+02	1.1E+00	3.2E-01	3.2E-02	90%	1.1E-01	--	3.2E-02	--	3.2E-03	--
PR04A	Entrance to Scale House	1	1	1	487	Paved	Industrial	10	6	36.6	--	--	0.63	1.2E+02	1.6E+01	3.9E+00	1.7E-02	2.2E-03	5.2E-04	95%	8.3E-04	--	1.1E-04	--	2.6E-05	--
PR04AZ	Entrance to Scale House, onsite equipment	1	1	1	487	Paved	Industrial	10	6	36.6	--	--	0.63	1.2E+02	1.6E+01	3.9E+00	1.7E-02	2.2E-03	5.2E-04	95%	8.3E-04	--	1.1E-04	--	2.6E-05	--
BR06	South Ramp - Variable Traffic	1	1	1	603	Paved	Industrial	10	6	41.1	--	--	3.53	6.7E+02	8.7E+01	2.1E+01	1.1E-01	1.5E-02	3.5E-03	90%	1.1E-02	--	1.5E-03	--	3.5E-04	--
BR06Z	South Ramp - Non-variable Traffic	1	1	1	603	Paved	Industrial	10	6	41.1	--	--	3.53	6.7E+02	8.7E+01	2.1E+01	1.1E-01	1.5E-02	3.5E-03	90%	1.1E-02	--	1.5E-03	--	3.5E-04	--
BR06Y	South Ramp - Construction Traffic	1	1	1	603	Paved	Industrial	10	6	41.1	--	--	3.53	6.7E+02	8.7E+01	2.1E+01	1.1E-01	1.5E-02	3.5E-03	90%	1.1E-02	--	1.5E-03	--	3.5E-04	--
PR08Z	WF to SS/LTF - Non-variable Traffic	1	1	1	307	Paved	Industrial	10	6	37.1	--	--	3.53	6.0E+02	7.8E+01	1.9E+01	5.1E-02	6.6E-03	1.6E-03	95%	2.6E-03	--	3.3E-04	--	8.0E-05	--
PR08Y	WF to SS/LTF - Construction Traffic	1	1	1	307	Paved	Industrial	10	6	37.1	--	--	3.53	6.0E+02	7.8E+01	1.9E+01	5.1E-02	6.6E-03	1.6E-03	95%	2.6E-03	--	3.3E-04	--	8.0E-05	--
UR09AZ	WF to SS, to CDA turn off - Non-variable Traffic	1	1	1	211	Unpaved	Industrial	10	6	36.7	--	43.1%	--	1.4E+04	4.1E+03	4.1E+02	8.0E-01	2.4E-01	2.4E-02	90%	8.0E-02	--	2.4E-02	--	2.4E-03	--
UR09AY	WF to SS, to CDA turnoff - Construction Traffic	1	1	1	211	Unpaved	Industrial	10	6	36.7	--	43.1%	--	1.4E+04	4.1E+03	4.1E+02	8.0E-01	2.4E-01	2.4E-02	90%	8.0E-02	--	2.4E-02	--	2.4E-03	--
UR09BZ	WF to SS, after CDA turnoff - Non-variable Traffic	1	1	1	179	Unpaved	Industrial	10	6	46.9	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	7.6E-01	2.3E-01	2.3E-02	90%	7.6E-02	--	2.3E-02	--	2.3E-03	--
UR09BY	WF to SS, after CDA turnoff - Construction Traffic	1	1	1	179	Unpaved	Industrial	10	6	46.9	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	7.6E-01	2.3E-01	2.3E-02	90%	7.6E-02	--	2.3E-02	--	2.3E-03	--
UR11Z	Across SS - Variable Traffic	1	1	1	242	Unpaved	Industrial	10	6	46.9	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	1.0E+00	3.1E-01	3.1E-02	90%	1.0E-01	--	3.1E-02	--	3.1E-03	--
UR11Y	Across SS - Construction Traffic	1	1	1	242	Unpaved	Industrial	10	6	46.9	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	1.0E+00	3.1E-01	3.1E-02	90%	1.0E-01	--	3.1E-02	--	3.1E-03	--
UR12	Unpaved Road to working face - Variable Traffic	1	1	1	752	Unpaved	Industrial	10	6	41.1	--	16.8%		8.2E+03	1.9E+03	1.9E+02	1.7E+00	3.9E-01	3.9E-02	90%	1.7E-01	--	3.9E-02	--	3.9E-03	--
UR12Z	Unpaved Road to working face - Non-variable Traffic	1	1	1	752	Unpaved	Industrial	10	6	41.1	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	1.7E+00	3.9E-01	3.9E-02	90%	1.7E-01	--	3.9E-02	--	3.9E-03	--
UR12Y	Unpaved Road to working face - Construction Traffic	1	1	1	752	Unpaved	Industrial	10	6	41.1	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	1.7E+00	3.9E-01	3.9E-02	90%	1.7E-01	--	3.9E-02	--	3.9E-03	--
PR13Z	WF to LTF	1	1	1	165	Paved	Industrial	10	6	44.3	--	--	3.53	7.2E+02	9.3E+01	2.3E+01	3.3E-02	4.3E-03	1.0E-03	95%	1.6E-03	--	2.1E-04	--	5.2E-05	--
PR14Z	WF to LTF	1	1	1	61	Paved	Industrial	10	6	44.3	--	--	3.53	7.2E+02	9.3E+01	2.3E+01	1.2E-02	1.6E-03	3.8E-04	95%	6.1E-04	--	7.9E-05	--	1.9E-05	--
UR17Z	Across CDA	1	1	1	90	Unpaved	Industrial	10	6	36.4	--	43.1%	--	1.4E+04	4.1E+03	4.1E+02	3.4E-01	1.0E-01	1.0E-02	90%	3.4E-02	--	1.0E-02	--	1.0E-03	--
UR18Z	Across WF, onsite equipment	1	1	1	45	Unpaved	Industrial	10	6	36.4	--	44.7%	--	1.4E+04	4.2E+03	4.2E+02	1.7E-01	5.3E-02	5.3E-03	90%	1.7E-02	--	5.3E-03	--	5.3E-04	--
PR04B	Scale House to WF	1	1	1	681	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	2.6E-02	3.4E-03	8.2E-04	95%	1.3E-03	--	1.7E-04	--	4.1E-05	--
PR04BZ	Scale House to WF, onsite equipment	1	1	1	681	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	2.6E-02	3.4E-03	8.2E-04	95%	1.3E-03	--	1.7E-04	--	4.1E-05	--
PR04C	Exit Road from WF	1	1	1	420	Paved	Industrial	10	6	36.6	--	--	0.75	1.5E+02	1.9E+01	4.5E+00	1.7E-02	2.2E-03	5.3E-04	95%	8.5E-04	--	1.1E-04	--	2.7E-05	--
PR04CZ	Exit Road from WF, onsite equipment	1	1	1	420	Paved	Industrial	10	6	36.6	--	--	0.75	1.5E+02	1.9E+01	4.5E+00	1.7E-02	2.2E-03	5.3E-04	95%	8.5E-04	--	1.1E-04	--	2.7E-05	--

Constants for Mobile Emission Equations

Roadway Type	Contaminant	k	a	b	c	d	Quality
Paved Roads:	**$PM_{2.5}$**	0.15	-	-	-	-	-
	PM_{10}	0.62	-	-	-	-	-
	TSP	4.79	-	-	-	-	-
Unpaved Roads - Industrial:	**$PM_{2.5}$**	0.15	0.9	0.45	-	-	C
	PM_{10}	1.5	0.9	0.45	-	-	B
	TSP	7.32	0.6	0.45	-	-	B
Unpaved Roads - Public:	**$PM_{2.5}$**	0.18	1	-	0.2	0.5	C
	PM_{10}	1.8	1	-	0.2	0.5	B
	TSP	8.96	1	-	0.49	0.2	B

[1] Route ID numbers provided on site plan.
[2] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.
[3] Paved surfaces include asphalt, concrete, and recycled asphalt (if it forms a relatively consistent surface).
[4] Publicly accessible and dominated by light vehicles, or industrial, and dominated by heavy vehicles.
[5] The average vehicle weight reflects the average of the empty and loaded vehicle weight, for travel in both directions.
[6] Required only for publicly accessible unpaved roads.
[7] Required only for unpaved roads (public and industrial).
[8] Required only for industrial paved roads.

Sample calculation for uncontrolled TSP emission factor for Source PR01: Main Entrance Road

EF = 281.9 x (4.9) x [(0% / 12)]^(0.7) x [(36.6087628865979 tons) / 3]^(0.45) = 102 g TSP / vehicle kilometer travelled (vkt)

Sample calculation for TSP emission rate for Source PR01: Main Entrance Road

$$\frac{1 \text{ vehicles}}{1 \text{ h}} \times \frac{206 \text{ m}}{1 \text{ km}} \times \frac{1 \text{ km}}{1000 \text{ m}} \times \frac{102 \text{ } g_{TSP}}{1 \text{ vehicle km}} \times \frac{1 \text{ h}}{3600 \text{ s}} \times \frac{0.05 \text{ } g_{TSP\ uncontrolled}}{1 \text{ } g_{TSP}} = 2.9E\text{-}04 \text{ } g_{TSP} / \text{s}$$

Comments

Appendix 5A-S2-M-5.1b: Vehicle Emission Rates - Tailpipe Emissions, Mitigation Applied, AM

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	PM TSP PM (g/vkt)	PM TSP PM (g/h)	PM10 PM10 (g/vkt)	PM10 PM10 (g/h)	PM25 PM25 (g/vkt)	PM25 PM25 (g/h)	71-43-2 Benzene 71-43-2 (g/vkt)	71-43-2 Benzene 71-43-2 (g/h)	7664-41-7 Ammonia 7664-41-7 (g/vkt)	7664-41-7 Ammonia 7664-41-7 (g/h)	NO2 Nitrogen Dioxide NO2 (g/vkt)	NO2 Nitrogen Dioxide NO2 (g/h)	10102-44-0 Nitrogen Oxides 10102-44-0 (g/vkt)	10102-44-0 Nitrogen Oxides 10102-44-0 (g/h)
							Tailpipe Emission Factor [5]													
Mobile Equipment																				
PR01	Main Entrance Road	1	1	206	10	100%	6.60E+00	0.00E+00	6.60E+00	0.00E+00	8.65E-01	0.00E+00	6.85E-04	0.00E+00	4.13E-02	0.00E+00	3.68E+00	0.00E+00	9.43E+00	0.00E+00
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	0.00E+00	6.94E-01	0.00E+00	6.94E-01	0.00E+00	9.09E-02	0.00E+00	3.51E-04	0.00E+00	8.15E-03	0.00E+00	3.78E-01	0.00E+00	9.79E-01
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	0.00E+00	1.09E+00	0.00E+00	1.09E+00	0.00E+00	1.43E-01	0.00E+00	8.23E-04	0.00E+00	1.63E-02	0.00E+00	5.88E-01	0.00E+00	1.53E+00
PR04A	Entrance to Scale House	1	1	487	10	100%	6.60E+00	1.13E+00	6.60E+00	1.13E+00	8.65E-01	1.47E-01	6.85E-04	1.94E-03	4.13E-02	2.27E-02	3.68E+00	5.79E-01	9.43E+00	1.57E+00
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	0.00E+00	1.64E+00	0.00E+00	1.64E+00	0.00E+00	2.15E-01	0.00E+00	8.29E-04	0.00E+00	1.93E-02	0.00E+00	8.94E-01	0.00E+00	2.31E+00
BR06	South Ramp - Variable Traffic	1	1	603	10	100%	6.60E+00	0.00E+00	6.60E+00	0.00E+00	8.65E-01	0.00E+00	6.85E-04	0.00E+00	4.13E-02	0.00E+00	3.68E+00	0.00E+00	9.43E+00	0.00E+00
BR06Z	South Ramp - Non-variable Traffic	1	1	603	10	100%	0.00E+00	7.81E-02	0.00E+00	7.81E-02	0.00E+00	5.63E-02	0.00E+00	3.24E-03	0.00E+00	6.44E-02	0.00E+00	1.18E-02	0.00E+00	1.67E+00
BR06Y	South Ramp - Construction Traffic	1	1	603	10	100%	0.00E+00	4.06E-02	0.00E+00	4.06E-02	0.00E+00	3.94E-02	0.00E+00	2.36E-03	0.00E+00	4.73E-02	0.00E+00	0.00E+00	0.00E+00	1.21E+00
PR08Z	WF to SS/LTF - Non-variable Traffic	1	1	307	10	100%	0.00E+00	6.28E-01	0.00E+00	6.28E-01	0.00E+00	9.19E-02	0.00E+00	9.79E-04	0.00E+00	2.06E-02	0.00E+00	3.36E-01	0.00E+00	1.21E+00
PR08Y	WF to SS/LTF - Construction Traffic	1	1	307	10	100%	0.00E+00	2.06E-02	0.00E+00	2.06E-02	0.00E+00	2.00E-02	0.00E+00	1.20E-03	0.00E+00	2.40E-02	0.00E+00	0.00E+00	0.00E+00	6.14E-01
UR09AZ	WF to SS, to CDA turn off - Non-variable Traffic	1	1	211	10	100%	0.00E+00	3.18E-01	0.00E+00	3.18E-01	0.00E+00	4.90E-02	0.00E+00	7.40E-04	0.00E+00	1.47E-02	0.00E+00	1.66E-01	0.00E+00	6.93E-01
UR09AY	WF to SS, to CDA turnoff - Construction Traffic	1	1	211	10	100%	0.00E+00	1.42E-02	0.00E+00	1.42E-02	0.00E+00	1.38E-02	0.00E+00	8.27E-04	0.00E+00	1.65E-02	0.00E+00	0.00E+00	0.00E+00	4.23E-01
UR09BZ	WF to SS, after CDA turnoff - Non-variable Traffic	1	1	179	10	100%	0.00E+00	1.65E-02	0.00E+00	1.65E-02	0.00E+00	1.61E-02	0.00E+00	9.63E-04	0.00E+00	1.92E-02	0.00E+00	0.00E+00	0.00E+00	4.92E-01
UR09BY	WF to SS, after CDA turnoff - Construction Traffic	1	1	179	10	100%	0.00E+00	1.20E-02	0.00E+00	1.20E-02	0.00E+00	1.17E-02	0.00E+00	7.00E-04	0.00E+00	1.40E-02	0.00E+00	0.00E+00	0.00E+00	3.58E-01
UR11Z	Across SS - Variable Traffic	1	1	242	10	100%	0.00E+00	2.25E-02	0.00E+00	2.25E-02	0.00E+00	2.18E-02	0.00E+00	1.31E-03	0.00E+00	2.61E-02	0.00E+00	0.00E+00	0.00E+00	6.68E-01
UR11Y	Across SS - Construction Traffic	1	1	242	10	100%	0.00E+00	1.63E-02	0.00E+00	1.63E-02	0.00E+00	1.58E-02	0.00E+00	9.50E-04	0.00E+00	1.90E-02	0.00E+00	0.00E+00	0.00E+00	4.85E-01
UR12	Unpaved Road to working face - Variable Traffic	1	1	752	10	100%	6.60E+00	0.00E+00	6.60E+00	0.00E+00	8.65E-01	0.00E+00	6.85E-04	0.00E+00	4.13E-02	0.00E+00	3.68E+00	0.00E+00	9.43E+00	0.00E+00
UR12Z	Unpaved Road to working face - Non-variable Traffic	1	1	752	10	100%	0.00E+00	9.74E-02	0.00E+00	9.74E-02	0.00E+00	7.03E-02	0.00E+00	4.04E-03	0.00E+00	8.04E-02	0.00E+00	1.47E-02	0.00E+00	2.08E+00
UR12Y	Unpaved Road to working face - Construction Traffic	1	1	752	10	100%	0.00E+00	5.07E-02	0.00E+00	5.07E-02	0.00E+00	4.92E-02	0.00E+00	2.95E-03	0.00E+00	5.89E-02	0.00E+00	0.00E+00	0.00E+00	1.51E+00
PR13Z	WF to LTF	1	1	165	10	100%	0.00E+00	1.19E+00	0.00E+00	1.19E+00	0.00E+00	1.56E-01	0.00E+00	3.06E-05	0.00E+00	6.67E-03	0.00E+00	6.67E-01	0.00E+00	1.70E+00
PR14Z	WF to LTF	1	1	61	10	100%	0.00E+00	4.38E-01	0.00E+00	4.38E-01	0.00E+00	5.75E-02	0.00E+00	1.12E-05	0.00E+00	2.45E-03	0.00E+00	2.45E-01	0.00E+00	6.27E-01
UR17Z	Across CDA	1	1	90	10	100%	0.00E+00	1.18E-02	0.00E+00	1.18E-02	0.00E+00	1.14E-02	0.00E+00	9.87E-04	0.00E+00	3.83E-03	0.00E+00	0.00E+00	0.00E+00	1.86E-01
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	0.00E+00	5.87E-03	0.00E+00	5.87E-03	0.00E+00	5.59E-03	0.00E+00	4.74E-04	0.00E+00	2.11E-03	0.00E+00	6.31E-05	0.00E+00	9.49E-02
PR04B	Scale House to WF	1	1	681	10	100%	6.60E+00	1.59E+00	6.60E+00	1.59E+00	8.65E-01	2.06E-01	6.85E-04	2.72E-03	4.13E-02	3.17E-02	3.68E+00	8.10E-01	9.43E+00	2.19E+00
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	0.00E+00	2.29E+00	0.00E+00	2.29E+00	0.00E+00	3.01E-01	0.00E+00	1.16E-03	0.00E+00	2.70E-02	0.00E+00	1.25E+00	0.00E+00	3.24E+00
PR04C	Exit Road from WF	1	1	420	10	100%	6.60E+00	9.79E-01	6.60E+00	9.79E-01	8.65E-01	1.27E-01	6.85E-04	1.68E-03	4.13E-02	1.96E-02	3.68E+00	5.00E-01	9.43E+00	1.35E+00
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	0.00E+00	1.42E+00	0.00E+00	1.42E+00	0.00E+00	1.86E-01	0.00E+00	7.16E-04	0.00E+00	1.66E-02	0.00E+00	7.72E-01	0.00E+00	2.00E+00
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	--	--	--	--	--	--	--	--	--	--	--	--	--	--
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	--	--	--	--	--	--	--	--	--	--	--	--	--	--
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	0.00E+00	4.54E+00	0.00E+00	4.54E+00	0.00E+00	4.40E+00	0.00E+00	3.04E-01	0.00E+00	2.80E+00	0.00E+00	0.00E+00	0.00E+00	9.39E+01
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	0.00E+00	1.17E+00	0.00E+00	1.17E+00	0.00E+00	1.14E+00	0.00E+00	8.50E-02	0.00E+00	8.13E-01	0.00E+00	0.00E+00	0.00E+00	2.57E+01
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	0.00E+00	1.31E+00	0.00E+00	1.31E+00	0.00E+00	1.28E+00	0.00E+00	1.10E-01	0.00E+00	4.27E-01	0.00E+00	0.00E+00	0.00E+00	2.07E+01
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	0.00E+00	1.03E+00	0.00E+00	1.03E+00	0.00E+00	9.99E-01	0.00E+00	6.00E-02	0.00E+00	1.20E+00	0.00E+00	0.00E+00	0.00E+00	3.06E+01

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes). For idling, this is the number of trucks idling per hour.

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Emissions are input on either a vehicle distance or operation time basis.

[5] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S2-M-5.1b: Vehicle Emission Rates - Tailpipe Emissions, Mitigation Applied, A

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	7446-09-5 Sulphur Dioxide (g/vkt)	7446-09-5 Sulphur Dioxide (g/h)	124-38-9 Carbon Dioxide (g/vkt)	124-38-9 Carbon Dioxide (g/h)	74-82-8 Methane (g/vkt)	74-82-8 Methane (g/h)	10024-97-2 Nitrous Oxide (g/vkt)	10024-97-2 Nitrous Oxide (g/h)	Source ID	TSP PM (g/s)
							7446-09-5	7446-09-5	124-38-9	124-38-9	74-82-8	74-82-8	10024-97-2	10024-97-2		
Mobile Equipment															**Mobile Equipment**	
PR01	Main Entrance Road	1	1	206	10	100%	5.95E-03	0.00E+00	1.74E+03	0.00E+00	5.93E-02	0.00E+00	1.15E-02	0.00E+00	PR01	3.77E-04
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	0.00E+00	9.97E-04	0.00E+00	2.48E+02	0.00E+00	8.62E-03	0.00E+00	1.99E-03	PR01Z	1.93E-04
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	0.00E+00	1.91E-03	0.00E+00	4.51E+02	0.00E+00	1.59E-02	0.00E+00	3.87E-03	UR02Z	3.04E-04
PR04A	Entrance to Scale House	1	1	487	10	100%	5.95E-03	2.47E-03	1.74E+03	5.96E+02	5.93E-02	2.58E-02	1.15E-02	6.11E-03	PR04A	8.91E-04
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	0.00E+00	2.36E-03	0.00E+00	5.87E+02	0.00E+00	2.04E-02	0.00E+00	4.70E-03	PR04AZ	4.55E-04
BR06	South Ramp - Variable Traffic	1	1	603	10	100%	5.95E-03	0.00E+00	1.74E+03	0.00E+00	5.93E-02	0.00E+00	1.15E-02	0.00E+00	BR06	1.10E-03
BR06Z	South Ramp - Non-variable Traffic	1	1	603	10	100%	0.00E+00	2.08E-02	0.00E+00	7.90E+03	0.00E+00	5.83E-03	0.00E+00	1.24E-04	BR06Z	2.17E-05
BR06Y	South Ramp - Construction Traffic	1	1	603	10	100%	0.00E+00	1.53E-02	0.00E+00	5.83E+03	0.00E+00	3.92E-03	0.00E+00	0.00E+00	BR06Y	1.13E-05
PR08Z	WF to SS/LTF - Non-variable Traffic	1	1	307	10	100%	0.00E+00	5.21E-03	0.00E+00	1.86E+03	0.00E+00	8.77E-03	0.00E+00	1.77E-03	PR08Z	1.74E-04
PR08Y	WF to SS/LTF - Construction Traffic	1	1	307	10	100%	0.00E+00	7.80E-03	0.00E+00	2.96E+03	0.00E+00	1.99E-03	0.00E+00	0.00E+00	PR08Y	5.74E-06
UR09AZ	WF to SS, to CDA turn off - Non-variable Traffic	1	1	211	10	100%	0.00E+00	3.83E-03	0.00E+00	1.38E+03	0.00E+00	5.34E-03	0.00E+00	1.09E-03	UR09AZ	8.85E-05
UR09AY	WF to SS, to CDA turnoff - Construction Traffic	1	1	211	10	100%	0.00E+00	5.37E-03	0.00E+00	2.04E+03	0.00E+00	1.37E-03	0.00E+00	0.00E+00	UR09AY	3.95E-06
UR09BZ	WF to SS, after CDA turnoff - Non-variable Traffic	1	1	179	10	100%	0.00E+00	6.25E-03	0.00E+00	2.37E+03	0.00E+00	1.60E-03	0.00E+00	0.00E+00	UR09BZ	4.60E-06
UR09BY	WF to SS, after CDA turnoff - Construction Traffic	1	1	179	10	100%	0.00E+00	4.54E-03	0.00E+00	1.72E+03	0.00E+00	1.16E-03	0.00E+00	0.00E+00	UR09BY	3.34E-06
UR11Z	Across SS - Variable Traffic	1	1	242	10	100%	0.00E+00	8.48E-03	0.00E+00	3.22E+03	0.00E+00	2.17E-03	0.00E+00	0.00E+00	UR11Z	6.24E-06
UR11Y	Across SS - Construction Traffic	1	1	242	10	100%	0.00E+00	6.16E-03	0.00E+00	2.34E+03	0.00E+00	1.57E-03	0.00E+00	0.00E+00	UR11Y	4.53E-06
UR12	Unpaved Road to working face - Variable Traffic	1	1	752	10	100%	5.95E-03	0.00E+00	1.74E+03	0.00E+00	5.93E-02	0.00E+00	1.15E-02	0.00E+00	UR12	1.38E-03
UR12Z	Unpaved Road to working face - Non-variable Traffic	1	1	752	10	100%	0.00E+00	2.60E-02	0.00E+00	9.86E+03	0.00E+00	7.28E-03	0.00E+00	1.55E-04	UR12Z	2.71E-05
UR12Y	Unpaved Road to working face - Construction Traffic	1	1	752	10	100%	0.00E+00	1.91E-02	0.00E+00	7.27E+03	0.00E+00	4.89E-03	0.00E+00	0.00E+00	UR12Y	1.41E-05
PR13Z	WF to LTF	1	1	165	10	100%	0.00E+00	1.00E-03	0.00E+00	3.00E+02	0.00E+00	9.91E-03	0.00E+00	1.86E-03	PR13Z	3.31E-04
PR14Z	WF to LTF	1	1	61	10	100%	0.00E+00	3.68E-04	0.00E+00	1.10E+02	0.00E+00	3.64E-03	0.00E+00	6.84E-04	PR14Z	1.22E-04
UR17Z	Across CDA	1	1	90	10	100%	0.00E+00	1.26E-03	0.00E+00	4.72E+02	0.00E+00	1.55E-03	0.00E+00	0.00E+00	UR17Z	3.28E-06
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	0.00E+00	6.93E-04	0.00E+00	2.60E+02	0.00E+00	7.47E-04	0.00E+00	6.65E-07	UR18Z	1.63E-06
PR04B	Scale House to WF	1	1	681	10	100%	5.95E-03	3.46E-03	1.74E+03	8.34E+02	5.93E-02	3.61E-02	1.15E-02	8.55E-03	PR04B	1.25E-03
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	0.00E+00	3.30E-03	0.00E+00	8.21E+02	0.00E+00	2.85E-02	0.00E+00	6.57E-03	PR04BZ	6.37E-04
PR04C	Exit Road from WF	1	1	420	10	100%	5.95E-03	2.14E-03	1.74E+03	5.15E+02	5.93E-02	2.23E-02	1.15E-02	5.28E-03	PR04C	7.70E-04
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	0.00E+00	2.04E-03	0.00E+00	5.07E+02	0.00E+00	1.76E-02	0.00E+00	4.06E-03	PR04CZ	3.93E-04
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	--	--	--	--	--	--	--	--	IDLE01	6.41E-05
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	--	--	--	--	--	--	--	--	IDLE02	6.41E-05
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	0.00E+00	9.13E-01	0.00E+00	3.45E+05	0.00E+00	4.90E-01	0.00E+00	0.00E+00	DOZE2	1.26E-03
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	0.00E+00	2.65E-01	0.00E+00	1.00E+05	0.00E+00	1.36E-01	0.00E+00	0.00E+00	DOZE4	3.26E-04
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	0.00E+00	1.40E-01	0.00E+00	5.26E+04	0.00E+00	1.73E-01	0.00E+00	0.00E+00	DOZE2CAP	3.65E-04
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	0.00E+00	3.89E-01	0.00E+00	1.48E+05	0.00E+00	9.94E-02	0.00E+00	0.00E+00	DOZE2SS	2.86E-04

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes). For idling, this is the number of trucks idling per hour.

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Emissions are input on either a vehicle distance or operation time basis.

[5] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S2-M-5.1b: Vehicle Emission Rates - Tailpipe Emissions, Mitigation Applied, A

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Tailpipe Emission Rate PM10 PM10 (g/s)	PM2.5 PM25 (g/s)	Benzene 71-43-2 (g/s)	Ammonia 7664-41-7 (g/s)	Nitrogen Dioxide NO2 (g/s)	Nitrogen Oxides 10102-44-0 (g/s)
Mobile Equipment												
PR01	Main Entrance Road	1	1	206	10	100%	3.77E-04	4.95E-05	3.92E-08	2.36E-06	2.10E-04	5.39E-04
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	1.93E-04	2.53E-05	9.75E-08	2.26E-06	1.05E-04	2.72E-04
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	3.04E-04	3.98E-05	2.29E-07	4.53E-06	1.63E-04	4.26E-04
PR04A	Entrance to Scale House	1	1	487	10	100%	8.91E-04	1.17E-04	9.26E-08	5.58E-06	4.97E-04	1.27E-03
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	4.55E-04	5.97E-05	2.30E-07	5.35E-06	2.48E-04	6.43E-04
BR06	South Ramp - Variable Traffic	1	1	603	10	100%	1.10E-03	1.45E-04	1.15E-07	6.92E-06	6.17E-04	1.58E-03
BR06Z	South Ramp - Non-variable Traffic	1	1	603	10	100%	2.17E-05	1.57E-05	9.00E-07	1.79E-05	3.28E-06	4.63E-04
BR06Y	South Ramp - Construction Traffic	1	1	603	10	100%	1.13E-05	1.09E-05	6.57E-07	1.31E-05	0.00E+00	3.36E-04
PR08Z	WF to SS/LTF - Non-variable Traffic	1	1	307	10	100%	1.74E-04	2.55E-05	2.72E-07	5.71E-06	9.34E-05	3.36E-04
PR08Y	WF to SS/LTF - Construction Traffic	1	1	307	10	100%	5.74E-06	5.56E-06	3.34E-07	6.67E-06	0.00E+00	1.71E-04
UR09AZ	WF to SS, to CDA turn off - Non-variable Traffic	1	1	211	10	100%	8.85E-05	1.36E-05	2.05E-07	4.10E-06	4.62E-05	1.92E-04
UR09AY	WF to SS, to CDA turnoff - Construction Traffic	1	1	211	10	100%	3.95E-06	3.83E-06	2.30E-07	4.59E-06	0.00E+00	1.17E-04
UR09BZ	WF to SS, after CDA turnoff - Non-variable Traffic	1	1	179	10	100%	4.60E-06	4.46E-06	2.68E-07	5.35E-06	0.00E+00	1.37E-04
UR09BY	WF to SS, after CDA turnoff - Construction Traffic	1	1	179	10	100%	3.34E-06	3.24E-06	1.94E-07	3.89E-06	0.00E+00	9.94E-05
UR11Z	Across SS - Variable Traffic	1	1	242	10	100%	6.24E-06	6.05E-06	3.63E-07	7.25E-06	0.00E+00	1.86E-04
UR11Y	Across SS - Construction Traffic	1	1	242	10	100%	4.53E-06	4.40E-06	2.64E-07	5.27E-06	0.00E+00	1.35E-04
UR12	Unpaved Road to working face - Variable Traffic	1	1	752	10	100%	1.38E-03	1.81E-04	1.43E-07	8.64E-06	7.69E-04	1.97E-03
UR12Z	Unpaved Road to working face - Non-variable Traffic	1	1	752	10	100%	2.71E-05	1.95E-05	1.12E-06	2.23E-05	4.09E-06	5.78E-04
UR12Y	Unpaved Road to working face - Construction Traffic	1	1	752	10	100%	1.41E-05	1.37E-05	8.19E-07	1.64E-05	0.00E+00	4.19E-04
PR13Z	WF to LTF	1	1	165	10	100%	3.31E-04	4.34E-05	8.49E-09	1.85E-06	1.85E-04	4.74E-04
PR14Z	WF to LTF	1	1	61	10	100%	1.22E-04	1.60E-05	3.12E-09	6.81E-07	6.82E-05	1.74E-04
UR17Z	Across CDA	1	1	90	10	100%	3.28E-06	3.18E-06	2.74E-07	1.06E-06	0.00E+00	5.17E-05
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	1.63E-06	1.55E-06	1.32E-07	5.87E-07	1.75E-08	2.64E-05
PR04B	Scale House to WF	1	1	681	10	100%	1.25E-03	1.64E-04	1.30E-07	7.81E-06	6.96E-04	1.78E-03
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	6.37E-04	8.35E-05	3.22E-07	7.49E-06	3.47E-04	8.99E-04
PR04C	Exit Road from WF	1	1	420	10	100%	7.70E-04	1.01E-04	8.00E-08	4.82E-06	4.30E-04	1.10E-03
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	3.93E-04	5.16E-05	1.99E-07	4.62E-06	2.14E-04	5.55E-04
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	6.41E-05	5.90E-05	6.13E-07	1.07E-04	5.38E-03	1.37E-02
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	6.41E-05	5.90E-05	6.13E-07	1.07E-04	5.38E-03	1.37E-02
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	1.26E-03	1.22E-03	8.45E-05	7.78E-04	0.00E+00	2.61E-02
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	3.26E-04	3.16E-04	2.36E-05	2.26E-04	0.00E+00	7.14E-03
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	3.65E-04	3.54E-04	3.06E-05	1.19E-04	0.00E+00	5.76E-03
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	2.86E-04	2.78E-04	1.67E-05	3.33E-04	0.00E+00	8.51E-03

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes). For idling, this is the number of trucks idling per hour.

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Emissions are input on either a vehicle distance or operation time basis.

[5] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S2-M-5.1b: Vehicle Emission Rates - Tailpipe Emissions, Mitigation Applied, A

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Sulphur Dioxide 7446-09-5 (g/s)	Carbon Dioxide 124-38-9 (g/s)	Methane 74-82-8 (g/s)	Nitrous Oxide 10024-97-2 (g/s)	Tailpipe + Fugitive Emission Rate [6] TSP PM (g/s)	PM10 PM10 (g/s)	PM2.5 PM2.5 (g/s)	Ratio Tail TSP PM (g/s)
Mobile Equipment														
PR01	Main Entrance Road	1	1	206	10	100%	3.40E-07	9.97E-02	3.39E-06	6.55E-07	6.68E-04	4.15E-04	5.86E-05	5.65E-01
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	2.77E-07	6.90E-02	2.40E-06	5.52E-07	4.83E-04	2.30E-04	3.44E-05	3.99E-01
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	5.30E-07	1.25E-01	4.42E-06	1.07E-06	1.07E-01	3.25E-02	3.26E-03	2.83E-03
PR04A	Entrance to Scale House	1	1	487	10	100%	8.04E-07	2.36E-01	8.01E-06	1.55E-06	1.73E-03	9.99E-04	1.43E-04	5.16E-01
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	6.55E-07	1.63E-01	5.66E-06	1.30E-06	1.29E-03	5.63E-04	8.58E-05	3.53E-01
BR06	South Ramp - Variable Traffic	1	1	603	10	100%	9.97E-07	2.92E-01	9.93E-06	1.92E-06	1.23E-02	2.56E-03	4.96E-04	8.97E-02
BR06Z	South Ramp - Non-variable Traffic	1	1	603	10	100%	5.78E-06	2.19E+00	1.62E-06	3.46E-08	1.12E-02	1.47E-03	3.67E-04	1.93E-03
BR06Y	South Ramp - Construction Traffic	1	1	603	10	100%	4.26E-06	1.62E+00	1.09E-06	0.00E+00	1.12E-02	1.46E-03	3.62E-04	1.01E-03
PR08Z	WF to SS/LTF - Non-variable Traffic	1	1	307	10	100%	1.45E-06	5.18E-01	2.44E-06	4.91E-07	2.74E-03	5.06E-04	1.06E-04	6.37E-02
PR08Y	WF to SS/LTF - Construction Traffic	1	1	307	10	100%	2.17E-06	8.23E-01	5.54E-07	0.00E+00	2.57E-03	3.38E-04	8.58E-05	2.23E-03
UR09AZ	WF to SS, to CDA turn off - Non-variable Traffic	1	1	211	10	100%	1.06E-06	3.82E-01	1.48E-06	3.04E-07	8.05E-02	2.43E-02	2.43E-03	1.10E-03
UR09AY	WF to SS, to CDA turnoff - Construction Traffic	1	1	211	10	100%	1.49E-06	5.66E-01	3.81E-07	0.00E+00	8.04E-02	2.42E-02	2.42E-03	4.91E-05
UR09BZ	WF to SS, after CDA turnoff - Non-variable Traffic	1	1	179	10	100%	1.74E-06	6.59E-01	4.44E-07	0.00E+00	7.60E-02	2.29E-02	2.29E-03	6.05E-05
UR09BY	WF to SS, after CDA turnoff - Construction Traffic	1	1	179	10	100%	1.26E-06	4.79E-01	3.22E-07	0.00E+00	7.60E-02	2.29E-02	2.29E-03	4.40E-05
UR11Z	Across SS - Variable Traffic	1	1	242	10	100%	2.36E-06	8.95E-01	6.02E-07	0.00E+00	1.03E-01	3.10E-02	3.11E-03	6.05E-05
UR11Y	Across SS - Construction Traffic	1	1	242	10	100%	1.71E-06	6.50E-01	4.37E-07	0.00E+00	1.03E-01	3.10E-02	3.11E-03	4.40E-05
UR12	Unpaved Road to working face - Variable Traffic	1	1	752	10	100%	1.24E-06	3.65E-01	1.24E-05	2.40E-06	1.73E-01	4.03E-02	4.07E-03	7.97E-03
UR12Z	Unpaved Road to working face - Non-variable Traffic	1	1	752	10	100%	7.22E-06	2.74E+00	2.02E-06	4.31E-08	1.72E-01	3.89E-02	3.91E-03	1.58E-04
UR12Y	Unpaved Road to working face - Construction Traffic	1	1	752	10	100%	5.32E-06	2.02E+00	1.36E-06	0.00E+00	1.72E-01	3.89E-02	3.90E-03	8.21E-05
PR13Z	WF to LTF	1	1	165	10	100%	2.78E-07	8.33E-02	2.75E-06	5.16E-07	1.98E-03	5.44E-04	9.51E-05	1.67E-01
PR14Z	WF to LTF	1	1	61	10	100%	1.02E-07	3.06E-02	1.01E-06	1.90E-07	7.28E-04	2.00E-04	3.50E-05	1.67E-01
UR17Z	Across CDA	1	1	90	10	100%	3.49E-07	1.31E-01	4.30E-07	0.00E+00	3.41E-02	1.02E-02	1.03E-03	9.62E-05
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	1.92E-07	7.24E-02	2.08E-07	1.85E-10	1.73E-02	5.28E-03	5.29E-04	9.40E-05
PR04B	Scale House to WF	1	1	681	10	100%	1.12E-06	3.30E-01	1.12E-05	2.17E-06	2.56E-03	1.42E-03	2.05E-04	4.88E-01
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	9.16E-07	2.28E-01	7.92E-06	1.83E-06	1.95E-03	8.07E-04	1.24E-04	3.28E-01
PR04C	Exit Road from WF	1	1	420	10	100%	6.94E-07	2.04E-01	6.92E-06	1.34E-06	1.62E-03	8.79E-04	1.28E-04	4.76E-01
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	5.65E-07	1.41E-01	4.89E-06	1.13E-06	1.24E-03	5.03E-04	7.81E-05	3.17E-01
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	6.20E-06	1.81E+00	9.65E-05	3.17E-05	6.41E-05	6.41E-05	5.90E-05	n/a
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	6.20E-06	1.81E+00	9.65E-05	3.17E-05	6.41E-05	6.41E-05	5.90E-05	n/a
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	2.54E-04	9.59E+01	1.36E-04	0.00E+00	1.26E-03	1.26E-03	1.22E-03	1.00E+00
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	7.35E-05	2.78E+01	3.78E-05	0.00E+00	3.26E-04	3.26E-04	3.16E-04	1.00E+00
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	3.89E-05	1.46E+01	4.80E-05	0.00E+00	3.65E-04	3.65E-04	3.54E-04	1.00E+00
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	1.08E-04	4.10E+01	2.76E-05	0.00E+00	2.86E-04	2.86E-04	2.78E-04	1.00E+00

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes). For idling, this is the number of trucks idling per hour.

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Emissions are input on either a vehicle distance or operation time basis.

[5] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S2-M-5.1b: Vehicle Emission Rates - Tailpipe Emissions, Mitigation Applied, A

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	ipe : Total Emission Rate PM10 PM10 (g/s)	PM2.5 PM2.5 (g/s)	Source ID	# of Volume Sources g/hr	# of Volume Sources g/vkt	TSP PM	PM10 PM10	PM2.5 PM25
Mobile Equipment									**Mobile Equipment**					
PR01	Main Entrance Road	1	1	206	10	100%	9.09E-01	8.45E-01	PR01	11	11	6.07E-05	3.77E-05	5.32E-06
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	8.37E-01	7.35E-01	PR01Z	11	11	4.39E-05	2.09E-05	3.12E-06
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	9.35E-03	1.22E-02	UR02Z	48	48	2.24E-03	6.77E-04	6.79E-05
PR04A	Entrance to Scale House	1	1	487	10	100%	8.92E-01	8.17E-01	PR04A	57	57	3.03E-05	1.75E-05	2.51E-06
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	8.08E-01	6.96E-01	PR04AZ	57	57	2.26E-05	9.89E-06	1.51E-06
BR06	South Ramp - Variable Traffic	1	1	603	10	100%	4.32E-01	2.92E-01	BR06	70	70	1.76E-04	3.65E-05	7.09E-06
BR06Z	South Ramp - Non-variable Traffic	1	1	603	10	100%	1.47E-02	4.27E-02	BR06Z	70	70	1.60E-04	2.10E-05	5.24E-06
BR06Y	South Ramp - Construction Traffic	1	1	603	10	100%	7.72E-03	3.02E-02	BR06Y	70	70	1.60E-04	2.09E-05	5.17E-06
PR08Z	WF to SS/LTF - Non-variable Traffic	1	1	307	10	100%	3.45E-01	2.41E-01	PR08Z	36	36	7.61E-05	1.41E-05	2.94E-06
PR08Y	WF to SS/LTF - Construction Traffic	1	1	307	10	100%	1.70E-02	6.48E-02	PR08Y	36	36	7.14E-05	9.38E-06	2.38E-06
UR09AZ	WF to SS, to CDA turn off - Non-variable Traffic	1	1	211	10	100%	3.65E-03	5.60E-03	UR09AZ	25	25	3.22E-03	9.71E-04	9.73E-05
UR09AY	WF to SS, to CDA turnoff - Construction Traffic	1	1	211	10	100%	1.63E-04	1.58E-03	UR09AY	25	25	3.22E-03	9.67E-04	9.69E-05
UR09BZ	WF to SS, after CDA turnoff - Non-variable Traffic	1	1	179	10	100%	2.01E-04	1.95E-03	UR09BZ	21	21	3.62E-03	1.09E-03	1.09E-04
UR09BY	WF to SS, after CDA turnoff - Construction Traffic	1	1	179	10	100%	1.46E-04	1.42E-03	UR09BY	21	21	3.62E-03	1.09E-03	1.09E-04
UR11Z	Across SS - Variable Traffic	1	1	242	10	100%	2.01E-04	1.95E-03	UR11Z	28	28	3.68E-03	1.11E-03	1.11E-04
UR11Y	Across SS - Construction Traffic	1	1	242	10	100%	1.46E-04	1.42E-03	UR11Y	28	28	3.68E-03	1.11E-03	1.11E-04
UR12	Unpaved Road to working face - Variable Traffic	1	1	752	10	100%	3.42E-02	4.44E-02	UR12	87	87	1.99E-03	4.63E-04	4.68E-05
UR12Z	Unpaved Road to working face - Non-variable Traffic	1	1	752	10	100%	6.95E-04	5.00E-03	UR12Z	87	87	1.97E-03	4.47E-04	4.49E-05
UR12Y	Unpaved Road to working face - Construction Traffic	1	1	752	10	100%	3.62E-04	3.50E-03	UR12Y	87	87	1.97E-03	4.47E-04	4.49E-05
PR13Z	WF to LTF	1	1	165	10	100%	6.08E-01	4.57E-01	PR13Z	19	19	1.04E-04	2.86E-05	5.00E-06
PR14Z	WF to LTF	1	1	61	10	100%	6.08E-01	4.57E-01	PR14Z	7	7	1.04E-04	2.86E-05	4.99E-06
UR17Z	Across CDA	1	1	90	10	100%	3.20E-04	3.09E-03	UR17Z	10	10	3.41E-03	1.02E-03	1.03E-04
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	3.09E-04	2.94E-03	UR18Z	5	5	3.47E-03	1.06E-03	1.06E-04
PR04B	Scale House to WF	1	1	681	10	100%	8.80E-01	8.00E-01	PR04B	79	79	3.23E-05	1.79E-05	2.59E-06
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	7.90E-01	6.71E-01	PR04BZ	79	79	2.46E-05	1.02E-05	1.58E-06
PR04C	Exit Road from WF	1	1	420	10	100%	8.75E-01	7.92E-01	PR04C	49	49	3.30E-05	1.79E-05	2.60E-06
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	7.82E-01	6.60E-01	PR04CZ	49	49	2.53E-05	1.03E-05	1.59E-06
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	n/a	n/a	IDLE01	1	1	1.28E-04	1.28E-04	1.18E-04
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	n/a	n/a	IDLE02	1	1	1.28E-04	1.28E-04	1.18E-04
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	1.00E+00	1.00E+00	DOZE2	1	1	1.26E-03	1.26E-03	1.22E-03
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	1.00E+00	1.00E+00	DOZE4	1	1	3.26E-04	3.26E-04	3.16E-04
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	1.00E+00	1.00E+00	DOZE2CAP	1	1	3.65E-04	3.65E-04	3.54E-04
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	1.00E+00	1.00E+00	DOZE2SS	1	1	2.86E-04	2.86E-04	2.78E-04

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes). For idling, this is the number of trucks idling per hour.

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Emissions are input on either a vehicle distance or operation time basis.

[5] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S2-M-5.1b: Vehicle Emission Rates - Tailpipe Emissions, Mitigation Applied, A

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Emission rate per volume source (g/s) Benzene 71-43-2	Ammonia 7664-41-7	Nitrogen Dioxide NO2	Nitrogen Oxides 10102-44-0	Sulphur Dioxide 7446-09-5	Carbon Dioxide 124-38-9	Methane 74-82-8	Nitrous Oxide 10024-97-2
Mobile Equipment														
PR01	Main Entrance Road	1	1	206	10	100%	3.56E-09	2.15E-07	1.91E-05	4.90E-05	3.09E-08	9.07E-03	3.08E-07	5.96E-08
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	8.86E-09	2.06E-07	9.55E-06	2.47E-05	2.52E-08	6.27E-03	2.18E-07	5.02E-08
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	4.76E-09	9.44E-08	3.40E-06	8.87E-06	1.10E-08	2.61E-03	9.21E-08	2.24E-08
PR04A	Entrance to Scale House	1	1	487	10	100%	1.62E-09	9.80E-08	8.73E-06	2.24E-05	1.41E-08	4.14E-03	1.41E-07	2.72E-08
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	4.04E-09	9.39E-08	4.36E-06	1.13E-05	1.15E-08	2.86E-03	9.93E-08	2.29E-08
BR06	South Ramp - Variable Traffic	1	1	603	10	100%	1.64E-09	9.89E-08	8.81E-06	2.26E-05	1.42E-08	4.18E-03	1.42E-07	2.74E-08
BR06Z	South Ramp - Non-variable Traffic	1	1	603	10	100%	1.29E-08	2.56E-07	4.68E-08	6.62E-06	8.26E-08	3.14E-02	2.31E-08	4.94E-10
BR06Y	South Ramp - Construction Traffic	1	1	603	10	100%	9.38E-09	1.88E-07	0.00E+00	4.80E-06	6.09E-08	2.31E-02	1.56E-08	0.00E+00
PR08Z	WF to SS/LTF - Non-variable Traffic	1	1	307	10	100%	7.55E-09	1.59E-07	2.59E-06	9.34E-06	4.02E-08	1.44E-02	6.77E-08	1.36E-08
PR08Y	WF to SS/LTF - Construction Traffic	1	1	307	10	100%	9.27E-09	1.85E-07	0.00E+00	4.74E-06	6.02E-08	2.29E-02	1.54E-08	0.00E+00
UR09AZ	WF to SS, to CDA turn off - Non-variable Traffic	1	1	211	10	100%	8.22E-09	1.64E-07	1.85E-06	7.70E-06	4.25E-08	1.53E-02	5.94E-08	1.22E-08
UR09AY	WF to SS, to CDA turnoff - Construction Traffic	1	1	211	10	100%	9.19E-09	1.84E-07	0.00E+00	4.70E-06	5.97E-08	2.27E-02	1.52E-08	0.00E+00
UR09BZ	WF to SS, after CDA turnoff - Non-variable Traffic	1	1	179	10	100%	1.27E-08	2.55E-07	0.00E+00	6.51E-06	8.27E-08	3.14E-02	2.11E-08	0.00E+00
UR09BY	WF to SS, after CDA turnoff - Construction Traffic	1	1	179	10	100%	9.26E-09	1.85E-07	0.00E+00	4.73E-06	6.01E-08	2.28E-02	1.54E-08	0.00E+00
UR11Z	Across SS - Variable Traffic	1	1	242	10	100%	1.30E-08	2.59E-07	0.00E+00	6.63E-06	8.41E-08	3.20E-02	2.15E-08	0.00E+00
UR11Y	Across SS - Construction Traffic	1	1	242	10	100%	9.42E-09	1.88E-07	0.00E+00	4.82E-06	6.11E-08	2.32E-02	1.56E-08	0.00E+00
UR12	Unpaved Road to working face - Variable Traffic	1	1	752	10	100%	1.65E-09	9.93E-08	8.84E-06	2.26E-05	1.43E-08	4.19E-03	1.42E-07	2.75E-08
UR12Z	Unpaved Road to working face - Non-variable Traffic	1	1	752	10	100%	1.29E-08	2.57E-07	4.70E-08	6.64E-06	8.29E-08	3.15E-02	2.32E-08	4.96E-10
UR12Y	Unpaved Road to working face - Construction Traffic	1	1	752	10	100%	9.42E-09	1.88E-07	0.00E+00	4.81E-06	6.11E-08	2.32E-02	1.56E-08	0.00E+00
PR13Z	WF to LTF	1	1	165	10	100%	4.47E-10	9.75E-08	9.76E-06	2.49E-05	1.46E-08	4.38E-03	1.45E-07	2.72E-08
PR14Z	WF to LTF	1	1	61	10	100%	4.46E-10	9.73E-08	9.74E-06	2.49E-05	1.46E-08	4.38E-03	1.45E-07	2.71E-08
UR17Z	Across CDA	1	1	90	10	100%	2.74E-08	1.06E-07	0.00E+00	5.17E-06	3.49E-08	1.31E-02	4.30E-08	0.00E+00
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	2.63E-08	1.17E-07	3.50E-09	5.27E-06	3.85E-08	1.45E-02	4.15E-08	3.70E-11
PR04B	Scale House to WF	1	1	681	10	100%	1.64E-09	9.89E-08	8.81E-06	2.26E-05	1.42E-08	4.18E-03	1.42E-07	2.74E-08
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	4.08E-09	9.48E-08	4.40E-06	1.14E-05	1.16E-08	2.89E-03	1.00E-07	2.31E-08
PR04C	Exit Road from WF	1	1	420	10	100%	1.63E-09	9.84E-08	8.77E-06	2.25E-05	1.42E-08	4.16E-03	1.41E-07	2.73E-08
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	4.06E-09	9.44E-08	4.38E-06	1.13E-05	1.15E-08	2.88E-03	9.98E-08	2.30E-08
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	1.23E-06	2.13E-04	1.08E-02	2.75E-02	1.24E-05	3.62E+00	1.93E-04	6.33E-05
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	1.23E-06	2.13E-04	1.08E-02	2.75E-02	1.24E-05	3.62E+00	1.93E-04	6.33E-05
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	8.45E-05	7.78E-04	0.00E+00	2.61E-02	2.54E-04	9.59E+01	1.36E-04	0.00E+00
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	2.36E-05	2.26E-04	0.00E+00	7.14E-03	7.35E-05	2.78E+01	3.78E-05	0.00E+00
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	3.06E-05	1.19E-04	0.00E+00	5.76E-03	3.89E-05	1.46E+01	4.80E-05	0.00E+00
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	1.67E-05	3.33E-04	0.00E+00	8.51E-03	1.08E-04	4.10E+01	2.76E-05	0.00E+00

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes). For idling, this is the number of trucks idling per hour.

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Emissions are input on either a vehicle distance or operation time basis.

[5] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S2-M-5.1b: Vehicle Emission Rates - Tailpipe Emissions, Mitigation Applied, MD

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Tailpipe Emission Factor [5], [7] TSP PM (g/vkt)	TSP PM (g/h)	PM10 PM10 (g/vkt)	PM10 PM10 (g/h)	PM2.5 PM25 (g/vkt)	PM2.5 PM25 (g/h)	Benzene 71-43-2 (g/vkt)	Benzene 71-43-2 (g/h)	Ammonia 7664-41-7 (g/vkt)	Ammonia 7664-41-7 (g/h)	Nitrogen Dioxide NO2 (g/vkt)	Nitrogen Dioxide NO2 (g/h)	Nitrogen Oxides 10102-44-0 (g/vkt)	Nitrogen Oxides 10102-44-0 (g/h)
Mobile Equipment																				
PR01	Main Entrance Road	1	1	206	10	100%	4.25E+00	0.00E+00	4.25E+00	0.00E+00	5.57E-01	0.00E+00	1.81E-03	0.00E+00	4.16E-02	0.00E+00	2.33E+00	0.00E+00	6.03E+00	0.00E+00
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	0.00E+00	6.94E-01	0.00E+00	6.94E-01	0.00E+00	9.09E-02	0.00E+00	3.51E-04	0.00E+00	8.15E-03	0.00E+00	3.78E-01	0.00E+00	9.79E-01
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	0.00E+00	1.09E+00	0.00E+00	1.09E+00	0.00E+00	1.43E-01	0.00E+00	8.23E-04	0.00E+00	1.63E-02	0.00E+00	5.88E-01	0.00E+00	1.53E+00
PR04A	Entrance to Scale House	1	1	487	10	100%	4.25E+00	1.13E+00	4.25E+00	1.13E+00	5.57E-01	1.47E-01	1.81E-03	1.94E-03	4.16E-02	2.27E-02	2.33E+00	5.79E-01	6.03E+00	1.57E+00
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	0.00E+00	1.64E+00	0.00E+00	1.64E+00	0.00E+00	2.15E-01	0.00E+00	8.29E-04	0.00E+00	1.93E-02	0.00E+00	8.94E-01	0.00E+00	2.31E+00
BR06	South Ramp - Variable Traffic	1	1	603	10	100%	4.25E+00	0.00E+00	4.25E+00	0.00E+00	5.57E-01	0.00E+00	1.81E-03	0.00E+00	4.16E-02	0.00E+00	2.33E+00	0.00E+00	6.03E+00	0.00E+00
BR06Z	South Ramp - Non-variable Traffic	1	1	603	10	100%	0.00E+00	7.81E-02	0.00E+00	7.81E-02	0.00E+00	5.63E-02	0.00E+00	3.24E-03	0.00E+00	6.44E-02	0.00E+00	1.18E-02	0.00E+00	1.67E+00
BR06Y	South Ramp - Construction Traffic	1	1	603	10	100%	0.00E+00	4.06E-02	0.00E+00	4.06E-02	0.00E+00	3.94E-02	0.00E+00	2.36E-03	0.00E+00	4.73E-02	0.00E+00	0.00E+00	0.00E+00	1.21E+00
PR08Z	WF to SS/LTF - Non-variable Traffic	1	1	307	10	100%	0.00E+00	6.28E-01	0.00E+00	6.28E-01	0.00E+00	9.19E-02	0.00E+00	9.79E-04	0.00E+00	2.06E-02	0.00E+00	3.36E-01	0.00E+00	1.21E+00
PR08Y	WF to SS/LTF - Construction Traffic	1	1	307	10	100%	0.00E+00	2.06E-02	0.00E+00	2.06E-02	0.00E+00	2.00E-02	0.00E+00	1.20E-03	0.00E+00	2.40E-02	0.00E+00	0.00E+00	0.00E+00	6.14E-01
UR09AZ	WF to SS, to CDA turn off - Non-variable Traffic	1	1	211	10	100%	0.00E+00	3.18E-01	0.00E+00	3.18E-01	0.00E+00	4.90E-02	0.00E+00	7.40E-04	0.00E+00	1.47E-02	0.00E+00	1.66E-01	0.00E+00	6.93E-01
UR09AY	WF to SS, to CDA turnoff - Construction Traffic	1	1	211	10	100%	0.00E+00	1.42E-02	0.00E+00	1.42E-02	0.00E+00	1.38E-02	0.00E+00	8.27E-04	0.00E+00	1.65E-02	0.00E+00	0.00E+00	0.00E+00	4.23E-01
UR09BZ	WF to SS, after CDA turnoff - Non-variable Traffic	1	1	179	10	100%	0.00E+00	1.65E-02	0.00E+00	1.65E-02	0.00E+00	1.61E-02	0.00E+00	9.63E-04	0.00E+00	1.92E-02	0.00E+00	0.00E+00	0.00E+00	4.92E-01
UR09BY	WF to SS, after CDA turnoff - Construction Traffic	1	1	179	10	100%	0.00E+00	1.20E-02	0.00E+00	1.20E-02	0.00E+00	1.17E-02	0.00E+00	7.00E-04	0.00E+00	1.40E-02	0.00E+00	0.00E+00	0.00E+00	3.58E-01
UR11Z	Across SS - Variable Traffic	1	1	242	10	100%	0.00E+00	2.25E-02	0.00E+00	2.25E-02	0.00E+00	2.18E-02	0.00E+00	1.31E-03	0.00E+00	2.61E-02	0.00E+00	0.00E+00	0.00E+00	6.68E-01
UR11Y	Across SS - Construction Traffic	1	1	242	10	100%	0.00E+00	1.63E-02	0.00E+00	1.63E-02	0.00E+00	1.58E-02	0.00E+00	9.50E-04	0.00E+00	1.90E-02	0.00E+00	0.00E+00	0.00E+00	4.85E-01
UR12	Unpaved Road to working face - Variable Traffic	1	1	752	10	100%	4.25E+00	0.00E+00	4.25E+00	0.00E+00	5.57E-01	0.00E+00	1.81E-03	0.00E+00	4.16E-02	0.00E+00	2.33E+00	0.00E+00	6.03E+00	0.00E+00
UR12Z	Unpaved Road to working face - Non-variable Traffic	1	1	752	10	100%	0.00E+00	9.74E-02	0.00E+00	9.74E-02	0.00E+00	7.03E-02	0.00E+00	4.04E-03	0.00E+00	8.04E-02	0.00E+00	1.47E-02	0.00E+00	2.08E+00
UR12Y	Unpaved Road to working face - Construction Traffic	1	1	752	10	100%	0.00E+00	5.07E-02	0.00E+00	5.07E-02	0.00E+00	4.92E-02	0.00E+00	2.95E-03	0.00E+00	5.89E-02	0.00E+00	0.00E+00	0.00E+00	1.51E+00
PR13Z	WF to LTF	1	1	165	10	100%	0.00E+00	1.19E+00	0.00E+00	1.19E+00	0.00E+00	1.56E-01	0.00E+00	3.06E-05	0.00E+00	6.67E-03	0.00E+00	6.67E-01	0.00E+00	1.70E+00
PR14Z	WF to LTF	1	1	61	10	100%	0.00E+00	4.38E-01	0.00E+00	4.38E-01	0.00E+00	5.75E-02	0.00E+00	1.12E-05	0.00E+00	2.45E-03	0.00E+00	2.45E-01	0.00E+00	6.27E-01
UR17Z	Across CDA	1	1	90	10	100%	0.00E+00	1.18E-02	0.00E+00	1.18E-02	0.00E+00	1.14E-02	0.00E+00	9.87E-04	0.00E+00	3.83E-03	0.00E+00	0.00E+00	0.00E+00	1.86E-01
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	0.00E+00	5.87E-03	0.00E+00	5.87E-03	0.00E+00	5.59E-03	0.00E+00	4.74E-04	0.00E+00	2.11E-03	0.00E+00	6.31E-05	0.00E+00	9.49E-02
PR04B	Scale House to WF	1	1	681	10	100%	4.25E+00	1.59E+00	4.25E+00	1.59E+00	5.57E-01	2.06E-01	1.81E-03	2.72E-03	4.16E-02	3.17E-02	2.33E+00	8.10E-01	6.03E+00	2.19E+00
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	0.00E+00	2.29E+00	0.00E+00	2.29E+00	0.00E+00	3.01E-01	0.00E+00	1.16E-03	0.00E+00	2.70E-02	0.00E+00	1.25E+00	0.00E+00	3.24E+00
PR04C	Exit Road from WF	1	1	420	10	100%	4.25E+00	9.79E-01	4.25E+00	9.79E-01	5.57E-01	1.27E-01	1.81E-03	1.68E-03	4.16E-02	1.96E-02	2.33E+00	5.00E-01	6.03E+00	1.35E+00
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	0.00E+00	1.42E+00	0.00E+00	1.42E+00	0.00E+00	1.86E-01	0.00E+00	7.16E-04	0.00E+00	1.66E-02	0.00E+00	7.72E-01	0.00E+00	2.00E+00
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	--	--	--	--	--	--	--	--	--	--	--	--	--	--
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	--	--	--	--	--	--	--	--	--	--	--	--	--	--
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	0.00E+00	4.54E+00	0.00E+00	4.54E+00	0.00E+00	4.40E+00	0.00E+00	3.04E-01	0.00E+00	2.80E+00	0.00E+00	0.00E+00	0.00E+00	9.39E+01
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	0.00E+00	1.17E+00	0.00E+00	1.17E+00	0.00E+00	1.14E+00	0.00E+00	8.50E-02	0.00E+00	8.13E-01	0.00E+00	0.00E+00	0.00E+00	2.57E+01
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	0.00E+00	1.31E+00	0.00E+00	1.31E+00	0.00E+00	1.28E+00	0.00E+00	1.10E-01	0.00E+00	4.27E-01	0.00E+00	0.00E+00	0.00E+00	2.07E+01
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	0.00E+00	1.03E+00	0.00E+00	1.03E+00	0.00E+00	9.99E-01	0.00E+00	6.00E-02	0.00E+00	1.20E+00	0.00E+00	0.00E+00	0.00E+00	3.06E+01

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes)

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

[5] Emissions are input on either a vehicle distance or power rating basis. Load factor applies only to emissions based on power ratings. Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

[6]

Appendix 5A-S2-M-5.1b: Vehicle Emission Rates - Tailpipe Emissions, Mitigation Applied, M

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Sulphur Dioxide 7446-09-5 (g/vkt)	Sulphur Dioxide 7446-09-5 (g/h)	Carbon Dioxide 124-38-9 (g/vkt)	Carbon Dioxide 124-38-9 (g/h)	Methane 74-82-8 (g/vkt)	Methane 74-82-8 (g/h)	Nitrous Oxide 10024-97-2 (g/vkt)	Nitrous Oxide 10024-97-2 (g/h)	Source ID	Tailpipe Emission Rate: TSP PM (g/s)	PM10 PM10 (g/s)	PM2.5 PM25 (g/s)	Benzene 71-43-2 (g/s)	Ammonia 7664-41-7 (g/s)	Nitrogen Dioxide NO2 (g/s)	Nitrogen Oxides 10102-44-0 (g/s)
Mobile Equipment															**Mobile Equipment**							
PR01	Main Entrance Road	1	1	206	10	100%	5.26E-03	0.00E+00	1.39E+03	0.00E+00	4.99E-02	0.00E+00	1.08E-02	0.00E+00	PR01	2.43E-04	2.43E-04	3.19E-05	1.03E-07	2.38E-06	1.33E-04	3.45E-04
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	0.00E+00	9.97E-04	0.00E+00	2.48E+02	0.00E+00	8.62E-03	0.00E+00	1.99E-03	PR01Z	1.93E-04	1.93E-04	2.53E-05	9.75E-08	2.26E-06	1.05E-04	2.72E-04
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	0.00E+00	1.91E-03	0.00E+00	4.51E+02	0.00E+00	1.59E-02	0.00E+00	3.87E-03	UR02Z	3.04E-04	3.04E-04	3.98E-05	2.29E-07	4.53E-06	1.63E-04	4.26E-04
PR04A	Entrance to Scale House	1	1	487	10	100%	5.26E-03	2.47E-03	1.39E+03	5.96E+02	4.99E-02	2.58E-02	1.08E-02	6.11E-03	PR04A	5.75E-04	5.75E-04	7.53E-05	2.44E-07	5.62E-06	3.15E-04	8.15E-04
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	0.00E+00	2.36E-03	0.00E+00	5.87E+02	0.00E+00	2.04E-02	0.00E+00	4.70E-03	PR04AZ	4.55E-04	4.55E-04	5.97E-05	2.30E-07	5.35E-06	2.48E-04	6.43E-04
BR06	South Ramp - Variable Traffic	1	1	603	10	100%	5.26E-03	0.00E+00	1.39E+03	0.00E+00	4.99E-02	0.00E+00	1.08E-02	0.00E+00	BR06	7.13E-04	7.13E-04	9.34E-05	3.03E-07	6.96E-06	3.91E-04	1.01E-03
BR06Z	South Ramp - Non-variable Traffic	1	1	603	10	100%	0.00E+00	2.08E-02	0.00E+00	7.90E+03	0.00E+00	5.83E-03	0.00E+00	1.24E-04	BR06Z	2.17E-05	2.17E-05	1.57E-05	9.00E-07	1.79E-05	3.28E-06	4.63E-04
BR06Y	South Ramp - Construction Traffic	1	1	603	10	100%	0.00E+00	1.53E-02	0.00E+00	5.83E+03	0.00E+00	3.92E-03	0.00E+00	0.00E+00	BR06Y	1.13E-05	1.13E-05	1.09E-05	6.57E-07	1.31E-05	0.00E+00	3.36E-04
PR08Z	WF to SS/LTF - Non-variable Traffic	1	1	307	10	100%	0.00E+00	5.21E-03	0.00E+00	1.86E+03	0.00E+00	8.77E-03	0.00E+00	1.77E-03	PR08Z	1.74E-04	1.74E-04	2.55E-05	2.72E-07	5.71E-06	9.34E-05	3.36E-04
PR08Y	WF to SS/LTF - Construction Traffic	1	1	307	10	100%	0.00E+00	7.80E-03	0.00E+00	2.96E+03	0.00E+00	1.99E-03	0.00E+00	0.00E+00	PR08Y	5.74E-06	5.74E-06	5.56E-06	3.34E-07	6.67E-06	0.00E+00	1.71E-04
UR09AZ	WF to SS, to CDA turn off - Non-variable Traffic	1	1	211	10	100%	0.00E+00	3.83E-03	0.00E+00	1.38E+03	0.00E+00	5.34E-03	0.00E+00	1.09E-03	UR09AZ	8.85E-05	8.85E-05	1.36E-05	2.05E-07	4.10E-06	4.62E-05	1.92E-04
UR09AY	WF to SS, to CDA turnoff - Construction Traffic	1	1	211	10	100%	0.00E+00	5.37E-03	0.00E+00	2.04E+03	0.00E+00	1.37E-03	0.00E+00	0.00E+00	UR09AY	3.95E-06	3.95E-06	3.83E-06	2.30E-07	4.59E-06	0.00E+00	1.17E-04
UR09BZ	WF to SS, after CDA turnoff - Non-variable Traffic	1	1	179	10	100%	0.00E+00	6.25E-03	0.00E+00	2.37E+03	0.00E+00	1.60E-03	0.00E+00	0.00E+00	UR09BZ	4.60E-06	4.60E-06	4.46E-06	2.68E-07	5.35E-06	0.00E+00	1.37E-04
UR09BY	WF to SS, after CDA turnoff - Construction Traffic	1	1	179	10	100%	0.00E+00	4.54E-03	0.00E+00	1.72E+03	0.00E+00	1.16E-03	0.00E+00	0.00E+00	UR09BY	3.34E-06	3.34E-06	3.24E-06	1.94E-07	3.89E-06	0.00E+00	9.94E-05
UR11Z	Across SS - Variable Traffic	1	1	242	10	100%	0.00E+00	8.48E-03	0.00E+00	3.22E+03	0.00E+00	2.17E-03	0.00E+00	0.00E+00	UR11Z	6.24E-06	6.24E-06	6.05E-06	3.63E-07	7.25E-06	0.00E+00	1.86E-04
UR11Y	Across SS - Construction Traffic	1	1	242	10	100%	0.00E+00	6.16E-03	0.00E+00	2.34E+03	0.00E+00	1.57E-03	0.00E+00	0.00E+00	UR11Y	4.53E-06	4.53E-06	4.40E-06	2.64E-07	5.27E-06	0.00E+00	1.35E-04
UR12	Unpaved Road to working face - Variable Traffic	1	1	752	10	100%	5.26E-03	0.00E+00	1.39E+03	0.00E+00	4.99E-02	0.00E+00	1.08E-02	0.00E+00	UR12	8.89E-04	8.89E-04	1.16E-04	3.78E-07	8.68E-06	4.87E-04	1.26E-03
UR12Z	Unpaved Road to working face - Non-variable Traffic	1	1	752	10	100%	0.00E+00	2.60E-02	0.00E+00	9.86E+03	0.00E+00	7.28E-03	0.00E+00	1.55E-04	UR12Z	2.71E-05	2.71E-05	1.95E-05	1.12E-06	2.23E-05	4.09E-06	5.78E-04
UR12Y	Unpaved Road to working face - Construction Traffic	1	1	752	10	100%	0.00E+00	1.91E-02	0.00E+00	7.27E+03	0.00E+00	4.89E-03	0.00E+00	0.00E+00	UR12Y	1.41E-05	1.41E-05	1.37E-05	8.19E-07	1.64E-05	0.00E+00	4.19E-04
PR13Z	WF to LTF	1	1	165	10	100%	0.00E+00	1.00E-03	0.00E+00	3.00E+02	0.00E+00	9.91E-03	0.00E+00	1.86E-03	PR13Z	3.31E-04	3.31E-04	4.34E-05	8.49E-09	1.85E-06	1.85E-04	4.74E-04
PR14Z	WF to LTF	1	1	61	10	100%	0.00E+00	3.68E-04	0.00E+00	1.10E+02	0.00E+00	3.64E-03	0.00E+00	6.84E-04	PR14Z	1.22E-04	1.22E-04	1.60E-05	3.12E-09	6.81E-07	6.82E-05	1.74E-04
UR17Z	Across CDA	1	1	90	10	100%	0.00E+00	1.26E-03	0.00E+00	4.72E+02	0.00E+00	1.55E-03	0.00E+00	0.00E+00	UR17Z	3.28E-06	3.28E-06	3.18E-06	2.74E-07	1.06E-06	0.00E+00	5.17E-05
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	0.00E+00	6.93E-04	0.00E+00	2.60E+02	0.00E+00	7.47E-04	0.00E+00	6.65E-07	UR18Z	1.63E-06	1.63E-06	1.55E-06	1.32E-07	5.87E-07	1.75E-08	2.64E-05
PR04B	Scale House to WF	1	1	681	10	100%	5.26E-03	3.46E-03	1.39E+03	8.34E+02	4.99E-02	3.61E-02	1.08E-02	8.55E-03	PR04B	8.04E-04	8.04E-04	1.05E-04	3.42E-07	7.86E-06	4.41E-04	1.14E-03
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	0.00E+00	3.30E-03	0.00E+00	8.21E+02	0.00E+00	2.85E-02	0.00E+00	6.57E-03	PR04BZ	6.37E-04	6.37E-04	8.35E-05	3.22E-07	7.49E-06	3.47E-04	8.99E-04
PR04C	Exit Road from WF	1	1	420	10	100%	5.26E-03	2.14E-03	1.39E+03	5.15E+02	4.99E-02	2.23E-02	1.08E-02	5.28E-03	PR04C	4.97E-04	4.97E-04	6.51E-05	2.11E-07	4.85E-06	2.72E-04	7.04E-04
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	0.00E+00	2.04E-03	0.00E+00	5.07E+02	0.00E+00	1.76E-02	0.00E+00	4.06E-03	PR04CZ	3.93E-04	3.93E-04	5.16E-05	1.99E-07	4.62E-06	2.14E-04	5.55E-04
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	--	--	--	--	--	--	--	--	IDLE01	3.95E-05	3.95E-05	3.63E-05	1.51E-06	1.05E-04	3.45E-03	8.85E-03
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	--	--	--	--	--	--	--	--	IDLE02	3.95E-05	3.95E-05	3.63E-05	1.51E-06	1.05E-04	3.45E-03	8.85E-03
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	0.00E+00	9.13E-01	0.00E+00	3.45E+05	0.00E+00	4.90E-01	0.00E+00	0.00E+00	DOZE2	1.26E-03	1.26E-03	1.22E-03	8.45E-05	7.78E-04	0.00E+00	2.61E-02
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	0.00E+00	2.65E-01	0.00E+00	1.00E+05	0.00E+00	1.36E-01	0.00E+00	0.00E+00	DOZE4	3.26E-04	3.26E-04	3.16E-04	2.36E-05	2.26E-04	0.00E+00	7.14E-03
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	0.00E+00	1.40E-01	0.00E+00	5.26E+04	0.00E+00	1.73E-01	0.00E+00	0.00E+00	DOZE2CAP	3.65E-04	3.65E-04	3.54E-04	3.06E-05	1.19E-04	0.00E+00	5.76E-03
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	0.00E+00	3.89E-01	0.00E+00	1.48E+05	0.00E+00	9.94E-02	0.00E+00	0.00E+00	DOZE2SS	2.86E-04	2.86E-04	2.78E-04	1.67E-05	3.33E-04	0.00E+00	8.51E-03

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes)

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

[5] Emissions are input on either a vehicle distance or power rating basis. Load factor applies only to emissions based on p

[6] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S2-M-5.1b: Vehicle Emission Rates - Tailpipe Emissions, Mitigation Applied, M

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Sulphur Dioxide 7446-09-5 (g/s)	Carbon Dioxide 124-38-9 (g/s)	Methane 74-82-8 (g/s)	Nitrous Oxide 10024-97-2 (g/s)	Tailpipe + Fugitive Emission Rate [6] TSP PM (g/s)	Tailpipe + Fugitive Emission Rate [6] PM10 PM10 (g/s)	Tailpipe + Fugitive Emission Rate [6] PM2.5 PM2.5 (g/s)	Ratio Tailpipe : Total Emission Rate TSP PM (g/s)	Ratio Tailpipe : Total Emission Rate PM10 PM10 (g/s)	Ratio Tailpipe : Total Emission Rate PM2.5 PM2.5 (g/s)	Source ID	# of Volume Sources g/hr	# of Volume Sources g/vkt	TSP PM	PM10 PM10
Mobile Equipment																	**Mobile Equipment**				
PR01	Main Entrance Road	1	1	206	10	100%	3.01E-07	7.96E-02	2.86E-06	6.19E-07	5.34E-04	2.81E-04	4.10E-05	4.56E-01	8.66E-01	7.78E-01	PR01	11	11	4.85E-05	2.55E-05
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	2.77E-07	6.90E-02	2.40E-06	5.52E-07	4.83E-04	2.30E-04	3.44E-05	3.99E-01	8.37E-01	7.35E-01	PR01Z	11	11	4.39E-05	2.09E-05
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	5.30E-07	1.25E-01	4.42E-06	1.07E-06	1.07E-01	3.25E-02	3.26E-03	2.83E-03	9.35E-03	1.22E-02	UR02Z	48	48	2.24E-03	6.77E-04
PR04A	Entrance to Scale House	1	1	487	10	100%	7.11E-07	1.88E-01	6.75E-06	1.46E-06	1.41E-03	6.83E-04	1.01E-04	4.08E-01	8.42E-01	7.42E-01	PR04A	57	57	2.47E-05	1.20E-05
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	6.55E-07	1.63E-01	5.66E-06	1.30E-06	1.29E-03	5.63E-04	8.58E-05	3.53E-01	8.08E-01	6.96E-01	PR04AZ	57	57	2.26E-05	9.89E-06
BR06	South Ramp - Variable Traffic	1	1	603	10	100%	8.82E-07	2.33E-01	8.37E-06	1.81E-06	1.19E-02	2.16E-03	4.44E-04	5.98E-02	3.29E-01	2.10E-01	BR06	70	70	1.70E-04	3.09E-05
BR06Z	South Ramp - Non-variable Traffic	1	1	603	10	100%	5.78E-06	2.19E+00	1.62E-06	3.46E-08	1.12E-02	1.47E-03	3.67E-04	1.93E-03	1.47E-02	4.27E-02	BR06Z	70	70	1.60E-04	2.10E-05
BR06Y	South Ramp - Construction Traffic	1	1	603	10	100%	4.26E-06	1.62E+00	1.09E-06	0.00E+00	1.12E-02	1.46E-03	3.62E-04	1.01E-03	7.72E-03	3.02E-02	BR06Y	70	70	1.60E-04	2.09E-05
PR08Z	WF to SS/LTF - Non-variable Traffic	1	1	307	10	100%	1.45E-06	5.18E-01	2.44E-06	4.91E-07	2.74E-03	5.06E-04	1.06E-04	6.37E-02	3.45E-01	2.41E-01	PR08Z	36	36	7.61E-05	1.41E-05
PR08Y	WF to SS/LTF - Construction Traffic	1	1	307	10	100%	2.17E-06	8.23E-01	5.54E-07	0.00E+00	2.57E-03	3.38E-04	8.58E-05	2.23E-03	1.70E-02	6.48E-02	PR08Y	36	36	7.14E-05	9.38E-06
UR09AZ	WF to SS, to CDA turn off - Non-variable Traffic	1	1	211	10	100%	1.06E-06	3.82E-01	1.48E-06	3.04E-07	8.05E-02	2.43E-02	2.43E-03	1.10E-03	3.65E-03	5.60E-03	UR09AZ	25	25	3.22E-03	9.71E-04
UR09AY	WF to SS, to CDA turnoff - Construction Traffic	1	1	211	10	100%	1.49E-06	5.66E-01	3.81E-07	0.00E+00	8.04E-02	2.42E-02	2.42E-03	4.91E-05	1.63E-04	1.58E-03	UR09AY	25	25	3.22E-03	9.67E-04
UR09BZ	WF to SS, after CDA turnoff - Non-variable Traffic	1	1	179	10	100%	1.74E-06	6.59E-01	4.44E-07	0.00E+00	7.60E-02	2.29E-02	2.29E-03	6.05E-05	2.01E-04	1.95E-03	UR09BZ	21	21	3.62E-03	1.09E-03
UR09BY	WF to SS, after CDA turnoff - Construction Traffic	1	1	179	10	100%	1.26E-06	4.79E-01	3.22E-07	0.00E+00	7.60E-02	2.29E-02	2.29E-03	4.40E-05	1.46E-04	1.42E-03	UR09BY	21	21	3.62E-03	1.09E-03
UR11Z	Across SS - Variable Traffic	1	1	242	10	100%	2.36E-06	8.95E-01	6.02E-07	0.00E+00	1.03E-01	3.10E-02	3.11E-03	6.05E-05	2.01E-04	1.95E-03	UR11Z	28	28	3.68E-03	1.11E-03
UR11Y	Across SS - Construction Traffic	1	1	242	10	100%	1.71E-06	6.50E-01	4.37E-07	0.00E+00	1.03E-01	3.10E-02	3.11E-03	4.40E-05	1.46E-04	1.42E-03	UR11Y	28	28	3.68E-03	1.11E-03
UR12	Unpaved Road to working face - Variable Traffic	1	1	752	10	100%	1.10E-06	2.91E-01	1.04E-05	2.26E-06	1.72E-01	3.98E-02	4.00E-03	5.16E-03	2.24E-02	2.91E-02	UR12	87	87	1.98E-03	4.57E-04
UR12Z	Unpaved Road to working face - Non-variable Traffic	1	1	752	10	100%	7.22E-06	2.74E+00	2.02E-06	4.31E-08	1.72E-01	3.89E-02	3.91E-03	1.58E-04	6.95E-04	5.00E-03	UR12Z	87	87	1.97E-03	4.47E-04
UR12Y	Unpaved Road to working face - Construction Traffic	1	1	752	10	100%	5.32E-06	2.02E+00	1.36E-06	0.00E+00	1.72E-01	3.89E-02	3.90E-03	8.21E-05	3.62E-04	3.50E-03	UR12Y	87	87	1.97E-03	4.47E-04
PR13Z	WF to LTF	1	1	165	10	100%	2.78E-07	8.33E-02	2.75E-06	5.16E-07	1.98E-03	5.44E-04	9.51E-05	1.67E-01	6.08E-01	4.57E-01	PR13Z	19	19	1.04E-04	2.86E-05
PR14Z	WF to LTF	1	1	61	10	100%	1.02E-07	3.06E-02	1.01E-06	1.90E-07	7.28E-04	2.00E-04	3.50E-05	1.67E-01	6.08E-01	4.57E-01	PR14Z	7	7	1.04E-04	2.86E-05
UR17Z	Across CDA	1	1	90	10	100%	3.49E-07	1.31E-01	4.30E-07	0.00E+00	3.41E-02	1.02E-02	1.03E-03	9.62E-05	3.20E-04	3.09E-03	UR17Z	10	10	3.41E-03	1.02E-03
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	1.92E-07	7.24E-02	2.08E-07	1.85E-10	1.73E-02	5.28E-03	5.29E-04	9.40E-05	3.09E-04	2.94E-03	UR18Z	5	5	3.47E-03	1.06E-03
PR04B	Scale House to WF	1	1	681	10	100%	9.95E-07	2.63E-01	9.44E-06	2.05E-06	2.11E-03	9.74E-04	1.46E-04	3.81E-01	8.26E-01	7.20E-01	PR04B	79	79	2.67E-05	1.23E-05
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	9.16E-07	2.28E-01	7.92E-06	1.83E-06	1.95E-03	8.07E-04	1.24E-04	3.28E-01	7.90E-01	6.71E-01	PR04BZ	79	79	2.46E-05	1.02E-05
PR04C	Exit Road from WF	1	1	420	10	100%	6.14E-07	1.62E-01	5.83E-06	1.26E-06	1.34E-03	6.06E-04	9.16E-05	3.70E-01	8.19E-01	7.10E-01	PR04C	49	49	2.74E-05	1.24E-05
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	5.65E-07	1.41E-01	4.89E-06	1.13E-06	1.24E-03	5.03E-04	7.81E-05	3.17E-01	7.82E-01	6.60E-01	PR04CZ	49	49	2.53E-05	1.03E-05
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	6.05E-06	1.55E+00	7.94E-05	2.99E-05	3.95E-05	3.95E-05	3.63E-05	n/a	n/a	n/a	IDLE01	1	1	7.91E-05	7.91E-05
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	6.05E-06	1.55E+00	7.94E-05	2.99E-05	3.95E-05	3.95E-05	3.63E-05	n/a	n/a	n/a	IDLE02	1	1	7.91E-05	7.91E-05
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	2.54E-04	9.59E+01	1.36E-04	0.00E+00	1.26E-03	1.26E-03	1.22E-03	1.00E+00	1.00E+00	1.00E+00	DOZE2	1	1	1.26E-03	1.26E-03
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	7.35E-05	2.78E+01	3.78E-05	0.00E+00	3.26E-04	3.26E-04	3.16E-04	1.00E+00	1.00E+00	1.00E+00	DOZE4	1	1	3.26E-04	3.26E-04
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	3.89E-05	1.46E+01	4.80E-05	0.00E+00	3.65E-04	3.65E-04	3.54E-04	1.00E+00	1.00E+00	1.00E+00	DOZE4	1	1	3.65E-04	3.65E-04
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	1.08E-04	4.10E+01	2.76E-05	0.00E+00	2.86E-04	2.86E-04	2.78E-04	1.00E+00	1.00E+00	1.00E+00	DOZE4	1	1	2.86E-04	2.86E-04

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes)

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

[5] Emissions are input on either a vehicle distance or power rating basis. Load factor applies only to emissions based on p

[6] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S2-M-5.1b: Vehicle Emission Rates - Tailpipe Emissions, Mitigation Applied, M

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Emission rate per volume source: PM2.5 PM25	Benzene 71-43-2	Ammonia 7664-41-7	Nitrogen Dioxide NO2	Nitrogen Oxides 10102-44-0	Sulphur Dioxide 7446-09-5	Carbon Dioxide 124-38-9	Methane 74-82-8	Nitrous Oxide 10024-97-2
Mobile Equipment															
PR01	Main Entrance Road	1	1	206	10	100%	3.72E-06	9.40E-09	2.16E-07	1.21E-05	3.14E-05	2.74E-08	7.23E-03	2.60E-07	5.63E-08
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	3.12E-06	8.86E-09	2.06E-07	9.55E-06	2.47E-05	2.52E-08	6.27E-03	2.18E-07	5.02E-08
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	6.79E-05	4.76E-09	9.44E-08	3.40E-06	8.87E-06	1.10E-08	2.61E-03	9.21E-08	2.24E-08
PR04A	Entrance to Scale House	1	1	487	10	100%	1.78E-06	4.29E-09	9.85E-08	5.53E-06	1.43E-05	1.25E-08	3.30E-03	1.18E-07	2.57E-08
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	1.51E-06	4.04E-09	9.39E-08	4.36E-06	1.13E-05	1.15E-08	2.86E-03	9.93E-08	2.29E-08
BR06	South Ramp - Variable Traffic	1	1	603	10	100%	6.35E-06	4.33E-09	9.95E-08	5.58E-06	1.44E-05	1.26E-08	3.33E-03	1.20E-07	2.59E-08
BR06Z	South Ramp - Non-variable Traffic	1	1	603	10	100%	5.24E-06	1.29E-08	2.56E-07	4.68E-08	6.62E-06	8.26E-08	3.14E-02	2.31E-08	4.94E-10
BR06Y	South Ramp - Construction Traffic	1	1	603	10	100%	5.17E-06	9.38E-09	1.88E-07	0.00E+00	4.80E-06	6.09E-08	2.31E-02	1.56E-08	0.00E+00
PR08Z	WF to SS/LTF - Non-variable Traffic	1	1	307	10	100%	2.94E-06	7.55E-09	1.59E-07	2.59E-06	9.34E-06	4.02E-08	1.44E-02	6.77E-08	1.36E-08
PR08Y	WF to SS/LTF - Construction Traffic	1	1	307	10	100%	2.38E-06	9.27E-09	1.85E-07	0.00E+00	4.74E-06	6.02E-08	2.29E-02	1.54E-08	0.00E+00
UR09AZ	WF to SS, to CDA turn off - Non-variable Traffic	1	1	211	10	100%	9.73E-05	8.22E-09	1.64E-07	1.85E-06	7.70E-06	4.25E-08	1.53E-02	5.94E-08	1.22E-08
UR09AY	WF to SS, to CDA turnoff - Construction Traffic	1	1	211	10	100%	9.69E-05	9.19E-09	1.84E-07	0.00E+00	4.70E-06	5.97E-08	2.27E-02	1.52E-08	0.00E+00
UR09BZ	WF to SS, after CDA turnoff - Non-variable Traffic	1	1	179	10	100%	1.09E-04	1.27E-08	2.55E-07	0.00E+00	6.51E-06	8.27E-08	3.14E-02	2.11E-08	0.00E+00
UR09BY	WF to SS, after CDA turnoff - Construction Traffic	1	1	179	10	100%	1.09E-04	9.26E-09	1.85E-07	0.00E+00	4.73E-06	6.01E-08	2.28E-02	1.54E-08	0.00E+00
UR11Z	Across SS - Variable Traffic	1	1	242	10	100%	1.11E-04	1.30E-08	2.59E-07	0.00E+00	6.63E-06	8.41E-08	3.20E-02	2.15E-08	0.00E+00
UR11Y	Across SS - Construction Traffic	1	1	242	10	100%	1.11E-04	9.42E-09	1.88E-07	0.00E+00	4.82E-06	6.11E-08	2.32E-02	1.56E-08	0.00E+00
UR12	Unpaved Road to working face - Variable Traffic	1	1	752	10	100%	4.60E-05	4.34E-09	9.98E-08	5.60E-06	1.45E-05	1.26E-08	3.34E-03	1.20E-07	2.60E-08
UR12Z	Unpaved Road to working face - Non-variable Traffic	1	1	752	10	100%	4.49E-05	1.29E-08	2.57E-07	4.70E-08	6.64E-06	8.29E-08	3.15E-02	2.32E-08	4.96E-10
UR12Y	Unpaved Road to working face - Construction Traffic	1	1	752	10	100%	4.49E-05	9.42E-09	1.88E-07	0.00E+00	4.81E-06	6.11E-08	2.32E-02	1.56E-08	0.00E+00
PR13Z	WF to LTF	1	1	165	10	100%	5.00E-06	4.47E-10	9.75E-08	9.76E-06	2.49E-05	1.46E-08	4.38E-03	1.45E-07	2.72E-08
PR14Z	WF to LTF	1	1	61	10	100%	4.99E-06	4.46E-10	9.73E-08	9.74E-06	2.49E-05	1.46E-08	4.38E-03	1.45E-07	2.71E-08
UR17Z	Across CDA	1	1	90	10	100%	1.03E-04	2.74E-08	1.06E-07	0.00E+00	5.17E-06	3.49E-08	1.31E-02	4.30E-08	0.00E+00
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	1.06E-04	2.63E-08	1.17E-07	3.50E-09	5.27E-06	3.85E-08	1.45E-02	4.15E-08	3.70E-11
PR04B	Scale House to WF	1	1	681	10	100%	1.85E-06	4.33E-09	9.95E-08	5.58E-06	1.44E-05	1.26E-08	3.33E-03	1.20E-07	2.59E-08
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	1.58E-06	4.08E-09	9.48E-08	4.40E-06	1.14E-05	1.16E-08	2.89E-03	1.00E-07	2.31E-08
PR04C	Exit Road from WF	1	1	420	10	100%	1.87E-06	4.31E-09	9.90E-08	5.56E-06	1.44E-05	1.25E-08	3.32E-03	1.19E-07	2.58E-08
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	1.59E-06	4.06E-09	9.44E-08	4.38E-06	1.13E-05	1.15E-08	2.88E-03	9.98E-08	2.30E-08
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	7.26E-05	3.02E-06	2.10E-04	6.89E-03	1.77E-02	1.21E-05	3.10E+00	1.59E-04	5.98E-05
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	7.26E-05	3.02E-06	2.10E-04	6.89E-03	1.77E-02	1.21E-05	3.10E+00	1.59E-04	5.98E-05
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	1.22E-03	8.45E-05	7.78E-04	0.00E+00	2.61E-02	2.54E-04	9.59E+01	1.36E-04	0.00E+00
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	3.16E-04	2.36E-05	2.26E-04	0.00E+00	7.14E-03	7.35E-05	2.78E+01	3.78E-05	0.00E+00
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	3.54E-04	3.06E-05	1.19E-04	0.00E+00	5.76E-03	3.89E-05	1.46E+01	4.80E-05	0.00E+00
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	2.78E-04	1.67E-05	3.33E-04	0.00E+00	8.51E-03	1.08E-04	4.10E+01	2.76E-05	0.00E+00

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes)

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

[5] Emissions are input on either a vehicle distance or power rating basis. Load factor applies only to emissions based on p

[6] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S2-M-5.1b: Vehicle Emission Rates - Tailpipe Emissions, Mitigation Applied, PM

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Tailpipe Emission Factor [5], [7] TSP PM (g/vkt)	TSP PM (g/h)	PM10 PM10 (g/vkt)	PM10 PM10 (g/h)	PM2.5 PM25 (g/vkt)	PM2.5 PM25 (g/h)	Benzene 71-43-2 (g/vkt)	Benzene 71-43-2 (g/h)	Ammonia 7664-41-7 (g/vkt)	Ammonia 7664-41-7 (g/h)	Nitrogen Dioxide NO2 (g/vkt)	Nitrogen Dioxide NO2 (g/h)	Nitrogen Oxides 10102-44-0 (g/vkt)	Nitrogen Oxides 10102-44-0 (g/h)
Mobile Equipment																				
PR01	Main Entrance Road	1	1	206	10	100%	5.18E+00	0.00E+00	5.18E+00	0.00E+00	6.80E-01	0.00E+00	6.09E-04	0.00E+00	3.86E-02	0.00E+00	2.89E+00	0.00E+00	7.39E+00	0.00E+00
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	0.00E+00	6.94E-01	0.00E+00	6.94E-01	0.00E+00	9.09E-02	0.00E+00	3.51E-04	0.00E+00	8.15E-03	0.00E+00	3.78E-01	0.00E+00	9.79E-01
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	0.00E+00	1.09E+00	0.00E+00	1.09E+00	0.00E+00	1.43E-01	0.00E+00	8.23E-04	0.00E+00	1.63E-02	0.00E+00	5.88E-01	0.00E+00	1.53E+00
PR04A	Entrance to Scale House	1	1	487	10	100%	5.18E+00	1.13E+00	5.18E+00	1.13E+00	6.80E-01	1.47E-01	6.09E-04	1.94E-03	3.86E-02	2.27E-02	2.89E+00	5.79E-01	7.39E+00	1.57E+00
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	0.00E+00	1.64E+00	0.00E+00	1.64E+00	0.00E+00	2.15E-01	0.00E+00	8.29E-04	0.00E+00	1.93E-02	0.00E+00	8.94E-01	0.00E+00	2.31E+00
BR06	South Ramp - Variable Traffic	1	1	603	10	100%	5.18E+00	0.00E+00	5.18E+00	0.00E+00	6.80E-01	0.00E+00	6.09E-04	0.00E+00	3.86E-02	0.00E+00	2.89E+00	0.00E+00	7.39E+00	0.00E+00
BR06Z	South Ramp - Non-variable Traffic	1	1	603	10	100%	0.00E+00	7.81E-02	0.00E+00	7.81E-02	0.00E+00	5.63E-02	0.00E+00	3.24E-03	0.00E+00	6.44E-02	0.00E+00	1.18E-02	0.00E+00	1.67E+00
BR06Y	South Ramp - Construction Traffic	1	1	603	10	100%	0.00E+00	4.06E-02	0.00E+00	4.06E-02	0.00E+00	3.94E-02	0.00E+00	2.36E-03	0.00E+00	4.73E-02	0.00E+00	0.00E+00	0.00E+00	1.21E+00
PR08Z	WF to SS/LTF - Non-variable Traffic	1	1	307	10	100%	0.00E+00	6.28E-01	0.00E+00	6.28E-01	0.00E+00	9.19E-02	0.00E+00	9.79E-04	0.00E+00	2.06E-02	0.00E+00	3.36E-01	0.00E+00	1.21E+00
PR08Y	WF to SS/LTF - Construction Traffic	1	1	307	10	100%	0.00E+00	2.06E-02	0.00E+00	2.06E-02	0.00E+00	2.00E-02	0.00E+00	1.20E-03	0.00E+00	2.40E-02	0.00E+00	0.00E+00	0.00E+00	6.14E-01
UR09AZ	WF to SS, to CDA turn off - Non-variable Traffic	1	1	211	10	100%	0.00E+00	3.18E-01	0.00E+00	3.18E-01	0.00E+00	4.90E-02	0.00E+00	7.40E-04	0.00E+00	1.47E-02	0.00E+00	1.66E-01	0.00E+00	6.93E-01
UR09AY	WF to SS, to CDA turnoff - Construction Traffic	1	1	211	10	100%	0.00E+00	1.42E-02	0.00E+00	1.42E-02	0.00E+00	1.38E-02	0.00E+00	8.27E-04	0.00E+00	1.65E-02	0.00E+00	0.00E+00	0.00E+00	4.23E-01
UR09BZ	WF to SS, after CDA turnoff - Non-variable Traffic	1	1	179	10	100%	0.00E+00	1.65E-02	0.00E+00	1.65E-02	0.00E+00	1.61E-02	0.00E+00	9.63E-04	0.00E+00	1.92E-02	0.00E+00	0.00E+00	0.00E+00	4.92E-01
UR09BY	WF to SS, after CDA turnoff - Construction Traffic	1	1	179	10	100%	0.00E+00	1.20E-02	0.00E+00	1.20E-02	0.00E+00	1.17E-02	0.00E+00	7.00E-04	0.00E+00	1.40E-02	0.00E+00	0.00E+00	0.00E+00	3.58E-01
UR11Z	Across SS - Variable Traffic	1	1	242	10	100%	0.00E+00	2.25E-02	0.00E+00	2.25E-02	0.00E+00	2.18E-02	0.00E+00	1.31E-03	0.00E+00	2.61E-02	0.00E+00	0.00E+00	0.00E+00	6.68E-01
UR11Y	Across SS - Construction Traffic	1	1	242	10	100%	0.00E+00	1.63E-02	0.00E+00	1.63E-02	0.00E+00	1.58E-02	0.00E+00	9.50E-04	0.00E+00	1.90E-02	0.00E+00	0.00E+00	0.00E+00	4.85E-01
UR12	Unpaved Road to working face - Variable Traffic	1	1	752	10	100%	5.18E+00	0.00E+00	5.18E+00	0.00E+00	6.80E-01	0.00E+00	6.09E-04	0.00E+00	3.86E-02	0.00E+00	2.89E+00	0.00E+00	7.39E+00	0.00E+00
UR12Z	Unpaved Road to working face - Non-variable Traffic	1	1	752	10	100%	0.00E+00	9.74E-02	0.00E+00	9.74E-02	0.00E+00	7.03E-02	0.00E+00	4.04E-03	0.00E+00	8.04E-02	0.00E+00	1.47E-02	0.00E+00	2.08E+00
UR12Y	Unpaved Road to working face - Construction Traffic	1	1	752	10	100%	0.00E+00	5.07E-02	0.00E+00	5.07E-02	0.00E+00	4.92E-02	0.00E+00	2.95E-03	0.00E+00	5.89E-02	0.00E+00	0.00E+00	0.00E+00	1.51E+00
PR13Z	WF to LTF	1	1	165	10	100%	0.00E+00	1.19E+00	0.00E+00	1.19E+00	0.00E+00	1.56E-01	0.00E+00	3.06E-05	0.00E+00	6.67E-03	0.00E+00	6.67E-01	0.00E+00	1.70E+00
PR14Z	WF to LTF	1	1	61	10	100%	0.00E+00	4.38E-01	0.00E+00	4.38E-01	0.00E+00	5.75E-02	0.00E+00	1.12E-05	0.00E+00	2.45E-03	0.00E+00	2.45E-01	0.00E+00	6.27E-01
UR17Z	Across CDA	1	1	90	10	100%	0.00E+00	1.18E-02	0.00E+00	1.18E-02	0.00E+00	1.14E-02	0.00E+00	9.87E-04	0.00E+00	3.83E-03	0.00E+00	0.00E+00	0.00E+00	1.86E-01
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	0.00E+00	5.87E-03	0.00E+00	5.87E-03	0.00E+00	5.59E-03	0.00E+00	4.74E-04	0.00E+00	2.11E-03	0.00E+00	6.31E-05	0.00E+00	9.49E-02
PR04B	Scale House to WF	1	1	681	10	100%	5.18E+00	1.59E+00	5.18E+00	1.59E+00	6.80E-01	2.06E-01	6.09E-04	2.72E-03	3.86E-02	3.17E-02	2.89E+00	8.10E-01	7.39E+00	2.19E+00
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	0.00E+00	2.29E+00	0.00E+00	2.29E+00	0.00E+00	3.01E-01	0.00E+00	1.16E-03	0.00E+00	2.70E-02	0.00E+00	1.25E+00	0.00E+00	3.24E+00
PR04C	Exit Road from WF	1	1	420	10	100%	5.18E+00	9.79E-01	5.18E+00	9.79E-01	6.80E-01	1.27E-01	6.09E-04	1.68E-03	3.86E-02	1.96E-02	2.89E+00	5.00E-01	7.39E+00	1.35E+00
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	0.00E+00	1.42E+00	0.00E+00	1.42E+00	0.00E+00	1.86E-01	0.00E+00	7.16E-04	0.00E+00	1.66E-02	0.00E+00	7.72E-01	0.00E+00	2.00E+00
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	--	--	--	--	--	--	--	--	--	--	--	--	--	--
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	--	--	--	--	--	--	--	--	--	--	--	--	--	--
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	0.00E+00	4.54E+00	0.00E+00	4.54E+00	0.00E+00	4.40E+00	0.00E+00	3.04E-01	0.00E+00	2.80E+00	0.00E+00	0.00E+00	0.00E+00	9.39E+01
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	0.00E+00	1.17E+00	0.00E+00	1.17E+00	0.00E+00	1.14E+00	0.00E+00	8.50E-02	0.00E+00	8.13E-01	0.00E+00	0.00E+00	0.00E+00	2.57E+01
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	0.00E+00	1.31E+00	0.00E+00	1.31E+00	0.00E+00	1.28E+00	0.00E+00	1.10E-01	0.00E+00	4.27E-01	0.00E+00	0.00E+00	0.00E+00	2.07E+01
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	0.00E+00	1.03E+00	0.00E+00	1.03E+00	0.00E+00	9.99E-01	0.00E+00	6.00E-02	0.00E+00	1.20E+00	0.00E+00	0.00E+00	0.00E+00	3.06E+01

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes)

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

[5] Emissions are input on either a vehicle distance or power rating basis. Load factor applies only to emissions based on power ratings.

[6] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S2-M-5.1b: Vehicle Emission Rates - Tailpipe Emissions, Mitigation Applied, P

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Sulphur Dioxide 7446-09-5 (g/vkt)	Sulphur Dioxide 7446-09-5 (g/h)	Carbon Dioxide 124-38-9 (g/vkt)	Carbon Dioxide 124-38-9 (g/h)	Methane 74-82-8 (g/vkt)	Methane 74-82-8 (g/h)	Nitrous Oxide 10024-97-2 (g/vkt)	Nitrous Oxide 10024-97-2 (g/h)	Source ID
Mobile Equipment															**Mobile Equipment**
PR01	Main Entrance Road	1	1	206	10	100%	5.30E-03	0.00E+00	1.46E+03	0.00E+00	4.72E-02	0.00E+00	9.74E-03	0.00E+00	PR01
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	0.00E+00	9.97E-04	0.00E+00	2.48E+02	0.00E+00	8.62E-03	0.00E+00	1.99E-03	PR01Z
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	0.00E+00	1.91E-03	0.00E+00	4.51E+02	0.00E+00	1.59E-02	0.00E+00	3.87E-03	UR02Z
PR04A	Entrance to Scale House	1	1	487	10	100%	5.30E-03	2.47E-03	1.46E+03	5.96E+02	4.72E-02	2.58E-02	9.74E-03	6.11E-03	PR04A
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	0.00E+00	2.36E-03	0.00E+00	5.87E+02	0.00E+00	2.04E-02	0.00E+00	4.70E-03	PR04AZ
BR06	South Ramp - Variable Traffic	1	1	603	10	100%	5.30E-03	0.00E+00	1.46E+03	0.00E+00	4.72E-02	0.00E+00	9.74E-03	0.00E+00	BR06
BR06Z	South Ramp - Non-variable Traffic	1	1	603	10	100%	0.00E+00	2.08E-02	0.00E+00	7.90E+03	0.00E+00	5.83E-03	0.00E+00	1.24E-04	BR06Z
BR06Y	South Ramp - Construction Traffic	1	1	603	10	100%	0.00E+00	1.53E-02	0.00E+00	5.83E+03	0.00E+00	3.92E-03	0.00E+00	0.00E+00	BR06Y
PR08Z	WF to SS/LTF - Non-variable Traffic	1	1	307	10	100%	0.00E+00	5.21E-03	0.00E+00	1.86E+03	0.00E+00	8.77E-03	0.00E+00	1.77E-03	PR08Z
PR08Y	WF to SS/LTF - Construction Traffic	1	1	307	10	100%	0.00E+00	7.80E-03	0.00E+00	2.96E+03	0.00E+00	1.99E-03	0.00E+00	0.00E+00	PR08Y
UR09AZ	WF to SS, to CDA turn off - Non-variable Traffic	1	1	211	10	100%	0.00E+00	3.83E-03	0.00E+00	1.38E+03	0.00E+00	5.34E-03	0.00E+00	1.09E-03	UR09AZ
UR09AY	WF to SS, to CDA turnoff - Construction Traffic	1	1	211	10	100%	0.00E+00	5.37E-03	0.00E+00	2.04E+03	0.00E+00	1.37E-03	0.00E+00	0.00E+00	UR09AY
UR09BZ	WF to SS, after CDA turnoff - Non-variable Traffic	1	1	179	10	100%	0.00E+00	6.25E-03	0.00E+00	2.37E+03	0.00E+00	1.60E-03	0.00E+00	0.00E+00	UR09BZ
UR09BY	WF to SS, after CDA turnoff - Construction Traffic	1	1	179	10	100%	0.00E+00	4.54E-03	0.00E+00	1.72E+03	0.00E+00	1.16E-03	0.00E+00	0.00E+00	UR09BY
UR11Z	Across SS - Variable Traffic	1	1	242	10	100%	0.00E+00	8.48E-03	0.00E+00	3.22E+03	0.00E+00	2.17E-03	0.00E+00	0.00E+00	UR11Z
UR11Y	Across SS - Construction Traffic	1	1	242	10	100%	0.00E+00	6.16E-03	0.00E+00	2.34E+03	0.00E+00	1.57E-03	0.00E+00	0.00E+00	UR11Y
UR12	Unpaved Road to working face - Variable Traffic	1	1	752	10	100%	5.30E-03	0.00E+00	1.46E+03	0.00E+00	4.72E-02	0.00E+00	9.74E-03	0.00E+00	UR12
UR12Z	Unpaved Road to working face - Non-variable Traffic	1	1	752	10	100%	0.00E+00	2.60E-02	0.00E+00	9.86E+03	0.00E+00	7.28E-03	0.00E+00	1.55E-04	UR12Z
UR12Y	Unpaved Road to working face - Construction Traffic	1	1	752	10	100%	0.00E+00	1.91E-02	0.00E+00	7.27E+03	0.00E+00	4.89E-03	0.00E+00	0.00E+00	UR12Y
PR13Z	WF to LTF	1	1	165	10	100%	0.00E+00	1.00E-03	0.00E+00	3.00E+02	0.00E+00	9.91E-03	0.00E+00	1.86E-03	PR13Z
PR14Z	WF to LTF	1	1	61	10	100%	0.00E+00	3.68E-04	0.00E+00	1.10E+02	0.00E+00	3.64E-03	0.00E+00	6.84E-04	PR14Z
UR17Z	Across CDA	1	1	90	10	100%	0.00E+00	1.26E-03	0.00E+00	4.72E+02	0.00E+00	1.55E-03	0.00E+00	0.00E+00	UR17Z
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	0.00E+00	6.93E-04	0.00E+00	2.60E+02	0.00E+00	7.47E-04	0.00E+00	6.65E-07	UR18Z
PR04B	Scale House to WF	1	1	681	10	100%	5.30E-03	3.46E-03	1.46E+03	8.34E+02	4.72E-02	3.61E-02	9.74E-03	8.55E-03	PR04B
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	0.00E+00	3.30E-03	0.00E+00	8.21E+02	0.00E+00	2.85E-02	0.00E+00	6.57E-03	PR04BZ
PR04C	Exit Road from WF	1	1	420	10	100%	5.30E-03	2.14E-03	1.46E+03	5.15E+02	4.72E-02	2.23E-02	9.74E-03	5.28E-03	PR04C
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	0.00E+00	2.04E-03	0.00E+00	5.07E+02	0.00E+00	1.76E-02	0.00E+00	4.06E-03	PR04CZ
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	--	--	--	--	--	--	--	--	IDLE01
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	--	--	--	--	--	--	--	--	IDLE02
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	0.00E+00	9.13E-01	0.00E+00	3.45E+05	0.00E+00	4.90E-01	0.00E+00	0.00E+00	DOZE2
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	0.00E+00	2.65E-01	0.00E+00	1.00E+05	0.00E+00	1.36E-01	0.00E+00	0.00E+00	DOZE4
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	0.00E+00	1.40E-01	0.00E+00	5.26E+04	0.00E+00	1.73E-01	0.00E+00	0.00E+00	DOZE2CAP
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	0.00E+00	3.89E-01	0.00E+00	1.48E+05	0.00E+00	9.94E-02	0.00E+00	0.00E+00	DOZE2SS

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes)

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

[5] Emissions are input on either a vehicle distance or power rating basis. Load factor applies only to emissions based on power ratings.

[6] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S2-M-5.1b: Vehicle Emission Rates - Tailpipe Emissions, Mitigation Applied, P

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Tailpipe Emission Rate TSP PM (g/s)	PM10 PM10 (g/s)	PM2.5 PM25 (g/s)	Benzene 71-43-2 (g/s)	Ammonia 7664-41-7 (g/s)	Nitrogen Dioxide NO2 (g/s)
Mobile Equipment												
PR01	Main Entrance Road	1	1	206	10	100%	2.96E-04	2.96E-04	3.89E-05	3.48E-08	2.20E-06	1.65E-04
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	1.93E-04	1.93E-04	2.53E-05	9.75E-08	2.26E-06	1.05E-04
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	3.04E-04	3.04E-04	3.98E-05	2.29E-07	4.53E-06	1.63E-04
PR04A	Entrance to Scale House	1	1	487	10	100%	7.00E-04	7.00E-04	9.19E-05	8.22E-08	5.21E-06	3.90E-04
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	4.55E-04	4.55E-04	5.97E-05	2.30E-07	5.35E-06	2.48E-04
BR06	South Ramp - Variable Traffic	1	1	603	10	100%	8.68E-04	8.68E-04	1.14E-04	1.02E-07	6.46E-06	4.84E-04
BR06Z	South Ramp - Non-variable Traffic	1	1	603	10	100%	2.17E-05	2.17E-05	1.57E-05	9.00E-07	1.79E-05	3.28E-06
BR06Y	South Ramp - Construction Traffic	1	1	603	10	100%	1.13E-05	1.13E-05	1.09E-05	6.57E-07	1.31E-05	0.00E+00
PR08Z	WF to SS/LTF - Non-variable Traffic	1	1	307	10	100%	1.74E-04	1.74E-04	2.55E-05	2.72E-07	5.71E-06	9.34E-05
PR08Y	WF to SS/LTF - Construction Traffic	1	1	307	10	100%	5.74E-06	5.74E-06	5.56E-06	3.34E-07	6.67E-06	0.00E+00
UR09AZ	WF to SS, to CDA turn off - Non-variable Traffic	1	1	211	10	100%	8.85E-05	8.85E-05	1.36E-05	2.05E-07	4.10E-06	4.62E-05
UR09AY	WF to SS, to CDA turnoff - Construction Traffic	1	1	211	10	100%	3.95E-06	3.95E-06	3.83E-06	2.30E-07	4.59E-06	0.00E+00
UR09BZ	WF to SS, after CDA turnoff - Non-variable Traffic	1	1	179	10	100%	4.60E-06	4.60E-06	4.46E-06	2.68E-07	5.35E-06	0.00E+00
UR09BY	WF to SS, after CDA turnoff - Construction Traffic	1	1	179	10	100%	3.34E-06	3.34E-06	3.24E-06	1.94E-07	3.89E-06	0.00E+00
UR11Z	Across SS - Variable Traffic	1	1	242	10	100%	6.24E-06	6.24E-06	6.05E-06	3.63E-07	7.25E-06	0.00E+00
UR11Y	Across SS - Construction Traffic	1	1	242	10	100%	4.53E-06	4.53E-06	4.40E-06	2.64E-07	5.27E-06	0.00E+00
UR12	Unpaved Road to working face - Variable Traffic	1	1	752	10	100%	1.08E-03	1.08E-03	1.42E-04	1.27E-07	8.06E-06	6.03E-04
UR12Z	Unpaved Road to working face - Non-variable Traffic	1	1	752	10	100%	2.71E-05	2.71E-05	1.95E-05	1.12E-06	2.23E-05	4.09E-06
UR12Y	Unpaved Road to working face - Construction Traffic	1	1	752	10	100%	1.41E-05	1.41E-05	1.37E-05	8.19E-07	1.64E-05	0.00E+00
PR13Z	WF to LTF	1	1	165	10	100%	3.31E-04	3.31E-04	4.34E-05	8.49E-09	1.85E-06	1.85E-04
PR14Z	WF to LTF	1	1	61	10	100%	1.22E-04	1.22E-04	1.60E-05	3.12E-09	6.81E-07	6.82E-05
UR17Z	Across CDA	1	1	90	10	100%	3.28E-06	3.28E-06	3.18E-06	2.74E-07	1.06E-06	0.00E+00
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	1.63E-06	1.63E-06	1.55E-06	1.32E-07	5.87E-07	1.75E-08
PR04B	Scale House to WF	1	1	681	10	100%	9.80E-04	9.80E-04	1.29E-04	1.15E-07	7.29E-06	5.46E-04
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	6.37E-04	6.37E-04	8.35E-05	3.22E-07	7.49E-06	3.47E-04
PR04C	Exit Road from WF	1	1	420	10	100%	6.05E-04	6.05E-04	7.94E-05	7.10E-08	4.50E-06	3.37E-04
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	3.93E-04	3.93E-04	5.16E-05	1.99E-07	4.62E-06	2.14E-04
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	5.15E-05	5.15E-05	4.74E-05	6.04E-07	9.62E-05	4.22E-03
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	5.15E-05	5.15E-05	4.74E-05	6.04E-07	9.62E-05	4.22E-03
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	1.26E-03	1.26E-03	1.22E-03	8.45E-05	7.78E-04	0.00E+00
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	3.26E-04	3.26E-04	3.16E-04	2.36E-05	2.26E-04	0.00E+00
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	3.65E-04	3.65E-04	3.54E-04	3.06E-05	1.19E-04	0.00E+00
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	2.86E-04	2.86E-04	2.78E-04	1.67E-05	3.33E-04	0.00E+00

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes)

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

[5] Emissions are input on either a vehicle distance or power rating basis. Load factor applies only to emissions based on power ratings.

[6] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S2-M-5.1b: Vehicle Emission Rates - Tailpipe Emissions, Mitigation Applied, P

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Nitrogen Oxides 10102-44-0 (g/s)	Sulphur Dioxide 7446-09-5 (g/s)	Carbon Dioxide 124-38-9 (g/s)	Methane 74-82-8 (g/s)	Nitrous Oxide 10024-97-2 (g/s)	Tailpipe + Fugitive Emission Rate [6] TSP PM (g/s)	PM10 PM10 (g/s)	PM2.5 PM2.5 (g/s)
Mobile Equipment														
PR01	Main Entrance Road	1	1	206	10	100%	4.22E-04	3.03E-07	8.33E-02	2.70E-06	5.57E-07	5.87E-04	3.34E-04	4.80E-05
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	2.72E-04	2.77E-07	6.90E-02	2.40E-06	5.52E-07	4.83E-04	2.30E-04	3.44E-05
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	4.26E-04	5.30E-07	1.25E-01	4.42E-06	1.07E-06	1.07E-01	3.25E-02	3.26E-03
PR04A	Entrance to Scale House	1	1	487	10	100%	9.98E-04	7.17E-07	1.97E-01	6.38E-06	1.32E-06	1.53E-03	8.08E-04	1.18E-04
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	6.43E-04	6.55E-07	1.63E-01	5.66E-06	1.30E-06	1.29E-03	5.63E-04	8.58E-05
BR06	South Ramp - Variable Traffic	1	1	603	10	100%	1.24E-03	8.89E-07	2.44E-01	7.91E-06	1.63E-06	1.21E-02	2.32E-03	4.65E-04
BR06Z	South Ramp - Non-variable Traffic	1	1	603	10	100%	4.63E-04	5.78E-06	2.19E+00	1.62E-06	3.46E-08	1.12E-02	1.47E-03	3.67E-04
BR06Y	South Ramp - Construction Traffic	1	1	603	10	100%	3.36E-04	4.26E-06	1.62E+00	1.09E-06	0.00E+00	1.12E-02	1.46E-03	3.62E-04
PR08Z	WF to SS/LTF - Non-variable Traffic	1	1	307	10	100%	3.36E-04	1.45E-06	5.18E-01	2.44E-06	4.91E-07	2.74E-03	5.06E-04	1.06E-04
PR08Y	WF to SS/LTF - Construction Traffic	1	1	307	10	100%	1.71E-04	2.17E-06	8.23E-01	5.54E-07	0.00E+00	2.57E-03	3.38E-04	8.58E-05
UR09AZ	WF to SS, to CDA turn off - Non-variable Traffic	1	1	211	10	100%	1.92E-04	1.06E-06	3.82E-01	1.48E-06	3.04E-07	8.05E-02	2.43E-02	2.43E-03
UR09AY	WF to SS, to CDA turnoff - Construction Traffic	1	1	211	10	100%	1.17E-04	1.49E-06	5.66E-01	3.81E-07	0.00E+00	8.04E-02	2.42E-02	2.42E-03
UR09BZ	WF to SS, after CDA turnoff - Non-variable Traffic	1	1	179	10	100%	1.37E-04	1.74E-06	6.59E-01	4.44E-07	0.00E+00	7.60E-02	2.29E-02	2.29E-03
UR09BY	WF to SS, after CDA turnoff - Construction Traffic	1	1	179	10	100%	9.94E-05	1.26E-06	4.79E-01	3.22E-07	0.00E+00	7.60E-02	2.29E-02	2.29E-03
UR11Z	Across SS - Variable Traffic	1	1	242	10	100%	1.86E-04	2.36E-06	8.95E-01	6.02E-07	0.00E+00	1.03E-01	3.10E-02	3.11E-03
UR11Y	Across SS - Construction Traffic	1	1	242	10	100%	1.35E-04	1.71E-06	6.50E-01	4.37E-07	0.00E+00	1.03E-01	3.10E-02	3.11E-03
UR12	Unpaved Road to working face - Variable Traffic	1	1	752	10	100%	1.54E-03	1.11E-06	3.05E-01	9.86E-06	2.04E-06	1.73E-01	4.00E-02	4.03E-03
UR12Z	Unpaved Road to working face - Non-variable Traffic	1	1	752	10	100%	5.78E-04	7.22E-06	2.74E+00	2.02E-06	4.31E-08	1.72E-01	3.89E-02	3.91E-03
UR12Y	Unpaved Road to working face - Construction Traffic	1	1	752	10	100%	4.19E-04	5.32E-06	2.02E+00	1.36E-06	0.00E+00	1.72E-01	3.89E-02	3.90E-03
PR13Z	WF to LTF	1	1	165	10	100%	4.74E-04	2.78E-07	8.33E-02	2.75E-06	5.16E-07	1.98E-03	5.44E-04	9.51E-05
PR14Z	WF to LTF	1	1	61	10	100%	1.74E-04	1.02E-07	3.06E-02	1.01E-06	1.90E-07	7.28E-04	2.00E-04	3.50E-05
UR17Z	Across CDA	1	1	90	10	100%	5.17E-05	3.49E-07	1.31E-01	4.30E-07	0.00E+00	3.41E-02	1.02E-02	1.03E-03
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	2.64E-05	1.92E-07	7.24E-02	2.08E-07	1.85E-10	1.73E-02	5.28E-03	5.29E-04
PR04B	Scale House to WF	1	1	681	10	100%	1.40E-03	1.00E-06	2.76E-01	8.92E-06	1.84E-06	2.29E-03	1.15E-03	1.70E-04
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	8.99E-04	9.16E-07	2.28E-01	7.92E-06	1.83E-06	1.95E-03	8.07E-04	1.24E-04
PR04C	Exit Road from WF	1	1	420	10	100%	8.62E-04	6.19E-07	1.70E-01	5.51E-06	1.14E-06	1.45E-03	7.15E-04	1.06E-04
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	5.55E-04	5.65E-07	1.41E-01	4.89E-06	1.13E-06	1.24E-03	5.03E-04	7.81E-05
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	1.08E-02	5.96E-06	1.58E+00	7.59E-05	2.69E-05	5.15E-05	5.15E-05	4.74E-05
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	1.08E-02	5.96E-06	1.58E+00	7.59E-05	2.69E-05	5.15E-05	5.15E-05	4.74E-05
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	2.61E-02	2.54E-04	9.59E+01	1.36E-04	0.00E+00	1.26E-03	1.26E-03	1.22E-03
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	7.14E-03	7.35E-05	2.78E+01	3.78E-05	0.00E+00	3.26E-04	3.26E-04	3.16E-04
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	5.76E-03	3.89E-05	1.46E+01	4.80E-05	0.00E+00	3.65E-04	3.65E-04	3.54E-04
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	8.51E-03	1.08E-04	4.10E+01	2.76E-05	0.00E+00	2.86E-04	2.86E-04	2.78E-04

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes)

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

[5] Emissions are input on either a vehicle distance or power rating basis. Load factor applies only to emissions based on power ratings.

[6] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S2-M-5.1b: Vehicle Emission Rates - Tailpipe Emissions, Mitigation Applied, P

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Ratio Tailpipe : Total Emission Rate TSP PM (g/s)	PM10 PM10 (g/s)	PM2.5 PM2.5 (g/s)	Source ID	# of Volume Sources g/hr	# of Volume Sources g/vkt	TSP PM	PM10 PM10
Mobile Equipment										**Mobile Equipment**				
PR01	Main Entrance Road	1	1	206	10	100%	5.05E-01	8.87E-01	8.10E-01	PR01	11	11	5.34E-05	3.04E-05
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	3.99E-01	8.37E-01	7.35E-01	PR01Z	11	11	4.39E-05	2.09E-05
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	2.83E-03	9.35E-03	1.22E-02	UR02Z	48	48	2.24E-03	6.77E-04
PR04A	Entrance to Scale House	1	1	487	10	100%	4.56E-01	8.66E-01	7.79E-01	PR04A	57	57	2.69E-05	1.42E-05
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	3.53E-01	8.08E-01	6.96E-01	PR04AZ	57	57	2.26E-05	9.89E-06
BR06	South Ramp - Variable Traffic	1	1	603	10	100%	7.19E-02	3.74E-01	2.45E-01	BR06	70	70	1.73E-04	3.31E-05
BR06Z	South Ramp - Non-variable Traffic	1	1	603	10	100%	1.93E-03	1.47E-02	4.27E-02	BR06Z	70	70	1.60E-04	2.10E-05
BR06Y	South Ramp - Construction Traffic	1	1	603	10	100%	1.01E-03	7.72E-03	3.02E-02	BR06Y	70	70	1.60E-04	2.09E-05
PR08Z	WF to SS/LTF - Non-variable Traffic	1	1	307	10	100%	6.37E-02	3.45E-01	2.41E-01	PR08Z	36	36	7.61E-05	1.41E-05
PR08Y	WF to SS/LTF - Construction Traffic	1	1	307	10	100%	2.23E-03	1.70E-02	6.48E-02	PR08Y	36	36	7.14E-05	9.38E-06
UR09AZ	WF to SS, to CDA turn off - Non-variable Traffic	1	1	211	10	100%	1.10E-03	3.65E-03	5.60E-03	UR09AZ	25	25	3.22E-03	9.71E-04
UR09AY	WF to SS, to CDA turnoff - Construction Traffic	1	1	211	10	100%	4.91E-05	1.63E-04	1.58E-03	UR09AY	25	25	3.22E-03	9.67E-04
UR09BZ	WF to SS, after CDA turnoff - Non-variable Traffic	1	1	179	10	100%	6.05E-05	2.01E-04	1.95E-03	UR09BZ	21	21	3.62E-03	1.09E-03
UR09BY	WF to SS, after CDA turnoff - Construction Traffic	1	1	179	10	100%	4.40E-05	1.46E-04	1.42E-03	UR09BY	21	21	3.62E-03	1.09E-03
UR11Z	Across SS - Variable Traffic	1	1	242	10	100%	6.05E-05	2.01E-04	1.95E-03	UR11Z	28	28	3.68E-03	1.11E-03
UR11Y	Across SS - Construction Traffic	1	1	242	10	100%	4.40E-05	1.46E-04	1.42E-03	UR11Y	28	28	3.68E-03	1.11E-03
UR12	Unpaved Road to working face - Variable Traffic	1	1	752	10	100%	6.27E-03	2.71E-02	3.53E-02	UR12	87	87	1.98E-03	4.59E-04
UR12Z	Unpaved Road to working face - Non-variable Traffic	1	1	752	10	100%	1.58E-04	6.95E-04	5.00E-03	UR12Z	87	87	1.97E-03	4.47E-04
UR12Y	Unpaved Road to working face - Construction Traffic	1	1	752	10	100%	8.21E-05	3.62E-04	3.50E-03	UR12Y	87	87	1.97E-03	4.47E-04
PR13Z	WF to LTF	1	1	165	10	100%	1.67E-01	6.08E-01	4.57E-01	PR13Z	19	19	1.04E-04	2.86E-05
PR14Z	WF to LTF	1	1	61	10	100%	1.67E-01	6.08E-01	4.57E-01	PR14Z	7	7	1.04E-04	2.86E-05
UR17Z	Across CDA	1	1	90	10	100%	9.62E-05	3.20E-04	3.09E-03	UR17Z	10	10	3.41E-03	1.02E-03
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	9.40E-05	3.09E-04	2.94E-03	UR18Z	5	5	3.47E-03	1.06E-03
PR04B	Scale House to WF	1	1	681	10	100%	4.28E-01	8.53E-01	7.58E-01	PR04B	79	79	2.90E-05	1.45E-05
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	3.28E-01	7.90E-01	6.71E-01	PR04BZ	79	79	2.46E-05	1.02E-05
PR04C	Exit Road from WF	1	1	420	10	100%	4.17E-01	8.47E-01	7.50E-01	PR04C	49	49	2.96E-05	1.46E-05
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	3.17E-01	7.82E-01	6.60E-01	PR04CZ	49	49	2.53E-05	1.03E-05
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	n/a	n/a	n/a	IDLE01	1	1	1.03E-04	1.03E-04
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	n/a	n/a	n/a	IDLE02	1	1	1.03E-04	1.03E-04
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	1.00E+00	1.00E+00	1.00E+00	DOZE2	1	1	1.26E-03	1.26E-03
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	1.00E+00	1.00E+00	1.00E+00	DOZE4	1	1	3.26E-04	3.26E-04
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	1.00E+00	1.00E+00	1.00E+00	DOZE4	1	1	3.65E-04	3.65E-04
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	1.00E+00	1.00E+00	1.00E+00	DOZE4	1	1	2.86E-04	2.86E-04

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes)

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

[5] Emissions are input on either a vehicle distance or power rating basis. Load factor applies only to emissions based on power ratings.

[6] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S2-M-5.1b: Vehicle Emission Rates - Tailpipe Emissions, Mitigation Applied, P

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Emission rate per volume source: PM2.5 PM25	Benzene 71-43-2	Ammonia 7664-41-7	Nitrogen Dioxide NO2	Nitrogen Oxides 10102-44-0	Sulphur Dioxide 7446-09-5	Carbon Dioxide 124-38-9	Methane 74-82-8	Nitrous Oxide 10024-97-2
Mobile Equipment															
PR01	Main Entrance Road	1	1	206	10	100%	4.36E-06	3.16E-09	2.00E-07	1.50E-05	3.84E-05	2.76E-08	7.58E-03	2.45E-07	5.06E-08
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	3.12E-06	8.86E-09	2.06E-07	9.55E-06	2.47E-05	2.52E-08	6.27E-03	2.18E-07	5.02E-08
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	6.79E-05	4.76E-09	9.44E-08	3.40E-06	8.87E-06	1.10E-08	2.61E-03	9.21E-08	2.24E-08
PR04A	Entrance to Scale House	1	1	487	10	100%	2.07E-06	1.44E-09	9.14E-08	6.84E-06	1.75E-05	1.26E-08	3.46E-03	1.12E-07	2.31E-08
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	1.51E-06	4.04E-09	9.39E-08	4.36E-06	1.13E-05	1.15E-08	2.86E-03	9.93E-08	2.29E-08
BR06	South Ramp - Variable Traffic	1	1	603	10	100%	6.64E-06	1.46E-09	9.23E-08	6.91E-06	1.77E-05	1.27E-08	3.49E-03	1.13E-07	2.33E-08
BR06Z	South Ramp - Non-variable Traffic	1	1	603	10	100%	5.24E-06	1.29E-08	2.56E-07	4.68E-08	6.62E-06	8.26E-08	3.14E-02	2.31E-08	4.94E-10
BR06Y	South Ramp - Construction Traffic	1	1	603	10	100%	5.17E-06	9.38E-09	1.88E-07	0.00E+00	4.80E-06	6.09E-08	2.31E-02	1.56E-08	0.00E+00
PR08Z	WF to SS/LTF - Non-variable Traffic	1	1	307	10	100%	2.94E-06	7.55E-09	1.59E-07	2.59E-06	9.34E-06	4.02E-08	1.44E-02	6.77E-08	1.36E-08
PR08Y	WF to SS/LTF - Construction Traffic	1	1	307	10	100%	2.38E-06	9.27E-09	1.85E-07	0.00E+00	4.74E-06	6.02E-08	2.29E-02	1.54E-08	0.00E+00
UR09AZ	WF to SS, to CDA turn off - Non-variable Traffic	1	1	211	10	100%	9.73E-05	8.22E-09	1.64E-07	1.85E-06	7.70E-06	4.25E-08	1.53E-02	5.94E-08	1.22E-08
UR09AY	WF to SS, to CDA turnoff - Construction Traffic	1	1	211	10	100%	9.69E-05	9.19E-09	1.84E-07	0.00E+00	4.70E-06	5.97E-08	2.27E-02	1.52E-08	0.00E+00
UR09BZ	WF to SS, after CDA turnoff - Non-variable Traffic	1	1	179	10	100%	1.09E-04	1.27E-08	2.55E-07	0.00E+00	6.51E-06	8.27E-08	3.14E-02	2.11E-08	0.00E+00
UR09BY	WF to SS, after CDA turnoff - Construction Traffic	1	1	179	10	100%	1.09E-04	9.26E-09	1.85E-07	0.00E+00	4.73E-06	6.01E-08	2.28E-02	1.54E-08	0.00E+00
UR11Z	Across SS - Variable Traffic	1	1	242	10	100%	1.11E-04	1.30E-08	2.59E-07	0.00E+00	6.63E-06	8.41E-08	3.20E-02	2.15E-08	0.00E+00
UR11Y	Across SS - Construction Traffic	1	1	242	10	100%	1.11E-04	9.42E-09	1.88E-07	0.00E+00	4.82E-06	6.11E-08	2.32E-02	1.56E-08	0.00E+00
UR12	Unpaved Road to working face - Variable Traffic	1	1	752	10	100%	4.63E-05	1.46E-09	9.26E-08	6.93E-06	1.77E-05	1.27E-08	3.50E-03	1.13E-07	2.34E-08
UR12Z	Unpaved Road to working face - Non-variable Traffic	1	1	752	10	100%	4.49E-05	1.29E-08	2.57E-07	4.70E-08	6.64E-06	8.29E-08	3.15E-02	2.32E-08	4.96E-10
UR12Y	Unpaved Road to working face - Construction Traffic	1	1	752	10	100%	4.49E-05	9.42E-09	1.88E-07	0.00E+00	4.81E-06	6.11E-08	2.32E-02	1.56E-08	0.00E+00
PR13Z	WF to LTF	1	1	165	10	100%	5.00E-06	4.47E-10	9.75E-08	9.76E-06	2.49E-05	1.46E-08	4.38E-03	1.45E-07	2.72E-08
PR14Z	WF to LTF	1	1	61	10	100%	4.99E-06	4.46E-10	9.73E-08	9.74E-06	2.49E-05	1.46E-08	4.38E-03	1.45E-07	2.71E-08
UR17Z	Across CDA	1	1	90	10	100%	1.03E-04	2.74E-08	1.06E-07	0.00E+00	5.17E-06	3.49E-08	1.31E-02	4.30E-08	0.00E+00
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	1.06E-04	2.63E-08	1.17E-07	3.50E-09	5.27E-06	3.85E-08	1.45E-02	4.15E-08	3.70E-11
PR04B	Scale House to WF	1	1	681	10	100%	2.15E-06	1.46E-09	9.23E-08	6.91E-06	1.77E-05	1.27E-08	3.49E-03	1.13E-07	2.33E-08
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	1.58E-06	4.08E-09	9.48E-08	4.40E-06	1.14E-05	1.16E-08	2.89E-03	1.00E-07	2.31E-08
PR04C	Exit Road from WF	1	1	420	10	100%	2.16E-06	1.45E-09	9.18E-08	6.88E-06	1.76E-05	1.26E-08	3.47E-03	1.12E-07	2.32E-08
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	1.59E-06	4.06E-09	9.44E-08	4.38E-06	1.13E-05	1.15E-08	2.88E-03	9.98E-08	2.30E-08
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	9.47E-05	1.21E-06	1.92E-04	8.44E-03	2.15E-02	1.19E-05	3.15E+00	1.52E-04	5.38E-05
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	9.47E-05	1.21E-06	1.92E-04	8.44E-03	2.15E-02	1.19E-05	3.15E+00	1.52E-04	5.38E-05
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	1.22E-03	8.45E-05	7.78E-04	0.00E+00	2.61E-02	2.54E-04	9.59E+01	1.36E-04	0.00E+00
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	3.16E-04	2.36E-05	2.26E-04	0.00E+00	7.14E-03	7.35E-05	2.78E+01	3.78E-05	0.00E+00
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	3.54E-04	3.06E-05	1.19E-04	0.00E+00	5.76E-03	3.89E-05	1.46E+01	4.80E-05	0.00E+00
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	2.78E-04	1.67E-05	3.33E-04	0.00E+00	8.51E-03	1.08E-04	4.10E+01	2.76E-05	0.00E+00

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes)

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

[5] Emissions are input on either a vehicle distance or power rating basis. Load factor applies only to emissions based on power ratings.

[6] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S3-M: Source Summary Table, Scenario 3 with Mitigation Applied

RWDI# 2101750

Twin Creeks Environmental Centre

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (°C)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
FLARE5	POINT	Landfill Gas Flare 5 - RNG Plant Startup	41.67	871	3.66	3.97	15.24	N/A	429140	4757490	Benzene	71-43-2	1.15E-04	N/A	24, Annual	EC	Average	2%
											Vinyl Chloride (Chloroethylene)	75-01-4	4.45E-05	N/A	24	EC	Average	1%
											1,2-Dichloroethane	107-06-2	3.68E-05	N/A	24	EC	Average	1%
											Nitrogen Oxides (NOx)	10102-44-0	5.96E-01	N/A	1, 24	EC	Average	7%
											Particulate Matter (PM)	PM	2.25E-01	N/A	24	EC	Average	<1%
											Sulphur Dioxide (SO2)	7446-09-5	3.53E-01	N/A	1, Annual	EC	Average	13%
											Dioxins and Furans	DF	2.08E-11	N/A	24	EF	Marginal	12%
											Total Reduced Sulphur (TRS)	TRS	1.78E-02	N/A	10-minute, 24	EC	Marginal	15%
											Hydrogen Sulfide	7783-06-4	1.78E-02	N/A	10-minute, 24	EC	Average	17%
FLARE6	POINT	Landfill Gas Flare 6 - RNG Plant Startup	41.67	871	3.66	3.97	15.24	N/A	429149	4757490	Benzene	71-43-2	1.15E-04	N/A	24, Annual	EC	Average	2%
											Vinyl Chloride (Chloroethylene)	75-01-4	4.45E-05	N/A	24	EC	Average	1%
											1,2-Dichloroethane	107-06-2	3.68E-05	N/A	24	EC	Average	1%
											Nitrogen Oxides (NOx)	10102-44-0	5.96E-01	N/A	1, 24	EC	Average	7%
											Particulate Matter (PM)	PM	2.25E-01	N/A	24	EC	Average	<1%
											Sulphur Dioxide (SO2)	7446-09-5	3.53E-01	N/A	1, Annual	EC	Average	13%
											Dioxins and Furans	DF	2.08E-11	N/A	24	EF	Marginal	12%
											Total Reduced Sulphur (TRS)	TRS	1.78E-02	N/A	10-minute, 24	EC	Marginal	15%
											Hydrogen Sulfide	7783-06-4	1.78E-02	N/A	10-minute, 24	EC	Average	17%
RNG_TO1	POINT	RNG Plant Pre-Treatment Thermal Oxidizer	2.51	816	1.22	2.15	15.24	N/A	429116	4757455	Benzene	71-43-2	4.24E-05	N/A	24, Annual	EC	Marginal	<1%
											1,2-Dichloroethane	107-06-2	6.14E-06	N/A	24	EC	Marginal	<1%
											Vinyl Chloride	75-01-4	1.78E-05	N/A	24	EC	Marginal	<1%
											Total Reduced Sulphur (TRS)	TRS	9.13E-04	N/A	10-minute, 24	EC	Marginal	<1%
											Oxides of Nitrogen	10102-44-0	1.30E-01	N/A	1, 24	EC	Marginal	2%
											Sulphur Dioxide	7446-09-5	9.13E-02	N/A	1, Annual	EC	Marginal	3%
											Dioxins and Furans	DF	3.58E-12	N/A	24	EF	Marginal	2%
											Particulate Matter	PM	4.65E-03	N/A	24	EC	Marginal	<1%
RNG_TO2	POINT	RNG Plant Main Thermal Oxidizer	18.03	816	2.90	2.74	15.24	N/A	429124	4757456	Benzene	71-43-2	1.24E-05	N/A	24, Annual	EC	Marginal	<1%
											1,2-Dichloroethane	107-06-2	4.04E-05	N/A	24	EC	Marginal	2%
											Vinyl Chloride	75-01-4	9.36E-05	N/A	24	EC	Marginal	3%
											Total Reduced Sulphur (TRS)	TRS	3.08E-04	N/A	10-minute, 24	EC	Marginal	<1%
											Oxides of Nitrogen	10102-44-0	1.20E+00	N/A	1, 24	EC	Marginal	15%
											Sulphur Dioxide	7446-09-5	3.08E-02	N/A	1, Annual	EC	Marginal	1%
											Dioxins and Furans	DF	2.54E-11	N/A	24	EF	Marginal	15%
											Particulate Matter	PM	7.71E-02	N/A	24	EC	Marginal	<1%
FLARE5BP	POINT	Landfill Gas Flare 5 - Thermal Oxidizer Bypass Scenario	37.15	871	3.66	3.54	15.24	N/A	429140	4757490	Benzene	71-43-2	2.46E-04	N/A	24, Annual	EC	Marginal	4%
											1,2-Dichloroethane	107-06-2	3.56E-05	N/A	24	EC	Marginal	1%
											Vinyl Chloride	75-01-4	1.03E-04	N/A	24	EC	Marginal	3%
											Total Reduced Sulphur (TRS)	TRS	5.29E-03	N/A	10-minute, 24	EC	Marginal	4%
											Oxides of Nitrogen	10102-44-0	5.78E-01	N/A	1, 24	EC	Marginal	7%
											Sulphur Dioxide	7446-09-5	2.65E-01	N/A	1, Annual	EC	Marginal	10%
											Dioxins and Furans	DF	1.04E-11	N/A	24	EF	Marginal	6%
											Particulate Matter	PM	2.18E-01	N/A	24	EC	Marginal	<1%
FLARE6BP	POINT	Landfill Gas Flare 6 - Thermal Oxidizer Bypass Scenario	37.15	871	3.66	3.54	15.24	N/A	429149	4757490	Benzene	71-43-2	1.01E-05	N/A	24, Annual	EC	Marginal	<1%
											1,2-Dichloroethane	107-06-2	3.30E-05	N/A	24	EC	Marginal	1%
											Vinyl Chloride	75-01-4	7.64E-05	N/A	24	EC	Marginal	2%
											Total Reduced Sulphur (TRS)	TRS	2.51E-04	N/A	10-minute, 24	EC	Marginal	<1%
											Oxides of Nitrogen	10102-44-0	5.78E-01	N/A	1, 24	EC	Marginal	7%
											Sulphur Dioxide	7446-09-5	1.26E-02	N/A	1, Annual	EC	Marginal	<1%
											Dioxins and Furans	DF	1.04E-11	N/A	24	EF	Marginal	6%
											Particulate Matter	PM	2.18E-01	N/A	24	EC	Marginal	<1%
AMINE	POINT-CAP	Amine Reboiler	0.59	204	0.39	5.00	4.92	1.87	429070	4757462	Nitrogen Oxides (NOx)	10102-44-0	8.99E-02	N/A	1, 24	EF	Average	1%
											Particulate Matter	PM	3.28E-03	N/A	24	EF	Average	<1%
GEN4	POINT	RNG Plant 360 kW Emergency Diesel Generator	0.48	491	0.15	26.50	2.15	N/A	429125	4757401	Nitrogen Oxides	10102-44-0	5.26E-01	N/A	1, 24	EF	Above-Average	7%
											Particulate Matter	PM	3.01E-02	N/A	24	EF	Above-Average	<1%
											Sulphur Dioxide	7446-09-5	1.26E-01	N/A	1, Annual	EF	Above-Average	5%
L4	POINT-HOR	Passive Exhaust Louvre Serving SBR and Aeration Tanks	1.96	25	1.38	1.31	2.13	N/A	429013	4757497	Benzene	71-43-2	1.43E-04	N/A	24, Annual	EC	Average	2%
											Vinyl Chloride (Chloroethylene)	75-01-4	3.09E-04	N/A	24	EC	Average	9%
											1,2-Dichloroethane	107-06-2	1.21E-04	N/A	24	EC	Average	5%
											Ammonia	7664-41-7	1.39E-02	N/A	24	EC	Average	40%
											Odour	ODOUR	4.76E+02	N/A	10-minute	EC	Average	2%
L3	POINT-HOR	Passive Exhaust Louvre Serving SBR and Aeration Tanks	1.96	25	1.38	1.31	2.13	N/A	429013	4757490	Benzene	71-43-2	1.43E-04	N/A	24, Annual	EC	Average	2%
											Vinyl Chloride (Chloroethylene)	75-01-4	3.09E-04	N/A	24	EC	Average	9%
											1,2-Dichloroethane	107-06-2	1.21E-04	N/A	24	EC	Average	5%
											Ammonia	7664-41-7	1.39E-02	N/A	24	EC	Average	40%
											Odour	ODOUR	4.76E+02	N/A	10-minute	EC	Average	2%

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (°C)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
EF_2	POINT	Process Exhaust Fan Serving RO System Area	1.71	25	0.51	8.37	3.96	N/A	429073	4757502	Benzene	71-43-2	2.55E-04	N/A	24, Annual	EC	Average	4%
											Vinyl Chloride (Chloroethylene)	75-01-4	2.59E-04	N/A	24	EC	Average	8%
											1,2-Dichloroethane	107-06-2	2.39E-04	N/A	24	EC	Average	9%
											Ammonia	7664-41-7	9.49E-06	N/A	24	EC	Average	<1%
											Odour	ODOUR	3.59E+00	N/A	10-minute	EC	Average	<1%
SD_1	POINT-CAP	Slurry Dryer Exhaust	0.24	25	0.30	3.34	5.00	N/A	429057	4757483	Benzene	71-43-2	6.40E-04	N/A	24, Annual	EC	Average	10%
											Vinyl Chloride (Chloroethylene)	75-01-4	6.40E-04	N/A	24	EC	Average	19%
											1,2-Dichloroethane	107-06-2	6.40E-04	N/A	24	EC	Average	25%
											Ammonia	7664-41-7	4.40E-04	N/A	24	EC	Average	1%
											Odour	ODOUR	2.36E+01	N/A	10-minute	EC	Average	<1%
GEN1	POINT	1,000 kW Emergency Diesel Generator Serving Landfill Gas Plant	3.56	477	0.25	72.52	3.60	0.00	429119	4757554	Nitrogen Oxides	10102-44-0	2.72E-01	N/A	1, 24	EF	Above-Average	3%
											Particulate Matter	PM	4.53E-02	N/A	24	EF	Above-Average	<1%
											Sulphur Dioxide	7446-09-5	4.53E-02	N/A	1, Annual	EF	Above-Average	2%
GEN2	POINT	50 kW Diesel Generator Serving Leachate Pumps	0.24	477	0.10	30.56	3.60	0.00	429246	4757604	Nitrogen Oxides	10102-44-0	7.05E-02	N/A	1, 24	EF	Marginal	<1%
											Particulate Matter	PM	2.32E-02	N/A	24	EF	Marginal	<1%
											Sulphur Dioxide	7446-09-5	2.16E-02	N/A	1, Annual	EF	Marginal	<1%
GEN3	POINT	250 kW Emergency Diesel Generator Serving the Maintenance Offices	0.97	477	0.15	54.89	3.60	0.00	428415	4758689	Nitrogen Oxides	10102-44-0	3.53E-01	N/A	1, 24	EF	Marginal	4%
											Particulate Matter	PM	1.16E-01	N/A	24	EF	Marginal	<1%
											Sulphur Dioxide	7446-09-5	1.08E-01	N/A	1, Annual	EF	Marginal	4%
FLARE1	POINT	Landfill Gas Flare (Based on Full Load)	61.30	950	3.70	5.70	15.20	N/A	429117	4757504	Benzene	71-43-2	1.26E-04	N/A	24, Annual	EC	Average	2%
											Vinyl Chloride (Chloroethylene)	75-01-4	4.91E-05	N/A	24	EC	Average	1%
											1,2-Dichloroethane	107-06-2	4.06E-05	N/A	24	EC	Above-Average	2%
											Nitrogen Oxides	10102-44-0	6.57E-01	N/A	1, 24	EF	Average	8%
											Particulate Matter	PM	2.48E-01	N/A	24	EF	Average	<1%
											Sulphur Dioxide	7446-09-5	3.89E-01	N/A	1, Annual	EC	Marginal	14%
											Dioxins and Furans	DF	2.29E-11	N/A	24	EF	Marginal	13%
											Total Reduced Sulphur (TRS)	TRS	1.97E-02	N/A	10-minute, 24	EC	Marginal	17%
											Hydrogen Sulfide	7783-06-4	1.97E-02	N/A	10-minute, 24	EC	Above-Average	19%
FLARE2	POINT	Landfill Gas Flare (Based on Full Load)	61.30	950	3.70	5.70	15.20	N/A	429154	4757504	Benzene	71-43-2	1.26E-04	N/A	24, Annual	EC	Average	2%
											Vinyl Chloride (Chloroethylene)	75-01-4	4.91E-05	N/A	24	EC	Average	1%
											1,2-Dichloroethane	107-06-2	4.06E-05	N/A	24	EC	Above-Average	2%
											Nitrogen Oxides	10102-44-0	6.57E-01	N/A	1, 24	EF	Average	8%
											Particulate Matter	PM	2.48E-01	N/A	24	EF	Average	<1%
											Sulphur Dioxide	7446-09-5	3.89E-01	N/A	1, Annual	EC	Marginal	14%
											Dioxins and Furans	DF	2.29E-11	N/A	24	EF	Marginal	13%
											Total Reduced Sulphur (TRS)	TRS	1.97E-02	N/A	10-minute, 24	EC	Marginal	17%
											Hydrogen Sulfide	7783-06-4	1.97E-02	N/A	10-minute, 24	EC	Above-Average	19%
FLARE3	POINT	Proposed Landfill Gas Flare (Based on Full Load)	61.30	950	3.70	5.70	15.20	N/A	429142	4757504	Benzene	71-43-2	1.26E-04	N/A	24, Annual	EC	Average	2%
											Vinyl Chloride (Chloroethylene)	75-01-4	4.91E-05	N/A	24	EC	Average	1%
											1,2-Dichloroethane	107-06-2	4.06E-05	N/A	24	EC	Above-Average	2%
											Nitrogen Oxides	10102-44-0	6.57E-01	N/A	1, 24	EF	Average	8%
											Particulate Matter	PM	2.48E-01	N/A	24	EF	Average	<1%
											Sulphur Dioxide	7446-09-5	3.89E-01	N/A	1, Annual	EC	Marginal	14%
											Dioxins and Furans	DF	2.29E-11	N/A	24	EF	Marginal	13%
											Total Reduced Sulphur (TRS)	TRS	1.97E-02	N/A	10-minute, 24	EC	Marginal	17%
											Hydrogen Sulfide	7783-06-4	1.97E-02	N/A	10-minute, 24	EC	Above-Average	19%
FLARE4	POINT	Proposed Landfill Gas Flare (Based on Full Load)	25.79	950	3.20	3.21	12.19	N/A	429129	4757504	Benzene	71-43-2	5.73E-05	N/A	24, Annual	EC	Average	<1%
											Vinyl Chloride (Chloroethylene)	75-01-4	2.22E-05	N/A	24	EC	Average	<1%
											1,2-Dichloroethane	107-06-2	1.84E-05	N/A	24	EC	Above-Average	<1%
											Nitrogen Oxides	10102-44-0	2.98E-01	N/A	1, 24	EF	Average	4%
											Particulate Matter	PM	1.12E-01	N/A	24	EF	Average	<1%
											Sulphur Dioxide	7446-09-5	1.76E-01	N/A	1, Annual	EC	Marginal	6%
											Dioxins and Furans	DF	1.04E-11	N/A	24	EF	Marginal	6%
											Total Reduced Sulphur (TRS)	TRS	8.92E-03	N/A	10-minute, 24	EC	Marginal	8%
											Hydrogen Sulfide	7783-06-4	8.92E-03	N/A	10-minute, 24	EC	Above-Average	8%
AREA1	AREA	Expansion Landfill Phases 1 Through 3 Approximate Area = 244,004 m^2 (Emissions Based on Year 2042)	N/A	N/A	N/A	N/A	N/A	N/A	428626	4757721	Benzene	71-43-2	5.58E-05	1.48E-09	24, Annual	EC	Average	<1%
											Vinyl Chloride (Chloroethylene)	75-01-4	1.40E-04	5.74E-10	24	EC	Average	4%
											1,2-Dichloroethane	107-06-2	1.16E-04	4.75E-10	24	EC	Above-Average	4%
											Total Reduced Sulphur (TRS)	TRS	0.00E+00	0.00E+00	10-minute, 24	EC	Marginal	<1%
											Hydrogen Sulfide	7783-06-4	0.00E+00	0.00E+00	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	0.00E+00	0.00E+00	10-minute	ST	Average	<1%

Appendix 5A-S3-M: Source Summary Table, Scenario 3 with Mitigation Applied

RWDI# 2101750

Twin Creeks Environmental Centre

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (°C)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
AREA2	AREA	Expansion Landfill Phases 4 Through 5 Approximate Area = 165,611 m^2 (Emissions Based on Year 2042)	N/A	N/A	N/A	N/A	N/A	N/A	428634	4758149	Benzene	71-43-2	4.50E-04	2.72E-09	24, Annual	EC	Average	7%
											Vinyl Chloride (Chloroethylene)	75-01-4	1.75E-04	1.05E-09	24	EC	Average	5%
											1,2-Dichloroethane	107-06-2	1.45E-04	8.73E-10	24	EC	Above-Average	6%
											Total Reduced Sulphur (TRS)	TRS	0.00E+00	0.00E+00	10-minute, 24	EC	Marginal	<1%
											Hydrogen Sulfide	7783-06-4	0.00E+00	0.00E+00	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	0.00E+00	0.00E+00	10-minute	ST	Average	<1%
AREA3	AREA	Expansion Landfill Phases 6 Through 7 Approximate Area = 179,092 m^2 (Emissions Based on Year 2042)	N/A	N/A	N/A	N/A	N/A	N/A	428637	4758461	Benzene	71-43-2	4.80E-04	2.68E-09	24, Annual	EC	Average	8%
											Vinyl Chloride (Chloroethylene)	75-01-4	1.86E-04	1.04E-09	24	EC	Average	5%
											1,2-Dichloroethane	107-06-2	1.54E-04	8.62E-10	24	EC	Above-Average	6%
											Total Reduced Sulphur (TRS)	TRS	0.00E+00	0.00E+00	10-minute, 24	EC	Marginal	<1%
											Hydrogen Sulfide	7783-06-4	0.00E+00	0.00E+00	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	0.00E+00	0.00E+00	10-minute	ST	Average	<1%
AREA4	AREA	Expansion Landfill Phases 8 Through 9 Approximate Area = 99,012 m^2 (Emissions Based on Year 2042)	N/A	N/A	N/A	N/A	N/A	N/A	429027	4758463	Benzene	71-43-2	0.00E+00	0.00E+00	24, Annual	EC	Average	<1%
											Vinyl Chloride (Chloroethylene)	75-01-4	0.00E+00	0.00E+00	24	EC	Average	<1%
											1,2-Dichloroethane	107-06-2	0.00E+00	0.00E+00	24	EC	Above-Average	<1%
											Total Reduced Sulphur (TRS)	TRS	0.00E+00	0.00E+00	10-minute, 24	EC	Marginal	<1%
											Hydrogen Sulfide	7783-06-4	0.00E+00	0.00E+00	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	0.00E+00	0.00E+00	10-minute	ST	Average	<1%
AREA5	AREA	Existing Landfill Approximate Area = 208,263 m^2 (Emissions Based on Year 2042)	N/A	N/A	N/A	N/A	N/A	N/A	429208	4757609	Benzene	71-43-2	5.26E-05	1.91E-10	24, Annual	EC	Average	<1%
											Vinyl Chloride (Chloroethylene)	75-01-4	2.04E-05	7.41E-11	24	EC	Average	<1%
											1,2-Dichloroethane	107-06-2	1.69E-05	6.14E-11	24	EC	Above-Average	<1%
											Total Reduced Sulphur (TRS)	TRS	2.95E-03	1.07E-08	10-minute, 24	EC	Marginal	3%
											Hydrogen Sulfide	7783-06-4	9.95E-04	3.61E-09	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	7.88E+00	2.86E-05	10-minute	ST	Average	<1%
STAGE1	AREA	Vertical Expansion Landfill Approximate Area = 378,390 m2 (Emissions Based on Year 2042)	N/A	N/A	N/A	N/A	N/A	N/A	428515	4758837	Benzene	71-43-2	4.14E-04	1.10E-09	24, Annual	EC	Average	7%
											Vinyl Chloride (Chloroethylene)	75-01-4	1.61E-04	4.25E-10	24	EC	Average	5%
											1,2-Dichloroethane	107-06-2	1.33E-04	3.52E-10	24	EC	Above-Average	5%
											Total Reduced Sulphur (TRS)	TRS	0.00E+00	0.00E+00	10-minute, 24	EC	Marginal	<1%
											Hydrogen Sulfide	7783-06-4	0.00E+00	0.00E+00	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	0.00E+00	0.00E+00	10-minute	ST	Average	<1%
STAGE1FC	AREA	Vertical Expansion Landfill, Stage 1 area not covered by Stage 3 Approximate Area = 205,538 m2	N/A	N/A	N/A	N/A	N/A	N/A	428508	4757867	Total Reduced Sulphur (TRS)	TRS	8.81E-04	4.29E-09	10-minute, 24	EC	Marginal	<1%
											Hydrogen Sulfide	7783-06-4	3.04E-04	1.48E-09	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	4.15E+03	2.02E-02	10-minute	EC	Average	13%
STAGE2	AREA	Vertical Expansion Landfill, Stage 2 Approximate Area = 366,429 m2 (Emissions Based on Year 2042)	N/A	N/A	N/A	N/A	N/A	N/A	428878	4758835	Benzene	71-43-2	7.91E-04	2.16E-09	24, Annual	EC	Average	13%
											Vinyl Chloride (Chloroethylene)	75-01-4	3.07E-04	8.37E-10	24	EC	Average	9%
											1,2-Dichloroethane	107-06-2	2.54E-04	6.94E-10	24	EC	Above-Average	10%
											Total Reduced Sulphur (TRS)	TRS	0.00E+00	0.00E+00	10-minute, 24	EC	Marginal	<1%
											Hydrogen Sulfide	7783-06-4	0.00E+00	0.00E+00	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	0.00E+00	0.00E+00	10-minute	ST	Average	<1%
STAGE2FC	AREA	Vertical Expansion Landfill, Stage 2 area not covered by Stage 4 Approximate Area = 210,645 m2	N/A	N/A	N/A	N/A	N/A	N/A	428876	4757705	Total Reduced Sulphur (TRS)	TRS	9.03E-04	4.29E-09	10-minute, 24	EC	Marginal	<1%
											Hydrogen Sulfide	7783-06-4	3.11E-04	1.48E-09	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	4.48E+03	2.13E-02	10-minute	EC	Average	15%
STAGE3	AREA	Vertical Expansion Landfill, Stage 3 Approximate Area = 147,144 m2 (Emissions Based on Year 2042)	N/A	N/A	N/A	N/A	N/A	N/A	428650	4758699	Benzene	71-43-2	2.41E-04	1.64E-09	24, Annual	EC	Average	4%
											Vinyl Chloride (Chloroethylene)	75-01-4	9.36E-05	6.36E-10	24	EC	Average	3%
											1,2-Dichloroethane	107-06-2	7.76E-05	5.27E-10	24	EC	Above-Average	3%
											Total Reduced Sulphur (TRS)	TRS	6.31E-04	4.29E-09	10-minute, 24	EC	Marginal	<1%
											Hydrogen Sulfide	7783-06-4	2.17E-04	1.48E-09	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	5.03E+03	3.42E-02	10-minute	ST	Average	16%
STAGE4	AREA	Vertical Expansion Landfill, Stage 4 Approximate Area = 181,496 m2 (Emissions Based on Year 2042)	N/A	N/A	N/A	N/A	N/A	N/A	428847	4758701	Benzene	71-43-2	7.71E-04	4.25E-09	24, Annual	EC	Average	12%
											Vinyl Chloride (Chloroethylene)	75-01-4	2.99E-04	1.65E-09	24	EC	Average	9%
											1,2-Dichloroethane	107-06-2	2.48E-04	1.36E-09	24	EC	Above-Average	9%
											Total Reduced Sulphur (TRS)	TRS	1.95E-03	1.07E-08	10-minute, 24	EC	Marginal	2%
											Hydrogen Sulfide	7783-06-4	6.70E-04	3.69E-09	10-minute, 24	EC	Above-Average	<1%
											Odour	ODOUR	1.17E+04	6.45E-02	10-minute	ST	Average	38%
DC_WF	VOLUME	Daily Cover Dropped at Working Face	N/A	N/A	N/A	N/A	N/A	N/A	429118	4758694	Particulate Matter	PM	Variable [4]	N/A	24	EF	Average	N/A
											PM10	PM10	Variable [4]	N/A	24	EF	Average	N/A
											PM2.5	PM25	Variable [4]	N/A	24	EF	Average	N/A
DC_SS	VOLUME	Daily Cover Dropped at Soil Stockpile	N/A	N/A	N/A	N/A	N/A	N/A	429308	4757217	Particulate Matter	PM	Variable [4]	N/A	24	EF	Average	N/A
											PM10	PM10	Variable [4]	N/A	24	EF	Average	N/A
											PM2.5	PM25	Variable [4]	N/A	24	EF	Average	N/A
CDA1	VOLUME	Compost Material Dropped at Compost Diversion Area 1 (North)	N/A	N/A	N/A	N/A	N/A	N/A	429524	4757510	Particulate Matter	PM	Variable [4]	N/A	24	EF	Average	N/A
											PM10	PM10	Variable [4]	N/A	24	EF	Average	N/A
											PM2.5	PM25	Variable [4]	N/A	24	EF	Average	N/A

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (°C)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
CDA2	VOLUME	Compost Material Dropped at Compost Diversion Area 2 (South)	N/A	N/A	N/A	N/A	N/A	N/A	429536	4757510	Particulate Matter	PM	Variable [4]	N/A	24	EF	Average	N/A
											PM10	PM10	Variable [4]	N/A	24	EF	Average	N/A
											PM2.5	PM25	Variable [4]	N/A	24	EF	Average	N/A
CDA	AREA	Compost Diversion Area	N/A	N/A	N/A	N/A	N/A	N/A	429513	4757452	Odour	ODOUR	4.47E+03	8.10E-01	10-minute	EF	Average	14%
CS_WF	VOLUME	Contaminated Soil Dropped at Working Face	N/A	N/A	N/A	N/A	N/A	N/A	429105	4758699	Particulate Matter	PM	Variable [4]	N/A	24	EF	Average	N/A
											PM10	PM10	Variable [4]	N/A	24	EF	Average	N/A
											PM2.5	PM25	Variable [4]	N/A	24	EF	Average	N/A
WIND_SS	AREA	Wind Erosion at Soil Stockpile	N/A	N/A	N/A	N/A	N/A	N/A	429216	4757189	Particulate Matter	PM	N/A	Variable [4]	24	EF	Average	N/A
											PM10	PM10	N/A	Variable [4]	24	EF	Average	N/A
											PM2.5	PM25	N/A	Variable [4]	24	EF	Average	N/A
WIND_WF	AREA	Wind Erosion at Working Face	N/A	N/A	N/A	N/A	N/A	N/A	429100	4758643	Particulate Matter	PM	N/A	Variable [4]	24	EF	Average	N/A
											PM10	PM10	N/A	Variable [4]	24	EF	Average	N/A
											PM2.5	PM25	N/A	Variable [4]	24	EF	Average	N/A
WIND_CDA	AREA	Wind Rrosion at Compost Diversion Area	N/A	N/A	N/A	N/A	N/A	N/A	429513	4757452	Particulate Matter	PM	N/A	Variable	24	EF	Average	N/A
											PM10	PM10	N/A	Variable	24	EF	Average	N/A
											PM2.5	PM25	N/A	Variable	24	EF	Average	N/A
FC_CAP	AREA	Final Cap Construction Clay Drop-off	N/A	N/A	N/A	N/A	N/A	N/A	429030	4758695	Particulate Matter	PM	N/A	Variable [4]	24	EF	Average	N/A
											PM10	PM10	N/A	Variable [4]	24	EF	Average	N/A
											PM2.5	PM25	N/A	Variable [4]	24	EF	Average	N/A
FC_SS	AREA	Final Cap Clay Storage Pile Truck Loading	N/A	N/A	N/A	N/A	N/A	N/A	429278	4757247	Particulate Matter	PM	N/A	Variable [4]	24	EF	Average	N/A
											PM10	PM10	N/A	Variable [4]	24	EF	Average	N/A
											PM2.5	PM25	N/A	Variable [4]	24	EF	Average	N/A
WIND_CAP	AREA	Wind Erosion at the Final Cap Construction Area	N/A	N/A	N/A	N/A	N/A	N/A	429022	4758752	Particulate Matter	PM	N/A	Variable [4]	24	EF	Average	N/A
											PM10	PM10	N/A	Variable [4]	24	EF	Average	N/A
											PM2.5	PM25	N/A	Variable [4]	24	EF	Average	N/A
MH5AB	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429468	4758257	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH4A	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429461	4758000	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH3SA	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429461	4757794	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH16	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429423	4757612	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH6AB	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429198	4758220	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
SUMP	AREA	Leachate Maintenance Sump	N/A	N/A	N/A	N/A	N/A	N/A	429247	4758070	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH3SF	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429334	4757819	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH18	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429266	4757613	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
CONSOIL	AREA	Contaminated Soil Pile	N/A	N/A	N/A	N/A	N/A	N/A	429109	4758698	Vinyl Chloride (Chloroethylene)	75-01-4	7.34E-07	3.67E-08	24	ST	Average	<1%
											1,2-Dichloroethane	107-06-2	1.59E-05	7.97E-07	24	ST	Average	<1%
											Benzene	71-43-2	6.76E-04	3.38E-05	24, Annual	ST	Average	11%
											Odour	ODOUR	1.53E+00	7.65E-02	10-minute	ST	Average	<1%
WF	AREA	Working Face / Scrape Down Area	N/A	N/A	N/A	N/A	N/A	N/A	429100	4758643	Odour	ODOUR	N/A	Variable [5]	10-minute	ST	Average	N/A
DOZE1	VOLUME	Cat Dozers at Working Face, Dugitive Dust	N/A	N/A	N/A	N/A	N/A	N/A	429131	4758672	Particulate Matter	PM	3.33E+00	N/A	24	EC	Average	8%
											PM10	PM10	9.84E-01	N/A	24	EC	Average	9%
											PM2.5	PM25	3.50E-01	N/A	24	EC	Average	17%
DOZE2	VOLUME	Cat Dozers at Working Face, Tailpipe	N/A	N/A	N/A	N/A	N/A	N/A	429131	4758672	Particulate Matter	PM	8.00E-04	N/A	24	EC	Average	<1%
											PM10	PM10	8.00E-04	N/A	24	EC	Average	<1%
											PM2.5	PM25	7.76E-04	N/A	24	EC	Average	<1%
											Benzene	71-43-2	4.95E-05	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	7.78E-04	N/A	24	EC	Average	2%
											Nitrogen Dioxide	NO2	2.10E-02	N/A	24	EC	Average	7%
											Nitrogen Oxides	10102-44-0	2.10E-02	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	2.53E-04	N/A	1, Annual	EC	Average	<1%
DOZE3	VOLUME	Cat Dozers at Soil Stockpile, Fugitive Dust	N/A	N/A	N/A	N/A	N/A	N/A	429314	4757233	Particulate Matter	PM	2.73E+00	N/A	24	EC	Average	7%
											PM10	PM10	8.65E-01	N/A	24	EC	Average	8%
											PM2.5	PM25	2.87E-01	N/A	24	EC	Average	14%
DOZE4	VOLUME	Cat Dozers at Soil Stockpile, Tailpipe	N/A	N/A	N/A	N/A	N/A	N/A	429314	4757233	Particulate Matter	PM	2.15E-04	N/A	24	EC	Average	<1%
											PM10	PM10	2.15E-04	N/A	24	EC	Average	<1%
											PM2.5	PM25	2.09E-04	N/A	24	EC	Average	<1%
											Benzene	71-43-2	1.37E-05	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	2.26E-04	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	5.88E-03	N/A	24	EC	Average	2%
											Nitrogen Oxides	10102-44-0	5.88E-03	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	7.33E-05	N/A	1, Annual	EC	Average	<1%
DOZE1CAP	VOLUME	Cat Dozers at Working Face, Dugitive Dust	N/A	N/A	N/A	N/A	N/A	N/A	429059	4758666	Particulate Matter	PM	5.67E+00	N/A	24	EC	Average	14%
											PM10	PM10	2.04E+00	N/A	24	EC	Average	18%
											PM2.5	PM25	5.96E-01	N/A	24	EC	Average	30%

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (°C)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
DOZE2CAP	VOLUME	Cat Dozers at Working Face, Tailpipe	N/A	N/A	N/A	N/A	N/A	N/A	429059	4758666	Particulate Matter	PM	1.43E-04	N/A	24	EC	Average	<1%
											PM10	PM10	1.43E-04	N/A	24	EC	Average	<1%
											PM2.5	PM25	1.39E-04	N/A	24	EC	Average	<1%
											Benzene	71-43-2	1.08E-05	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	1.19E-04	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	3.25E-03	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	3.86E-05	N/A	1, Annual	EC	Average	<1%
DOZE2SS	VOLUME	Cat Dozers at Soil Stockpile, Tailpipe	N/A	N/A	N/A	N/A	N/A	N/A	429460	4757232	Particulate Matter	PM	2.87E-04	N/A	24	EC	Average	<1%
											PM10	PM10	2.87E-04	N/A	24	EC	Average	<1%
											PM2.5	PM25	2.78E-04	N/A	24	EC	Average	<1%
											Benzene	71-43-2	1.67E-05	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	3.33E-04	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	8.51E-03	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	1.08E-04	N/A	1, Annual	EC	Average	<1%
IDLE01	VOLUME	Trucks Idling at the Scale House	N/A	N/A	N/A	N/A	N/A	N/A	428420	4758417	Particulate Matter	PM	1.20E-04	N/A	24	EC	Average	<1%
											PM10	PM10	1.20E-04	N/A	24	EC	Average	<1%
											PM2.5	PM25	1.10E-04	N/A	24	EC	Average	<1%
											Benzene	71-43-2	6.30E-07	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	2.13E-04	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.09E-02	N/A	24	EC	Average	4%
											Nitrogen Oxides	10102-44-0	2.74E-02	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	1.20E-05	N/A	1, Annual	EC	Average	<1%
IDLE02	VOLUME	Trucks Idling at the Working Face	N/A	N/A	N/A	N/A	N/A	N/A	429122	4758680	Particulate Matter	PM	1.20E-04	N/A	24	EC	Average	<1%
											PM10	PM10	1.20E-04	N/A	24	EC	Average	<1%
											PM2.5	PM25	1.10E-04	N/A	24	EC	Average	<1%
											Benzene	71-43-2	6.30E-07	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	2.13E-04	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.09E-02	N/A	24	EC	Average	4%
											Nitrogen Oxides	10102-44-0	2.74E-02	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	1.20E-05	N/A	1, Annual	EC	Average	<1%
PR01	LINE_VOLUME	Main Entrance Road	N/A	N/A	N/A	N/A	N/A	N/A	428277	4758638	Particulate Matter	PM	5.78E-02 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	3.50E-02 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	4.97E-03 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	2.16E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	2.13E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.89E-02 [6]	N/A	24	EC	Average	6%
											Nitrogen Oxides	10102-44-0	4.75E-02 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	2.95E-05 [6]	N/A	1, Annual	EC	Average	<1%
PR01Z	LINE_VOLUME	Main Entrance Road, onsite equipment	N/A	N/A	N/A	N/A	N/A	N/A	428277	4758638	Particulate Matter	PM	5.78E-03 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	2.56E-03 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	3.90E-04 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	9.42E-07 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	2.87E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.33E-03 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	3.35E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	3.39E-06 [6]	N/A	1, Annual	EC	Average	<1%
UR02Z	LINE_VOLUME	Access road to compost diversion area (CDA)	N/A	N/A	N/A	N/A	N/A	N/A	429167	4757583	Particulate Matter	PM	1.15E+00 [6]	N/A	24	EC	Average	3%
											PM10	PM10	3.47E-01 [6]	N/A	24	EC	Average	3%
											PM2.5	PM25	3.48E-02 [6]	N/A	24	EC	Average	2%
											Benzene	71-43-2	1.89E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	4.84E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.74E-03 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	4.38E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	5.47E-06 [6]	N/A	1, Annual	EC	Average	<1%
PR04A	LINE_VOLUME	Entrance to Scale House	N/A	N/A	N/A	N/A	N/A	N/A	428404	4758633	Particulate Matter	PM	7.31E-02 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	4.19E-02 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	6.02E-03 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	2.55E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	2.51E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	2.23E-02 [6]	N/A	24	EC	Average	8%
											Nitrogen Oxides	10102-44-0	5.61E-02 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	3.48E-05 [6]	N/A	1, Annual	EC	Average	<1%

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (°C)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
PR04AZ	LINE_VOLUME	Entrance to Scale House, onsite equipment	N/A	N/A	N/A	N/A	N/A	N/A	428404	4758633	Particulate Matter	PM	7.49E-03 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	3.11E-03 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	4.81E-04 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	1.11E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	3.39E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.57E-03 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	3.94E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	4.00E-06 [6]	N/A	1, Annual	EC	Average	<1%
BR06	LINE_VOLUME	Across LF to WF southern section	N/A	N/A	N/A	N/A	N/A	N/A	428755	4757734	Particulate Matter	PM	1.10E+00 [6]	N/A	24	EC	Average	3%
											PM10	PM10	2.23E-01 [6]	N/A	24	EC	Average	2%
											PM2.5	PM25	4.37E-02 [6]	N/A	24	EC	Average	2%
											Benzene	71-43-2	6.33E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	6.24E-04 [6]	N/A	24	EC	Average	2%
											Nitrogen Dioxide	NO2	5.54E-02 [6]	N/A	24	EC	Average	19%
											Nitrogen Oxides	10102-44-0	1.39E-01 [6]	N/A	1, 24	EC	Average	2%
											Sulphur Dioxide	7446-09-5	8.64E-05 [6]	N/A	1, Annual	EC	Average	<1%
BR06Z	LINE_VOLUME	Across LF to WF southern section, onsite equipment	N/A	N/A	N/A	N/A	N/A	N/A	428755	4757734	Particulate Matter	PM	1.05E-01 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	1.38E-02 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	3.44E-03 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	8.45E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	1.68E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	2.84E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	4.35E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	5.44E-05 [6]	N/A	1, Annual	EC	Average	<1%
BR06Y	LINE_VOLUME	Across LF to WF southern section, final cap construction truc	N/A	N/A	N/A	N/A	N/A	N/A	428755	4757734	Particulate Matter	PM	1.34E-01 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	1.75E-02 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	4.35E-03 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	8.55E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	1.71E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	4.37E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	5.55E-05 [6]	N/A	1, Annual	EC	Average	<1%
PR08Z	LINE_VOLUME	WF to SS/LTF	N/A	N/A	N/A	N/A	N/A	N/A	428750	4757727	Particulate Matter	PM	5.93E-02 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	1.04E-02 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	2.24E-03 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	5.65E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	1.28E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.98E-03 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	7.14E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	3.26E-05 [6]	N/A	1, Annual	EC	Average	<1%
PR08Y	LINE_VOLUME	WF to SS/LTF, final cap construction trucks	N/A	N/A	N/A	N/A	N/A	N/A	428750	4757727	Particulate Matter	PM	3.08E-02 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	4.05E-03 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	1.04E-03 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	4.34E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	8.68E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	2.22E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	2.82E-05 [6]	N/A	1, Annual	EC	Average	<1%
UR09AZ	LINE_VOLUME	WF to SS, to CDA turn off	N/A	N/A	N/A	N/A	N/A	N/A	429039	4757671	Particulate Matter	PM	1.60E+00 [6]	N/A	24	EC	Average	4%
											PM10	PM10	4.83E-01 [6]	N/A	24	EC	Average	4%
											PM2.5	PM25	4.84E-02 [6]	N/A	24	EC	Average	2%
											Benzene	71-43-2	3.89E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	8.31E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	8.85E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	3.73E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	2.18E-05 [6]	N/A	1, Annual	EC	Average	<1%
UR09AY	LINE_VOLUME	WF to SS, to CDA turn off, final cap construction trucks	N/A	N/A	N/A	N/A	N/A	N/A	429039	4757671	Particulate Matter	PM	9.65E-01 [6]	N/A	24	EC	Average	2%
											PM10	PM10	2.90E-01 [6]	N/A	24	EC	Average	3%
											PM2.5	PM25	2.91E-02 [6]	N/A	24	EC	Average	1%
											Benzene	71-43-2	2.99E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	5.97E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	1.53E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	1.94E-05 [6]	N/A	1, Annual	EC	Average	<1%

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (^oC)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
UR09BZ	LINE_VOLUME	WF to SS, after CDA turnoff	N/A	N/A	N/A	N/A	N/A	N/A	429164	4757579	Particulate Matter	PM	7.01E-01 [6]	N/A	24	EC	Average	2%
											PM10	PM10	2.11E-01 [6]	N/A	24	EC	Average	2%
											PM2.5	PM25	2.11E-02 [6]	N/A	24	EC	Average	1%
											Benzene	71-43-2	2.48E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	4.95E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	1.27E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	1.61E-05 [6]	N/A	1, Annual	EC	Average	<1%
UR09BY	LINE_VOLUME	WF to SS, after CDA turnoff, final cap construction trucks	N/A	N/A	N/A	N/A	N/A	N/A	429164	4757579	Particulate Matter	PM	9.09E-01 [6]	N/A	24	EC	Average	2%
											PM10	PM10	2.73E-01 [6]	N/A	24	EC	Average	2%
											PM2.5	PM25	2.74E-02 [6]	N/A	24	EC	Average	1%
											Benzene	71-43-2	2.53E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	5.05E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	1.29E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	1.64E-05 [6]	N/A	1, Annual	EC	Average	<1%
UR11Z	LINE_VOLUME	Across SS	N/A	N/A	N/A	N/A	N/A	N/A	429160	4757399	Particulate Matter	PM	9.51E-01 [6]	N/A	24	EC	Average	2%
											PM10	PM10	2.86E-01 [6]	N/A	24	EC	Average	3%
											PM2.5	PM25	2.87E-02 [6]	N/A	24	EC	Average	1%
											Benzene	71-43-2	3.36E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	6.72E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	1.72E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	2.18E-05 [6]	N/A	1, Annual	EC	Average	<1%
UR11Y	LINE_VOLUME	Across SS, final cap construction trucks	N/A	N/A	N/A	N/A	N/A	N/A	429160	4757399	Particulate Matter	PM	1.23E+00 [6]	N/A	24	EC	Average	3%
											PM10	PM10	3.71E-01 [6]	N/A	24	EC	Average	3%
											PM2.5	PM25	3.71E-02 [6]	N/A	24	EC	Average	2%
											Benzene	71-43-2	3.43E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	6.86E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	1.75E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	2.23E-05 [6]	N/A	1, Annual	EC	Average	<1%
UR12	LINE_VOLUME	Across LF to WF northern section	N/A	N/A	N/A	N/A	N/A	N/A	429512	4757267	Particulate Matter	PM	1.19E+01 [6]	N/A	24	EC	Average	28%
											PM10	PM10	2.76E+00 [6]	N/A	24	EC	Average	24%
											PM2.5	PM25	2.79E-01 [6]	N/A	24	EC	Average	14%
											Benzene	71-43-2	6.03E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	5.94E-04 [6]	N/A	24	EC	Average	2%
											Nitrogen Dioxide	NO2	5.28E-02 [6]	N/A	24	EC	Average	18%
											Nitrogen Oxides	10102-44-0	1.33E-01 [6]	N/A	1, 24	EC	Average	2%
											Sulphur Dioxide	7446-09-5	8.23E-05 [6]	N/A	1, Annual	EC	Average	<1%
UR12Z	LINE_VOLUME	Across LF to WF northern section, onsite equipment	N/A	N/A	N/A	N/A	N/A	N/A	429512	4757267	Particulate Matter	PM	1.23E+00 [6]	N/A	24	EC	Average	3%
											PM10	PM10	2.79E-01 [6]	N/A	24	EC	Average	2%
											PM2.5	PM25	2.80E-02 [6]	N/A	24	EC	Average	1%
											Benzene	71-43-2	8.05E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	1.60E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	2.70E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	4.14E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	5.18E-05 [6]	N/A	1, Annual	EC	Average	<1%
UR12Y	LINE_VOLUME	Across LF to WF northern section, final cap construction truc	N/A	N/A	N/A	N/A	N/A	N/A	429512	4757267	Particulate Matter	PM	1.57E+00 [6]	N/A	24	EC	Average	4%
											PM10	PM10	3.56E-01 [6]	N/A	24	EC	Average	3%
											PM2.5	PM25	3.57E-02 [6]	N/A	24	EC	Average	2%
											Benzene	71-43-2	8.14E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	1.63E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	4.16E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	5.28E-05 [6]	N/A	1, Annual	EC	Average	<1%
PR13Z	LINE_VOLUME	WF to LTF	N/A	N/A	N/A	N/A	N/A	N/A	429035	4757669	Particulate Matter	PM	3.93E-03 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	1.06E-03 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	1.86E-04 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	0.00E+00 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	3.71E-06 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	3.70E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	9.29E-04 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	5.34E-07 [6]	N/A	1, Annual	EC	Average	<1%

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (°C)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
PR14Z	LINE_VOLUME	WF to LTF	N/A	N/A	N/A	N/A	N/A	N/A	429077	4757516	Particulate Matter	PM	1.44E-03 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	3.88E-04 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	6.84E-05 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	0.00E+00 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	1.36E-06 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.36E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	3.42E-04 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	1.96E-07 [6]	N/A	1, Annual	EC	Average	<1%
UR17Z	LINE_VOLUME	Across CDA	N/A	N/A	N/A	N/A	N/A	N/A	429514	4757517	Particulate Matter	PM	1.90E+00 [6]	N/A	24	EC	Average	5%
											PM10	PM10	5.71E-01 [6]	N/A	24	EC	Average	5%
											PM2.5	PM25	5.72E-02 [6]	N/A	24	EC	Average	3%
											Benzene	71-43-2	5.40E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	5.93E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	0.00E+00 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	1.63E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	1.93E-05 [6]	N/A	1, Annual	EC	Average	<1%
UR18Z	LINE_VOLUME	Across WF, onsite equipment	N/A	N/A	N/A	N/A	N/A	N/A	429144	4758670	Particulate Matter	PM	2.10E+00 [6]	N/A	24	EC	Average	5%
											PM10	PM10	6.40E-01 [6]	N/A	24	EC	Average	6%
											PM2.5	PM25	6.41E-02 [6]	N/A	24	EC	Average	3%
											Benzene	71-43-2	6.03E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	7.18E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	2.10E-06 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	1.95E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	2.33E-05 [6]	N/A	1, Annual	EC	Average	<1%
PR04B	LINE_VOLUME	Scale House to WF	N/A	N/A	N/A	N/A	N/A	N/A	428477	4758211	Particulate Matter	PM	2.22E-01 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	1.20E-01 [6]	N/A	24	EC	Average	1%
											PM2.5	PM25	1.74E-02 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	7.15E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	7.04E-04 [6]	N/A	24	EC	Average	2%
											Nitrogen Dioxide	NO2	6.26E-02 [6]	N/A	24	EC	Average	21%
											Nitrogen Oxides	10102-44-0	1.57E-01 [6]	N/A	1, 24	EC	Average	2%
											Sulphur Dioxide	7446-09-5	9.76E-05 [6]	N/A	1, Annual	EC	Average	<1%
PR04BZ	LINE_VOLUME	Scale House to WF, onsite equipment	N/A	N/A	N/A	N/A	N/A	N/A	428477	4758211	Particulate Matter	PM	2.34E-02 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	9.02E-03 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	1.42E-03 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	3.11E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	9.47E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	4.39E-03 [6]	N/A	24	EC	Average	1%
											Nitrogen Oxides	10102-44-0	1.10E-02 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	1.12E-05 [6]	N/A	1, Annual	EC	Average	<1%
PR04C	LINE_VOLUME	Exit Road from WF	N/A	N/A	N/A	N/A	N/A	N/A	428477	4758211	Particulate Matter	PM	6.86E-02 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	3.69E-02 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	5.37E-03 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	2.20E-06 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	2.17E-04 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.93E-02 [6]	N/A	24	EC	Average	7%
											Nitrogen Oxides	10102-44-0	4.85E-02 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	3.01E-05 [6]	N/A	1, Annual	EC	Average	<1%
PR04CZ	LINE_VOLUME	Exit Road from WF, onsite equipment	N/A	N/A	N/A	N/A	N/A	N/A	428477	4758211	Particulate Matter	PM	7.24E-03 [6]	N/A	24	EC	Average	<1%
											PM10	PM10	2.78E-03 [6]	N/A	24	EC	Average	<1%
											PM2.5	PM25	4.40E-04 [6]	N/A	24	EC	Average	<1%
											Benzene	71-43-2	9.59E-07 [6]	N/A	24, Annual	EC	Average	<1%
											Ammonia	7664-41-7	2.92E-05 [6]	N/A	24	EC	Average	<1%
											Nitrogen Dioxide	NO2	1.35E-03 [6]	N/A	24	EC	Average	<1%
											Nitrogen Oxides	10102-44-0	3.41E-03 [6]	N/A	1, 24	EC	Average	<1%
											Sulphur Dioxide	7446-09-5	3.45E-06 [6]	N/A	1, Annual	EC	Average	<1%
MH17	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429326	4757612	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
LW6	AREA	Leachate Monitoring Well	N/A	N/A	N/A	N/A	N/A	N/A	429295	4757641	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
LW5	AREA	Leachate Monitoring Well	N/A	N/A	N/A	N/A	N/A	N/A	429414	4757638	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH3SB	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429460	4757818	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH3SD	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429216	4757819	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH3SC	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429211	4757771	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH3SE	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429326	4757780	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH4B	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429448	4758128	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
LW4	AREA	Leachate Monitoring Well	N/A	N/A	N/A	N/A	N/A	N/A	429414	4758056	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%

Appendix 5A-S3-M: Source Summary Table, Scenario 3 with Mitigation Applied

RWDI# 2101750

Twin Creeks Environmental Centre

Source ID	Source Type	Source Description	Source Data								Emission Data							
			Stack Volumetric Flow Rate (Am^3/s)	Stack Exit Gas Temperature (°C)	Stack Inner Diameter (m)	Stack Exit Velocity (m/s)	Stack Height Above Grade (m)	Stack Height Above Roof (m)	Source Coordinates X (m)	Source Coordinates Y (m)	Contaminant	CAS Number	Maximum Emission Rate [3] (g/s)	Maximum Flux Rate [3] ($g/m^2/s$)	Averaging Period (hours)	Emission Estimating Technique [1]	Emissions Data Quality [2]	Percentage of Overall Emissions (%)
LW3	AREA	Leachate Monitoring Well	N/A	N/A	N/A	N/A	N/A	N/A	429437	4758227	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH8AB	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429215	4758370	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH10	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429205	4758622	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH12AB	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429195	4758697	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH7AB	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429471	4758461	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
LW2	AREA	Leachate Monitoring Well	N/A	N/A	N/A	N/A	N/A	N/A	429451	4758527	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH9AB	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429473	4758617	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
MH11AB	AREA	Leachate Maintenance Hole	N/A	N/A	N/A	N/A	N/A	N/A	429473	4758632	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
LW1	AREA	Leachate Monitoring Well	N/A	N/A	N/A	N/A	N/A	N/A	429457	4758703	Odour	ODOUR	3.99E-02	7.97E-02	10-minute	ST	Average	<1%
Total		Total of All Listed Sources									Benzene	71-43-2	6.29E-03					100%
											Vinyl Chloride (Chloroethylene)	75-01-4	3.45E-03					100%
											1,2-Dichloroethane	107-06-2	2.61E-03					100%
											Ammonia	7664-41-7	3.44E-02					100%
											Nitrogen Oxides	10102-44-0	8.00E+00					100%
											Particulate Matter	PM	4.19E+01					100%
											Sulphur Dioxide	7446-09-5	2.75E+00					100%
											Hydrogen Sulfide	7783-06-4	1.06E-01					100%
											Total Reduced Sulphur (TRS)	TRS	1.18E-01					100%
											PM10	PM10	1.13E+01					100%
											PM2.5	PM25	2.02E+00					100%
											Odour	ODOUR	3.08E+04					100%
											Dioxins and Furans	DF	1.70E-10					100%
											Nitrogen Dioxide	NO2	2.94E-01					100%

Notes:

[1] Emission Estimating Technique Short-Forms are V-ST (Validated Source Test), ST (Source Test), EF (Emission Factor), MB (Mass Balance), and EC (Engineering Calculation).

[2] Data Quality Categories: Highest; Above-Average; Average; and Marginal.

[3] For Odour, the units are OU/s and $OU/m^2/s$ for emission rate and flux rate.

[4] Material handling and wind erosion emissions vary by time of day depending on wind conditions in each hour. Hourly emission rates have been applied during modelling.

[5] Odour emissions from the active working face vary depending on the time of day. From 6 a.m. to 9 a.m. the active face is freshly uncovered waste as the daily cover is stripped and new waste is deposited. By 9 a.m. the entire active face has been covered by at least 1 foot to 1 metre of new waste. After 9 a.m. the emission factor for new waste at the active face is applied.

[6] Roadway traffic varies by time of day. The maximum emission rate (g/s) for the entire road segment is shown in this table; hourly emissions rates have been applied during modelling.

Appendix 5A-S3-M-5.1a: On-Site Mobile Equipment Emissions Spreadsheet - Fugitive Dust (AM)

Project #2101750

Twin Creeks Environmental Centre - Preferred Alternative

UNPAVED ROAD SECTIONS - AP-42 Section 13.2.2
PAVED ROAD SECTIONS - AP-42 Section 13.2.1

Paved Roads: $E = k\,(sL)^{0.91}\,(W)^{1.02}$
Unpaved Roads - Industrial: $E = 281.9\,k\,(s/12)^{a}\,(W/3)^{b}$
Unpaved Roads - Public: $E = 281.9\,k\,(s/12)^{a}\,(S/30)^{d} / (M/0.5)^{c} - C$

E particulate emission factor (g/VKT)
k particle size multiplier (see below)
sL road surface silt loading (g/m^2)
W average weight of the vehicles traveling the road (US short tons)
s surface material silt content (%)
C emission factor for 1980's vehicle fleet exhaust, brake wear and tire wear
M surface material moisture content (%)
S mean vehicle speed (mph)
a,b,c,d constants (see below)

Route ID [1]	Route Description	Traffic Passes			Segment Length [2]	Road Surface [3]	Roadway Type [4]	Mean Vehicle Speed		Average Vehicle Weight [5]	Surface Material Moisture Content [6] (%)	Surface Silt Content [7] (%)	Road Surface Silt Loading [8] (g/m^2)	Base AP-42 Emission Factor			Base Emission Rate			Additional Control Efficiency Applied	Final Controlled Emission Rate					
		Hourly	Daily	Annual										TSP	PM_{10}	$PM_{2.5}$	TSP	PM_{10}	$PM_{2.5}$		TSP	Data Quality Rating	PM_{10}	Data Quality Rating	$PM_{2.5}$	Data Quality Rating
		(#/h)	(#/d)	(#/a)	(m)			(km/h)	(mph)	(tons)	(%)	(%)	(g/m^2)	(g/VKT)	(g/VKT)	(g/VKT)	(g/s)	(g/s)	(g/s)	(%)	(g/s)		(g/s)		(g/s)	
PR01	Main Entrance Road	1	1	1	206	Paved	Industrial	10	6	30.2	--	--	0.63	1.0E+02	1.3E+01	3.2E+00	5.8E-03	7.5E-04	1.8E-04	95%	2.9E-04	--	3.8E-05	--	9.1E-06	--
PR01Z	Main Entrance Road, onsite equipment	1	1	1	206	Paved	Industrial	10	6	30.2	--	--	0.63	1.0E+02	1.3E+01	3.2E+00	5.8E-03	7.5E-04	1.8E-04	95%	2.9E-04	--	3.8E-05	--	9.1E-06	--
UR02Z	Access road to compost diversion area (CDA)	1	1	1	414	Unpaved	Industrial	10	6	15.5	--	43.1%	--	9.3E+03	2.8E+03	2.8E+02	1.1E+00	3.2E-01	3.2E-02	90%	1.1E-01	--	3.2E-02	--	3.2E-03	--
PR04A	Entrance to Scale House	1	1	1	487	Paved	Industrial	10	6	34.9	--	--	0.63	1.2E+02	1.5E+01	3.7E+00	1.6E-02	2.1E-03	5.0E-04	95%	8.0E-04	--	1.0E-04	--	2.5E-05	--
PR04AZ	Entrance to Scale House, onsite equipment	1	1	1	487	Paved	Industrial	10	6	34.9	--	--	0.63	1.2E+02	1.5E+01	3.7E+00	1.6E-02	2.1E-03	5.0E-04	95%	8.0E-04	--	1.0E-04	--	2.5E-05	--
BR06	Across LF to WF southern section	1	1	1	603	Paved	Industrial	10	6	41.1	--	--	3.53	6.7E+02	8.6E+01	2.1E+01	1.1E-01	1.4E-02	3.5E-03	90%	1.1E-02	--	1.4E-03	--	3.5E-04	--
BR06Z	Across LF to WF southern section, onsite equipment	1	1	1	603	Paved	Industrial	10	6	41.1	--	--	3.53	6.7E+02	8.6E+01	2.1E+01	1.1E-01	1.4E-02	3.5E-03	90%	1.1E-02	--	1.4E-03	--	3.5E-04	--
BR06Y	Across LF to WF southern section, final cap construction trucks	1	1	1	603	Paved	Industrial	10	6	41.1	--	--	3.53	6.7E+02	8.6E+01	2.1E+01	1.1E-01	1.4E-02	3.5E-03	90%	1.1E-02	--	1.4E-03	--	3.5E-04	--
PR08Z	WF to SS/LTF	1	1	1	307	Paved	Industrial	10	6	37.1	--	--	3.53	6.0E+02	7.8E+01	1.9E+01	5.1E-02	6.6E-03	1.6E-03	95%	2.6E-03	--	3.3E-04	--	8.0E-05	--
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	1	307	Paved	Industrial	10	6	37.1	--	--	3.53	6.0E+02	7.8E+01	1.9E+01	5.1E-02	6.6E-03	1.6E-03	95%	2.6E-03	--	3.3E-04	--	8.0E-05	--
UR09AZ	WF to SS, to CDA turn off	1	1	1	211	Unpaved	Industrial	10	6	36.7	--	43.1%	--	1.4E+04	4.1E+03	4.1E+02	8.0E-01	2.4E-01	2.4E-02	90%	8.0E-02	--	2.4E-02	--	2.4E-03	--
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	1	211	Unpaved	Industrial	10	6	36.7	--	43.1%	--	1.4E+04	4.1E+03	4.1E+02	8.0E-01	2.4E-01	2.4E-02	90%	8.0E-02	--	2.4E-02	--	2.4E-03	--
UR09BZ	WF to SS, after CDA turnoff	1	1	1	179	Unpaved	Industrial	10	6	46.5	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	7.6E-01	2.3E-01	2.3E-02	90%	7.6E-02	--	2.3E-02	--	2.3E-03	--
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	1	179	Unpaved	Industrial	10	6	46.5	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	7.6E-01	2.3E-01	2.3E-02	90%	7.6E-02	--	2.3E-02	--	2.3E-03	--
UR11Z	Across SS	1	1	1	242	Unpaved	Industrial	10	6	46.5	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	1.0E+00	3.1E-01	3.1E-02	90%	1.0E-01	--	3.1E-02	--	3.1E-03	--
UR11Y	Across SS, final cap construction trucks	1	1	1	242	Unpaved	Industrial	10	6	46.5	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	1.0E+00	3.1E-01	3.1E-02	90%	1.0E-01	--	3.1E-02	--	3.1E-03	--
UR12	Across LF to WF northern section	1	1	1	575	Unpaved	Industrial	10	6	41.1	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	1.3E+00	3.0E-01	3.0E-02	90%	1.3E-01	--	3.0E-02	--	3.0E-03	--
UR12Z	Across LF to WF northern section, onsite equipment	1	1	1	575	Unpaved	Industrial	10	6	41.1	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	1.3E+00	3.0E-01	3.0E-02	90%	1.3E-01	--	3.0E-02	--	3.0E-03	--
UR12Y	Across LF to WF northern section, final cap construction trucks	1	1	1	575	Unpaved	Industrial	10	6	41.1	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	1.3E+00	3.0E-01	3.0E-02	90%	1.3E-01	--	3.0E-02	--	3.0E-03	--
PR13Z	WF to LTF	1	1	1	165	Paved	Industrial	10	6	44.3	--	--	3.53	7.2E+02	9.3E+01	2.3E+01	3.3E-02	4.3E-03	1.0E-03	95%	1.6E-03	--	2.1E-04	--	5.2E-05	--
PR14Z	WF to LTF	1	1	1	61	Paved	Industrial	10	6	44.3	--	--	3.53	7.2E+02	9.3E+01	2.3E+01	1.2E-02	1.6E-03	3.8E-04	95%	6.1E-04	--	7.9E-05	--	1.9E-05	--
UR17Z	Across CDA	1	1	1	90	Unpaved	Industrial	10	6	36.4	--	43.1%	--	1.4E+04	4.1E+03	4.1E+02	3.4E-01	1.0E-01	1.0E-02	90%	3.4E-02	--	1.0E-02	--	1.0E-03	--
UR18Z	Across WF, onsite equipment	1	1	1	45	Unpaved	Industrial	10	6	36.4	--	44.7%	--	1.4E+04	4.2E+03	4.2E+02	1.7E-01	5.3E-02	5.3E-03	90%	1.7E-02	--	5.3E-03	--	5.3E-04	--
PR04B	Scale House to WF	1	1	1	681	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	2.6E-02	3.4E-03	8.2E-04	95%	1.3E-03	--	1.7E-04	--	4.1E-05	--
PR04BZ	Scale House to WF, onsite equipment	1	1	1	681	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	2.6E-02	3.4E-03	8.2E-04	95%	1.3E-03	--	1.7E-04	--	4.1E-05	--
PR04C	Exit Road from WF	1	1	1	420	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	1.6E-02	2.1E-03	5.1E-04	95%	8.1E-04	--	1.0E-04	--	2.5E-05	--
PR04CZ	Exit Road from WF, onsite equipment	1	1	1	420	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	1.6E-02	2.1E-03	5.1E-04	95%	8.1E-04	--	1.0E-04	--	2.5E-05	--

Constants for Mobile Emission Equations

Roadway Type	Contaminant	k	a	b	c	d	Quality
Paved Roads:	**$PM_{2.5}$**	0.15	-	-	-	-	-
	PM_{10}	0.62	-	-	-	-	-
	TSP	4.79	-	-	-	-	-
Unpaved Roads - Industrial:	**$PM_{2.5}$**	0.15	0.9	0.45	-	-	C
	PM_{10}	1.5	0.9	0.45	-	-	B
	TSP	7.32	0.6	0.45	-	-	B
Unpaved Roads - Public:	**$PM_{2.5}$**	0.18	1	-	0.2	0.5	C
	PM_{10}	1.8	1	-	0.2	0.5	B
	TSP	8.96	1	-	0.49	0.2	B

[1] Route ID numbers provided on site plan.
[2] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.
[3] Paved surfaces include asphalt, concrete, and recycled asphalt (if it forms a relatively consistent surface).
[4] Publicly accessible and dominated by light vehicles, or industrial, and dominated by heavy vehicles.
[5] The average vehicle weight reflects the average of the empty and loaded vehicle weight, for travel in both directions.
[6] Required only for publicly accessible unpaved roads.
[7] Required only for unpaved roads (public and industrial).
[8] Required only for industrial paved roads.

Sample calculation for uncontrolled TSP emission factor for Source PR01: Main Entrance Road

EF = 281.9 x (4.9) x [(0% / 12)]^(0.7) x [(36.6087628865979 tons) / 3]^(0.45) = 102 g TSP / vehicle kilometer travelled (vkt)

Sample calculation for TSP emission rate for Source PR01: Main Entrance Road

$$\frac{1 \text{ vehicles}}{1 \text{ h}} \times \frac{206 \text{ m}}{1 \text{ km}} \times \frac{1 \text{ km}}{1000 \text{ m}} \times \frac{102 \text{ } g_{TSP}}{1 \text{ vehicle km}} \times \frac{1 \text{ h}}{3600 \text{ s}} \times \frac{0.05 \text{ } g_{TSP\ uncontrolled}}{1 \text{ } g_{TSP}} = 2.9E\text{-}04 \text{ } g_{TSP} / \text{s}$$

Comments

Appendix 5A-S3-M-5.1a: On-Site Mobile Equipment Emissions - Fugitive Dust, Mitigation Applied (MD)

Project #2101750

Twin Creeks Environmental Centre - Preferred Alternative

UNPAVED ROAD SECTIONS - AP-42 Section 13.2.2
PAVED ROAD SECTIONS - AP-42 Section 13.2.1

Paved Roads: $E = k\,(sL)^{0.91}\,(W)^{1.02}$
Unpaved Roads - Industrial: $E = 281.9\,k\,(s/12)^{a}\,(W/3)^{b}$
Unpaved Roads - Public: $E = 281.9\,k\,(s/12)^{a}\,(S/30)^{d} / (M/0.5)^{c} - C$

E particulate emission factor (g/VKT)
k particle size multiplier (see below)
sL road surface silt loading (g/m^2)
W average weight of the vehicles traveling the road (US short tons)
s surface material silt content (%)
C emission factor for 1980's vehicle fleet exhaust, brake wear and tire wear
M surface material moisture content (%)
S mean vehicle speed (mph)
a,b,c,d constants (see below)

Route ID [1]	Route Description	Traffic Passes [2]			Segment Length [2]	Road Surface [3]	Roadway Type [4]	Mean Vehicle Speed		Average Vehicle Weight [5]	Surface Material Moisture Content [6]	Surface Silt Content [7]	Road Surface Silt Loading [8]	Base AP-42 Emission Factor			Base Emission Rate			Additional Control Efficiency Applied	Final Controlled Emission Rate					
		Hourly	Daily	Annual										TSP	PM_{10}	$PM_{2.5}$	TSP	PM_{10}	$PM_{2.5}$		TSP	Data Quality Rating	PM_{10}	Data Quality Rating	$PM_{2.5}$	Data Quality Rating
		(#/h)	(#/d)	(#/a)	(m)			(km/h)	(mph)	(tons)	(%)	(%)	(g/m^2)	(g/VKT)	(g/VKT)	(g/VKT)	(g/s)	(g/s)	(g/s)	(%)	(g/s)		(g/s)		(g/s)	
PR01	Main Entrance Road	1	1	1	206	Paved	Industrial	10	6	30.2	--	--	0.63	1.0E+02	1.3E+01	3.2E+00	5.8E-03	7.5E-04	1.8E-04	95%	2.9E-04	--	3.8E-05	--	9.1E-06	--
PR01Z	Main Entrance Road, onsite equipment	1	1	1	206	Paved	Industrial	10	6	30.2	--	--	0.63	1.0E+02	1.3E+01	3.2E+00	5.8E-03	7.5E-04	1.8E-04	95%	2.9E-04	--	3.8E-05	--	9.1E-06	--
UR02Z	Access road to compost diversion area (CDA)	1	1	1	414	Unpaved	Industrial	10	6	15.5	--	43.1%	--	9.3E+03	2.8E+03	2.8E+02	1.1E+00	3.2E-01	3.2E-02	90%	1.1E-01	--	3.2E-02	--	3.2E-03	--
PR04A	Entrance to Scale House	1	1	1	487	Paved	Industrial	10	6	34.9	--	--	0.63	1.2E+02	1.5E+01	3.7E+00	1.6E-02	2.1E-03	5.0E-04	95%	8.0E-04	--	1.0E-04	--	2.5E-05	--
PR04AZ	Entrance to Scale House, onsite equipment	1	1	1	487	Paved	Industrial	10	6	34.9	--	--	0.63	1.2E+02	1.5E+01	3.7E+00	1.6E-02	2.1E-03	5.0E-04	95%	8.0E-04	--	1.0E-04	--	2.5E-05	--
BR06	Across LF to WF southern section	1	1	1	603	Paved	Industrial	10	6	41.1	--	--	3.53	6.7E+02	8.6E+01	2.1E+01	1.1E-01	1.4E-02	3.5E-03	90%	1.1E-02	--	1.4E-03	--	3.5E-04	--
BR06Z	Across LF to WF southern section, onsite equipment	1	1	1	603	Paved	Industrial	10	6	41.1	--	--	3.53	6.7E+02	8.6E+01	2.1E+01	1.1E-01	1.4E-02	3.5E-03	90%	1.1E-02	--	1.4E-03	--	3.5E-04	--
BR06Y	Across LF to WF southern section, final cap construction trucks	1	1	1	603	Paved	Industrial	10	6	41.1	--	--	3.53	6.7E+02	8.6E+01	2.1E+01	1.1E-01	1.4E-02	3.5E-03	90%	1.1E-02	--	1.4E-03	--	3.5E-04	--
PR08Z	WF to SS/LTF	1	1	1	307	Paved	Industrial	10	6	37.1	--	--	3.53	6.0E+02	7.8E+01	1.9E+01	5.1E-02	6.6E-03	1.6E-03	95%	2.6E-03	--	3.3E-04	--	8.0E-05	--
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	1	307	Paved	Industrial	10	6	37.1	--	--	3.53	6.0E+02	7.8E+01	1.9E+01	5.1E-02	6.6E-03	1.6E-03	95%	2.6E-03	--	3.3E-04	--	8.0E-05	--
UR09AZ	WF to SS, to CDA turn off	1	1	1	211	Unpaved	Industrial	10	6	36.7	--	43.1%	--	1.4E+04	4.1E+03	4.1E+02	8.0E-01	2.4E-01	2.4E-02	90%	8.0E-02	--	2.4E-02	--	2.4E-03	--
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	1	211	Unpaved	Industrial	10	6	36.7	--	43.1%	--	1.4E+04	4.1E+03	4.1E+02	8.0E-01	2.4E-01	2.4E-02	90%	8.0E-02	--	2.4E-02	--	2.4E-03	--
UR09BZ	WF to SS, after CDA turnoff	1	1	1	179	Unpaved	Industrial	10	6	46.5	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	7.6E-01	2.3E-01	2.3E-02	90%	7.6E-02	--	2.3E-02	--	2.3E-03	--
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	1	179	Unpaved	Industrial	10	6	46.5	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	7.6E-01	2.3E-01	2.3E-02	90%	7.6E-02	--	2.3E-02	--	2.3E-03	--
UR11Z	Across SS	1	1	1	242	Unpaved	Industrial	10	6	46.5	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	1.0E+00	3.1E-01	3.1E-02	90%	1.0E-01	--	3.1E-02	--	3.1E-03	--
UR11Y	Across SS, final cap construction trucks	1	1	1	242	Unpaved	Industrial	10	6	46.5	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	1.0E+00	3.1E-01	3.1E-02	90%	1.0E-01	--	3.1E-02	--	3.1E-03	--
UR12	Across LF to WF northern section	1	1	1	575	Unpaved	Industrial	10	6	41.1	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	1.3E+00	3.0E-01	3.0E-02	90%	1.3E-01	--	3.0E-02	--	3.0E-03	--
UR12Z	Across LF to WF northern section, onsite equipment	1	1	1	575	Unpaved	Industrial	10	6	41.1	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	1.3E+00	3.0E-01	3.0E-02	90%	1.3E-01	--	3.0E-02	--	3.0E-03	--
UR12Y	Across LF to WF northern section, final cap construction trucks	1	1	1	575	Unpaved	Industrial	10	6	41.1	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	1.3E+00	3.0E-01	3.0E-02	90%	1.3E-01	--	3.0E-02	--	3.0E-03	--
PR13Z	WF to LTF	1	1	1	165	Paved	Industrial	10	6	44.3	--	--	3.53	7.2E+02	9.3E+01	2.3E+01	3.3E-02	4.3E-03	1.0E-03	95%	1.6E-03	--	2.1E-04	--	5.2E-05	--
PR14Z	WF to LTF	1	1	1	61	Paved	Industrial	10	6	44.3	--	--	3.53	7.2E+02	9.3E+01	2.3E+01	1.2E-02	1.6E-03	3.8E-04	95%	6.1E-04	--	7.9E-05	--	1.9E-05	--
UR17Z	Across CDA	1	1	1	90	Unpaved	Industrial	10	6	36.4	--	43.1%	--	1.4E+04	4.1E+03	4.1E+02	3.4E-01	1.0E-01	1.0E-02	90%	3.4E-02	--	1.0E-02	--	1.0E-03	--
UR18Z	Across WF, onsite equipment	1	1	1	45	Unpaved	Industrial	10	6	36.4	--	44.7%	--	1.4E+04	4.2E+03	4.2E+02	1.7E-01	5.3E-02	5.3E-03	90%	1.7E-02	--	5.3E-03	--	5.3E-04	--
PR04B	Scale House to WF	1	1	1	681	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	2.6E-02	3.4E-03	8.2E-04	95%	1.3E-03	--	1.7E-04	--	4.1E-05	--
PR04BZ	Scale House to WF, onsite equipment	1	1	1	681	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	2.6E-02	3.4E-03	8.2E-04	95%	1.3E-03	--	1.7E-04	--	4.1E-05	--
PR04C	Exit Road from WF	1	1	1	420	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	1.6E-02	2.1E-03	5.1E-04	95%	8.1E-04	--	1.0E-04	--	2.5E-05	--
PR04CZ	Exit Road from WF, onsite equipment	1	1	1	420	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	1.6E-02	2.1E-03	5.1E-04	95%	8.1E-04	--	1.0E-04	--	2.5E-05	--

Constants for Mobile Emission Equations

Roadway Type	Contaminant	k	a	b	c	d	Quality
Paved Roads:	**$PM_{2.5}$**	0.15	-	-	-	-	-
	PM_{10}	0.62	-	-	-	-	-
	TSP	4.79	-	-	-	-	-
Unpaved Roads - Industrial:	**$PM_{2.5}$**	0.15	0.9	0.45	-	-	C
	PM_{10}	1.5	0.9	0.45	-	-	B
	TSP	7.32	0.6	0.45	-	-	B
Unpaved Roads - Public:	**$PM_{2.5}$**	0.18	1	-	0.2	0.5	C
	PM_{10}	1.8	1	-	0.2	0.5	B
	TSP	8.96	1	-	0.49	0.2	B

[1] Route ID numbers provided on site plan.
[2] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.
[3] Paved surfaces include asphalt, concrete, and recycled asphalt (if it forms a relatively consistent surface).
[4] Publicly accessible and dominated by light vehicles, or industrial, and dominated by heavy vehicles.
[5] The average vehicle weight reflects the average of the empty and loaded vehicle weight, for travel in both directions.
[6] Required only for publicly accessible unpaved roads.
[7] Required only for unpaved roads (public and industrial).
[8] Required only for industrial paved roads.

Sample calculation for uncontrolled TSP emission factor for Source PR01: Main Entrance Road

EF = 281.9 x (4.9) x [(0% / 12)]^(0.7) x [(36.6087628865979 tons) / 3]^(0.45) = 102 g TSP / vehicle kilometer travelled (vkt)

Sample calculation for TSP emission rate for Source PR01: Main Entrance Road

$$\frac{1 \text{ vehicles}}{1 \text{ h}} \times \frac{206 \text{ m}}{1 \text{ km}} \times \frac{1 \text{ km}}{1000 \text{ m}} \times \frac{102 \text{ } g_{TSP}}{1 \text{ vehicle km}} \times \frac{1 \text{ h}}{3600 \text{ s}} \times \frac{0.05 \text{ } g_{TSP\ uncontrolled}}{1 \text{ } g_{TSP}} = 2.9E\text{-}04 \text{ } g_{TSP} / \text{s}$$

Comments

Appendix 5A-S3-M-5.1a: On-Site Mobile Equipment Emissions - Fugitive Dust, Mitigation Applied (PM)

Project #2101750

Twin Creeks Environmental Centre - Preferred Alternative

UNPAVED ROAD SECTIONS - AP-42 Section 13.2.2
PAVED ROAD SECTIONS - AP-42 Section 13.2.1

Paved Roads: $E = k\,(sL)^{0.91}\,(W)^{1.02}$
Unpaved Roads - Industrial: $E = 281.9\,k\,(s / 12)^{a}\,(W / 3)^{b}$
Unpaved Roads - Public: $E = 281.9\,k\,(s / 12)^{a}\,(S / 30)^{d} / (M / 0.5)^{c} - C$

E particulate emission factor (g/VKT)
k particle size multiplier (see below)
sL road surface silt loading (g/m^2)
W average weight of the vehicles traveling the road (US short tons)
s surface material silt content (%)
C emission factor for 1980's vehicle fleet exhaust, brake wear and tire wear
M surface material moisture content (%)
S mean vehicle speed (mph)
a,b,c,d constants (see below)

			0.13739	0.00066

Route ID [1]	Route Description	Traffic Passes [2] Hourly (#/h)	Daily (#/d)	Annual (#/a)	Segment Length [2] (m)	Road Surface [3]	Roadway Type [4]	Mean Vehicle Speed (km/h)	(mph)	Average Vehicle Weight [5] (tons)	Surface Material Moisture Content [6] (%)	Surface Silt Content [7] (%)	Road Surface Silt Loading [8] (g/m^2)	Base AP-42 Emission Factor TSP (g/VKT)	PM_{10} (g/VKT)	$PM_{2.5}$ (g/VKT)	Base Emission Rate TSP (g/s)	PM_{10} (g/s)	$PM_{2.5}$ (g/s)	Additional Control Efficiency Applied (%)	Final Controlled Emission Rate TSP (g/s)	Data Quality Rating	PM_{10} (g/s)	Data Quality Rating	$PM_{2.5}$ (g/s)	Data Quality Rating
PR01	Main Entrance Road	1	1	1	206	Paved	Industrial	10	6	30.2	--	--	0.63	1.0E+02	1.3E+01	3.2E+00	5.8E-03	7.5E-04	1.8E-04	95%	2.9E-04	--	3.8E-05	--	9.1E-06	--
PR01Z	Main Entrance Road, onsite equipment	1	1	1	206	Paved	Industrial	10	6	30.2	--	--	0.63	1.0E+02	1.3E+01	3.2E+00	5.8E-03	7.5E-04	1.8E-04	95%	2.9E-04	--	3.8E-05	--	9.1E-06	--
UR02Z	Access road to compost diversion area (CDA)	1	1	1	414	Unpaved	Industrial	10	6	15.5	--	43.1%	--	9.3E+03	2.8E+03	2.8E+02	1.1E+00	3.2E-01	3.2E-02	90%	1.1E-01	--	3.2E-02	--	3.2E-03	--
PR04A	Entrance to Scale House	1	1	1	487	Paved	Industrial	10	6	34.9	--	--	0.63	1.2E+02	1.5E+01	3.7E+00	1.6E-02	2.1E-03	5.0E-04	95%	8.0E-04	--	1.0E-04	--	2.5E-05	--
PR04AZ	Entrance to Scale House, onsite equipment	1	1	1	487	Paved	Industrial	10	6	34.9	--	--	0.63	1.2E+02	1.5E+01	3.7E+00	1.6E-02	2.1E-03	5.0E-04	95%	8.0E-04	--	1.0E-04	--	2.5E-05	--
BR06	Across LF to WF southern section	1	1	1	603	Paved	Industrial	10	6	41.1	--	--	3.53	6.7E+02	8.6E+01	2.1E+01	1.1E-01	1.4E-02	3.5E-03	90%	1.1E-02	--	1.4E-03	--	3.5E-04	--
BR06Z	Across LF to WF southern section, onsite equipment	1	1	1	603	Paved	Industrial	10	6	41.1	--	--	3.53	6.7E+02	8.6E+01	2.1E+01	1.1E-01	1.4E-02	3.5E-03	90%	1.1E-02	--	1.4E-03	--	3.5E-04	--
BR06Y	Across LF to WF southern section, final cap construction trucks	1	1	1	603	Paved	Industrial	10	6	41.1	--	--	3.53	6.7E+02	8.6E+01	2.1E+01	1.1E-01	1.4E-02	3.5E-03	90%	1.1E-02	--	1.4E-03	--	3.5E-04	--
PR08Z	WF to SS/LTF	1	1	1	307	Paved	Industrial	10	6	37.1	--	--	3.53	6.0E+02	7.8E+01	1.9E+01	5.1E-02	6.6E-03	1.6E-03	95%	2.6E-03	--	3.3E-04	--	8.0E-05	--
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	1	307	Paved	Industrial	10	6	37.1	--	--	3.53	6.0E+02	7.8E+01	1.9E+01	5.1E-02	6.6E-03	1.6E-03	95%	2.6E-03	--	3.3E-04	--	8.0E-05	--
UR09AZ	WF to SS, to CDA turn off	1	1	1	211	Unpaved	Industrial	10	6	36.7	--	43.1%	--	1.4E+04	4.1E+03	4.1E+02	8.0E-01	2.4E-01	2.4E-02	90%	8.0E-02	--	2.4E-02	--	2.4E-03	--
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	1	211	Unpaved	Industrial	10	6	36.7	--	43.1%	--	1.4E+04	4.1E+03	4.1E+02	8.0E-01	2.4E-01	2.4E-02	90%	8.0E-02	--	2.4E-02	--	2.4E-03	--
UR09BZ	WF to SS, after CDA turnoff	1	1	1	179	Unpaved	Industrial	10	6	46.5	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	7.6E-01	2.3E-01	2.3E-02	90%	7.6E-02	--	2.3E-02	--	2.3E-03	--
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	1	179	Unpaved	Industrial	10	6	46.5	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	7.6E-01	2.3E-01	2.3E-02	90%	7.6E-02	--	2.3E-02	--	2.3E-03	--
UR11Z	Across SS	1	1	1	242	Unpaved	Industrial	10	6	46.5	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	1.0E+00	3.1E-01	3.1E-02	90%	1.0E-01	--	3.1E-02	--	3.1E-03	--
UR11Y	Across SS, final cap construction trucks	1	1	1	242	Unpaved	Industrial	10	6	46.5	--	43.1%	--	1.5E+04	4.6E+03	4.6E+02	1.0E+00	3.1E-01	3.1E-02	90%	1.0E-01	--	3.1E-02	--	3.1E-03	--
UR12	Across LF to WF northern section	1	1	1	575	Unpaved	Industrial	10	6	41.1	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	1.3E+00	3.0E-01	3.0E-02	90%	1.3E-01	--	3.0E-02	--	3.0E-03	--
UR12Z	Across LF to WF northern section, onsite equipment	1	1	1	575	Unpaved	Industrial	10	6	41.1	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	1.3E+00	3.0E-01	3.0E-02	90%	1.3E-01	--	3.0E-02	--	3.0E-03	--
UR12Y	Across LF to WF northern section, final cap construction trucks	1	1	1	575	Unpaved	Industrial	10	6	41.1	--	16.8%	--	8.2E+03	1.9E+03	1.9E+02	1.3E+00	3.0E-01	3.0E-02	90%	1.3E-01	--	3.0E-02	--	3.0E-03	--
PR13Z	WF to LTF	1	1	1	165	Paved	Industrial	10	6	44.3	--	--	3.53	7.2E+02	9.3E+01	2.3E+01	3.3E-02	4.3E-03	1.0E-03	95%	1.6E-03	--	2.1E-04	--	5.2E-05	--
PR14Z	WF to LTF	1	1	1	61	Paved	Industrial	10	6	44.3	--	--	3.53	7.2E+02	9.3E+01	2.3E+01	1.2E-02	1.6E-03	3.8E-04	95%	6.1E-04	--	7.9E-05	--	1.9E-05	--
UR17Z	Across CDA	1	1	1	90	Unpaved	Industrial	10	6	36.4	--	43.1%	--	1.4E+04	4.1E+03	4.1E+02	3.4E-01	1.0E-01	1.0E-02	90%	3.4E-02	--	1.0E-02	--	1.0E-03	--
UR18Z	Across WF, onsite equipment	1	1	1	45	Unpaved	Industrial	10	6	36.4	--	44.7%	--	1.4E+04	4.2E+03	4.2E+02	1.7E-01	5.3E-02	5.3E-03	90%	1.7E-02	--	5.3E-03	--	5.3E-04	--
PR04B	Scale House to WF	1	1	1	681	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	2.6E-02	3.4E-03	8.2E-04	95%	1.3E-03	--	1.7E-04	--	4.1E-05	--
PR04BZ	Scale House to WF, onsite equipment	1	1	1	681	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	2.6E-02	3.4E-03	8.2E-04	95%	1.3E-03	--	1.7E-04	--	4.1E-05	--
PR04C	Exit Road from WF	1	1	1	420	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	1.6E-02	2.1E-03	5.1E-04	95%	8.1E-04	--	1.0E-04	--	2.5E-05	--
PR04CZ	Exit Road from WF, onsite equipment	1	1	1	420	Paved	Industrial	10	6	34.9	--	--	0.75	1.4E+02	1.8E+01	4.3E+00	1.6E-02	2.1E-03	5.1E-04	95%	8.1E-04	--	1.0E-04	--	2.5E-05	--

Constants for Mobile Emission Equations

Roadway Type	Contaminant	k	a	b	c	d	Quality
Paved Roads:	**$PM_{2.5}$**	0.15	-	-	-	-	-
	PM_{10}	0.62	-	-	-	-	-
	TSP	4.79	-	-	-	-	-
Unpaved Roads - Industrial:	**$PM_{2.5}$**	0.15	0.9	0.45	-	-	C
	PM_{10}	1.5	0.9	0.45	-	-	B
	TSP	7.32	0.6	0.45	-	-	B
Unpaved Roads - Public:	**$PM_{2.5}$**	0.18	1	-	0.2	0.5	C
	PM_{10}	1.8	1	-	0.2	0.5	B
	TSP	8.96	1	-	0.49	0.2	B

[1] Route ID numbers provided on site plan.
[2] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.
[3] Paved surfaces include asphalt, concrete, and recycled asphalt (if it forms a relatively consistent surface).
[4] Publicly accessible and dominated by light vehicles, or industrial, and dominated by heavy vehicles.
[5] The average vehicle weight reflects the average of the empty and loaded vehicle weight, for travel in both directions.
[6] Required only for publicly accessible unpaved roads.
[7] Required only for unpaved roads (public and industrial).
[8] Required only for industrial paved roads.

Sample calculation for uncontrolled TSP emission factor for Source PR01: Main Entrance Road

EF = 281.9 x (4.9) x [(0% / 12)]^(0.7) x [(36.6087628865979 tons) / 3]^(0.45) = 102 g TSP / vehicle kilometer travelled (vkt)

Sample calculation for TSP emission rate for Source PR01: Main Entrance Road

$$\frac{1 \text{ vehicles}}{1 \text{ h}} \times \frac{206 \text{ m}}{1 \text{ km}} \times \frac{1 \text{ km}}{1000 \text{ m}} \times \frac{102 \text{ } g_{TSP}}{1 \text{ vehicle km}} \times \frac{1 \text{ h}}{3600 \text{ s}} \times \frac{0.05 \text{ } g_{TSP\ uncontrolled}}{1 \text{ } g_{TSP}} = 2.9E\text{-}04 \text{ } g_{TSP} / \text{s}$$

Comments

Appendix 5A-S3-M-5.1b: Vehicle Emission Rates - Tailpipe Emissions, Mitigation Applied, AM

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Tailpipe Emission Factor [5] TSP PM (g/vkt)	TSP PM (g/h)	PM10 PM10 (g/vkt)	PM10 PM10 (g/h)	PM2.5 PM25 (g/vkt)	PM2.5 PM25 (g/h)	Benzene 71-43-2 (g/vkt)	Benzene 71-43-2 (g/h)	Ammonia 7664-41-7 (g/vkt)	Ammonia 7664-41-7 (g/h)	Nitrogen Dioxide NO2 (g/vkt)	Nitrogen Dioxide NO2 (g/h)	Nitrogen Oxides 10102-44-0 (g/vkt)	Nitrogen Oxides 10102-44-0 (g/h)
Mobile Equipment																				
PR01	Main Entrance Road	1	1	206	10	100%	6.14E+00	0.00E+00	6.14E+00	0.00E+00	8.06E-01	0.00E+00	4.19E-04	0.00E+00	4.13E-02	0.00E+00	3.67E+00	0.00E+00	9.23E+00	0.00E+00
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	0.00E+00	5.91E-01	0.00E+00	5.91E-01	0.00E+00	7.78E-02	0.00E+00	2.67E-04	0.00E+00	8.14E-03	0.00E+00	3.77E-01	0.00E+00	9.48E-01
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	0.00E+00	8.77E-01	0.00E+00	8.77E-01	0.00E+00	1.16E-01	0.00E+00	6.37E-04	0.00E+00	1.63E-02	0.00E+00	5.86E-01	0.00E+00	1.47E+00
PR03	Road to CDA	0	0	0	10	100%	6.14E+00	0.00E+00	6.14E+00	0.00E+00	8.06E-01	0.00E+00	4.19E-04	0.00E+00	4.13E-02	0.00E+00	3.67E+00	0.00E+00	9.23E+00	0.00E+00
PR04A	Entrance to Scale House	1	1	487	10	100%	6.14E+00	5.84E-01	6.14E+00	5.84E-01	8.06E-01	7.79E-02	4.19E-04	1.56E-03	4.13E-02	2.27E-02	3.67E+00	5.77E-01	9.23E+00	1.46E+00
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	0.00E+00	1.40E+00	0.00E+00	1.40E+00	0.00E+00	1.84E-01	0.00E+00	6.31E-04	0.00E+00	1.92E-02	0.00E+00	8.91E-01	0.00E+00	2.24E+00
BR06	Across LF to WF southern section	1	1	603	10	100%	6.14E+00	0.00E+00	6.14E+00	0.00E+00	8.06E-01	0.00E+00	4.19E-04	0.00E+00	4.13E-02	0.00E+00	3.67E+00	0.00E+00	9.23E+00	0.00E+00
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	0.00E+00	6.63E-02	0.00E+00	6.63E-02	0.00E+00	5.51E-02	0.00E+00	3.23E-03	0.00E+00	6.45E-02	0.00E+00	1.09E-02	0.00E+00	1.67E+00
BR06Y	Across LF to WF southern section, final cap construction truck	1	1	603	10	100%	0.00E+00	4.42E-02	0.00E+00	4.42E-02	0.00E+00	4.29E-02	0.00E+00	2.56E-03	0.00E+00	5.12E-02	0.00E+00	0.00E+00	0.00E+00	1.31E+00
PR08Z	WF to SS/LTF	1	1	307	10	100%	0.00E+00	5.21E-01	0.00E+00	5.21E-01	0.00E+00	7.86E-02	0.00E+00	9.28E-04	0.00E+00	2.10E-02	0.00E+00	3.24E-01	0.00E+00	1.17E+00
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	0.00E+00	2.25E-02	0.00E+00	2.25E-02	0.00E+00	2.18E-02	0.00E+00	1.30E-03	0.00E+00	2.60E-02	0.00E+00	0.00E+00	0.00E+00	6.66E-01
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	0.00E+00	2.49E-01	0.00E+00	2.49E-01	0.00E+00	4.04E-02	0.00E+00	7.03E-04	0.00E+00	1.50E-02	0.00E+00	1.60E-01	0.00E+00	6.73E-01
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	0.00E+00	1.55E-02	0.00E+00	1.55E-02	0.00E+00	1.50E-02	0.00E+00	8.97E-04	0.00E+00	1.79E-02	0.00E+00	0.00E+00	0.00E+00	4.58E-01
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	0.00E+00	1.66E-02	0.00E+00	1.66E-02	0.00E+00	1.61E-02	0.00E+00	9.63E-04	0.00E+00	1.92E-02	0.00E+00	0.00E+00	0.00E+00	4.92E-01
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	0.00E+00	1.31E-02	0.00E+00	1.31E-02	0.00E+00	1.27E-02	0.00E+00	7.59E-04	0.00E+00	1.52E-02	0.00E+00	0.00E+00	0.00E+00	3.88E-01
UR11Z	Across SS	1	1	242	10	100%	0.00E+00	2.25E-02	0.00E+00	2.25E-02	0.00E+00	2.19E-02	0.00E+00	1.31E-03	0.00E+00	2.61E-02	0.00E+00	0.00E+00	0.00E+00	6.68E-01
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	0.00E+00	1.77E-02	0.00E+00	1.77E-02	0.00E+00	1.72E-02	0.00E+00	1.03E-03	0.00E+00	2.06E-02	0.00E+00	0.00E+00	0.00E+00	5.26E-01
UR12	Across LF to WF northern section	1	1	575	10	100%	6.14E+00	0.00E+00	6.14E+00	0.00E+00	8.06E-01	0.00E+00	4.19E-04	0.00E+00	4.13E-02	0.00E+00	3.67E+00	0.00E+00	9.23E+00	0.00E+00
UR12Z	Across LF to WF northern section, onsite equipment	1	1	575	10	100%	0.00E+00	6.31E-02	0.00E+00	6.31E-02	0.00E+00	5.25E-02	0.00E+00	3.08E-03	0.00E+00	6.14E-02	0.00E+00	1.04E-02	0.00E+00	1.59E+00
UR12Y	Across LF to WF northern section, final cap construction truck	1	1	575	10	100%	0.00E+00	4.21E-02	0.00E+00	4.21E-02	0.00E+00	4.08E-02	0.00E+00	2.44E-03	0.00E+00	4.88E-02	0.00E+00	0.00E+00	0.00E+00	1.25E+00
PR13Z	WF to LTF	1	1	165	10	100%	0.00E+00	1.13E+00	0.00E+00	1.13E+00	0.00E+00	1.49E-01	0.00E+00	0.00E+00	0.00E+00	6.67E-03	0.00E+00	6.66E-01	0.00E+00	1.67E+00
PR14Z	WF to LTF	1	1	61	10	100%	0.00E+00	4.16E-01	0.00E+00	4.16E-01	0.00E+00	5.46E-02	0.00E+00	0.00E+00	0.00E+00	2.45E-03	0.00E+00	2.45E-01	0.00E+00	6.15E-01
PR15	Entrance to CDA	0	0	0	10	100%	6.14E+00	0.00E+00	6.14E+00	0.00E+00	8.06E-01	0.00E+00	4.19E-04	0.00E+00	4.13E-02	0.00E+00	3.67E+00	0.00E+00	9.23E+00	0.00E+00
UR16Z	Access to Tire Shred Storage Area	0	0	193	10	100%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
UR17Z	Across CDA	1	1	90	10	100%	0.00E+00	4.63E-03	0.00E+00	4.63E-03	0.00E+00	4.49E-03	0.00E+00	3.49E-04	0.00E+00	3.83E-03	0.00E+00	0.00E+00	0.00E+00	1.05E-01
UR18	Across WF	0	0	0	10	100%	6.14E+00	0.00E+00	6.14E+00	0.00E+00	8.06E-01	0.00E+00	4.19E-04	0.00E+00	4.13E-02	0.00E+00	3.67E+00	0.00E+00	9.23E+00	0.00E+00
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	0.00E+00	2.51E-03	0.00E+00	2.51E-03	0.00E+00	2.38E-03	0.00E+00	1.79E-04	0.00E+00	2.13E-03	0.00E+00	6.25E-05	0.00E+00	5.79E-02
PR04B	Scale House to WF	1	1	681	10	100%	6.14E+00	8.17E-01	6.14E+00	8.17E-01	8.06E-01	1.09E-01	4.19E-04	2.18E-03	4.13E-02	3.17E-02	3.67E+00	8.07E-01	9.23E+00	2.04E+00
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	0.00E+00	1.95E+00	0.00E+00	1.95E+00	0.00E+00	2.57E-01	0.00E+00	8.83E-04	0.00E+00	2.69E-02	0.00E+00	1.25E+00	0.00E+00	3.14E+00
PR04C	Exit Road from WF	1	1	420	10	100%	6.14E+00	5.04E-01	6.14E+00	5.04E-01	8.06E-01	6.73E-02	4.19E-04	1.34E-03	4.13E-02	1.96E-02	3.67E+00	4.98E-01	9.23E+00	1.26E+00
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	0.00E+00	1.21E+00	0.00E+00	1.21E+00	0.00E+00	1.59E-01	0.00E+00	5.45E-04	0.00E+00	1.66E-02	0.00E+00	7.70E-01	0.00E+00	1.94E+00
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	--	--	--	--	--	--	--	--	--	--	--	--	--	--
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	--	--	--	--	--	--	--	--	--	--	--	--	--	--
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	0.00E+00	2.88E+00	0.00E+00	2.88E+00	0.00E+00	2.79E+00	0.00E+00	1.78E-01	0.00E+00	2.80E+00	0.00E+00	0.00E+00	0.00E+00	7.57E+01
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	0.00E+00	7.75E-01	0.00E+00	7.75E-01	0.00E+00	7.51E-01	0.00E+00	4.94E-02	0.00E+00	8.13E-01	0.00E+00	0.00E+00	0.00E+00	2.12E+01
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	0.00E+00	5.16E-01	0.00E+00	5.16E-01	0.00E+00	5.00E-01	0.00E+00	3.89E-02	0.00E+00	4.27E-01	0.00E+00	0.00E+00	0.00E+00	1.17E+01
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	0.00E+00	1.03E+00	0.00E+00	1.03E+00	0.00E+00	1.00E+00	0.00E+00	6.00E-02	0.00E+00	1.20E+00	0.00E+00	0.00E+00	0.00E+00	3.06E+01

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes). For idling, this is the number of trucks idling per hour.

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Emissions are input on either a vehicle distance or operation time basis.

[5] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S3-M-5.1b: Vehicle Emission Rates - Tailpipe Emissions, Mitigation Applied, A

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Sulphur Dioxide 7446-09-5 (g/vkt)	Sulphur Dioxide 7446-09-5 (g/h)	Carbon Dioxide 124-38-9 (g/vkt)	Carbon Dioxide 124-38-9 (g/h)	Methane 74-82-8 (g/vkt)	Methane 74-82-8 (g/h)	Nitrous Oxide 10024-97-2 (g/vkt)	Nitrous Oxide 10024-97-2 (g/h)	Source ID	TSP PM (g/s)
Mobile Equipment															**Mobile Equipment**	
PR01	Main Entrance Road	1	1	206	10	100%	5.73E-03	0.00E+00	1.68E+03	0.00E+00	4.78E-02	0.00E+00	9.79E-03	0.00E+00	PR01	3.51E-04
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	0.00E+00	9.61E-04	0.00E+00	2.39E+02	0.00E+00	6.68E-03	0.00E+00	1.69E-03	PR01Z	1.64E-04
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	0.00E+00	1.84E-03	0.00E+00	4.34E+02	0.00E+00	1.21E-02	0.00E+00	3.28E-03	UR02Z	2.44E-04
PR03	Road to CDA	0	0	0	10	100%	5.73E-03	0.00E+00	1.68E+03	0.00E+00	4.78E-02	0.00E+00	9.79E-03	0.00E+00	PR03	0.00E+00
PR04A	Entrance to Scale House	1	1	487	10	100%	5.73E-03	2.41E-03	1.68E+03	5.72E+02	4.78E-02	1.85E-02	9.79E-03	4.90E-03	PR04A	8.29E-04
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	0.00E+00	2.27E-03	0.00E+00	5.64E+02	0.00E+00	1.58E-02	0.00E+00	4.00E-03	PR04AZ	3.88E-04
BR06	Across LF to WF southern section	1	1	603	10	100%	5.73E-03	0.00E+00	1.68E+03	0.00E+00	4.78E-02	0.00E+00	9.79E-03	0.00E+00	BR06	1.03E-03
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	0.00E+00	2.08E-02	0.00E+00	7.91E+03	0.00E+00	5.66E-03	0.00E+00	9.24E-05	BR06Z	1.84E-05
BR06Y	Across LF to WF southern section, final cap construction truck	1	1	603	10	100%	0.00E+00	1.66E-02	0.00E+00	6.32E+03	0.00E+00	4.25E-03	0.00E+00	0.00E+00	BR06Y	1.23E-05
PR08Z	WF to SS/LTF	1	1	307	10	100%	0.00E+00	5.36E-03	0.00E+00	1.93E+03	0.00E+00	6.91E-03	0.00E+00	1.46E-03	PR08Z	1.45E-04
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	0.00E+00	8.45E-03	0.00E+00	3.21E+03	0.00E+00	2.16E-03	0.00E+00	0.00E+00	PR08Y	6.24E-06
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	0.00E+00	3.94E-03	0.00E+00	1.42E+03	0.00E+00	4.19E-03	0.00E+00	8.96E-04	UR09AZ	6.91E-05
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	0.00E+00	5.82E-03	0.00E+00	2.21E+03	0.00E+00	1.49E-03	0.00E+00	0.00E+00	UR09AY	4.29E-06
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	0.00E+00	6.25E-03	0.00E+00	2.37E+03	0.00E+00	1.60E-03	0.00E+00	0.00E+00	UR09BZ	4.61E-06
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	0.00E+00	4.92E-03	0.00E+00	1.87E+03	0.00E+00	1.26E-03	0.00E+00	0.00E+00	UR09BY	3.63E-06
UR11Z	Across SS	1	1	242	10	100%	0.00E+00	8.48E-03	0.00E+00	3.22E+03	0.00E+00	2.17E-03	0.00E+00	0.00E+00	UR11Z	6.26E-06
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	0.00E+00	6.68E-03	0.00E+00	2.54E+03	0.00E+00	1.71E-03	0.00E+00	0.00E+00	UR11Y	4.93E-06
UR12	Across LF to WF northern section	1	1	575	10	100%	5.73E-03	0.00E+00	1.68E+03	0.00E+00	4.78E-02	0.00E+00	9.79E-03	0.00E+00	UR12	9.79E-04
UR12Z	Across LF to WF northern section, onsite equipment	1	1	575	10	100%	0.00E+00	1.99E-02	0.00E+00	7.53E+03	0.00E+00	5.39E-03	0.00E+00	8.80E-05	UR12Z	1.75E-05
UR12Y	Across LF to WF northern section, final cap construction truck	1	1	575	10	100%	0.00E+00	1.58E-02	0.00E+00	6.02E+03	0.00E+00	4.05E-03	0.00E+00	0.00E+00	UR12Y	1.17E-05
PR13Z	WF to LTF	1	1	165	10	100%	0.00E+00	9.62E-04	0.00E+00	2.88E+02	0.00E+00	8.11E-03	0.00E+00	1.60E-03	PR13Z	3.14E-04
PR14Z	WF to LTF	1	1	61	10	100%	0.00E+00	3.54E-04	0.00E+00	1.06E+02	0.00E+00	2.98E-03	0.00E+00	5.90E-04	PR14Z	1.16E-04
PR15	Entrance to CDA	0	0	0	10	100%	5.73E-03	0.00E+00	1.68E+03	0.00E+00	4.78E-02	0.00E+00	9.79E-03	0.00E+00	PR15	0.00E+00
UR16Z	Access to Tire Shred Storage Area	0	0	193	10	100%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	UR16Z	0.00E+00
UR17Z	Across CDA	1	1	90	10	100%	0.00E+00	1.25E-03	0.00E+00	4.72E+02	0.00E+00	5.65E-04	0.00E+00	0.00E+00	UR17Z	1.28E-06
UR18	Across WF	0	0	0	10	100%	5.73E-03	0.00E+00	1.68E+03	0.00E+00	4.78E-02	0.00E+00	9.79E-03	0.00E+00	UR18	0.00E+00
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	0.00E+00	6.93E-04	0.00E+00	2.62E+02	0.00E+00	2.92E-04	0.00E+00	5.31E-07	UR18Z	6.96E-07
PR04B	Scale House to WF	1	1	681	10	100%	5.73E-03	3.37E-03	1.68E+03	8.00E+02	4.78E-02	2.58E-02	9.79E-03	6.86E-03	PR04B	1.16E-03
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	0.00E+00	3.18E-03	0.00E+00	7.89E+02	0.00E+00	2.21E-02	0.00E+00	5.59E-03	PR04BZ	5.43E-04
PR04C	Exit Road from WF	1	1	420	10	100%	5.73E-03	2.08E-03	1.68E+03	4.94E+02	4.78E-02	1.59E-02	9.79E-03	4.24E-03	PR04C	7.16E-04
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	0.00E+00	1.96E-03	0.00E+00	4.87E+02	0.00E+00	1.36E-02	0.00E+00	3.45E-03	PR04CZ	3.35E-04
															0	
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	--	--	--	--	--	--	--	--	IDLE01	6.01E-05
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	--	--	--	--	--	--	--	--	IDLE02	6.01E-05
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	0.00E+00	9.10E-01	0.00E+00	3.45E+05	0.00E+00	2.93E-01	0.00E+00	0.00E+00	DOZE2	8.00E-04
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	0.00E+00	2.64E-01	0.00E+00	1.00E+05	0.00E+00	8.12E-02	0.00E+00	0.00E+00	DOZE4	2.15E-04
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	0.00E+00	1.39E-01	0.00E+00	5.26E+04	0.00E+00	6.30E-02	0.00E+00	0.00E+00	DOZE2CAP	1.43E-04
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	0.00E+00	3.89E-01	0.00E+00	1.48E+05	0.00E+00	9.95E-02	0.00E+00	0.00E+00	DOZE2SS	2.87E-04

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes). For idling, this is the number of trucks idling per hour.

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Emissions are input on either a vehicle distance or operation time basis.

[5] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S3-M-5.1b: Vehicle Emission Rates - Tailpipe Emissions, Mitigation Applied, A

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Tailpipe Emission Rate PM10 PM10 (g/s)	PM2.5 PM25 (g/s)	Benzene 71-43-2 (g/s)	Ammonia 7664-41-7 (g/s)	Nitrogen Dioxide NO2 (g/s)	Nitrogen Oxides 10102-44-0 (g/s)
Mobile Equipment												
PR01	Main Entrance Road	1	1	206	10	100%	3.51E-04	4.61E-05	2.40E-08	2.36E-06	2.10E-04	5.28E-04
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	1.64E-04	2.16E-05	7.42E-08	2.26E-06	1.05E-04	2.63E-04
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	2.44E-04	3.21E-05	1.77E-07	4.52E-06	1.63E-04	4.10E-04
PR03	Road to CDA	0	0	0	10	100%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PR04A	Entrance to Scale House	1	1	487	10	100%	8.29E-04	1.09E-04	5.67E-08	5.59E-06	4.96E-04	1.25E-03
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	3.88E-04	5.11E-05	1.75E-07	5.35E-06	2.48E-04	6.23E-04
BR06	Across LF to WF southern section	1	1	603	10	100%	1.03E-03	1.35E-04	7.03E-08	6.92E-06	6.15E-04	1.55E-03
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	1.84E-05	1.53E-05	8.98E-07	1.79E-05	3.02E-06	4.63E-04
BR06Y	Across LF to WF southern section, final cap construction truck	1	1	603	10	100%	1.23E-05	1.19E-05	7.12E-07	1.42E-05	0.00E+00	3.64E-04
PR08Z	WF to SS/LTF	1	1	307	10	100%	1.45E-04	2.18E-05	2.58E-07	5.82E-06	9.01E-05	3.26E-04
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	6.24E-06	6.05E-06	3.62E-07	7.23E-06	0.00E+00	1.85E-04
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	6.91E-05	1.12E-05	1.95E-07	4.17E-06	4.44E-05	1.87E-04
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	4.29E-06	4.17E-06	2.49E-07	4.98E-06	0.00E+00	1.27E-04
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	4.61E-06	4.47E-06	2.68E-07	5.35E-06	0.00E+00	1.37E-04
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	3.63E-06	3.52E-06	2.11E-07	4.21E-06	0.00E+00	1.08E-04
UR11Z	Across SS	1	1	242	10	100%	6.26E-06	6.07E-06	3.63E-07	7.25E-06	0.00E+00	1.86E-04
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	4.93E-06	4.78E-06	2.86E-07	5.71E-06	0.00E+00	1.46E-04
UR12	Across LF to WF northern section	1	1	575	10	100%	9.79E-04	1.29E-04	6.69E-08	6.60E-06	5.86E-04	1.47E-03
UR12Z	Across LF to WF northern section, onsite equipment	1	1	575	10	100%	1.75E-05	1.46E-05	8.56E-07	1.71E-05	2.88E-06	4.41E-04
UR12Y	Across LF to WF northern section, final cap construction truck	1	1	575	10	100%	1.17E-05	1.13E-05	6.78E-07	1.36E-05	0.00E+00	3.47E-04
PR13Z	WF to LTF	1	1	165	10	100%	3.14E-04	4.13E-05	0.00E+00	1.85E-06	1.85E-04	4.65E-04
PR14Z	WF to LTF	1	1	61	10	100%	1.16E-04	1.52E-05	0.00E+00	6.81E-07	6.80E-05	1.71E-04
PR15	Entrance to CDA	0	0	0	10	100%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
UR16Z	Access to Tire Shred Storage Area	0	0	193	10	100%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
UR17Z	Across CDA	1	1	90	10	100%	1.28E-06	1.25E-06	9.69E-08	1.06E-06	0.00E+00	2.92E-05
UR18	Across WF	0	0	0	10	100%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	6.96E-07	6.61E-07	4.97E-08	5.92E-07	1.73E-08	1.61E-05
PR04B	Scale House to WF	1	1	681	10	100%	1.16E-03	1.52E-04	7.93E-08	7.81E-06	6.94E-04	1.74E-03
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	5.43E-04	7.15E-05	2.45E-07	7.48E-06	3.46E-04	8.71E-04
PR04C	Exit Road from WF	1	1	420	10	100%	7.16E-04	9.40E-05	4.90E-08	4.82E-06	4.29E-04	1.08E-03
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	3.35E-04	4.41E-05	1.51E-07	4.62E-06	2.14E-04	5.38E-04
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	6.01E-05	5.52E-05	3.15E-07	1.07E-04	5.46E-03	1.37E-02
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	6.01E-05	5.52E-05	3.15E-07	1.07E-04	5.46E-03	1.37E-02
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	8.00E-04	7.76E-04	4.95E-05	7.78E-04	0.00E+00	2.10E-02
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	2.15E-04	2.09E-04	1.37E-05	2.26E-04	0.00E+00	5.88E-03
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	1.43E-04	1.39E-04	1.08E-05	1.19E-04	0.00E+00	3.25E-03
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	2.87E-04	2.78E-04	1.67E-05	3.33E-04	0.00E+00	8.51E-03

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes). For idling, this is the number of trucks idling per hour.

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Emissions are input on either a vehicle distance or operation time basis.

[5] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S3-M-5.1b: Vehicle Emission Rates - Tailpipe Emissions, Mitigation Applied, A

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Sulphur Dioxide 7446-09-5 (g/s)	Carbon Dioxide 124-38-9 (g/s)	Methane 74-82-8 (g/s)	Nitrous Oxide 10024-97-2 (g/s)	Tailpipe + Fugitive Emission Rate [6] TSP PM (g/s)	PM10 PM10 (g/s)	PM2.5 PM2.5 (g/s)	Ratio Tail TSP PM (g/s)
Mobile Equipment														
PR01	Main Entrance Road	1	1	206	10	100%	3.27E-07	9.59E-02	2.73E-06	5.60E-07	6.41E-04	3.88E-04	5.52E-05	5.47E-01
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	2.67E-07	6.63E-02	1.86E-06	4.70E-07	4.55E-04	2.02E-04	3.07E-05	3.61E-01
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	5.11E-07	1.20E-01	3.37E-06	9.11E-07	1.07E-01	3.24E-02	3.25E-03	2.27E-03
PR03	Road to CDA	0	0	0	10	100%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	n/a
PR04A	Entrance to Scale House	1	1	487	10	100%	7.74E-07	2.27E-01	6.46E-06	1.32E-06	1.62E-03	9.32E-04	1.34E-04	5.10E-01
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	6.31E-07	1.57E-01	4.39E-06	1.11E-06	1.18E-03	4.91E-04	7.60E-05	3.28E-01
BR06	Across LF to WF southern section	1	1	603	10	100%	9.59E-07	2.81E-01	8.01E-06	1.64E-06	1.22E-02	2.48E-03	4.86E-04	8.41E-02
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	5.79E-06	2.20E+00	1.57E-06	2.57E-08	1.12E-02	1.47E-03	3.66E-04	1.64E-03
BR06Y	Across LF to WF southern section, final cap construction truck	1	1	603	10	100%	4.62E-06	1.75E+00	1.18E-06	0.00E+00	1.12E-02	1.46E-03	3.62E-04	1.10E-03
PR08Z	WF to SS/LTF	1	1	307	10	100%	1.49E-06	5.35E-01	1.92E-06	4.04E-07	2.71E-03	4.76E-04	1.02E-04	5.34E-02
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	2.35E-06	8.92E-01	6.00E-07	0.00E+00	2.57E-03	3.38E-04	8.63E-05	2.43E-03
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	1.09E-06	3.95E-01	1.16E-06	2.49E-07	8.04E-02	2.42E-02	2.43E-03	8.58E-04
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	1.62E-06	6.14E-01	4.13E-07	0.00E+00	8.04E-02	2.42E-02	2.42E-03	5.34E-05
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	1.74E-06	6.59E-01	4.44E-07	0.00E+00	7.57E-02	2.28E-02	2.28E-03	6.09E-05
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	1.37E-06	5.19E-01	3.50E-07	0.00E+00	7.57E-02	2.28E-02	2.28E-03	4.80E-05
UR11Z	Across SS	1	1	242	10	100%	2.36E-06	8.95E-01	6.02E-07	0.00E+00	1.03E-01	3.09E-02	3.10E-03	6.09E-05
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	1.86E-06	7.05E-01	4.74E-07	0.00E+00	1.03E-01	3.09E-02	3.09E-03	4.80E-05
UR12	Across LF to WF northern section	1	1	575	10	100%	9.14E-07	2.68E-01	7.63E-06	1.56E-06	1.32E-01	3.07E-02	3.10E-03	7.43E-03
UR12Z	Across LF to WF northern section, onsite equipment	1	1	575	10	100%	5.52E-06	2.09E+00	1.50E-06	2.44E-08	1.31E-01	2.97E-02	2.98E-03	1.34E-04
UR12Y	Across LF to WF northern section, final cap construction truck	1	1	575	10	100%	4.40E-06	1.67E+00	1.13E-06	0.00E+00	1.31E-01	2.97E-02	2.98E-03	8.93E-05
PR13Z	WF to LTF	1	1	165	10	100%	2.67E-07	8.01E-02	2.25E-06	4.45E-07	1.96E-03	5.28E-04	9.29E-05	1.60E-01
PR14Z	WF to LTF	1	1	61	10	100%	9.82E-08	2.95E-02	8.29E-07	1.64E-07	7.22E-04	1.94E-04	3.42E-05	1.60E-01
PR15	Entrance to CDA	0	0	0	10	100%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	n/a
UR16Z	Access to Tire Shred Storage Area	0	0	193	10	100%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	n/a
UR17Z	Across CDA	1	1	90	10	100%	3.46E-07	1.31E-01	1.57E-07	0.00E+00	3.41E-02	1.02E-02	1.03E-03	3.77E-05
UR18	Across WF	0	0	0	10	100%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	n/a
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	1.92E-07	7.29E-02	8.12E-08	1.47E-10	1.73E-02	5.28E-03	5.28E-04	4.01E-05
PR04B	Scale House to WF	1	1	681	10	100%	1.08E-06	3.17E-01	9.04E-06	1.85E-06	2.47E-03	1.33E-03	1.93E-04	4.70E-01
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	8.83E-07	2.19E-01	6.14E-06	1.55E-06	1.85E-03	7.12E-04	1.12E-04	2.93E-01
PR04C	Exit Road from WF	1	1	420	10	100%	6.69E-07	1.96E-01	5.58E-06	1.14E-06	1.52E-03	8.21E-04	1.19E-04	4.70E-01
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	5.45E-07	1.35E-01	3.79E-06	9.59E-07	1.14E-03	4.40E-04	6.94E-05	2.93E-01
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	6.01E-06	1.75E+00	8.44E-05	2.70E-05	6.01E-05	6.01E-05	5.52E-05	n/a
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	6.01E-06	1.75E+00	8.44E-05	2.70E-05	6.01E-05	6.01E-05	5.52E-05	n/a
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	2.53E-04	9.59E+01	8.15E-05	0.00E+00	8.00E-04	8.00E-04	7.76E-04	1.00E+00
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	7.33E-05	2.78E+01	2.26E-05	0.00E+00	2.15E-04	2.15E-04	2.09E-04	1.00E+00
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	3.86E-05	1.46E+01	1.75E-05	0.00E+00	1.43E-04	1.43E-04	1.39E-04	1.00E+00
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	1.08E-04	4.10E+01	2.76E-05	0.00E+00	2.87E-04	2.87E-04	2.78E-04	1.00E+00

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes). For idling, this is the number of trucks idling per hour.

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Emissions are input on either a vehicle distance or operation time basis.

[5] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S3-M-5.1b: Vehicle Emission Rates - Tailpipe Emissions, Mitigation Applied, A

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	ipe : Total Emission Rate PM10 PM10 (g/s)	PM2.5 PM2.5 (g/s)	Source ID	# of Volume Sources g/hr	# of Volume Sources g/vkt	TSP PM	PM10 PM10	PM2.5 PM25
Mobile Equipment									**Mobile Equipment**					
PR01	Main Entrance Road	1	1	206	10	100%	9.03E-01	8.35E-01	PR01	11	11	5.83E-05	3.53E-05	5.01E-06
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	8.14E-01	7.04E-01	PR01Z	11	11	4.13E-05	1.83E-05	2.79E-06
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	7.51E-03	9.88E-03	UR02Z	48	48	2.24E-03	6.76E-04	6.78E-05
PR03	Road to CDA	0	0	0	10	100%	n/a	n/a	PR03	26	26	0.00E+00	0.00E+00	0.00E+00
PR04A	Entrance to Scale House	1	1	487	10	100%	8.90E-01	8.14E-01	PR04A	57	57	2.85E-05	1.64E-05	2.35E-06
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	7.90E-01	6.72E-01	PR04AZ	57	57	2.08E-05	8.61E-06	1.33E-06
BR06	Across LF to WF southern section	1	1	603	10	100%	4.15E-01	2.78E-01	BR06	70	70	1.75E-04	3.54E-05	6.94E-06
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	1.25E-02	4.18E-02	BR06Z	70	70	1.60E-04	2.10E-05	5.23E-06
BR06Y	Across LF to WF southern section, final cap construction truck	1	1	603	10	100%	8.40E-03	3.29E-02	BR06Y	70	70	1.60E-04	2.09E-05	5.18E-06
PR08Z	WF to SS/LTF	1	1	307	10	100%	3.04E-01	2.14E-01	PR08Z	36	36	7.52E-05	1.32E-05	2.84E-06
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	1.85E-02	7.01E-02	PR08Y	36	36	7.13E-05	9.39E-06	2.40E-06
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	2.85E-03	4.63E-03	UR09AZ	25	25	3.22E-03	9.70E-04	9.72E-05
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	1.78E-04	1.72E-03	UR09AY	25	25	3.22E-03	9.67E-04	9.69E-05
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	2.03E-04	1.96E-03	UR09BZ	21	21	3.61E-03	1.08E-03	1.09E-04
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	1.60E-04	1.55E-03	UR09BY	21	21	3.61E-03	1.08E-03	1.09E-04
UR11Z	Across SS	1	1	242	10	100%	2.03E-04	1.96E-03	UR11Z	28	28	3.67E-03	1.10E-03	1.11E-04
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	1.60E-04	1.55E-03	UR11Y	28	28	3.67E-03	1.10E-03	1.11E-04
UR12	Across LF to WF northern section	1	1	575	10	100%	3.19E-02	4.15E-02	UR12	67	67	1.97E-03	4.58E-04	4.62E-05
UR12Z	Across LF to WF northern section, onsite equipment	1	1	575	10	100%	5.90E-04	4.89E-03	UR12Z	67	67	1.95E-03	4.43E-04	4.45E-05
UR12Y	Across LF to WF northern section, final cap construction truck	1	1	575	10	100%	3.94E-04	3.81E-03	UR12Y	67	67	1.95E-03	4.43E-04	4.45E-05
PR13Z	WF to LTF	1	1	165	10	100%	5.96E-01	4.44E-01	PR13Z	19	19	1.03E-04	2.78E-05	4.89E-06
PR14Z	WF to LTF	1	1	61	10	100%	5.96E-01	4.44E-01	PR14Z	7	7	1.03E-04	2.77E-05	4.88E-06
PR15	Entrance to CDA	0	0	0	10	100%	n/a	n/a	PR15	10	10	0.00E+00	0.00E+00	0.00E+00
UR16Z	Access to Tire Shred Storage Area	0	0	193	10	100%	n/a	n/a	UR16Z	22	22	0.00E+00	0.00E+00	0.00E+00
UR17Z	Across CDA	1	1	90	10	100%	1.25E-04	1.22E-03	UR17Z	10	10	3.41E-03	1.02E-03	1.03E-04
UR18	Across WF	0	0	0	10	100%	n/a	n/a	UR18	5	5	0.00E+00	0.00E+00	0.00E+00
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	1.32E-04	1.25E-03	UR18Z	5	5	3.47E-03	1.06E-03	1.06E-04
PR04B	Scale House to WF	1	1	681	10	100%	8.73E-01	7.88E-01	PR04B	79	79	3.12E-05	1.68E-05	2.45E-06
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	7.62E-01	6.36E-01	PR04BZ	79	79	2.34E-05	9.02E-06	1.42E-06
PR04C	Exit Road from WF	1	1	420	10	100%	8.73E-01	7.88E-01	PR04C	49	49	3.11E-05	1.68E-05	2.44E-06
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	7.62E-01	6.36E-01	PR04CZ	49	49	2.33E-05	8.97E-06	1.42E-06
									0					
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	n/a	n/a	IDLE01	1	1	1.20E-04	1.20E-04	1.10E-04
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	n/a	n/a	IDLE02	1	1	1.20E-04	1.20E-04	1.10E-04
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	1.00E+00	1.00E+00	DOZE2	1	1	8.00E-04	8.00E-04	7.76E-04
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	1.00E+00	1.00E+00	DOZE4	1	1	2.15E-04	2.15E-04	2.09E-04
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	1.00E+00	1.00E+00	DOZE2CAP	1	1	1.43E-04	1.43E-04	1.39E-04
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	1.00E+00	1.00E+00	DOZE2SS	1	1	2.87E-04	2.87E-04	2.78E-04

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes). For idling, this is the number of trucks idling per hour.

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Emissions are input on either a vehicle distance or operation time basis.

[5] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S3-M-5.1b: Vehicle Emission Rates - Tailpipe Emissions, Mitigation Applied, A

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Emission rate per volume source (g/s) Benzene 71-43-2	Ammonia 7664-41-7	Nitrogen Dioxide NO2	Nitrogen Oxides 10102-44-0	Sulphur Dioxide 7446-09-5	Carbon Dioxide 124-38-9	Methane 74-82-8	Nitrous Oxide 10024-97-2
Mobile Equipment														
PR01	Main Entrance Road	1	1	206	10	100%	2.18E-09	2.15E-07	1.91E-05	4.80E-05	2.98E-08	8.72E-03	2.48E-07	5.09E-08
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	6.74E-09	2.06E-07	9.52E-06	2.39E-05	2.43E-08	6.03E-03	1.69E-07	4.27E-08
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	3.69E-09	9.43E-08	3.39E-06	8.53E-06	1.07E-08	2.51E-03	7.01E-08	1.90E-08
PR03	Road to CDA	0	0	0	10	100%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PR04A	Entrance to Scale House	1	1	487	10	100%	9.94E-10	9.80E-08	8.71E-06	2.19E-05	1.36E-08	3.98E-03	1.13E-07	2.32E-08
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	3.08E-09	9.38E-08	4.34E-06	1.09E-05	1.11E-08	2.75E-03	7.70E-08	1.95E-08
BR06	Across LF to WF southern section	1	1	603	10	100%	1.00E-09	9.89E-08	8.79E-06	2.21E-05	1.37E-08	4.01E-03	1.14E-07	2.34E-08
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	1.28E-08	2.56E-07	4.31E-08	6.61E-06	8.27E-08	3.14E-02	2.25E-08	3.67E-10
BR06Y	Across LF to WF southern section, final cap construction truck	1	1	603	10	100%	1.02E-08	2.03E-07	0.00E+00	5.20E-06	6.60E-08	2.51E-02	1.69E-08	0.00E+00
PR08Z	WF to SS/LTF	1	1	307	10	100%	7.16E-09	1.62E-07	2.50E-06	9.05E-06	4.13E-08	1.49E-02	5.33E-08	1.12E-08
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	1.01E-08	2.01E-07	0.00E+00	5.14E-06	6.52E-08	2.48E-02	1.67E-08	0.00E+00
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	7.81E-09	1.67E-07	1.78E-06	7.48E-06	4.37E-08	1.58E-02	4.65E-08	9.96E-09
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	9.97E-09	1.99E-07	0.00E+00	5.09E-06	6.47E-08	2.46E-02	1.65E-08	0.00E+00
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	1.27E-08	2.55E-07	0.00E+00	6.51E-06	8.27E-08	3.14E-02	2.11E-08	0.00E+00
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	1.00E-08	2.01E-07	0.00E+00	5.13E-06	6.51E-08	2.47E-02	1.66E-08	0.00E+00
UR11Z	Across SS	1	1	242	10	100%	1.30E-08	2.59E-07	0.00E+00	6.63E-06	8.41E-08	3.20E-02	2.15E-08	0.00E+00
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	1.02E-08	2.04E-07	0.00E+00	5.22E-06	6.63E-08	2.52E-02	1.69E-08	0.00E+00
UR12	Across LF to WF northern section	1	1	575	10	100%	9.99E-10	9.85E-08	8.75E-06	2.20E-05	1.36E-08	3.99E-03	1.14E-07	2.33E-08
UR12Z	Across LF to WF northern section, onsite equipment	1	1	575	10	100%	1.28E-08	2.55E-07	4.29E-08	6.58E-06	8.23E-08	3.12E-02	2.24E-08	3.65E-10
UR12Y	Across LF to WF northern section, final cap construction truck	1	1	575	10	100%	1.01E-08	2.02E-07	0.00E+00	5.17E-06	6.57E-08	2.50E-02	1.68E-08	0.00E+00
PR13Z	WF to LTF	1	1	165	10	100%	0.00E+00	9.75E-08	9.74E-06	2.45E-05	1.41E-08	4.22E-03	1.19E-07	2.34E-08
PR14Z	WF to LTF	1	1	61	10	100%	0.00E+00	9.73E-08	9.72E-06	2.44E-05	1.40E-08	4.21E-03	1.18E-07	2.34E-08
PR15	Entrance to CDA	0	0	0	10	100%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
UR16Z	Access to Tire Shred Storage Area	0	0	193	10	100%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
UR17Z	Across CDA	1	1	90	10	100%	9.69E-09	1.06E-07	0.00E+00	2.92E-06	3.46E-08	1.31E-02	1.57E-08	0.00E+00
UR18	Across WF	0	0	0	10	100%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	9.94E-09	1.18E-07	3.47E-09	3.22E-06	3.85E-08	1.46E-02	1.62E-08	2.95E-11
PR04B	Scale House to WF	1	1	681	10	100%	1.00E-09	9.89E-08	8.79E-06	2.21E-05	1.37E-08	4.01E-03	1.14E-07	2.34E-08
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	3.10E-09	9.47E-08	4.38E-06	1.10E-05	1.12E-08	2.77E-03	7.77E-08	1.97E-08
PR04C	Exit Road from WF	1	1	420	10	100%	9.99E-10	9.85E-08	8.75E-06	2.20E-05	1.36E-08	4.00E-03	1.14E-07	2.33E-08
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	3.09E-09	9.42E-08	4.36E-06	1.10E-05	1.11E-08	2.76E-03	7.73E-08	1.96E-08
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	6.30E-07	2.13E-04	1.09E-02	2.74E-02	1.20E-05	3.50E+00	1.69E-04	5.41E-05
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	6.30E-07	2.13E-04	1.09E-02	2.74E-02	1.20E-05	3.50E+00	1.69E-04	5.41E-05
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	4.95E-05	7.78E-04	0.00E+00	2.10E-02	2.53E-04	9.59E+01	8.15E-05	0.00E+00
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	1.37E-05	2.26E-04	0.00E+00	5.88E-03	7.33E-05	2.78E+01	2.26E-05	0.00E+00
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	1.08E-05	1.19E-04	0.00E+00	3.25E-03	3.86E-05	1.46E+01	1.75E-05	0.00E+00
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	1.67E-05	3.33E-04	0.00E+00	8.51E-03	1.08E-04	4.10E+01	2.76E-05	0.00E+00

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes). For idling, this is the number of trucks idling per hour.

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Emissions are input on either a vehicle distance or operation time basis.

[5] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S3-M-5.1b: Vehicle Emission Rates - Tailpipe Emissions, Mitigation Applied, MD

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Tailpipe Emission Factor [5], [7] TSP PM (g/vkt)	TSP PM (g/h)	PM10 PM10 (g/vkt)	PM10 PM10 (g/h)	PM2.5 PM25 (g/vkt)	PM2.5 PM25 (g/h)	Benzene 71-43-2 (g/vkt)	Benzene 71-43-2 (g/h)	Ammonia 7664-41-7 (g/vkt)	Ammonia 7664-41-7 (g/h)	Nitrogen Dioxide NO2 (g/vkt)	Nitrogen Dioxide NO2 (g/h)	Nitrogen Oxides 10102-44-0 (g/vkt)	Nitrogen Oxides 10102-44-0 (g/h)
Mobile Equipment																				
PR01	Main Entrance Road	1	1	206	10	100%	3.65E+00	0.00E+00	3.65E+00	0.00E+00	4.80E-01	0.00E+00	1.37E-03	0.00E+00	4.15E-02	0.00E+00	2.33E+00	0.00E+00	5.85E+00	0.00E+00
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	0.00E+00	5.91E-01	0.00E+00	5.91E-01	0.00E+00	7.78E-02	0.00E+00	2.67E-04	0.00E+00	8.14E-03	0.00E+00	3.77E-01	0.00E+00	9.48E-01
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	0.00E+00	8.77E-01	0.00E+00	8.77E-01	0.00E+00	1.16E-01	0.00E+00	6.37E-04	0.00E+00	1.63E-02	0.00E+00	5.86E-01	0.00E+00	1.47E+00
PR03	Road to CDA	0	0	0	10	100%	3.65E+00	0.00E+00	3.65E+00	0.00E+00	4.80E-01	0.00E+00	1.37E-03	0.00E+00	4.15E-02	0.00E+00	2.33E+00	0.00E+00	5.85E+00	0.00E+00
PR04A	Entrance to Scale House	1	1	487	10	100%	3.65E+00	5.84E-01	3.65E+00	5.84E-01	4.80E-01	7.79E-02	1.37E-03	1.56E-03	4.15E-02	2.27E-02	2.33E+00	5.77E-01	5.85E+00	1.46E+00
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	0.00E+00	1.40E+00	0.00E+00	1.40E+00	0.00E+00	1.84E-01	0.00E+00	6.31E-04	0.00E+00	1.92E-02	0.00E+00	8.91E-01	0.00E+00	2.24E+00
BR06	Across LF to WF southern section	1	1	603	10	100%	3.65E+00	0.00E+00	3.65E+00	0.00E+00	4.80E-01	0.00E+00	1.37E-03	0.00E+00	4.15E-02	0.00E+00	2.33E+00	0.00E+00	5.85E+00	0.00E+00
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	0.00E+00	6.63E-02	0.00E+00	6.63E-02	0.00E+00	5.51E-02	0.00E+00	3.23E-03	0.00E+00	6.45E-02	0.00E+00	1.09E-02	0.00E+00	1.67E+00
BR06Y	Across LF to WF southern section, final cap construction truc	1	1	603	10	100%	0.00E+00	4.42E-02	0.00E+00	4.42E-02	0.00E+00	4.29E-02	0.00E+00	2.56E-03	0.00E+00	5.12E-02	0.00E+00	0.00E+00	0.00E+00	1.31E+00
PR08Z	WF to SS/LTF	1	1	307	10	100%	0.00E+00	5.21E-01	0.00E+00	5.21E-01	0.00E+00	7.86E-02	0.00E+00	9.28E-04	0.00E+00	2.10E-02	0.00E+00	3.24E-01	0.00E+00	1.17E+00
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	0.00E+00	2.25E-02	0.00E+00	2.25E-02	0.00E+00	2.18E-02	0.00E+00	1.30E-03	0.00E+00	2.60E-02	0.00E+00	0.00E+00	0.00E+00	6.66E-01
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	0.00E+00	2.49E-01	0.00E+00	2.49E-01	0.00E+00	4.04E-02	0.00E+00	7.03E-04	0.00E+00	1.50E-02	0.00E+00	1.60E-01	0.00E+00	6.73E-01
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	0.00E+00	1.55E-02	0.00E+00	1.55E-02	0.00E+00	1.50E-02	0.00E+00	8.97E-04	0.00E+00	1.79E-02	0.00E+00	0.00E+00	0.00E+00	4.58E-01
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	0.00E+00	1.66E-02	0.00E+00	1.66E-02	0.00E+00	1.61E-02	0.00E+00	9.63E-04	0.00E+00	1.92E-02	0.00E+00	0.00E+00	0.00E+00	4.92E-01
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	0.00E+00	1.31E-02	0.00E+00	1.31E-02	0.00E+00	1.27E-02	0.00E+00	7.59E-04	0.00E+00	1.52E-02	0.00E+00	0.00E+00	0.00E+00	3.88E-01
UR11Z	Across SS	1	1	242	10	100%	0.00E+00	2.25E-02	0.00E+00	2.25E-02	0.00E+00	2.19E-02	0.00E+00	1.31E-03	0.00E+00	2.61E-02	0.00E+00	0.00E+00	0.00E+00	6.68E-01
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	0.00E+00	1.77E-02	0.00E+00	1.77E-02	0.00E+00	1.72E-02	0.00E+00	1.03E-03	0.00E+00	2.06E-02	0.00E+00	0.00E+00	0.00E+00	5.26E-01
UR12	Across LF to WF northern section	1	1	575	10	100%	3.65E+00	0.00E+00	3.65E+00	0.00E+00	4.80E-01	0.00E+00	1.37E-03	0.00E+00	4.15E-02	0.00E+00	2.33E+00	0.00E+00	5.85E+00	0.00E+00
UR12Z	Across LF to WF northern section, onsite equipment	1	1	575	10	100%	0.00E+00	6.31E-02	0.00E+00	6.31E-02	0.00E+00	5.25E-02	0.00E+00	3.08E-03	0.00E+00	6.14E-02	0.00E+00	1.04E-02	0.00E+00	1.59E+00
UR12Y	Across LF to WF northern section, final cap construction truc	1	1	575	10	100%	0.00E+00	4.21E-02	0.00E+00	4.21E-02	0.00E+00	4.08E-02	0.00E+00	2.44E-03	0.00E+00	4.88E-02	0.00E+00	0.00E+00	0.00E+00	1.25E+00
PR13Z	WF to LTF	1	1	165	10	100%	0.00E+00	1.13E+00	0.00E+00	1.13E+00	0.00E+00	1.49E-01	0.00E+00	0.00E+00	0.00E+00	6.67E-03	0.00E+00	6.66E-01	0.00E+00	1.67E+00
PR14Z	WF to LTF	1	1	61	10	100%	0.00E+00	4.16E-01	0.00E+00	4.16E-01	0.00E+00	5.46E-02	0.00E+00	0.00E+00	0.00E+00	2.45E-03	0.00E+00	2.45E-01	0.00E+00	6.15E-01
PR15	Entrance to CDA	0	0	0	10	100%	3.65E+00	0.00E+00	3.65E+00	0.00E+00	4.80E-01	0.00E+00	1.37E-03	0.00E+00	4.15E-02	0.00E+00	2.33E+00	0.00E+00	5.85E+00	0.00E+00
UR16Z	Access to Tire Shred Storage Area	0	0	193	10	100%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
UR17Z	Across CDA	1	1	90	10	100%	0.00E+00	4.63E-03	0.00E+00	4.63E-03	0.00E+00	4.49E-03	0.00E+00	3.49E-04	0.00E+00	3.83E-03	0.00E+00	0.00E+00	0.00E+00	1.05E-01
UR18	Across WF	0	0	0	10	100%	3.65E+00	0.00E+00	3.65E+00	0.00E+00	4.80E-01	0.00E+00	1.37E-03	0.00E+00	4.15E-02	0.00E+00	2.33E+00	0.00E+00	5.85E+00	0.00E+00
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	0.00E+00	2.51E-03	0.00E+00	2.51E-03	0.00E+00	2.38E-03	0.00E+00	1.79E-04	0.00E+00	2.13E-03	0.00E+00	6.25E-05	0.00E+00	5.79E-02
PR04B	Scale House to WF	1	1	681	10	100%	3.65E+00	8.17E-01	3.65E+00	8.17E-01	4.80E-01	1.09E-01	1.37E-03	2.18E-03	4.15E-02	3.17E-02	2.33E+00	8.07E-01	5.85E+00	2.04E+00
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	0.00E+00	1.95E+00	0.00E+00	1.95E+00	0.00E+00	2.57E-01	0.00E+00	8.83E-04	0.00E+00	2.69E-02	0.00E+00	1.25E+00	0.00E+00	3.14E+00
PR04C	Exit Road from WF	1	1	420	10	100%	3.65E+00	5.04E-01	3.65E+00	5.04E-01	4.80E-01	6.73E-02	1.37E-03	1.34E-03	4.15E-02	1.96E-02	2.33E+00	4.98E-01	5.85E+00	1.26E+00
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	0.00E+00	1.21E+00	0.00E+00	1.21E+00	0.00E+00	1.59E-01	0.00E+00	5.45E-04	0.00E+00	1.66E-02	0.00E+00	7.70E-01	0.00E+00	1.94E+00
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	--	--	--	--	--	--	--	--	--	--	--	--	--	--
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	--	--	--	--	--	--	--	--	--	--	--	--	--	--
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	0.00E+00	2.88E+00	0.00E+00	2.88E+00	0.00E+00	2.79E+00	0.00E+00	1.78E-01	0.00E+00	2.80E+00	0.00E+00	0.00E+00	0.00E+00	7.57E+01
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	0.00E+00	7.75E-01	0.00E+00	7.75E-01	0.00E+00	7.51E-01	0.00E+00	4.94E-02	0.00E+00	8.13E-01	0.00E+00	0.00E+00	0.00E+00	2.12E+01
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	0.00E+00	5.16E-01	0.00E+00	5.16E-01	0.00E+00	5.00E-01	0.00E+00	3.89E-02	0.00E+00	4.27E-01	0.00E+00	0.00E+00	0.00E+00	1.17E+01
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	0.00E+00	1.03E+00	0.00E+00	1.03E+00	0.00E+00	1.00E+00	0.00E+00	6.00E-02	0.00E+00	1.20E+00	0.00E+00	0.00E+00	0.00E+00	3.06E+01

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes)

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

[5] Emissions are input on either a vehicle distance or power rating basis. Load factor applies only to emissions based on power ratings.

[6] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S3-M-5.1b: Vehicle Emission Rates - Tailpipe Emissions, Mitigation Applied, M

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Sulphur Dioxide 7446-09-5 (g/vkt)	Sulphur Dioxide 7446-09-5 (g/h)	Carbon Dioxide 124-38-9 (g/vkt)	Carbon Dioxide 124-38-9 (g/h)	Methane 74-82-8 (g/vkt)	Methane 74-82-8 (g/h)	Nitrous Oxide 10024-97-2 (g/vkt)	Nitrous Oxide 10024-97-2 (g/h)
Mobile Equipment														
PR01	Main Entrance Road	1	1	206	10	100%	5.08E-03	0.00E+00	1.34E+03	0.00E+00	3.87E-02	0.00E+00	9.11E-03	0.00E+00
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	0.00E+00	9.61E-04	0.00E+00	2.39E+02	0.00E+00	6.68E-03	0.00E+00	1.69E-03
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	0.00E+00	1.84E-03	0.00E+00	4.34E+02	0.00E+00	1.21E-02	0.00E+00	3.28E-03
PR03	Road to CDA	0	0	0	10	100%	5.08E-03	0.00E+00	1.34E+03	0.00E+00	3.87E-02	0.00E+00	9.11E-03	0.00E+00
PR04A	Entrance to Scale House	1	1	487	10	100%	5.08E-03	2.41E-03	1.34E+03	5.72E+02	3.87E-02	1.85E-02	9.11E-03	4.90E-03
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	0.00E+00	2.27E-03	0.00E+00	5.64E+02	0.00E+00	1.58E-02	0.00E+00	4.00E-03
BR06	Across LF to WF southern section	1	1	603	10	100%	5.08E-03	0.00E+00	1.34E+03	0.00E+00	3.87E-02	0.00E+00	9.11E-03	0.00E+00
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	0.00E+00	2.08E-02	0.00E+00	7.91E+03	0.00E+00	5.66E-03	0.00E+00	9.24E-05
BR06Y	Across LF to WF southern section, final cap construction truc	1	1	603	10	100%	0.00E+00	1.66E-02	0.00E+00	6.32E+03	0.00E+00	4.25E-03	0.00E+00	0.00E+00
PR08Z	WF to SS/LTF	1	1	307	10	100%	0.00E+00	5.36E-03	0.00E+00	1.93E+03	0.00E+00	6.91E-03	0.00E+00	1.46E-03
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	0.00E+00	8.45E-03	0.00E+00	3.21E+03	0.00E+00	2.16E-03	0.00E+00	0.00E+00
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	0.00E+00	3.94E-03	0.00E+00	1.42E+03	0.00E+00	4.19E-03	0.00E+00	8.96E-04
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	0.00E+00	5.82E-03	0.00E+00	2.21E+03	0.00E+00	1.49E-03	0.00E+00	0.00E+00
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	0.00E+00	6.25E-03	0.00E+00	2.37E+03	0.00E+00	1.60E-03	0.00E+00	0.00E+00
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	0.00E+00	4.92E-03	0.00E+00	1.87E+03	0.00E+00	1.26E-03	0.00E+00	0.00E+00
UR11Z	Across SS	1	1	242	10	100%	0.00E+00	8.48E-03	0.00E+00	3.22E+03	0.00E+00	2.17E-03	0.00E+00	0.00E+00
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	0.00E+00	6.68E-03	0.00E+00	2.54E+03	0.00E+00	1.71E-03	0.00E+00	0.00E+00
UR12	Across LF to WF northern section	1	1	575	10	100%	5.08E-03	0.00E+00	1.34E+03	0.00E+00	3.87E-02	0.00E+00	9.11E-03	0.00E+00
UR12Z	Across LF to WF northern section, onsite equipment	1	1	575	10	100%	0.00E+00	1.99E-02	0.00E+00	7.53E+03	0.00E+00	5.39E-03	0.00E+00	8.80E-05
UR12Y	Across LF to WF northern section, final cap construction truc	1	1	575	10	100%	0.00E+00	1.58E-02	0.00E+00	6.02E+03	0.00E+00	4.05E-03	0.00E+00	0.00E+00
PR13Z	WF to LTF	1	1	165	10	100%	0.00E+00	9.62E-04	0.00E+00	2.88E+02	0.00E+00	8.11E-03	0.00E+00	1.60E-03
PR14Z	WF to LTF	1	1	61	10	100%	0.00E+00	3.54E-04	0.00E+00	1.06E+02	0.00E+00	2.98E-03	0.00E+00	5.90E-04
PR15	Entrance to CDA	0	0	0	10	100%	5.08E-03	0.00E+00	1.34E+03	0.00E+00	3.87E-02	0.00E+00	9.11E-03	0.00E+00
UR16Z	Access to Tire Shred Storage Area	0	0	193	10	100%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
UR17Z	Across CDA	1	1	90	10	100%	0.00E+00	1.25E-03	0.00E+00	4.72E+02	0.00E+00	5.65E-04	0.00E+00	0.00E+00
UR18	Across WF	0	0	0	10	100%	5.08E-03	0.00E+00	1.34E+03	0.00E+00	3.87E-02	0.00E+00	9.11E-03	0.00E+00
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	0.00E+00	6.93E-04	0.00E+00	2.62E+02	0.00E+00	2.92E-04	0.00E+00	5.31E-07
PR04B	Scale House to WF	1	1	681	10	100%	5.08E-03	3.37E-03	1.34E+03	8.00E+02	3.87E-02	2.58E-02	9.11E-03	6.86E-03
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	0.00E+00	3.18E-03	0.00E+00	7.89E+02	0.00E+00	2.21E-02	0.00E+00	5.59E-03
PR04C	Exit Road from WF	1	1	420	10	100%	5.08E-03	2.08E-03	1.34E+03	4.94E+02	3.87E-02	1.59E-02	9.11E-03	4.24E-03
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	0.00E+00	1.96E-03	0.00E+00	4.87E+02	0.00E+00	1.36E-02	0.00E+00	3.45E-03
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	--	--	--	--	--	--	--	--
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	--	--	--	--	--	--	--	--
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	0.00E+00	9.10E-01	0.00E+00	3.45E+05	0.00E+00	2.93E-01	0.00E+00	0.00E+00
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	0.00E+00	2.64E-01	0.00E+00	1.00E+05	0.00E+00	8.12E-02	0.00E+00	0.00E+00
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	0.00E+00	1.39E-01	0.00E+00	5.26E+04	0.00E+00	6.30E-02	0.00E+00	0.00E+00
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	0.00E+00	3.89E-01	0.00E+00	1.48E+05	0.00E+00	9.95E-02	0.00E+00	0.00E+00

Source ID	Tailpipe Emission Rate TSP PM (g/s)	PM10 PM10 (g/s)	PM2.5 PM25 (g/s)	Benzene 71-43-2 (g/s)	Ammonia 7664-41-7 (g/s)	Nitrogen Dioxide NO2 (g/s)	Nitrogen Oxides 10102-44-0 (g/s)
Mobile Equipment							
PR01	2.1E-04	2.1E-04	2.7E-05	7.8E-08	2.4E-06	1.3E-04	3.3E-04
PR01Z	1.6E-04	1.6E-04	2.2E-05	7.4E-08	2.3E-06	1.0E-04	2.6E-04
UR02Z	2.4E-04	2.4E-04	3.2E-05	1.8E-07	4.5E-06	1.6E-04	4.1E-04
PR03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
PR04A	4.9E-04	4.9E-04	6.5E-05	1.9E-07	5.6E-06	3.1E-04	7.9E-04
PR04AZ	3.9E-04	3.9E-04	5.1E-05	1.8E-07	5.3E-06	2.5E-04	6.2E-04
BR06	6.1E-04	6.1E-04	8.0E-05	2.3E-07	7.0E-06	3.9E-04	9.8E-04
BR06Z	1.8E-05	1.8E-05	1.5E-05	9.0E-07	1.8E-05	3.0E-06	4.6E-04
BR06Y	1.2E-05	1.2E-05	1.2E-05	7.1E-07	1.4E-05	0.0E+00	3.6E-04
PR08Z	1.4E-04	1.4E-04	2.2E-05	2.6E-07	5.8E-06	9.0E-05	3.3E-04
PR08Y	6.2E-06	6.2E-06	6.1E-06	3.6E-07	7.2E-06	0.0E+00	1.8E-04
UR09AZ	6.9E-05	6.9E-05	1.1E-05	2.0E-07	4.2E-06	4.4E-05	1.9E-04
UR09AY	4.3E-06	4.3E-06	4.2E-06	2.5E-07	5.0E-06	0.0E+00	1.3E-04
UR09BZ	4.6E-06	4.6E-06	4.5E-06	2.7E-07	5.3E-06	0.0E+00	1.4E-04
UR09BY	3.6E-06	3.6E-06	3.5E-06	2.1E-07	4.2E-06	0.0E+00	1.1E-04
UR11Z	6.3E-06	6.3E-06	6.1E-06	3.6E-07	7.3E-06	0.0E+00	1.9E-04
UR11Y	4.9E-06	4.9E-06	4.8E-06	2.9E-07	5.7E-06	0.0E+00	1.5E-04
UR12	5.8E-04	5.8E-04	7.7E-05	2.2E-07	6.6E-06	3.7E-04	9.3E-04
UR12Z	1.8E-05	1.8E-05	1.5E-05	8.6E-07	1.7E-05	2.9E-06	4.4E-04
UR12Y	1.2E-05	1.2E-05	1.1E-05	6.8E-07	1.4E-05	0.0E+00	3.5E-04
PR13Z	3.1E-04	3.1E-04	4.1E-05	0.0E+00	1.9E-06	1.8E-04	4.6E-04
PR14Z	1.2E-04	1.2E-04	1.5E-05	0.0E+00	6.8E-07	6.8E-05	1.7E-04
PR15	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
UR16Z	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
UR17Z	1.3E-06	1.3E-06	1.2E-06	9.7E-08	1.1E-06	0.0E+00	2.9E-05
UR18	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
UR18Z	7.0E-07	7.0E-07	6.6E-07	5.0E-08	5.9E-07	1.7E-08	1.6E-05
PR04B	6.9E-04	6.9E-04	9.1E-05	2.6E-07	7.9E-06	4.4E-04	1.1E-03
PR04BZ	5.4E-04	5.4E-04	7.1E-05	2.5E-07	7.5E-06	3.5E-04	8.7E-04
PR04C	4.3E-04	4.3E-04	5.6E-05	1.6E-07	4.8E-06	2.7E-04	6.8E-04
PR04CZ	3.4E-04	3.4E-04	4.4E-05	1.5E-07	4.6E-06	2.1E-04	5.4E-04
0							
IDLE01	3.5E-05	3.5E-05	3.3E-05	1.1E-06	1.0E-04	3.5E-03	8.8E-03
IDLE02	3.5E-05	3.5E-05	3.3E-05	1.1E-06	1.0E-04	3.5E-03	8.8E-03
DOZE2	8.0E-04	8.0E-04	7.8E-04	5.0E-05	7.8E-04	0.0E+00	2.1E-02
DOZE4	2.2E-04	2.2E-04	2.1E-04	1.4E-05	2.3E-04	0.0E+00	5.9E-03
DOZE2CAP	1.4E-04	1.4E-04	1.4E-04	1.1E-05	1.2E-04	0.0E+00	3.3E-03
DOZE2SS	2.9E-04	2.9E-04	2.8E-04	1.7E-05	3.3E-04	0.0E+00	8.5E-03

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes)

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

[5] Emissions are input on either a vehicle distance or power rating basis. Load factor applies only to emissions based on p

[6] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S3-M-5.1b: Vehicle Emission Rates - Tailpipe Emissions, Mitigation Applied, M

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Sulphur Dioxide 7446-09-5 (g/s)	Carbon Dioxide 124-38-9 (g/s)	Methane 74-82-8 (g/s)	Nitrous Oxide 10024-97-2 (g/s)	Tailpipe + Fugitive Emission Rate [6] TSP PM (g/s)	Tailpipe + Fugitive Emission Rate [6] PM10 PM10 (g/s)	Tailpipe + Fugitive Emission Rate [6] PM2.5 PM2.5 (g/s)	Ratio Tailpipe : Total Emission Rate TSP PM (g/s)	Ratio Tailpipe : Total Emission Rate PM10 PM10 (g/s)	Ratio Tailpipe : Total Emission Rate PM2.5 PM2.5 (g/s)	Source ID	# of Volume Sources g/hr	# of Volume Sources g/vkt	TSP PM	PM10 PM10
Mobile Equipment																	**Mobile Equipment**				
PR01	Main Entrance Road	1	1	206	10	100%	2.9E-07	7.6E-02	2.2E-06	5.2E-07	4.99E-04	2.46E-04	3.65E-05	4.18E-01	8.47E-01	7.51E-01	PR01	11	11	4.5E-05	2.2E-05
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	2.7E-07	6.6E-02	1.9E-06	4.7E-07	4.55E-04	2.02E-04	3.07E-05	3.61E-01	8.14E-01	7.04E-01	PR01Z	11	11	4.1E-05	1.8E-05
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	5.1E-07	1.2E-01	3.4E-06	9.1E-07	1.07E-01	3.24E-02	3.25E-03	2.27E-03	7.51E-03	9.88E-03	UR02Z	48	48	2.2E-03	6.8E-04
PR03	Road to CDA	0	0	0	10	100%	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.00E+00	0.00E+00	0.00E+00	n/a	n/a	n/a	PR03	26	26	0.0E+00	0.0E+00
PR04A	Entrance to Scale House	1	1	487	10	100%	6.9E-07	1.8E-01	5.2E-06	1.2E-06	1.29E-03	5.96E-04	8.97E-05	3.83E-01	8.27E-01	7.22E-01	PR04A	57	57	2.3E-05	1.0E-05
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	6.3E-07	1.6E-01	4.4E-06	1.1E-06	1.18E-03	4.91E-04	7.60E-05	3.28E-01	7.90E-01	6.72E-01	PR04AZ	57	57	2.1E-05	8.6E-06
BR06	Across LF to WF southern section	1	1	603	10	100%	8.5E-07	2.2E-01	6.5E-06	1.5E-06	1.18E-02	2.06E-03	4.31E-04	5.17E-02	2.97E-01	1.87E-01	BR06	70	70	1.7E-04	2.9E-05
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	5.8E-06	2.2E+00	1.6E-06	2.6E-08	1.12E-02	1.47E-03	3.66E-04	1.64E-03	1.25E-02	4.18E-02	BR06Z	70	70	1.6E-04	2.1E-05
BR06Y	Across LF to WF southern section, final cap construction truc	1	1	603	10	100%	4.6E-06	1.8E+00	1.2E-06	0.0E+00	1.12E-02	1.46E-03	3.62E-04	1.10E-03	8.40E-03	3.29E-02	BR06Y	70	70	1.6E-04	2.1E-05
PR08Z	WF to SS/LTF	1	1	307	10	100%	1.5E-06	5.4E-01	1.9E-06	4.0E-07	2.71E-03	4.76E-04	1.02E-04	5.34E-02	3.04E-01	2.14E-01	PR08Z	36	36	7.5E-05	1.3E-05
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	2.3E-06	8.9E-01	6.0E-07	0.0E+00	2.57E-03	3.38E-04	8.63E-05	2.43E-03	1.85E-02	7.01E-02	PR08Y	36	36	7.1E-05	9.4E-06
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	1.1E-06	4.0E-01	1.2E-06	2.5E-07	8.04E-02	2.42E-02	2.43E-03	8.58E-04	2.85E-03	4.63E-03	UR09AZ	25	25	3.2E-03	9.7E-04
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	1.6E-06	6.1E-01	4.1E-07	0.0E+00	8.04E-02	2.42E-02	2.42E-03	5.34E-05	1.78E-04	1.72E-03	UR09AY	25	25	3.2E-03	9.7E-04
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	1.7E-06	6.6E-01	4.4E-07	0.0E+00	7.57E-02	2.28E-02	2.28E-03	6.09E-05	2.03E-04	1.96E-03	UR09BZ	21	21	3.6E-03	1.1E-03
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	1.4E-06	5.2E-01	3.5E-07	0.0E+00	7.57E-02	2.28E-02	2.28E-03	4.80E-05	1.60E-04	1.55E-03	UR09BY	21	21	3.6E-03	1.1E-03
UR11Z	Across SS	1	1	242	10	100%	2.4E-06	8.9E-01	6.0E-07	0.0E+00	1.03E-01	3.09E-02	3.10E-03	6.09E-05	2.03E-04	1.96E-03	UR11Z	28	28	3.7E-03	1.1E-03
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	1.9E-06	7.0E-01	4.7E-07	0.0E+00	1.03E-01	3.09E-02	3.09E-03	4.80E-05	1.60E-04	1.55E-03	UR11Y	28	28	3.7E-03	1.1E-03
UR12	Across LF to WF northern section	1	1	575	10	100%	8.1E-07	2.1E-01	6.2E-06	1.5E-06	1.31E-01	3.03E-02	3.04E-03	4.43E-03	1.92E-02	2.51E-02	UR12	67	67	2.0E-03	4.5E-04
UR12Z	Across LF to WF northern section, onsite equipment	1	1	575	10	100%	5.5E-06	2.1E+00	1.5E-06	2.4E-08	1.31E-01	2.97E-02	2.98E-03	1.34E-04	5.90E-04	4.89E-03	UR12Z	67	67	2.0E-03	4.4E-04
UR12Y	Across LF to WF northern section, final cap construction truc	1	1	575	10	100%	4.4E-06	1.7E+00	1.1E-06	0.0E+00	1.31E-01	2.97E-02	2.98E-03	8.93E-05	3.94E-04	3.81E-03	UR12Y	67	67	2.0E-03	4.4E-04
PR13Z	WF to LTF	1	1	165	10	100%	2.7E-07	8.0E-02	2.3E-06	4.5E-07	1.96E-03	5.28E-04	9.29E-05	1.60E-01	5.96E-01	4.44E-01	PR13Z	19	19	1.0E-04	2.8E-05
PR14Z	WF to LTF	1	1	61	10	100%	9.8E-08	2.9E-02	8.3E-07	1.6E-07	7.22E-04	1.94E-04	3.42E-05	1.60E-01	5.96E-01	4.44E-01	PR14Z	7	7	1.0E-04	2.8E-05
PR15	Entrance to CDA	0	0	0	10	100%	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.00E+00	0.00E+00	0.00E+00	n/a	n/a	n/a	PR15	10	10	0.0E+00	0.0E+00
UR16Z	Access to Tire Shred Storage Area	0	0	193	10	100%	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.00E+00	0.00E+00	0.00E+00	n/a	n/a	n/a	UR16Z	22	22	0.0E+00	0.0E+00
UR17Z	Across CDA	1	1	90	10	100%	3.5E-07	1.3E-01	1.6E-07	0.0E+00	3.41E-02	1.02E-02	1.03E-03	3.77E-05	1.25E-04	1.22E-03	UR17Z	10	10	3.4E-03	1.0E-03
UR18	Across WF	0	0	0	10	100%	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.00E+00	0.00E+00	0.00E+00	n/a	n/a	n/a	UR18	5	5	0.0E+00	0.0E+00
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	1.9E-07	7.3E-02	8.1E-08	1.5E-10	1.73E-02	5.28E-03	5.28E-04	4.01E-05	1.32E-04	1.25E-03	UR18Z	5	5	3.5E-03	1.1E-03
PR04B	Scale House to WF	1	1	681	10	100%	9.6E-07	2.5E-01	7.3E-06	1.7E-06	2.00E-03	8.59E-04	1.32E-04	3.45E-01	8.03E-01	6.89E-01	PR04B	79	79	2.5E-05	1.1E-05
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	8.8E-07	2.2E-01	6.1E-06	1.6E-06	1.85E-03	7.12E-04	1.12E-04	2.93E-01	7.62E-01	6.36E-01	PR04BZ	79	79	2.3E-05	9.0E-06
PR04C	Exit Road from WF	1	1	420	10	100%	5.9E-07	1.6E-01	4.5E-06	1.1E-06	1.23E-03	5.30E-04	8.13E-05	3.45E-01	8.03E-01	6.89E-01	PR04C	49	49	2.5E-05	1.1E-05
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	5.5E-07	1.4E-01	3.8E-06	9.6E-07	1.14E-03	4.40E-04	6.94E-05	2.93E-01	7.62E-01	6.36E-01	PR04CZ	49	49	2.3E-05	9.0E-06
																	0				
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	5.9E-06	1.5E+00	6.6E-05	2.5E-05	3.55E-05	3.55E-05	3.26E-05	n/a	n/a	n/a	IDLE01	1	1	7.1E-05	7.1E-05
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	5.9E-06	1.5E+00	6.6E-05	2.5E-05	3.55E-05	3.55E-05	3.26E-05	n/a	n/a	n/a	IDLE02	1	1	7.1E-05	7.1E-05
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	2.5E-04	9.6E+01	8.1E-05	0.0E+00	8.00E-04	8.00E-04	7.76E-04	1.00E+00	1.00E+00	1.00E+00	DOZE2	1	1	8.0E-04	8.0E-04
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	7.3E-05	2.8E+01	2.3E-05	0.0E+00	2.15E-04	2.15E-04	2.09E-04	1.00E+00	1.00E+00	1.00E+00	DOZE4	1	1	2.2E-04	2.2E-04
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	3.9E-05	1.5E+01	1.7E-05	0.0E+00	1.43E-04	1.43E-04	1.39E-04	1.00E+00	1.00E+00	1.00E+00	DOZE2CAP	1	1	1.4E-04	1.4E-04
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	1.1E-04	4.1E+01	2.8E-05	0.0E+00	2.87E-04	2.87E-04	2.78E-04	1.00E+00	1.00E+00	1.00E+00	DOZE2SS	1	1	2.9E-04	2.9E-04

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes)

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

[5] Emissions are input on either a vehicle distance or power rating basis. Load factor applies only to emissions based on p

[6] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S3-M-5.1b: Vehicle Emission Rates - Tailpipe Emissions, Mitigation Applied, M

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Emission rate per volume source: PM2.5 PM25	Benzene 71-43-2	Ammonia 7664-41-7	Nitrogen Dioxide NO2	Nitrogen Oxides 10102-44-0	Sulphur Dioxide 7446-09-5	Carbon Dioxide 124-38-9	Methane 74-82-8	Nitrous Oxide 10024-97-2
Mobile Equipment															
PR01	Main Entrance Road	1	1	206	10	100%	3.3E-06	7.1E-09	2.2E-07	1.2E-05	3.0E-05	2.6E-08	6.9E-03	2.0E-07	4.7E-08
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	2.8E-06	6.7E-09	2.1E-07	9.5E-06	2.4E-05	2.4E-08	6.0E-03	1.7E-07	4.3E-08
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	6.8E-05	3.7E-09	9.4E-08	3.4E-06	8.5E-06	1.1E-08	2.5E-03	7.0E-08	1.9E-08
PR03	Road to CDA	0	0	0	10	100%	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
PR04A	Entrance to Scale House	1	1	487	10	100%	1.6E-06	3.3E-09	9.8E-08	5.5E-06	1.4E-05	1.2E-08	3.2E-03	9.2E-08	2.2E-08
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	1.3E-06	3.1E-09	9.4E-08	4.3E-06	1.1E-05	1.1E-08	2.7E-03	7.7E-08	1.9E-08
BR06	Across LF to WF southern section	1	1	603	10	100%	6.2E-06	3.3E-09	9.9E-08	5.6E-06	1.4E-05	1.2E-08	3.2E-03	9.3E-08	2.2E-08
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	5.2E-06	1.3E-08	2.6E-07	4.3E-08	6.6E-06	8.3E-08	3.1E-02	2.2E-08	3.7E-10
BR06Y	Across LF to WF southern section, final cap construction truc	1	1	603	10	100%	5.2E-06	1.0E-08	2.0E-07	0.0E+00	5.2E-06	6.6E-08	2.5E-02	1.7E-08	0.0E+00
PR08Z	WF to SS/LTF	1	1	307	10	100%	2.8E-06	7.2E-09	1.6E-07	2.5E-06	9.1E-06	4.1E-08	1.5E-02	5.3E-08	1.1E-08
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	2.4E-06	1.0E-08	2.0E-07	0.0E+00	5.1E-06	6.5E-08	2.5E-02	1.7E-08	0.0E+00
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	9.7E-05	7.8E-09	1.7E-07	1.8E-06	7.5E-06	4.4E-08	1.6E-02	4.7E-08	1.0E-08
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	9.7E-05	1.0E-08	2.0E-07	0.0E+00	5.1E-06	6.5E-08	2.5E-02	1.7E-08	0.0E+00
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	1.1E-04	1.3E-08	2.5E-07	0.0E+00	6.5E-06	8.3E-08	3.1E-02	2.1E-08	0.0E+00
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	1.1E-04	1.0E-08	2.0E-07	0.0E+00	5.1E-06	6.5E-08	2.5E-02	1.7E-08	0.0E+00
UR11Z	Across SS	1	1	242	10	100%	1.1E-04	1.3E-08	2.6E-07	0.0E+00	6.6E-06	8.4E-08	3.2E-02	2.2E-08	0.0E+00
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	1.1E-04	1.0E-08	2.0E-07	0.0E+00	5.2E-06	6.6E-08	2.5E-02	1.7E-08	0.0E+00
UR12	Across LF to WF northern section	1	1	575	10	100%	4.5E-05	3.3E-09	9.9E-08	5.5E-06	1.4E-05	1.2E-08	3.2E-03	9.2E-08	2.2E-08
UR12Z	Across LF to WF northern section, onsite equipment	1	1	575	10	100%	4.5E-05	1.3E-08	2.5E-07	4.3E-08	6.6E-06	8.2E-08	3.1E-02	2.2E-08	3.6E-10
UR12Y	Across LF to WF northern section, final cap construction truc	1	1	575	10	100%	4.4E-05	1.0E-08	2.0E-07	0.0E+00	5.2E-06	6.6E-08	2.5E-02	1.7E-08	0.0E+00
PR13Z	WF to LTF	1	1	165	10	100%	4.9E-06	0.0E+00	9.8E-08	9.7E-06	2.4E-05	1.4E-08	4.2E-03	1.2E-07	2.3E-08
PR14Z	WF to LTF	1	1	61	10	100%	4.9E-06	0.0E+00	9.7E-08	9.7E-06	2.4E-05	1.4E-08	4.2E-03	1.2E-07	2.3E-08
PR15	Entrance to CDA	0	0	0	10	100%	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
UR16Z	Access to Tire Shred Storage Area	0	0	193	10	100%	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
UR17Z	Across CDA	1	1	90	10	100%	1.0E-04	9.7E-09	1.1E-07	0.0E+00	2.9E-06	3.5E-08	1.3E-02	1.6E-08	0.0E+00
UR18	Across WF	0	0	0	10	100%	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	1.1E-04	9.9E-09	1.2E-07	3.5E-09	3.2E-06	3.8E-08	1.5E-02	1.6E-08	2.9E-11
PR04B	Scale House to WF	1	1	681	10	100%	1.7E-06	3.3E-09	9.9E-08	5.6E-06	1.4E-05	1.2E-08	3.2E-03	9.3E-08	2.2E-08
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	1.4E-06	3.1E-09	9.5E-08	4.4E-06	1.1E-05	1.1E-08	2.8E-03	7.8E-08	2.0E-08
PR04C	Exit Road from WF	1	1	420	10	100%	1.7E-06	3.3E-09	9.9E-08	5.5E-06	1.4E-05	1.2E-08	3.2E-03	9.2E-08	2.2E-08
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	1.4E-06	3.1E-09	9.4E-08	4.4E-06	1.1E-05	1.1E-08	2.8E-03	7.7E-08	2.0E-08
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	6.5E-05	2.1E-06	2.1E-04	7.0E-03	1.8E-02	1.2E-05	3.0E+00	1.3E-04	5.0E-05
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	6.5E-05	2.1E-06	2.1E-04	7.0E-03	1.8E-02	1.2E-05	3.0E+00	1.3E-04	5.0E-05
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	7.8E-04	5.0E-05	7.8E-04	0.0E+00	2.1E-02	2.5E-04	9.6E+01	8.1E-05	0.0E+00
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	2.1E-04	1.4E-05	2.3E-04	0.0E+00	5.9E-03	7.3E-05	2.8E+01	2.3E-05	0.0E+00
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	1.4E-04	1.1E-05	1.2E-04	0.0E+00	3.3E-03	3.9E-05	1.5E+01	1.7E-05	0.0E+00
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	2.8E-04	1.7E-05	3.3E-04	0.0E+00	8.5E-03	1.1E-04	4.1E+01	2.8E-05	0.0E+00

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes)

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

[5] Emissions are input on either a vehicle distance or power rating basis. Load factor applies only to emissions based on p

[6] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S3-M-5.1b: Vehicle Emission Rates - Tailpipe Emissions, Mitigation Applied, PM

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Tailpipe Emission Factor [5], [7] TSP PM (g/vkt)	TSP PM (g/h)	PM10 PM10 (g/vkt)	PM10 PM10 (g/h)	PM2.5 PM25 (g/vkt)	PM2.5 PM25 (g/h)	Benzene 71-43-2 (g/vkt)	Benzene 71-43-2 (g/h)	Ammonia 7664-41-7 (g/vkt)	Ammonia 7664-41-7 (g/h)	Nitrogen Dioxide NO2 (g/vkt)	Nitrogen Dioxide NO2 (g/h)	Nitrogen Oxides 10102-44-0 (g/vkt)	Nitrogen Oxides 10102-44-0 (g/h)
Mobile Equipment																				
PR01	Main Entrance Road	1	1	206	10	100%	4.87E+00	0.00E+00	4.87E+00	0.00E+00	6.40E-01	0.00E+00	3.72E-04	0.00E+00	3.85E-02	0.00E+00	2.88E+00	0.00E+00	7.24E+00	0.00E+00
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	0.00E+00	5.91E-01	0.00E+00	5.91E-01	0.00E+00	7.78E-02	0.00E+00	2.67E-04	0.00E+00	8.14E-03	0.00E+00	3.77E-01	0.00E+00	9.48E-01
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	0.00E+00	8.77E-01	0.00E+00	8.77E-01	0.00E+00	1.16E-01	0.00E+00	6.37E-04	0.00E+00	1.63E-02	0.00E+00	5.86E-01	0.00E+00	1.47E+00
PR04A	Entrance to Scale House	1	1	487	10	100%	4.87E+00	5.84E-01	4.87E+00	5.84E-01	6.40E-01	7.79E-02	3.72E-04	1.56E-03	3.85E-02	2.27E-02	2.88E+00	5.77E-01	7.24E+00	1.46E+00
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	0.00E+00	1.40E+00	0.00E+00	1.40E+00	0.00E+00	1.84E-01	0.00E+00	6.31E-04	0.00E+00	1.92E-02	0.00E+00	8.91E-01	0.00E+00	2.24E+00
BR06	Across LF to WF southern section	1	1	603	10	100%	4.87E+00	0.00E+00	4.87E+00	0.00E+00	6.40E-01	0.00E+00	3.72E-04	0.00E+00	3.85E-02	0.00E+00	2.88E+00	0.00E+00	7.24E+00	0.00E+00
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	0.00E+00	6.63E-02	0.00E+00	6.63E-02	0.00E+00	5.51E-02	0.00E+00	3.23E-03	0.00E+00	6.45E-02	0.00E+00	1.09E-02	0.00E+00	1.67E+00
BR06Y	Across LF to WF southern section, final cap construction truck	1	1	603	10	100%	0.00E+00	4.42E-02	0.00E+00	4.42E-02	0.00E+00	4.29E-02	0.00E+00	2.56E-03	0.00E+00	5.12E-02	0.00E+00	0.00E+00	0.00E+00	1.31E+00
PR08Z	WF to SS/LTF	1	1	307	10	100%	0.00E+00	5.21E-01	0.00E+00	5.21E-01	0.00E+00	7.86E-02	0.00E+00	9.28E-04	0.00E+00	2.10E-02	0.00E+00	3.24E-01	0.00E+00	1.17E+00
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	0.00E+00	2.25E-02	0.00E+00	2.25E-02	0.00E+00	2.18E-02	0.00E+00	1.30E-03	0.00E+00	2.60E-02	0.00E+00	0.00E+00	0.00E+00	6.66E-01
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	0.00E+00	2.49E-01	0.00E+00	2.49E-01	0.00E+00	4.04E-02	0.00E+00	7.03E-04	0.00E+00	1.50E-02	0.00E+00	1.60E-01	0.00E+00	6.73E-01
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	0.00E+00	1.55E-02	0.00E+00	1.55E-02	0.00E+00	1.50E-02	0.00E+00	8.97E-04	0.00E+00	1.79E-02	0.00E+00	0.00E+00	0.00E+00	4.58E-01
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	0.00E+00	1.66E-02	0.00E+00	1.66E-02	0.00E+00	1.61E-02	0.00E+00	9.63E-04	0.00E+00	1.92E-02	0.00E+00	0.00E+00	0.00E+00	4.92E-01
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	0.00E+00	1.31E-02	0.00E+00	1.31E-02	0.00E+00	1.27E-02	0.00E+00	7.59E-04	0.00E+00	1.52E-02	0.00E+00	0.00E+00	0.00E+00	3.88E-01
UR11Z	Across SS	1	1	242	10	100%	0.00E+00	2.25E-02	0.00E+00	2.25E-02	0.00E+00	2.19E-02	0.00E+00	1.31E-03	0.00E+00	2.61E-02	0.00E+00	0.00E+00	0.00E+00	6.68E-01
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	0.00E+00	1.77E-02	0.00E+00	1.77E-02	0.00E+00	1.72E-02	0.00E+00	1.03E-03	0.00E+00	2.06E-02	0.00E+00	0.00E+00	0.00E+00	5.26E-01
UR12	Across LF to WF northern section	1	1	575	10	100%	4.87E+00	0.00E+00	4.87E+00	0.00E+00	6.40E-01	0.00E+00	3.72E-04	0.00E+00	3.85E-02	0.00E+00	2.88E+00	0.00E+00	7.24E+00	0.00E+00
UR12Z	Across LF to WF northern section, onsite equipment	1	1	575	10	100%	0.00E+00	6.31E-02	0.00E+00	6.31E-02	0.00E+00	5.25E-02	0.00E+00	3.08E-03	0.00E+00	6.14E-02	0.00E+00	1.04E-02	0.00E+00	1.59E+00
UR12Y	Across LF to WF northern section, final cap construction truck	1	1	575	10	100%	0.00E+00	4.21E-02	0.00E+00	4.21E-02	0.00E+00	4.08E-02	0.00E+00	2.44E-03	0.00E+00	4.88E-02	0.00E+00	0.00E+00	0.00E+00	1.25E+00
PR13Z	WF to LTF	1	1	165	10	100%	0.00E+00	1.13E+00	0.00E+00	1.13E+00	0.00E+00	1.49E-01	0.00E+00	0.00E+00	0.00E+00	6.67E-03	0.00E+00	6.66E-01	0.00E+00	1.67E+00
PR14Z	WF to LTF	1	1	61	10	100%	0.00E+00	4.16E-01	0.00E+00	4.16E-01	0.00E+00	5.46E-02	0.00E+00	0.00E+00	0.00E+00	2.45E-03	0.00E+00	2.45E-01	0.00E+00	6.15E-01
UR17Z	Across CDA	1	1	90	10	100%	0.00E+00	4.63E-03	0.00E+00	4.63E-03	0.00E+00	4.49E-03	0.00E+00	3.49E-04	0.00E+00	3.83E-03	0.00E+00	0.00E+00	0.00E+00	1.05E-01
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	0.00E+00	2.51E-03	0.00E+00	2.51E-03	0.00E+00	2.38E-03	0.00E+00	1.79E-04	0.00E+00	2.13E-03	0.00E+00	6.25E-05	0.00E+00	5.79E-02
PR04B	Scale House to WF	1	1	681	10	100%	4.87E+00	8.17E-01	4.87E+00	8.17E-01	6.40E-01	1.09E-01	3.72E-04	2.18E-03	3.85E-02	3.17E-02	2.88E+00	8.07E-01	7.24E+00	2.04E+00
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	0.00E+00	1.95E+00	0.00E+00	1.95E+00	0.00E+00	2.57E-01	0.00E+00	8.83E-04	0.00E+00	2.69E-02	0.00E+00	1.25E+00	0.00E+00	3.14E+00
PR04C	Exit Road from WF	1	1	420	10	100%	4.87E+00	5.04E-01	4.87E+00	5.04E-01	6.40E-01	6.73E-02	3.72E-04	1.34E-03	3.85E-02	1.96E-02	2.88E+00	4.98E-01	7.24E+00	1.26E+00
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	0.00E+00	1.21E+00	0.00E+00	1.21E+00	0.00E+00	1.59E-01	0.00E+00	5.45E-04	0.00E+00	1.66E-02	0.00E+00	7.70E-01	0.00E+00	1.94E+00
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	--	--	--	--	--	--	--	--	--	--	--	--	--	--
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	--	--	--	--	--	--	--	--	--	--	--	--	--	--
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	0.00E+00	2.88E+00	0.00E+00	2.88E+00	0.00E+00	2.79E+00	0.00E+00	1.78E-01	0.00E+00	2.80E+00	0.00E+00	0.00E+00	0.00E+00	7.57E+01
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	0.00E+00	7.75E-01	0.00E+00	7.75E-01	0.00E+00	7.51E-01	0.00E+00	4.94E-02	0.00E+00	8.13E-01	0.00E+00	0.00E+00	0.00E+00	2.12E+01
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	0.00E+00	5.16E-01	0.00E+00	5.16E-01	0.00E+00	5.00E-01	0.00E+00	3.89E-02	0.00E+00	4.27E-01	0.00E+00	0.00E+00	0.00E+00	1.17E+01
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	0.00E+00	1.03E+00	0.00E+00	1.03E+00	0.00E+00	1.00E+00	0.00E+00	6.00E-02	0.00E+00	1.20E+00	0.00E+00	0.00E+00	0.00E+00	3.06E+01

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes)

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

[5] Emissions are input on either a vehicle distance or power rating basis. Load factor applies only to emissions based on power ratings.

[6] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S3-M-5.1b: Vehicle Emission Rates - Tailpipe Emissions, Mitigation Applied, P

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Sulphur Dioxide 7446-09-5 (g/vkt)	Sulphur Dioxide 7446-09-5 (g/h)	Carbon Dioxide 124-38-9 (g/vkt)	Carbon Dioxide 124-38-9 (g/h)	Methane 74-82-8 (g/vkt)	Methane 74-82-8 (g/h)	Nitrous Oxide 10024-97-2 (g/vkt)	Nitrous Oxide 10024-97-2 (g/h)	Source ID
Mobile Equipment															**Mobile Equipment**
PR01	Main Entrance Road	1	1	206	10	100%	5.10E-03	0.00E+00	1.40E+03	0.00E+00	3.83E-02	0.00E+00	8.47E-03	0.00E+00	PR01
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	0.00E+00	9.61E-04	0.00E+00	2.39E+02	0.00E+00	6.68E-03	0.00E+00	1.69E-03	PR01Z
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	0.00E+00	1.84E-03	0.00E+00	4.34E+02	0.00E+00	1.21E-02	0.00E+00	3.28E-03	UR02Z
PR04A	Entrance to Scale House	1	1	487	10	100%	5.10E-03	2.41E-03	1.40E+03	5.72E+02	3.83E-02	1.85E-02	8.47E-03	4.90E-03	PR04A
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	0.00E+00	2.27E-03	0.00E+00	5.64E+02	0.00E+00	1.58E-02	0.00E+00	4.00E-03	PR04AZ
BR06	Across LF to WF southern section	1	1	603	10	100%	5.10E-03	0.00E+00	1.40E+03	0.00E+00	3.83E-02	0.00E+00	8.47E-03	0.00E+00	BR06
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	0.00E+00	2.08E-02	0.00E+00	7.91E+03	0.00E+00	5.66E-03	0.00E+00	9.24E-05	BR06Z
BR06Y	Across LF to WF southern section, final cap construction truck	1	1	603	10	100%	0.00E+00	1.66E-02	0.00E+00	6.32E+03	0.00E+00	4.25E-03	0.00E+00	0.00E+00	BR06Y
PR08Z	WF to SS/LTF	1	1	307	10	100%	0.00E+00	5.36E-03	0.00E+00	1.93E+03	0.00E+00	6.91E-03	0.00E+00	1.46E-03	PR08Z
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	0.00E+00	8.45E-03	0.00E+00	3.21E+03	0.00E+00	2.16E-03	0.00E+00	0.00E+00	PR08Y
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	0.00E+00	3.94E-03	0.00E+00	1.42E+03	0.00E+00	4.19E-03	0.00E+00	8.96E-04	UR09AZ
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	0.00E+00	5.82E-03	0.00E+00	2.21E+03	0.00E+00	1.49E-03	0.00E+00	0.00E+00	UR09AY
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	0.00E+00	6.25E-03	0.00E+00	2.37E+03	0.00E+00	1.60E-03	0.00E+00	0.00E+00	UR09BZ
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	0.00E+00	4.92E-03	0.00E+00	1.87E+03	0.00E+00	1.26E-03	0.00E+00	0.00E+00	UR09BY
UR11Z	Across SS	1	1	242	10	100%	0.00E+00	8.48E-03	0.00E+00	3.22E+03	0.00E+00	2.17E-03	0.00E+00	0.00E+00	UR11Z
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	0.00E+00	6.68E-03	0.00E+00	2.54E+03	0.00E+00	1.71E-03	0.00E+00	0.00E+00	UR11Y
UR12	Across LF to WF northern section	1	1	575	10	100%	5.10E-03	0.00E+00	1.40E+03	0.00E+00	3.83E-02	0.00E+00	8.47E-03	0.00E+00	UR12
UR12Z	Across LF to WF northern section, onsite equipment	1	1	575	10	100%	0.00E+00	1.99E-02	0.00E+00	7.53E+03	0.00E+00	5.39E-03	0.00E+00	8.80E-05	UR12Z
UR12Y	Across LF to WF northern section, final cap construction truck	1	1	575	10	100%	0.00E+00	1.58E-02	0.00E+00	6.02E+03	0.00E+00	4.05E-03	0.00E+00	0.00E+00	UR12Y
PR13Z	WF to LTF	1	1	165	10	100%	0.00E+00	9.62E-04	0.00E+00	2.88E+02	0.00E+00	8.11E-03	0.00E+00	1.60E-03	PR13Z
PR14Z	WF to LTF	1	1	61	10	100%	0.00E+00	3.54E-04	0.00E+00	1.06E+02	0.00E+00	2.98E-03	0.00E+00	5.90E-04	PR14Z
UR17Z	Across CDA	1	1	90	10	100%	0.00E+00	1.25E-03	0.00E+00	4.72E+02	0.00E+00	5.65E-04	0.00E+00	0.00E+00	UR17Z
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	0.00E+00	6.93E-04	0.00E+00	2.62E+02	0.00E+00	2.92E-04	0.00E+00	5.31E-07	UR18Z
PR04B	Scale House to WF	1	1	681	10	100%	5.10E-03	3.37E-03	1.40E+03	8.00E+02	3.83E-02	2.58E-02	8.47E-03	6.86E-03	PR04B
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	0.00E+00	3.18E-03	0.00E+00	7.89E+02	0.00E+00	2.21E-02	0.00E+00	5.59E-03	PR04BZ
PR04C	Exit Road from WF	1	1	420	10	100%	5.10E-03	2.08E-03	1.40E+03	4.94E+02	3.83E-02	1.59E-02	8.47E-03	4.24E-03	PR04C
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	0.00E+00	1.96E-03	0.00E+00	4.87E+02	0.00E+00	1.36E-02	0.00E+00	3.45E-03	PR04CZ
															0
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	--	--	--	--	--	--	--	--	IDLE01
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	--	--	--	--	--	--	--	--	IDLE02
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	0.00E+00	9.10E-01	0.00E+00	3.45E+05	0.00E+00	2.93E-01	0.00E+00	0.00E+00	DOZE2
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	0.00E+00	2.64E-01	0.00E+00	1.00E+05	0.00E+00	8.12E-02	0.00E+00	0.00E+00	DOZE4
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	0.00E+00	1.39E-01	0.00E+00	5.26E+04	0.00E+00	6.30E-02	0.00E+00	0.00E+00	DOZE2CAP
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	0.00E+00	3.89E-01	0.00E+00	1.48E+05	0.00E+00	9.95E-02	0.00E+00	0.00E+00	DOZE2SS

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes)

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

[5] Emissions are input on either a vehicle distance or power rating basis. Load factor applies only to emissions based on power ratings.

[6] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S3-M-5.1b: Vehicle Emission Rates - Tailpipe Emissions, Mitigation Applied, P

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Tailpipe Emission Rate TSP PM (g/s)	PM10 PM10 (g/s)	PM2.5 PM25 (g/s)	Benzene 71-43-2 (g/s)	Ammonia 7664-41-7 (g/s)	Nitrogen Dioxide NO2 (g/s)
Mobile Equipment												
PR01	Main Entrance Road	1	1	206	10	100%	2.8E-04	2.8E-04	3.7E-05	2.1E-08	2.2E-06	1.6E-04
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	1.6E-04	1.6E-04	2.2E-05	7.4E-08	2.3E-06	1.0E-04
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	2.4E-04	2.4E-04	3.2E-05	1.8E-07	4.5E-06	1.6E-04
PR04A	Entrance to Scale House	1	1	487	10	100%	6.6E-04	6.6E-04	8.6E-05	5.0E-08	5.2E-06	3.9E-04
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	3.9E-04	3.9E-04	5.1E-05	1.8E-07	5.3E-06	2.5E-04
BR06	Across LF to WF southern section	1	1	603	10	100%	8.2E-04	8.2E-04	1.1E-04	6.2E-08	6.5E-06	4.8E-04
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	1.8E-05	1.8E-05	1.5E-05	9.0E-07	1.8E-05	3.0E-06
BR06Y	Across LF to WF southern section, final cap construction truck	1	1	603	10	100%	1.2E-05	1.2E-05	1.2E-05	7.1E-07	1.4E-05	0.0E+00
PR08Z	WF to SS/LTF	1	1	307	10	100%	1.4E-04	1.4E-04	2.2E-05	2.6E-07	5.8E-06	9.0E-05
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	6.2E-06	6.2E-06	6.1E-06	3.6E-07	7.2E-06	0.0E+00
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	6.9E-05	6.9E-05	1.1E-05	2.0E-07	4.2E-06	4.4E-05
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	4.3E-06	4.3E-06	4.2E-06	2.5E-07	5.0E-06	0.0E+00
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	4.6E-06	4.6E-06	4.5E-06	2.7E-07	5.3E-06	0.0E+00
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	3.6E-06	3.6E-06	3.5E-06	2.1E-07	4.2E-06	0.0E+00
UR11Z	Across SS	1	1	242	10	100%	6.3E-06	6.3E-06	6.1E-06	3.6E-07	7.3E-06	0.0E+00
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	4.9E-06	4.9E-06	4.8E-06	2.9E-07	5.7E-06	0.0E+00
UR12	Across LF to WF northern section	1	1	575	10	100%	7.8E-04	7.8E-04	1.0E-04	5.9E-08	6.1E-06	4.6E-04
UR12Z	Across LF to WF northern section, onsite equipment	1	1	575	10	100%	1.8E-05	1.8E-05	1.5E-05	8.6E-07	1.7E-05	2.9E-06
UR12Y	Across LF to WF northern section, final cap construction truck	1	1	575	10	100%	1.2E-05	1.2E-05	1.1E-05	6.8E-07	1.4E-05	0.0E+00
PR13Z	WF to LTF	1	1	165	10	100%	3.1E-04	3.1E-04	4.1E-05	0.0E+00	1.9E-06	1.8E-04
PR14Z	WF to LTF	1	1	61	10	100%	1.2E-04	1.2E-04	1.5E-05	0.0E+00	6.8E-07	6.8E-05
UR17Z	Across CDA	1	1	90	10	100%	1.3E-06	1.3E-06	1.2E-06	9.7E-08	1.1E-06	0.0E+00
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	7.0E-07	7.0E-07	6.6E-07	5.0E-08	5.9E-07	1.7E-08
PR04B	Scale House to WF	1	1	681	10	100%	9.2E-04	9.2E-04	1.2E-04	7.0E-08	7.3E-06	5.4E-04
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	5.4E-04	5.4E-04	7.1E-05	2.5E-07	7.5E-06	3.5E-04
PR04C	Exit Road from WF	1	1	420	10	100%	5.7E-04	5.7E-04	7.5E-05	4.3E-08	4.5E-06	3.4E-04
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	3.4E-04	3.4E-04	4.4E-05	1.5E-07	4.6E-06	2.1E-04
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	4.8E-05	4.8E-05	4.5E-05	3.4E-07	9.6E-05	4.3E-03
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	4.8E-05	4.8E-05	4.5E-05	3.4E-07	9.6E-05	4.3E-03
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	8.0E-04	8.0E-04	7.8E-04	5.0E-05	7.8E-04	0.0E+00
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	2.2E-04	2.2E-04	2.1E-04	1.4E-05	2.3E-04	0.0E+00
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	1.4E-04	1.4E-04	1.4E-04	1.1E-05	1.2E-04	0.0E+00
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	2.9E-04	2.9E-04	2.8E-04	1.7E-05	3.3E-04	0.0E+00

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes)

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

[5] Emissions are input on either a vehicle distance or power rating basis. Load factor applies only to emissions based on power ratings.

[6] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S3-M-5.1b: Vehicle Emission Rates - Tailpipe Emissions, Mitigation Applied, P

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Nitrogen Oxides 10102-44-0 (g/s)	Sulphur Dioxide 7446-09-5 (g/s)	Carbon Dioxide 124-38-9 (g/s)	Methane 74-82-8 (g/s)	Nitrous Oxide 10024-97-2 (g/s)	Tailpipe + Fugitive Emission Rate [6] TSP PM (g/s)	PM10 PM10 (g/s)	PM2.5 PM2.5 (g/s)
Mobile Equipment														
PR01	Main Entrance Road	1	1	206	10	100%	4.1E-04	2.9E-07	8.0E-02	2.2E-06	4.8E-07	5.7E-04	3.2E-04	4.6E-05
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	2.6E-04	2.7E-07	6.6E-02	1.9E-06	4.7E-07	4.5E-04	2.0E-04	3.1E-05
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	4.1E-04	5.1E-07	1.2E-01	3.4E-06	9.1E-07	1.1E-01	3.2E-02	3.3E-03
PR04A	Entrance to Scale House	1	1	487	10	100%	9.8E-04	6.9E-07	1.9E-01	5.2E-06	1.1E-06	1.5E-03	7.6E-04	1.1E-04
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	6.2E-04	6.3E-07	1.6E-01	4.4E-06	1.1E-06	1.2E-03	4.9E-04	7.6E-05
BR06	Across LF to WF southern section	1	1	603	10	100%	1.2E-03	8.5E-07	2.3E-01	6.4E-06	1.4E-06	1.2E-02	2.3E-03	4.6E-04
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	4.6E-04	5.8E-06	2.2E+00	1.6E-06	2.6E-08	1.1E-02	1.5E-03	3.7E-04
BR06Y	Across LF to WF southern section, final cap construction truck	1	1	603	10	100%	3.6E-04	4.6E-06	1.8E+00	1.2E-06	0.0E+00	1.1E-02	1.5E-03	3.6E-04
PR08Z	WF to SS/LTF	1	1	307	10	100%	3.3E-04	1.5E-06	5.4E-01	1.9E-06	4.0E-07	2.7E-03	4.8E-04	1.0E-04
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	1.8E-04	2.3E-06	8.9E-01	6.0E-07	0.0E+00	2.6E-03	3.4E-04	8.6E-05
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	1.9E-04	1.1E-06	4.0E-01	1.2E-06	2.5E-07	8.0E-02	2.4E-02	2.4E-03
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	1.3E-04	1.6E-06	6.1E-01	4.1E-07	0.0E+00	8.0E-02	2.4E-02	2.4E-03
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	1.4E-04	1.7E-06	6.6E-01	4.4E-07	0.0E+00	7.6E-02	2.3E-02	2.3E-03
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	1.1E-04	1.4E-06	5.2E-01	3.5E-07	0.0E+00	7.6E-02	2.3E-02	2.3E-03
UR11Z	Across SS	1	1	242	10	100%	1.9E-04	2.4E-06	8.9E-01	6.0E-07	0.0E+00	1.0E-01	3.1E-02	3.1E-03
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	1.5E-04	1.9E-06	7.0E-01	4.7E-07	0.0E+00	1.0E-01	3.1E-02	3.1E-03
UR12	Across LF to WF northern section	1	1	575	10	100%	1.2E-03	8.1E-07	2.2E-01	6.1E-06	1.4E-06	1.3E-01	3.0E-02	3.1E-03
UR12Z	Across LF to WF northern section, onsite equipment	1	1	575	10	100%	4.4E-04	5.5E-06	2.1E+00	1.5E-06	2.4E-08	1.3E-01	3.0E-02	3.0E-03
UR12Y	Across LF to WF northern section, final cap construction truck	1	1	575	10	100%	3.5E-04	4.4E-06	1.7E+00	1.1E-06	0.0E+00	1.3E-01	3.0E-02	3.0E-03
PR13Z	WF to LTF	1	1	165	10	100%	4.6E-04	2.7E-07	8.0E-02	2.3E-06	4.5E-07	2.0E-03	5.3E-04	9.3E-05
PR14Z	WF to LTF	1	1	61	10	100%	1.7E-04	9.8E-08	2.9E-02	8.3E-07	1.6E-07	7.2E-04	1.9E-04	3.4E-05
UR17Z	Across CDA	1	1	90	10	100%	2.9E-05	3.5E-07	1.3E-01	1.6E-07	0.0E+00	3.4E-02	1.0E-02	1.0E-03
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	1.6E-05	1.9E-07	7.3E-02	8.1E-08	1.5E-10	1.7E-02	5.3E-03	5.3E-04
PR04B	Scale House to WF	1	1	681	10	100%	1.4E-03	9.6E-07	2.6E-01	7.2E-06	1.6E-06	2.2E-03	1.1E-03	1.6E-04
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	8.7E-04	8.8E-07	2.2E-01	6.1E-06	1.6E-06	1.9E-03	7.1E-04	1.1E-04
PR04C	Exit Road from WF	1	1	420	10	100%	8.4E-04	6.0E-07	1.6E-01	4.5E-06	9.9E-07	1.4E-03	6.7E-04	1.0E-04
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	5.4E-04	5.5E-07	1.4E-01	3.8E-06	9.6E-07	1.1E-03	4.4E-04	6.9E-05
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	1.1E-02	5.8E-06	1.5E+00	6.7E-05	2.3E-05	4.8E-05	4.8E-05	4.5E-05
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	1.1E-02	5.8E-06	1.5E+00	6.7E-05	2.3E-05	4.8E-05	4.8E-05	4.5E-05
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	2.1E-02	2.5E-04	9.6E+01	8.1E-05	0.0E+00	8.0E-04	8.0E-04	7.8E-04
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	5.9E-03	7.3E-05	2.8E+01	2.3E-05	0.0E+00	2.2E-04	2.2E-04	2.1E-04
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	3.3E-03	3.9E-05	1.5E+01	1.7E-05	0.0E+00	1.4E-04	1.4E-04	1.4E-04
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	8.5E-03	1.1E-04	4.1E+01	2.8E-05	0.0E+00	2.9E-04	2.9E-04	2.8E-04

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes)

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

[5] Emissions are input on either a vehicle distance or power rating basis. Load factor applies only to emissions based on power ratings.

[6] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S3-M-5.1b: Vehicle Emission Rates - Tailpipe Emissions, Mitigation Applied, P

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Ratio Tailpipe : Total Emission Rate TSP PM (g/s)	PM10 PM10 (g/s)	PM2.5 PM2.5 (g/s)	Source ID	# of Volume Sources g/hr	# of Volume Sources g/vkt	TSP PM	PM10 PM10
Mobile Equipment										**Mobile Equipment**				
PR01	Main Entrance Road	1	1	206	10	100%	4.89E-01	8.81E-01	8.01E-01	PR01	11	11	5.2E-05	2.9E-05
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	3.61E-01	8.14E-01	7.04E-01	PR01Z	11	11	4.1E-05	1.8E-05
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	2.27E-03	7.51E-03	9.88E-03	UR02Z	48	48	2.2E-03	6.8E-04
PR04A	Entrance to Scale House	1	1	487	10	100%	4.53E-01	8.65E-01	7.76E-01	PR04A	57	57	2.6E-05	1.3E-05
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	3.28E-01	7.90E-01	6.72E-01	PR04AZ	57	57	2.1E-05	8.6E-06
BR06	Across LF to WF southern section	1	1	603	10	100%	6.79E-02	3.60E-01	2.34E-01	BR06	70	70	1.7E-04	3.2E-05
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	1.64E-03	1.25E-02	4.18E-02	BR06Z	70	70	1.6E-04	2.1E-05
BR06Y	Across LF to WF southern section, final cap construction truck	1	1	603	10	100%	1.10E-03	8.40E-03	3.29E-02	BR06Y	70	70	1.6E-04	2.1E-05
PR08Z	WF to SS/LTF	1	1	307	10	100%	5.34E-02	3.04E-01	2.14E-01	PR08Z	36	36	7.5E-05	1.3E-05
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	2.43E-03	1.85E-02	7.01E-02	PR08Y	36	36	7.1E-05	9.4E-06
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	8.58E-04	2.85E-03	4.63E-03	UR09AZ	25	25	3.2E-03	9.7E-04
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	5.34E-05	1.78E-04	1.72E-03	UR09AY	25	25	3.2E-03	9.7E-04
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	6.09E-05	2.03E-04	1.96E-03	UR09BZ	21	21	3.6E-03	1.1E-03
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	4.80E-05	1.60E-04	1.55E-03	UR09BY	21	21	3.6E-03	1.1E-03
UR11Z	Across SS	1	1	242	10	100%	6.09E-05	2.03E-04	1.96E-03	UR11Z	28	28	3.7E-03	1.1E-03
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	4.80E-05	1.60E-04	1.55E-03	UR11Y	28	28	3.7E-03	1.1E-03
UR12	Across LF to WF northern section	1	1	575	10	100%	5.90E-03	2.55E-02	3.33E-02	UR12	67	67	2.0E-03	4.5E-04
UR12Z	Across LF to WF northern section, onsite equipment	1	1	575	10	100%	1.34E-04	5.90E-04	4.89E-03	UR12Z	67	67	2.0E-03	4.4E-04
UR12Y	Across LF to WF northern section, final cap construction truck	1	1	575	10	100%	8.93E-05	3.94E-04	3.81E-03	UR12Y	67	67	2.0E-03	4.4E-04
PR13Z	WF to LTF	1	1	165	10	100%	1.60E-01	5.96E-01	4.44E-01	PR13Z	19	19	1.0E-04	2.8E-05
PR14Z	WF to LTF	1	1	61	10	100%	1.60E-01	5.96E-01	4.44E-01	PR14Z	7	7	1.0E-04	2.8E-05
UR17Z	Across CDA	1	1	90	10	100%	3.77E-05	1.25E-04	1.22E-03	UR17Z	10	10	3.4E-03	1.0E-03
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	4.01E-05	1.32E-04	1.25E-03	UR18Z	5	5	3.5E-03	1.1E-03
PR04B	Scale House to WF	1	1	681	10	100%	4.13E-01	8.45E-01	7.47E-01	PR04B	79	79	2.8E-05	1.4E-05
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	2.93E-01	7.62E-01	6.36E-01	PR04BZ	79	79	2.3E-05	9.0E-06
PR04C	Exit Road from WF	1	1	420	10	100%	4.13E-01	8.45E-01	7.47E-01	PR04C	49	49	2.8E-05	1.4E-05
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	2.93E-01	7.62E-01	6.36E-01	PR04CZ	49	49	2.3E-05	9.0E-06
										0				
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	n/a	n/a	n/a	IDLE01	1	1	9.7E-05	9.7E-05
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	n/a	n/a	n/a	IDLE02	1	1	9.7E-05	9.7E-05
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	1.00E+00	1.00E+00	1.00E+00	DOZE2	1	1	8.0E-04	8.0E-04
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	1.00E+00	1.00E+00	1.00E+00	DOZE4	1	1	2.2E-04	2.2E-04
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	1.00E+00	1.00E+00	1.00E+00	DOZE2CAP	1	1	1.4E-04	1.4E-04
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	1.00E+00	1.00E+00	1.00E+00	DOZE2SS	1	1	2.9E-04	2.9E-04

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes)

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

[5] Emissions are input on either a vehicle distance or power rating basis. Load factor applies only to emissions based on power ratings.

[6] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

Appendix 5A-S3-M-5.1b: Vehicle Emission Rates - Tailpipe Emissions, Mitigation Applied, P

Source ID	Description	Traffic Passes [2] Hourly (#/h)	Traffic Passes [2] Daily (#/d)	Segment Length [3] (m)	Mean Vehicle Speed (km/h)	Load Factor [4] (%)	Emission rate per volume source: PM2.5 PM25	Benzene 71-43-2	Ammonia 7664-41-7	Nitrogen Dioxide NO2	Nitrogen Oxides 10102-44-0	Sulphur Dioxide 7446-09-5	Carbon Dioxide 124-38-9	Methane 74-82-8	Nitrous Oxide 10024-97-2
Mobile Equipment															
PR01	Main Entrance Road	1	1	206	10	100%	4.2E-06	1.9E-09	2.0E-07	1.5E-05	3.8E-05	2.7E-08	7.3E-03	2.0E-07	4.4E-08
PR01Z	Main Entrance Road, onsite equipment	1	1	206	10	100%	2.8E-06	6.7E-09	2.1E-07	9.5E-06	2.4E-05	2.4E-08	6.0E-03	1.7E-07	4.3E-08
UR02Z	Access road to compost diversion area (CDA)	1	1	414	10	100%	6.8E-05	3.7E-09	9.4E-08	3.4E-06	8.5E-06	1.1E-08	2.5E-03	7.0E-08	1.9E-08
PR04A	Entrance to Scale House	1	1	487	10	100%	2.0E-06	8.8E-10	9.1E-08	6.8E-06	1.7E-05	1.2E-08	3.3E-03	9.1E-08	2.0E-08
PR04AZ	Entrance to Scale House, onsite equipment	1	1	487	10	100%	1.3E-06	3.1E-09	9.4E-08	4.3E-06	1.1E-05	1.1E-08	2.7E-03	7.7E-08	1.9E-08
BR06	Across LF to WF southern section	1	1	603	10	100%	6.5E-06	8.9E-10	9.2E-08	6.9E-06	1.7E-05	1.2E-08	3.4E-03	9.2E-08	2.0E-08
BR06Z	Across LF to WF southern section, onsite equipment	1	1	603	10	100%	5.2E-06	1.3E-08	2.6E-07	4.3E-08	6.6E-06	8.3E-08	3.1E-02	2.2E-08	3.7E-10
BR06Y	Across LF to WF southern section, final cap construction truck	1	1	603	10	100%	5.2E-06	1.0E-08	2.0E-07	0.0E+00	5.2E-06	6.6E-08	2.5E-02	1.7E-08	0.0E+00
PR08Z	WF to SS/LTF	1	1	307	10	100%	2.8E-06	7.2E-09	1.6E-07	2.5E-06	9.1E-06	4.1E-08	1.5E-02	5.3E-08	1.1E-08
PR08Y	WF to SS/LTF, final cap construction trucks	1	1	307	10	100%	2.4E-06	1.0E-08	2.0E-07	0.0E+00	5.1E-06	6.5E-08	2.5E-02	1.7E-08	0.0E+00
UR09AZ	WF to SS, to CDA turn off	1	1	211	10	100%	9.7E-05	7.8E-09	1.7E-07	1.8E-06	7.5E-06	4.4E-08	1.6E-02	4.7E-08	1.0E-08
UR09AY	WF to SS, to CDA turn off, final cap construction trucks	1	1	211	10	100%	9.7E-05	1.0E-08	2.0E-07	0.0E+00	5.1E-06	6.5E-08	2.5E-02	1.7E-08	0.0E+00
UR09BZ	WF to SS, after CDA turnoff	1	1	179	10	100%	1.1E-04	1.3E-08	2.5E-07	0.0E+00	6.5E-06	8.3E-08	3.1E-02	2.1E-08	0.0E+00
UR09BY	WF to SS, after CDA turnoff, final cap construction trucks	1	1	179	10	100%	1.1E-04	1.0E-08	2.0E-07	0.0E+00	5.1E-06	6.5E-08	2.5E-02	1.7E-08	0.0E+00
UR11Z	Across SS	1	1	242	10	100%	1.1E-04	1.3E-08	2.6E-07	0.0E+00	6.6E-06	8.4E-08	3.2E-02	2.2E-08	0.0E+00
UR11Y	Across SS, final cap construction trucks	1	1	242	10	100%	1.1E-04	1.0E-08	2.0E-07	0.0E+00	5.2E-06	6.6E-08	2.5E-02	1.7E-08	0.0E+00
UR12	Across LF to WF northern section	1	1	575	10	100%	4.6E-05	8.9E-10	9.2E-08	6.9E-06	1.7E-05	1.2E-08	3.3E-03	9.1E-08	2.0E-08
UR12Z	Across LF to WF northern section, onsite equipment	1	1	575	10	100%	4.5E-05	1.3E-08	2.5E-07	4.3E-08	6.6E-06	8.2E-08	3.1E-02	2.2E-08	3.6E-10
UR12Y	Across LF to WF northern section, final cap construction truck	1	1	575	10	100%	4.4E-05	1.0E-08	2.0E-07	0.0E+00	5.2E-06	6.6E-08	2.5E-02	1.7E-08	0.0E+00
PR13Z	WF to LTF	1	1	165	10	100%	4.9E-06	0.0E+00	9.8E-08	9.7E-06	2.4E-05	1.4E-08	4.2E-03	1.2E-07	2.3E-08
PR14Z	WF to LTF	1	1	61	10	100%	4.9E-06	0.0E+00	9.7E-08	9.7E-06	2.4E-05	1.4E-08	4.2E-03	1.2E-07	2.3E-08
UR17Z	Across CDA	1	1	90	10	100%	1.0E-04	9.7E-09	1.1E-07	0.0E+00	2.9E-06	3.5E-08	1.3E-02	1.6E-08	0.0E+00
UR18Z	Across WF, onsite equipment	1	1	45	10	100%	1.1E-04	9.9E-09	1.2E-07	3.5E-09	3.2E-06	3.8E-08	1.5E-02	1.6E-08	2.9E-11
PR04B	Scale House to WF	1	1	681	10	100%	2.0E-06	8.9E-10	9.2E-08	6.9E-06	1.7E-05	1.2E-08	3.4E-03	9.2E-08	2.0E-08
PR04BZ	Scale House to WF, onsite equipment	1	1	681	10	100%	1.4E-06	3.1E-09	9.5E-08	4.4E-06	1.1E-05	1.1E-08	2.8E-03	7.8E-08	2.0E-08
PR04C	Exit Road from WF	1	1	420	10	100%	2.0E-06	8.9E-10	9.2E-08	6.9E-06	1.7E-05	1.2E-08	3.3E-03	9.1E-08	2.0E-08
PR04CZ	Exit Road from WF, onsite equipment	1	1	420	10	100%	1.4E-06	3.1E-09	9.4E-08	4.4E-06	1.1E-05	1.1E-08	2.8E-03	7.7E-08	2.0E-08
IDLE01	Trucks idling at the Scale House	2	20	1	0	100%	8.9E-05	6.8E-07	1.9E-04	8.6E-03	2.2E-02	1.2E-05	3.0E+00	1.3E-04	4.7E-05
IDLE02	Trucks idling at the Working Face	2	20	1	0	100%	8.9E-05	6.8E-07	1.9E-04	8.6E-03	2.2E-02	1.2E-05	3.0E+00	1.3E-04	4.7E-05
DOZE2	Cat Dozers at WF, tailpipe	1	1	1	--	100%	7.8E-04	5.0E-05	7.8E-04	0.0E+00	2.1E-02	2.5E-04	9.6E+01	8.1E-05	0.0E+00
DOZE4	Cat Dozer at SS, tailpipe	1	1	1	--	100%	2.1E-04	1.4E-05	2.3E-04	0.0E+00	5.9E-03	7.3E-05	2.8E+01	2.3E-05	0.0E+00
DOZE2CAP	Cat Dozer at final cap face	1	1	1	--	100%	1.4E-04	1.1E-05	1.2E-04	0.0E+00	3.3E-03	3.9E-05	1.5E+01	1.7E-05	0.0E+00
DOZE2SS	Cat Excavator at clay stockpile	1	1	1	--	100%	2.8E-04	1.7E-05	3.3E-04	0.0E+00	8.5E-03	1.1E-04	4.1E+01	2.8E-05	0.0E+00

[1] ID should reflect Source ID or Route ID, as appropriate.

[2] Where applicable, this value reflects travel in both directions (e.g., 1 round-trip = 2 passes)

[3] Length of a specific road segment. A separate segment should be used whenever one or more parameters change.

[4] Load Factors from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", EPA-420-R-10-016, NR-005d, July 2010

[5] Emissions are input on either a vehicle distance or power rating basis. Load factor applies only to emissions based on power ratings.

[6] Applicable only for TSP, PM10 and PM2.5 emissions from mobile equipment. Emissions rates for NOx and stationary sources do not change.

5B

Summary of TSP Concentrations for Construction vs Landfill Operations

Appendix 5B: Summary of Total Suspended Particulate Matter Concentrations for Construction vs Landfill Operations

Contaminant	CAS #	Averaging Period	Criteria (µg/m³)	Background Concentration (µg/m³)	Scenario	Maximum Modelled Concentration from Landfill Operations (µg/m³)	Maximum Modelled Concentration from Construction Operations (µg/m³)	Maximum Modelled Concentration from Combined Operations (µg/m³)
Total Suspended Particulate	TSP	24-Hour	120	46	Preferred Alternative - Scenario 1	173.1	57.0	173.0
					Preferred Alternative - Scenario 2	142.2	57.0	142.2
					Preferred Alternative - Scenario 3	173.4	35.2	173.4

5C

Scenario 1 – Predicted Concentrations and Frequency Analysis, TSP, PM_{10}

Summary of Dust Dispersion Modelling Results

Contaminant	CAS #	Averaging Period	Criteria (µg/m³)	Background Concentration (µg/m³)	Preferred Alternative - Scenario 1				
					Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%)	Maximum Modelled Concentration With Background (µg/m³)	Percentage of Criteria With Background (%)	Receptor Location for Maximum Concentration
Total Suspended Particulate	TSP	24-Hour	120	46	142	118%	188	157%	R7
		Annual	60	24	10	16%	33	56%	R7
Particulate Matter <10µm	PM10	24-Hour	50	19	54	108%	73	146%	R7
Particulate Matter <2.5µm	PM2.5	24-Hour	27	12	7	27%	19	72%	R7
		Annual	8.8	7	1	9%	8	87%	R7

Summary of Dust Dispersion Modelling Results

Contaminant	CAS #	Averaging Period	Preferred Alternative - Scenario 1		
			Number of Receptors Potentially Affected [1]	Maximum Frequency of Excedance of Criteria at a Receptor [2]	Receptor Location for Maximum Frequency of Exceedance
Total Suspended Particulate	TSP	24-Hour	17	1.1%	R7
		Annual	0	0%	- -
Particulate Matter <10µm	PM10	24-Hour	13	0.9%	R7
Particulate Matter <2.5µm	PM2.5	24-Hour	0	0%	- -
		Annual	0	0%	- -

Notes:

[1] Number of sensitive receptors with maximum modelled concentrations (including background) that are greater than the criteria for each contaminant. There are a total of 24 residential receptors (applicable to all averaging periods) and 1 short-term receptor (applicable to 1-hour and 10-minute averaging periods only).

[2] Maximum percentage of time the criteria is exceeded at a sensitive receptor location.

Scenario 1 - End of Stage 1 of Preferred Alternative

Annual TSP Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 1				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
R1	3	5%	27	45%	6	10%	30	50%	90%	11%
R2	11	19%	35	59%	8	13%	31	52%	-33%	-11%
R3	7	12%	31	52%	6	9%	29	49%	-23%	-5%
R4	16	26%	40	66%	9	15%	33	55%	-43%	-17%
R5	6	10%	30	50%	5	8%	29	48%	-22%	-4%
R6	6	10%	30	50%	5	8%	29	48%	-19%	-4%
R7	6	10%	30	50%	10	16%	33	56%	60%	12%
R8	3	5%	27	45%	6	10%	30	49%	78%	9%
R9	6	10%	30	49%	7	12%	31	52%	22%	4%
R10	1	2%	25	42%	2	3%	26	43%	38%	2%
R11	2	3%	25	42%	2	4%	26	43%	46%	3%
R12	2	4%	26	44%	3	5%	27	45%	38%	3%
R13	3	4%	27	44%	4	6%	27	46%	34%	3%
R14	3	4%	26	44%	4	6%	27	46%	42%	4%
R15	2	3%	26	43%	2	4%	26	44%	32%	2%
R16	3	4%	26	44%	4	7%	28	47%	63%	6%
R17	4	6%	27	46%	7	12%	31	52%	108%	14%
R18	3	5%	27	45%	6	9%	30	49%	86%	10%
R19	3	5%	27	45%	5	9%	29	49%	81%	9%
R20	3	5%	27	44%	5	8%	29	48%	74%	8%
R21	3	4%	26	44%	4	7%	28	47%	67%	7%
R22	2	4%	26	44%	3	6%	27	45%	47%	4%
R23	2	4%	26	43%	3	5%	27	45%	40%	3%
R24	2	3%	26	43%	2	4%	26	44%	39%	3%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 60 µg/m³
[2] Average Background Concentration = 23.9 µg/m³

Scenario 1 - End of Stage 1 of Preferred Alternative

24-Hour TSP Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 1				Percentage Change from Existing Conditions to Preferred Alternative		Exceedances per Year [3]		
	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)	Existing Conditions	Preferred Alternative	Change from Existing Conditions to Preferred Alternative
R1	53	44%	99	83%	97	80%	142	119%	81%	44%	0	1	1
R2	150	125%	196	163%	77	64%	123	102%	-49%	-37%	3	<1	-3
R3	92	77%	138	115%	58	48%	104	86%	-37%	-25%	<1	0	-1
R4	220	183%	266	221%	88	73%	133	111%	-60%	-50%	6	<1	-5
R5	78	65%	123	103%	60	50%	106	89%	-22%	-14%	<1	0	0
R6	77	64%	123	103%	54	45%	100	83%	-30%	-19%	<1	0	0
R7	103	86%	149	124%	142	118%	188	157%	38%	27%	<1	4	3
R8	53	44%	99	82%	87	72%	133	111%	64%	34%	0	<1	1
R9	107	89%	152	127%	121	101%	167	139%	14%	10%	<1	2	1
R10	44	36%	90	75%	56	47%	102	85%	29%	14%	0	0	0
R11	35	29%	80	67%	51	43%	97	81%	48%	21%	0	0	0
R12	69	58%	115	96%	88	74%	134	112%	27%	16%	0	<1	0
R13	68	57%	114	95%	98	82%	144	120%	44%	26%	0	<1	1
R14	48	40%	94	78%	80	67%	126	105%	67%	34%	0	<1	0
R15	50	42%	96	80%	69	57%	114	95%	37%	19%	0	0	0
R16	60	50%	106	88%	84	70%	129	108%	39%	22%	0	<1	1
R17	45	37%	91	76%	131	109%	177	148%	194%	96%	0	2	2
R18	41	34%	87	73%	130	108%	176	146%	215%	102%	0	1	1
R19	49	40%	94	79%	88	74%	134	112%	82%	42%	0	<1	1
R20	38	31%	83	70%	78	65%	124	104%	109%	49%	0	<1	1
R21	35	29%	81	68%	79	66%	125	104%	125%	54%	0	<1	0
R22	44	36%	90	75%	84	70%	130	108%	92%	45%	0	<1	0
R23	47	39%	93	77%	81	68%	127	106%	74%	37%	0	<1	0
R24	55	46%	101	84%	71	59%	117	98%	29%	16%	0	0	0
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 120 µg/m³

[2] 90th Percentile Background Concentration = 46 µg/m³

[3] Exceedances per year have been rounded to the nearest full day.

Scenario 1 - End of Stage 1 of Preferred Alternative

24-Hour PM10 Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 1				Percentage Change from Existing Conditions to Preferred Alternative		Exceedances per Year [3]		
	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)	Existing Conditions	Preferred Alternative	Change from Existing Conditions to Preferred Alternative
R1	19	38%	38	77%	34	69%	54	107%	79%	39%	0	<1	1
R2	55	109%	74	148%	27	54%	46	93%	-50%	-37%	2	0	-2
R3	32	65%	52	103%	20	40%	39	78%	-38%	-24%	<1	0	0
R4	80	159%	99	198%	31	62%	50	100%	-61%	-49%	3	<1	-3
R5	27	55%	47	93%	21	42%	40	81%	-23%	-13%	0	0	0
R6	27	54%	46	93%	19	37%	38	76%	-31%	-18%	0	0	0
R7	36	73%	56	111%	54	108%	73	146%	49%	32%	<1	3	3
R8	18	36%	37	75%	33	65%	52	104%	80%	39%	0	<1	0
R9	35	71%	55	109%	43	85%	62	124%	21%	13%	<1	<1	1
R10	16	32%	35	70%	22	43%	41	82%	36%	16%	0	0	0
R11	12	24%	31	62%	20	39%	39	78%	66%	25%	0	0	0
R12	25	51%	45	89%	33	65%	52	104%	29%	16%	0	<1	0
R13	25	50%	44	89%	37	73%	56	112%	46%	26%	0	<1	0
R14	17	35%	37	73%	30	59%	49	98%	69%	33%	0	0	0
R15	19	37%	38	76%	26	51%	45	90%	37%	18%	0	0	0
R16	21	43%	41	81%	30	59%	49	98%	39%	20%	0	0	0
R17	17	33%	36	72%	45	90%	64	128%	172%	79%	0	1	1
R18	15	30%	34	68%	47	94%	66	132%	213%	93%	0	<1	1
R19	18	35%	37	74%	32	63%	51	102%	80%	38%	0	<1	0
R20	14	27%	33	66%	30	59%	49	98%	118%	49%	0	0	0
R21	13	26%	32	64%	31	63%	51	101%	143%	57%	0	<1	0
R22	16	33%	36	71%	33	66%	52	105%	103%	47%	0	<1	0
R23	18	35%	37	74%	32	64%	51	103%	83%	40%	0	<1	0
R24	21	41%	40	80%	28	55%	47	94%	34%	17%	0	0	0
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

[1] Criteria = 50 µg/m³

[2] 90th Percentile Background Concentration = 19 µg/m³

[3] Exceedances per year have been rounded to the nearest full day.

Scenario 1 - End of Stage 1 of Preferred Alternative

24-Hour PM2.5 Predicted Concentrations (CAAQS)

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 1				Percentage Change from Existing Conditions to Preferred Alternative		Exceedances per Year [4]		
	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³) [3]	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria with Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)	Existing Conditions	Preferred Alternative	Change from Existing Conditions to Preferred Alternative
R1	2	9%	15	54%	5	18%	17	63%	108%	18%	0	0	0
R2	7	26%	19	71%	3	13%	16	58%	-51%	-19%	0	0	0
R3	5	18%	17	63%	3	10%	15	55%	-44%	-13%	0	0	0
R4	9	33%	21	78%	4	14%	16	59%	-58%	-24%	0	0	0
R5	4	16%	17	61%	2	9%	15	54%	-43%	-11%	0	0	0
R6	5	17%	17	62%	2	9%	15	54%	-46%	-12%	0	0	0
R7	4	15%	16	61%	7	27%	19	72%	73%	19%	0	0	0
R8	3	11%	15	56%	5	17%	17	62%	61%	12%	0	0	0
R9	4	13%	16	58%	5	18%	17	63%	37%	8%	0	0	0
R10	2	8%	14	53%	3	10%	15	55%	27%	4%	0	0	0
R11	2	7%	14	52%	3	11%	15	56%	46%	6%	0	0	0
R12	3	12%	15	57%	4	15%	16	60%	26%	5%	0	0	0
R13	2	9%	15	54%	4	15%	16	60%	65%	11%	0	0	0
R14	3	10%	15	55%	4	13%	16	58%	32%	6%	0	0	0
R15	2	9%	15	54%	3	11%	15	56%	23%	4%	0	0	0
R16	2	9%	15	54%	4	16%	17	61%	76%	13%	0	0	0
R17	3	11%	15	56%	7	25%	19	70%	128%	25%	0	0	0
R18	3	10%	15	55%	6	23%	18	68%	122%	22%	0	0	0
R19	2	8%	14	53%	5	17%	17	62%	103%	16%	0	0	0
R20	2	8%	14	53%	5	17%	17	62%	108%	17%	0	0	0
R21	2	8%	14	53%	4	16%	17	61%	90%	14%	0	0	0
R22	2	8%	14	53%	4	13%	16	59%	63%	10%	0	0	0
R23	2	8%	14	53%	3	12%	16	58%	54%	8%	0	0	0
R24	2	8%	14	53%	3	9%	15	54%	23%	3%	0	0	0
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

[1] Criteria = 27 µg/m³

[2] 90th Percentile Background Concentration = 12 µg/m³

[3] Results based on the 3-year average of the annual 98th percentile of the daily 24-hour average concentrations

[4] Exceedances per year have been rounded to the nearest full day.

Scenario 1 - End of Stage 1 of Preferred Alternative

Annual PM2.5 Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 1				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
R1	0.3	3%	7.2	82%	0.5	6%	7.4	84%	63%	3%
R2	0.9	10%	7.8	88%	0.6	7%	7.5	85%	-34%	-4%
R3	0.6	7%	7.5	85%	0.4	5%	7.3	83%	-27%	-2%
R4	1.2	14%	8.1	92%	0.7	7%	7.5	86%	-45%	-7%
R5	0.5	6%	7.4	84%	0.4	4%	7.3	83%	-22%	-1%
R6	0.5	6%	7.4	84%	0.4	5%	7.3	83%	-23%	-2%
R7	0.5	5%	7.4	84%	0.8	9%	7.6	87%	60%	4%
R8	0.3	4%	7.2	82%	0.5	6%	7.4	84%	53%	2%
R9	0.4	5%	7.3	83%	0.5	6%	7.4	84%	23%	1%
R10	0.1	2%	7.0	80%	0.2	2%	7.1	80%	25%	1%
R11	0.2	2%	7.1	80%	0.2	2%	7.1	81%	30%	1%
R12	0.2	3%	7.1	81%	0.3	3%	7.2	82%	26%	1%
R13	0.3	3%	7.1	81%	0.3	4%	7.2	82%	26%	1%
R14	0.3	3%	7.1	81%	0.3	4%	7.2	82%	27%	1%
R15	0.2	2%	7.1	80%	0.2	3%	7.1	81%	28%	1%
R16	0.3	3%	7.2	81%	0.4	4%	7.3	83%	49%	2%
R17	0.4	4%	7.2	82%	0.6	7%	7.5	85%	76%	4%
R18	0.3	3%	7.2	82%	0.5	6%	7.4	84%	64%	3%
R19	0.3	3%	7.2	81%	0.4	5%	7.3	83%	56%	2%
R20	0.3	3%	7.2	81%	0.4	4%	7.3	83%	49%	2%
R21	0.3	3%	7.1	81%	0.4	4%	7.3	82%	44%	2%
R22	0.2	3%	7.1	81%	0.3	3%	7.2	82%	34%	1%
R23	0.2	2%	7.1	81%	0.3	3%	7.2	81%	31%	1%
R24	0.2	2%	7.1	80%	0.2	3%	7.1	81%	30%	1%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

[1] Criteria = 8.8 µg/m³

[2] Average Background Concentration = 7 µg/m³

Appendix 5C: Frequency Analysis, PM_{10}

RWDI Project #2101750

TCEC Preferred Alternative - Scenario 1 (End of Stage 1) - No Mitigation

Receptor Information					Maximum Predicted 24-Hour Concentration ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)	Maximum Predicted plus Background ($\mu g/m^3$)	Predicted Excursions Above Criteria	
								Events > 50 $\mu g/m^3$	
ID#	Description	X	Y	Z				Count	Frequency
R01	Residence	428327	4759333	1.5	34	19	54	3	0.2%
R02	Residence	429414	4759099	1.5	27	19	46	0	0.0%
R03	Residence	429921	4758864	1.5	20	19	39	0	0.0%
R04	Residence	429363	4759027	1.5	31	19	50	1	0.1%
R05	Residence	429934	4759043	1.5	21	19	40	0	0.0%
R06	Residence	430005	4758900	1.5	19	19	38	0	0.0%
R07	Residence	428174	4758398	1.5	54	19	73	16	0.9%
R08	Residence	427821	4758838	1.5	33	19	52	2	0.1%
R09	Residence	428197	4757771	1.5	43	19	62	5	0.3%
R10	Residence	428464	4756293	1.5	22	19	41	0	0.0%
R11	Residence	428874	4756180	1.5	20	19	39	0	0.0%
R12	Residence	429315	4756206	1.5	33	19	52	1	0.1%
R13	Residence	429640	4756198	1.5	37	19	56	2	0.1%
R14	Residence	430164	4756347	1.5	30	19	49	0	0.0%
R15	Residence	428283	4756641	1.5	26	19	45	0	0.0%
R16	Residence	427797	4759047	1.5	30	19	49	0	0.0%
R17	Residence	428305	4759209	1.5	45	19	64	7	0.4%
R18	Residence	428206	4759269	1.5	47	19	66	4	0.2%
R19	Residence	428305	4759399	1.5	32	19	51	2	0.1%
R20	Residence	428313	4759463	1.5	30	19	49	0	0.0%
R21	Residence	428336	4759518	1.5	31	19	51	1	0.1%
R22	Residence	428364	4759661	1.5	33	19	52	1	0.1%
R23	Residence	428368	4759744	1.5	32	19	51	1	0.1%
R24	Residence	428416	4759907	1.5	28	19	47	0	0.0%
STR1	Cemetery	428319	4757590	1.5	n/a	n/a	n/a	n/a	n/a

1826 Days of Meterological Data

Appendix 5C: Frequency Analysis, TSP

RWDI Project #2101750

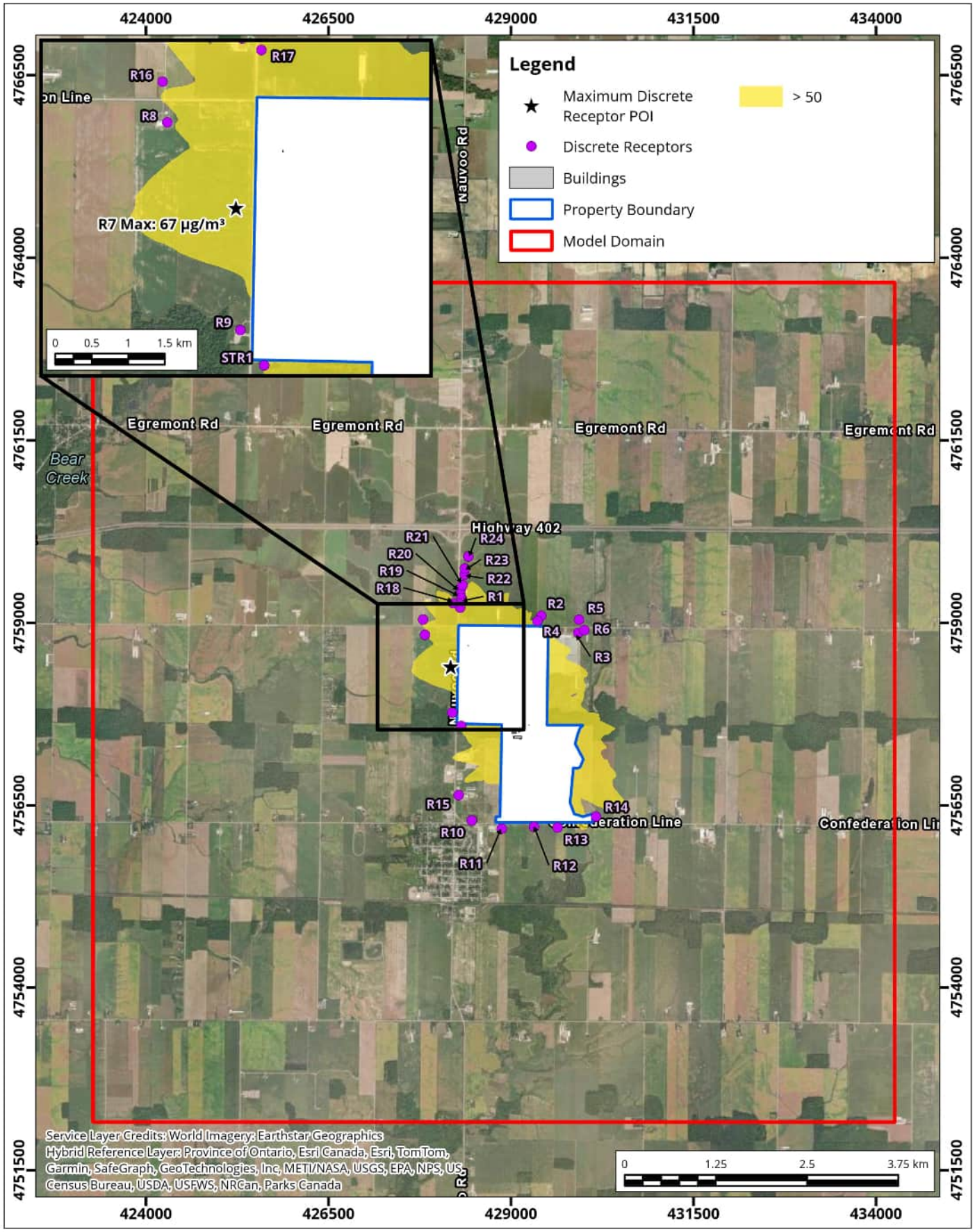
TCEC Preferred Alternative - Scenario 1 (End of Stage 1) - Without Mitigation

Receptor Information					Maximum Predicted 24-Hour Concentration (µg/m³)	Background Concentration (µg/m^3)	Maximum Predicted plus Background (µg/m^3)	Criteria (µg/m^3)	Predicted Excursions Above Criteria	
									Events > 120 µg/m^3	
ID#	Description	X	Y	Z					Count	Frequency
R01	Residence	428327	4759333	1.5	96.57	46	142.57	120	7	0.4%
R02	Residence	429414	4759099	1.5	76.68	46	122.68	120	2	0.1%
R03	Residence	429921	4758864	1.5	57.87	46	103.87	120	0	0.0%
R04	Residence	429363	4759027	1.5	87.56	46	133.56	120	4	0.2%
R05	Residence	429934	4759043	1.5	60.37	46	106.37	120	0	0.0%
R06	Residence	430005	4758900	1.5	53.68	46	99.68	120	0	0.0%
R07	Residence	428174	4758398	1.5	142.16	46	188.16	120	20	1.1%
R08	Residence	427821	4758838	1.5	86.82	46	132.82	120	4	0.2%
R09	Residence	428197	4757771	1.5	121.48	46	167.48	120	10	0.5%
R10	Residence	428464	4756293	1.5	56.32	46	102.32	120	0	0.0%
R11	Residence	428874	4756180	1.5	51.27	46	97.27	120	0	0.0%
R12	Residence	429315	4756206	1.5	88.43	46	134.43	120	1	0.1%
R13	Residence	429640	4756198	1.5	97.93	46	143.93	120	3	0.2%
R14	Residence	430164	4756347	1.5	80.20	46	126.20	120	1	0.1%
R15	Residence	428283	4756641	1.5	68.57	46	114.57	120	0	0.0%
R16	Residence	427797	4759047	1.5	83.52	46	129.52	120	3	0.2%
R17	Residence	428305	4759209	1.5	131.31	46	177.31	120	12	0.7%
R18	Residence	428206	4759269	1.5	129.79	46	175.79	120	7	0.4%
R19	Residence	428305	4759399	1.5	88.42	46	134.42	120	4	0.2%
R20	Residence	428313	4759463	1.5	78.49	46	124.49	120	3	0.2%
R21	Residence	428336	4759518	1.5	79.31	46	125.31	120	2	0.1%
R22	Residence	428364	4759661	1.5	83.73	46	129.73	120	1	0.1%
R23	Residence	428368	4759744	1.5	81.48	46	127.48	120	1	0.1%
R24	Residence	428416	4759907	1.5	71.22	46	117.22	120	0	0.0%
STR1	Cemetery	428319	4757590	1.5	N/A	46	N/A	120	N/A	N/A

1826 Days of Meterological Data

5D

Scenario 1 – Concentration Isopleths, TSP, PM_{10}, $PM_{2.5}$



Predicted 24-Hour PM_{10} Concentrations (in µg/m³)

Preferred Alternative - Scenario 1 Mitigation

Map Projection: NAD 1983 UTM Zone 17N

Twin Creeks Environmental Centre - Watford, ON

True North

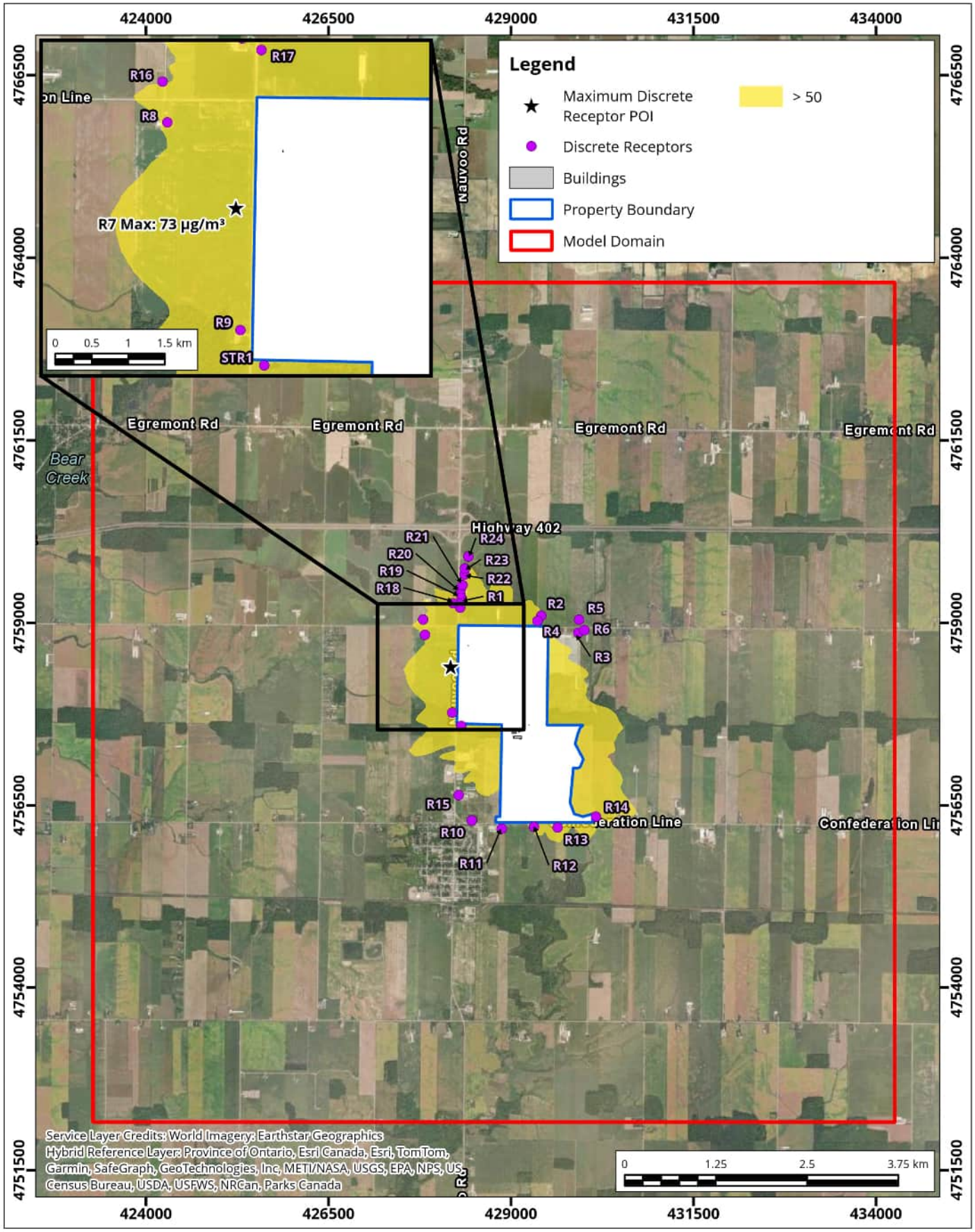
Criteria - 50 µg/m³

Background - 19.3 µg/m³

Project #: 2101750

Drawn by: RCL	
Approx. Scale:	1:72,000
Date Revised:	Nov 20, 2024

Map Document: C:\GIS\2101750_TwinCreeks\P2101750_TwinCreeks_Oct2024\P2101750_TwinCreeks_Scen1_Oct2024.aprx



Predicted 24-Hour PM_{10} Concentrations (in µg/m³)

Preferred Alternative - Scenario 1 Without Mitigation

Map Projection: NAD 1983 UTM Zone 17N

Twin Creeks Environmental Centre - Watford, ON

True North

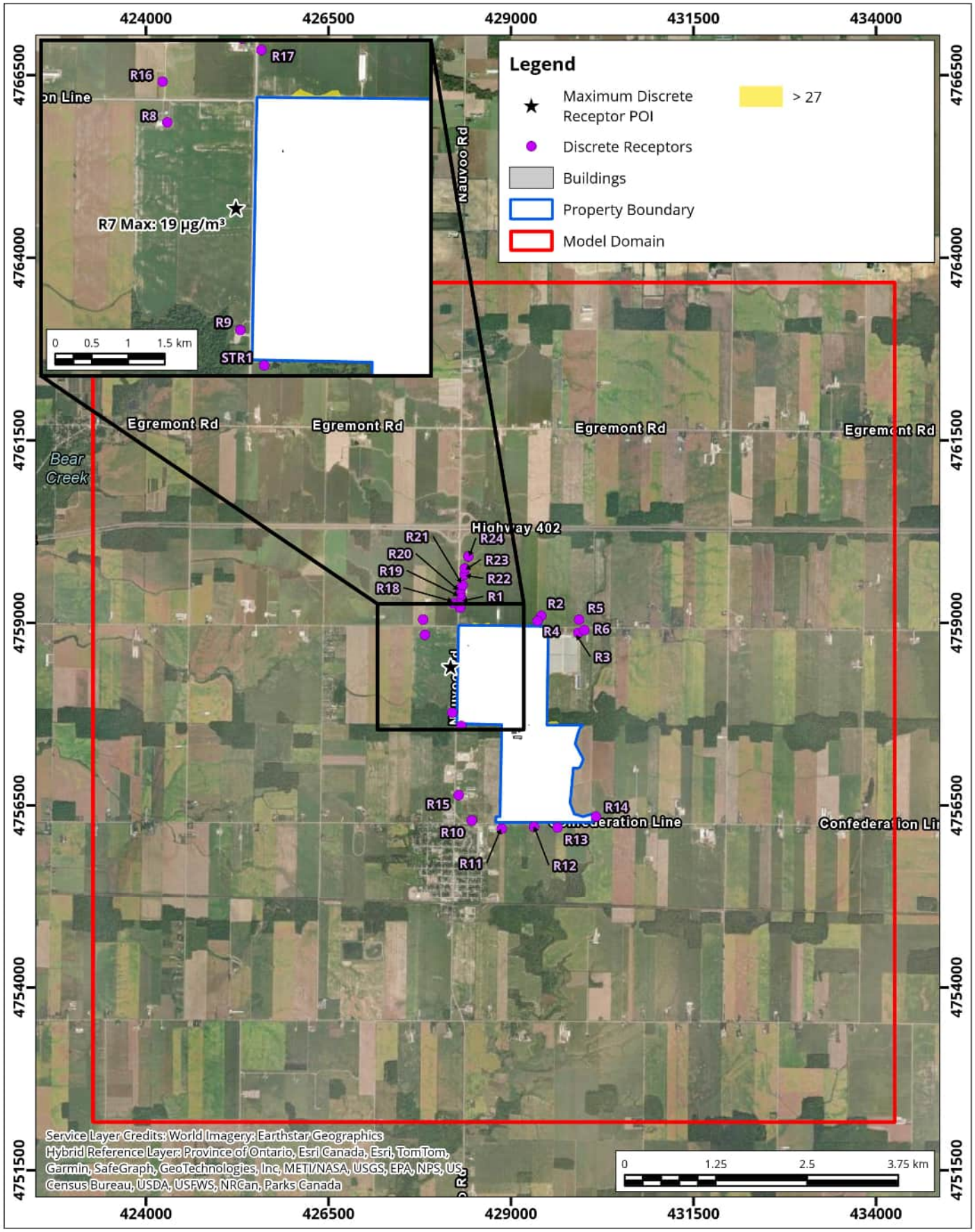
Criteria - 50 µg/m³

Background - 19.3 µg/m³

Project #: 2101750

Drawn by: RCL	
Approx. Scale:	1:72,000
Date Revised:	Nov 20, 2024

Map Document: C:\GIS\2101750_TwinCreeks\P2101750_TwinCreeks_Oct2024\P2101750_TwinCreeks_Scen1_Oct2024.aprx



Predicted 24-Hour $PM_{2.5}$ Concentrations (in µg/m³)

Preferred Alternative - Scenario 1 Mitigation

Map Projection: NAD 1983 UTM Zone 17N

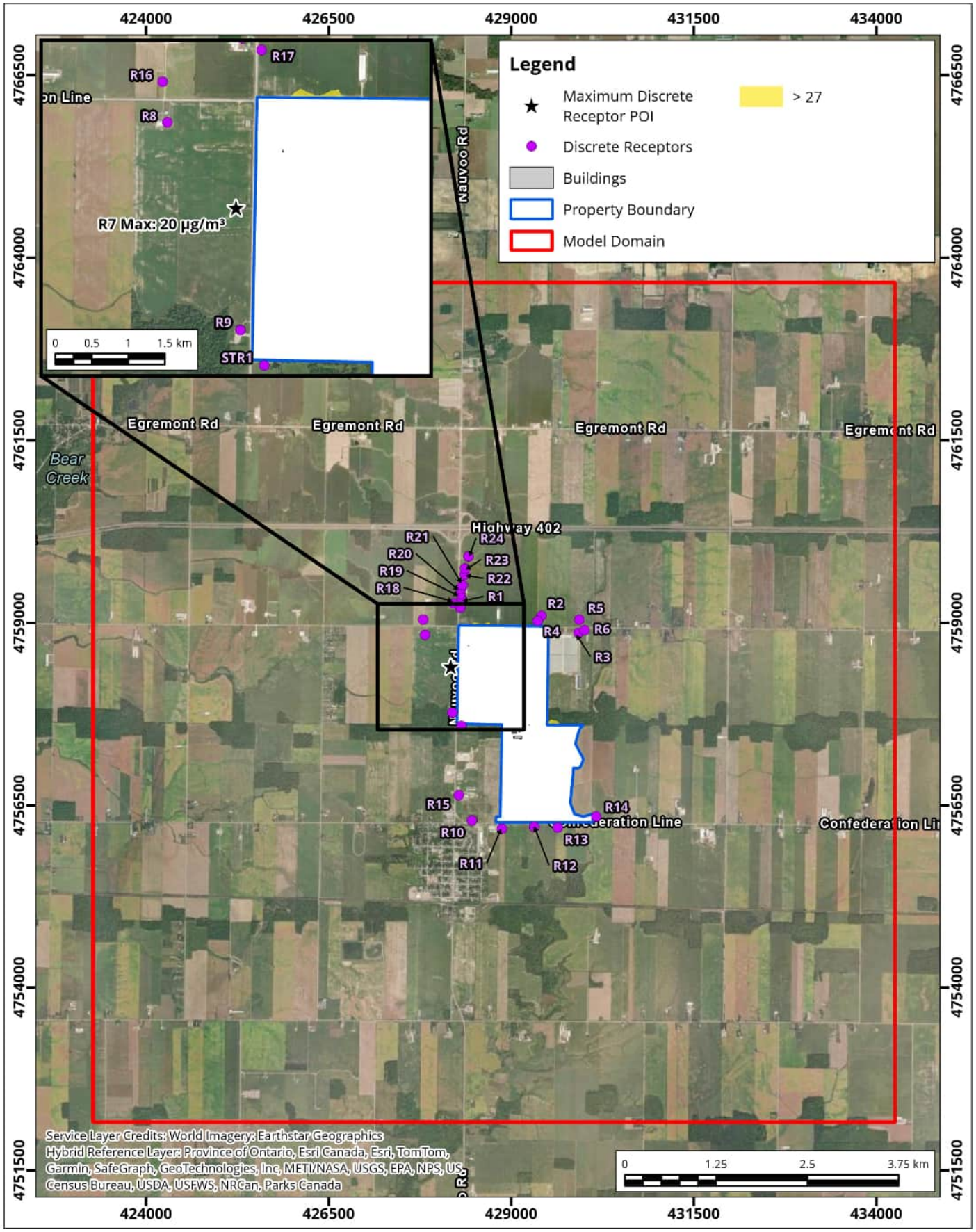
Twin Creeks Environmental Centre - Watford, ON

True North

Criteria - 27 µg/m³
Background - 12.2 µg/m³
Project #: 2101750

Drawn by: RCL	
Approx. Scale:	1:72,000
Date Revised:	Nov 20, 2024

Map Document: C:\GIS\2101750_TwinCreeks\P2101750_TwinCreeks_Oct2024\P2101750_TwinCreeks_Scen1_Oct2024.aprx



Predicted 24-Hour $PM_{2.5}$ Concentrations (in µg/m³)

Preferred Alternative - Scenario 1 Without Mitigation

True North

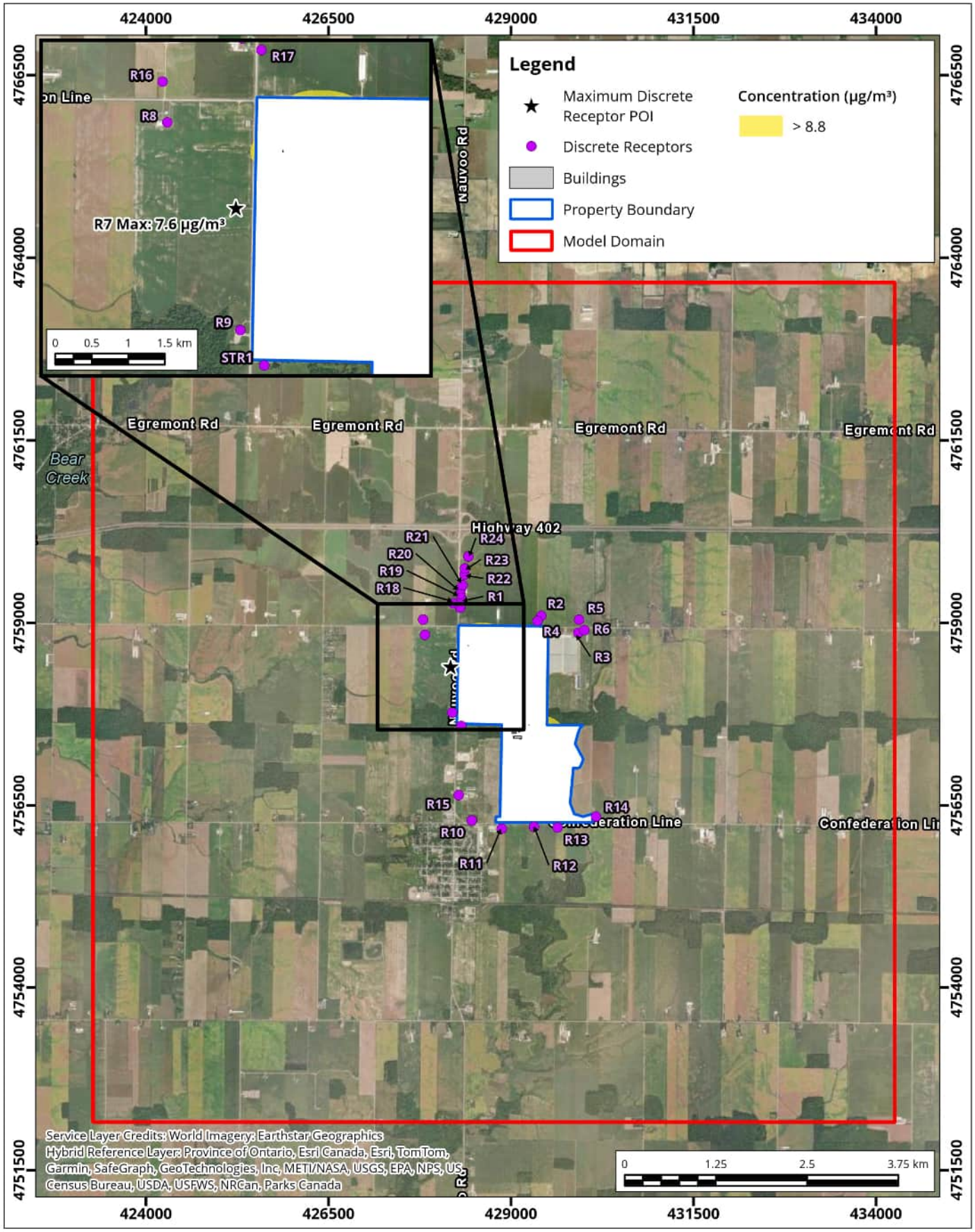
Map Projection: NAD 1983 UTM Zone 17N

Twin Creeks Environmental Centre - Watford, ON

Criteria - 27 µg/m³
Background - 12.2 µg/m³
Project #: 2101750

Drawn by: RCL	
Approx. Scale:	1:72,000
Date Revised:	Nov 20, 2024

Map Document: C:\GIS\2101750_TwinCreeks\P2101750_TwinCreeks_Oct2024\P2101750_TwinCreeks_Scen1_Oct2024.aprx



Predicted Annual $PM_{2.5}$ Concentrations (in µg/m^3)

Preferred Alternative - Scenario 1 Mitigation

Map Projection: NAD 1983 UTM Zone 17N

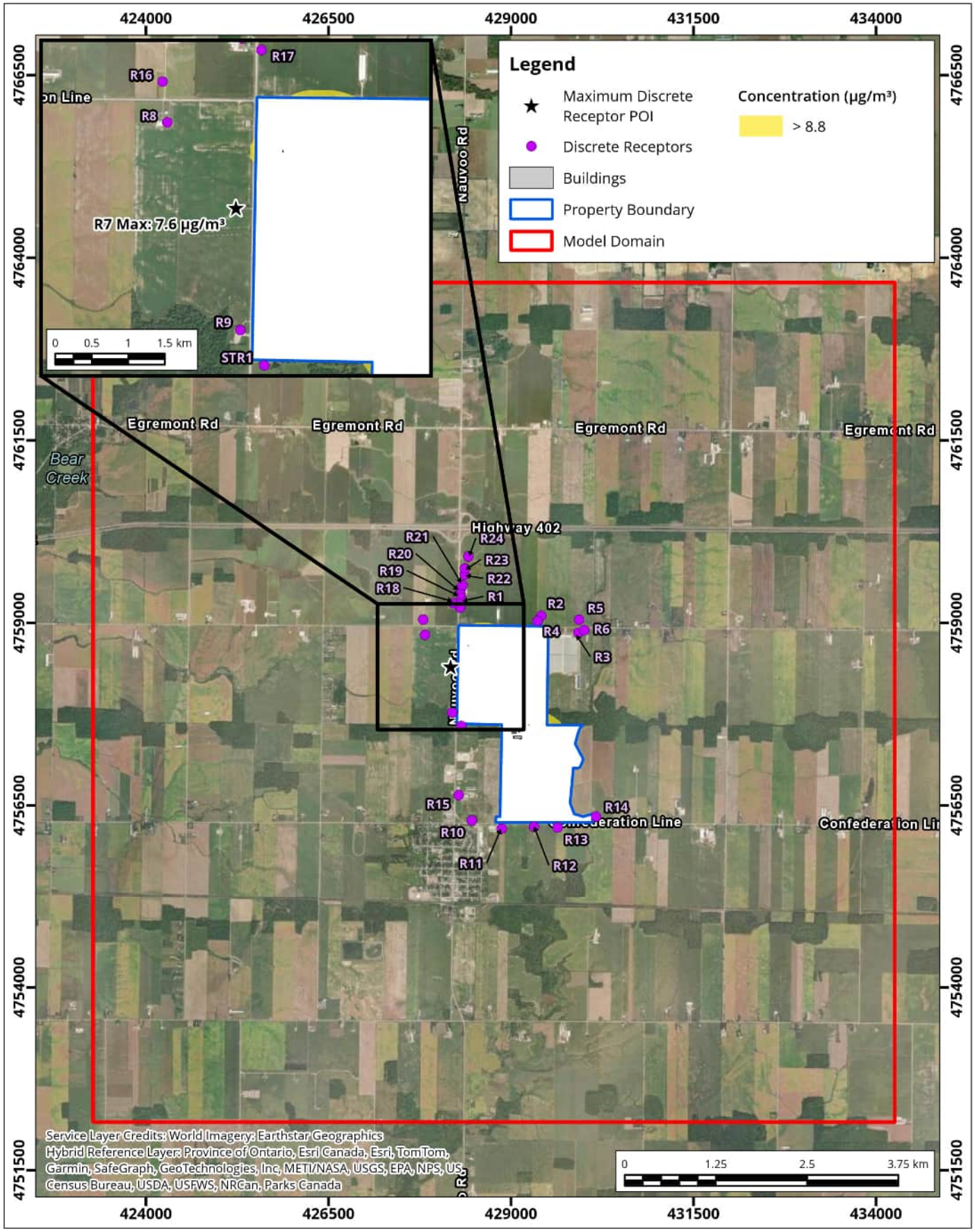
Twin Creeks Environmental Centre - Watford, ON

True North

Criteria - 8.8 µg/m³
Background - 6.9 µg/m³
Project #: 2101750

Drawn by: RCL	
Approx. Scale:	1:72,000
Date Revised:	Nov 20, 2024

Map Document: C:\GIS\2101750_TwinCreeks\P2101750_TwinCreeks_Oct2024\P2101750_TwinCreeks_Scen1_Oct2024.aprx



Predicted Annual $PM_{2.5}$ Concentrations (in µg/m^3)

Preferred Alternative - Scenario 1 Without Mitigation

True North

Map Projection: NAD 1983 UTM Zone 17N

Twin Creeks Environmental Centre - Watford, ON

Criteria - 8.8 µg/m³
Background - 6.9 µg/m³
Project #: 2101750

Drawn by: RCL	
Approx. Scale:	1:72,000
Date Revised:	Nov 20, 2024

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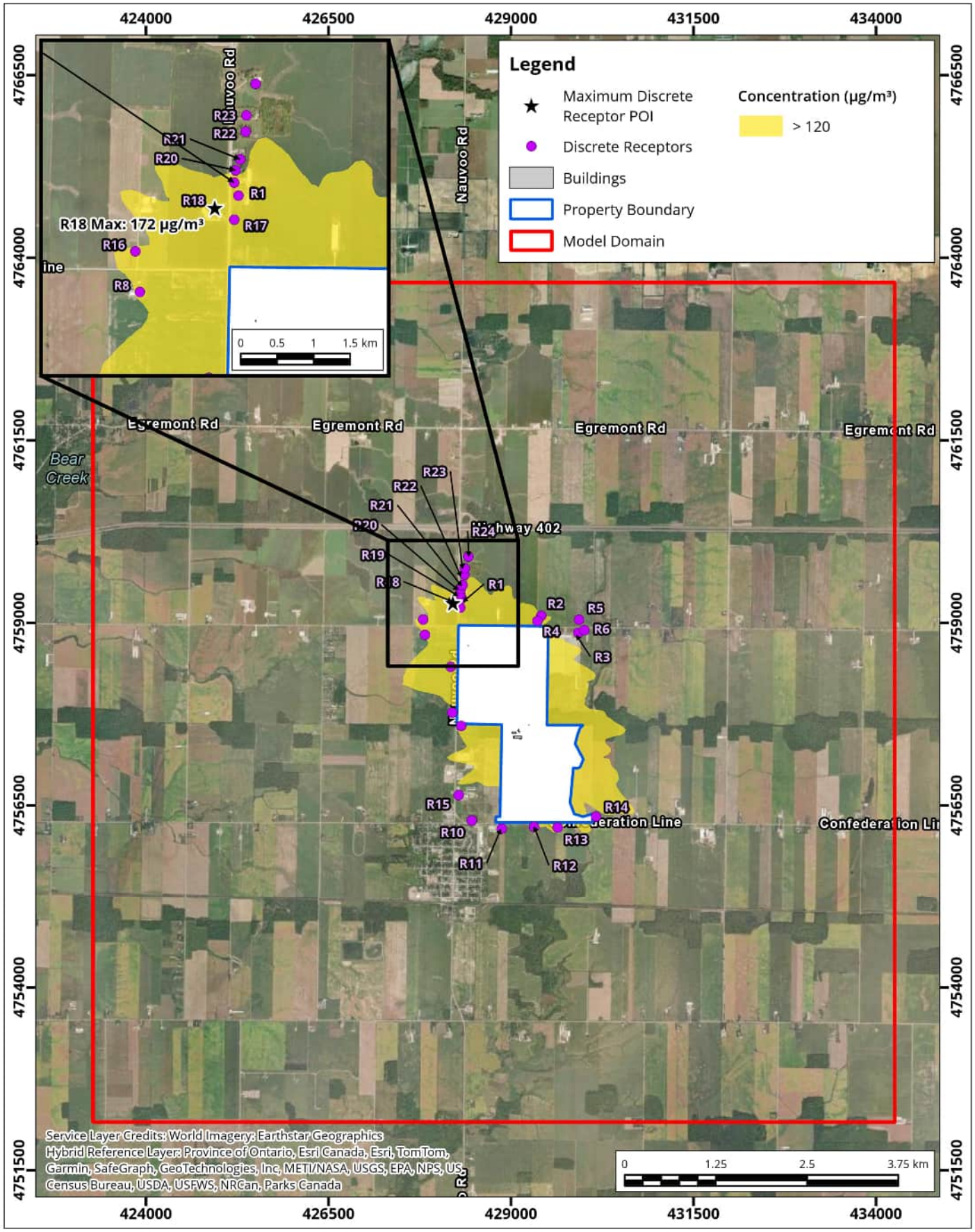


Predicted 24-Hour TSP Concentrations (in µg/m³)

Preferred Alternative - Scenario 1 With Mitigation

Map Projection: NAD 1983 UTM Zone 17N

Twin Creeks Environmental Centre - Watford, ON

True North

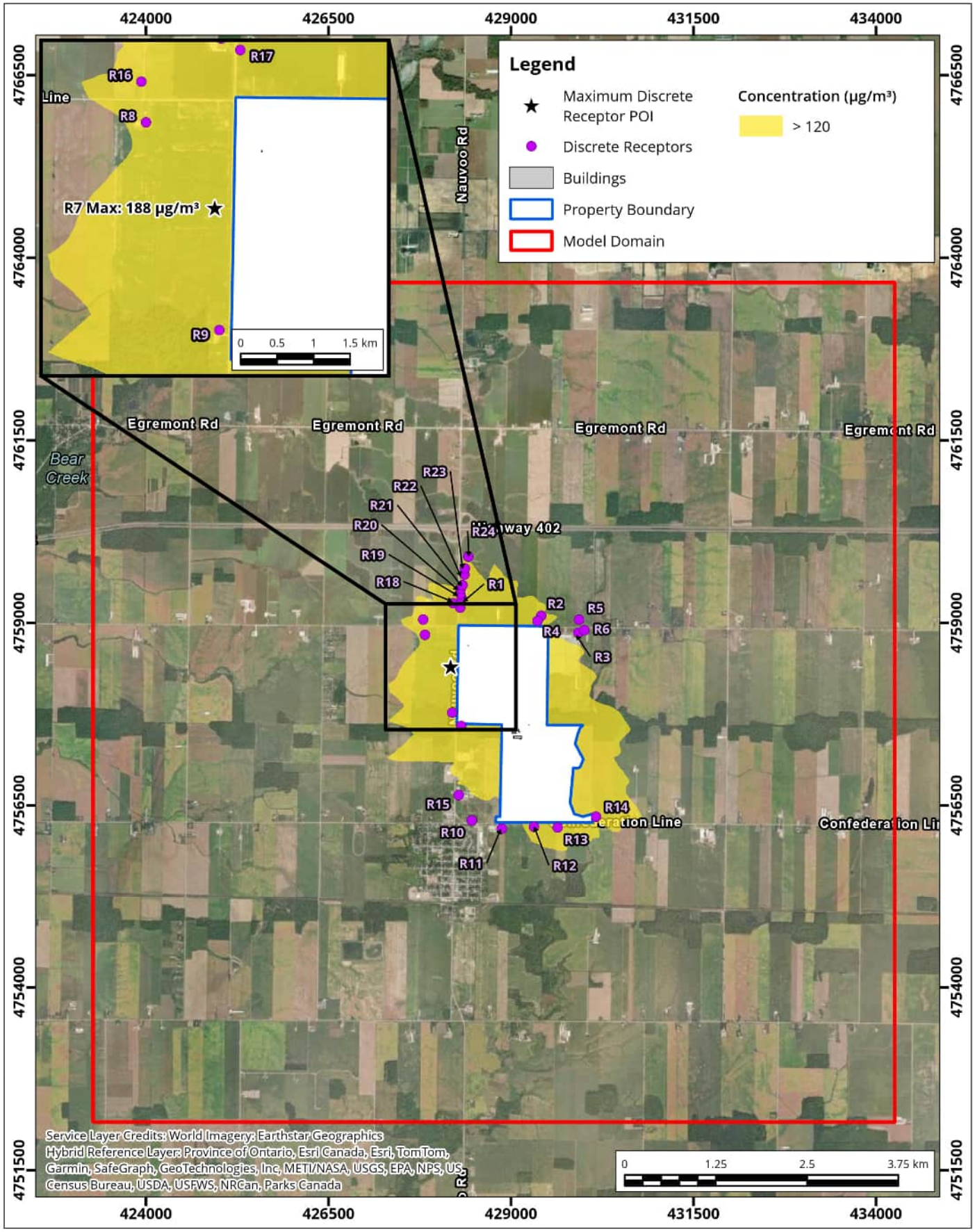
Criteria - 120 µg/m³

Background - 24 µg/m³

Project #: 2101750

Drawn by: RCL	
Approx. Scale:	1:72,000
Date Revised:	Nov 20, 2024

Map Document: C:\GIS\2101750_TwinCreeks\P2101750_TwinCreeks_Oct2024\P2101750_TwinCreeks_Scen1_Oct2024.aprx



Predicted 24-Hour TSP Concentrations (in µg/m³)

Preferred Alternative - Scenario 1 Without Mitigation

True North

Map Projection: NAD 1983 UTM Zone 17N

Twin Creeks Environmental Centre - Watford, ON

Criteria - 120 µg/m³
Background - 46 µg/m³
Project #: 2101750

Drawn by: RCL	
Approx. Scale:	1:72,000
Date Revised:	Nov 20, 2024

Map Document: C:\GIS\2101750_TwinCreeks\P2101750_TwinCreeks_Oct2024\P2101750_TwinCreeks_Scen1_Oct2024.aprx

5E

Scenario 2 – Predicted Concentrations and Frequency Analysis, TSP, PM_{10}

Summary of Dust Dispersion Modelling Results

Contaminant	CAS #	Averaging Period	Criteria (µg/m³)	Background Concentration (µg/m³)	Preferred Alternative - Scenario 2				
					Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%)	Maximum Modelled Concentration With Background (µg/m³)	Percentage of Criteria With Background (%)	Receptor Location for Maximum Concentration
Total Suspended Particulate	TSP	24-Hour	120	46	253	211%	299	249%	R4
		Annual	60	24	19	31%	42	71%	R4
Particulate Matter <10µm	PM10	24-Hour	50	19	87	175%	107	213%	R4
Particulate Matter <2.5µm	PM2.5	24-Hour	27	12	10	37%	22	82%	R4
		Annual	8.8	7	1	14%	8	93%	R4

Summary of Dust Dispersion Modelling Results

Contaminant	CAS #	Averaging Period	Preferred Alternative - Scenario 2		
			Number of Receptors Potentially Affected [1]	Maximum Frequency of Excedance of Criteria at a Receptor [2]	Receptor Location for Maximum Frequency of Exceedance
Total Suspended Particulate	TSP	24-Hour	7	2.6%	R4
		Annual	0	0%	- -
Particulate Matter <10µm	PM10	24-Hour	6	1.5%	R4
Particulate Matter <2.5µm	PM2.5	24-Hour	0	0%	- -
		Annual	0	0%	- -

Notes:

[1] Number of sensitive receptors with maximum modelled concentrations (including background) that are greater than the criteria for each contaminant. There are a total of 24 residential receptors (applicable to all averaging periods) and 1 short-term receptor (applicable to 1-hour and 10-minute averaging periods only).

[2] Maximum percentage of time the criteria is exceeded at a sensitive receptor location.

Scenario 2 - End of Stage 2 of Preferred Alternative - No Mitigation

Annual TSP Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 2				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
R1	3	5%	27	45%	4	6%	27	46%	13%	1%
R2	11	19%	35	59%	13	22%	37	62%	16%	5%
R3	7	12%	31	52%	8	13%	31	52%	3%	1%
R4	16	26%	40	66%	19	31%	42	71%	18%	7%
R5	6	10%	30	50%	7	11%	30	51%	7%	1%
R6	6	10%	30	50%	6	11%	30	50%	4%	1%
R7	6	10%	30	50%	7	11%	31	51%	11%	2%
R8	3	5%	27	45%	4	6%	28	46%	13%	2%
R9	6	10%	30	49%	6	11%	30	50%	10%	2%
R10	1	2%	25	42%	2	3%	26	43%	25%	1%
R11	2	3%	25	42%	2	3%	26	43%	26%	2%
R12	2	4%	26	44%	3	5%	27	45%	21%	2%
R13	3	4%	27	44%	3	5%	27	45%	21%	2%
R14	3	4%	26	44%	3	5%	27	45%	29%	3%
R15	2	3%	26	43%	2	4%	26	43%	21%	1%
R16	3	4%	26	44%	3	5%	27	45%	15%	1%
R17	4	6%	27	46%	4	7%	28	47%	14%	2%
R18	3	5%	27	45%	3	6%	27	45%	13%	1%
R19	3	5%	27	45%	3	6%	27	45%	13%	1%
R20	3	5%	27	44%	3	5%	27	45%	14%	1%
R21	3	4%	26	44%	3	5%	27	45%	14%	1%
R22	2	4%	26	44%	3	4%	26	44%	12%	1%
R23	2	4%	26	43%	2	4%	26	44%	12%	1%
R24	2	3%	26	43%	2	3%	26	43%	13%	1%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 60 µg/m³
[2] Average Background Concentration = 23.9 µg/m³

Scenario 2 - End of Stage 2 of Preferred Alternative - No Mitigation

24-Hour TSP Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 2				Percentage Change from Existing Conditions to Preferred Alternative		Exceedances per Year	
	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)	Existing Conditions	Preferred Alternative
R1	53	44%	99	83%	51	42%	96	80%	-5%	-3%	0	0
R2	150	125%	196	163%	198	165%	243	203%	32%	24%	3	5
R3	92	77%	138	115%	71	59%	117	98%	-23%	-15%	<1	0
R4	220	183%	266	221%	253	211%	299	249%	15%	12%	6	10
R5	78	65%	123	103%	75	62%	121	101%	-3%	-2%	<1	<1
R6	77	64%	123	103%	67	56%	113	94%	-14%	-9%	<1	0
R7	103	86%	149	124%	139	116%	185	154%	36%	25%	<1	1
R8	53	44%	99	82%	68	57%	114	95%	30%	16%	0	0
R9	107	89%	152	127%	124	104%	170	142%	17%	12%	<1	2
R10	44	36%	90	75%	61	51%	106	89%	39%	19%	0	0
R11	35	29%	80	67%	46	39%	92	77%	34%	14%	0	0
R12	69	58%	115	96%	85	71%	131	109%	22%	13%	0	<1
R13	68	57%	114	95%	90	75%	136	113%	32%	19%	0	<1
R14	48	40%	94	78%	63	53%	109	91%	33%	17%	0	0
R15	50	42%	96	80%	62	52%	108	90%	25%	13%	0	0
R16	60	50%	106	88%	64	53%	110	92%	6%	4%	0	0
R17	45	37%	91	76%	50	41%	96	80%	11%	6%	0	0
R18	41	34%	87	73%	46	38%	92	77%	11%	5%	0	0
R19	49	40%	94	79%	49	41%	95	79%	2%	1%	0	0
R20	38	31%	83	70%	42	35%	88	74%	13%	6%	0	0
R21	35	29%	81	68%	39	33%	85	71%	11%	5%	0	0
R22	44	36%	90	75%	44	37%	90	75%	1%	1%	0	0
R23	47	39%	93	77%	41	34%	87	72%	-13%	-6%	0	0
R24	55	46%	101	84%	48	40%	94	78%	-14%	-7%	0	0
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 120 µg/m³

[2] 90th Percentile Background Concentration = 46 µg/m³

[3] Exceedances per year have been rounded to the nearest full day.

Scenario 2 - End of Stage 2 of Preferred Alternative - No Mitigation

24-Hour PM10 Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 2				Percentage Change from Existing Conditions to Preferred Alternative		Exceedances per Year	
	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)	Existing Conditions	Preferred Alternative
R1	19	38%	38	77%	19	37%	38	76%	-3%	-1%	<1	0
R2	55	109%	74	148%	69	138%	88	177%	26%	19%	11	3
R3	32	65%	52	103%	25	51%	45	89%	-22%	-14%	6	0
R4	80	159%	99	198%	87	175%	107	213%	10%	8%	17	6
R5	27	55%	47	93%	27	54%	46	92%	-2%	-1%	4	0
R6	27	54%	46	93%	24	48%	43	86%	-12%	-7%	4	0
R7	36	73%	56	111%	52	104%	71	142%	43%	28%	3	<1
R8	18	36%	37	75%	25	51%	45	89%	39%	19%	<1	0
R9	35	71%	55	109%	44	87%	63	126%	23%	15%	4	<1
R10	16	32%	35	70%	23	46%	42	85%	46%	21%	<1	0
R11	12	24%	31	62%	17	34%	36	72%	43%	16%	0	0
R12	25	51%	45	89%	32	63%	51	102%	25%	14%	1	<1
R13	25	50%	44	89%	34	67%	53	106%	34%	19%	<1	<1
R14	17	35%	37	73%	23	47%	43	85%	34%	16%	<1	0
R15	19	37%	38	76%	23	46%	42	85%	24%	12%	<1	0
R16	21	43%	41	81%	24	47%	43	86%	11%	6%	<1	0
R17	17	33%	36	72%	19	38%	38	76%	15%	7%	<1	0
R18	15	30%	34	68%	17	34%	36	73%	15%	6%	<1	0
R19	18	35%	37	74%	18	36%	38	75%	4%	2%	<1	0
R20	14	27%	33	66%	16	31%	35	70%	16%	6%	<1	0
R21	13	26%	32	64%	15	30%	34	69%	18%	7%	0	0
R22	16	33%	36	71%	16	33%	36	71%	0%	0%	0	0
R23	18	35%	37	74%	15	30%	34	69%	-14%	-7%	0	0
R24	21	41%	40	80%	18	37%	38	75%	-11%	-6%	0	0
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	n/a	N/A

Notes:
[1] Criteria = 50 µg/m³
[2] 90th Percentile Background Concentration = 19 µg/m³

Scenario 2 - End of Stage 2 of Preferred Alternative - No Mitigation

24-Hour PM2.5 Predicted Concentrations (CAAQS)

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 2				Percentage Change from Existing Conditions to Preferred Alternative		Exceedances per Year	
	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³) [3]	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria with Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)	Existing Conditions	Preferred Alternative
R1	2	9%	15	54%	3	10%	15	55%	8%	1%	0	0
R2	7	26%	19	71%	8	28%	20	73%	7%	2%	0	0
R3	5	18%	17	63%	4	15%	16	60%	-18%	-5%	0	0
R4	9	33%	21	78%	10	37%	22	82%	11%	5%	0	0
R5	4	16%	17	61%	4	14%	16	59%	-12%	-3%	0	0
R6	5	17%	17	62%	4	14%	16	59%	-18%	-5%	0	0
R7	4	15%	16	61%	4	16%	17	62%	6%	2%	0	0
R8	3	11%	15	56%	3	11%	15	56%	6%	1%	0	0
R9	4	13%	16	58%	4	17%	17	62%	25%	6%	0	0
R10	2	8%	14	53%	3	10%	15	55%	23%	3%	0	0
R11	2	7%	14	52%	2	8%	14	53%	14%	2%	0	0
R12	3	12%	15	57%	4	14%	16	59%	24%	5%	0	0
R13	2	9%	15	54%	3	11%	15	57%	28%	5%	0	0
R14	3	10%	15	55%	3	11%	15	57%	16%	3%	0	0
R15	2	9%	15	54%	3	11%	15	56%	13%	2%	0	0
R16	2	9%	15	54%	3	10%	15	56%	14%	2%	0	0
R17	3	11%	15	56%	3	12%	15	57%	4%	1%	0	0
R18	3	10%	15	55%	3	11%	15	56%	5%	1%	0	0
R19	2	8%	14	53%	2	9%	15	54%	6%	1%	0	0
R20	2	8%	14	53%	2	9%	15	54%	11%	2%	0	0
R21	2	8%	14	53%	2	9%	15	54%	10%	2%	0	0
R22	2	8%	14	53%	2	9%	15	54%	8%	1%	0	0
R23	2	8%	14	53%	2	8%	14	54%	5%	1%	0	0
R24	2	8%	14	53%	2	7%	14	52%	-6%	-1%	0	0
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

[1] Criteria = 27 µg/m³

[2] 90th Percentile Background Concentration = 12 µg/m³

[3] Results based on the 3-year average of the annual 98th percentile of the daily 24-hour average concentrations

Scenario 2 - End of Stage 2 of Preferred Alternative - No Mitigation

Annual PM2.5 Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 2				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
R1	0.3	3%	7.2	82%	0.3	4%	7.2	82%	10%	0%
R2	0.9	10%	7.8	88%	0.9	10%	7.8	89%	4%	0%
R3	0.6	7%	7.5	85%	0.6	6%	7.5	85%	-6%	0%
R4	1.2	14%	8.1	92%	1.3	14%	8.1	93%	6%	1%
R5	0.5	6%	7.4	84%	0.5	6%	7.4	84%	0%	0%
R6	0.5	6%	7.4	84%	0.5	6%	7.4	84%	-4%	0%
R7	0.5	5%	7.4	84%	0.5	6%	7.4	84%	10%	1%
R8	0.3	4%	7.2	82%	0.4	4%	7.2	82%	7%	0%
R9	0.4	5%	7.3	83%	0.5	5%	7.4	84%	10%	1%
R10	0.1	2%	7.0	80%	0.2	2%	7.0	80%	10%	0%
R11	0.2	2%	7.1	80%	0.2	2%	7.1	80%	11%	0%
R12	0.2	3%	7.1	81%	0.3	3%	7.2	81%	9%	0%
R13	0.3	3%	7.1	81%	0.3	3%	7.2	81%	10%	0%
R14	0.3	3%	7.1	81%	0.3	3%	7.2	81%	11%	0%
R15	0.2	2%	7.1	80%	0.2	2%	7.1	81%	9%	0%
R16	0.3	3%	7.2	81%	0.3	3%	7.2	82%	7%	0%
R17	0.4	4%	7.2	82%	0.4	4%	7.3	83%	9%	0%
R18	0.3	3%	7.2	82%	0.3	4%	7.2	82%	8%	0%
R19	0.3	3%	7.2	81%	0.3	3%	7.2	82%	10%	0%
R20	0.3	3%	7.2	81%	0.3	3%	7.2	82%	10%	0%
R21	0.3	3%	7.1	81%	0.3	3%	7.2	81%	10%	0%
R22	0.2	3%	7.1	81%	0.2	3%	7.1	81%	8%	0%
R23	0.2	2%	7.1	81%	0.2	3%	7.1	81%	8%	0%
R24	0.2	2%	7.1	80%	0.2	2%	7.1	80%	8%	0%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 8.8 µg/m³
[2] Average Background Concentration = 7 µg/m³

Appendix 5E: Frequency Analysis, PM10

RWDI Project #2101750

TCEC Preferred Alternative - Scenario 2 (End of Stage 2) - Without Mitigation

Receptor Information					Maximum Predicted 24-Hour Concentration (µg/m³)	Background Concentration (µg/m³)	Maximum Predicted plus Background (µg/m³)	Predicted Excursions Above Criteria	
								Events > 50 µg/m³	
ID#	Description	X	Y	Z				Count	Frequency
R01	Residence	428327	4759333	1.5	19	19	38	0	0.0%
R02	Residence	429414	4759099	1.5	69	19	88	15	0.8%
R03	Residence	429921	4758864	1.5	25	19	45	0	0.0%
R04	Residence	429363	4759027	1.5	87	19	107	28	1.5%
R05	Residence	429934	4759043	1.5	27	19	46	0	0.0%
R06	Residence	430005	4758900	1.5	24	19	43	0	0.0%
R07	Residence	428174	4758398	1.5	52	19	71	5	0.3%
R08	Residence	427821	4758838	1.5	25	19	45	0	0.0%
R09	Residence	428197	4757771	1.5	44	19	63	4	0.2%
R10	Residence	428464	4756293	1.5	23	19	42	0	0.0%
R11	Residence	428874	4756180	1.5	17	19	36	0	0.0%
R12	Residence	429315	4756206	1.5	32	19	51	1	0.1%
R13	Residence	429640	4756198	1.5	34	19	53	1	0.1%
R14	Residence	430164	4756347	1.5	23	19	43	0	0.0%
R15	Residence	428283	4756641	1.5	23	19	42	0	0.0%
R16	Residence	427797	4759047	1.5	24	19	43	0	0.0%
R17	Residence	428305	4759209	1.5	19	19	38	0	0.0%
R18	Residence	428206	4759269	1.5	17	19	36	0	0.0%
R19	Residence	428305	4759399	1.5	18	19	38	0	0.0%
R20	Residence	428313	4759463	1.5	16	19	35	0	0.0%
R21	Residence	428336	4759518	1.5	15	19	34	0	0.0%
R22	Residence	428364	4759661	1.5	16	19	36	0	0.0%
R23	Residence	428368	4759744	1.5	15	19	34	0	0.0%
R24	Residence	428416	4759907	1.5	18	19	38	0	0.0%
STR1	Cemetery	428319	4757590	1.5	n/a	n/a	n/a	n/a	n/a

1826 Days of Meterological Data

Appendix 5E: Frequency Analysis, TSP

RWDI Project #2101750

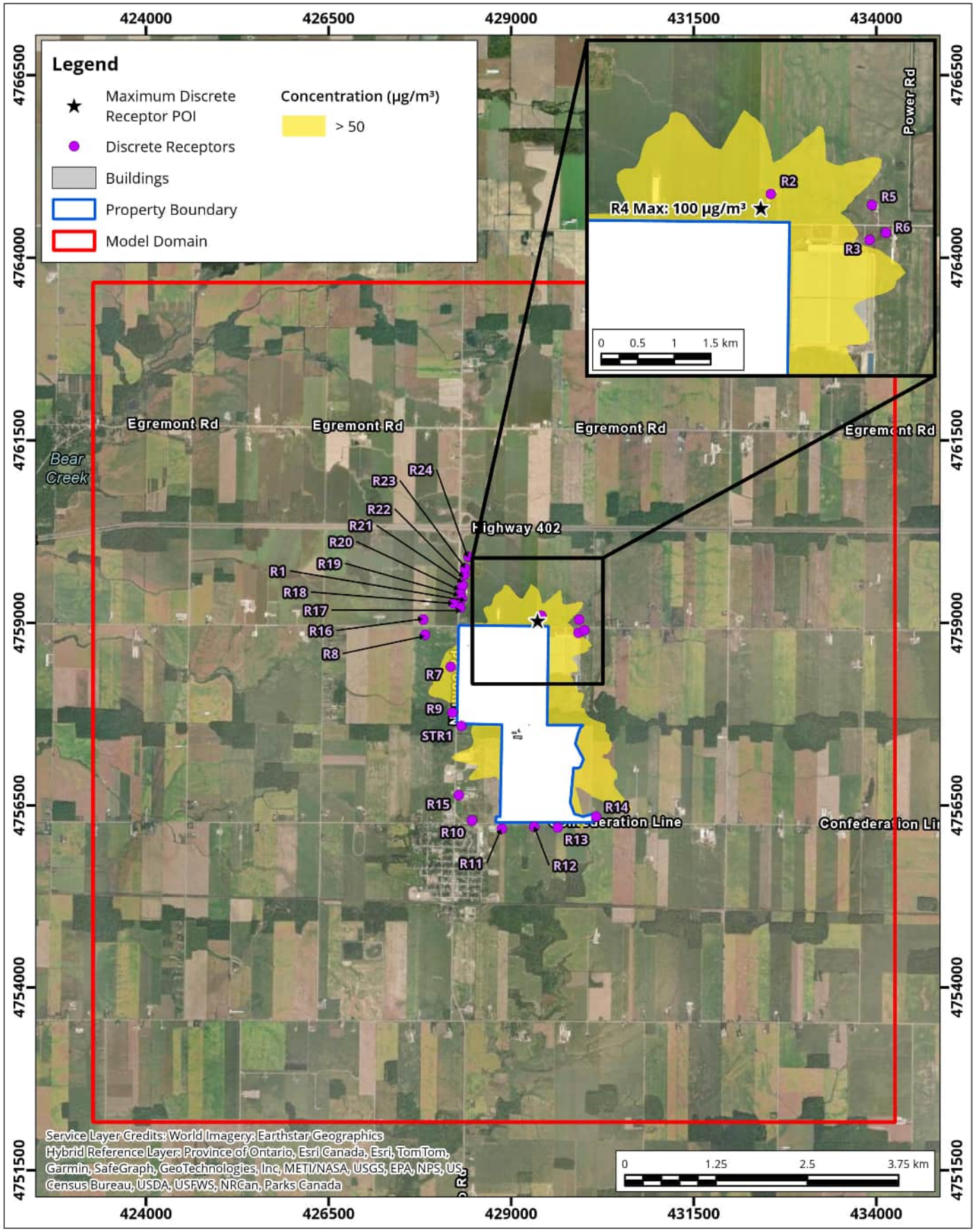
TCEC Preferred Alternative - Scenario 2 (End of Stage 2) - Without Mitigation

Receptor Information					Maximum Predicted 24-Hour Concentration (µg/m³)	Background Concentration (µg/m³)	Maximum Predicted plus Background (µg/m³)	Criteria (µg/m³)	Predicted Excursions Above Criteria	
ID#	Description	X	Y	Z					Events > 120 µg/m³	
									Count	Frequency
R01	Residence	428327	4759333	1.5	50.50	46.00	97	120	0	0.0%
R02	Residence	429414	4759099	1.5	197.55	46.00	244	120	25	1.4%
R03	Residence	429921	4758864	1.5	71.39	46.00	117	120	0	0.0%
R04	Residence	429363	4759027	1.5	252.83	46.00	299	120	48	2.6%
R05	Residence	429934	4759043	1.5	74.95	46.00	121	120	1	0.1%
R06	Residence	430005	4758900	1.5	66.63	46.00	113	120	0	0.0%
R07	Residence	428174	4758398	1.5	139.22	46.00	185	120	7	0.4%
R08	Residence	427821	4758838	1.5	68.48	46.00	114	120	0	0.0%
R09	Residence	428197	4757771	1.5	124.25	46.00	170	120	9	0.5%
R10	Residence	428464	4756293	1.5	60.60	46.00	107	120	0	0.0%
R11	Residence	428874	4756180	1.5	46.21	46.00	92	120	0	0.0%
R12	Residence	429315	4756206	1.5	84.83	46.00	131	120	1	0.1%
R13	Residence	429640	4756198	1.5	90.14	46.00	136	120	2	0.1%
R14	Residence	430164	4756347	1.5	63.49	46.00	109	120	0	0.0%
R15	Residence	428283	4756641	1.5	62.24	46.00	108	120	0	0.0%
R16	Residence	427797	4759047	1.5	64.00	46.00	110	120	0	0.0%
R17	Residence	428305	4759209	1.5	49.80	46.00	96	120	0	0.0%
R18	Residence	428206	4759269	1.5	45.92	46.00	92	120	0	0.0%
R19	Residence	428305	4759399	1.5	49.37	46.00	95	120	0	0.0%
R20	Residence	428313	4759463	1.5	42.46	46.00	88	120	0	0.0%
R21	Residence	428336	4759518	1.5	39.17	46.00	85	120	0	0.0%
R22	Residence	428364	4759661	1.5	44.14	46.00	90	120	0	0.0%
R23	Residence	428368	4759744	1.5	40.78	46.00	87	120	0	0.0%
R24	Residence	428416	4759907	1.5	47.76	46.00	94	120	0	0.0%
STR1	Cemetery	428319	4757590	1.5	N/A	46.00	N/A	120	N/A	N/A

1826 Days of Meterological Data

5F

Scenario 2 – Concentration Isopleths, TSP, PM_{10}, $PM_{2.5}$



Predicted 24-Hour PM_{10} Concentrations (in µg/m^3)

Preferred Alternative - Scenario 2 Mitigation

Map Projection: NAD 1983 UTM Zone 17N

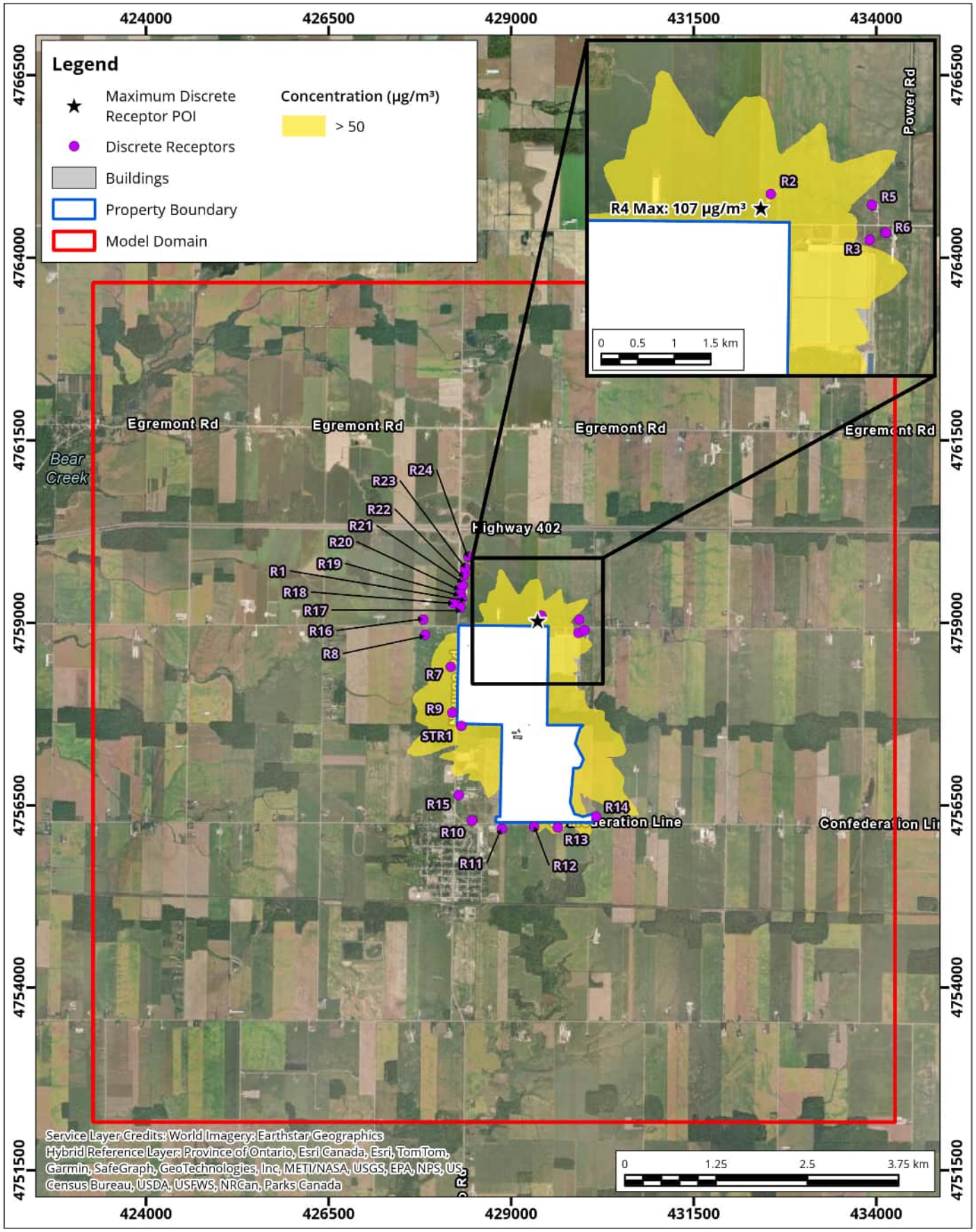
Twin Creeks Environmental Centre - Watford, ON

True North

Criteria - 50 µg/m³
Background - 19.3 µg/m³
Project #: 2101750

Drawn by: RCL	
Approx. Scale:	1:72,000
Date Revised:	Nov 20, 2024

Map Document: C:\GIS\2101750_TwinCreeks\P2101750_TwinCreeks_Oct2024\P2101750_TwinCreeks_Scen2_Oct2024.aprx



Predicted 24-Hour PM_{10} Concentrations (in µg/m³)

Preferred Alternative - Scenario 2 Without Mitigation

True North

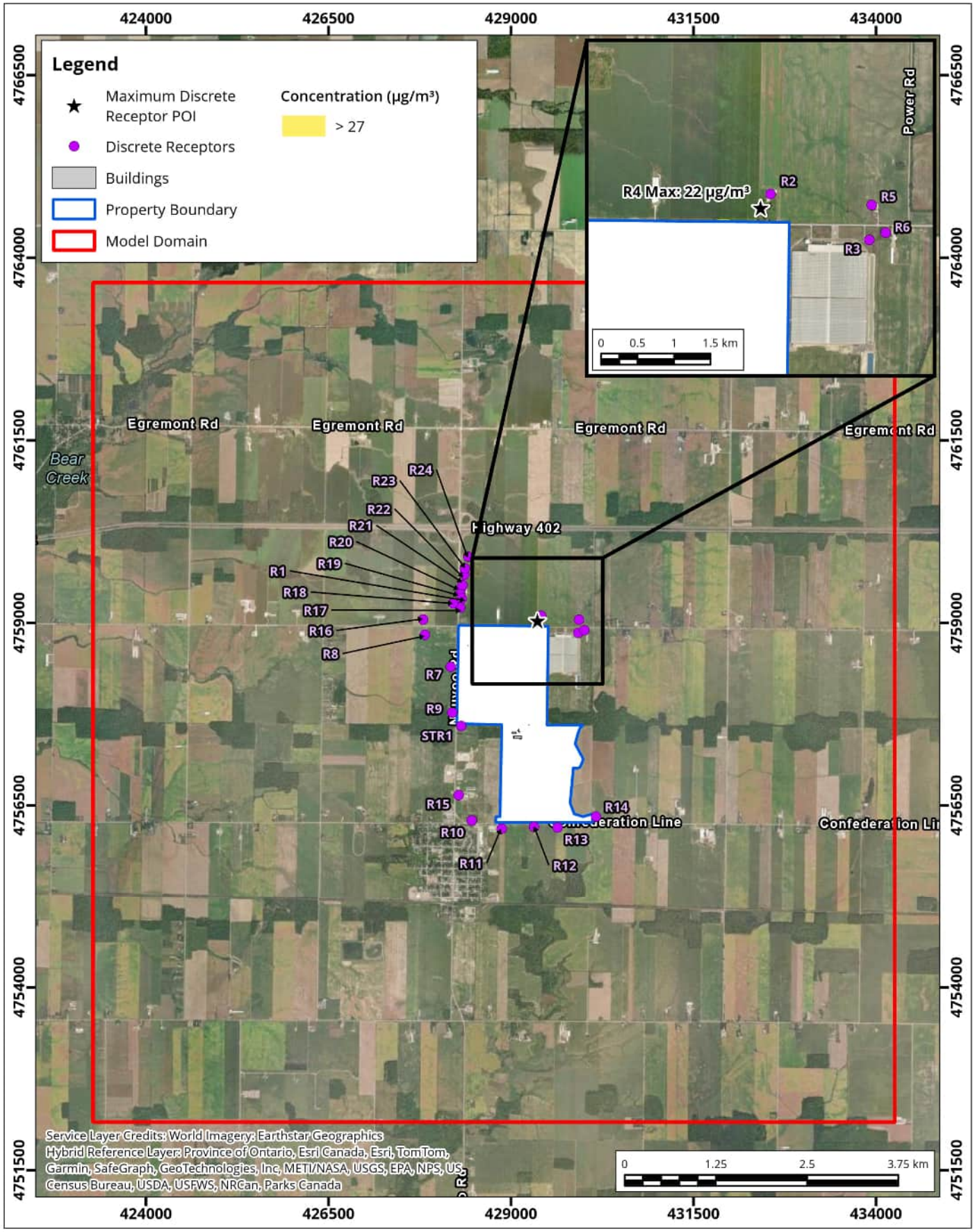
Map Projection: NAD 1983 UTM Zone 17N

Twin Creeks Environmental Centre - Watford, ON

Criteria - 50 µg/m³
Background - 19.3 µg/m³
Project #: 2101750

Drawn by: RCL	
Approx. Scale:	1:72,000
Date Revised:	Nov 20, 2024

Map Document: C:\GIS\2101750_TwinCreeks\P2101750_TwinCreeks_Oct2024\P2101750_TwinCreeks_Scen2_Oct2024.aprx



Predicted 24-Hour $PM_{2.5}$ Concentrations (in µg/m³)

Preferred Alternative - Scenario 2 Mitigation

Map Projection: NAD 1983 UTM Zone 17N
Twin Creek Environmental Centre - Watford, ON

True North

Criteria - 27 µg/m³
Background - 12.2 µg/m³
Project #: 2101750

Drawn by: RCL	
Approx. Scale:	1:72,000
Date Revised:	Nov 1, 2024

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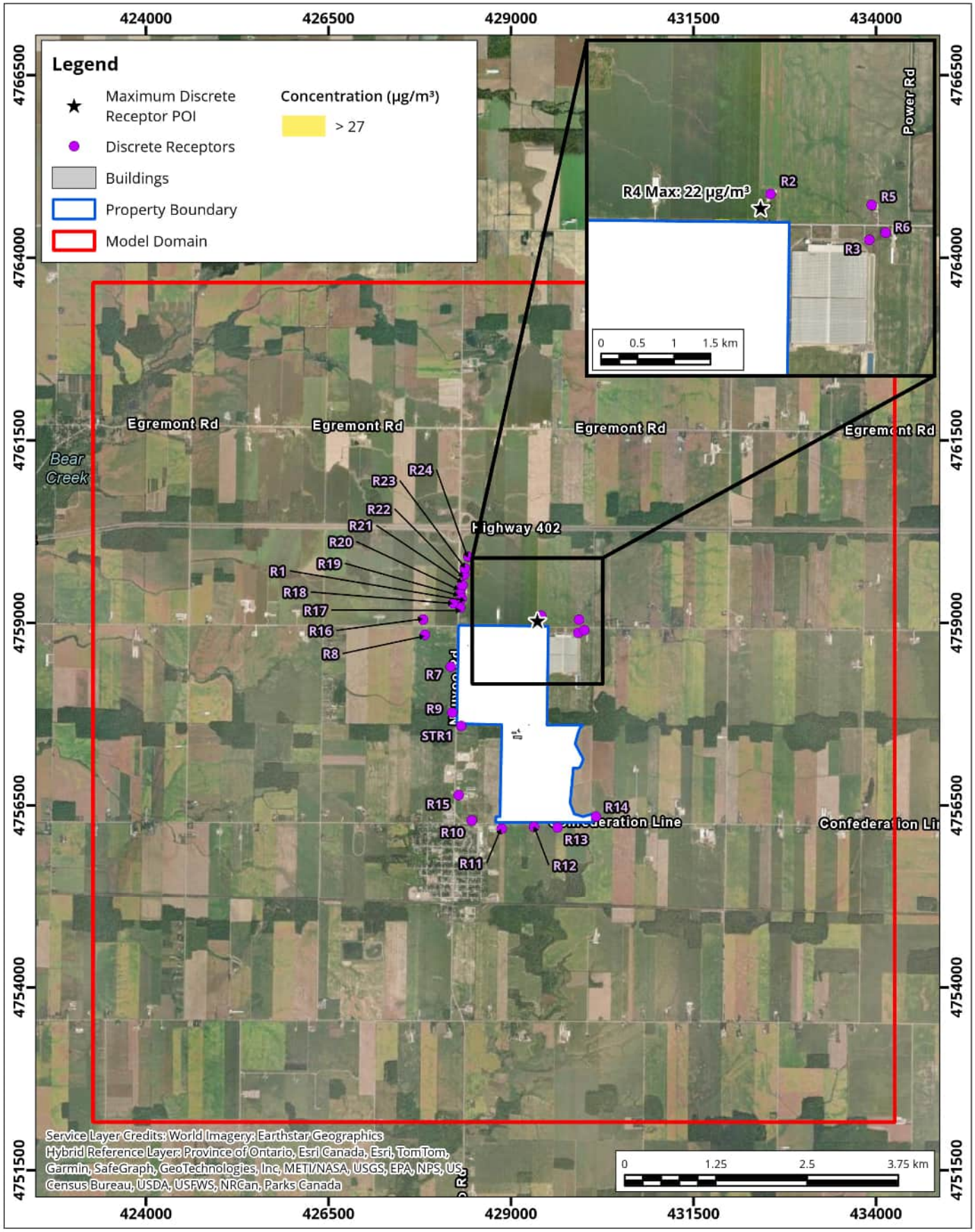


Predicted 24-Hour $PM_{2.5}$ Concentrations (in µg/m³)

Preferred Alternative - Scenario 2 Without Mitigation

True North

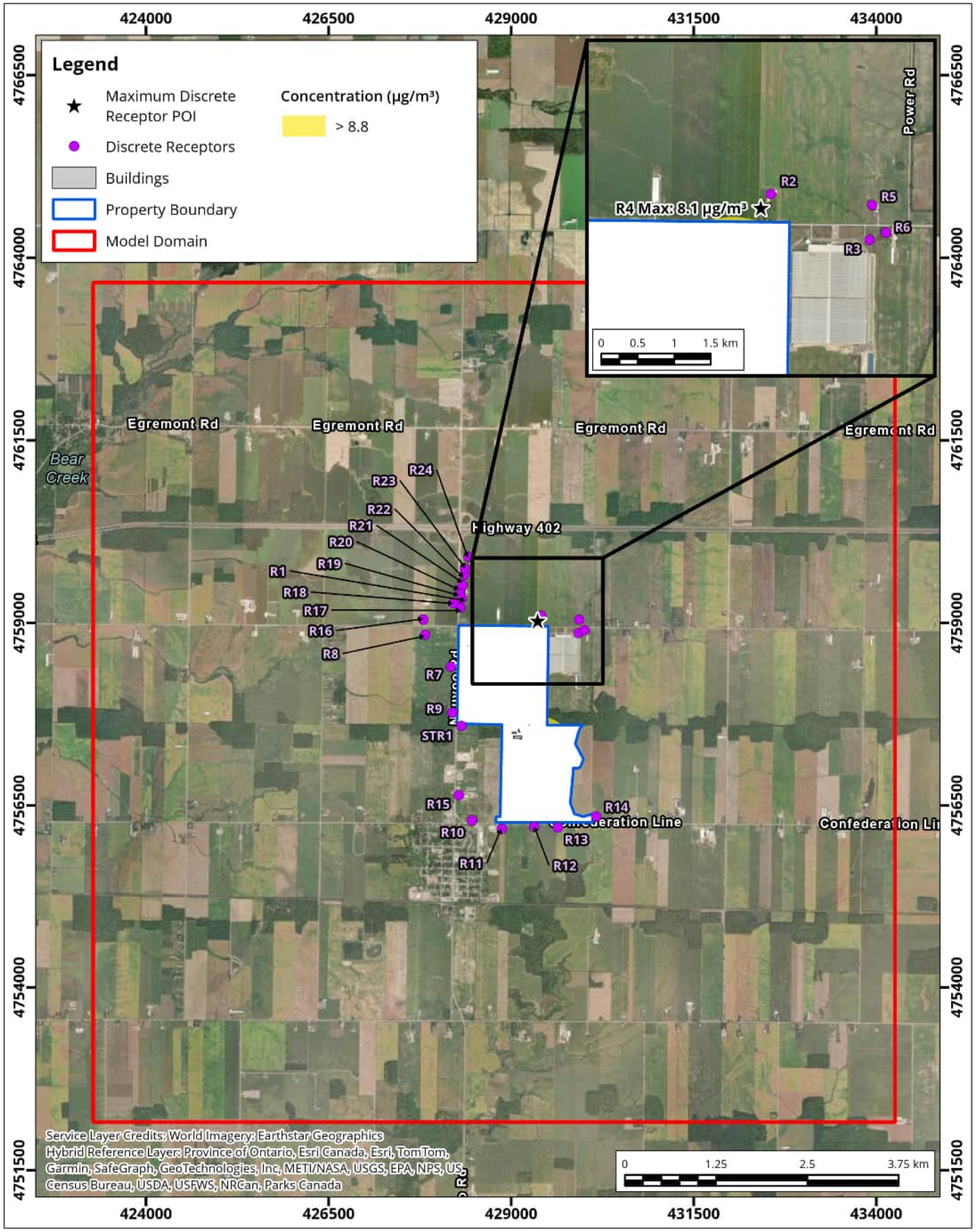
Map Projection: NAD 1983 UTM Zone 17N

Twin Creek Environmental Centre - Watford, ON

Criteria - 27 µg/m³
Background - 12.2 µg/m³
Project #: 2101750

Drawn by: RCL	
Approx. Scale:	1:72,000
Date Revised:	Nov 1, 2024

Map Document: C:\GIS\2101750_TwinCreeks\P2101750_TwinCreeks_Oct2024\P2101750_TwinCreeks_Scen2_Oct2024.aprx



Predicted Annual $PM_{2.5}$ Concentrations (in µg/m³)

Preferred Alternative - Scenario 2 Mitigation

Map Projection: NAD 1983 UTM Zone 17N

Twin Creeks Environmental Centre - Watford, ON

True North

Criteria - 8.8 µg/m³
Background - 6.9 µg/m³
Project #: 2101750

Drawn by: RCL	
Approx. Scale:	1:72,000
Date Revised:	Nov 20, 2024

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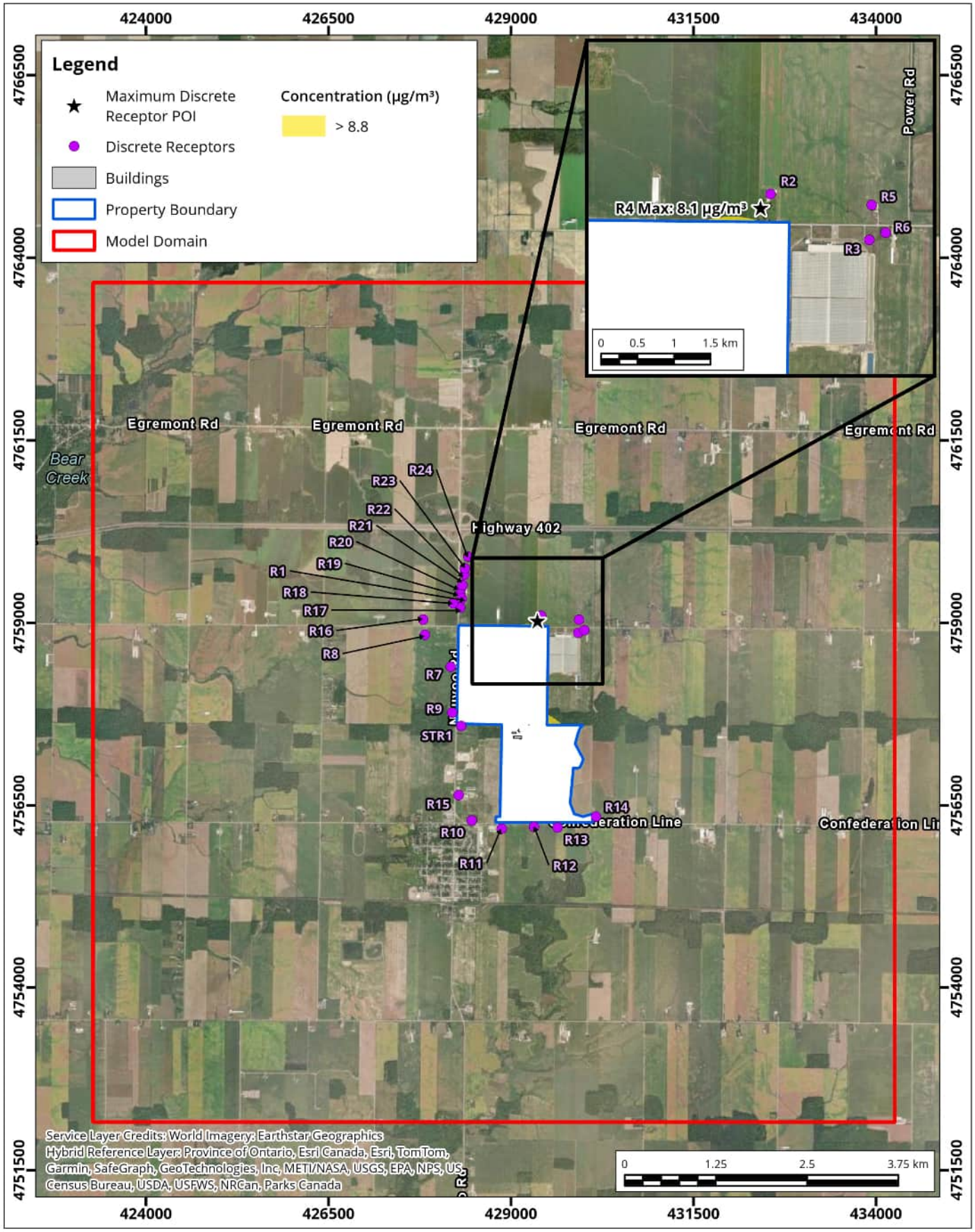


Predicted Annual $PM_{2.5}$ Concentrations (in µg/m^3)

Preferred Alternative - Scenario 2 Without Mitigation

True North

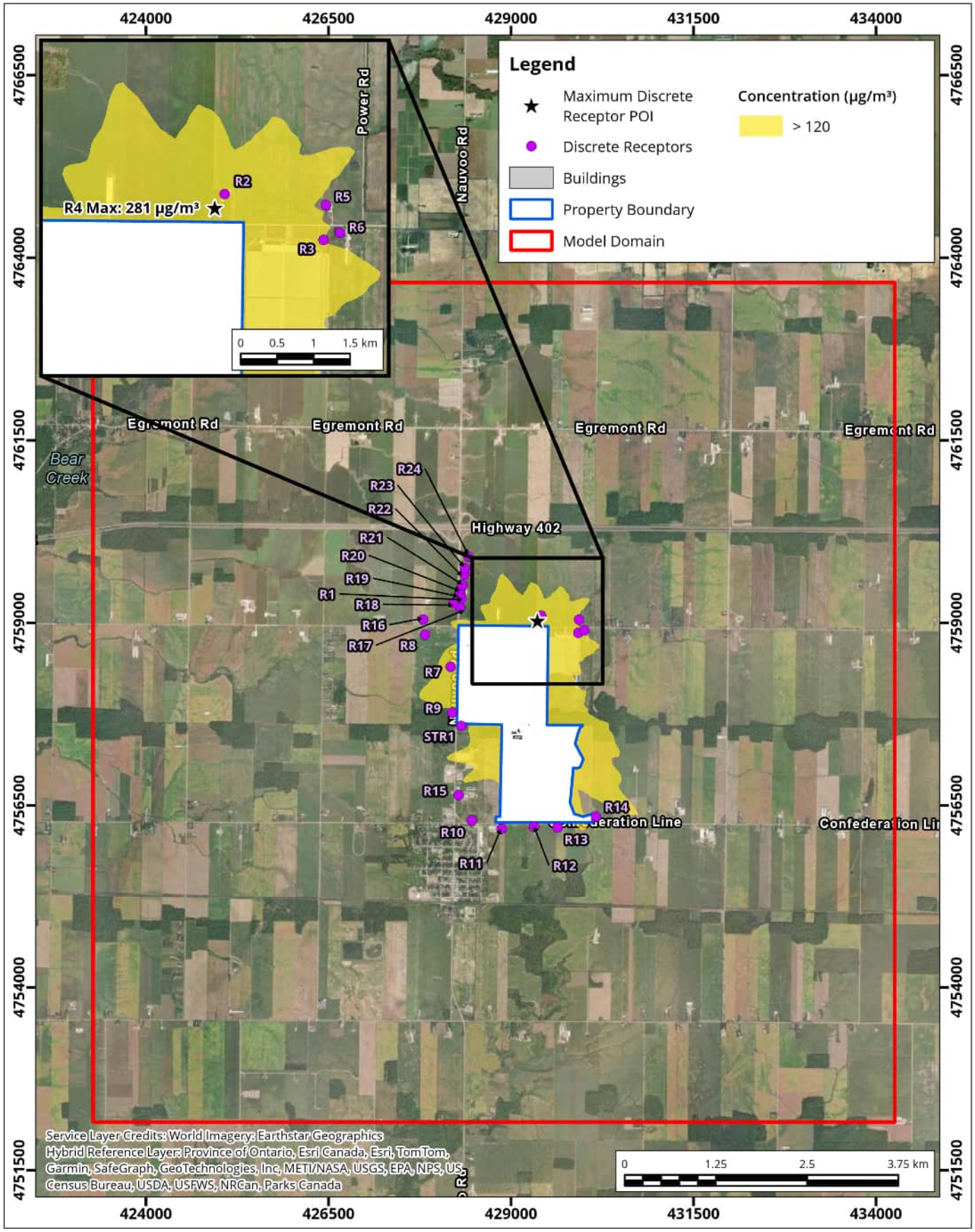
Map Projection: NAD 1983 UTM Zone 17N

Twin Creeks Environmental Centre - Watford, ON

Criteria - 8.8 µg/m³
Background - 6.9 µg/m³
Project #: 2101750

Drawn by: RCL	
Approx. Scale:	1:72,000
Date Revised:	Nov 20, 2024

Map Document: C:\GIS\2101750_TwinCreeks\P2101750_TwinCreeks_Oct2024\P2101750_TwinCreeks_Scen2_Oct2024.aprx



Predicted 24-Hour TSP Concentration (in µg/m³)

Preferred Alternative - Scenario 2 With Mitigation

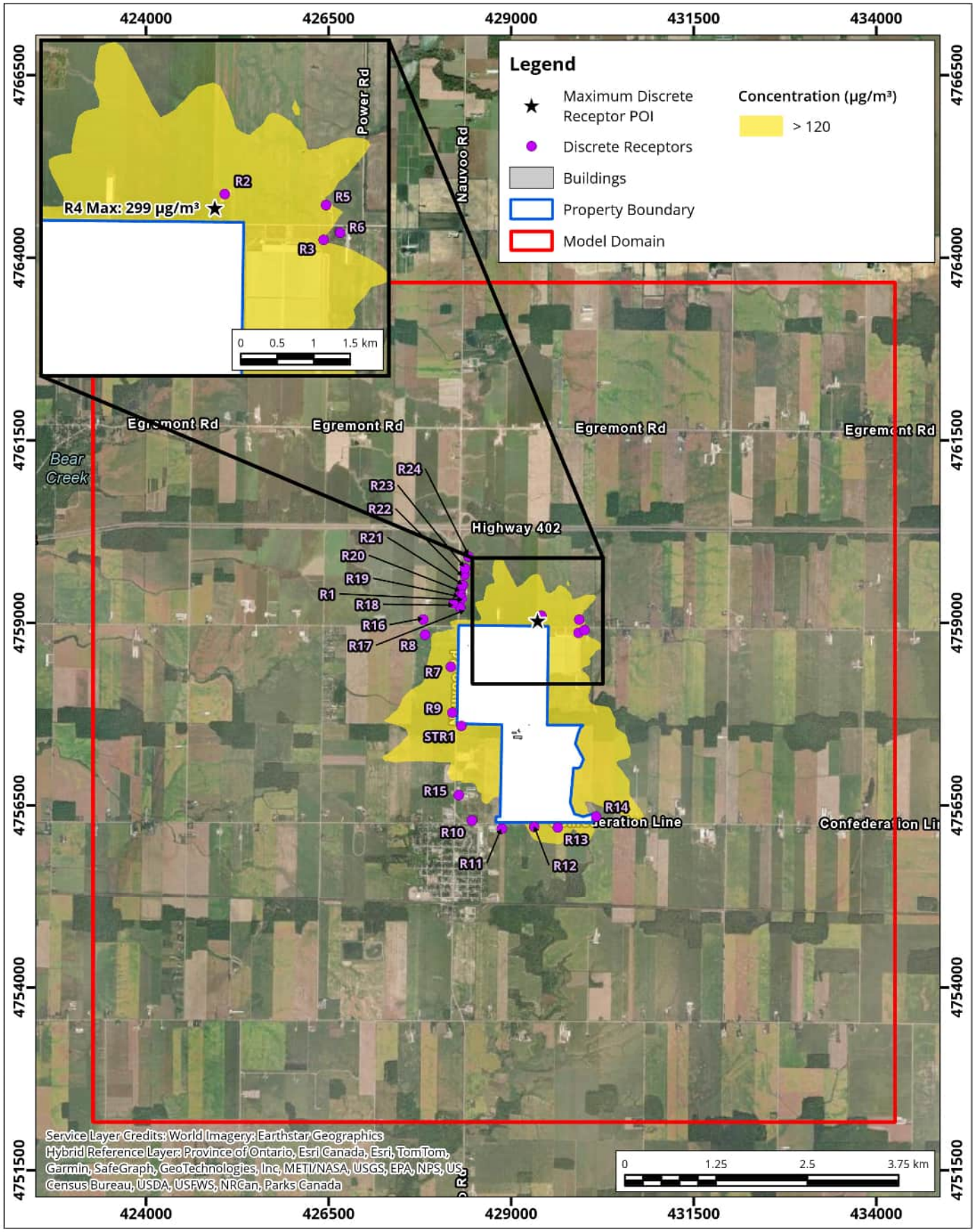
Map Projection: NAD 1983 UTM Zone 17N
Twin Creeks Environmental Centre - Watford, ON

True North

Criteria - 120 µg/m³
Background - 24 µg/m³
Project #: 2101750

Drawn by: RCL	
Approx. Scale:	1:72,000
Date Revised:	Nov 20, 2024

Map Document: C:\GIS\2101750_TwinCreeks\P2101750_TwinCreeks_Oct2024\P2101750_TwinCreeks_Scen1_Oct2024.aprx



Predicted 24-Hour TSP Concentration (in µg/m³)

Preferred Alternative - Scenario 2 Without Mitigation

Map Projection: NAD 1983 UTM Zone 17N

Twin Creeks Environmental Centre - Watford, ON

True North

Criteria - 120 µg/m³

Background - 24 µg/m³

Project #: 2101750

Drawn by:	RCL
Approx. Scale:	1:72,000
Date Revised:	Nov 20, 2024

Map Document: C:\GIS\2101750_TwinCreeks\P2101750_TwinCreeks_Oct2024\P2101750_TwinCreeks_Scen1_Oct2024.aprx

5G

Scenario 3 – Predicted Concentrations and Frequency Analysis, TSP, PM_{10}

Summary of Dust Dispersion Modelling Results

Contaminant	CAS #	Averaging Period	Criteria (µg/m³)	Background Concentration (µg/m³)	Preferred Alternative - Scenario 3			
					Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%)	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%)
Total Suspended Particulate	TSP	24-Hour	120	46	170	141%	215	180%
		Annual	60	23.9	11	18%	34	57%
Particulate Matter <10µm	PM10	24-Hour	50	19.3	60	119%	79	158%
Particulate Matter <2.5µm	PM2.5	24-Hour	27	12.2	7	41%	19	86%
		Annual	8.8	6.9	0.8	9%	7.7	87%

Summary of Dust Dispersion Modelling Results

Contaminant	CAS #	Averaging Period	Preferred Alternative - Scenario 3		
			Number of Receptors Potentially Affected [1]	Maximum Frequency of Excedance of Criteria at a Receptor [2]	Receptor Location for Maximum Frequency of Exceedance
Total Suspended Particulate	TSP	24-Hour	6	0.8%	R4
		Annual	0	0%	- -
Particulate Matter <10µm	PM10	24-Hour	5	0.5%	R4
Particulate Matter <2.5µm	PM2.5	24-Hour	0	0%	- -
		Annual	0	0%	- -

Notes:

[1] Number of sensitive receptors with maximum modelled concentrations (including background) that are greater than the criteria for each contaminant. There are a total of 24 residential receptors (applicable to all averaging periods) and 1 short-term receptor (applicable to 1-hour and 10-minute averaging periods only).

[2] Maximum percentage of time the criteria is exceeded at a sensitive receptor location.

Scenario 3 - End of Stage 4 of Preferred Alternative - No Mitigation

Annual TSP Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 3			
	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]
R1	3	5%	27	45%	3	5%	27	45%
R2	11	19%	35	59%	8	14%	32	54%
R3	7	12%	31	52%	6	10%	30	50%
R4	16	26%	40	66%	11	18%	34	57%
R5	6	10%	30	50%	5	8%	29	48%
R6	6	10%	30	50%	5	9%	29	49%
R7	6	10%	30	50%	7	11%	31	51%
R8	3	5%	27	45%	3	6%	27	45%
R9	6	10%	30	49%	6	11%	30	50%
R10	1	2%	25	42%	2	3%	26	43%
R11	2	3%	25	42%	2	3%	26	43%
R12	2	4%	26	44%	3	5%	27	45%
R13	3	4%	27	44%	3	5%	27	45%
R14	3	4%	26	44%	3	5%	27	45%
R15	2	3%	26	43%	2	4%	26	43%
R16	3	4%	26	44%	3	5%	27	44%
R17	4	6%	27	46%	4	6%	28	46%
R18	3	5%	27	45%	3	5%	27	45%
R19	3	5%	27	45%	3	5%	27	45%
R20	3	5%	27	44%	3	5%	27	44%
R21	3	4%	26	44%	3	5%	27	44%
R22	2	4%	26	44%	2	4%	26	44%
R23	2	4%	26	43%	2	3%	26	43%
R24	2	3%	26	43%	2	3%	26	43%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 60 µg/m³
[2] Average Background Concentration = 23.9 µg/m³

24-Hour TSP Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 3				Exceedances per Year
	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Preferred Alternative
R1	53	44%	99	83%	48	40%	94	78%	0
R2	150	125%	196	163%	136	114%	182	152%	2
R3	92	77%	138	115%	73	61%	119	99%	0
R4	220	183%	266	221%	170	141%	215	180%	3
R5	78	65%	123	103%	64	53%	110	92%	0
R6	77	64%	123	103%	68	56%	114	95%	0
R7	103	86%	149	124%	129	107%	175	146%	1
R8	53	44%	99	82%	68	57%	114	95%	0
R9	107	89%	152	127%	124	104%	170	142%	2
R10	44	36%	90	75%	59	49%	105	87%	0
R11	35	29%	80	67%	46	38%	92	77%	0
R12	69	58%	115	96%	82	68%	128	107%	<1
R13	68	57%	114	95%	91	76%	137	114%	<1
R14	48	40%	94	78%	64	53%	110	92%	0
R15	50	42%	96	80%	61	51%	107	89%	0
R16	60	50%	106	88%	63	52%	108	90%	0
R17	45	37%	91	76%	54	45%	100	83%	0
R18	41	34%	87	73%	47	39%	93	77%	0
R19	49	40%	94	79%	51	43%	97	81%	0
R20	38	31%	83	70%	57	47%	103	85%	0
R21	35	29%	81	68%	55	46%	101	84%	0
R22	44	36%	90	75%	38	32%	84	70%	0
R23	47	39%	93	77%	42	35%	88	73%	0
R24	55	46%	101	84%	58	48%	104	86%	0
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 120 µg/m³
[2] 90th Percentile Background Concentration = 46 µg/m³
[3] Exceedances per year have been rounded to the nearest full day.

Scenario 3 - End of Stage 4 of Preferred Alternative - No Mitigation

24-Hour PM10 Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 3				Exceedances per Year
	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Preferred Alternative
R1	19	38%	38	77%	18	36%	37	74%	0
R2	55	109%	74	148%	48	97%	68	135%	<1
R3	32	65%	52	103%	26	51%	45	90%	0
R4	80	159%	99	198%	60	119%	79	158%	2
R5	27	55%	47	93%	23	46%	42	84%	0
R6	27	54%	46	93%	24	48%	43	86%	0
R7	36	73%	56	111%	48	95%	67	134%	<1
R8	18	36%	37	75%	25	50%	44	89%	0
R9	35	71%	55	109%	43	87%	63	125%	<1
R10	16	32%	35	70%	22	45%	42	84%	0
R11	12	24%	31	62%	17	34%	36	72%	0
R12	25	51%	45	89%	30	61%	50	100%	0
R13	25	50%	44	89%	34	68%	53	107%	<1
R14	17	35%	37	73%	24	47%	43	86%	0
R15	19	37%	38	76%	23	45%	42	84%	0
R16	21	43%	41	81%	23	46%	42	85%	0
R17	17	33%	36	72%	20	40%	39	78%	0
R18	15	30%	34	68%	18	35%	37	74%	0
R19	18	35%	37	74%	19	38%	38	77%	0
R20	14	27%	33	66%	21	42%	40	81%	0
R21	13	26%	32	64%	21	41%	40	80%	0
R22	16	33%	36	71%	14	29%	34	68%	0
R23	18	35%	37	74%	16	32%	35	71%	0
R24	21	41%	40	80%	23	45%	42	84%	0
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 50 µg/m³
[2] 90th Percentile Background Concentration = 19 µg/m³

24-Hour PM2.5 Predicted Concentrations (CAAQS)

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 3				Exceedances per Year
	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³) [3]	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria with Background (%) [1]	Preferred Alternative
R1	2	9%	15	54%	3	13%	15	58%	0
R2	7	26%	19	71%	6	34%	18	79%	0
R3	5	18%	17	63%	4	17%	16	62%	0
R4	9	33%	21	78%	7	41%	19	86%	0
R5	4	16%	17	61%	3	20%	15	65%	0
R6	5	17%	17	62%	3	16%	15	61%	0
R7	4	15%	16	61%	4	27%	17	72%	0
R8	3	11%	15	56%	3	16%	15	61%	0
R9	4	13%	16	58%	5	21%	17	66%	0
R10	2	8%	14	53%	3	15%	15	60%	0
R11	2	7%	14	52%	2	14%	14	59%	0
R12	3	12%	15	57%	4	21%	16	67%	0
R13	2	9%	15	54%	3	27%	15	72%	0
R14	3	10%	15	55%	3	16%	15	61%	0
R15	2	9%	15	54%	3	16%	15	61%	0
R16	2	9%	15	54%	3	13%	15	58%	0
R17	3	11%	15	56%	3	16%	15	61%	0
R18	3	10%	15	55%	2	13%	15	59%	0
R19	2	8%	14	53%	3	13%	15	58%	0
R20	2	8%	14	53%	3	15%	15	60%	0
R21	2	8%	14	53%	3	14%	15	60%	0
R22	2	8%	14	53%	2	11%	14	56%	0
R23	2	8%	14	53%	2	11%	14	56%	0
R24	2	8%	14	53%	2	16%	14	62%	0
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 27 µg/m³
[2] 90th Percentile Background Concentration = 12 µg/m³
[3] Results based on the 3-year average of the annual 98th percentile of the daily 24-hour average concentrations

Scenario 3 - End of Stage 4 of Preferred Alternative - No Mitigation

Annual PM2.5 Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 3			
	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]
R1	0.3	3%	7.2	82%	0.3	4%	7.2	82%
R2	0.9	10%	7.8	88%	0.6	7%	7.5	85%
R3	0.6	7%	7.5	85%	0.5	6%	7.4	84%
R4	1.19	14%	8.1	92%	0.8	9%	7.7	87%
R5	0.5	6%	7.4	84%	0.4	5%	7.3	83%
R6	0.5	6%	7.4	84%	0.4	5%	7.3	83%
R7	0.5	5%	7.4	84%	0.5	6%	7.4	84%
R8	0.3	4%	7.2	82%	0.4	4%	7.2	82%
R9	0.43	5%	7.3	83%	0.5	5%	7.4	84%
R10	0.1	2%	7.0	80%	0.2	2%	7.0	80%
R11	0.2	2%	7.1	80%	0.2	2%	7.1	80%
R12	0.2	3%	7.1	81%	0.3	3%	7.2	81%
R13	0.3	3%	7.1	81%	0.3	3%	7.2	81%
R14	0.3	3%	7.1	81%	0.3	3%	7.2	81%
R15	0.2	2%	7.1	80%	0.2	2%	7.1	81%
R16	0.3	3%	7.2	81%	0.3	3%	7.2	81%
R17	0.4	4%	7.2	82%	0.4	4%	7.3	82%
R18	0.3	3%	7.2	82%	0.3	3%	7.2	82%
R19	0.3	3%	7.2	81%	0.3	3%	7.2	82%
R20	0.3	3%	7.2	81%	0.3	3%	7.2	81%
R21	0.3	3%	7.1	81%	0.3	3%	7.2	81%
R22	0.2	3%	7.1	81%	0.2	3%	7.1	81%
R23	0.2	2%	7.1	81%	0.2	2%	7.1	81%
R24	0.2	2%	7.1	80%	0.2	2%	7.1	80%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 8.8 µg/m³
[2] Average Background Concentration = 7 µg/m³

Appendix 5G: Frequency Analysis, PM10

RWDI Project #2101750

TCEC Preferred Alternative - Scenario 3 (End of Stage 4) - Without Mitigation

Receptor Information					Maximum Predicted 24-Hour Concentration (µg/m³)	Background Concentration (µg/m³)	Maximum Predicted plus Background (µg/m³)	Predicted Excursions Above Criteria Events > 50 µg/m³	
ID#	Description	X	Y	Z				Count	Frequency
R01	Residence	428327	4759333	1.5	18	19	37	0	0.0%
R02	Residence	429414	4759099	1.5	48	19	68	4	0.2%
R03	Residence	429921	4758864	1.5	26	19	45	0	0.0%
R04	Residence	429363	4759027	1.5	60	19	79	10	0.5%
R05	Residence	429934	4759043	1.5	23	19	42	0	0.0%
R06	Residence	430005	4758900	1.5	24	19	43	0	0.0%
R07	Residence	428174	4758398	1.5	48	19	67	3	0.2%
R08	Residence	427821	4758838	1.5	25	19	44	0	0.0%
R09	Residence	428197	4757771	1.5	43	19	63	3	0.2%
R10	Residence	428464	4756293	1.5	22	19	42	0	0.0%
R11	Residence	428874	4756180	1.5	17	19	36	0	0.0%
R12	Residence	429315	4756206	1.5	30	19	50	0	0.0%
R13	Residence	429640	4756198	1.5	34	19	53	1	0.1%
R14	Residence	430164	4756347	1.5	24	19	43	0	0.0%
R15	Residence	428283	4756641	1.5	23	19	42	0	0.0%
R16	Residence	427797	4759047	1.5	23	19	42	0	0.0%
R17	Residence	428305	4759209	1.5	20	19	39	0	0.0%
R18	Residence	428206	4759269	1.5	18	19	37	0	0.0%
R19	Residence	428305	4759399	1.5	19	19	38	0	0.0%
R20	Residence	428313	4759463	1.5	21	19	40	0	0.0%
R21	Residence	428336	4759518	1.5	21	19	40	0	0.0%
R22	Residence	428364	4759661	1.5	14	19	34	0	0.0%
R23	Residence	428368	4759744	1.5	16	19	35	0	0.0%
R24	Residence	428416	4759907	1.5	23	19	42	0	0.0%
STR1	Cemetery	428319	4757590	1.5	n/a	n/a	n/a	n/a	n/a

1826 Days of Meterological Data

Appendix 5G: Frequency Analysis, TSP

RWDI Project #2101750

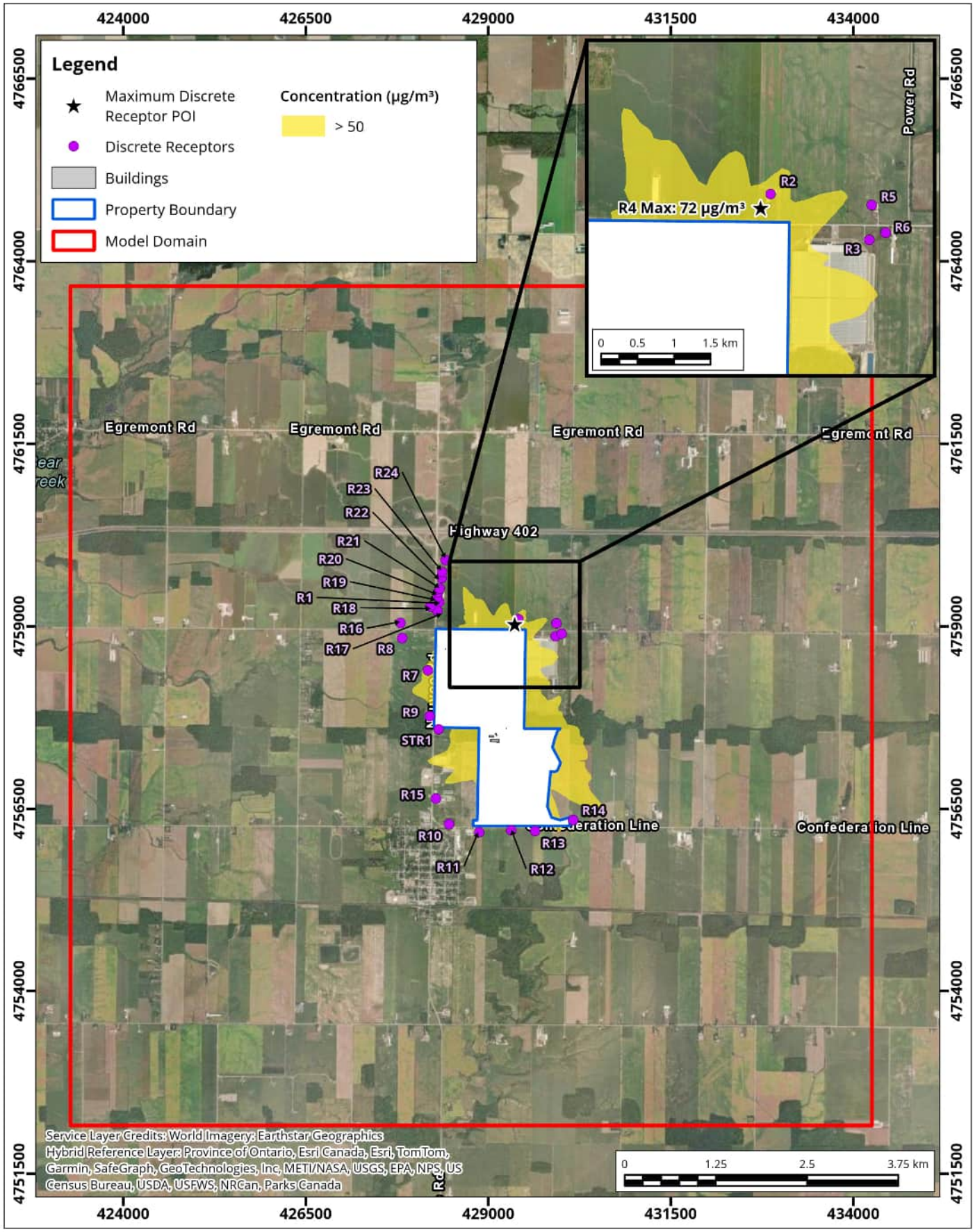
TCEC Preferred Alternative - Scenario 3 (End of Stage 4) - Without Mitigation

Receptor Information					Maximum Predicted 24-Hour Concentration (µg/m³)	Background Concentration (µg/m³)	Maximum Predicted plus Background (µg/m³)	Criteria (µg/m³)	Predicted Excursions Above Criteria	
									Events > 120 µg/m³	
ID#	Description	X	Y	Z					Count	Frequency
R01	Residence	428327	4759333	1.5	47.79	46	93.79	120	0	0.0%
R02	Residence	429414	4759099	1.5	136.38	46	182.38	120	9	0.5%
R03	Residence	429921	4758864	1.5	73.35	46	119.35	120	0	0.0%
R04	Residence	429363	4759027	1.5	169.56	46	215.56	120	15	0.8%
R05	Residence	429934	4759043	1.5	63.92	46	109.92	120	0	0.0%
R06	Residence	430005	4758900	1.5	67.71	46	113.71	120	0	0.0%
R07	Residence	428174	4758398	1.5	128.99	46	174.99	120	6	0.3%
R08	Residence	427821	4758838	1.5	68.24	46	114.24	120	0	0.0%
R09	Residence	428197	4757771	1.5	124.35	46	170.35	120	10	0.5%
R10	Residence	428464	4756293	1.5	58.83	46	104.83	120	0	0.0%
R11	Residence	428874	4756180	1.5	46.18	46	92.18	120	0	0.0%
R12	Residence	429315	4756206	1.5	82.17	46	128.17	120	1	0.1%
R13	Residence	429640	4756198	1.5	91.37	46	137.37	120	2	0.1%
R14	Residence	430164	4756347	1.5	64.16	46	110.16	120	0	0.0%
R15	Residence	428283	4756641	1.5	60.90	46	106.90	120	0	0.0%
R16	Residence	427797	4759047	1.5	62.50	46	108.50	120	0	0.0%
R17	Residence	428305	4759209	1.5	54.00	46	100.00	120	0	0.0%
R18	Residence	428206	4759269	1.5	46.95	46	92.95	120	0	0.0%
R19	Residence	428305	4759399	1.5	51.21	46	97.21	120	0	0.0%
R20	Residence	428313	4759463	1.5	56.69	46	102.69	120	0	0.0%
R21	Residence	428336	4759518	1.5	55.35	46	101.35	120	0	0.0%
R22	Residence	428364	4759661	1.5	38.12	46	84.12	120	0	0.0%
R23	Residence	428368	4759744	1.5	41.86	46	87.86	120	0	0.0%
R24	Residence	428416	4759907	1.5	57.82	46	103.82	120	0	0.0%
STR1	Cemetery	428319	4757590	1.5	N/A	46	N/A	120	N/A	N/A

1826 Days of valid Meterological Data

5H

Scenario 3 – Concentration Isopleths, TSP, PM_{10}, $PM_{2.5}$



Predicted 24-Hour PM_{10} Concentrations (in µg/m^3)

Preferred Alternative - Scenario 3 Mitigation

Map Projection: NAD 1983 UTM Zone 17N

Twin Creeks Environmental Centre - Watford, ON

True North

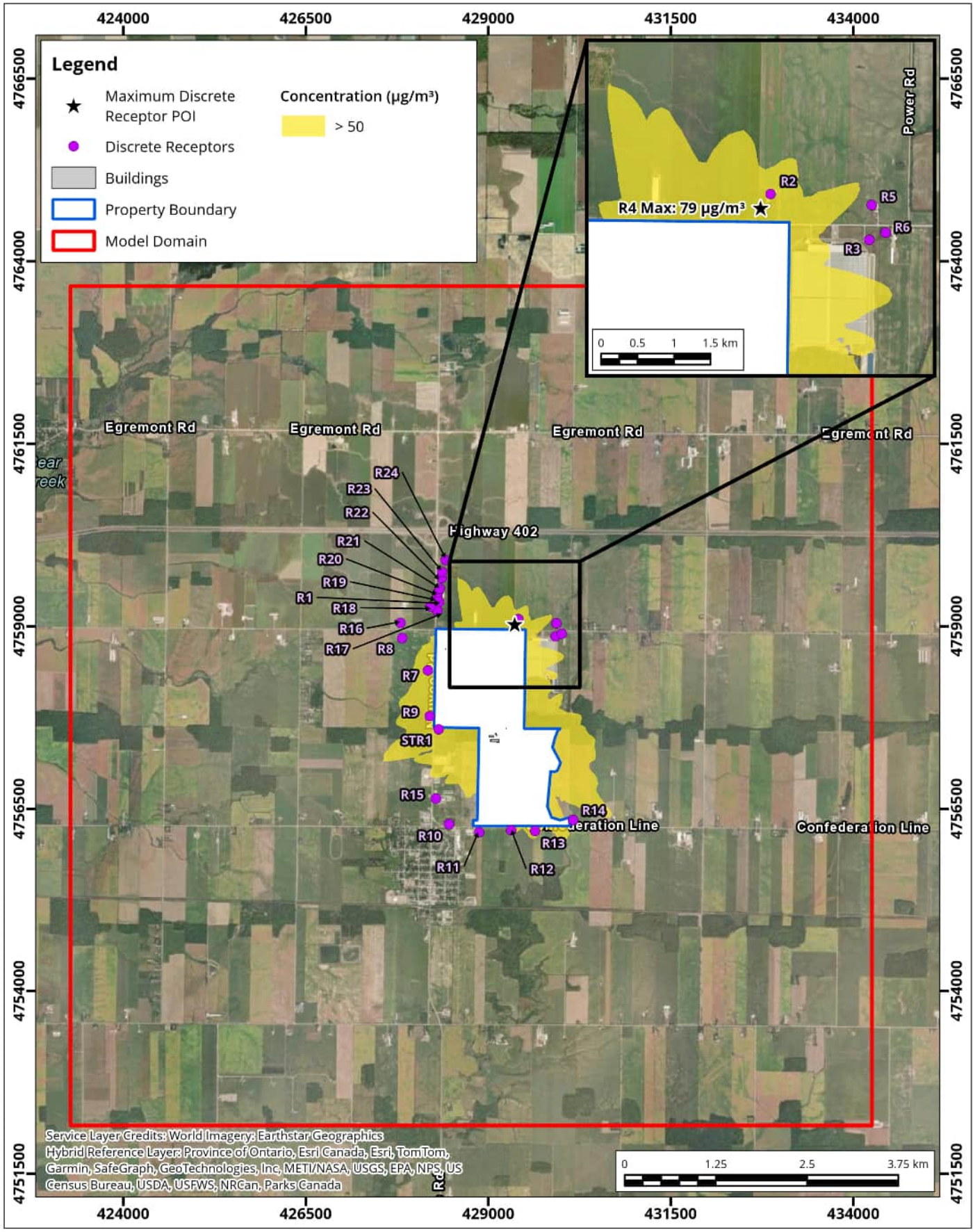
Criteria - 50 µg/m³

Background - 19.3 µg/m³

Project #: 2101750

Drawn by: RCL	
Approx. Scale:	1:72,000
Date Revised:	Nov 20, 2024

Map Document: C:\GIS\2101750_TwinCreeks\P2101750_TwinCreeks_Oct2024\P2101750_TwinCreeks_Scen3_Oct2024.aprx



Predicted 24-Hour PM_{10} Concentrations (in µg/m³)

Preferred Alternative - Scenario 3 Without Mitigation

True North

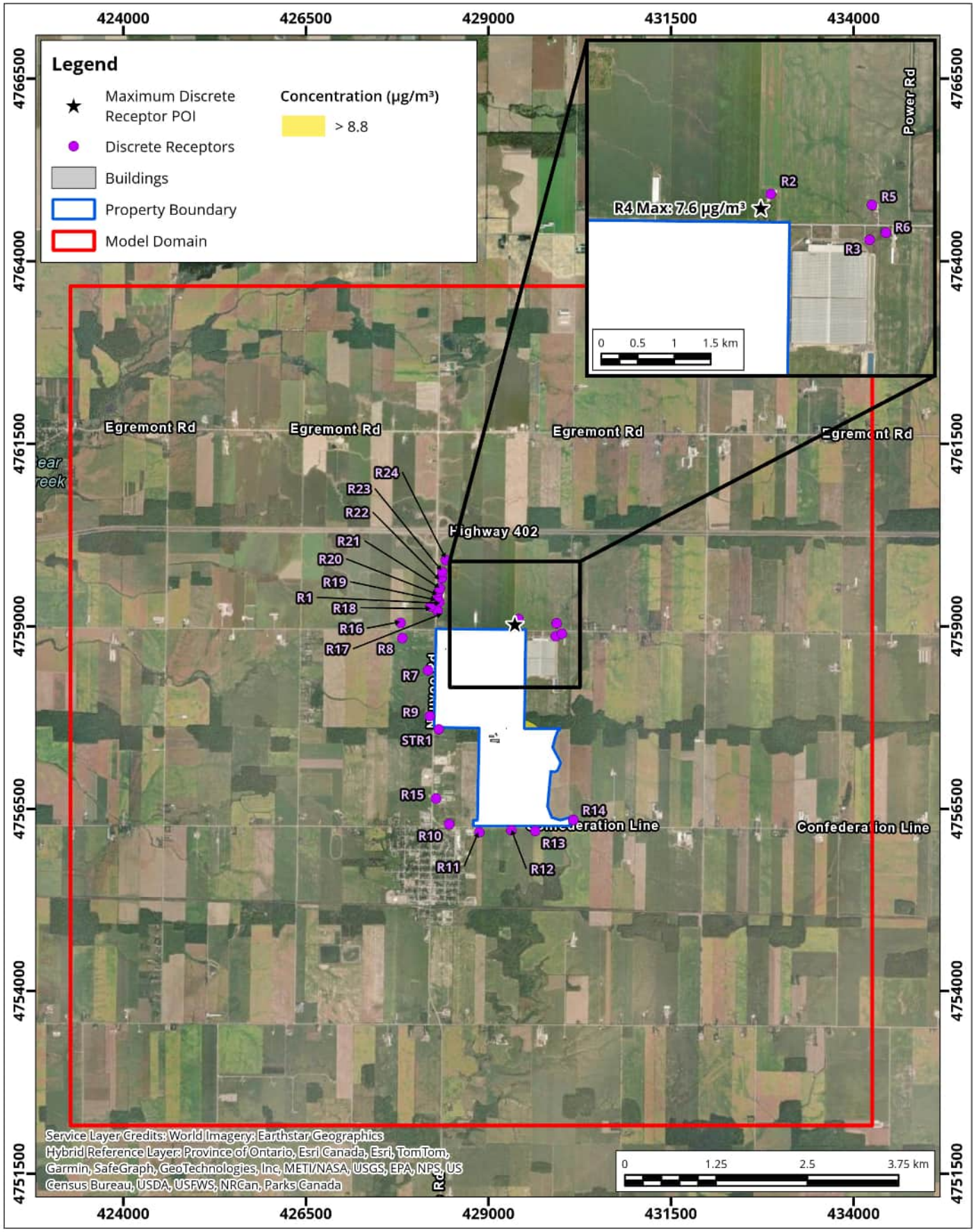
Map Projection: NAD 1983 UTM Zone 17N

Twin Creeks Environmental Centre - Watford, ON

Criteria - 50 µg/m³
Background - 19.3 µg/m³
Project #: 2101750

Drawn by: RCL	
Approx. Scale:	1:72,000
Date Revised:	Nov 20, 2024

Map Document: C:\GIS\2101750_TwinCreeks\P2101750_TwinCreeks_Oct2024\P2101750_TwinCreeks_Scen3_Oct2024.aprx



Predicted Annual $PM_{2.5}$ Concentrations (in µg/m^3)

Preferred Alternative - Scenario 3 Mitigation

Map Projection: NAD 1983 UTM Zone 17N

Twin Creeks Environmental Centre - Watford, ON

True North

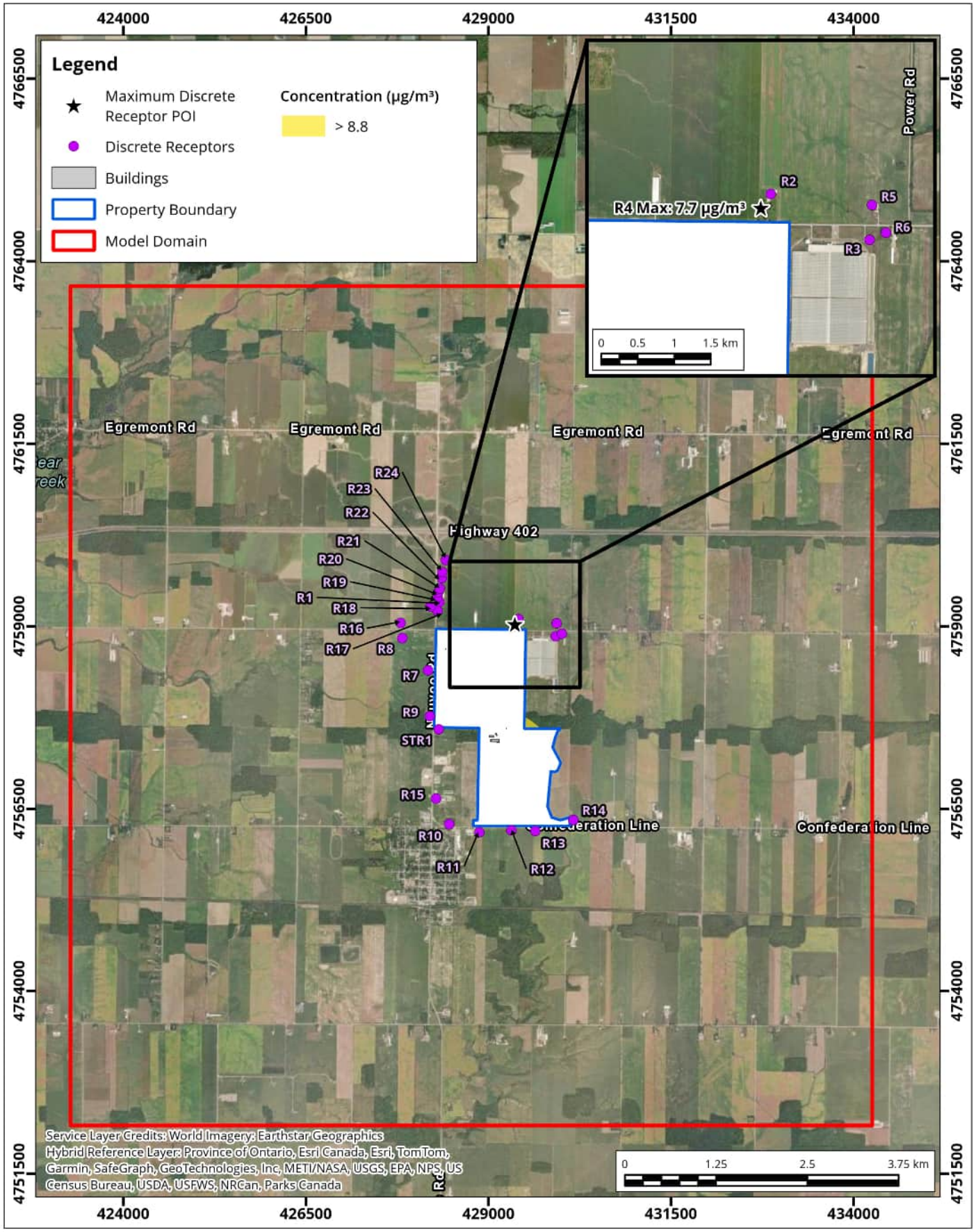
Criteria - 8.8 µg/m³

Background - 6.9 µg/m³

Project #: 2101750

Drawn by: RCL	
Approx. Scale:	1:72,000
Date Revised:	Nov 20, 2024

Map Document: C:\GIS\2101750_TwinCreeks\P2101750_TwinCreeks_Oct2024\P2101750_TwinCreeks_Scen3_Oct2024.aprx



Predicted Annual $PM_{2.5}$ Concentrations (in µg/m³)

Preferred Alternative - Scenario 3 Without Mitigation

True North

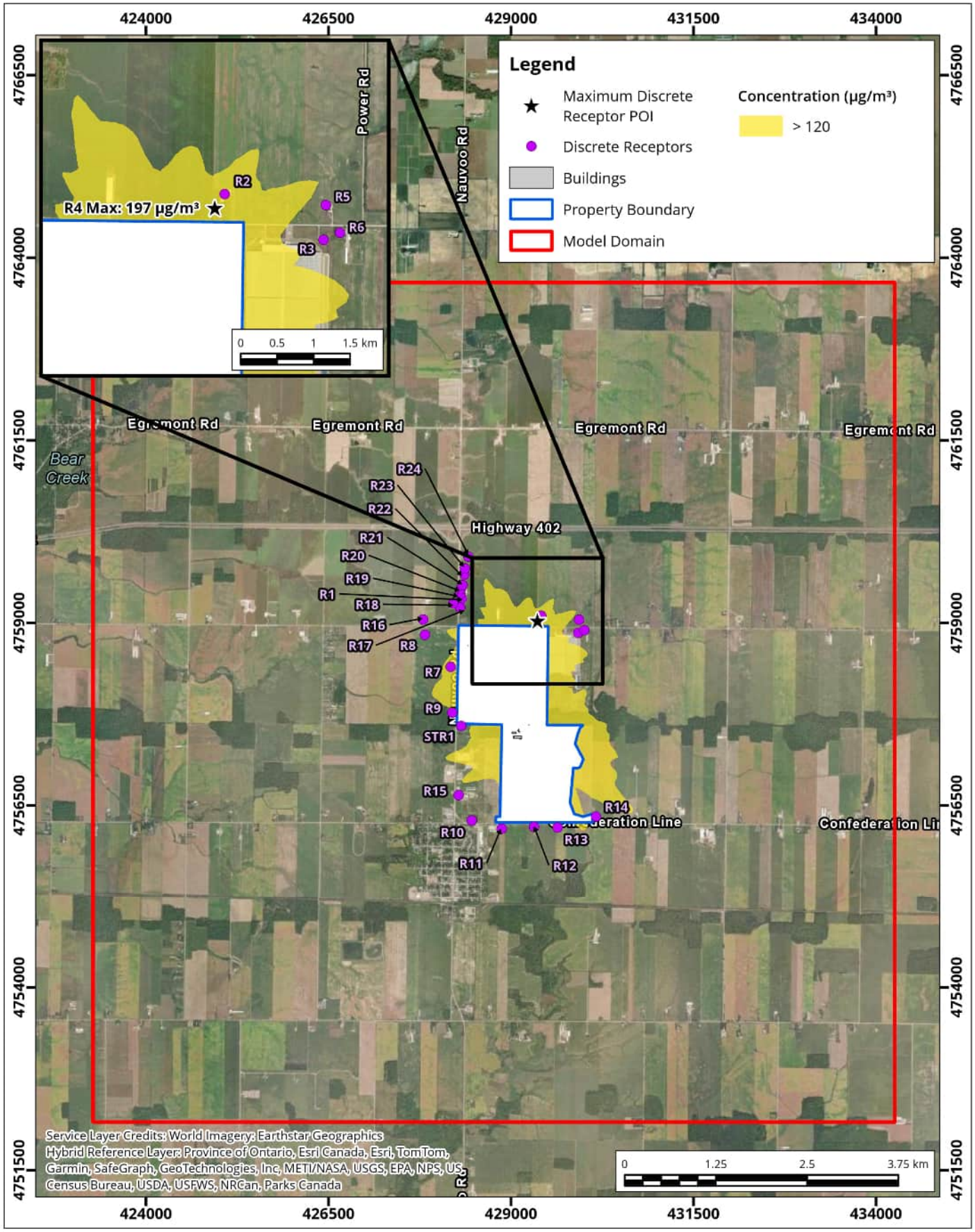
Map Projection: NAD 1983 UTM Zone 17N

Twin Creeks Environmental Centre - Watford, ON

Criteria - 8.8 µg/m³
Background - 6.9 µg/m³
Project #: 2101750

Drawn by: RCL	
Approx. Scale:	1:72,000
Date Revised:	Nov 20, 2024

Map Document: C:\GIS\2101750_TwinCreeks\P2101750_TwinCreeks_Oct2024\P2101750_TwinCreeks_Scen3_Oct2024.aprx



Predicted 24-Hour TSP Concentration (in µg/m³)

Preferred Alternative - Scenario 3 With Mitigation

Map Projection: NAD 1983 UTM Zone 17N

Twin Creeks Environmental Centre - Watford, ON

True North

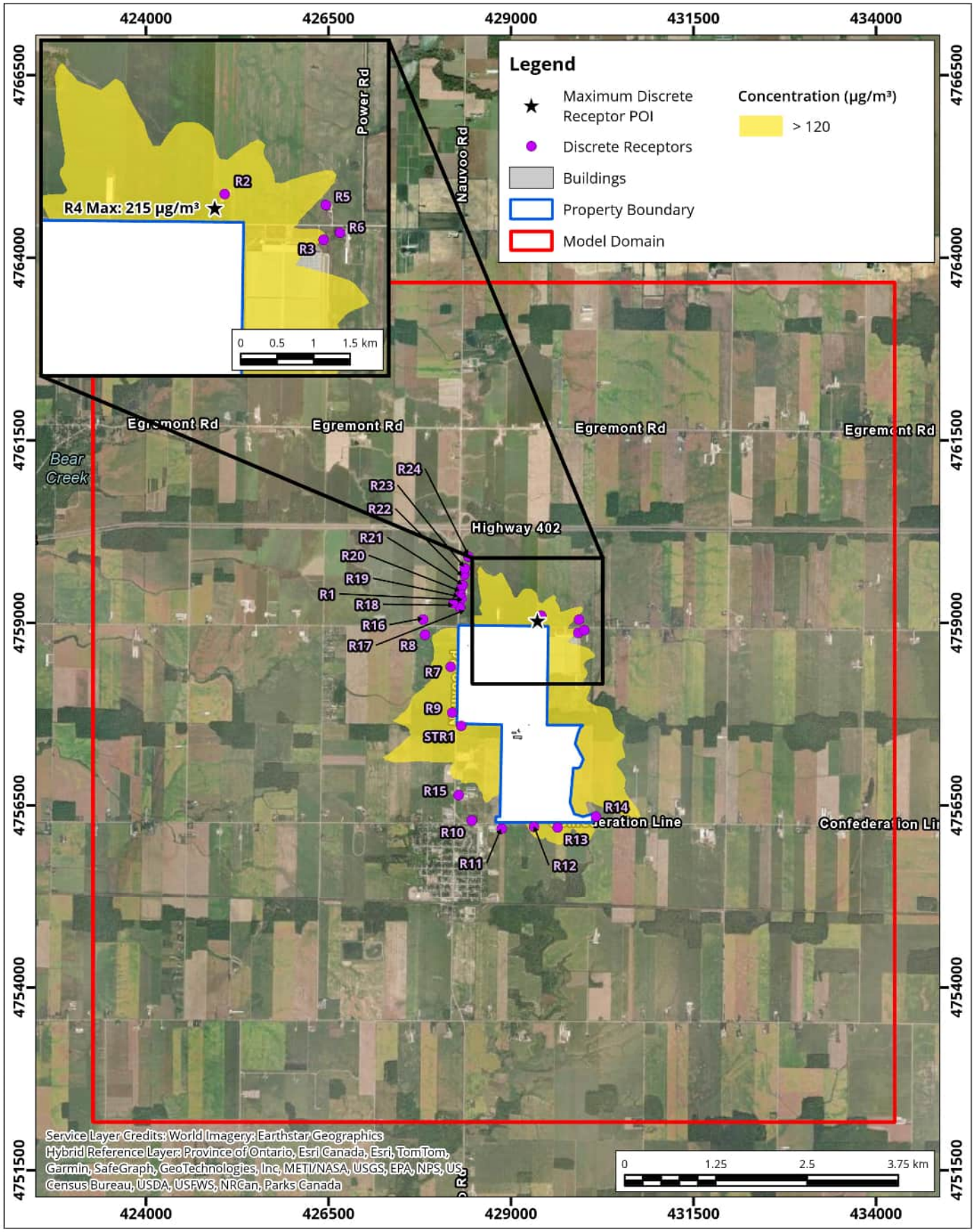
Criteria - 120 µg/m³

Background - 24 µg/m³

Project #: 2101750

Drawn by:	RCL
Approx. Scale:	1:72,000
Date Revised:	Nov 20, 2024

Map Document: C:\GIS\2101750_TwinCreeks\P2101750_TwinCreeks_Oct2024\P2101750_TwinCreeks_Scen1_Oct2024.aprx



Predicted 24-Hour TSP Concentration (in µg/m³)

Preferred Alternative - Scenario 3 Without Mitigation

Map Projection: NAD 1983 UTM Zone 17N

Twin Creeks Environmental Centre - Watford, ON

True North

Criteria - 120 µg/m³

Background - 24 µg/m³

Project #: 2101750

Drawn by: RCL	
Approx. Scale:	1:72,000
Date Revised:	Nov 20, 2024

Map Document: C:\GIS\2101750_TwinCreeks\P2101750_TwinCreeks_Oct2024\P2101750_TwinCreeks_Scen1_Oct2024.aprx

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All Scenarios – Predicted Concentrations, TSP, PM_{10}, $PM_{2.5}$

Scenario 1 - End of Stage 1 of Preferred Alternative

Annual TSP Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 1				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
R1	3	5%	27	45%	6	10%	30	50%	90%	11%
R2	11	19%	35	59%	8	13%	31	52%	-33%	-11%
R3	7	12%	31	52%	6	9%	29	49%	-23%	-5%
R4	16	26%	40	66%	9	15%	33	55%	-43%	-17%
R5	6	10%	30	50%	5	8%	29	48%	-22%	-4%
R6	6	10%	30	50%	5	8%	29	48%	-19%	-4%
R7	6	10%	30	50%	10	16%	33	56%	60%	12%
R8	3	5%	27	45%	6	10%	30	49%	78%	9%
R9	6	10%	30	49%	7	12%	31	52%	22%	4%
R10	1	2%	25	42%	2	3%	26	43%	38%	2%
R11	2	3%	25	42%	2	4%	26	43%	46%	3%
R12	2	4%	26	44%	3	5%	27	45%	38%	3%
R13	3	4%	27	44%	4	6%	27	46%	34%	3%
R14	3	4%	26	44%	4	6%	27	46%	42%	4%
R15	2	3%	26	43%	2	4%	26	44%	32%	2%
R16	3	4%	26	44%	4	7%	28	47%	63%	6%
R17	4	6%	27	46%	7	12%	31	52%	108%	14%
R18	3	5%	27	45%	6	9%	30	49%	86%	10%
R19	3	5%	27	45%	5	9%	29	49%	81%	9%
R20	3	5%	27	44%	5	8%	29	48%	74%	8%
R21	3	4%	26	44%	4	7%	28	47%	67%	7%
R22	2	4%	26	44%	3	6%	27	45%	47%	4%
R23	2	4%	26	43%	3	5%	27	45%	40%	3%
R24	2	3%	26	43%	2	4%	26	44%	39%	3%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 60 µg/m³
[2] Average Background Concentration = 23.9 µg/m³

Scenario 1 - End of Stage 1 of Preferred Alternative

24-Hour TSP Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 1				Percentage Change from Existing Conditions to Preferred Alternative		Exceedances per Year [3]		
	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)	Existing Conditions	Preferred Alternative	Change from Existing Conditions to Preferred Alternative
R1	53	44%	99	83%	97	80%	142	119%	81%	44%	0	1	1
R2	150	125%	196	163%	77	64%	123	102%	-49%	-37%	3	<1	-3
R3	92	77%	138	115%	58	48%	104	86%	-37%	-25%	<1	0	-1
R4	220	183%	266	221%	88	73%	133	111%	-60%	-50%	6	<1	-5
R5	78	65%	123	103%	60	50%	106	89%	-22%	-14%	<1	0	0
R6	77	64%	123	103%	54	45%	100	83%	-30%	-19%	<1	0	0
R7	103	86%	149	124%	142	118%	188	157%	38%	27%	<1	4	3
R8	53	44%	99	82%	87	72%	133	111%	64%	34%	0	<1	1
R9	107	89%	152	127%	121	101%	167	139%	14%	10%	<1	2	1
R10	44	36%	90	75%	56	47%	102	85%	29%	14%	0	0	0
R11	35	29%	80	67%	51	43%	97	81%	48%	21%	0	0	0
R12	69	58%	115	96%	88	74%	134	112%	27%	16%	0	<1	0
R13	68	57%	114	95%	98	82%	144	120%	44%	26%	0	<1	1
R14	48	40%	94	78%	80	67%	126	105%	67%	34%	0	<1	0
R15	50	42%	96	80%	69	57%	114	95%	37%	19%	0	0	0
R16	60	50%	106	88%	84	70%	129	108%	39%	22%	0	<1	1
R17	45	37%	91	76%	131	109%	177	148%	194%	96%	0	2	2
R18	41	34%	87	73%	130	108%	176	146%	215%	102%	0	1	1
R19	49	40%	94	79%	88	74%	134	112%	82%	42%	0	<1	1
R20	38	31%	83	70%	78	65%	124	104%	109%	49%	0	<1	1
R21	35	29%	81	68%	79	66%	125	104%	125%	54%	0	<1	0
R22	44	36%	90	75%	84	70%	130	108%	92%	45%	0	<1	0
R23	47	39%	93	77%	81	68%	127	106%	74%	37%	0	<1	0
R24	55	46%	101	84%	71	59%	117	98%	29%	16%	0	0	0
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 120 µg/m³

[2] 90th Percentile Background Concentration = 46 µg/m³

[3] Exceedances per year have been rounded to the nearest full day.

Scenario 1 - End of Stage 1 of Preferred Alternative

24-Hour PM10 Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 1				Percentage Change from Existing Conditions to Preferred Alternative		Exceedances per Year [3]		
	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)	Existing Conditions	Preferred Alternative	Change from Existing Conditions to Preferred Alternative
R1	19	38%	38	77%	34	69%	54	107%	79%	39%	0	<1	1
R2	55	109%	74	148%	27	54%	46	93%	-50%	-37%	2	0	-2
R3	32	65%	52	103%	20	40%	39	78%	-38%	-24%	<1	0	0
R4	80	159%	99	198%	31	62%	50	100%	-61%	-49%	3	<1	-3
R5	27	55%	47	93%	21	42%	40	81%	-23%	-13%	0	0	0
R6	27	54%	46	93%	19	37%	38	76%	-31%	-18%	0	0	0
R7	36	73%	56	111%	54	108%	73	146%	49%	32%	<1	3	3
R8	18	36%	37	75%	33	65%	52	104%	80%	39%	0	<1	0
R9	35	71%	55	109%	43	85%	62	124%	21%	13%	<1	<1	1
R10	16	32%	35	70%	22	43%	41	82%	36%	16%	0	0	0
R11	12	24%	31	62%	20	39%	39	78%	66%	25%	0	0	0
R12	25	51%	45	89%	33	65%	52	104%	29%	16%	0	<1	0
R13	25	50%	44	89%	37	73%	56	112%	46%	26%	0	<1	0
R14	17	35%	37	73%	30	59%	49	98%	69%	33%	0	0	0
R15	19	37%	38	76%	26	51%	45	90%	37%	18%	0	0	0
R16	21	43%	41	81%	30	59%	49	98%	39%	20%	0	0	0
R17	17	33%	36	72%	45	90%	64	128%	172%	79%	0	1	1
R18	15	30%	34	68%	47	94%	66	132%	213%	93%	0	<1	1
R19	18	35%	37	74%	32	63%	51	102%	80%	38%	0	<1	0
R20	14	27%	33	66%	30	59%	49	98%	118%	49%	0	0	0
R21	13	26%	32	64%	31	63%	51	101%	143%	57%	0	<1	0
R22	16	33%	36	71%	33	66%	52	105%	103%	47%	0	<1	0
R23	18	35%	37	74%	32	64%	51	103%	83%	40%	0	<1	0
R24	21	41%	40	80%	28	55%	47	94%	34%	17%	0	0	0
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

[1] Criteria = 50 µg/m³

[2] 90th Percentile Background Concentration = 19 µg/m³

[3] Exceedances per year have been rounded to the nearest full day.

Scenario 1 - End of Stage 1 of Preferred Alternative

24-Hour PM2.5 Predicted Concentrations (CAAQS)

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 1				Percentage Change from Existing Conditions to Preferred Alternative		Exceedances per Year [4]		
	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³) [3]	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria with Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)	Existing Conditions	Preferred Alternative	Change from Existing Conditions to Preferred Alternative
R1	2	9%	15	54%	5	18%	17	63%	108%	18%	0	0	0
R2	7	26%	19	71%	3	13%	16	58%	-51%	-19%	0	0	0
R3	5	18%	17	63%	3	10%	15	55%	-44%	-13%	0	0	0
R4	9	33%	21	78%	4	14%	16	59%	-58%	-24%	0	0	0
R5	4	16%	17	61%	2	9%	15	54%	-43%	-11%	0	0	0
R6	5	17%	17	62%	2	9%	15	54%	-46%	-12%	0	0	0
R7	4	15%	16	61%	7	27%	19	72%	73%	19%	0	0	0
R8	3	11%	15	56%	5	17%	17	62%	61%	12%	0	0	0
R9	4	13%	16	58%	5	18%	17	63%	37%	8%	0	0	0
R10	2	8%	14	53%	3	10%	15	55%	27%	4%	0	0	0
R11	2	7%	14	52%	3	11%	15	56%	46%	6%	0	0	0
R12	3	12%	15	57%	4	15%	16	60%	26%	5%	0	0	0
R13	2	9%	15	54%	4	15%	16	60%	65%	11%	0	0	0
R14	3	10%	15	55%	4	13%	16	58%	32%	6%	0	0	0
R15	2	9%	15	54%	3	11%	15	56%	23%	4%	0	0	0
R16	2	9%	15	54%	4	16%	17	61%	76%	13%	0	0	0
R17	3	11%	15	56%	7	25%	19	70%	128%	25%	0	0	0
R18	3	10%	15	55%	6	23%	18	68%	122%	22%	0	0	0
R19	2	8%	14	53%	5	17%	17	62%	103%	16%	0	0	0
R20	2	8%	14	53%	5	17%	17	62%	108%	17%	0	0	0
R21	2	8%	14	53%	4	16%	17	61%	90%	14%	0	0	0
R22	2	8%	14	53%	4	13%	16	59%	63%	10%	0	0	0
R23	2	8%	14	53%	3	12%	16	58%	54%	8%	0	0	0
R24	2	8%	14	53%	3	9%	15	54%	23%	3%	0	0	0
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

[1] Criteria = 27 µg/m³

[2] 90th Percentile Background Concentration = 12 µg/m³

[3] Results based on the 3-year average of the annual 98th percentile of the daily 24-hour average concentrations

[4] Exceedances per year have been rounded to the nearest full day.

Scenario 1 - End of Stage 1 of Preferred Alternative

Annual PM2.5 Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 1				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
R1	0.3	3%	7.2	82%	0.5	6%	7.4	84%	63%	3%
R2	0.9	10%	7.8	88%	0.6	7%	7.5	85%	-34%	-4%
R3	0.6	7%	7.5	85%	0.4	5%	7.3	83%	-27%	-2%
R4	1.2	14%	8.1	92%	0.7	7%	7.5	86%	-45%	-7%
R5	0.5	6%	7.4	84%	0.4	4%	7.3	83%	-22%	-1%
R6	0.5	6%	7.4	84%	0.4	5%	7.3	83%	-23%	-2%
R7	0.5	5%	7.4	84%	0.8	9%	7.6	87%	60%	4%
R8	0.3	4%	7.2	82%	0.5	6%	7.4	84%	53%	2%
R9	0.4	5%	7.3	83%	0.5	6%	7.4	84%	23%	1%
R10	0.1	2%	7.0	80%	0.2	2%	7.1	80%	25%	1%
R11	0.2	2%	7.1	80%	0.2	2%	7.1	81%	30%	1%
R12	0.2	3%	7.1	81%	0.3	3%	7.2	82%	26%	1%
R13	0.3	3%	7.1	81%	0.3	4%	7.2	82%	26%	1%
R14	0.3	3%	7.1	81%	0.3	4%	7.2	82%	27%	1%
R15	0.2	2%	7.1	80%	0.2	3%	7.1	81%	28%	1%
R16	0.3	3%	7.2	81%	0.4	4%	7.3	83%	49%	2%
R17	0.4	4%	7.2	82%	0.6	7%	7.5	85%	76%	4%
R18	0.3	3%	7.2	82%	0.5	6%	7.4	84%	64%	3%
R19	0.3	3%	7.2	81%	0.4	5%	7.3	83%	56%	2%
R20	0.3	3%	7.2	81%	0.4	4%	7.3	83%	49%	2%
R21	0.3	3%	7.1	81%	0.4	4%	7.3	82%	44%	2%
R22	0.2	3%	7.1	81%	0.3	3%	7.2	82%	34%	1%
R23	0.2	2%	7.1	81%	0.3	3%	7.2	81%	31%	1%
R24	0.2	2%	7.1	80%	0.2	3%	7.1	81%	30%	1%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

[1] Criteria = 8.8 µg/m³

[2] Average Background Concentration = 7 µg/m³

Scenario 2 - End of Stage 2 of Preferred Alternative - No Mitigation

Annual TSP Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 2				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
R1	3	5%	27	45%	4	6%	27	46%	13%	1%
R2	11	19%	35	59%	13	22%	37	62%	16%	5%
R3	7	12%	31	52%	8	13%	31	52%	3%	1%
R4	16	26%	40	66%	19	31%	42	71%	18%	7%
R5	6	10%	30	50%	7	11%	30	51%	7%	1%
R6	6	10%	30	50%	6	11%	30	50%	4%	1%
R7	6	10%	30	50%	7	11%	31	51%	11%	2%
R8	3	5%	27	45%	4	6%	28	46%	13%	2%
R9	6	10%	30	49%	6	11%	30	50%	10%	2%
R10	1	2%	25	42%	2	3%	26	43%	25%	1%
R11	2	3%	25	42%	2	3%	26	43%	26%	2%
R12	2	4%	26	44%	3	5%	27	45%	21%	2%
R13	3	4%	27	44%	3	5%	27	45%	21%	2%
R14	3	4%	26	44%	3	5%	27	45%	29%	3%
R15	2	3%	26	43%	2	4%	26	43%	21%	1%
R16	3	4%	26	44%	3	5%	27	45%	15%	1%
R17	4	6%	27	46%	4	7%	28	47%	14%	2%
R18	3	5%	27	45%	3	6%	27	45%	13%	1%
R19	3	5%	27	45%	3	6%	27	45%	13%	1%
R20	3	5%	27	44%	3	5%	27	45%	14%	1%
R21	3	4%	26	44%	3	5%	27	45%	14%	1%
R22	2	4%	26	44%	3	4%	26	44%	12%	1%
R23	2	4%	26	43%	2	4%	26	44%	12%	1%
R24	2	3%	26	43%	2	3%	26	43%	13%	1%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 60 µg/m³
[2] Average Background Concentration = 23.9 µg/m³

Scenario 2 - End of Stage 2 of Preferred Alternative - No Mitigation

24-Hour TSP Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 2				Percentage Change from Existing Conditions to Preferred Alternative		Exceedances per Year	
	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)	Existing Conditions	Preferred Alternative
R1	53	44%	99	83%	51	42%	96	80%	-5%	-3%	0	0
R2	150	125%	196	163%	198	165%	243	203%	32%	24%	3	5
R3	92	77%	138	115%	71	59%	117	98%	-23%	-15%	<1	0
R4	220	183%	266	221%	253	211%	299	249%	15%	12%	6	10
R5	78	65%	123	103%	75	62%	121	101%	-3%	-2%	<1	<1
R6	77	64%	123	103%	67	56%	113	94%	-14%	-9%	<1	0
R7	103	86%	149	124%	139	116%	185	154%	36%	25%	<1	1
R8	53	44%	99	82%	68	57%	114	95%	30%	16%	0	0
R9	107	89%	152	127%	124	104%	170	142%	17%	12%	<1	2
R10	44	36%	90	75%	61	51%	106	89%	39%	19%	0	0
R11	35	29%	80	67%	46	39%	92	77%	34%	14%	0	0
R12	69	58%	115	96%	85	71%	131	109%	22%	13%	0	<1
R13	68	57%	114	95%	90	75%	136	113%	32%	19%	0	<1
R14	48	40%	94	78%	63	53%	109	91%	33%	17%	0	0
R15	50	42%	96	80%	62	52%	108	90%	25%	13%	0	0
R16	60	50%	106	88%	64	53%	110	92%	6%	4%	0	0
R17	45	37%	91	76%	50	41%	96	80%	11%	6%	0	0
R18	41	34%	87	73%	46	38%	92	77%	11%	5%	0	0
R19	49	40%	94	79%	49	41%	95	79%	2%	1%	0	0
R20	38	31%	83	70%	42	35%	88	74%	13%	6%	0	0
R21	35	29%	81	68%	39	33%	85	71%	11%	5%	0	0
R22	44	36%	90	75%	44	37%	90	75%	1%	1%	0	0
R23	47	39%	93	77%	41	34%	87	72%	-13%	-6%	0	0
R24	55	46%	101	84%	48	40%	94	78%	-14%	-7%	0	0
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 120 µg/m³

[2] 90th Percentile Background Concentration = 46 µg/m³

[3] Exceedances per year have been rounded to the nearest full day.

Scenario 2 - End of Stage 2 of Preferred Alternative - No Mitigation

24-Hour PM10 Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 2				Percentage Change from Existing Conditions to Preferred Alternative		Exceedances per Year	
	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)	Existing Conditions	Preferred Alternative
R1	19	38%	38	77%	19	37%	38	76%	-3%	-1%	<1	0
R2	55	109%	74	148%	69	138%	88	177%	26%	19%	11	3
R3	32	65%	52	103%	25	51%	45	89%	-22%	-14%	6	0
R4	80	159%	99	198%	87	175%	107	213%	10%	8%	17	6
R5	27	55%	47	93%	27	54%	46	92%	-2%	-1%	4	0
R6	27	54%	46	93%	24	48%	43	86%	-12%	-7%	4	0
R7	36	73%	56	111%	52	104%	71	142%	43%	28%	3	<1
R8	18	36%	37	75%	25	51%	45	89%	39%	19%	<1	0
R9	35	71%	55	109%	44	87%	63	126%	23%	15%	4	<1
R10	16	32%	35	70%	23	46%	42	85%	46%	21%	<1	0
R11	12	24%	31	62%	17	34%	36	72%	43%	16%	0	0
R12	25	51%	45	89%	32	63%	51	102%	25%	14%	1	<1
R13	25	50%	44	89%	34	67%	53	106%	34%	19%	<1	<1
R14	17	35%	37	73%	23	47%	43	85%	34%	16%	<1	0
R15	19	37%	38	76%	23	46%	42	85%	24%	12%	<1	0
R16	21	43%	41	81%	24	47%	43	86%	11%	6%	<1	0
R17	17	33%	36	72%	19	38%	38	76%	15%	7%	<1	0
R18	15	30%	34	68%	17	34%	36	73%	15%	6%	<1	0
R19	18	35%	37	74%	18	36%	38	75%	4%	2%	<1	0
R20	14	27%	33	66%	16	31%	35	70%	16%	6%	<1	0
R21	13	26%	32	64%	15	30%	34	69%	18%	7%	0	0
R22	16	33%	36	71%	16	33%	36	71%	0%	0%	0	0
R23	18	35%	37	74%	15	30%	34	69%	-14%	-7%	0	0
R24	21	41%	40	80%	18	37%	38	75%	-11%	-6%	0	0
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	n/a	N/A

Notes:
[1] Criteria = 50 µg/m³
[2] 90th Percentile Background Concentration = 19 µg/m³

Scenario 2 - End of Stage 2 of Preferred Alternative - No Mitigation

24-Hour PM2.5 Predicted Concentrations (CAAQS)

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 2				Percentage Change from Existing Conditions to Preferred Alternative		Exceedances per Year	
	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³) [3]	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria with Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)	Existing Conditions	Preferred Alternative
R1	2	9%	15	54%	3	10%	15	55%	8%	1%	0	0
R2	7	26%	19	71%	8	28%	20	73%	7%	2%	0	0
R3	5	18%	17	63%	4	15%	16	60%	-18%	-5%	0	0
R4	9	33%	21	78%	10	37%	22	82%	11%	5%	0	0
R5	4	16%	17	61%	4	14%	16	59%	-12%	-3%	0	0
R6	5	17%	17	62%	4	14%	16	59%	-18%	-5%	0	0
R7	4	15%	16	61%	4	16%	17	62%	6%	2%	0	0
R8	3	11%	15	56%	3	11%	15	56%	6%	1%	0	0
R9	4	13%	16	58%	4	17%	17	62%	25%	6%	0	0
R10	2	8%	14	53%	3	10%	15	55%	23%	3%	0	0
R11	2	7%	14	52%	2	8%	14	53%	14%	2%	0	0
R12	3	12%	15	57%	4	14%	16	59%	24%	5%	0	0
R13	2	9%	15	54%	3	11%	15	57%	28%	5%	0	0
R14	3	10%	15	55%	3	11%	15	57%	16%	3%	0	0
R15	2	9%	15	54%	3	11%	15	56%	13%	2%	0	0
R16	2	9%	15	54%	3	10%	15	56%	14%	2%	0	0
R17	3	11%	15	56%	3	12%	15	57%	4%	1%	0	0
R18	3	10%	15	55%	3	11%	15	56%	5%	1%	0	0
R19	2	8%	14	53%	2	9%	15	54%	6%	1%	0	0
R20	2	8%	14	53%	2	9%	15	54%	11%	2%	0	0
R21	2	8%	14	53%	2	9%	15	54%	10%	2%	0	0
R22	2	8%	14	53%	2	9%	15	54%	8%	1%	0	0
R23	2	8%	14	53%	2	8%	14	54%	5%	1%	0	0
R24	2	8%	14	53%	2	7%	14	52%	-6%	-1%	0	0
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

[1] Criteria = 27 µg/m³

[2] 90th Percentile Background Concentration = 12 µg/m³

[3] Results based on the 3-year average of the annual 98th percentile of the daily 24-hour average concentrations

Scenario 2 - End of Stage 2 of Preferred Alternative - No Mitigation

Annual PM2.5 Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 2				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
R1	0.3	3%	7.2	82%	0.3	4%	7.2	82%	10%	0%
R2	0.9	10%	7.8	88%	0.9	10%	7.8	89%	4%	0%
R3	0.6	7%	7.5	85%	0.6	6%	7.5	85%	-6%	0%
R4	1.2	14%	8.1	92%	1.3	14%	8.1	93%	6%	1%
R5	0.5	6%	7.4	84%	0.5	6%	7.4	84%	0%	0%
R6	0.5	6%	7.4	84%	0.5	6%	7.4	84%	-4%	0%
R7	0.5	5%	7.4	84%	0.5	6%	7.4	84%	10%	1%
R8	0.3	4%	7.2	82%	0.4	4%	7.2	82%	7%	0%
R9	0.4	5%	7.3	83%	0.5	5%	7.4	84%	10%	1%
R10	0.1	2%	7.0	80%	0.2	2%	7.0	80%	10%	0%
R11	0.2	2%	7.1	80%	0.2	2%	7.1	80%	11%	0%
R12	0.2	3%	7.1	81%	0.3	3%	7.2	81%	9%	0%
R13	0.3	3%	7.1	81%	0.3	3%	7.2	81%	10%	0%
R14	0.3	3%	7.1	81%	0.3	3%	7.2	81%	11%	0%
R15	0.2	2%	7.1	80%	0.2	2%	7.1	81%	9%	0%
R16	0.3	3%	7.2	81%	0.3	3%	7.2	82%	7%	0%
R17	0.4	4%	7.2	82%	0.4	4%	7.3	83%	9%	0%
R18	0.3	3%	7.2	82%	0.3	4%	7.2	82%	8%	0%
R19	0.3	3%	7.2	81%	0.3	3%	7.2	82%	10%	0%
R20	0.3	3%	7.2	81%	0.3	3%	7.2	82%	10%	0%
R21	0.3	3%	7.1	81%	0.3	3%	7.2	81%	10%	0%
R22	0.2	3%	7.1	81%	0.2	3%	7.1	81%	8%	0%
R23	0.2	2%	7.1	81%	0.2	3%	7.1	81%	8%	0%
R24	0.2	2%	7.1	80%	0.2	2%	7.1	80%	8%	0%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 8.8 µg/m³
[2] Average Background Concentration = 7 µg/m³

Scenario 3 - End of Stage 4 of Preferred Alternative - No Mitigation

Annual TSP Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 3			
	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]
R1	3	5%	27	45%	3	5%	27	45%
R2	11	19%	35	59%	8	14%	32	54%
R3	7	12%	31	52%	6	10%	30	50%
R4	16	26%	40	66%	11	18%	34	57%
R5	6	10%	30	50%	5	8%	29	48%
R6	6	10%	30	50%	5	9%	29	49%
R7	6	10%	30	50%	7	11%	31	51%
R8	3	5%	27	45%	3	6%	27	45%
R9	6	10%	30	49%	6	11%	30	50%
R10	1	2%	25	42%	2	3%	26	43%
R11	2	3%	25	42%	2	3%	26	43%
R12	2	4%	26	44%	3	5%	27	45%
R13	3	4%	27	44%	3	5%	27	45%
R14	3	4%	26	44%	3	5%	27	45%
R15	2	3%	26	43%	2	4%	26	43%
R16	3	4%	26	44%	3	5%	27	44%
R17	4	6%	27	46%	4	6%	28	46%
R18	3	5%	27	45%	3	5%	27	45%
R19	3	5%	27	45%	3	5%	27	45%
R20	3	5%	27	44%	3	5%	27	44%
R21	3	4%	26	44%	3	5%	27	44%
R22	2	4%	26	44%	2	4%	26	44%
R23	2	4%	26	43%	2	3%	26	43%
R24	2	3%	26	43%	2	3%	26	43%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 60 µg/m³
[2] Average Background Concentration = 23.9 µg/m³

24-Hour TSP Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 3				Exceedances per Year
	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Preferred Alternative
R1	53	44%	99	83%	48	40%	94	78%	0
R2	150	125%	196	163%	136	114%	182	152%	2
R3	92	77%	138	115%	73	61%	119	99%	0
R4	220	183%	266	221%	170	141%	215	180%	3
R5	78	65%	123	103%	64	53%	110	92%	0
R6	77	64%	123	103%	68	56%	114	95%	0
R7	103	86%	149	124%	129	107%	175	146%	1
R8	53	44%	99	82%	68	57%	114	95%	0
R9	107	89%	152	127%	124	104%	170	142%	2
R10	44	36%	90	75%	59	49%	105	87%	0
R11	35	29%	80	67%	46	38%	92	77%	0
R12	69	58%	115	96%	82	68%	128	107%	<1
R13	68	57%	114	95%	91	76%	137	114%	<1
R14	48	40%	94	78%	64	53%	110	92%	0
R15	50	42%	96	80%	61	51%	107	89%	0
R16	60	50%	106	88%	63	52%	108	90%	0
R17	45	37%	91	76%	54	45%	100	83%	0
R18	41	34%	87	73%	47	39%	93	77%	0
R19	49	40%	94	79%	51	43%	97	81%	0
R20	38	31%	83	70%	57	47%	103	85%	0
R21	35	29%	81	68%	55	46%	101	84%	0
R22	44	36%	90	75%	38	32%	84	70%	0
R23	47	39%	93	77%	42	35%	88	73%	0
R24	55	46%	101	84%	58	48%	104	86%	0
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 120 µg/m³
[2] 90th Percentile Background Concentration = 46 µg/m³
[3] Exceedances per year have been rounded to the nearest full day.

Scenario 3 - End of Stage 4 of Preferred Alternative - No Mitigation

24-Hour PM10 Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 3				Exceedances per Year
	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Preferred Alternative
R1	19	38%	38	77%	18	36%	37	74%	0
R2	55	109%	74	148%	48	97%	68	135%	<1
R3	32	65%	52	103%	26	51%	45	90%	0
R4	80	159%	99	198%	60	119%	79	158%	2
R5	27	55%	47	93%	23	46%	42	84%	0
R6	27	54%	46	93%	24	48%	43	86%	0
R7	36	73%	56	111%	48	95%	67	134%	<1
R8	18	36%	37	75%	25	50%	44	89%	0
R9	35	71%	55	109%	43	87%	63	125%	<1
R10	16	32%	35	70%	22	45%	42	84%	0
R11	12	24%	31	62%	17	34%	36	72%	0
R12	25	51%	45	89%	30	61%	50	100%	0
R13	25	50%	44	89%	34	68%	53	107%	<1
R14	17	35%	37	73%	24	47%	43	86%	0
R15	19	37%	38	76%	23	45%	42	84%	0
R16	21	43%	41	81%	23	46%	42	85%	0
R17	17	33%	36	72%	20	40%	39	78%	0
R18	15	30%	34	68%	18	35%	37	74%	0
R19	18	35%	37	74%	19	38%	38	77%	0
R20	14	27%	33	66%	21	42%	40	81%	0
R21	13	26%	32	64%	21	41%	40	80%	0
R22	16	33%	36	71%	14	29%	34	68%	0
R23	18	35%	37	74%	16	32%	35	71%	0
R24	21	41%	40	80%	23	45%	42	84%	0
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 50 µg/m³
[2] 90th Percentile Background Concentration = 19 µg/m³

24-Hour PM2.5 Predicted Concentrations (CAAQS)

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 3				Exceedances per Year
	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³) [3]	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria with Background (%) [1]	Preferred Alternative
R1	2	9%	15	54%	3	13%	15	58%	0
R2	7	26%	19	71%	6	34%	18	79%	0
R3	5	18%	17	63%	4	17%	16	62%	0
R4	9	33%	21	78%	7	41%	19	86%	0
R5	4	16%	17	61%	3	20%	15	65%	0
R6	5	17%	17	62%	3	16%	15	61%	0
R7	4	15%	16	61%	4	27%	17	72%	0
R8	3	11%	15	56%	3	16%	15	61%	0
R9	4	13%	16	58%	5	21%	17	66%	0
R10	2	8%	14	53%	3	15%	15	60%	0
R11	2	7%	14	52%	2	14%	14	59%	0
R12	3	12%	15	57%	4	21%	16	67%	0
R13	2	9%	15	54%	3	27%	15	72%	0
R14	3	10%	15	55%	3	16%	15	61%	0
R15	2	9%	15	54%	3	16%	15	61%	0
R16	2	9%	15	54%	3	13%	15	58%	0
R17	3	11%	15	56%	3	16%	15	61%	0
R18	3	10%	15	55%	2	13%	15	59%	0
R19	2	8%	14	53%	3	13%	15	58%	0
R20	2	8%	14	53%	3	15%	15	60%	0
R21	2	8%	14	53%	3	14%	15	60%	0
R22	2	8%	14	53%	2	11%	14	56%	0
R23	2	8%	14	53%	2	11%	14	56%	0
R24	2	8%	14	53%	2	16%	14	62%	0
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 27 µg/m³
[2] 90th Percentile Background Concentration = 12 µg/m³
[3] Results based on the 3-year average of the annual 98th percentile of the daily 24-hour average concentrations

Scenario 3 - End of Stage 4 of Preferred Alternative - No Mitigation

Annual PM2.5 Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 3			
	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]
R1	0.3	3%	7.2	82%	0.3	4%	7.2	82%
R2	0.9	10%	7.8	88%	0.6	7%	7.5	85%
R3	0.6	7%	7.5	85%	0.5	6%	7.4	84%
R4	1.19	14%	8.1	92%	0.8	9%	7.7	87%
R5	0.5	6%	7.4	84%	0.4	5%	7.3	83%
R6	0.5	6%	7.4	84%	0.4	5%	7.3	83%
R7	0.5	5%	7.4	84%	0.5	6%	7.4	84%
R8	0.3	4%	7.2	82%	0.4	4%	7.2	82%
R9	0.43	5%	7.3	83%	0.5	5%	7.4	84%
R10	0.1	2%	7.0	80%	0.2	2%	7.0	80%
R11	0.2	2%	7.1	80%	0.2	2%	7.1	80%
R12	0.2	3%	7.1	81%	0.3	3%	7.2	81%
R13	0.3	3%	7.1	81%	0.3	3%	7.2	81%
R14	0.3	3%	7.1	81%	0.3	3%	7.2	81%
R15	0.2	2%	7.1	80%	0.2	2%	7.1	81%
R16	0.3	3%	7.2	81%	0.3	3%	7.2	81%
R17	0.4	4%	7.2	82%	0.4	4%	7.3	82%
R18	0.3	3%	7.2	82%	0.3	3%	7.2	82%
R19	0.3	3%	7.2	81%	0.3	3%	7.2	82%
R20	0.3	3%	7.2	81%	0.3	3%	7.2	81%
R21	0.3	3%	7.1	81%	0.3	3%	7.2	81%
R22	0.2	3%	7.1	81%	0.2	3%	7.1	81%
R23	0.2	2%	7.1	81%	0.2	2%	7.1	81%
R24	0.2	2%	7.1	80%	0.2	2%	7.1	80%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 8.8 µg/m³
[2] Average Background Concentration = 7 µg/m³

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All Scenarios – Predicted Concentrations with Mitigation, TSP, PM_{10}, $PM_{2.5}$

Summary of Dust Dispersion Modelling Results

Contaminant	CAS #	Averaging Period	Criteria (µg/m³)	Background Concentration (µg/m³)	Preferred Alternative - Scenario 2				
					Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%)	Maximum Modelled Concentration With Background (µg/m³)	Percentage of Criteria With Background (%)	Receptor Location for Maximum Concentration
Total Suspended Particulate	TSP	24-Hour	120	45.9	126	105%	172	143%	R18
		Annual	60	23.9	8	13%	32	53%	R7
Particulate Matter <10µm	PM10	24-Hour	50	19.3	47	95%	67	133%	R7
Particulate Matter <2.5µm	PM2.5	24-Hour	27	12.2	7	25%	19	70%	R7
		Annual	8.8	6.9	0.7	8%	7.6	86%	R7

Summary of Dust Dispersion Modelling Results

Contaminant	CAS #	Averaging Period	Preferred Alternative - Scenario 2		
			Number of Receptors Potentially Affected [1]	Maximum Frequency of Excedance of Criteria at a Receptor [2]	Receptor Location for Maximum Frequency of Exceedance
Total Suspended Particulate	TSP	24-Hour	9	0.7%	R7
		Annual	0	0%	- -
Particulate Matter <10µm	PM10	24-Hour	3	0.5%	R7
Particulate Matter <2.5µm	PM2.5	24-Hour	0	0%	- -
		Annual	0	0%	- -

Notes:

[1] Number of sensitive receptors with maximum modelled concentrations (including background) that are greater than the criteria for each contaminant. There are a total of 24 residential receptors (applicable to all averaging periods) and 1 short-term receptor (applicable to 1-hour and 10-minute averaging periods only).

[2] Maximum percentage of time the criteria is exceeded at a sensitive receptor location.

Summary of Dust Dispersion Modelling Results

Contaminant	CAS #	Averaging Period	Criteria (µg/m³)	Background Concentration (µg/m³)	Preferred Alternative - Scenario 2			
					Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%)	Maximum Modelled Concentration With Background (µg/m³)	Percentage of Criteria With Background (%)
Total Suspended Particulate	TSP	24-Hour	120	46	235	196%	281	234%
		Annual	60	24	17	29%	41	69%
Particulate Matter <10µm	PM10	24-Hour	50	19	81	161%	100	200%
Particulate Matter <2.5µm	PM2.5	24-Hour	27	12	10	36%	22	81%
		Annual	8.8	7	1	14%	8	92%

Summary of Dust Dispersion Modelling Results

Contaminant	CAS #	Averaging Period	Preferred Alternative - Scenario 2		
			Number of Receptors Potentially Affected [1]	Maximum Frequency of Excedance of Criteria at a Receptor [2]	Receptor Location for Maximum Frequency of Exceedance
Total Suspended Particulate	TSP	24-Hour	3	2.2%	R4
		Annual	0	0%	- -
Particulate Matter <10µm	PM10	24-Hour	3	1.3%	R4
Particulate Matter <2.5µm	PM2.5	24-Hour	0	0%	- -
		Annual	0	0%	- -

Notes:

[1] Number of sensitive receptors with maximum modelled concentrations (including background) that are greater than the criteria for each contaminant. There are a total of 24 residential receptors (applicable to all averaging periods) and 1 short-term receptor (applicable to 1-hour and 10-minute averaging periods only).

[2] Maximum percentage of time the criteria is exceeded at a sensitive receptor location.

Summary of Dust Dispersion Modelling Results

Contaminant	CAS #	Averaging Period	Criteria (µg/m³)	Background Concentration (µg/m³)	Preferred Alternative - Scenario 3 Mitigated				
					Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%)	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%)	Receptor Location for Maximum Concentration
Total Suspended Particulate	TSP	24-Hour	120	46	151	126%	197	164%	R4
		Annual	60	24	9	16%	33	55%	R4
Particulate Matter <10µm	PM10	24-Hour	50	19	53	105%	72	144%	R4
Particulate Matter <2.5µm	PM2.5	24-Hour	27	12	6	38%	19	83%	R4
		Annual	8.8	7	1	8%	8	87%	R4

Notes:

Summary of Dust Dispersion Modelling Results

Contaminant	CAS #	Averaging Period	Preferred Alternative - Scenario 3 Mitigated		
			Number of Receptors Potentially Affected [1]	Maximum Frequency of Excedance of Criteria at a Receptor [2]	Receptor Location for Maximum Frequency of Exceedance
Total Suspended Particulate	TSP	24-Hour	4	0.5%	R4
		Annual	0	0%	- -
Particulate Matter <10µm	PM10	24-Hour	3	0.4%	R4
Particulate Matter <2.5µm	PM2.5	24-Hour	0	0%	- -
		Annual	0	0%	- -

Notes:

[1] Number of sensitive receptors with maximum modelled concentrations (including background) that are greater than the criteria for each contaminant. There are a total of 24 residential receptors (applicable to all averaging periods) and 1 short-term receptor (applicable to 1-hour and 10-minute averaging periods only).

[2] Maximum percentage of time the criteria is exceeded at a sensitive receptor location.

Scenario 1 - End of Stage 1 of Preferred Alternative

Annual TSP Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
R1	3	5%	27	45%	6	9%	29	49%	73%	9%
R2	11	19%	35	59%	7	11%	31	51%	-40%	-13%
R3	7	12%	31	52%	5	8%	29	48%	-35%	-8%
R4	16	26%	40	66%	8	13%	32	53%	-49%	-19%
R5	6	10%	30	50%	4	7%	28	46%	-34%	-7%
R6	6	10%	30	50%	4	7%	28	47%	-31%	-6%
R7	6	10%	30	50%	8	13%	32	53%	35%	7%
R8	3	5%	27	45%	5	8%	29	48%	56%	7%
R9	6	10%	30	49%	5	8%	28	47%	-21%	-4%
R10	1	2%	25	42%	1	2%	25	42%	11%	1%
R11	2	3%	25	42%	2	3%	26	43%	18%	1%
R12	2	4%	26	44%	3	5%	27	44%	15%	1%
R13	3	4%	27	44%	3	5%	27	45%	11%	1%
R14	3	4%	26	44%	3	5%	27	45%	22%	2%
R15	2	3%	26	43%	2	3%	26	43%	9%	1%
R16	3	4%	26	44%	4	6%	28	46%	44%	4%
R17	4	6%	27	46%	7	11%	31	51%	90%	12%
R18	3	5%	27	45%	5	8%	29	48%	67%	8%
R19	3	5%	27	45%	5	8%	29	48%	63%	7%
R20	3	5%	27	44%	4	7%	28	47%	57%	6%
R21	3	4%	26	44%	4	6%	28	46%	50%	5%
R22	2	4%	26	44%	3	5%	27	45%	31%	3%
R23	2	4%	26	43%	3	4%	27	44%	24%	2%
R24	2	3%	26	43%	2	4%	26	43%	22%	2%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 60 µg/m³
[2] Average Background Concentration = 23.9 µg/m³

Scenario 1 - End of Stage 1 of Preferred Alternative

24-Hour TSP Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative				Percentage Change from Existing Conditions to Preferred Alternative		Exceedances per Year [3]		
	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)	Existing Conditions	Preferred Alternative	Change from Existing Conditions to Preferred Alternative
R1	53	44%	99	83%	86	72%	132	110%	61%	33%	<1	<1	0
R2	150	125%	196	163%	72	60%	118	98%	-52%	-40%	12	0	-12
R3	92	77%	138	115%	49	41%	95	79%	-47%	-31%	7	0	-7
R4	220	183%	266	221%	85	71%	131	109%	-61%	-51%	22	<1	-22
R5	78	65%	123	103%	40	33%	86	71%	-49%	-31%	5	0	-5
R6	77	64%	123	103%	46	38%	92	76%	-41%	-26%	5	0	-5
R7	103	86%	149	124%	114	95%	160	133%	11%	7%	5	3	-2
R8	53	44%	99	82%	78	65%	124	103%	47%	25%	<1	<1	-1
R9	107	89%	152	127%	63	52%	109	91%	-41%	-29%	5	0	-5
R10	44	36%	90	75%	43	36%	89	74%	-1%	-1%	<1	0	0
R11	35	29%	80	67%	46	39%	92	77%	34%	14%	0	0	0
R12	69	58%	115	96%	66	55%	112	94%	-5%	-3%	2	0	-2
R13	68	57%	114	95%	81	68%	127	106%	19%	11%	<1	<1	-1
R14	48	40%	94	78%	60	50%	106	89%	26%	13%	<1	0	0
R15	50	42%	96	80%	45	38%	91	76%	-9%	-5%	<1	0	0
R16	60	50%	106	88%	79	66%	125	104%	32%	18%	<1	<1	0
R17	45	37%	91	76%	118	98%	164	137%	164%	81%	<1	1	1
R18	41	34%	87	73%	126	105%	172	143%	205%	97%	<1	1	1
R19	49	40%	94	79%	79	66%	125	104%	62%	32%	<1	<1	0
R20	38	31%	83	70%	69	58%	115	96%	85%	38%	<1	0	0
R21	35	29%	81	68%	66	55%	112	93%	86%	37%	0	0	0
R22	44	36%	90	75%	69	57%	115	96%	58%	28%	0	0	0
R23	47	39%	93	77%	67	56%	113	94%	42%	21%	0	0	0
R24	55	46%	101	84%	58	49%	104	87%	5%	3%	0	0	0
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 120 µg/m³

[2] 90th Percentile Background Concentration = 46 µg/m³

[3] Exceedances per year have been rounded to the nearest full day.

Scenario 1 - End of Stage 1 of Preferred Alternative

24-Hour PM10 Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative				Percentage Change from Existing Conditions to Preferred Alternative		Exceedances per Year [3]		
	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)	Existing Conditions	Preferred Alternative	Change from Existing Conditions to Preferred Alternative
R1	19	38%	38	77%	30	61%	50	100%	59%	29%	<1	0	0
R2	55	109%	74	148%	25	51%	45	89%	-54%	-40%	11	0	-11
R3	32	65%	52	103%	18	37%	38	75%	-44%	-27%	6	0	-6
R4	80	159%	99	198%	30	60%	49	99%	-62%	-50%	17	0	-17
R5	27	55%	47	93%	15	30%	34	69%	-45%	-26%	4	0	-4
R6	27	54%	46	93%	17	34%	36	73%	-37%	-22%	4	0	-4
R7	36	73%	56	111%	47	95%	67	133%	31%	20%	3	2	-1
R8	18	36%	37	75%	30	59%	49	98%	63%	30%	<1	0	0
R9	35	71%	55	109%	24	48%	43	87%	-32%	-21%	4	0	-4
R10	16	32%	35	70%	17	33%	36	72%	5%	2%	<1	0	0
R11	12	24%	31	62%	18	36%	37	74%	51%	19%	0	0	0
R12	25	51%	45	89%	25	50%	44	88%	-2%	-1%	1	0	-1
R13	25	50%	44	89%	31	61%	50	100%	21%	12%	<1	0	-1
R14	17	35%	37	73%	24	47%	43	86%	36%	17%	<1	0	0
R15	19	37%	38	76%	17	35%	37	73%	-6%	-3%	<1	0	0
R16	21	43%	41	81%	28	56%	47	95%	32%	17%	<1	0	0
R17	17	33%	36	72%	42	84%	61	123%	154%	71%	<1	1	1
R18	15	30%	34	68%	46	91%	65	130%	205%	90%	<1	<1	1
R19	18	35%	37	74%	28	56%	47	95%	60%	29%	<1	0	0
R20	14	27%	33	66%	25	51%	45	90%	87%	36%	<1	0	0
R21	13	26%	32	64%	26	53%	46	91%	104%	42%	0	0	0
R22	16	33%	36	71%	28	55%	47	94%	69%	32%	0	0	0
R23	18	35%	37	74%	27	53%	46	92%	52%	25%	0	0	0
R24	21	41%	40	80%	23	45%	42	84%	10%	5%	0	0	0
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 50 µg/m³

[2] 90th Percentile Background Concentration = 19 µg/m³

[3] Exceedances per year have been rounded to the nearest full day.

Scenario 1 - End of Stage 1 of Preferred Alternative

24-Hour PM2.5 Predicted Concentrations (CAAQS)

Receptor ID	Existing Conditions				Preferred Alternative				Percentage Change from Existing Conditions to Preferred Alternative		Exceedances per Year [4]		
	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³) [3]	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria with Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)	Existing Conditions	Preferred Alternative	Change from Existing Conditions to Preferred Alternative
R1	2	9%	15	54%	5	17%	17	62%	91%	15%	0	0	0
R2	7	26%	19	71%	3	12%	16	57%	-53%	-19%	0	0	0
R3	5	18%	17	63%	2	9%	15	54%	-51%	-15%	0	0	0
R4	9	33%	21	78%	4	14%	16	59%	-59%	-25%	0	0	0
R5	4	16%	17	61%	2	8%	14	53%	-49%	-13%	0	0	0
R6	5	17%	17	62%	2	8%	14	53%	-50%	-14%	0	0	0
R7	4	15%	16	61%	7	25%	19	70%	64%	16%	0	0	0
R8	3	11%	15	56%	4	15%	16	60%	45%	9%	0	0	0
R9	4	13%	16	58%	4	13%	16	58%	1%	0%	0	0	0
R10	2	8%	14	53%	2	8%	14	54%	8%	1%	0	0	0
R11	2	7%	14	52%	3	10%	15	55%	35%	5%	0	0	0
R12	3	12%	15	57%	4	13%	16	58%	13%	3%	0	0	0
R13	2	9%	15	54%	4	14%	16	59%	55%	9%	0	0	0
R14	3	10%	15	55%	3	12%	15	57%	23%	4%	0	0	0
R15	2	9%	15	54%	3	11%	15	56%	16%	3%	0	0	0
R16	2	9%	15	54%	4	15%	16	60%	62%	10%	0	0	0
R17	3	11%	15	56%	7	25%	19	70%	125%	25%	0	0	0
R18	3	10%	15	55%	6	22%	18	67%	119%	22%	0	0	0
R19	2	8%	14	53%	4	15%	16	60%	84%	13%	0	0	0
R20	2	8%	14	53%	4	16%	16	61%	90%	14%	0	0	0
R21	2	8%	14	53%	4	15%	16	60%	78%	12%	0	0	0
R22	2	8%	14	53%	4	13%	16	58%	58%	9%	0	0	0
R23	2	8%	14	53%	3	12%	15	57%	51%	8%	0	0	0
R24	2	8%	14	53%	2	9%	15	54%	15%	2%	0	0	0
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

[1] Criteria = 27 µg/m³

[2] 90th Percentile Background Concentration = 12 µg/m³

[3] Results based on the 3-year average of the annual 98th percentile of the daily 24-hour average concentrations

[4] Exceedances per year have been rounded to the nearest full day.

Scenario 1 - End of Stage 1 of Preferred Alternative

Annual PM2.5 Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
R1	0.3	3%	7.2	82%	0.5	5%	7.4	84%	57%	2%
R2	0.9	10%	7.8	88%	0.5	6%	7.4	84%	-38%	-4%
R3	0.6	7%	7.5	85%	0.4	5%	7.3	83%	-33%	-3%
R4	1.2	14%	8.1	92%	0.6	7%	7.5	85%	-47%	-7%
R5	0.5	6%	7.4	84%	0.4	4%	7.2	82%	-27%	-2%
R6	0.5	6%	7.4	84%	0.4	4%	7.3	82%	-29%	-2%
R7	0.5	5%	7.4	84%	0.7	8%	7.6	86%	50%	3%
R8	0.3	4%	7.2	82%	0.5	6%	7.4	84%	47%	2%
R9	0.4	5%	7.3	83%	0.5	5%	7.3	83%	6%	0%
R10	0.1	2%	7.0	80%	0.2	2%	7.1	80%	17%	0%
R11	0.2	2%	7.1	80%	0.2	2%	7.1	81%	23%	1%
R12	0.2	3%	7.1	81%	0.3	3%	7.2	82%	19%	1%
R13	0.3	3%	7.1	81%	0.3	3%	7.2	82%	20%	1%
R14	0.3	3%	7.1	81%	0.3	3%	7.2	82%	20%	1%
R15	0.2	2%	7.1	80%	0.2	3%	7.1	81%	20%	1%
R16	0.3	3%	7.2	81%	0.4	4%	7.3	83%	43%	2%
R17	0.4	4%	7.2	82%	0.6	7%	7.5	85%	70%	3%
R18	0.3	3%	7.2	82%	0.5	5%	7.4	84%	58%	2%
R19	0.3	3%	7.2	81%	0.4	5%	7.3	83%	50%	2%
R20	0.3	3%	7.2	81%	0.4	4%	7.3	83%	43%	2%
R21	0.3	3%	7.1	81%	0.4	4%	7.2	82%	38%	1%
R22	0.2	3%	7.1	81%	0.3	3%	7.2	82%	28%	1%
R23	0.2	2%	7.1	81%	0.3	3%	7.2	81%	26%	1%
R24	0.2	2%	7.1	80%	0.2	3%	7.1	81%	24%	1%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 8.8 µg/m³

[2] Average Background Concentration = 7 µg/m³

Scenario 2 - End of Stage 2 of Preferred Alternative - Mitigation

Annual TSP Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative			
	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]
R1	3	5%	27	45%	3	5%	27	45%
R2	11	19%	35	59%	12	20%	36	60%
R3	7	12%	31	52%	7	11%	31	51%
R4	16	26%	40	66%	17	29%	41	69%
R5	6	10%	30	50%	6	9%	30	49%
R6	6	10%	30	50%	6	9%	30	49%
R7	6	10%	30	50%	5	8%	29	48%
R8	3	5%	27	45%	3	5%	27	45%
R9	6	10%	30	49%	4	6%	28	46%
R10	1	2%	25	42%	1	2%	25	42%
R11	2	3%	25	42%	2	3%	25	42%
R12	2	4%	26	44%	2	4%	26	44%
R13	3	4%	27	44%	3	4%	26	44%
R14	3	4%	26	44%	3	5%	27	44%
R15	2	3%	26	43%	2	3%	26	43%
R16	3	4%	26	44%	2	4%	26	44%
R17	4	6%	27	46%	3	6%	27	45%
R18	3	5%	27	45%	3	5%	27	45%
R19	3	5%	27	45%	3	5%	27	44%
R20	3	5%	27	44%	3	4%	26	44%
R21	3	4%	26	44%	3	4%	26	44%
R22	2	4%	26	44%	2	4%	26	43%
R23	2	4%	26	43%	2	3%	26	43%
R24	2	3%	26	43%	2	3%	26	43%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 60 µg/m³

[2] Average Background Concentration = 23.9 µg/m³

Scenario 2 - End of Stage 2 of Preferred Alternative - Mitigation

24-Hour TSP Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative				Exceedances (Days) per Year	
	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Preferred Alternative	Change from Existing Conditions to Preferred Alternative
R1	53	44%	99	83%	44	36%	89	75%	0	0
R2	150	125%	196	163%	184	153%	230	192%	4	1
R3	92	77%	138	115%	71	59%	117	97%	0	-1
R4	220	183%	266	221%	235	196%	281	234%	8	2
R5	78	65%	123	103%	70	58%	115	96%	0	0
R6	77	64%	123	103%	66	55%	112	94%	0	0
R7	103	86%	149	124%	104	87%	150	125%	<1	-1
R8	53	44%	99	82%	50	42%	96	80%	0	0
R9	107	89%	152	127%	68	57%	114	95%	0	-1
R10	44	36%	90	75%	47	39%	93	78%	0	0
R11	35	29%	80	67%	38	32%	84	70%	0	0
R12	69	58%	115	96%	63	52%	108	90%	0	0
R13	68	57%	114	95%	73	61%	119	99%	0	0
R14	48	40%	94	78%	48	40%	93	78%	0	0
R15	50	42%	96	80%	40	33%	86	72%	0	0
R16	60	50%	106	88%	50	42%	96	80%	0	0
R17	45	37%	91	76%	46	38%	92	77%	0	0
R18	41	34%	87	73%	42	35%	88	73%	0	0
R19	49	40%	94	79%	43	36%	89	74%	0	0
R20	38	31%	83	70%	35	29%	81	68%	0	0
R21	35	29%	81	68%	34	29%	80	67%	0	0
R22	44	36%	90	75%	43	36%	89	74%	0	0
R23	47	39%	93	77%	40	34%	86	72%	0	0
R24	55	46%	101	84%	35	29%	81	67%	0	0
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 120 µg/m³

[2] 90th Percentile Background Concentration = 46 µg/m³

[3] Exceedances per year have been rounded to the nearest full day.

Scenario 2 - End of Stage 2 of Preferred Alternative - Mitigation

24-Hour PM10 Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative				Exceedances (Days) per Year	
	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Preferred Alternative	Change from Existing Conditions to Preferred Alternative
R1	19	38%	38	77%	16	32%	35	71%	0	0
R2	55	109%	74	148%	64	128%	83	166%	2	0
R3	32	65%	52	103%	25	50%	44	89%	0	0
R4	80	159%	99	198%	81	161%	100	200%	5	2
R5	27	55%	47	93%	25	50%	44	89%	0	0
R6	27	54%	46	93%	24	48%	43	86%	0	0
R7	36	73%	56	111%	40	80%	59	119%	<1	0
R8	18	36%	37	75%	19	39%	39	77%	0	0
R9	35	71%	55	109%	26	52%	45	90%	0	0
R10	16	32%	35	70%	18	36%	37	75%	0	0
R11	12	24%	31	62%	14	28%	33	67%	0	0
R12	25	51%	45	89%	24	48%	43	86%	0	0
R13	25	50%	44	89%	28	55%	47	94%	0	0
R14	17	35%	37	73%	19	38%	38	76%	0	0
R15	19	37%	38	76%	15	30%	34	68%	0	0
R16	21	43%	41	81%	19	37%	38	76%	0	0
R17	17	33%	36	72%	17	34%	36	72%	0	0
R18	15	30%	34	68%	15	30%	34	69%	0	0
R19	18	35%	37	74%	16	31%	35	70%	0	0
R20	14	27%	33	66%	13	26%	32	65%	0	0
R21	13	26%	32	64%	13	26%	32	64%	0	0
R22	16	33%	36	71%	16	32%	35	70%	0	0
R23	18	35%	37	74%	15	30%	34	68%	0	0
R24	21	41%	40	80%	13	27%	33	65%	0	0
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 50 µg/m³

[2] 90th Percentile Background Concentration = 19 µg/m³

Scenario 2 - End of Stage 2 of Preferred Alternative - Mitigation

24-Hour PM2.5 Predicted Concentrations (CAAQS)

Receptor ID	Existing Conditions				Preferred Alternative				Exceedances (Days) per Year	
	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³) [3]	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria with Background (%) [1]	Preferred Alternative	Change from Existing Conditions to Preferred Alternative
R1	2	9%	15	54%	2	9%	15	54%	0	0
R2	7	26%	19	71%	7	27%	19	72%	0	0
R3	5	18%	17	63%	4	13%	16	58%	0	0
R4	9	33%	21	78%	10	36%	22	81%	0	0
R5	4	16%	17	61%	4	14%	16	59%	0	0
R6	5	17%	17	62%	3	12%	15	57%	0	0
R7	4	15%	16	61%	4	15%	16	60%	0	0
R8	3	11%	15	56%	3	10%	15	55%	0	0
R9	4	13%	16	58%	4	13%	16	58%	0	0
R10	2	8%	14	53%	2	9%	15	54%	0	0
R11	2	7%	14	52%	2	8%	14	53%	0	0
R12	3	12%	15	57%	4	13%	16	58%	0	0
R13	2	9%	15	54%	3	11%	15	56%	0	0
R14	3	10%	15	55%	3	11%	15	56%	0	0
R15	2	9%	15	54%	3	10%	15	55%	0	0
R16	2	9%	15	54%	2	9%	15	54%	0	0
R17	3	11%	15	56%	3	11%	15	56%	0	0
R18	3	10%	15	55%	3	10%	15	55%	0	0
R19	2	8%	14	53%	2	9%	14	54%	0	0
R20	2	8%	14	53%	2	8%	14	54%	0	0
R21	2	8%	14	53%	2	8%	14	53%	0	0
R22	2	8%	14	53%	2	9%	14	54%	0	0
R23	2	8%	14	53%	2	8%	14	53%	0	0
R24	2	8%	14	53%	2	7%	14	52%	0	0
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 27 µg/m³

[2] 90th Percentile Background Concentration = 12 µg/m³

[3] Results based on the 3-year average of the annual 98th percentile of the daily 24-hour average concentrations

Scenario 2 - End of Stage 2 of Preferred Alternative - Mitigation

Annual PM2.5 Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative			
	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]
R1	0.3	3%	7	82%	0.3	4%	7.2	82%
R2	0.9	10%	8	88%	0.9	10%	7.8	88%
R3	0.6	7%	7	85%	0.5	6%	7.4	84%
R4	1.2	14%	8	92%	1.2	14%	8.1	92%
R5	0.5	6%	7	84%	0.5	5%	7.4	84%
R6	0.5	6%	7	84%	0.5	5%	7.4	84%
R7	0.5	5%	7	84%	0.5	5%	7.4	84%
R8	0.3	4%	7	82%	0.3	4%	7.2	82%
R9	0.4	5%	7	83%	0.4	4%	7.3	83%
R10	0.1	2%	7	80%	0.1	2%	7.0	80%
R11	0.2	2%	7	80%	0.2	2%	7.1	80%
R12	0.2	3%	7	81%	0.2	3%	7.1	81%
R13	0.3	3%	7	81%	0.3	3%	7.1	81%
R14	0.3	3%	7	81%	0.3	3%	7.2	81%
R15	0.2	2%	7	80%	0.2	2%	7.1	80%
R16	0.3	3%	7	81%	0.3	3%	7.2	81%
R17	0.4	4%	7	82%	0.4	4%	7.3	82%
R18	0.3	3%	7	82%	0.3	3%	7.2	82%
R19	0.3	3%	7	81%	0.3	3%	7.2	82%
R20	0.3	3%	7	81%	0.3	3%	7.2	81%
R21	0.3	3%	7	81%	0.3	3%	7.2	81%
R22	0.2	3%	7	81%	0.2	3%	7.1	81%
R23	0.2	2%	7	81%	0.2	2%	7.1	81%
R24	0.2	2%	7	80%	0.2	2%	7.1	80%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 8.8 µg/m³
[2] Average Background Concentration = 7 µg/m³

Scenario 3 - End of Stage 4 of Preferred Alternative - Mitigation

Annual TSP Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 3 Mitigated				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
R1	3	5%	27	45%	3	4%	27	44%	-17%	-2%
R2	11	19%	35	59%	7	12%	31	52%	-35%	-11%
R3	7	12%	31	52%	5	8%	29	48%	-31%	-7%
R4	16	26%	40	66%	9	16%	33	55%	-40%	-16%
R5	6	10%	30	50%	4	7%	28	47%	-32%	-6%
R6	6	10%	30	50%	4	7%	28	47%	-29%	-6%
R7	6	10%	30	50%	5	8%	29	48%	-16%	-3%
R8	3	5%	27	45%	3	4%	27	44%	-17%	-2%
R9	6	10%	30	49%	4	7%	28	46%	-33%	-6%
R10	1	2%	25	42%	1	2%	25	42%	-4%	0%
R11	2	3%	25	42%	2	3%	25	42%	-1%	0%
R12	2	4%	26	44%	2	4%	26	44%	-3%	0%
R13	3	4%	27	44%	3	4%	26	44%	-3%	0%
R14	3	4%	26	44%	3	4%	27	44%	6%	1%
R15	2	3%	26	43%	2	3%	26	43%	-5%	0%
R16	3	4%	26	44%	2	4%	26	43%	-19%	-2%
R17	4	6%	27	46%	3	5%	27	45%	-16%	-2%
R18	3	5%	27	45%	3	4%	26	44%	-17%	-2%
R19	3	5%	27	45%	2	4%	26	44%	-17%	-2%
R20	3	5%	27	44%	2	4%	26	44%	-15%	-1%
R21	3	4%	26	44%	2	4%	26	44%	-13%	-1%
R22	2	4%	26	44%	2	3%	26	43%	-18%	-2%
R23	2	4%	26	43%	2	3%	26	43%	-20%	-2%
R24	2	3%	26	43%	2	3%	25	42%	-16%	-1%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 60 µg/m³

[2] Average Background Concentration = 23.9 µg/m³

Scenario 3 - End of Stage 4 of Preferred Alternative - Mitigation

24-Hour TSP Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 3 Mitigated				Percentage Change from Existing Conditions to Preferred Alternative		Exceedances per Year	
	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)	Existing Conditions	Preferred Alternative
R1	53	44%	99	83%	37	31%	83	69%	-30%	-16%	0	0
R2	150	125%	196	163%	123	102%	169	140%	-18%	-14%	3	1
R3	92	77%	138	115%	54	45%	100	83%	-42%	-28%	<1	0
R4	220	183%	266	221%	151	126%	197	164%	-31%	-26%	6	2
R5	78	65%	123	103%	60	50%	105	88%	-23%	-15%	<1	0
R6	77	64%	123	103%	50	41%	96	80%	-36%	-22%	<1	0
R7	103	86%	149	124%	94	78%	140	116%	-9%	-6%	<1	<1
R8	53	44%	99	82%	50	42%	96	80%	-5%	-3%	0	0
R9	107	89%	152	127%	64	53%	110	91%	-40%	-28%	<1	0
R10	44	36%	90	75%	45	38%	91	76%	4%	2%	0	0
R11	35	29%	80	67%	38	31%	84	70%	9%	4%	0	0
R12	69	58%	115	96%	60	50%	106	88%	-14%	-8%	0	0
R13	68	57%	114	95%	74	62%	120	100%	9%	5%	0	<1
R14	48	40%	94	78%	48	40%	93	78%	-1%	0%	0	0
R15	50	42%	96	80%	40	33%	86	72%	-20%	-10%	0	0
R16	60	50%	106	88%	47	39%	93	78%	-21%	-12%	0	0
R17	45	37%	91	76%	48	40%	94	78%	8%	4%	0	0
R18	41	34%	87	73%	43	36%	89	74%	5%	2%	0	0
R19	49	40%	94	79%	42	35%	88	73%	-14%	-7%	0	0
R20	38	31%	83	70%	50	42%	96	80%	34%	15%	0	0
R21	35	29%	81	68%	52	43%	98	81%	46%	20%	0	0
R22	44	36%	90	75%	34	29%	80	67%	-21%	-10%	0	0
R23	47	39%	93	77%	31	26%	77	64%	-34%	-17%	0	0
R24	55	46%	101	84%	45	37%	91	75%	-19%	-10%	0	0
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 120 µg/m³

[2] 90th Percentile Background Concentration = 46 µg/m³

[3] Exceedances per year have been rounded to the nearest full day.

Scenario 3 - End of Stage 4 of Preferred Alternative - Mitigation

24-Hour PM10 Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 3 Mitigated				Percentage Change from Existing Conditions to Preferred Alternative		Exceedances per Year	
	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)	Existing Conditions	Preferred Alternative
R1	19	38%	38	77%	14	28%	33	66%	-28%	-14%	0	0
R2	55	109%	74	148%	43	86%	62	125%	-21%	-16%	2	<1
R3	32	65%	52	103%	19	39%	39	77%	-40%	-25%	<1	0
R4	80	159%	99	198%	53	105%	72	144%	-34%	-27%	3	2
R5	27	55%	47	93%	22	43%	41	82%	-21%	-12%	0	0
R6	27	54%	46	93%	18	36%	37	75%	-34%	-20%	0	0
R7	36	73%	56	111%	36	72%	55	110%	-1%	-1%	<1	<1
R8	18	36%	37	75%	19	38%	38	77%	5%	2%	0	0
R9	35	71%	55	109%	24	48%	43	86%	-33%	-21%	<1	0
R10	16	32%	35	70%	17	35%	37	73%	10%	4%	0	0
R11	12	24%	31	62%	14	28%	33	67%	20%	7%	0	0
R12	25	51%	45	89%	23	45%	42	84%	-10%	-6%	0	0
R13	25	50%	44	89%	28	56%	47	94%	11%	6%	0	0
R14	17	35%	37	73%	19	38%	38	76%	8%	4%	0	0
R15	19	37%	38	76%	15	30%	34	68%	-21%	-10%	0	0
R16	21	43%	41	81%	18	36%	37	74%	-16%	-8%	0	0
R17	17	33%	36	72%	18	36%	37	74%	8%	4%	0	0
R18	15	30%	34	68%	16	33%	36	71%	9%	4%	0	0
R19	18	35%	37	74%	16	31%	35	70%	-11%	-5%	0	0
R20	14	27%	33	66%	19	37%	38	76%	37%	15%	0	0
R21	13	26%	32	64%	19	38%	38	77%	48%	19%	0	0
R22	16	33%	36	71%	12	24%	31	63%	-25%	-12%	0	0
R23	18	35%	37	74%	11	22%	30	60%	-38%	-18%	0	0
R24	21	41%	40	80%	18	35%	37	74%	-14%	-7%	0	0
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 50 µg/m³

[2] 90th Percentile Background Concentration = 19 µg/m³

Scenario 3 - End of Stage 4 of Preferred Alternative - Mitigation

24-Hour PM2.5 Predicted Concentrations (CAAQS)

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 3 Mitigated				Percentage Change from Existing Conditions to Preferred Alternative		Exceedances per Year	
	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³) [3]	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria with Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)	Existing Conditions	Preferred Alternative
R1	2	9%	15	54%	3	13%	15	58%	13%	2%	0	0
R2	7	26%	19	71%	5	32%	17	77%	-25%	-9%	0	0
R3	5	18%	17	63%	3	17%	15	62%	-34%	-10%	0	0
R4	9	33%	21	78%	6	38%	19	83%	-28%	-12%	0	0
R5	4	16%	17	61%	3	19%	15	64%	-35%	-9%	0	0
R6	5	17%	17	62%	3	15%	15	61%	-37%	-10%	0	0
R7	4	15%	16	61%	4	22%	16	67%	-5%	-1%	0	0
R8	3	11%	15	56%	3	14%	15	59%	0%	0%	0	0
R9	4	13%	16	58%	4	16%	16	61%	4%	1%	0	0
R10	2	8%	14	53%	3	13%	15	58%	19%	3%	0	0
R11	2	7%	14	52%	2	13%	14	58%	8%	1%	0	0
R12	3	12%	15	57%	4	18%	16	64%	16%	3%	0	0
R13	2	9%	15	54%	3	24%	15	69%	15%	2%	0	0
R14	3	10%	15	55%	3	13%	15	59%	7%	1%	0	0
R15	2	9%	15	54%	3	15%	15	60%	6%	1%	0	0
R16	2	9%	15	54%	2	12%	15	57%	-1%	0%	0	0
R17	3	11%	15	56%	3	15%	15	61%	-8%	-2%	0	0
R18	3	10%	15	55%	2	13%	15	58%	-15%	-3%	0	0
R19	2	8%	14	53%	3	12%	15	57%	21%	3%	0	0
R20	2	8%	14	53%	3	14%	15	59%	19%	3%	0	0
R21	2	8%	14	53%	2	14%	15	59%	7%	1%	0	0
R22	2	8%	14	53%	2	10%	14	55%	-6%	-1%	0	0
R23	2	8%	14	53%	2	11%	14	56%	-13%	-2%	0	0
R24	2	8%	14	53%	2	14%	14	60%	-22%	-3%	0	0
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 27 µg/m³

[2] 90th Percentile Background Concentration = 12 µg/m³

[3] Results based on the 3-year average of the annual 98th percentile of the daily 24-hour average concentrations

Scenario 3 - End of Stage 4 of Preferred Alternative - Mitigation

Annual PM2.5 Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 3 Mitigated				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
R1	0.3	3%	7.2	82%	0.3	3%	7.2	82%	0%	0%
R2	0.9	10%	7.8	88%	0.6	7%	7.5	85%	-31%	-4%
R3	0.6	7%	7.5	85%	0.5	5%	7.3	83%	-25%	-2%
R4	1.2	14%	8.1	92%	0.7	8%	7.6	87%	-38%	-6%
R5	0.5	6%	7.4	84%	0.4	4%	7.3	83%	-23%	-2%
R6	0.5	6%	7.4	84%	0.4	5%	7.3	83%	-22%	-2%
R7	0.5	5%	7.4	84%	0.5	6%	7.4	84%	3%	0%
R8	0.3	4%	7.2	82%	0.3	4%	7.2	82%	-2%	0%
R9	0.4	5%	7.3	83%	0.4	5%	7.3	83%	-6%	0%
R10	0.1	2%	7.0	80%	0.1	2%	7.0	80%	3%	0%
R11	0.2	2%	7.1	80%	0.2	2%	7.1	80%	4%	0%
R12	0.2	3%	7.1	81%	0.3	3%	7.1	81%	3%	0%
R13	0.3	3%	7.1	81%	0.3	3%	7.1	81%	3%	0%
R14	0.3	3%	7.1	81%	0.3	3%	7.2	81%	5%	0%
R15	0.2	2%	7.1	80%	0.2	2%	7.1	81%	2%	0%
R16	0.3	3%	7.2	81%	0.3	3%	7.1	81%	-1%	0%
R17	0.4	4%	7.2	82%	0.3	4%	7.2	82%	-3%	0%
R18	0.3	3%	7.2	82%	0.3	3%	7.2	82%	-4%	0%
R19	0.3	3%	7.2	81%	0.3	3%	7.2	81%	0%	0%
R20	0.3	3%	7.2	81%	0.3	3%	7.1	81%	-1%	0%
R21	0.3	3%	7.1	81%	0.2	3%	7.1	81%	-3%	0%
R22	0.2	3%	7.1	81%	0.2	2%	7.1	81%	-7%	0%
R23	0.2	2%	7.1	81%	0.2	2%	7.1	80%	-8%	0%
R24	0.2	2%	7.1	80%	0.2	2%	7.1	80%	-6%	0%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 8.8 µg/m³
[2] Average Background Concentration = 7 µg/m³

5K

Scenario 1 – Summary Results, LFG and Combustion Byproduct Contaminants

Summary of VOCs and Combustion Byproduct Dispersion Modelling Results

Contaminant	CAS #	Averaging Period	Criteria (µg/m³)	Background Concentration (µg/m³)	Preferred Alternative - Scenario 1				
					Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%)	Maximum Modelled Concentration With Background (µg/m³)	Percentage of Criteria With Background (%)	Receptor Location for Maximum Concentration
Benzene	71-43-2	24-Hour	2.3	0.6	0.1	5%	0.7	29%	R17
		Annual	0.45	0.4	0.01	3%	0.41	91%	R7
Vinyl Chloride	75-01-4	24-Hour	1	0.05	0.05	5%	0.10	10%	R9
		Annual	0.2	0.05	0.01	3%	0.06	28%	R9
1,2-Dichloroethane	107-06-2	24-Hour	2	0.10	0.03	2%	0.13	6%	R9
		Annual	0.4	0.060	0.004	1%	0.064	16%	R9
Ammonia	7664-41-7	24-Hour	100	3.1	0.8	1%	3.9	4%	R9
Hydrogen Sulphide	7783-06-4	10-minute	13	22.5	0.8	6%	23.3	179%	STR1
		24-Hour	7	5.6	0.1	1%	5.7	81%	R9
Total Reduced Sulphur	TRS	10-minute	13	44.2	1.2	9%	45.4	349%	R4
		24-Hour	7	11	0.2	2%	11.2	159%	R9
Sulphur Dioxide	7446-09-5	1-Hour	100	2.4	28.2	28%	30.6	31%	STR1
		Annual	10	1.4	0.3	3%	1.7	17%	R9
Nitrogen Oxides	10102-44-0	1-Hour	400	21	73	18%	94	24%	R7
		24-Hour	200	19	8	4%	27	13%	R7
Dioxins and Furans [1]	DF	24-Hour	0.1	0.02	0.0001	0.1%	0.02	20%	R9

Notes:

[1] Dioxin and Furans are presented as pgTEQ/m³)

Summary of VOCs and Combustion Byproduct Dispersion Modelling Results

Contaminant	CAS #	Averaging Period	Preferred Alternative - Scenario 1		
			Number of Receptors Potentially Affected [1]	Maximum Frequency of Excedance of Criteria at a Receptor [2]	Receptor Location for Maximum Frequency of Exceedance
Benzene	71-43-2	24-Hour	0	0%	- -
		Annual	0	0%	- -
Vinyl Chloride	75-01-4	24-Hour	0	0%	- -
		Annual	0	0%	- -
1,2-Dichloroethane	107-06-2	24-Hour	0	0%	- -
		Annual	0	0%	- -
Ammonia	7664-41-7	24-Hour	0	0%	- -
Hydrogen Sulphide	7783-06-4	10-minute	25	note [3]	- -
		24-Hour	0	0%	- -
Total Reduced Sulphur	TRS	10-minute	25	note [3]	- -
		24-Hour	24	note [3]	- -
Sulphur Dioxide	7446-09-5	1-Hour	0	0%	- -
		Annual	0	0%	- -
Nitrogen Oxides	10102-44-0	1-Hour	0	0%	- -
		24-Hour	0	0%	- -
Dioxins and Furans	DF	24-Hour	0	0%	- -

Notes:

[1] Number of sensitive receptors with maximum modelled concentrations (including background) that are greater than the criteria for each contaminant. There are a total of 24 residential receptors (applicable to all averaging periods) and 1 short-term receptor (applicable to 1-hour and 10-minute averaging periods only).

[2] Maximum percentage of time the criteria is exceeded at a sensitive receptor location.

[3] Background concentrations for 10-minute Hydrogen Sulphide as well as 10-minute and 24-hour Total Reduced Sulphur were above the applicable criteria on their own. However, modelled contributions from the landfill are relatively small compared to background.

5L

Scenario 2 – Summary Results, LFG and Combustion Byproduct Contaminants

Summary of VOCs and Combustion Byproduct Dispersion Modelling Results

Contaminant	CAS #	Averaging Period	Criteria (µg/m³)	Background Concentration (µg/m³)	Preferred Alternative - Scenario 2				
					Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%)	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%)	Receptor Location for Maximum Concentration
Benzene	71-43-2	24-Hour	2.3	0.6	0.1	6%	0.7	31%	R4
		Annual	0.45	0.40	0.01	3%	0.41	91%	R4
Vinyl Chloride	75-01-4	24-Hour	1	0.05	0.04	4%	0.10	10%	R9
		Annual	0.2	0.05	0.005	2%	0.056	28%	R9
1,2-Dichloroethane	107-06-2	24-Hour	2	0.10	0.03	2%	0.13	6%	R9
		Annual	0.4	0.06	0.004	1%	0.064	16%	R9
Ammonia	7664-41-7	24-Hour	100	3.1	0.8	1%	3.9	4%	R9
Hydrogen Sulphide	7783-06-4	10-minute	13	22.5	0.8	6%	23.3	179%	STR1
		24-Hour	7	5.6	0.1	1%	5.7	81%	R9
Total Reduced Sulphur	TRS	10-minute	13	44	1	9%	45	349%	R4
		24-Hour	7	11	0.1	2%	11.1	159%	R9
Sulphur Dioxide	7446-09-5	1-Hour	100	2.4	28.2	28%	30.6	31%	STR1
		Annual	10	1.4	0.3	3%	1.7	17%	R9
Nitrogen Oxides	10102-44-0	1-Hour	400	21	102	25%	123	31%	R4
		24-Hour	200	19	8	4%	27	13%	R7
Dioxins and Furans [1]	DF	24-Hour	0.1	0.02	0.0001	0.1%	0.0201	20%	R9

Notes:

[1] Dioxin and Furans are presented as pgTEQ/m³)

Summary of VOCs and Combustion Byproduct Dispersion Modelling Results

Contaminant	CAS #	Averaging Period	Preferred Alternative - Scenario 2		
			Number of Receptors Potentially Affected [1]	Maximum Frequency of Excedance of Criteria at a Receptor [2]	Receptor Location for Maximum Frequency of Exceedance
Benzene	71-43-2	24-Hour	0	0%	- -
		Annual	0	0%	- -
Vinyl Chloride	75-01-4	24-Hour	0	0%	- -
		Annual	0	0%	- -
1,2-Dichloroethane	107-06-2	24-Hour	0	0%	- -
		Annual	0	0%	- -
Ammonia	7664-41-7	24-Hour	0	0%	- -
Hydrogen Sulphide	7783-06-4	10-minute	25	note [3]	- -
		24-Hour	0	0%	- -
Total Reduced Sulphur	TRS	10-minute	25	note [3]	- -
		24-Hour	24	note [3]	- -
Sulphur Dioxide	7446-09-5	1-Hour	0	0%	- -
		Annual	0	0%	- -
Nitrogen Oxides	10102-44-0	1-Hour	0	0%	- -
		24-Hour	0	0%	- -
Dioxins and Furans	DF	24-Hour	0	0%	- -

Notes:

[1] Number of sensitive receptors with maximum modelled concentrations (including background) that are greater than the criteria for each contaminant. There are a total of 24 residential receptors (applicable to all averaging periods) and 1 short-term receptor (applicable to 1-hour and 10-minute averaging periods only).

[2] Maximum percentage of time the criteria is exceeded at a sensitive receptor location.

[3] Background concentrations for 10-minute Hydrogen Sulphide as well as 10-minute and 24-hour Total Reduced Sulphur were above the applicable criteria on their own. However, modelled contributions from the landfill are relatively small compared to background.

5M

Scenario 3 – Summary Results, LFG and Combustion Byproduct Contaminants

Scenario 3 - End of Stage 4 of Preferred Alternative

24-Hour Hydrogen Sulphide Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 3				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
Max GLC	0.85	12.1%	6.4	92%	0.85	12.2%	6.5	92%	<0.01%	<0.01%
R1	0.04	0.6%	5.6	81%	0.04	0.6%	5.6	81%	-2%	<0.01%
R2	0.07	1.0%	5.7	81%	0.07	1.0%	5.7	81%	-5%	<0.01%
R3	0.07	1.0%	5.7	81%	0.07	1.0%	5.7	81%	<0.01%	<0.01%
R4	0.07	1.0%	5.7	81%	0.07	1.0%	5.7	81%	-6%	<0.01%
R5	0.06	0.9%	5.7	81%	0.06	0.9%	5.7	81%	<0.01%	<0.01%
R6	0.07	1.0%	5.7	81%	0.07	0.9%	5.7	81%	-1%	<0.01%
R7	0.07	0.9%	5.7	81%	0.07	0.9%	5.7	81%	<0.01%	<0.01%
R8	0.04	0.6%	5.6	81%	0.04	0.6%	5.6	81%	<0.01%	<0.01%
R9	0.10	1.5%	5.7	81%	0.10	1.4%	5.7	81%	-2%	<0.01%
R10	0.04	0.5%	5.6	81%	0.04	0.5%	5.6	81%	-2%	<0.01%
R11	0.06	0.9%	5.7	81%	0.06	0.9%	5.7	81%	-1%	<0.01%
R12	0.10	1.4%	5.7	81%	0.10	1.4%	5.7	81%	<0.01%	<0.01%
R13	0.08	1.1%	5.7	81%	0.08	1.1%	5.7	81%	<0.01%	<0.01%
R14	0.07	1.0%	5.7	81%	0.07	0.9%	5.7	81%	-4%	<0.01%
R15	0.08	1.1%	5.7	81%	0.08	1.1%	5.7	81%	<0.01%	<0.01%
R16	0.04	0.6%	5.6	81%	0.04	0.6%	5.6	81%	<0.01%	<0.01%
R17	0.04	0.6%	5.6	81%	0.04	0.6%	5.6	81%	-3%	<0.01%
R18	0.04	0.6%	5.6	81%	0.04	0.6%	5.6	81%	-2%	<0.01%
R19	0.04	0.6%	5.6	81%	0.04	0.6%	5.6	81%	-2%	<0.01%
R20	0.04	0.5%	5.6	81%	0.04	0.5%	5.6	81%	-2%	<0.01%
R21	0.04	0.5%	5.6	81%	0.04	0.5%	5.6	81%	-3%	<0.01%
R22	0.03	0.5%	5.6	80%	0.03	0.5%	5.6	80%	-3%	<0.01%
R23	0.03	0.5%	5.6	80%	0.03	0.4%	5.6	80%	-3%	<0.01%
R24	0.03	0.4%	5.6	80%	0.03	0.4%	5.6	80%	-10%	<0.01%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 7 µg/m³
[2] 90th Percentile Background Concentration based on all wind directions = 5.6 µg/m³

10-Minute Hydrogen Sulphide Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 3				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
R1	0.43	3.3%	22.9	177%	0.44	3%	22.96	177%	3%	<0.01%
R2	0.34	2.6%	22.9	176%	0.34	3%	22.85	176%	<0.01%	<0.01%
R3	0.37	2.8%	22.9	176%	0.37	3%	22.89	176%	<0.01%	<0.01%
R4	0.40	3.1%	22.9	176%	0.39	3%	22.91	176%	-2%	<0.01%
R5	0.30	2.3%	22.8	176%	0.30	2%	22.82	176%	<0.01%	<0.01%
R6	0.33	2.6%	22.8	176%	0.33	3%	22.85	176%	<0.01%	<0.01%
R7	0.41	3.2%	22.9	176%	0.41	3%	22.93	176%	<0.01%	<0.01%
R8	0.35	2.7%	22.9	176%	0.36	3%	22.87	176%	1%	<0.01%
R9	0.59	4.6%	23.1	178%	0.59	5%	23.11	178%	<0.01%	<0.01%
R10	0.28	2.2%	22.8	175%	0.28	2%	22.80	175%	<0.01%	<0.01%
R11	0.33	2.5%	22.8	176%	0.33	3%	22.84	176%	<0.01%	<0.01%
R12	0.39	3.0%	22.9	176%	0.39	3%	22.91	176%	<0.01%	<0.01%
R13	0.37	2.9%	22.9	176%	0.37	3%	22.89	176%	<0.01%	<0.01%
R14	0.36	2.8%	22.9	176%	0.36	3%	22.88	176%	<0.01%	<0.01%
R15	0.43	3.3%	22.9	177%	0.43	3%	22.95	177%	<0.01%	<0.01%
R16	0.34	2.6%	22.9	176%	0.35	3%	22.87	176%	1%	<0.01%
R17	0.40	3.1%	22.9	176%	0.42	3%	22.93	176%	4%	<0.01%
R18	0.36	2.8%	22.9	176%	0.38	3%	22.90	176%	5%	<0.01%
R19	0.43	3.3%	22.9	177%	0.42	3%	22.93	176%	-3%	<0.01%
R20	0.44	3.4%	23.0	177%	0.44	3%	22.96	177%	1%	<0.01%
R21	0.44	3.4%	23.0	177%	0.44	3%	22.96	177%	<0.01%	<0.01%
R22	0.43	3.3%	22.9	177%	0.43	3%	22.94	176%	-1%	<0.01%
R23	0.42	3.2%	22.9	176%	0.42	3%	22.93	176%	-1%	<0.01%
R24	0.39	3.0%	22.9	176%	0.39	3%	22.90	176%	-2%	<0.01%
STR1	0.76	5.9%	23.3	179%	0.76	6%	23.28	179%	<0.01%	<0.01%

Notes:
[1] Criteria = 13 µg/m³
[2] 90th Percentile Background Concentration based on all wind directions = 22.5 µg/m³

Scenario 3 - End of Stage 4 of Preferred Alternative

10-Minute Total Reduced Sulphur Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 3				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
R1	0.74	5.7%	45.0	346%	0.49	4%	44.72	344%	-34%	<0.01%
R2	1.00	7.7%	45.2	348%	0.99	8%	45.23	348%	<0.01%	<0.01%
R3	0.76	5.8%	45.0	346%	0.50	4%	44.74	344%	-33%	<0.01%
R4	1.17	9.0%	45.4	349%	1.15	9%	45.38	349%	-2%	<0.01%
R5	0.78	6.0%	45.0	346%	0.52	4%	44.75	344%	-34%	<0.01%
R6	0.72	5.5%	45.0	346%	0.48	4%	44.71	344%	-34%	<0.01%
R7	0.61	4.7%	44.8	345%	0.41	3%	44.65	343%	-32%	<0.01%
R8	0.56	4.3%	44.8	345%	0.36	3%	44.59	343%	-36%	<0.01%
R9	0.63	4.8%	44.9	345%	0.59	5%	44.82	345%	-5%	<0.01%
R10	0.58	4.4%	44.8	345%	0.39	3%	44.62	343%	-33%	<0.01%
R11	0.57	4.4%	44.8	345%	0.52	4%	44.75	344%	-8%	<0.01%
R12	0.67	5.2%	44.9	345%	0.60	5%	44.83	345%	-11%	<0.01%
R13	0.71	5.5%	44.9	346%	0.55	4%	44.79	345%	-22%	<0.01%
R14	0.69	5.3%	44.9	346%	0.49	4%	44.72	344%	-29%	<0.01%
R15	0.63	4.9%	44.9	345%	0.43	3%	44.66	344%	-32%	<0.01%
R16	0.56	4.3%	44.8	345%	0.37	3%	44.60	343%	-34%	<0.01%
R17	0.75	5.8%	45.0	346%	0.47	4%	44.70	344%	-37%	<0.01%
R18	0.72	5.5%	45.0	346%	0.45	3%	44.68	344%	-37%	<0.01%
R19	0.72	5.5%	45.0	346%	0.49	4%	44.72	344%	-32%	<0.01%
R20	0.70	5.4%	44.9	346%	0.50	4%	44.73	344%	-29%	<0.01%
R21	0.69	5.3%	44.9	346%	0.51	4%	44.74	344%	-27%	<0.01%
R22	0.69	5.3%	44.9	346%	0.51	4%	44.74	344%	-26%	<0.01%
R23	0.68	5.3%	44.9	346%	0.50	4%	44.73	344%	-27%	<0.01%
R24	0.70	5.4%	44.9	346%	0.48	4%	44.72	344%	-31%	<0.01%
STR1	0.76	5.9%	45.0	346%	0.76	6%	44.99	346%	<0.01%	<0.01%

Notes:
[1] Criteria = 13 µg/m³
[2] 90th Percentile Background Concentration based on all wind directions = 44.2 µg/m³

24-Hour Total Reduced Sulphur Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 3				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
Max GLC	0.85	12.2%	11.9	169%	0.85	12.2%	11.9	169%	<0.01%	<0.01%
R1	0.08	1.2%	11.1	158%	0.05	0.7%	11.0	158%	-39%	<0.01%
R2	0.12	1.7%	11.1	159%	0.09	1.4%	11.1	158%	-20%	<0.01%
R3	0.10	1.5%	11.1	159%	0.08	1.1%	11.1	158%	-22%	<0.01%
R4	0.13	1.9%	11.1	159%	0.10	1.5%	11.1	159%	-21%	<0.01%
R5	0.10	1.5%	11.1	159%	0.07	1.0%	11.1	158%	-30%	<0.01%
R6	0.09	1.3%	11.1	158%	0.07	1.0%	11.1	158%	-22%	<0.01%
R7	0.13	1.9%	11.1	159%	0.08	1.2%	11.1	158%	-37%	<0.01%
R8	0.10	1.5%	11.1	159%	0.06	0.9%	11.1	158%	-40%	<0.01%
R9	0.15	2.2%	11.2	159%	0.11	1.5%	11.1	159%	-31%	<0.01%
R10	0.06	0.8%	11.1	158%	0.04	0.6%	11.0	158%	-32%	<0.01%
R11	0.07	1.0%	11.1	158%	0.07	0.9%	11.1	158%	-3%	<0.01%
R12	0.10	1.5%	11.1	159%	0.10	1.5%	11.1	159%	-2%	<0.01%
R13	0.08	1.2%	11.1	158%	0.08	1.2%	11.1	158%	-3%	<0.01%
R14	0.08	1.1%	11.1	158%	0.07	1.0%	11.1	158%	-10%	<0.01%
R15	0.08	1.1%	11.1	158%	0.08	1.1%	11.1	158%	<0.01%	<0.01%
R16	0.08	1.1%	11.1	158%	0.05	0.7%	11.0	158%	-38%	<0.01%
R17	0.10	1.4%	11.1	159%	0.06	0.8%	11.1	158%	-38%	<0.01%
R18	0.09	1.2%	11.1	158%	0.05	0.8%	11.1	158%	-37%	<0.01%
R19	0.07	1.1%	11.1	158%	0.05	0.7%	11.0	158%	-39%	<0.01%
R20	0.07	1.0%	11.1	158%	0.04	0.6%	11.0	158%	-37%	<0.01%
R21	0.06	0.9%	11.1	158%	0.04	0.6%	11.0	158%	-35%	<0.01%
R22	0.05	0.8%	11.1	158%	0.04	0.5%	11.0	158%	-31%	<0.01%
R23	0.05	0.7%	11.0	158%	0.04	0.5%	11.0	158%	-26%	<0.01%
R24	0.05	0.7%	11.1	158%	0.04	0.5%	11.0	158%	-27%	<0.01%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 7 µg/m³
[2] 90th Percentile Background Concentration based on all wind directions = 11 µg/m³

Scenario 3 - End of Stage 4 of Preferred Alternative

24-Hour Benzene Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 3				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
Max GLC	0.32	14.1%	0.9	38%	0.32	14.1%	0.9	38%	<0.01%	<0.01%
R1	0.07	3.2%	0.6	28%	0.04	1.7%	0.6	26%	-46%	-5%
R2	0.14	6.2%	0.7	30%	0.12	5.4%	0.7	30%	-13%	-3%
R3	0.12	5.2%	0.7	29%	0.07	3.0%	0.6	27%	-42%	-7%
R4	0.17	7.3%	0.7	32%	0.15	6.5%	0.7	31%	-11%	-2%
R5	0.09	3.8%	0.6	28%	0.05	2.1%	0.6	26%	-45%	-6%
R6	0.10	4.3%	0.7	29%	0.05	2.2%	0.6	26%	-49%	-7%
R7	0.12	5.3%	0.7	30%	0.07	3.0%	0.6	27%	-44%	-8%
R8	0.09	3.9%	0.6	28%	0.04	1.9%	0.6	26%	-50%	-7%
R9	0.10	4.3%	0.7	29%	0.05	2.1%	0.6	26%	-51%	-8%
R10	0.05	2.3%	0.6	27%	0.03	1.4%	0.6	26%	-36%	-3%
R11	0.05	2.2%	0.6	26%	0.03	1.3%	0.6	26%	-38%	-3%
R12	0.06	2.6%	0.6	27%	0.05	2.0%	0.6	26%	-24%	-2%
R13	0.05	2.2%	0.6	27%	0.04	1.5%	0.6	26%	-31%	-3%
R14	0.05	2.1%	0.6	26%	0.03	1.5%	0.6	26%	-30%	-2%
R15	0.05	2.2%	0.6	26%	0.03	1.2%	0.6	26%	-43%	-4%
R16	0.08	3.3%	0.6	28%	0.04	1.6%	0.6	26%	-53%	-6%
R17	0.09	3.9%	0.6	28%	0.05	2.0%	0.6	26%	-47%	-6%
R19	0.07	2.9%	0.6	27%	0.04	1.6%	0.6	26%	-46%	-5%
R20	0.06	2.6%	0.6	27%	0.03	1.3%	0.6	26%	-49%	-5%
R21	0.05	2.4%	0.6	27%	0.03	1.2%	0.6	25%	-50%	-4%
R22	0.04	1.9%	0.6	26%	0.02	1.1%	0.6	25%	-43%	-3%
R23	0.04	1.8%	0.6	26%	0.03	1.1%	0.6	25%	-40%	-3%
R24	0.04	1.6%	0.6	26%	0.02	0.9%	0.6	25%	-43%	-3%
STR1	NA	N/A	N/A	N/A	NA	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 2.3 µg/m³
[2] 90th Percentile Background Concentration = 0.56 µg/m³

Annual Benzene Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 3				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
Max GLC	0.04	9.6%	0.4	98%	0.04	8.6%	0.4	97%	-10%	-1%
R1	0.01	1.3%	0.4	90%	0.00	0.7%	0.4	89%	-45%	<0.01%
R2	0.01	3.3%	0.4	92%	0.01	1.6%	0.4	90%	-51%	-2%
R3	0.01	2.6%	0.4	91%	0.01	1.2%	0.4	90%	-52%	-1%
R4	0.02	4.2%	0.4	93%	0.009	2.1%	0.4	91%	-51%	-2%
R5	0.01	2.1%	0.4	91%	0.005	1.0%	0.4	90%	-51%	-1%
R6	0.01	2.2%	0.4	91%	0.00	1.1%	0.4	90%	-52%	-1%
R7	0.01	3.1%	0.4	92%	0.01	1.8%	0.4	90%	-42%	-1%
R8	0.01	1.5%	0.4	90%	0.00	0.9%	0.4	90%	-43%	<0.01%
R9	0.01	2.2%	0.4	91%	0.01	1.4%	0.4	90%	-35%	<0.01%
R10	0.003	0.6%	0.4	89%	0.00	0.4%	0.4	89%	-33%	<0.01%
R11	0.003	0.8%	0.4	89%	0.00	0.5%	0.4	89%	-32%	<0.01%
R12	0.004	1.0%	0.4	90%	0.00	0.7%	0.4	89%	-32%	<0.01%
R13	0.004	0.9%	0.4	90%	0.00	0.6%	0.4	89%	-35%	<0.01%
R14	0.003	0.7%	0.4	89%	0.00	0.5%	0.4	89%	-36%	<0.01%
R15	0.003	0.7%	0.4	89%	0.00	0.5%	0.4	89%	-32%	<0.01%
R16	0.01	1.3%	0.4	90%	0.00	0.7%	0.4	89%	-44%	<0.01%
R17	0.01	1.5%	0.4	90%	0.004	0.9%	0.4	90%	-42%	<0.01%
R18	0.01	1.3%	0.4	90%	0.003	0.8%	0.4	89%	-42%	<0.01%
R19	0.01	1.2%	0.4	90%	0.003	0.7%	0.4	89%	-45%	<0.01%
R20	0.01	1.1%	0.4	90%	0.003	0.6%	0.4	89%	-45%	<0.01%
R21	0.00	1.1%	0.4	90%	0.003	0.6%	0.4	89%	-43%	<0.01%
R22	0.004	0.9%	0.4	90%	0.002	0.5%	0.4	89%	-43%	<0.01%
R23	0.004	0.9%	0.4	90%	0.002	0.5%	0.4	89%	-45%	<0.01%
R24	0.003	0.8%	0.4	89%	0.00	0.4%	0.4	89%	-45%	<0.01%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 0.45 µg/m³
[2] Average Background Concentration = 0.40 µg/m³

Scenario 3 - End of Stage 4 of Preferred Alternative

24-Hour Vinyl Chloride Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 3				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
Max GLC	0.41	40.9%	0.5	46%	0.409	40.9%	0.46	46%	<0.01%	<0.01%
R1	0.03	2.8%	0.1	8%	0.016	1.6%	0.07	7%	-41%	-14%
R2	0.05	5.1%	0.1	10%	0.021	2.1%	0.07	7%	-58%	-29%
R3	0.03	3.1%	0.1	8%	0.025	2.5%	0.08	8%	-18%	-7%
R4	0.06	5.6%	0.1	11%	0.023	2.3%	0.07	7%	-59%	-31%
R5	0.03	3.0%	0.1	8%	0.019	1.9%	0.07	7%	-36%	-14%
R6	0.03	3.0%	0.1	8%	0.024	2.4%	0.08	8%	-21%	-8%
R7	0.04	4.2%	0.1	9%	0.027	2.7%	0.08	8%	-35%	-16%
R8	0.03	3.3%	0.1	8%	0.017	1.7%	0.07	7%	-50%	-20%
R9	0.04	4.5%	0.1	10%	0.044	4.4%	0.09	9%	-3%	-1%
R10	0.03	3.0%	0.1	8%	0.024	2.4%	0.08	8%	-20%	-7%
R11	0.03	3.0%	0.1	8%	0.023	2.3%	0.07	7%	-22%	-8%
R12	0.04	4.3%	0.1	9%	0.037	3.7%	0.09	9%	-14%	-6%
R13	0.03	3.0%	0.1	8%	0.023	2.3%	0.07	7%	-21%	-8%
R14	0.03	2.8%	0.1	8%	0.023	2.3%	0.07	7%	-20%	-7%
R15	0.03	3.0%	0.1	8%	0.027	2.7%	0.08	8%	-10%	-4%
R16	0.03	2.5%	0.1	8%	0.014	1.4%	0.06	6%	-47%	-16%
R17	0.03	3.4%	0.1	8%	0.019	1.9%	0.07	7%	-45%	-18%
R18	0.03	3.1%	0.1	8%	0.016	1.6%	0.07	7%	-47%	-18%
R19	0.02	2.5%	0.1	8%	0.015	1.5%	0.07	7%	-39%	-13%
R20	0.02	2.2%	0.1	7%	0.014	1.4%	0.07	7%	-36%	-11%
R21	0.02	1.9%	0.1	7%	0.013	1.3%	0.06	6%	-33%	-9%
R22	0.02	1.8%	0.1	7%	0.011	1.1%	0.06	6%	-41%	-11%
R23	0.02	1.8%	0.1	7%	0.010	1.0%	0.06	6%	-43%	-11%
R24	0.02	1.6%	0.1	7%	0.009	0.9%	0.06	6%	-43%	-10%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

[1] Criteria = 1 µg/m³

[2] Average Background Concentration = 0.05 µg/m³

Annual Vinyl Chloride Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 3				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
Max GLC	0.047	23.5%	0.10	49%	0.045	22.6%	0.10	48%	-4%	-2%
R1	0.002	1.2%	0.05	27%	0.001	0.7%	0.05	26%	-45%	-2%
R2	0.005	2.5%	0.06	28%	0.002	1.1%	0.05	27%	-57%	-5%
R3	0.004	2.1%	0.06	28%	0.002	1.0%	0.05	27%	-53%	-4%
R4	0.006	3.0%	0.06	29%	0.002	1.2%	0.05	27%	-59%	-6%
R5	0.003	1.7%	0.05	27%	0.002	0.8%	0.05	26%	-52%	-3%
R6	0.004	1.9%	0.05	27%	0.002	0.9%	0.05	26%	-52%	-4%
R7	0.006	3.0%	0.06	28%	0.003	1.7%	0.05	27%	-42%	-4%
R8	0.003	1.4%	0.05	27%	0.002	0.8%	0.05	26%	-42%	-2%
R9	0.006	2.8%	0.06	28%	0.004	2.1%	0.06	28%	-24%	-2%
R10	0.002	0.8%	0.05	26%	0.001	0.7%	0.05	26%	-23%	<0.01%
R11	0.002	1.1%	0.05	27%	0.002	0.8%	0.05	26%	-21%	<0.01%
R12	0.003	1.3%	0.05	27%	0.002	1.1%	0.05	27%	-20%	-1%
R13	0.002	1.1%	0.05	27%	0.002	0.9%	0.05	26%	-24%	-1%
R14	0.002	0.9%	0.05	26%	0.001	0.7%	0.05	26%	-24%	<0.01%
R15	0.002	1.0%	0.05	27%	0.002	0.8%	0.05	26%	-18%	<0.01%
R16	0.002	1.2%	0.05	27%	0.001	0.7%	0.05	26%	-44%	-2%
R17	0.003	1.4%	0.05	27%	0.001	0.7%	0.05	26%	-45%	-2%
R18	0.002	1.2%	0.05	27%	0.001	0.7%	0.05	26%	-45%	-2%
R19	0.002	1.1%	0.05	27%	0.001	0.6%	0.05	26%	-44%	-2%
R20	0.002	1.0%	0.05	27%	0.001	0.6%	0.05	26%	-44%	-2%
R21	0.002	1.0%	0.05	27%	0.001	0.6%	0.05	26%	-44%	-2%
R22	0.002	0.9%	0.05	26%	0.001	0.5%	0.05	26%	-45%	-1%
R23	0.002	0.8%	0.05	26%	0.001	0.5%	0.05	26%	-45%	-1%
R24	0.001	0.7%	0.05	26%	0.001	0.4%	0.05	26%	-43%	-1%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

[1] Criteria = 0.2 µg/m³

[2] Average Background Concentration = 0.05 µg/m³

Scenario 3 - End of Stage 4 of Preferred Alternative

24-Hour 1,2-Dichloroethane Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 3				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
Max GLC	0.31	15.3%	0.40	20%	0.31	15.3%	0.40	20%	<0.01%	<0.01%
R1	0.02	1.1%	0.12	6%	0.013	0.6%	0.11	5%	-43%	-8%
R2	0.04	2.1%	0.14	7%	0.019	0.9%	0.11	6%	-55%	-17%
R3	0.03	1.3%	0.12	6%	0.019	1.0%	0.11	6%	-26%	-6%
R4	0.05	2.3%	0.14	7%	0.021	1.0%	0.12	6%	-55%	-18%
R5	0.02	1.2%	0.12	6%	0.015	0.7%	0.11	5%	-38%	-8%
R6	0.02	1.2%	0.12	6%	0.019	0.9%	0.11	6%	-25%	-5%
R7	0.04	1.8%	0.13	7%	0.021	1.1%	0.12	6%	-39%	-11%
R8	0.03	1.4%	0.12	6%	0.014	0.7%	0.11	5%	-51%	-11%
R9	0.03	1.7%	0.13	6%	0.032	1.6%	0.13	6%	-3%	<0.01%
R10	0.02	1.2%	0.12	6%	0.020	1.0%	0.11	6%	-20%	-4%
R11	0.02	1.2%	0.12	6%	0.019	0.9%	0.11	6%	-23%	-5%
R12	0.03	1.7%	0.13	6%	0.029	1.4%	0.12	6%	-14%	-4%
R13	0.02	1.2%	0.12	6%	0.018	0.9%	0.11	6%	-22%	-4%
R14	0.02	1.2%	0.12	6%	0.018	0.9%	0.11	6%	-20%	-4%
R15	0.02	1.2%	0.12	6%	0.021	1.1%	0.12	6%	-10%	-2%
R16	0.02	1.1%	0.12	6%	0.011	0.5%	0.11	5%	-50%	-9%
R17	0.03	1.4%	0.12	6%	0.015	0.7%	0.11	5%	-47%	-11%
R18	0.03	1.3%	0.12	6%	0.013	0.7%	0.11	5%	-47%	-10%
R19	0.02	1.0%	0.12	6%	0.012	0.6%	0.11	5%	-41%	-7%
R20	0.02	0.9%	0.11	6%	0.011	0.6%	0.11	5%	-38%	-6%
R21	0.02	0.8%	0.11	6%	0.010	0.5%	0.11	5%	-36%	-5%
R22	0.01	0.7%	0.11	5%	0.009	0.4%	0.10	5%	-41%	-5%
R23	0.01	0.7%	0.11	5%	0.008	0.4%	0.10	5%	-44%	-6%
R24	0.01	0.6%	0.11	5%	0.007	0.3%	0.10	5%	-46%	-5%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 2 µg/m³
[2] Average Background Concentration = 0.10 µg/m³

Annual 1,2-Dichloroethane Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 3				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
Max GLC	0.03	8.6%	0.09	24%	0.03	8.2%	0.09	23%	-4%	-2%
R1	0.002	0.5%	0.06	15%	0.001	0.3%	0.06	15%	-45%	-1%
R2	0.004	1.0%	0.06	16%	0.002	0.4%	0.06	15%	-57%	-4%
R3	0.003	0.9%	0.06	16%	0.002	0.4%	0.06	15%	-54%	-3%
R4	0.005	1.2%	0.06	16%	0.002	0.5%	0.06	16%	-59%	-5%
R5	0.003	0.7%	0.06	16%	0.001	0.3%	0.06	15%	-52%	-2%
R6	0.003	0.8%	0.06	16%	0.001	0.4%	0.06	15%	-53%	-3%
R7	0.005	1.2%	0.06	16%	0.003	0.7%	0.06	16%	-43%	-3%
R8	0.002	0.6%	0.06	16%	0.001	0.3%	0.06	15%	-43%	-2%
R9	0.004	1.1%	0.06	16%	0.003	0.8%	0.06	16%	-26%	-2%
R10	0.001	0.3%	0.06	15%	0.001	0.3%	0.06	15%	-24%	<0.01%
R11	0.002	0.4%	0.06	15%	0.001	0.3%	0.06	15%	-22%	<0.01%
R12	0.002	0.5%	0.06	16%	0.002	0.4%	0.06	15%	-21%	<0.01%
R13	0.002	0.5%	0.06	15%	0.001	0.3%	0.06	15%	-25%	<0.01%
R14	0.001	0.4%	0.06	15%	0.001	0.3%	0.06	15%	-26%	<0.01%
R15	0.002	0.4%	0.06	15%	0.001	0.3%	0.06	15%	-20%	<0.01%
R16	0.002	0.5%	0.06	15%	0.001	0.3%	0.06	15%	-45%	-1%
R17	0.002	0.6%	0.06	16%	0.001	0.3%	0.06	15%	-46%	-2%
R18	0.002	0.5%	0.06	15%	0.001	0.3%	0.06	15%	-45%	-1%
R19	0.002	0.4%	0.06	15%	0.001	0.2%	0.06	15%	-45%	-1%
R20	0.002	0.4%	0.06	15%	0.001	0.2%	0.06	15%	-45%	-1%
R21	0.002	0.4%	0.06	15%	0.001	0.2%	0.06	15%	-45%	-1%
R22	0.001	0.4%	0.06	15%	0.001	0.2%	0.06	15%	-45%	-1%
R23	0.001	0.3%	0.06	15%	0.001	0.2%	0.06	15%	-45%	<0.01%
R24	0.001	0.3%	0.06	15%	0.001	0.2%	0.06	15%	-44%	<0.01%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 0.4 µg/m³
[2] Average Background Concentration = 0.06 µg/m³

Scenario 3 - End of Stage 4 of Preferred Alternative

24-Hour Ammonia Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 3				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
Max GLC	8.5	9%	12	12%	8.5	9%	12	12%	<0.01%	<0.01%
R1	0.2	0.2%	3.3	3%	0.2	0%	3	3%	1%	<0.01%
R2	0.1	0.1%	3.3	3%	0.1	0%	3	3%	-2%	<0.01%
R3	0.3	0.3%	3.5	3%	0.4	0%	3	3%	<0.01%	<0.01%
R4	0.2	0.2%	3.3	3%	0.2	0%	3	3%	-10%	<0.01%
R5	0.3	0.3%	3.4	3%	0.3	0%	3	3%	<0.01%	<0.01%
R6	0.3	0.3%	3.4	3%	0.3	0%	3	3%	<0.01%	<0.01%
R7	0.4	0.4%	3.5	3%	0.4	0%	3	3%	<0.01%	<0.01%
R8	0.2	0.2%	3.3	3%	0.2	0%	3	3%	2%	<0.01%
R9	0.8	0.8%	3.9	4%	0.8	1%	4	4%	<0.01%	<0.01%
R10	0.3	0.3%	3.4	3%	0.3	0%	3	3%	<0.01%	<0.01%
R11	0.3	0.3%	3.4	3%	0.3	0%	3	3%	<0.01%	<0.01%
R12	0.5	0.5%	3.6	4%	0.5	0%	4	4%	<0.01%	<0.01%
R13	0.3	0.3%	3.4	3%	0.3	0%	3	3%	<0.01%	<0.01%
R14	0.2	0.2%	3.3	3%	0.2	0%	3	3%	<0.01%	<0.01%
R15	0.4	0.4%	3.5	3%	0.4	0%	3	3%	<0.01%	<0.01%
R16	0.1	0.1%	3.2	3%	0.1	0%	3	3%	<0.01%	<0.01%
R17	0.2	0.2%	3.3	3%	0.2	0%	3	3%	<0.01%	<0.01%
R18	0.2	0.2%	3.3	3%	0.2	0%	3	3%	<0.01%	<0.01%
R19	0.1	0.1%	3.3	3%	0.2	0%	3	3%	1%	<0.01%
R20	0.1	0.1%	3.3	3%	0.1	0%	3	3%	1%	<0.01%
R21	0.1	0.1%	3.3	3%	0.1	0%	3	3%	<0.01%	<0.01%
R22	0.1	0.1%	3.2	3%	0.1	0%	3	3%	<0.01%	<0.01%
R23	0.1	0.1%	3.2	3%	0.1	0%	3	3%	1%	<0.01%
R24	0.1	0.1%	3.2	3%	0.1	0%	3	3%	<0.01%	<0.01%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 100 µg/m³
[2] Average Background Concentration = 3.11 µg/m³

1-Hour Sulphur Dioxide Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 3				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
Max GLC	75	75%	77	77%	75	75%	77	77%	<0.01%	<0.01%
R1	8	8%	10	10%	8	8%	10	10%	<0.01%	<0.01%
R2	10	10%	12	12%	10	10%	12	12%	<0.01%	<0.01%
R3	12	12%	14	14%	12	12%	14	14%	<0.01%	<0.01%
R4	11	11%	13	13%	11	11%	13	13%	<0.01%	<0.01%
R5	9	9%	12	12%	9	9%	12	12%	<0.01%	<0.01%
R6	14	14%	16	16%	14	14%	16	16%	<0.01%	<0.01%
R7	21	21%	24	24%	21	21%	24	24%	<0.01%	<0.01%
R8	10	10%	12	12%	10	10%	12	12%	<0.01%	<0.01%
R9	26	26%	28	28%	26	26%	28	28%	<0.01%	<0.01%
R10	19	19%	22	22%	19	19%	22	22%	<0.01%	<0.01%
R11	18	18%	21	21%	18	18%	21	21%	<0.01%	<0.01%
R12	22	22%	25	25%	22	22%	25	25%	<0.01%	<0.01%
R13	20	20%	22	22%	20	20%	22	22%	<0.01%	<0.01%
R14	12	12%	15	15%	12	12%	15	15%	<0.01%	<0.01%
R15	23	23%	25	25%	23	23%	25	25%	<0.01%	<0.01%
R16	9	9%	11	11%	9	9%	11	11%	<0.01%	<0.01%
R17	10	10%	12	12%	10	10%	12	12%	<0.01%	<0.01%
R18	9	9%	11	11%	9	9%	11	11%	<0.01%	<0.01%
R19	8	8%	10	10%	8	8%	10	10%	<0.01%	<0.01%
R20	8	8%	10	10%	8	8%	10	10%	<0.01%	<0.01%
R21	7	7%	10	10%	7	7%	10	10%	<0.01%	<0.01%
R22	7	7%	9	9%	7	7%	9	9%	<0.01%	<0.01%
R23	6	6%	9	9%	6	6%	9	9%	<0.01%	<0.01%
R24	6	6%	8	8%	6	6%	8	8%	<0.01%	<0.01%
STR1	28	28%	31	31%	28	28%	31	31%	<0.01%	<0.01%

Notes:
[1] Criteria = 100 µg/m³
[2] Average Background Concentration = 2.4 µg/m³

Scenario 3 - End of Stage 4 of Preferred Alternative

Table 12J-9: Annual Sulphur Dioxide Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 3				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
Max GLC	2.0	20%	3.4	34%	2.0	20.2%	3.4	34%	<0.01%	<0.01%
R1	0.17	2%	1.6	16%	0.17	2%	1.6	16%	<0.01%	<0.01%
R2	0.22	2%	1.6	16%	0.22	2%	1.6	16%	<0.01%	<0.01%
R3	0.24	2%	1.6	16%	0.23	2%	1.6	16%	<0.01%	<0.01%
R4	0.24	2%	1.6	16%	0.24	2%	1.6	16%	<0.01%	<0.01%
R5	0.21	2%	1.6	16%	0.21	2%	1.6	16%	<0.01%	<0.01%
R6	0.22	2%	1.6	16%	0.22	2%	1.6	16%	<0.01%	<0.01%
R7	0.27	3%	1.7	17%	0.27	3%	1.7	17%	<0.01%	<0.01%
R8	0.22	2%	1.6	16%	0.22	2%	1.6	16%	<0.01%	<0.01%
R9	0.32	3%	1.7	17%	0.32	3%	1.7	17%	<0.01%	<0.01%
R10	0.12	1%	1.5	15%	0.12	1%	1.5	15%	<0.01%	<0.01%
R11	0.17	2%	1.6	16%	0.17	2%	1.6	16%	<0.01%	<0.01%
R12	0.26	3%	1.7	17%	0.26	3%	1.7	17%	<0.01%	<0.01%
R13	0.23	2%	1.6	16%	0.23	2%	1.6	16%	<0.01%	<0.01%
R14	0.19	2%	1.6	16%	0.19	2%	1.6	16%	<0.01%	<0.01%
R15	0.19	2%	1.6	16%	0.19	2%	1.6	16%	<0.01%	<0.01%
R16	0.17	2%	1.6	16%	0.17	2%	1.6	16%	<0.01%	<0.01%
R17	0.21	2%	1.6	16%	0.21	2%	1.6	16%	<0.01%	<0.01%
R18	0.18	2%	1.6	16%	0.18	2%	1.6	16%	<0.01%	<0.01%
R19	0.16	2%	1.6	16%	0.16	2%	1.6	16%	<0.01%	<0.01%
R20	0.15	2%	1.6	16%	0.15	2%	1.6	16%	<0.01%	<0.01%
R21	0.14	1%	1.5	15%	0.14	1%	1.5	15%	<0.01%	<0.01%
R22	0.12	1%	1.5	15%	0.12	1%	1.5	15%	<0.01%	<0.01%
R23	0.12	1%	1.5	15%	0.12	1%	1.5	15%	<0.01%	<0.01%
R24	0.11	1%	1.5	15%	0.11	1%	1.5	15%	<0.01%	<0.01%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 10 µg/m³
[2] Average Background Concentration = 1.4 µg/m³

1-Hour Nitrogen Oxides Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 3				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
Max GLC	184	46%	205	51%	179	45%	200	50%	-3%	-2%
R1	46	12%	67	17%	46	11%	67	17%	-2%	-1%
R2	85	21%	106	27%	42	11%	63	16%	-50%	-40%
R3	51	13%	72	18%	26	6%	47	12%	-50%	-35%
R4	95	24%	116	29%	50	13%	71	18%	-47%	-39%
R5	55	14%	76	19%	33	8%	54	13%	-40%	-29%
R6	40	10%	61	15%	24	6%	45	11%	-40%	-26%
R7	77	19%	98	25%	72	18%	93	23%	-6%	-5%
R8	38	9%	59	15%	37	9%	58	15%	-2%	-1%
R9	62	15%	83	21%	60	15%	81	20%	-3%	-2%
R10	18	5%	39	10%	17	4%	38	10%	-6%	-3%
R11	22	6%	43	11%	22	5%	43	11%	-1%	<0.01%
R12	26	6%	47	12%	26	7%	47	12%	<0.01%	<0.01%
R13	27	7%	48	12%	27	7%	48	12%	<0.01%	<0.01%
R14	24	6%	45	11%	23	6%	44	11%	-2%	<0.01%
R15	34	8%	55	14%	28	7%	49	12%	-19%	-12%
R16	41	10%	62	16%	41	10%	62	15%	-1%	<0.01%
R17	58	14%	79	20%	57	14%	78	19%	-2%	-1%
R18	49	12%	70	17%	48	12%	69	17%	-1%	-1%
R19	45	11%	66	16%	44	11%	65	16%	-2%	-1%
R20	40	10%	61	15%	40	10%	61	15%	-2%	-1%
R21	33	8%	54	13%	32	8%	53	13%	-2%	<0.01%
R22	31	8%	52	13%	31	8%	52	13%	<0.01%	<0.01%
R23	30	7%	51	13%	29	7%	50	13%	<0.01%	<0.01%
R24	26	7%	47	12%	26	7%	47	12%	<0.01%	<0.01%
STR1	54	13%	75	19%	47	12%	68	17%	-12%	-9%

Notes:
[1] Criteria = 400 µg/m³
[2] Average Background Concentration = 21.0 µg/m³

Scenario 3 - End of Stage 4 of Preferred Alternative

24-Hour Nitrogen Oxides Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 3				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
Max GLC	31	16%	50	25%	31	16%	50	25%	<0.01%	<0.01%
R1	3	1%	22	11%	3	1%	22	11%	-2%	<0.01%
R2	5	2%	24	12%	3	1%	22	11%	-37%	-7%
R3	5	2%	24	12%	3	2%	22	11%	-38%	-8%
R4	6	3%	25	13%	4	2%	23	11%	-41%	-10%
R5	3	1%	22	11%	2	1%	21	11%	-24%	-3%
R6	4	2%	23	12%	2	1%	22	11%	-37%	-6%
R7	7	4%	26	13%	8	4%	27	13%	2%	<0.01%
R8	3	1%	22	11%	3	1%	22	11%	-2%	<0.01%
R9	6	3%	25	12%	6	3%	25	12%	-1%	<0.01%
R10	2	1%	21	11%	2	1%	21	10%	-5%	<0.01%
R11	2	1%	21	11%	2	1%	21	11%	<0.01%	<0.01%
R12	3	2%	23	11%	3	2%	22	11%	<0.01%	<0.01%
R13	3	1%	22	11%	3	1%	22	11%	<0.01%	<0.01%
R14	3	2%	22	11%	3	2%	22	11%	<0.01%	<0.01%
R15	3	1%	22	11%	3	1%	22	11%	<0.01%	<0.01%
R16	2	1%	22	11%	2	1%	21	11%	-6%	<0.01%
R17	3	2%	22	11%	3	1%	22	11%	-1%	<0.01%
R18	3	1%	22	11%	2	1%	22	11%	-11%	-1%
R19	2	1%	22	11%	2	1%	21	11%	-2%	<0.01%
R20	2	1%	21	11%	2	1%	21	11%	-2%	<0.01%
R21	2	1%	21	11%	2	1%	21	11%	-1%	<0.01%
R22	2	1%	21	11%	2	1%	21	11%	<0.01%	<0.01%
R23	2	1%	21	10%	2	1%	21	10%	4%	<0.01%
R24	2	1%	21	10%	2	1%	21	10%	5%	<0.01%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 200 µg/m³
[2] Average Background Concentration = 19.1 µg/m³

24-Hour Dioxins and Furans Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 3				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
Max GLC	0.001	0.99%	0.02	21%	0.001	0.99%	0.02	21%	<0.01%	<0.01%
R1	0.00004	0.04%	0.02	20%	0.00004	0.04%	0.02	20%	<0.01%	<0.01%
R2	0.00007	0.07%	0.02	20%	0.00007	0.07%	0.02	20%	<0.01%	<0.01%
R3	0.00008	0.08%	0.02	20%	0.00008	0.08%	0.02	20%	<0.01%	<0.01%
R4	0.00007	0.07%	0.02	20%	0.00007	0.07%	0.02	20%	<0.01%	<0.01%
R5	0.00007	0.07%	0.02	20%	0.00007	0.07%	0.02	20%	<0.01%	<0.01%
R6	0.00008	0.08%	0.02	20%	0.00008	0.08%	0.02	20%	<0.01%	<0.01%
R7	0.00008	0.08%	0.02	20%	0.00008	0.08%	0.02	20%	<0.01%	<0.01%
R8	0.00005	0.05%	0.02	20%	0.00005	0.05%	0.02	20%	<0.01%	<0.01%
R9	0.00011	0.11%	0.02	20%	0.00011	0.11%	0.02	20%	<0.01%	<0.01%
R10	0.00004	0.04%	0.02	20%	0.00004	0.04%	0.02	20%	<0.01%	<0.01%
R11	0.00007	0.07%	0.02	20%	0.00007	0.07%	0.02	20%	<0.01%	<0.01%
R12	0.00011	0.11%	0.02	20%	0.00011	0.11%	0.02	20%	<0.01%	<0.01%
R13	0.00009	0.09%	0.02	20%	0.00009	0.09%	0.02	20%	<0.01%	<0.01%
R14	0.00007	0.07%	0.02	20%	0.00007	0.07%	0.02	20%	<0.01%	<0.01%
R15	0.00009	0.09%	0.02	20%	0.00009	0.09%	0.02	20%	<0.01%	<0.01%
R16	0.00005	0.05%	0.02	20%	0.00005	0.05%	0.02	20%	<0.01%	<0.01%
R17	0.00005	0.05%	0.02	20%	0.00005	0.05%	0.02	20%	<0.01%	<0.01%
R18	0.00005	0.05%	0.02	20%	0.00005	0.05%	0.02	20%	<0.01%	<0.01%
R19	0.00004	0.04%	0.02	20%	0.00004	0.04%	0.02	20%	<0.01%	<0.01%
R20	0.00004	0.04%	0.02	20%	0.00004	0.04%	0.02	20%	<0.01%	<0.01%
R21	0.00004	0.04%	0.02	20%	0.00004	0.04%	0.02	20%	<0.01%	<0.01%
R22	0.00004	0.04%	0.02	20%	0.00004	0.04%	0.02	20%	<0.01%	<0.01%
R23	0.00003	0.03%	0.02	20%	0.00003	0.03%	0.02	20%	<0.01%	<0.01%
R24	0.00003	0.03%	0.02	20%	0.00003	0.03%	0.02	20%	<0.01%	<0.01%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 0.1 pg TEQ/m³
[2] Average Background Concentration = 0.02 pg TEQ/m³

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All Scenarios – Detailed Results, LFG and Combustion Byproduct Contaminants

Scenario 1 - End of Stage 1 of Preferred Alternative

24-Hour Hydrogen Sulphide Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 1				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
Max GLC	0.85	12.1%	6.4	92%	0.85	12.2%	6.5	92%	<0.01%	<0.01%
R1	0.04	0.6%	5.6	81%	0.04	0.6%	5.6	81%	2%	<0.01%
R2	0.07	1.0%	5.7	81%	0.07	1.0%	5.7	81%	<0.01%	<0.01%
R3	0.07	1.0%	5.7	81%	0.07	1.0%	5.7	81%	<0.01%	<0.01%
R4	0.07	1.0%	5.7	81%	0.07	1.0%	5.7	81%	<0.01%	<0.01%
R5	0.06	0.9%	5.7	81%	0.06	0.9%	5.7	81%	<0.01%	<0.01%
R6	0.07	1.0%	5.7	81%	0.07	0.9%	5.7	81%	<0.01%	<0.01%
R7	0.07	0.9%	5.7	81%	0.07	0.9%	5.7	81%	<0.01%	<0.01%
R8	0.04	0.6%	5.6	81%	0.05	0.6%	5.6	81%	<0.01%	<0.01%
R9	0.10	1.5%	5.7	81%	0.10	1.5%	5.7	81%	<0.01%	<0.01%
R10	0.04	0.5%	5.6	81%	0.04	0.5%	5.6	81%	<0.01%	<0.01%
R11	0.06	0.9%	5.7	81%	0.06	0.9%	5.7	81%	<0.01%	<0.01%
R12	0.10	1.4%	5.7	81%	0.10	1.4%	5.7	81%	<0.01%	<0.01%
R13	0.08	1.1%	5.7	81%	0.08	1.1%	5.7	81%	<0.01%	<0.01%
R14	0.07	1.0%	5.7	81%	0.07	1.0%	5.7	81%	1%	<0.01%
R15	0.08	1.1%	5.7	81%	0.08	1.1%	5.7	81%	<0.01%	<0.01%
R16	0.04	0.6%	5.6	81%	0.04	0.6%	5.6	81%	<0.01%	<0.01%
R17	0.04	0.6%	5.6	81%	0.04	0.6%	5.6	81%	2%	<0.01%
R18	0.04	0.6%	5.6	81%	0.04	0.6%	5.6	81%	2%	<0.01%
R19	0.04	0.6%	5.6	81%	0.04	0.6%	5.6	81%	2%	<0.01%
R20	0.04	0.5%	5.6	81%	0.04	0.6%	5.6	81%	2%	<0.01%
R21	0.04	0.5%	5.6	81%	0.04	0.5%	5.6	81%	2%	<0.01%
R22	0.03	0.5%	5.6	80%	0.03	0.5%	5.6	80%	1%	<0.01%
R23	0.03	0.5%	5.6	80%	0.03	0.5%	5.6	80%	<0.01%	<0.01%
R24	0.03	0.4%	5.6	80%	0.03	0.4%	5.6	80%	2%	<0.01%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

[1] Criteria = 7 µg/m³

[2] 90th Percentile Background Concentration based on all wind directions = 5.6 µg/m³

Scenario 1 - End of Stage 1 of Preferred Alternative

10-Minute Hydrogen Sulphide Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 1				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
R1	0.43	3.3%	22.9	177%	0.45	3.5%	23.0	177%	5%	<0.01%
R2	0.34	2.6%	22.9	176%	0.34	2.6%	22.9	176%	<0.01%	<0.01%
R3	0.37	2.8%	22.9	176%	0.37	2.8%	22.9	176%	<0.01%	<0.01%
R4	0.40	3.1%	22.9	176%	0.39	3.0%	22.9	176%	-2%	<0.01%
R5	0.30	2.3%	22.8	176%	0.30	2.3%	22.8	176%	<0.01%	<0.01%
R6	0.33	2.6%	22.8	176%	0.33	2.6%	22.8	176%	<0.01%	<0.01%
R7	0.41	3.2%	22.9	176%	0.41	3.2%	22.9	176%	<0.01%	<0.01%
R8	0.35	2.7%	22.9	176%	0.36	2.7%	22.9	176%	2%	<0.01%
R9	0.59	4.6%	23.1	178%	0.59	4.6%	23.1	178%	<0.01%	<0.01%
R10	0.28	2.2%	22.8	175%	0.28	2.2%	22.8	175%	<0.01%	<0.01%
R11	0.33	2.5%	22.8	176%	0.33	2.5%	22.8	176%	<0.01%	<0.01%
R12	0.39	3.0%	22.9	176%	0.39	3.0%	22.9	176%	<0.01%	<0.01%
R13	0.37	2.9%	22.9	176%	0.37	2.9%	22.9	176%	<0.01%	<0.01%
R14	0.36	2.8%	22.9	176%	0.36	2.8%	22.9	176%	<0.01%	<0.01%
R15	0.43	3.3%	22.9	177%	0.43	3.3%	22.9	177%	<0.01%	<0.01%
R16	0.34	2.6%	22.9	176%	0.35	2.7%	22.9	176%	2%	<0.01%
R17	0.40	3.1%	22.9	176%	0.42	3.3%	22.9	176%	6%	<0.01%
R18	0.36	2.8%	22.9	176%	0.39	3.0%	22.9	176%	6%	<0.01%
R19	0.43	3.3%	22.9	177%	0.45	3.4%	23.0	177%	5%	<0.01%
R20	0.44	3.4%	23.0	177%	0.45	3.5%	23.0	177%	4%	<0.01%
R21	0.44	3.4%	23.0	177%	0.45	3.5%	23.0	177%	2%	<0.01%
R22	0.43	3.3%	22.9	177%	0.43	3.3%	23.0	177%	<0.01%	<0.01%
R23	0.42	3.2%	22.9	176%	0.42	3.3%	22.9	176%	<0.01%	<0.01%
R24	0.39	3.0%	22.9	176%	0.39	3.0%	22.9	176%	-1%	<0.01%
STR1	0.76	5.9%	23.3	179%	0.76	5.9%	23.3	179%	<0.01%	<0.01%

Notes:
[1] Criteria = 13 µg/m³

[2] 90th Percentile Background Concentration based on all wind directions = 22.5 µg/m³

Scenario 1 - End of Stage 1 of Preferred Alternative

10-Minute Total Reduced Sulphur Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 1				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
R1	0.74	5.7%	45.0	346%	0.75	5.8%	45.0	346%	2%	<0.01%
R2	1.00	7.7%	45.2	348%	0.99	7.6%	45.2	348%	<0.01%	<0.01%
R3	0.76	5.8%	45.0	346%	0.76	5.8%	45.0	346%	<0.01%	<0.01%
R4	1.17	9.0%	45.4	349%	1.15	8.8%	45.4	349%	-2%	<0.01%
R5	0.78	6.0%	45.0	346%	0.74	5.7%	45.0	346%	-5%	<0.01%
R6	0.72	5.5%	45.0	346%	0.72	5.6%	45.0	346%	<0.01%	<0.01%
R7	0.61	4.7%	44.8	345%	0.63	4.9%	44.9	345%	5%	<0.01%
R8	0.56	4.3%	44.8	345%	0.59	4.6%	44.8	345%	6%	<0.01%
R9	0.63	4.8%	44.9	345%	0.68	5.2%	44.9	345%	9%	<0.01%
R10	0.58	4.4%	44.8	345%	0.56	4.3%	44.8	345%	-3%	<0.01%
R11	0.57	4.4%	44.8	345%	0.53	4.1%	44.8	344%	-7%	<0.01%
R12	0.67	5.2%	44.9	345%	0.64	4.9%	44.9	345%	-5%	<0.01%
R13	0.71	5.5%	44.9	346%	0.65	5.0%	44.9	345%	-8%	<0.01%
R14	0.69	5.3%	44.9	346%	0.67	5.1%	44.9	345%	-3%	<0.01%
R15	0.63	4.9%	44.9	345%	0.58	4.5%	44.8	345%	-8%	<0.01%
R16	0.56	4.3%	44.8	345%	0.60	4.6%	44.8	345%	8%	<0.01%
R17	0.75	5.8%	45.0	346%	0.77	5.9%	45.0	346%	3%	<0.01%
R18	0.72	5.5%	45.0	346%	0.76	5.8%	45.0	346%	5%	<0.01%
R19	0.72	5.5%	45.0	346%	0.73	5.6%	45.0	346%	2%	<0.01%
R20	0.70	5.4%	44.9	346%	0.71	5.5%	44.9	346%	2%	<0.01%
R21	0.69	5.3%	44.9	346%	0.70	5.4%	44.9	346%	<0.01%	<0.01%
R22	0.69	5.3%	44.9	346%	0.69	5.3%	44.9	346%	<0.01%	<0.01%
R23	0.68	5.3%	44.9	346%	0.69	5.3%	44.9	346%	<0.01%	<0.01%
R24	0.70	5.4%	44.9	346%	0.67	5.1%	44.9	345%	-4%	<0.01%
STR1	0.76	5.9%	45.0	346%	0.76	5.9%	45.0	346%	N/A	N/A

Notes:

[1] Criteria = 13 µg/m³

[2] 90th Percentile Background Concentration based on all wind directions = 44.2 µg/m³

Scenario 1 - End of Stage 1 of Preferred Alternative

24-Hour Total Reduced Sulphur Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 1				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
Max GLC	0.85	12.2%	11.9	169%	0.86	12.2%	11.9	169%	<0.01%	<0.01%
R1	0.08	1.2%	11.1	158%	0.08	1.2%	11.1	158%	<0.01%	<0.01%
R2	0.12	1.7%	11.1	159%	0.12	1.7%	11.1	159%	<0.01%	<0.01%
R3	0.10	1.5%	11.1	159%	0.10	1.5%	11.1	159%	3%	<0.01%
R4	0.13	1.9%	11.1	159%	0.13	1.8%	11.1	159%	-3%	<0.01%
R5	0.10	1.5%	11.1	159%	0.10	1.5%	11.1	159%	-2%	<0.01%
R6	0.09	1.3%	11.1	158%	0.09	1.3%	11.1	158%	<0.01%	<0.01%
R7	0.13	1.9%	11.1	159%	0.14	2.0%	11.1	159%	7%	<0.01%
R8	0.10	1.5%	11.1	159%	0.11	1.6%	11.1	159%	7%	<0.01%
R9	0.15	2.2%	11.2	159%	0.16	2.2%	11.2	159%	1%	<0.01%
R10	0.06	0.8%	11.1	158%	0.06	0.8%	11.1	158%	<0.01%	<0.01%
R11	0.07	1.0%	11.1	158%	0.07	1.0%	11.1	158%	2%	<0.01%
R12	0.10	1.5%	11.1	159%	0.10	1.5%	11.1	159%	<0.01%	<0.01%
R13	0.08	1.2%	11.1	158%	0.08	1.2%	11.1	158%	<0.01%	<0.01%
R14	0.08	1.1%	11.1	158%	0.08	1.2%	11.1	158%	2%	<0.01%
R15	0.08	1.1%	11.1	158%	0.08	1.1%	11.1	158%	<0.01%	<0.01%
R16	0.08	1.1%	11.1	158%	0.09	1.2%	11.1	158%	10%	<0.01%
R17	0.10	1.4%	11.1	159%	0.10	1.5%	11.1	159%	7%	<0.01%
R18	0.09	1.2%	11.1	158%	0.09	1.3%	11.1	158%	9%	<0.01%
R19	0.07	1.1%	11.1	158%	0.07	1.1%	11.1	158%	<0.01%	<0.01%
R20	0.07	1.0%	11.1	158%	0.07	1.0%	11.1	158%	<0.01%	<0.01%
R21	0.06	0.9%	11.1	158%	0.06	0.9%	11.1	158%	-1%	<0.01%
R22	0.05	0.8%	11.1	158%	0.05	0.8%	11.1	158%	2%	<0.01%
R23	0.05	0.7%	11.0	158%	0.05	0.8%	11.1	158%	8%	<0.01%
R24	0.05	0.7%	11.1	158%	0.05	0.7%	11.1	158%	3%	<0.01%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 7 µg/m³

[2] 90th Percentile Background Concentration based on all wind directions = 11 µg/m³

Scenario 1 - End of Stage 1 of Preferred Alternative

24-Hour Benzene Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 1				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
Max GLC	0.32	14.1%	0.9	38%	0.57	24.7%	1.1	49%	75%	28%
R1	0.07	3.2%	0.6	28%	0.09	3.9%	0.6	28%	21%	2%
R2	0.14	6.2%	0.7	30%	0.07	3.0%	0.6	27%	-52%	-11%
R3	0.12	5.2%	0.7	29%	0.05	2.1%	0.6	26%	-60%	-11%
R4	0.17	7.3%	0.7	32%	0.07	3.2%	0.6	28%	-56%	-13%
R5	0.09	3.8%	0.6	28%	0.04	1.8%	0.6	26%	-54%	-7%
R6	0.10	4.3%	0.7	29%	0.04	1.9%	0.6	26%	-55%	-8%
R7	0.12	5.3%	0.7	30%	0.07	3.2%	0.6	27%	-40%	-7%
R8	0.09	3.9%	0.6	28%	0.07	3.1%	0.6	27%	-21%	-3%
R9	0.10	4.3%	0.7	29%	0.07	3.2%	0.6	27%	-25%	-4%
R10	0.05	2.3%	0.6	27%	0.04	1.6%	0.6	26%	-27%	-2%
R11	0.05	2.2%	0.6	26%	0.04	1.6%	0.6	26%	-26%	-2%
R12	0.06	2.6%	0.6	27%	0.06	2.6%	0.6	27%	<0.01%	<0.01%
R13	0.05	2.2%	0.6	27%	0.05	2.0%	0.6	26%	-11%	<0.01%
R14	0.05	2.1%	0.6	26%	0.05	2.3%	0.6	27%	10%	<0.01%
R15	0.05	2.2%	0.6	26%	0.04	1.7%	0.6	26%	-22%	-2%
R16	0.08	3.3%	0.6	28%	0.07	3.0%	0.6	27%	-11%	-1%
R17	0.09	3.9%	0.6	28%	0.11	4.7%	0.7	29%	22%	3%
R19	0.07	2.9%	0.6	27%	0.08	3.4%	0.6	28%	16%	2%
R20	0.06	2.6%	0.6	27%	0.06	2.6%	0.6	27%	-2%	<0.01%
R21	0.05	2.4%	0.6	27%	0.05	2.1%	0.6	26%	-10%	<0.01%
R22	0.04	1.9%	0.6	26%	0.04	1.6%	0.6	26%	-12%	<0.01%
R23	0.04	1.8%	0.6	26%	0.03	1.4%	0.6	26%	-24%	-2%
R24	0.04	1.6%	0.6	26%	0.03	1.3%	0.6	26%	-22%	-1%
STR1	NA	N/A	N/A	N/A	NA	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 2.3 µg/m³

[2] 90th Percentile Background Concentration = 0.56 µg/m³

Scenario 1 - End of Stage 1 of Preferred Alternative

Annual Benzene Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 1				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
Max GLC	0.04	9.6%	0.4	98%	0.04	9.4%	0.4	98%	-2%	<0.01%
R1	0.01	1.3%	0.4	90%	0.01	1.3%	0.4	90%	-2%	<0.01%
R2	0.01	3.3%	0.4	92%	0.01	1.6%	0.4	90%	-50%	-2%
R3	0.01	2.6%	0.4	91%	0.01	1.3%	0.4	90%	-47%	-1%
R4	0.02	4.2%	0.4	93%	0.01	2.0%	0.4	91%	-53%	-2%
R5	0.01	2.1%	0.4	91%	0.01	1.2%	0.4	90%	-46%	-1%
R6	0.01	2.2%	0.4	91%	0.01	1.2%	0.4	90%	-46%	-1%
R7	0.01	3.1%	0.4	92%	0.01	2.6%	0.4	91%	-16%	<0.01%
R8	0.01	1.5%	0.4	90%	0.01	1.5%	0.4	90%	2%	<0.01%
R9	0.01	2.2%	0.4	91%	0.01	2.0%	0.4	91%	-6%	<0.01%
R10	0.003	0.6%	0.4	89%	0.003	0.6%	0.4	89%	-11%	<0.01%
R11	0.003	0.8%	0.4	89%	0.003	0.7%	0.4	89%	-12%	<0.01%
R12	0.004	1.0%	0.4	90%	0.004	0.8%	0.4	90%	-16%	<0.01%
R13	0.004	0.9%	0.4	90%	0.003	0.7%	0.4	89%	-21%	<0.01%
R14	0.003	0.7%	0.4	89%	0.003	0.6%	0.4	89%	-20%	<0.01%
R15	0.003	0.7%	0.4	89%	0.003	0.6%	0.4	89%	-10%	<0.01%
R16	0.01	1.3%	0.4	90%	0.01	1.3%	0.4	90%	-3%	<0.01%
R17	0.01	1.5%	0.4	90%	0.01	1.7%	0.4	90%	13%	<0.01%
R18	0.01	1.3%	0.4	90%	0.01	1.4%	0.4	90%	6%	<0.01%
R19	0.01	1.2%	0.4	90%	0.01	1.1%	0.4	90%	-7%	<0.01%
R20	0.01	1.1%	0.4	90%	0.005	1.0%	0.4	90%	-9%	<0.01%
R21	0.005	1.1%	0.4	90%	0.004	1.0%	0.4	90%	-10%	<0.01%
R22	0.004	0.9%	0.4	90%	0.004	0.8%	0.4	90%	-14%	<0.01%
R23	0.004	0.9%	0.4	90%	0.003	0.7%	0.4	89%	-17%	<0.01%
R24	0.003	0.8%	0.4	89%	0.003	0.6%	0.4	89%	-20%	<0.01%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

[1] Criteria = 0.45 µg/m³

[2] Average Background Concentration = 0.40 µg/m³

Scenario 1 - End of Stage 1 of Preferred Alternative

24-Hour Vinyl Chloride Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 1				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
Max GLC	0.41	40.9%	0.5	46%	0.41	40.9%	0.5	46%	<0.01%	<0.01%
R1	0.03	2.8%	0.1	8%	0.02	2.1%	0.1	7%	-25%	-9%
R2	0.05	5.1%	0.1	10%	0.03	3.0%	0.1	8%	-41%	-21%
R3	0.03	3.1%	0.1	8%	0.03	2.9%	0.1	8%	-5%	-2%
R4	0.06	5.6%	0.1	11%	0.03	3.3%	0.1	8%	-42%	-22%
R5	0.03	3.0%	0.1	8%	0.02	2.4%	0.1	7%	-22%	-8%
R6	0.03	3.0%	0.1	8%	0.03	2.7%	0.1	8%	-11%	-4%
R7	0.04	4.2%	0.1	9%	0.03	3.5%	0.1	9%	-18%	-8%
R8	0.03	3.3%	0.1	8%	0.02	2.2%	0.1	7%	-33%	-13%
R9	0.04	4.5%	0.1	10%	0.05	4.5%	0.1	10%	<0.01%	<0.01%
R10	0.03	3.0%	0.1	8%	0.03	2.6%	0.1	8%	-12%	-5%
R11	0.03	3.0%	0.1	8%	0.03	2.6%	0.1	8%	-12%	-5%
R12	0.04	4.3%	0.1	9%	0.04	4.1%	0.1	9%	-4%	-2%
R13	0.03	3.0%	0.1	8%	0.03	2.7%	0.1	8%	-9%	-3%
R14	0.03	2.8%	0.1	8%	0.03	2.8%	0.1	8%	-2%	<0.01%
R15	0.03	3.0%	0.1	8%	0.03	2.9%	0.1	8%	-3%	<0.01%
R16	0.03	2.5%	0.1	8%	0.02	1.8%	0.1	7%	-29%	-10%
R17	0.03	3.4%	0.1	8%	0.02	2.4%	0.1	7%	-30%	-12%
R18	0.03	3.1%	0.1	8%	0.02	2.2%	0.1	7%	-29%	-11%
R19	0.02	2.5%	0.1	8%	0.02	2.0%	0.1	7%	-22%	-7%
R20	0.02	2.2%	0.1	7%	0.02	1.8%	0.1	7%	-17%	-5%
R21	0.02	1.9%	0.1	7%	0.02	1.7%	0.1	7%	-13%	-4%
R22	0.02	1.8%	0.1	7%	0.01	1.4%	0.1	7%	-21%	-6%
R23	0.02	1.8%	0.1	7%	0.01	1.3%	0.1	6%	-26%	-7%
R24	0.02	1.6%	0.1	7%	0.01	1.1%	0.1	6%	-27%	-6%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

[1] Criteria = 1 µg/m³

[2] Average Background Concentration = 0.05 µg/m³

Scenario 1 - End of Stage 1 of Preferred Alternative

Annual Vinyl Chloride Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 1				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
Max GLC	0.047	23.5%	0.1	49%	0.047	23.3%	0.1	49%	<0.01%	<0.01%
R1	0.002	1.2%	0.1	27%	0.002	0.9%	0.1	26%	-26%	-1%
R2	0.005	2.5%	0.1	28%	0.003	1.4%	0.1	27%	-42%	-4%
R3	0.004	2.1%	0.1	28%	0.003	1.3%	0.1	27%	-39%	-3%
R4	0.006	3.0%	0.1	29%	0.003	1.7%	0.1	27%	-44%	-5%
R5	0.003	1.7%	0.1	27%	0.002	1.1%	0.1	27%	-37%	-2%
R6	0.004	1.9%	0.1	27%	0.002	1.2%	0.1	27%	-38%	-3%
R7	0.006	3.0%	0.1	28%	0.005	2.4%	0.1	28%	-20%	-2%
R8	0.003	1.4%	0.1	27%	0.002	1.1%	0.1	27%	-22%	-1%
R9	0.006	2.8%	0.1	28%	0.005	2.6%	0.1	28%	-6%	<0.01%
R10	0.002	0.8%	0.1	26%	0.002	0.8%	0.1	26%	-10%	<0.01%
R11	0.002	1.1%	0.1	27%	0.002	1.0%	0.1	26%	-9%	<0.01%
R12	0.003	1.3%	0.1	27%	0.002	1.2%	0.1	27%	-10%	<0.01%
R13	0.002	1.1%	0.1	27%	0.002	1.0%	0.1	27%	-13%	<0.01%
R14	0.002	0.9%	0.1	26%	0.002	0.8%	0.1	26%	-13%	<0.01%
R15	0.002	1.0%	0.1	27%	0.002	0.9%	0.1	26%	-8%	<0.01%
R16	0.002	1.2%	0.1	27%	0.002	0.9%	0.1	26%	-25%	-1%
R17	0.003	1.4%	0.1	27%	0.002	1.0%	0.1	27%	-26%	-1%
R18	0.002	1.2%	0.1	27%	0.002	0.9%	0.1	26%	-25%	-1%
R19	0.002	1.1%	0.1	27%	0.002	0.8%	0.1	26%	-25%	-1%
R20	0.002	1.0%	0.1	27%	0.002	0.8%	0.1	26%	-26%	<0.01%
R21	0.002	1.0%	0.1	27%	0.001	0.7%	0.1	26%	-26%	<0.01%
R22	0.002	0.9%	0.1	26%	0.001	0.6%	0.1	26%	-27%	<0.01%
R23	0.002	0.8%	0.1	26%	0.001	0.6%	0.1	26%	-28%	<0.01%
R24	0.001	0.7%	0.1	26%	0.001	0.5%	0.1	26%	-27%	<0.01%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 0.2 µg/m³

[2] Average Background Concentration = 0.05 µg/m³

Scenario 1 - End of Stage 1 of Preferred Alternative

24-Hour 1,2-Dichloroethane Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 1				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
Max GLC	0.31	15.3%	0.4	20%	0.31	15.3%	0.4	20%	<0.01%	<0.01%
R1	0.02	1.1%	0.1	6%	0.02	0.9%	0.1	6%	-23%	-4%
R2	0.04	2.1%	0.1	7%	0.02	1.2%	0.1	6%	-42%	-13%
R3	0.03	1.3%	0.1	6%	0.02	1.1%	0.1	6%	-12%	-3%
R4	0.05	2.3%	0.1	7%	0.03	1.3%	0.1	6%	-43%	-14%
R5	0.02	1.2%	0.1	6%	0.02	0.9%	0.1	6%	-23%	-5%
R6	0.02	1.2%	0.1	6%	0.02	1.1%	0.1	6%	-13%	-3%
R7	0.04	1.8%	0.1	7%	0.03	1.4%	0.1	6%	-22%	-6%
R8	0.03	1.4%	0.1	6%	0.02	0.9%	0.1	6%	-33%	-7%
R9	0.03	1.7%	0.1	6%	0.03	1.7%	0.1	6%	<0.01%	<0.01%
R10	0.02	1.2%	0.1	6%	0.02	1.1%	0.1	6%	-13%	-3%
R11	0.02	1.2%	0.1	6%	0.02	1.1%	0.1	6%	-13%	-3%
R12	0.03	1.7%	0.1	6%	0.03	1.6%	0.1	6%	-4%	<0.01%
R13	0.02	1.2%	0.1	6%	0.02	1.1%	0.1	6%	-10%	-2%
R14	0.02	1.2%	0.1	6%	0.02	1.1%	0.1	6%	-2%	<0.01%
R15	0.02	1.2%	0.1	6%	0.02	1.1%	0.1	6%	-3%	<0.01%
R16	0.02	1.1%	0.1	6%	0.01	0.7%	0.1	5%	-32%	-6%
R17	0.03	1.4%	0.1	6%	0.02	1.0%	0.1	6%	-30%	-7%
R18	0.03	1.3%	0.1	6%	0.02	0.9%	0.1	6%	-29%	-6%
R19	0.02	1.0%	0.1	6%	0.02	0.8%	0.1	6%	-20%	-4%
R20	0.02	0.9%	0.1	6%	0.01	0.7%	0.1	6%	-18%	-3%
R21	0.02	0.8%	0.1	6%	0.01	0.7%	0.1	5%	-15%	-2%
R22	0.01	0.7%	0.1	5%	0.01	0.6%	0.1	5%	-21%	-3%
R23	0.01	0.7%	0.1	5%	0.01	0.5%	0.1	5%	-26%	-3%
R24	0.01	0.6%	0.1	5%	0.01	0.5%	0.1	5%	-29%	-3%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 2 µg/m³

[2] Average Background Concentration = 0.10 µg/m³

Scenario 1 - End of Stage 1 of Preferred Alternative

Annual 1,2-Dichloroethane Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 1				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
Max GLC	0.034	8.6%	0.1	24%	0.034	8.5%	0.1	23%	-1%	<0.01%
R1	0.002	0.5%	0.1	15%	0.001	0.4%	0.1	15%	-25%	<0.01%
R2	0.004	1.0%	0.1	16%	0.002	0.6%	0.1	16%	-43%	-3%
R3	0.003	0.9%	0.1	16%	0.002	0.5%	0.1	16%	-40%	-2%
R4	0.005	1.2%	0.1	16%	0.003	0.7%	0.1	16%	-45%	-3%
R5	0.003	0.7%	0.1	16%	0.002	0.4%	0.1	15%	-38%	-2%
R6	0.003	0.8%	0.1	16%	0.002	0.5%	0.1	15%	-39%	-2%
R7	0.005	1.2%	0.1	16%	0.004	1.0%	0.1	16%	-20%	-1%
R8	0.002	0.6%	0.1	16%	0.002	0.5%	0.1	15%	-21%	<0.01%
R9	0.004	1.1%	0.1	16%	0.004	1.0%	0.1	16%	-7%	<0.01%
R10	0.001	0.3%	0.1	15%	0.001	0.3%	0.1	15%	-11%	<0.01%
R11	0.002	0.4%	0.1	15%	0.002	0.4%	0.1	15%	-9%	<0.01%
R12	0.002	0.5%	0.1	16%	0.002	0.5%	0.1	15%	-10%	<0.01%
R13	0.002	0.5%	0.1	15%	0.002	0.4%	0.1	15%	-14%	<0.01%
R14	0.001	0.4%	0.1	15%	0.001	0.3%	0.1	15%	-14%	<0.01%
R15	0.002	0.4%	0.1	15%	0.001	0.4%	0.1	15%	-8%	<0.01%
R16	0.002	0.5%	0.1	15%	0.001	0.4%	0.1	15%	-24%	<0.01%
R17	0.002	0.6%	0.1	16%	0.002	0.4%	0.1	15%	-24%	<0.01%
R18	0.002	0.5%	0.1	15%	0.002	0.4%	0.1	15%	-23%	<0.01%
R19	0.002	0.4%	0.1	15%	0.001	0.3%	0.1	15%	-25%	<0.01%
R20	0.002	0.4%	0.1	15%	0.001	0.3%	0.1	15%	-25%	<0.01%
R21	0.002	0.4%	0.1	15%	0.001	0.3%	0.1	15%	-26%	<0.01%
R22	0.001	0.4%	0.1	15%	0.001	0.3%	0.1	15%	-27%	<0.01%
R23	0.001	0.3%	0.1	15%	0.001	0.2%	0.1	15%	-27%	<0.01%
R24	0.001	0.3%	0.1	15%	0.001	0.2%	0.1	15%	-27%	<0.01%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

[1] Criteria = 0.4 µg/m³

[2] Average Background Concentration = 0.06 µg/m³

Scenario 1 - End of Stage 1 of Preferred Alternative

24-Hour Ammonia Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 1				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
Max GLC	8.52	8.5%	11.6	12%	8.53	8.5%	11.6	12%	<0.01%	<0.01%
R1	0.16	0.2%	3.3	3%	0.16	0.2%	3.3	3%	4%	<0.01%
R2	0.14	0.1%	3.3	3%	0.14	0.1%	3.2	3%	-4%	<0.01%
R3	0.35	0.3%	3.5	3%	0.35	0.3%	3.5	3%	<0.01%	<0.01%
R4	0.17	0.2%	3.3	3%	0.15	0.1%	3.3	3%	-13%	<0.01%
R5	0.25	0.3%	3.4	3%	0.25	0.3%	3.4	3%	<0.01%	<0.01%
R6	0.33	0.3%	3.4	3%	0.33	0.3%	3.4	3%	<0.01%	<0.01%
R7	0.36	0.4%	3.5	3%	0.36	0.4%	3.5	3%	<0.01%	<0.01%
R8	0.18	0.2%	3.3	3%	0.19	0.2%	3.3	3%	7%	<0.01%
R9	0.80	0.8%	3.9	4%	0.81	0.8%	3.9	4%	<0.01%	<0.01%
R10	0.27	0.3%	3.4	3%	0.27	0.3%	3.4	3%	<0.01%	<0.01%
R11	0.30	0.3%	3.4	3%	0.31	0.3%	3.4	3%	<0.01%	<0.01%
R12	0.48	0.5%	3.6	4%	0.49	0.5%	3.6	4%	<0.01%	<0.01%
R13	0.28	0.3%	3.4	3%	0.28	0.3%	3.4	3%	<0.01%	<0.01%
R14	0.23	0.2%	3.3	3%	0.23	0.2%	3.3	3%	2%	<0.01%
R15	0.38	0.4%	3.5	3%	0.38	0.4%	3.5	3%	<0.01%	<0.01%
R16	0.14	0.1%	3.2	3%	0.15	0.2%	3.3	3%	8%	<0.01%
R17	0.21	0.2%	3.3	3%	0.21	0.2%	3.3	3%	<0.01%	<0.01%
R18	0.20	0.2%	3.3	3%	0.20	0.2%	3.3	3%	<0.01%	<0.01%
R19	0.15	0.1%	3.3	3%	0.15	0.2%	3.3	3%	4%	<0.01%
R20	0.15	0.1%	3.3	3%	0.15	0.2%	3.3	3%	4%	<0.01%
R21	0.14	0.1%	3.3	3%	0.15	0.1%	3.3	3%	5%	<0.01%
R22	0.11	0.1%	3.2	3%	0.12	0.1%	3.2	3%	6%	<0.01%
R23	0.10	0.1%	3.2	3%	0.11	0.1%	3.2	3%	7%	<0.01%
R24	0.10	0.1%	3.2	3%	0.11	0.1%	3.2	3%	4%	<0.01%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

[1] Criteria = 100 µg/m³

[2] Average Background Concentration = 3.11 µg/m³

Scenario 1 - End of Stage 1 of Preferred Alternative

1-Hour Sulphur Dioxide Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 1				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
Max GLC	74.67	74.7%	77.1	77%	74.68	74.7%	77.1	77%	<0.01%	<0.01%
R1	7.82	7.8%	10.2	10%	7.83	7.8%	10.2	10%	<0.01%	<0.01%
R2	9.79	9.8%	12.2	12%	9.79	9.8%	12.2	12%	<0.01%	<0.01%
R3	11.83	11.8%	14.2	14%	11.82	11.8%	14.2	14%	<0.01%	<0.01%
R4	11.06	11.1%	13.5	13%	11.06	11.1%	13.5	13%	<0.01%	<0.01%
R5	9.31	9.3%	11.7	12%	9.31	9.3%	11.7	12%	<0.01%	<0.01%
R6	13.59	13.6%	16.0	16%	13.59	13.6%	16.0	16%	<0.01%	<0.01%
R7	21.23	21.2%	23.6	24%	21.23	21.2%	23.6	24%	<0.01%	<0.01%
R8	9.82	9.8%	12.2	12%	9.82	9.8%	12.2	12%	<0.01%	<0.01%
R9	25.88	25.9%	28.3	28%	25.88	25.9%	28.3	28%	<0.01%	<0.01%
R10	19.46	19.5%	21.9	22%	19.46	19.5%	21.9	22%	<0.01%	<0.01%
R11	18.34	18.3%	20.7	21%	18.34	18.3%	20.7	21%	<0.01%	<0.01%
R12	22.23	22.2%	24.6	25%	22.23	22.2%	24.6	25%	<0.01%	<0.01%
R13	19.90	19.9%	22.3	22%	19.92	19.9%	22.3	22%	<0.01%	<0.01%
R14	12.46	12.5%	14.9	15%	12.46	12.5%	14.9	15%	<0.01%	<0.01%
R15	22.81	22.8%	25.2	25%	22.82	22.8%	25.2	25%	<0.01%	<0.01%
R16	8.88	8.9%	11.3	11%	8.88	8.9%	11.3	11%	<0.01%	<0.01%
R17	9.61	9.6%	12.0	12%	9.61	9.6%	12.0	12%	<0.01%	<0.01%
R18	8.88	8.9%	11.3	11%	8.92	8.9%	11.3	11%	<0.01%	<0.01%
R19	7.84	7.8%	10.2	10%	7.85	7.9%	10.3	10%	<0.01%	<0.01%
R20	7.72	7.7%	10.1	10%	7.73	7.7%	10.1	10%	<0.01%	<0.01%
R21	7.43	7.4%	9.8	10%	7.43	7.4%	9.8	10%	<0.01%	<0.01%
R22	6.67	6.7%	9.1	9%	6.67	6.7%	9.1	9%	<0.01%	<0.01%
R23	6.28	6.3%	8.7	9%	6.28	6.3%	8.7	9%	<0.01%	<0.01%
R24	5.80	5.8%	8.2	8%	5.83	5.8%	8.2	8%	<0.01%	<0.01%
STR1	28.18	28.2%	30.6	31%	28.18	28.2%	30.6	31%	<0.01%	<0.01%

Notes:

[1] Criteria = 100 µg/m³

[2] Average Background Concentration = 2.4 µg/m³

Scenario 1 - End of Stage 1 of Preferred Alternative

Annual Sulphur Dioxide Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 1				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
Max GLC	2.02	20.2%	3.4	34%	2.02	20.2%	3.4	34%	<0.01%	<0.01%
R1	0.17	1.7%	1.6	16%	0.17	1.7%	1.6	16%	<0.01%	<0.01%
R2	0.22	2.2%	1.6	16%	0.22	2.2%	1.6	16%	<0.01%	<0.01%
R3	0.24	2.4%	1.6	16%	0.23	2.3%	1.6	16%	<0.01%	<0.01%
R4	0.24	2.4%	1.6	16%	0.24	2.4%	1.6	16%	<0.01%	<0.01%
R5	0.21	2.1%	1.6	16%	0.21	2.1%	1.6	16%	<0.01%	<0.01%
R6	0.22	2.2%	1.6	16%	0.22	2.2%	1.6	16%	<0.01%	<0.01%
R7	0.27	2.7%	1.7	17%	0.27	2.7%	1.7	17%	<0.01%	<0.01%
R8	0.22	2.2%	1.6	16%	0.22	2.2%	1.6	16%	<0.01%	<0.01%
R9	0.32	3.2%	1.7	17%	0.32	3.2%	1.7	17%	<0.01%	<0.01%
R10	0.12	1.2%	1.5	15%	0.12	1.2%	1.5	15%	<0.01%	<0.01%
R11	0.17	1.7%	1.6	16%	0.17	1.7%	1.6	16%	<0.01%	<0.01%
R12	0.26	2.6%	1.7	17%	0.26	2.6%	1.7	17%	<0.01%	<0.01%
R13	0.23	2.3%	1.6	16%	0.23	2.3%	1.6	16%	<0.01%	<0.01%
R14	0.19	1.9%	1.6	16%	0.19	1.9%	1.6	16%	<0.01%	<0.01%
R15	0.19	1.9%	1.6	16%	0.19	1.9%	1.6	16%	<0.01%	<0.01%
R16	0.17	1.7%	1.6	16%	0.17	1.7%	1.6	16%	<0.01%	<0.01%
R17	0.21	2.1%	1.6	16%	0.21	2.1%	1.6	16%	<0.01%	<0.01%
R18	0.18	1.8%	1.6	16%	0.18	1.8%	1.6	16%	<0.01%	<0.01%
R19	0.16	1.6%	1.6	16%	0.16	1.6%	1.6	16%	<0.01%	<0.01%
R20	0.15	1.5%	1.6	16%	0.15	1.5%	1.6	16%	<0.01%	<0.01%
R21	0.14	1.4%	1.5	15%	0.14	1.4%	1.5	15%	<0.01%	<0.01%
R22	0.12	1.2%	1.5	15%	0.12	1.2%	1.5	15%	<0.01%	<0.01%
R23	0.12	1.2%	1.5	15%	0.12	1.2%	1.5	15%	<0.01%	<0.01%
R24	0.11	1.1%	1.5	15%	0.11	1.1%	1.5	15%	<0.01%	<0.01%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

[1] Criteria = 10 µg/m³

[2] Average Background Concentration = 1.4 µg/m³

Scenario 1 - End of Stage 1 of Preferred Alternative

1-Hour Nitrogen Oxides Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 1				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
Max GLC	183.97	46.0%	205.0	51%	196.35	49.1%	217.3	54%	7%	6%
R1	46.45	11.6%	67.4	17%	53.56	13.4%	74.6	19%	15%	11%
R2	85.04	21.3%	106.0	27%	35.22	8.8%	56.2	14%	-59%	-47%
R3	50.95	12.7%	72.0	18%	25.04	6.3%	46.0	12%	-51%	-36%
R4	95.26	23.8%	116.3	29%	36.40	9.1%	57.4	14%	-62%	-51%
R5	55.16	13.8%	76.2	19%	23.59	5.9%	44.6	11%	-57%	-41%
R6	40.46	10.1%	61.5	15%	23.83	6.0%	44.8	11%	-41%	-27%
R7	77.22	19.3%	98.2	25%	73.33	18.3%	94.3	24%	-5%	-4%
R8	37.75	9.4%	58.7	15%	41.24	10.3%	62.2	16%	9%	6%
R9	61.75	15.4%	82.8	21%	63.22	15.8%	84.2	21%	2%	2%
R10	18.23	4.6%	39.2	10%	14.20	3.6%	35.2	9%	-22%	-10%
R11	22.05	5.5%	43.1	11%	27.65	6.9%	48.6	12%	25%	13%
R12	25.90	6.5%	46.9	12%	28.12	7.0%	49.1	12%	9%	5%
R13	27.37	6.8%	48.4	12%	33.64	8.4%	54.6	14%	23%	13%
R14	23.68	5.9%	44.7	11%	25.57	6.4%	46.6	12%	8%	4%
R15	33.95	8.5%	55.0	14%	24.83	6.2%	45.8	11%	-27%	-17%
R16	41.14	10.3%	62.1	16%	42.70	10.7%	63.7	16%	4%	2%
R17	57.88	14.5%	78.9	20%	63.78	15.9%	84.8	21%	10%	7%
R18	48.66	12.2%	69.7	17%	64.69	16.2%	85.7	21%	33%	23%
R19	44.98	11.2%	66.0	16%	50.76	12.7%	71.8	18%	13%	9%
R20	40.22	10.1%	61.2	15%	51.79	12.9%	72.8	18%	29%	19%
R21	32.64	8.2%	53.6	13%	50.34	12.6%	71.3	18%	54%	33%
R22	31.36	7.8%	52.4	13%	41.60	10.4%	62.6	16%	33%	20%
R23	29.53	7.4%	50.5	13%	37.74	9.4%	58.7	15%	28%	16%
R24	26.17	6.5%	47.2	12%	37.03	9.3%	58.0	15%	42%	23%
STR1	53.63	13.4%	74.6	19%	56.21	14.1%	77.2	19%	5%	3%

Notes:
[1] Criteria = 400 µg/m³
[2] Average Background Concentration = 21.0 µg/m³

Scenario 1 - End of Stage 1 of Preferred Alternative

24-Hour Nitrogen Oxides Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 1				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
Max GLC	31.09	15.5%	50.2	25%	31.23	15.6%	50.3	25%	<0.01%	<0.01%
R1	2.56	1.3%	21.7	11%	3.82	1.9%	22.9	11%	49%	6%
R2	4.67	2.3%	23.8	12%	2.45	1.2%	21.6	11%	-48%	-9%
R3	4.85	2.4%	24.0	12%	2.86	1.4%	22.0	11%	-41%	-8%
R4	6.11	3.1%	25.2	13%	2.48	1.2%	21.6	11%	-59%	-14%
R5	2.96	1.5%	22.1	11%	2.64	1.3%	21.7	11%	-11%	-1%
R6	3.97	2.0%	23.1	12%	2.61	1.3%	21.7	11%	-34%	-6%
R7	7.40	3.7%	26.5	13%	7.86	3.9%	27.0	13%	6%	2%
R8	2.98	1.5%	22.1	11%	4.13	2.1%	23.2	12%	39%	5%
R9	5.60	2.8%	24.7	12%	5.73	2.9%	24.8	12%	2%	<0.01%
R10	1.97	1.0%	21.1	11%	1.84	0.9%	20.9	10%	-7%	<0.01%
R11	2.24	1.1%	21.3	11%	2.26	1.1%	21.4	11%	<0.01%	<0.01%
R12	3.41	1.7%	22.5	11%	3.40	1.7%	22.5	11%	<0.01%	<0.01%
R13	2.67	1.3%	21.8	11%	2.68	1.3%	21.8	11%	<0.01%	<0.01%
R14	3.13	1.6%	22.2	11%	3.41	1.7%	22.5	11%	9%	1%
R15	2.71	1.4%	21.8	11%	2.73	1.4%	21.8	11%	<0.01%	<0.01%
R16	2.48	1.2%	21.6	11%	3.38	1.7%	22.5	11%	36%	4%
R17	3.03	1.5%	22.1	11%	3.83	1.9%	22.9	11%	27%	4%
R18	2.76	1.4%	21.9	11%	3.49	1.7%	22.6	11%	27%	3%
R19	2.40	1.2%	21.5	11%	3.30	1.6%	22.4	11%	37%	4%
R20	2.20	1.1%	21.3	11%	3.05	1.5%	22.2	11%	38%	4%
R21	2.07	1.0%	21.2	11%	2.88	1.4%	22.0	11%	39%	4%
R22	1.91	1.0%	21.0	11%	2.29	1.1%	21.4	11%	20%	2%
R23	1.76	0.9%	20.9	10%	2.01	1.0%	21.1	11%	14%	1%
R24	1.56	0.8%	20.7	10%	1.73	0.9%	20.8	10%	11%	<0.01%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

[1] Criteria = 200 µg/m³

[2] Average Background Concentration = 19.1 µg/m³

Scenario 1 - End of Stage 1 of Preferred Alternative

24-Hour Dioxins and Furans Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 1				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
Max GLC	0.00099	1.0%	0.021	21%	0.00099	1.0%	0.021	21%	<0.01%	<0.01%
R1	0.00004	0.0%	0.020	20%	0.00004	0.0%	0.020	20%	<0.01%	<0.01%
R2	0.00007	0.1%	0.020	20%	0.00007	0.1%	0.020	20%	<0.01%	<0.01%
R3	0.00008	0.1%	0.020	20%	0.00008	0.1%	0.020	20%	<0.01%	<0.01%
R4	0.00007	0.1%	0.020	20%	0.00007	0.1%	0.020	20%	<0.01%	<0.01%
R5	0.00007	0.1%	0.020	20%	0.00007	0.1%	0.020	20%	<0.01%	<0.01%
R6	0.00008	0.1%	0.020	20%	0.00008	0.1%	0.020	20%	<0.01%	<0.01%
R7	0.00008	0.1%	0.020	20%	0.00008	0.1%	0.020	20%	<0.01%	<0.01%
R8	0.00005	0.1%	0.020	20%	0.00005	0.1%	0.020	20%	<0.01%	<0.01%
R9	0.00011	0.1%	0.020	20%	0.00011	0.1%	0.020	20%	<0.01%	<0.01%
R10	0.00004	0.0%	0.020	20%	0.00004	0.0%	0.020	20%	<0.01%	<0.01%
R11	0.00007	0.1%	0.020	20%	0.00007	0.1%	0.020	20%	<0.01%	<0.01%
R12	0.00011	0.1%	0.020	20%	0.00011	0.1%	0.020	20%	<0.01%	<0.01%
R13	0.00009	0.1%	0.020	20%	0.00009	0.1%	0.020	20%	<0.01%	<0.01%
R14	0.00007	0.1%	0.020	20%	0.00007	0.1%	0.020	20%	<0.01%	<0.01%
R15	0.00009	0.1%	0.020	20%	0.00009	0.1%	0.020	20%	<0.01%	<0.01%
R16	0.00005	0.1%	0.020	20%	0.00005	0.1%	0.020	20%	<0.01%	<0.01%
R17	0.00005	0.1%	0.020	20%	0.00005	0.1%	0.020	20%	<0.01%	<0.01%
R18	0.00005	0.1%	0.020	20%	0.00005	0.1%	0.020	20%	<0.01%	<0.01%
R19	0.00004	0.0%	0.020	20%	0.00004	0.0%	0.020	20%	<0.01%	<0.01%
R20	0.00004	0.0%	0.020	20%	0.00004	0.0%	0.020	20%	<0.01%	<0.01%
R21	0.00004	0.0%	0.020	20%	0.00004	0.0%	0.020	20%	<0.01%	<0.01%
R22	0.00004	0.0%	0.020	20%	0.00004	0.0%	0.020	20%	<0.01%	<0.01%
R23	0.00003	0.0%	0.020	20%	0.00003	0.0%	0.020	20%	<0.01%	<0.01%
R24	0.00003	0.0%	0.020	20%	0.00003	0.0%	0.020	20%	<0.01%	<0.01%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 0.1 pg TEQ/m³

[2] Average Background Concentration = 0.02 pg TEQ/m³

Scenario 2 - End of Stage 2 of Preferred Alternative

24-Hour Hydrogen Sulphide Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 2				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
Max GLC	0.85	12.1%	6.4	92%	0.85	12.2%	6.5	92%	<0.01%	<0.01%
R1	0.04	0.6%	5.6	81%	0.04	0.6%	5.6	81%	<0.01%	<0.01%
R2	0.07	1.0%	5.7	81%	0.07	1.0%	5.7	81%	-3%	<0.01%
R3	0.07	1.0%	5.7	81%	0.07	1.0%	5.7	81%	<0.01%	<0.01%
R4	0.07	1.0%	5.7	81%	0.07	1.0%	5.7	81%	-3%	<0.01%
R5	0.06	0.9%	5.7	81%	0.06	0.9%	5.7	81%	<0.01%	<0.01%
R6	0.07	1.0%	5.7	81%	0.07	0.9%	5.7	81%	<0.01%	<0.01%
R7	0.07	0.9%	5.7	81%	0.07	0.9%	5.7	81%	<0.01%	<0.01%
R8	0.04	0.6%	5.6	81%	0.04	0.6%	5.6	81%	<0.01%	<0.01%
R9	0.10	1.5%	5.7	81%	0.10	1.5%	5.7	81%	-1%	<0.01%
R10	0.04	0.5%	5.6	81%	0.04	0.5%	5.6	81%	<0.01%	<0.01%
R11	0.06	0.9%	5.7	81%	0.06	0.9%	5.7	81%	<0.01%	<0.01%
R12	0.10	1.4%	5.7	81%	0.10	1.4%	5.7	81%	<0.01%	<0.01%
R13	0.08	1.1%	5.7	81%	0.08	1.1%	5.7	81%	<0.01%	<0.01%
R14	0.07	1.0%	5.7	81%	0.07	1.0%	5.7	81%	-1%	<0.01%
R15	0.08	1.1%	5.7	81%	0.08	1.1%	5.7	81%	<0.01%	<0.01%
R16	0.04	0.6%	5.6	81%	0.04	0.6%	5.6	81%	<0.01%	<0.01%
R17	0.04	0.6%	5.6	81%	0.04	0.6%	5.6	81%	<0.01%	<0.01%
R18	0.04	0.6%	5.6	81%	0.04	0.6%	5.6	81%	<0.01%	<0.01%
R19	0.04	0.6%	5.6	81%	0.04	0.6%	5.6	81%	-9%	<0.01%
R20	0.04	0.5%	5.6	81%	0.04	0.5%	5.6	81%	<0.01%	<0.01%
R21	0.04	0.5%	5.6	81%	0.04	0.5%	5.6	81%	<0.01%	<0.01%
R22	0.03	0.5%	5.6	80%	0.03	0.5%	5.6	80%	<0.01%	<0.01%
R23	0.03	0.5%	5.6	80%	0.03	0.4%	5.6	80%	<0.01%	<0.01%
R24	0.03	0.4%	5.6	80%	0.03	0.4%	5.6	80%	-6%	<0.01%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

[1] Criteria = 7 µg/m³

[2] 90th Percentile Background Concentration based on all wind directions = 5.6 µg/m³

Scenario 2 - End of Stage 2 of Preferred Alternative

10-Minute Hydrogen Sulphide Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 2				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
R1	0.43	3.3%	22.9	177%	0.43	3.3%	22.9	177%	<0.01%	<0.01%
R2	0.34	2.6%	22.9	176%	0.34	2.6%	22.9	176%	<0.01%	<0.01%
R3	0.37	2.8%	22.9	176%	0.37	2.8%	22.9	176%	<0.01%	<0.01%
R4	0.40	3.1%	22.9	176%	0.39	3.0%	22.9	176%	-2%	<0.01%
R5	0.30	2.3%	22.8	176%	0.30	2.3%	22.8	176%	<0.01%	<0.01%
R6	0.33	2.6%	22.8	176%	0.33	2.6%	22.8	176%	<0.01%	<0.01%
R7	0.41	3.2%	22.9	176%	0.41	3.2%	22.9	176%	<0.01%	<0.01%
R8	0.35	2.7%	22.9	176%	0.35	2.7%	22.9	176%	<0.01%	<0.01%
R9	0.59	4.6%	23.1	178%	0.59	4.6%	23.1	178%	<0.01%	<0.01%
R10	0.28	2.2%	22.8	175%	0.28	2.2%	22.8	175%	<0.01%	<0.01%
R11	0.33	2.5%	22.8	176%	0.33	2.5%	22.8	176%	<0.01%	<0.01%
R12	0.39	3.0%	22.9	176%	0.39	3.0%	22.9	176%	<0.01%	<0.01%
R13	0.37	2.9%	22.9	176%	0.37	2.9%	22.9	176%	<0.01%	<0.01%
R14	0.36	2.8%	22.9	176%	0.36	2.8%	22.9	176%	<0.01%	<0.01%
R15	0.43	3.3%	22.9	177%	0.43	3.3%	22.9	177%	<0.01%	<0.01%
R16	0.34	2.6%	22.9	176%	0.34	2.6%	22.9	176%	<0.01%	<0.01%
R17	0.40	3.1%	22.9	176%	0.40	3.1%	22.9	176%	<0.01%	<0.01%
R18	0.36	2.8%	22.9	176%	0.36	2.8%	22.9	176%	<0.01%	<0.01%
R19	0.40	3.1%	22.9	176%	0.43	3.3%	22.9	177%	8%	<0.01%
R20	0.44	3.4%	23.0	177%	0.44	3.4%	23.0	177%	<0.01%	<0.01%
R21	0.44	3.4%	23.0	177%	0.44	3.4%	23.0	177%	<0.01%	<0.01%
R22	0.43	3.3%	22.9	177%	0.42	3.3%	22.9	176%	-2%	<0.01%
R23	0.42	3.2%	22.9	176%	0.41	3.2%	22.9	176%	-2%	<0.01%
R24	0.39	3.0%	22.9	176%	0.38	2.9%	22.9	176%	-2%	<0.01%
STR1	0.76	5.9%	23.3	179%	0.76	5.9%	23.3	179%	<0.01%	<0.01%

Notes:

[1] Criteria = 13 µg/m³

[2] 90th Percentile Background Concentration based on all wind directions = 22.5 µg/m³

Scenario 2 - End of Stage 2 of Preferred Alternative

10-Minute Total Reduced Sulphur Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 2				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
R1	0.74	5.7%	45.0	346%	0.59	4.5%	44.8	345%	-20%	<0.01%
R2	1.00	7.7%	45.2	348%	0.99	7.6%	45.2	348%	<0.01%	<0.01%
R3	0.76	5.8%	45.0	346%	0.61	4.7%	44.8	345%	-20%	<0.01%
R4	1.17	9.0%	45.4	349%	1.15	8.8%	45.4	349%	-2%	<0.01%
R5	0.78	6.0%	45.0	346%	0.61	4.7%	44.8	345%	-22%	<0.01%
R6	0.72	5.5%	45.0	346%	0.58	4.5%	44.8	345%	-19%	<0.01%
R7	0.61	4.7%	44.8	345%	0.50	3.8%	44.7	344%	-18%	<0.01%
R8	0.56	4.3%	44.8	345%	0.48	3.7%	44.7	344%	-15%	<0.01%
R9	0.63	4.8%	44.9	345%	0.59	4.6%	44.8	345%	-5%	<0.01%
R10	0.58	4.4%	44.8	345%	0.43	3.3%	44.7	344%	-26%	<0.01%
R11	0.57	4.4%	44.8	345%	0.53	4.1%	44.8	344%	-8%	<0.01%
R12	0.67	5.2%	44.9	345%	0.62	4.8%	44.9	345%	-8%	<0.01%
R13	0.71	5.5%	44.9	346%	0.61	4.7%	44.8	345%	-14%	<0.01%
R14	0.69	5.3%	44.9	346%	0.58	4.5%	44.8	345%	-15%	<0.01%
R15	0.63	4.9%	44.9	345%	0.46	3.6%	44.7	344%	-27%	<0.01%
R16	0.56	4.3%	44.8	345%	0.49	3.7%	44.7	344%	-13%	<0.01%
R17	0.75	5.8%	45.0	346%	0.61	4.7%	44.8	345%	-19%	<0.01%
R18	0.72	5.5%	45.0	346%	0.60	4.6%	44.8	345%	-16%	<0.01%
R19	0.75	5.8%	45.0	346%	0.57	4.4%	44.8	345%	-23%	<0.01%
R20	0.70	5.4%	44.9	346%	0.56	4.3%	44.8	345%	-20%	<0.01%
R21	0.69	5.3%	44.9	346%	0.57	4.4%	44.8	345%	-18%	<0.01%
R22	0.69	5.3%	44.9	346%	0.56	4.3%	44.8	345%	-18%	<0.01%
R23	0.68	5.3%	44.9	346%	0.56	4.3%	44.8	345%	-18%	<0.01%
R24	0.70	5.4%	44.9	346%	0.56	4.3%	44.8	345%	-19%	<0.01%
STR1	0.76	5.9%	45.0	346%	0.76	5.9%	45.0	346%	<0.01%	<0.01%

Notes:

[1] Criteria = 13 µg/m³

[2] 90th Percentile Background Concentration based on all wind directions = 44.2 µg/m³

Scenario 2 - End of Stage 2 of Preferred Alternative

24-Hour Total Reduced Sulphur Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 2				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
Max GLC	0.85	12.2%	11.9	169%	0.86	12.2%	11.9	169%	<0.01%	<0.01%
R1	0.08	1.2%	11.1	158%	0.07	1.0%	11.1	158%	-16%	<0.01%
R2	0.12	1.7%	11.1	159%	0.11	1.5%	11.1	159%	-10%	<0.01%
R3	0.10	1.5%	11.1	159%	0.09	1.3%	11.1	158%	-11%	<0.01%
R4	0.13	1.9%	11.1	159%	0.12	1.7%	11.1	159%	-11%	<0.01%
R5	0.10	1.5%	11.1	159%	0.09	1.3%	11.1	158%	-16%	<0.01%
R6	0.09	1.3%	11.1	158%	0.08	1.2%	11.1	158%	-12%	<0.01%
R7	0.13	1.9%	11.1	159%	0.11	1.6%	11.1	159%	-15%	<0.01%
R8	0.10	1.5%	11.1	159%	0.09	1.2%	11.1	158%	-18%	<0.01%
R9	0.15	2.2%	11.2	159%	0.12	1.7%	11.1	159%	-22%	<0.01%
R10	0.06	0.8%	11.1	158%	0.04	0.6%	11.0	158%	-23%	<0.01%
R11	0.07	1.0%	11.1	158%	0.07	1.0%	11.1	158%	-1%	<0.01%
R12	0.10	1.5%	11.1	159%	0.10	1.5%	11.1	159%	<0.01%	<0.01%
R13	0.08	1.2%	11.1	158%	0.08	1.2%	11.1	158%	-1%	<0.01%
R14	0.08	1.1%	11.1	158%	0.08	1.1%	11.1	158%	-3%	<0.01%
R15	0.08	1.1%	11.1	158%	0.08	1.1%	11.1	158%	<0.01%	<0.01%
R16	0.08	1.1%	11.1	158%	0.07	0.9%	11.1	158%	-15%	<0.01%
R17	0.10	1.4%	11.1	159%	0.08	1.2%	11.1	158%	-13%	<0.01%
R18	0.09	1.2%	11.1	158%	0.08	1.1%	11.1	158%	-12%	<0.01%
R19	0.10	1.4%	11.1	159%	0.06	0.9%	11.1	158%	-35%	<0.01%
R20	0.07	1.0%	11.1	158%	0.06	0.8%	11.1	158%	-16%	<0.01%
R21	0.06	0.9%	11.1	158%	0.05	0.7%	11.1	158%	-16%	<0.01%
R22	0.05	0.8%	11.1	158%	0.04	0.6%	11.0	158%	-16%	<0.01%
R23	0.05	0.7%	11.0	158%	0.04	0.6%	11.0	158%	-10%	<0.01%
R24	0.05	0.7%	11.1	158%	0.05	0.6%	11.0	158%	-11%	<0.01%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

[1] Criteria = 7 µg/m³

[2] 90th Percentile Background Concentration based on all wind directions = 11 µg/m³

Scenario 2 - End of Stage 2 of Preferred Alternative

24-Hour Benzene Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 2				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
Max GLC	0.32	14.1%	0.9	38%	0.32	14.1%	0.9	38%	<0.01%	<0.01%
R1	0.07	3.2%	0.6	28%	0.05	2.0%	0.6	26%	-38%	-4%
R2	0.14	6.2%	0.7	30%	0.12	5.4%	0.7	30%	-13%	-3%
R3	0.12	5.2%	0.7	29%	0.05	2.1%	0.6	26%	-60%	-11%
R4	0.17	7.3%	0.7	32%	0.15	6.4%	0.7	31%	-13%	-3%
R5	0.09	3.8%	0.6	28%	0.05	2.1%	0.6	26%	-44%	-6%
R6	0.10	4.3%	0.7	29%	0.05	2.1%	0.6	26%	-51%	-8%
R7	0.12	5.3%	0.7	30%	0.08	3.6%	0.6	28%	-32%	-6%
R8	0.09	3.9%	0.6	28%	0.05	2.1%	0.6	26%	-46%	-6%
R9	0.10	4.3%	0.7	29%	0.06	2.7%	0.6	27%	-38%	-6%
R10	0.05	2.3%	0.6	27%	0.04	1.6%	0.6	26%	-31%	-3%
R11	0.05	2.2%	0.6	26%	0.04	1.6%	0.6	26%	-26%	-2%
R12	0.06	2.6%	0.6	27%	0.05	2.2%	0.6	27%	-15%	-1%
R13	0.05	2.2%	0.6	27%	0.04	1.7%	0.6	26%	-22%	-2%
R14	0.05	2.1%	0.6	26%	0.04	1.8%	0.6	26%	-15%	-1%
R15	0.05	2.2%	0.6	26%	0.04	1.5%	0.6	26%	-29%	-2%
R16	0.08	3.3%	0.6	28%	0.04	1.8%	0.6	26%	-47%	-6%
R17	0.09	3.9%	0.6	28%	0.05	2.4%	0.6	27%	-39%	-5%
R19	0.09	3.9%	0.6	28%	0.04	1.8%	0.6	26%	-54%	-7%
R20	0.06	2.6%	0.6	27%	0.04	1.6%	0.6	26%	-38%	-4%
R21	0.05	2.4%	0.6	27%	0.03	1.5%	0.6	26%	-36%	-3%
R22	0.04	1.9%	0.6	26%	0.03	1.1%	0.6	25%	-39%	-3%
R23	0.04	1.8%	0.6	26%	0.02	1.0%	0.6	25%	-43%	-3%
R24	0.04	1.6%	0.6	26%	0.02	0.9%	0.6	25%	-42%	-3%
STR1	NA	N/A	N/A	N/A	NA	N/A	N/A	N/A	N/A	N/A

Notes:

[1] Criteria = 2.3 µg/m³

[2] 90th Percentile Background Concentration = 0.56 µg/m³

Scenario 2 - End of Stage 2 of Preferred Alternative

Annual Benzene Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 2				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
Max GLC	0.043	9.6%	0.4	98%	0.040	9.0%	0.4	98%	-6%	<0.01%
R1	0.006	1.3%	0.4	90%	0.004	0.9%	0.4	90%	-34%	<0.01%
R2	0.015	3.3%	0.4	92%	0.009	2.0%	0.4	91%	-38%	-1%
R3	0.012	2.6%	0.4	91%	0.006	1.4%	0.4	90%	-44%	-1%
R4	0.003	0.8%	0.4	89%	0.012	2.7%	0.4	91%	253%	2%
R5	0.004	1.0%	0.4	90%	0.006	1.3%	0.4	90%	31%	<0.01%
R6	0.014	3.1%	0.4	92%	0.006	1.3%	0.4	90%	-59%	-2%
R7	0.007	1.5%	0.4	90%	0.009	2.1%	0.4	91%	37%	<0.01%
R8	0.019	4.2%	0.4	93%	0.005	1.0%	0.4	90%	-75%	-3%
R9	0.010	2.1%	0.4	91%	0.008	1.7%	0.4	90%	-20%	<0.01%
R10	0.010	2.2%	0.4	91%	0.002	0.5%	0.4	89%	-78%	-2%
R11	0.006	1.3%	0.4	90%	0.003	0.6%	0.4	89%	-54%	<0.01%
R12	0.007	1.5%	0.4	90%	0.003	0.7%	0.4	89%	-50%	<0.01%
R13	0.006	1.3%	0.4	90%	0.003	0.6%	0.4	89%	-51%	<0.01%
R14	0.005	1.2%	0.4	90%	0.002	0.5%	0.4	89%	-55%	<0.01%
R15	0.005	1.1%	0.4	90%	0.003	0.6%	0.4	89%	-50%	<0.01%
R16	0.005	1.1%	0.4	90%	0.004	0.8%	0.4	90%	-21%	<0.01%
R17	0.004	0.9%	0.4	90%	0.004	1.0%	0.4	90%	4%	<0.01%
R18	0.004	0.9%	0.4	90%	0.004	0.9%	0.4	90%	-3%	<0.01%
R19	0.003	0.8%	0.4	89%	0.004	0.8%	0.4	89%	3%	<0.01%
R20	0.003	0.7%	0.4	89%	0.003	0.7%	0.4	89%	4%	<0.01%
R21	0.003	0.6%	0.4	89%	0.003	0.7%	0.4	89%	8%	<0.01%
R22	0.004	0.9%	0.4	90%	0.003	0.6%	0.4	89%	-30%	<0.01%
R23	0.003	0.7%	0.4	89%	0.003	0.6%	0.4	89%	-21%	<0.01%
R24	0.010	2.2%	0.4	91%	0.002	0.5%	0.4	89%	-77%	-2%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

[1] Criteria = 0.45 µg/m³

[2] Average Background Concentration = 0.40 µg/m³

Scenario 2 - End of Stage 2 of Preferred Alternative

24-Hour Vinyl Chloride Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 2				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
Max GLC	0.41	40.9%	0.5	46%	0.41	40.9%	0.5	46%	<0.01%	<0.01%
R1	0.03	2.8%	0.1	8%	0.02	1.9%	0.1	7%	-32%	-11%
R2	0.05	5.1%	0.1	10%	0.03	2.6%	0.1	8%	-48%	-24%
R3	0.03	3.1%	0.1	8%	0.03	2.8%	0.1	8%	-10%	-4%
R4	0.06	5.6%	0.1	11%	0.03	2.9%	0.1	8%	-49%	-25%
R5	0.03	3.0%	0.1	8%	0.02	2.2%	0.1	7%	-27%	-10%
R6	0.03	3.0%	0.1	8%	0.03	2.6%	0.1	8%	-15%	-5%
R7	0.04	4.2%	0.1	9%	0.03	3.2%	0.1	8%	-25%	-11%
R8	0.03	3.3%	0.1	8%	0.02	2.0%	0.1	7%	-40%	-16%
R9	0.04	4.5%	0.1	10%	0.04	4.4%	0.1	10%	-1%	<0.01%
R10	0.03	3.0%	0.1	8%	0.03	2.6%	0.1	8%	-15%	-5%
R11	0.03	3.0%	0.1	8%	0.03	2.5%	0.1	8%	-16%	-6%
R12	0.04	4.3%	0.1	9%	0.04	3.9%	0.1	9%	-8%	-4%
R13	0.03	3.0%	0.1	8%	0.03	2.6%	0.1	8%	-14%	-5%
R14	0.03	2.8%	0.1	8%	0.03	2.6%	0.1	8%	-9%	-3%
R15	0.03	3.0%	0.1	8%	0.03	2.8%	0.1	8%	-6%	-2%
R16	0.03	2.5%	0.1	8%	0.02	1.6%	0.1	7%	-37%	-12%
R17	0.03	3.4%	0.1	8%	0.02	2.1%	0.1	7%	-37%	-15%
R18	0.03	3.1%	0.1	8%	0.02	2.0%	0.1	7%	-36%	-14%
R19	0.03	3.4%	0.1	8%	0.02	1.8%	0.1	7%	-48%	-19%
R20	0.02	2.2%	0.1	7%	0.02	1.6%	0.1	7%	-25%	-8%
R21	0.02	1.9%	0.1	7%	0.02	1.5%	0.1	7%	-21%	-6%
R22	0.02	1.8%	0.1	7%	0.01	1.3%	0.1	6%	-29%	-8%
R23	0.02	1.8%	0.1	7%	0.01	1.2%	0.1	6%	-33%	-8%
R24	0.02	1.6%	0.1	7%	0.01	1.0%	0.1	6%	-35%	-8%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 1 µg/m³
[2] Average Background Concentration = 0.05 µg/m³

Scenario 2 - End of Stage 2 of Preferred Alternative

Annual Vinyl Chloride Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 2				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
Max GLC	0.047	23.5%	0.10	49%	0.0460	23.0%	0.10	49%	-2%	-1%
R1	0.002	1.2%	0.05	27%	0.0016	0.8%	0.05	26%	-34%	-1%
R2	0.005	2.5%	0.06	28%	0.0026	1.3%	0.05	27%	-47%	-4%
R3	0.004	2.1%	0.06	28%	0.0024	1.2%	0.05	27%	-44%	-3%
R4	0.002	1.1%	0.05	27%	0.0030	1.5%	0.05	27%	43%	2%
R5	0.003	1.3%	0.05	27%	0.0020	1.0%	0.05	27%	-26%	-1%
R6	0.006	3.0%	0.06	28%	0.0022	1.1%	0.05	27%	-63%	-7%
R7	0.003	1.4%	0.05	27%	0.0042	2.1%	0.06	28%	45%	2%
R8	0.006	3.0%	0.06	29%	0.0020	1.0%	0.05	27%	-67%	-7%
R9	0.003	1.7%	0.05	27%	0.0048	2.4%	0.06	28%	40%	3%
R10	0.004	1.9%	0.05	27%	0.0014	0.7%	0.05	26%	-62%	-4%
R11	0.002	1.2%	0.05	27%	0.0018	0.9%	0.05	26%	-24%	-1%
R12	0.003	1.4%	0.05	27%	0.0023	1.2%	0.05	27%	-15%	<0.01%
R13	0.002	1.2%	0.05	27%	0.0019	0.9%	0.05	26%	-22%	<0.01%
R14	0.002	1.1%	0.05	27%	0.0015	0.8%	0.05	26%	-30%	-1%
R15	0.002	1.0%	0.05	27%	0.0017	0.9%	0.05	26%	-16%	<0.01%
R16	0.002	1.0%	0.05	27%	0.0016	0.8%	0.05	26%	-18%	<0.01%
R17	0.002	0.9%	0.05	26%	0.0018	0.9%	0.05	26%	3%	<0.01%
R18	0.002	0.8%	0.05	26%	0.0016	0.8%	0.05	26%	<0.01%	<0.01%
R19	0.001	0.7%	0.05	26%	0.0015	0.7%	0.05	26%	2%	<0.01%
R20	0.002	1.0%	0.05	27%	0.0014	0.7%	0.05	26%	-31%	-1%
R21	0.002	0.8%	0.05	26%	0.0013	0.7%	0.05	26%	-22%	<0.01%
R22	0.002	1.1%	0.05	27%	0.0012	0.6%	0.05	26%	-49%	-2%
R23	0.002	0.9%	0.05	26%	0.0011	0.5%	0.05	26%	-41%	-1%
R24	0.006	2.8%	0.06	28%	0.0010	0.5%	0.05	26%	-83%	-8%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 0.2 µg/m³

[2] Average Background Concentration = 0.05 µg/m³

Scenario 2 - End of Stage 2 of Preferred Alternative

24-Hour 1,2-Dichloroethane Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 2				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
Max GLC	0.307	15.3%	0.40	20%	0.307	15.3%	0.40	20%	<0.01%	<0.01%
R1	0.023	1.1%	0.12	6%	0.015	0.7%	0.11	5%	-35%	-7%
R2	0.042	2.1%	0.14	7%	0.023	1.1%	0.12	6%	-46%	-14%
R3	0.026	1.3%	0.12	6%	0.022	1.1%	0.12	6%	-16%	-4%
R4	0.046	2.3%	0.14	7%	0.025	1.3%	0.12	6%	-46%	-15%
R5	0.024	1.2%	0.12	6%	0.017	0.9%	0.11	6%	-28%	-6%
R6	0.025	1.2%	0.12	6%	0.020	1.0%	0.12	6%	-17%	-4%
R7	0.035	1.8%	0.13	7%	0.025	1.2%	0.12	6%	-29%	-8%
R8	0.028	1.4%	0.12	6%	0.016	0.8%	0.11	6%	-42%	-9%
R9	0.033	1.7%	0.13	6%	0.033	1.7%	0.13	6%	-1%	<0.01%
R10	0.025	1.2%	0.12	6%	0.021	1.1%	0.12	6%	-15%	-3%
R11	0.024	1.2%	0.12	6%	0.020	1.0%	0.12	6%	-16%	-3%
R12	0.034	1.7%	0.13	6%	0.031	1.6%	0.13	6%	-8%	-2%
R13	0.023	1.2%	0.12	6%	0.020	1.0%	0.12	6%	-14%	-3%
R14	0.023	1.2%	0.12	6%	0.021	1.0%	0.12	6%	-10%	-2%
R15	0.024	1.2%	0.12	6%	0.022	1.1%	0.12	6%	-6%	-1%
R16	0.021	1.1%	0.12	6%	0.013	0.6%	0.11	5%	-39%	-7%
R17	0.028	1.4%	0.12	6%	0.017	0.8%	0.11	6%	-39%	-9%
R18	0.025	1.3%	0.12	6%	0.016	0.8%	0.11	6%	-36%	-8%
R19	0.028	1.4%	0.12	6%	0.014	0.7%	0.11	5%	-49%	-11%
R20	0.018	0.9%	0.11	6%	0.013	0.7%	0.11	5%	-27%	-4%
R21	0.016	0.8%	0.11	6%	0.012	0.6%	0.11	5%	-23%	-3%
R22	0.015	0.7%	0.11	5%	0.010	0.5%	0.11	5%	-30%	-4%
R23	0.014	0.7%	0.11	5%	0.010	0.5%	0.10	5%	-33%	-4%
R24	0.013	0.6%	0.11	5%	0.008	0.4%	0.10	5%	-38%	-4%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 2 µg/m³
[2] Average Background Concentration = 0.10 µg/m³

Scenario 2 - End of Stage 2 of Preferred Alternative

Annual 1,2-Dichloroethane Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 2				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
Max GLC	0.034	8.6%	0.09	24%	0.033	8.4%	0.09	23%	-3%	<0.01%
R1	0.002	0.5%	0.06	15%	0.001	0.3%	0.06	15%	-34%	-1%
R2	0.004	1.0%	0.06	16%	0.002	0.5%	0.06	16%	-47%	-3%
R3	0.003	0.9%	0.06	16%	0.002	0.5%	0.06	15%	-44%	-2%
R4	0.002	0.4%	0.06	15%	0.003	0.6%	0.06	16%	55%	1%
R5	0.002	0.5%	0.06	16%	0.002	0.4%	0.06	15%	-22%	<0.01%
R6	0.005	1.2%	0.06	16%	0.002	0.4%	0.06	15%	-63%	-5%
R7	0.002	0.6%	0.06	16%	0.003	0.8%	0.06	16%	44%	2%
R8	0.005	1.2%	0.06	16%	0.002	0.4%	0.06	15%	-68%	-5%
R9	0.003	0.7%	0.06	16%	0.004	0.9%	0.06	16%	30%	1%
R10	0.003	0.8%	0.06	16%	0.001	0.3%	0.06	15%	-64%	-3%
R11	0.002	0.5%	0.06	15%	0.001	0.4%	0.06	15%	-28%	<0.01%
R12	0.002	0.6%	0.06	16%	0.002	0.5%	0.06	15%	-19%	<0.01%
R13	0.002	0.5%	0.06	15%	0.001	0.4%	0.06	15%	-25%	<0.01%
R14	0.002	0.4%	0.06	15%	0.001	0.3%	0.06	15%	-33%	<0.01%
R15	0.002	0.4%	0.06	15%	0.001	0.3%	0.06	15%	-20%	<0.01%
R16	0.002	0.4%	0.06	15%	0.001	0.3%	0.06	15%	-19%	<0.01%
R17	0.001	0.4%	0.06	15%	0.001	0.4%	0.06	15%	3%	<0.01%
R18	0.001	0.3%	0.06	15%	0.001	0.3%	0.06	15%	-2%	<0.01%
R19	0.001	0.3%	0.06	15%	0.001	0.3%	0.06	15%	3%	<0.01%
R20	0.002	0.4%	0.06	15%	0.001	0.3%	0.06	15%	-28%	<0.01%
R21	0.001	0.3%	0.06	15%	0.001	0.3%	0.06	15%	-20%	<0.01%
R22	0.002	0.5%	0.06	15%	0.001	0.2%	0.06	15%	-48%	-1%
R23	0.001	0.4%	0.06	15%	0.001	0.2%	0.06	15%	-40%	<0.01%
R24	0.004	1.1%	0.06	16%	0.001	0.2%	0.06	15%	-82%	-6%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

[1] Criteria = 0.4 µg/m³

[2] Average Background Concentration = 0.06 µg/m³

Scenario 2 - End of Stage 2 of Preferred Alternative

24-Hour Ammonia Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 2				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
Max GLC	8.52	8.5%	11.6	12%	8.53	8.5%	11.6	12%	<0.01%	<0.01%
R1	0.16	0.2%	3.3	3%	0.16	0.2%	3.3	3%	<0.01%	<0.01%
R2	0.14	0.1%	3.3	3%	0.16	0.2%	3.3	3%	13%	<0.01%
R3	0.35	0.3%	3.5	3%	0.35	0.4%	3.5	3%	<0.01%	<0.01%
R4	0.17	0.2%	3.3	3%	0.19	0.2%	3.3	3%	10%	<0.01%
R5	0.25	0.3%	3.4	3%	0.25	0.3%	3.4	3%	<0.01%	<0.01%
R6	0.33	0.3%	3.4	3%	0.33	0.3%	3.4	3%	<0.01%	<0.01%
R7	0.36	0.4%	3.5	3%	0.36	0.4%	3.5	3%	<0.01%	<0.01%
R8	0.18	0.2%	3.3	3%	0.18	0.2%	3.3	3%	<0.01%	<0.01%
R9	0.80	0.8%	3.9	4%	0.80	0.8%	3.9	4%	<0.01%	<0.01%
R10	0.27	0.3%	3.4	3%	0.27	0.3%	3.4	3%	<0.01%	<0.01%
R11	0.30	0.3%	3.4	3%	0.30	0.3%	3.4	3%	<0.01%	<0.01%
R12	0.48	0.5%	3.6	4%	0.48	0.5%	3.6	4%	<0.01%	<0.01%
R13	0.28	0.3%	3.4	3%	0.28	0.3%	3.4	3%	<0.01%	<0.01%
R14	0.23	0.2%	3.3	3%	0.23	0.2%	3.3	3%	<0.01%	<0.01%
R15	0.38	0.4%	3.5	3%	0.38	0.4%	3.5	3%	<0.01%	<0.01%
R16	0.14	0.1%	3.2	3%	0.14	0.1%	3.3	3%	2%	<0.01%
R17	0.21	0.2%	3.3	3%	0.21	0.2%	3.3	3%	<0.01%	<0.01%
R18	0.20	0.2%	3.3	3%	0.20	0.2%	3.3	3%	<0.01%	<0.01%
R19	0.21	0.2%	3.3	3%	0.15	0.1%	3.3	3%	-29%	-2%
R20	0.15	0.1%	3.3	3%	0.15	0.1%	3.3	3%	<0.01%	<0.01%
R21	0.14	0.1%	3.3	3%	0.14	0.1%	3.3	3%	1%	<0.01%
R22	0.11	0.1%	3.2	3%	0.12	0.1%	3.2	3%	1%	<0.01%
R23	0.10	0.1%	3.2	3%	0.10	0.1%	3.2	3%	2%	<0.01%
R24	0.10	0.1%	3.2	3%	0.10	0.1%	3.2	3%	<0.01%	<0.01%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

[1] Criteria = 100 µg/m³

[2] Average Background Concentration = 3.11 µg/m³

Scenario 2 - End of Stage 2 of Preferred Alternative

1-Hour Sulphur Dioxide Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 2				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
Max GLC	75	75%	77	77%	75	75%	77	77%	<0.01%	<0.01%
R1	8	8%	10	10%	8	8%	10	10%	<0.01%	<0.01%
R2	10	10%	12	12%	10	10%	12	12%	<0.01%	<0.01%
R3	12	12%	14	14%	12	12%	14	14%	<0.01%	<0.01%
R4	11	11%	13	13%	11	11%	13	13%	<0.01%	<0.01%
R5	9	9%	12	12%	9	9%	12	12%	<0.01%	<0.01%
R6	14	14%	16	16%	14	14%	16	16%	<0.01%	<0.01%
R7	21	21%	24	24%	21	21%	24	24%	<0.01%	<0.01%
R8	10	10%	12	12%	10	10%	12	12%	<0.01%	<0.01%
R9	26	26%	28	28%	26	26%	28	28%	<0.01%	<0.01%
R10	19	19%	22	22%	19	19%	22	22%	<0.01%	<0.01%
R11	18	18%	21	21%	18	18%	21	21%	<0.01%	<0.01%
R12	22	22%	25	25%	22	22%	25	25%	<0.01%	<0.01%
R13	20	20%	22	22%	20	20%	22	22%	<0.01%	<0.01%
R14	12	12%	15	15%	12	12%	15	15%	<0.01%	<0.01%
R15	23	23%	25	25%	23	23%	25	25%	<0.01%	<0.01%
R16	9	9%	11	11%	9	9%	11	11%	<0.01%	<0.01%
R17	10	10%	12	12%	10	10%	12	12%	<0.01%	<0.01%
R18	9	9%	11	11%	9	9%	11	11%	<0.01%	<0.01%
R19	10	10%	12	12%	8	8%	10	10%	-19%	-15%
R20	8	8%	10	10%	8	8%	10	10%	<0.01%	<0.01%
R21	7	7%	10	10%	7	7%	10	10%	<0.01%	<0.01%
R22	7	7%	9	9%	7	7%	9	9%	<0.01%	<0.01%
R23	6	6%	9	9%	6	6%	9	9%	<0.01%	<0.01%
R24	6	6%	8	8%	6	6%	8	8%	<0.01%	<0.01%
STR1	28	28%	31	31%	28	28%	31	31%	<0.01%	<0.01%

Notes:

[1] Criteria = 100 µg/m³

[2] Average Background Concentration = 2.4 µg/m³

Scenario 2 - End of Stage 2 of Preferred Alternative

Annual Sulphur Dioxide Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 2				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
Max GLC	2.02	20.18%	3.4	34%	2.02	20.2%	3.4	34%	<0.01%	<0.01%
R1	0.17	1.73%	1.6	16%	0.17	1.7%	1.6	16%	<0.01%	<0.01%
R2	0.22	2.23%	1.6	16%	0.22	2.2%	1.6	16%	<0.01%	<0.01%
R3	0.24	2.35%	1.6	16%	0.23	2.3%	1.6	16%	<0.01%	<0.01%
R4	0.17	1.72%	1.6	16%	0.24	2.4%	1.6	16%	40%	4%
R5	0.26	2.59%	1.7	17%	0.21	2.1%	1.6	16%	-21%	-3%
R6	0.27	2.73%	1.7	17%	0.22	2.2%	1.6	16%	-19%	-3%
R7	0.22	2.19%	1.6	16%	0.27	2.7%	1.7	17%	25%	3%
R8	0.24	2.40%	1.6	16%	0.22	2.2%	1.6	16%	-9%	-1%
R9	0.21	2.05%	1.6	16%	0.32	3.2%	1.7	17%	55%	7%
R10	0.22	2.22%	1.6	16%	0.12	1.2%	1.5	15%	-47%	-6%
R11	0.17	1.67%	1.6	16%	0.17	1.7%	1.6	16%	3%	<0.01%
R12	0.21	2.06%	1.6	16%	0.26	2.6%	1.7	17%	26%	3%
R13	0.18	1.79%	1.6	16%	0.23	2.3%	1.6	16%	29%	3%
R14	0.16	1.59%	1.6	16%	0.19	1.9%	1.6	16%	21%	2%
R15	0.15	1.51%	1.6	16%	0.19	1.9%	1.6	16%	24%	2%
R16	0.14	1.42%	1.5	15%	0.17	1.7%	1.6	16%	18%	2%
R17	0.12	1.24%	1.5	15%	0.21	2.1%	1.6	16%	67%	5%
R18	0.12	1.16%	1.5	15%	0.18	1.8%	1.6	16%	55%	4%
R19	0.11	1.05%	1.5	15%	0.16	1.6%	1.6	16%	51%	4%
R20	0.19	1.87%	1.6	16%	0.15	1.5%	1.6	16%	-19%	-2%
R21	0.12	1.17%	1.5	15%	0.14	1.4%	1.5	15%	21%	2%
R22	0.23	2.31%	1.6	16%	0.12	1.2%	1.5	15%	-47%	-7%
R23	0.19	1.93%	1.6	16%	0.12	1.2%	1.5	15%	-40%	-5%
R24	0.32	3.18%	1.7	17%	0.11	1.1%	1.5	15%	-67%	-12%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

[1] Criteria = 10 µg/m³

[2] Average Background Concentration = 1.4 µg/m³

Scenario 2 - End of Stage 2 of Preferred Alternative

1-Hour Nitrogen Oxides Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 2				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
Max GLC	184	46%	205	51%	180	45%	201	50%	-2%	-2%
R1	46	12%	67	17%	47	12%	68	17%	<0.01%	<0.01%
R2	85	21%	106	27%	74	18%	95	24%	-13%	-11%
R3	51	13%	72	18%	39	10%	60	15%	-23%	-16%
R4	95	24%	116	29%	102	25%	123	31%	7%	6%
R5	55	14%	76	19%	43	11%	64	16%	-22%	-16%
R6	40	10%	61	15%	36	9%	57	14%	-10%	-7%
R7	77	19%	98	25%	73	18%	94	23%	-6%	-5%
R8	38	9%	59	15%	38	9%	59	15%	<0.01%	<0.01%
R9	62	15%	83	21%	61	15%	82	21%	<0.01%	<0.01%
R10	18	5%	39	10%	17	4%	38	10%	-5%	-2%
R11	22	6%	43	11%	22	6%	43	11%	<0.01%	<0.01%
R12	26	6%	47	12%	26	7%	47	12%	<0.01%	<0.01%
R13	27	7%	48	12%	28	7%	49	12%	<0.01%	<0.01%
R14	24	6%	45	11%	24	6%	45	11%	<0.01%	<0.01%
R15	34	8%	55	14%	31	8%	52	13%	-8%	-5%
R16	41	10%	62	16%	41	10%	62	16%	<0.01%	<0.01%
R17	58	14%	79	20%	58	15%	79	20%	<0.01%	<0.01%
R18	49	12%	70	17%	49	12%	70	17%	<0.01%	<0.01%
R19	58	14%	79	20%	45	11%	66	17%	-22%	-16%
R20	40	10%	61	15%	40	10%	61	15%	<0.01%	<0.01%
R21	33	8%	54	13%	33	8%	54	13%	<0.01%	<0.01%
R22	31	8%	52	13%	32	8%	53	13%	2%	1%
R23	30	7%	51	13%	30	8%	51	13%	2%	1%
R24	26	7%	47	12%	27	7%	48	12%	2%	<0.01%
STR1	54	13%	75	19%	50	12%	71	18%	-8%	-5%

Notes:

[1] Criteria = 400 µg/m³

[2] Average Background Concentration = 21.0 µg/m³

Scenario 2 - End of Stage 2 of Preferred Alternative

24-Hour Nitrogen Oxides Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 2				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
Max GLC	31	16%	50	25%	31	16%	50	25%	<0.01%	<0.01%
R1	3	1%	22	11%	3	1%	22	11%	3%	<0.01%
R2	5	2%	24	12%	5	2%	24	12%	3%	<0.01%
R3	5	2%	24	12%	4	2%	23	11%	-20%	-4%
R4	6	3%	25	13%	6	3%	26	13%	5%	1%
R5	3	1%	22	11%	3	1%	22	11%	-5%	<0.01%
R6	4	2%	23	12%	4	2%	23	11%	-11%	-2%
R7	7	4%	26	13%	8	4%	27	13%	6%	2%
R8	3	1%	22	11%	3	2%	22	11%	1%	<0.01%
R9	6	3%	25	12%	6	3%	25	12%	<0.01%	<0.01%
R10	2	1%	21	11%	2	1%	21	11%	<0.01%	<0.01%
R11	2	1%	21	11%	2	1%	21	11%	<0.01%	<0.01%
R12	3	2%	23	11%	3	2%	23	11%	<0.01%	<0.01%
R13	3	1%	22	11%	3	1%	22	11%	<0.01%	<0.01%
R14	3	2%	22	11%	3	2%	22	11%	1%	<0.01%
R15	3	1%	22	11%	3	1%	22	11%	<0.01%	<0.01%
R16	2	1%	22	11%	3	1%	22	11%	3%	<0.01%
R17	3	2%	22	11%	3	2%	22	11%	2%	<0.01%
R18	3	1%	22	11%	3	1%	22	11%	-5%	<0.01%
R19	3	2%	22	11%	2	1%	22	11%	-19%	-3%
R20	2	1%	21	11%	2	1%	21	11%	3%	<0.01%
R21	2	1%	21	11%	2	1%	21	11%	1%	<0.01%
R22	2	1%	21	11%	2	1%	21	11%	1%	<0.01%
R23	2	1%	21	10%	2	1%	21	10%	1%	<0.01%
R24	2	1%	21	10%	2	1%	21	10%	<0.01%	<0.01%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 200 µg/m³

[2] Average Background Concentration = 19.1 µg/m³

Scenario 2 - End of Stage 2 of Preferred Alternative

24-Hour Dioxins and Furans Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 2				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (pg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (pg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (pg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (pg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
Max GLC	0.00099	0.99%	0.02	21%	0.00099	0.99%	0.02	21%	<0.01%	<0.01%
R1	0.00004	0.04%	0.02	20%	0.00004	0.04%	0.02	20%	<0.01%	<0.01%
R2	0.00007	0.07%	0.02	20%	0.00007	0.07%	0.02	20%	<0.01%	<0.01%
R3	0.00008	0.08%	0.02	20%	0.00008	0.08%	0.02	20%	<0.01%	<0.01%
R4	0.00007	0.07%	0.02	20%	0.00007	0.07%	0.02	20%	<0.01%	<0.01%
R5	0.00007	0.07%	0.02	20%	0.00007	0.07%	0.02	20%	<0.01%	<0.01%
R6	0.00008	0.08%	0.02	20%	0.00008	0.08%	0.02	20%	<0.01%	<0.01%
R7	0.00008	0.08%	0.02	20%	0.00008	0.08%	0.02	20%	<0.01%	<0.01%
R8	0.00005	0.05%	0.02	20%	0.00005	0.05%	0.02	20%	<0.01%	<0.01%
R9	0.00011	0.11%	0.02	20%	0.00011	0.11%	0.02	20%	<0.01%	<0.01%
R10	0.00004	0.04%	0.02	20%	0.00004	0.04%	0.02	20%	<0.01%	<0.01%
R11	0.00007	0.07%	0.02	20%	0.00007	0.07%	0.02	20%	<0.01%	<0.01%
R12	0.00011	0.11%	0.02	20%	0.00011	0.11%	0.02	20%	<0.01%	<0.01%
R13	0.00009	0.09%	0.02	20%	0.00009	0.09%	0.02	20%	<0.01%	<0.01%
R14	0.00007	0.07%	0.02	20%	0.00007	0.07%	0.02	20%	<0.01%	<0.01%
R15	0.00009	0.09%	0.02	20%	0.00009	0.09%	0.02	20%	<0.01%	<0.01%
R16	0.00005	0.05%	0.02	20%	0.00005	0.05%	0.02	20%	<0.01%	<0.01%
R17	0.00005	0.05%	0.02	20%	0.00005	0.05%	0.02	20%	<0.01%	<0.01%
R18	0.00005	0.05%	0.02	20%	0.00005	0.05%	0.02	20%	<0.01%	<0.01%
R19	0.00005	0.05%	0.02	20%	0.00004	0.04%	0.02	20%	-20%	<0.01%
R20	0.00004	0.04%	0.02	20%	0.00004	0.04%	0.02	20%	<0.01%	<0.01%
R21	0.00004	0.04%	0.02	20%	0.00004	0.04%	0.02	20%	<0.01%	<0.01%
R22	0.00004	0.04%	0.02	20%	0.00004	0.04%	0.02	20%	<0.01%	<0.01%
R23	0.00003	0.03%	0.02	20%	0.00003	0.03%	0.02	20%	<0.01%	<0.01%
R24	0.00003	0.03%	0.02	20%	0.00003	0.03%	0.02	20%	<0.01%	<0.01%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

[1] Criteria = 0.1 pg TEQ/m³

[2] Average Background Concentration = 0.02 pg TEQ/m³

Scenario 3 - End of Stage 4 of Preferred Alternative

24-Hour Hydrogen Sulphide Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 3				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
Max GLC	0.85	12.1%	6.4	92%	0.85	12.2%	6.5	92%	<0.01%	<0.01%
R1	0.04	0.6%	5.6	81%	0.04	0.6%	5.6	81%	-2%	<0.01%
R2	0.07	1.0%	5.7	81%	0.07	1.0%	5.7	81%	-5%	<0.01%
R3	0.07	1.0%	5.7	81%	0.07	1.0%	5.7	81%	<0.01%	<0.01%
R4	0.07	1.0%	5.7	81%	0.07	1.0%	5.7	81%	-6%	<0.01%
R5	0.06	0.9%	5.7	81%	0.06	0.9%	5.7	81%	<0.01%	<0.01%
R6	0.07	1.0%	5.7	81%	0.07	0.9%	5.7	81%	-1%	<0.01%
R7	0.07	0.9%	5.7	81%	0.07	0.9%	5.7	81%	<0.01%	<0.01%
R8	0.04	0.6%	5.6	81%	0.04	0.6%	5.6	81%	<0.01%	<0.01%
R9	0.10	1.5%	5.7	81%	0.10	1.4%	5.7	81%	-2%	<0.01%
R10	0.04	0.5%	5.6	81%	0.04	0.5%	5.6	81%	-2%	<0.01%
R11	0.06	0.9%	5.7	81%	0.06	0.9%	5.7	81%	-1%	<0.01%
R12	0.10	1.4%	5.7	81%	0.10	1.4%	5.7	81%	<0.01%	<0.01%
R13	0.08	1.1%	5.7	81%	0.08	1.1%	5.7	81%	<0.01%	<0.01%
R14	0.07	1.0%	5.7	81%	0.07	0.9%	5.7	81%	-4%	<0.01%
R15	0.08	1.1%	5.7	81%	0.08	1.1%	5.7	81%	<0.01%	<0.01%
R16	0.04	0.6%	5.6	81%	0.04	0.6%	5.6	81%	<0.01%	<0.01%
R17	0.04	0.6%	5.6	81%	0.04	0.6%	5.6	81%	-3%	<0.01%
R18	0.04	0.6%	5.6	81%	0.04	0.6%	5.6	81%	-2%	<0.01%
R19	0.04	0.6%	5.6	81%	0.04	0.6%	5.6	81%	-2%	<0.01%
R20	0.04	0.5%	5.6	81%	0.04	0.5%	5.6	81%	-2%	<0.01%
R21	0.04	0.5%	5.6	81%	0.04	0.5%	5.6	81%	-3%	<0.01%
R22	0.03	0.5%	5.6	80%	0.03	0.5%	5.6	80%	-3%	<0.01%
R23	0.03	0.5%	5.6	80%	0.03	0.4%	5.6	80%	-3%	<0.01%
R24	0.03	0.4%	5.6	80%	0.03	0.4%	5.6	80%	-10%	<0.01%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 7 µg/m³
[2] 90th Percentile Background Concentration based on all wind directions = 5.6 µg/m³

10-Minute Hydrogen Sulphide Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 3				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
R1	0.43	3.3%	22.9	177%	0.44	3%	22.96	177%	3%	<0.01%
R2	0.34	2.6%	22.9	176%	0.34	3%	22.85	176%	<0.01%	<0.01%
R3	0.37	2.8%	22.9	176%	0.37	3%	22.89	176%	<0.01%	<0.01%
R4	0.40	3.1%	22.9	176%	0.39	3%	22.91	176%	-2%	<0.01%
R5	0.30	2.3%	22.8	176%	0.30	2%	22.82	176%	<0.01%	<0.01%
R6	0.33	2.6%	22.8	176%	0.33	3%	22.85	176%	<0.01%	<0.01%
R7	0.41	3.2%	22.9	176%	0.41	3%	22.93	176%	<0.01%	<0.01%
R8	0.35	2.7%	22.9	176%	0.36	3%	22.87	176%	1%	<0.01%
R9	0.59	4.6%	23.1	178%	0.59	5%	23.11	178%	<0.01%	<0.01%
R10	0.28	2.2%	22.8	175%	0.28	2%	22.80	175%	<0.01%	<0.01%
R11	0.33	2.5%	22.8	176%	0.33	3%	22.84	176%	<0.01%	<0.01%
R12	0.39	3.0%	22.9	176%	0.39	3%	22.91	176%	<0.01%	<0.01%
R13	0.37	2.9%	22.9	176%	0.37	3%	22.89	176%	<0.01%	<0.01%
R14	0.36	2.8%	22.9	176%	0.36	3%	22.88	176%	<0.01%	<0.01%
R15	0.43	3.3%	22.9	177%	0.43	3%	22.95	177%	<0.01%	<0.01%
R16	0.34	2.6%	22.9	176%	0.35	3%	22.87	176%	1%	<0.01%
R17	0.40	3.1%	22.9	176%	0.42	3%	22.93	176%	4%	<0.01%
R18	0.36	2.8%	22.9	176%	0.38	3%	22.90	176%	5%	<0.01%
R19	0.43	3.3%	22.9	177%	0.42	3%	22.93	176%	-3%	<0.01%
R20	0.44	3.4%	23.0	177%	0.44	3%	22.96	177%	1%	<0.01%
R21	0.44	3.4%	23.0	177%	0.44	3%	22.96	177%	<0.01%	<0.01%
R22	0.43	3.3%	22.9	177%	0.43	3%	22.94	176%	-1%	<0.01%
R23	0.42	3.2%	22.9	176%	0.42	3%	22.93	176%	-1%	<0.01%
R24	0.39	3.0%	22.9	176%	0.39	3%	22.90	176%	-2%	<0.01%
STR1	0.76	5.9%	23.3	179%	0.76	6%	23.28	179%	<0.01%	<0.01%

Notes:
[1] Criteria = 13 µg/m³
[2] 90th Percentile Background Concentration based on all wind directions = 22.5 µg/m³

Scenario 3 - End of Stage 4 of Preferred Alternative

10-Minute Total Reduced Sulphur Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 3				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
R1	0.74	5.7%	45.0	346%	0.49	4%	44.72	344%	-34%	<0.01%
R2	1.00	7.7%	45.2	348%	0.99	8%	45.23	348%	<0.01%	<0.01%
R3	0.76	5.8%	45.0	346%	0.50	4%	44.74	344%	-33%	<0.01%
R4	1.17	9.0%	45.4	349%	1.15	9%	45.38	349%	-2%	<0.01%
R5	0.78	6.0%	45.0	346%	0.52	4%	44.75	344%	-34%	<0.01%
R6	0.72	5.5%	45.0	346%	0.48	4%	44.71	344%	-34%	<0.01%
R7	0.61	4.7%	44.8	345%	0.41	3%	44.65	343%	-32%	<0.01%
R8	0.56	4.3%	44.8	345%	0.36	3%	44.59	343%	-36%	<0.01%
R9	0.63	4.8%	44.9	345%	0.59	5%	44.82	345%	-5%	<0.01%
R10	0.58	4.4%	44.8	345%	0.39	3%	44.62	343%	-33%	<0.01%
R11	0.57	4.4%	44.8	345%	0.52	4%	44.75	344%	-8%	<0.01%
R12	0.67	5.2%	44.9	345%	0.60	5%	44.83	345%	-11%	<0.01%
R13	0.71	5.5%	44.9	346%	0.55	4%	44.79	345%	-22%	<0.01%
R14	0.69	5.3%	44.9	346%	0.49	4%	44.72	344%	-29%	<0.01%
R15	0.63	4.9%	44.9	345%	0.43	3%	44.66	344%	-32%	<0.01%
R16	0.56	4.3%	44.8	345%	0.37	3%	44.60	343%	-34%	<0.01%
R17	0.75	5.8%	45.0	346%	0.47	4%	44.70	344%	-37%	<0.01%
R18	0.72	5.5%	45.0	346%	0.45	3%	44.68	344%	-37%	<0.01%
R19	0.72	5.5%	45.0	346%	0.49	4%	44.72	344%	-32%	<0.01%
R20	0.70	5.4%	44.9	346%	0.50	4%	44.73	344%	-29%	<0.01%
R21	0.69	5.3%	44.9	346%	0.51	4%	44.74	344%	-27%	<0.01%
R22	0.69	5.3%	44.9	346%	0.51	4%	44.74	344%	-26%	<0.01%
R23	0.68	5.3%	44.9	346%	0.50	4%	44.73	344%	-27%	<0.01%
R24	0.70	5.4%	44.9	346%	0.48	4%	44.72	344%	-31%	<0.01%
STR1	0.76	5.9%	45.0	346%	0.76	6%	44.99	346%	<0.01%	<0.01%

Notes:
[1] Criteria = 13 µg/m³
[2] 90th Percentile Background Concentration based on all wind directions = 44.2 µg/m³

24-Hour Total Reduced Sulphur Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 3				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
Max GLC	0.85	12.2%	11.9	169%	0.85	12.2%	11.9	169%	<0.01%	<0.01%
R1	0.08	1.2%	11.1	158%	0.05	0.7%	11.0	158%	-39%	<0.01%
R2	0.12	1.7%	11.1	159%	0.09	1.4%	11.1	158%	-20%	<0.01%
R3	0.10	1.5%	11.1	159%	0.08	1.1%	11.1	158%	-22%	<0.01%
R4	0.13	1.9%	11.1	159%	0.10	1.5%	11.1	159%	-21%	<0.01%
R5	0.10	1.5%	11.1	159%	0.07	1.0%	11.1	158%	-30%	<0.01%
R6	0.09	1.3%	11.1	158%	0.07	1.0%	11.1	158%	-22%	<0.01%
R7	0.13	1.9%	11.1	159%	0.08	1.2%	11.1	158%	-37%	<0.01%
R8	0.10	1.5%	11.1	159%	0.06	0.9%	11.1	158%	-40%	<0.01%
R9	0.15	2.2%	11.2	159%	0.11	1.5%	11.1	159%	-31%	<0.01%
R10	0.06	0.8%	11.1	158%	0.04	0.6%	11.0	158%	-32%	<0.01%
R11	0.07	1.0%	11.1	158%	0.07	0.9%	11.1	158%	-3%	<0.01%
R12	0.10	1.5%	11.1	159%	0.10	1.5%	11.1	159%	-2%	<0.01%
R13	0.08	1.2%	11.1	158%	0.08	1.2%	11.1	158%	-3%	<0.01%
R14	0.08	1.1%	11.1	158%	0.07	1.0%	11.1	158%	-10%	<0.01%
R15	0.08	1.1%	11.1	158%	0.08	1.1%	11.1	158%	<0.01%	<0.01%
R16	0.08	1.1%	11.1	158%	0.05	0.7%	11.0	158%	-38%	<0.01%
R17	0.10	1.4%	11.1	159%	0.06	0.8%	11.1	158%	-38%	<0.01%
R18	0.09	1.2%	11.1	158%	0.05	0.8%	11.1	158%	-37%	<0.01%
R19	0.07	1.1%	11.1	158%	0.05	0.7%	11.0	158%	-39%	<0.01%
R20	0.07	1.0%	11.1	158%	0.04	0.6%	11.0	158%	-37%	<0.01%
R21	0.06	0.9%	11.1	158%	0.04	0.6%	11.0	158%	-35%	<0.01%
R22	0.05	0.8%	11.1	158%	0.04	0.5%	11.0	158%	-31%	<0.01%
R23	0.05	0.7%	11.0	158%	0.04	0.5%	11.0	158%	-26%	<0.01%
R24	0.05	0.7%	11.1	158%	0.04	0.5%	11.0	158%	-27%	<0.01%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 7 µg/m³
[2] 90th Percentile Background Concentration based on all wind directions = 11 µg/m³

Scenario 3 - End of Stage 4 of Preferred Alternative

24-Hour Benzene Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 3				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
Max GLC	0.32	14.1%	0.9	38%	0.32	14.1%	0.9	38%	<0.01%	<0.01%
R1	0.07	3.2%	0.6	28%	0.04	1.7%	0.6	26%	-46%	-5%
R2	0.14	6.2%	0.7	30%	0.12	5.4%	0.7	30%	-13%	-3%
R3	0.12	5.2%	0.7	29%	0.07	3.0%	0.6	27%	-42%	-7%
R4	0.17	7.3%	0.7	32%	0.15	6.5%	0.7	31%	-11%	-2%
R5	0.09	3.8%	0.6	28%	0.05	2.1%	0.6	26%	-45%	-6%
R6	0.10	4.3%	0.7	29%	0.05	2.2%	0.6	26%	-49%	-7%
R7	0.12	5.3%	0.7	30%	0.07	3.0%	0.6	27%	-44%	-8%
R8	0.09	3.9%	0.6	28%	0.04	1.9%	0.6	26%	-50%	-7%
R9	0.10	4.3%	0.7	29%	0.05	2.1%	0.6	26%	-51%	-8%
R10	0.05	2.3%	0.6	27%	0.03	1.4%	0.6	26%	-36%	-3%
R11	0.05	2.2%	0.6	26%	0.03	1.3%	0.6	26%	-38%	-3%
R12	0.06	2.6%	0.6	27%	0.05	2.0%	0.6	26%	-24%	-2%
R13	0.05	2.2%	0.6	27%	0.04	1.5%	0.6	26%	-31%	-3%
R14	0.05	2.1%	0.6	26%	0.03	1.5%	0.6	26%	-30%	-2%
R15	0.05	2.2%	0.6	26%	0.03	1.2%	0.6	26%	-43%	-4%
R16	0.08	3.3%	0.6	28%	0.04	1.6%	0.6	26%	-53%	-6%
R17	0.09	3.9%	0.6	28%	0.05	2.0%	0.6	26%	-47%	-6%
R19	0.07	2.9%	0.6	27%	0.04	1.6%	0.6	26%	-46%	-5%
R20	0.06	2.6%	0.6	27%	0.03	1.3%	0.6	26%	-49%	-5%
R21	0.05	2.4%	0.6	27%	0.03	1.2%	0.6	25%	-50%	-4%
R22	0.04	1.9%	0.6	26%	0.02	1.1%	0.6	25%	-43%	-3%
R23	0.04	1.8%	0.6	26%	0.03	1.1%	0.6	25%	-40%	-3%
R24	0.04	1.6%	0.6	26%	0.02	0.9%	0.6	25%	-43%	-3%
STR1	NA	N/A	N/A	N/A	NA	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 2.3 µg/m³
[2] 90th Percentile Background Concentration = 0.56 µg/m³

Annual Benzene Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 3				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
Max GLC	0.04	9.6%	0.4	98%	0.04	8.6%	0.4	97%	-10%	-1%
R1	0.01	1.3%	0.4	90%	0.00	0.7%	0.4	89%	-45%	<0.01%
R2	0.01	3.3%	0.4	92%	0.01	1.6%	0.4	90%	-51%	-2%
R3	0.01	2.6%	0.4	91%	0.01	1.2%	0.4	90%	-52%	-1%
R4	0.02	4.2%	0.4	93%	0.009	2.1%	0.4	91%	-51%	-2%
R5	0.01	2.1%	0.4	91%	0.005	1.0%	0.4	90%	-51%	-1%
R6	0.01	2.2%	0.4	91%	0.00	1.1%	0.4	90%	-52%	-1%
R7	0.01	3.1%	0.4	92%	0.01	1.8%	0.4	90%	-42%	-1%
R8	0.01	1.5%	0.4	90%	0.00	0.9%	0.4	90%	-43%	<0.01%
R9	0.01	2.2%	0.4	91%	0.01	1.4%	0.4	90%	-35%	<0.01%
R10	0.003	0.6%	0.4	89%	0.00	0.4%	0.4	89%	-33%	<0.01%
R11	0.003	0.8%	0.4	89%	0.00	0.5%	0.4	89%	-32%	<0.01%
R12	0.004	1.0%	0.4	90%	0.00	0.7%	0.4	89%	-32%	<0.01%
R13	0.004	0.9%	0.4	90%	0.00	0.6%	0.4	89%	-35%	<0.01%
R14	0.003	0.7%	0.4	89%	0.00	0.5%	0.4	89%	-36%	<0.01%
R15	0.003	0.7%	0.4	89%	0.00	0.5%	0.4	89%	-32%	<0.01%
R16	0.01	1.3%	0.4	90%	0.00	0.7%	0.4	89%	-44%	<0.01%
R17	0.01	1.5%	0.4	90%	0.004	0.9%	0.4	90%	-42%	<0.01%
R18	0.01	1.3%	0.4	90%	0.003	0.8%	0.4	89%	-42%	<0.01%
R19	0.01	1.2%	0.4	90%	0.003	0.7%	0.4	89%	-45%	<0.01%
R20	0.01	1.1%	0.4	90%	0.003	0.6%	0.4	89%	-45%	<0.01%
R21	0.00	1.1%	0.4	90%	0.003	0.6%	0.4	89%	-43%	<0.01%
R22	0.004	0.9%	0.4	90%	0.002	0.5%	0.4	89%	-43%	<0.01%
R23	0.004	0.9%	0.4	90%	0.002	0.5%	0.4	89%	-45%	<0.01%
R24	0.003	0.8%	0.4	89%	0.00	0.4%	0.4	89%	-45%	<0.01%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 0.45 µg/m³
[2] Average Background Concentration = 0.40 µg/m³

Scenario 3 - End of Stage 4 of Preferred Alternative

24-Hour Vinyl Chloride Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 3				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
Max GLC	0.41	40.9%	0.5	46%	0.409	40.9%	0.46	46%	<0.01%	<0.01%
R1	0.03	2.8%	0.1	8%	0.016	1.6%	0.07	7%	-41%	-14%
R2	0.05	5.1%	0.1	10%	0.021	2.1%	0.07	7%	-58%	-29%
R3	0.03	3.1%	0.1	8%	0.025	2.5%	0.08	8%	-18%	-7%
R4	0.06	5.6%	0.1	11%	0.023	2.3%	0.07	7%	-59%	-31%
R5	0.03	3.0%	0.1	8%	0.019	1.9%	0.07	7%	-36%	-14%
R6	0.03	3.0%	0.1	8%	0.024	2.4%	0.08	8%	-21%	-8%
R7	0.04	4.2%	0.1	9%	0.027	2.7%	0.08	8%	-35%	-16%
R8	0.03	3.3%	0.1	8%	0.017	1.7%	0.07	7%	-50%	-20%
R9	0.04	4.5%	0.1	10%	0.044	4.4%	0.09	9%	-3%	-1%
R10	0.03	3.0%	0.1	8%	0.024	2.4%	0.08	8%	-20%	-7%
R11	0.03	3.0%	0.1	8%	0.023	2.3%	0.07	7%	-22%	-8%
R12	0.04	4.3%	0.1	9%	0.037	3.7%	0.09	9%	-14%	-6%
R13	0.03	3.0%	0.1	8%	0.023	2.3%	0.07	7%	-21%	-8%
R14	0.03	2.8%	0.1	8%	0.023	2.3%	0.07	7%	-20%	-7%
R15	0.03	3.0%	0.1	8%	0.027	2.7%	0.08	8%	-10%	-4%
R16	0.03	2.5%	0.1	8%	0.014	1.4%	0.06	6%	-47%	-16%
R17	0.03	3.4%	0.1	8%	0.019	1.9%	0.07	7%	-45%	-18%
R18	0.03	3.1%	0.1	8%	0.016	1.6%	0.07	7%	-47%	-18%
R19	0.02	2.5%	0.1	8%	0.015	1.5%	0.07	7%	-39%	-13%
R20	0.02	2.2%	0.1	7%	0.014	1.4%	0.07	7%	-36%	-11%
R21	0.02	1.9%	0.1	7%	0.013	1.3%	0.06	6%	-33%	-9%
R22	0.02	1.8%	0.1	7%	0.011	1.1%	0.06	6%	-41%	-11%
R23	0.02	1.8%	0.1	7%	0.010	1.0%	0.06	6%	-43%	-11%
R24	0.02	1.6%	0.1	7%	0.009	0.9%	0.06	6%	-43%	-10%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

[1] Criteria = 1 µg/m³

[2] Average Background Concentration = 0.05 µg/m³

Annual Vinyl Chloride Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 3				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
Max GLC	0.047	23.5%	0.10	49%	0.045	22.6%	0.10	48%	-4%	-2%
R1	0.002	1.2%	0.05	27%	0.001	0.7%	0.05	26%	-45%	-2%
R2	0.005	2.5%	0.06	28%	0.002	1.1%	0.05	27%	-57%	-5%
R3	0.004	2.1%	0.06	28%	0.002	1.0%	0.05	27%	-53%	-4%
R4	0.006	3.0%	0.06	29%	0.002	1.2%	0.05	27%	-59%	-6%
R5	0.003	1.7%	0.05	27%	0.002	0.8%	0.05	26%	-52%	-3%
R6	0.004	1.9%	0.05	27%	0.002	0.9%	0.05	26%	-52%	-4%
R7	0.006	3.0%	0.06	28%	0.003	1.7%	0.05	27%	-42%	-4%
R8	0.003	1.4%	0.05	27%	0.002	0.8%	0.05	26%	-42%	-2%
R9	0.006	2.8%	0.06	28%	0.004	2.1%	0.06	28%	-24%	-2%
R10	0.002	0.8%	0.05	26%	0.001	0.7%	0.05	26%	-23%	<0.01%
R11	0.002	1.1%	0.05	27%	0.002	0.8%	0.05	26%	-21%	<0.01%
R12	0.003	1.3%	0.05	27%	0.002	1.1%	0.05	27%	-20%	-1%
R13	0.002	1.1%	0.05	27%	0.002	0.9%	0.05	26%	-24%	-1%
R14	0.002	0.9%	0.05	26%	0.001	0.7%	0.05	26%	-24%	<0.01%
R15	0.002	1.0%	0.05	27%	0.002	0.8%	0.05	26%	-18%	<0.01%
R16	0.002	1.2%	0.05	27%	0.001	0.7%	0.05	26%	-44%	-2%
R17	0.003	1.4%	0.05	27%	0.001	0.7%	0.05	26%	-45%	-2%
R18	0.002	1.2%	0.05	27%	0.001	0.7%	0.05	26%	-45%	-2%
R19	0.002	1.1%	0.05	27%	0.001	0.6%	0.05	26%	-44%	-2%
R20	0.002	1.0%	0.05	27%	0.001	0.6%	0.05	26%	-44%	-2%
R21	0.002	1.0%	0.05	27%	0.001	0.6%	0.05	26%	-44%	-2%
R22	0.002	0.9%	0.05	26%	0.001	0.5%	0.05	26%	-45%	-1%
R23	0.002	0.8%	0.05	26%	0.001	0.5%	0.05	26%	-45%	-1%
R24	0.001	0.7%	0.05	26%	0.001	0.4%	0.05	26%	-43%	-1%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

[1] Criteria = 0.2 µg/m³

[2] Average Background Concentration = 0.05 µg/m³

Scenario 3 - End of Stage 4 of Preferred Alternative

24-Hour 1,2-Dichloroethane Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 3				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
Max GLC	0.31	15.3%	0.40	20%	0.31	15.3%	0.40	20%	<0.01%	<0.01%
R1	0.02	1.1%	0.12	6%	0.013	0.6%	0.11	5%	-43%	-8%
R2	0.04	2.1%	0.14	7%	0.019	0.9%	0.11	6%	-55%	-17%
R3	0.03	1.3%	0.12	6%	0.019	1.0%	0.11	6%	-26%	-6%
R4	0.05	2.3%	0.14	7%	0.021	1.0%	0.12	6%	-55%	-18%
R5	0.02	1.2%	0.12	6%	0.015	0.7%	0.11	5%	-38%	-8%
R6	0.02	1.2%	0.12	6%	0.019	0.9%	0.11	6%	-25%	-5%
R7	0.04	1.8%	0.13	7%	0.021	1.1%	0.12	6%	-39%	-11%
R8	0.03	1.4%	0.12	6%	0.014	0.7%	0.11	5%	-51%	-11%
R9	0.03	1.7%	0.13	6%	0.032	1.6%	0.13	6%	-3%	<0.01%
R10	0.02	1.2%	0.12	6%	0.020	1.0%	0.11	6%	-20%	-4%
R11	0.02	1.2%	0.12	6%	0.019	0.9%	0.11	6%	-23%	-5%
R12	0.03	1.7%	0.13	6%	0.029	1.4%	0.12	6%	-14%	-4%
R13	0.02	1.2%	0.12	6%	0.018	0.9%	0.11	6%	-22%	-4%
R14	0.02	1.2%	0.12	6%	0.018	0.9%	0.11	6%	-20%	-4%
R15	0.02	1.2%	0.12	6%	0.021	1.1%	0.12	6%	-10%	-2%
R16	0.02	1.1%	0.12	6%	0.011	0.5%	0.11	5%	-50%	-9%
R17	0.03	1.4%	0.12	6%	0.015	0.7%	0.11	5%	-47%	-11%
R18	0.03	1.3%	0.12	6%	0.013	0.7%	0.11	5%	-47%	-10%
R19	0.02	1.0%	0.12	6%	0.012	0.6%	0.11	5%	-41%	-7%
R20	0.02	0.9%	0.11	6%	0.011	0.6%	0.11	5%	-38%	-6%
R21	0.02	0.8%	0.11	6%	0.010	0.5%	0.11	5%	-36%	-5%
R22	0.01	0.7%	0.11	5%	0.009	0.4%	0.10	5%	-41%	-5%
R23	0.01	0.7%	0.11	5%	0.008	0.4%	0.10	5%	-44%	-6%
R24	0.01	0.6%	0.11	5%	0.007	0.3%	0.10	5%	-46%	-5%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 2 µg/m³
[2] Average Background Concentration = 0.10 µg/m³

Annual 1,2-Dichloroethane Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 3				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
Max GLC	0.03	8.6%	0.09	24%	0.03	8.2%	0.09	23%	-4%	-2%
R1	0.002	0.5%	0.06	15%	0.001	0.3%	0.06	15%	-45%	-1%
R2	0.004	1.0%	0.06	16%	0.002	0.4%	0.06	15%	-57%	-4%
R3	0.003	0.9%	0.06	16%	0.002	0.4%	0.06	15%	-54%	-3%
R4	0.005	1.2%	0.06	16%	0.002	0.5%	0.06	16%	-59%	-5%
R5	0.003	0.7%	0.06	16%	0.001	0.3%	0.06	15%	-52%	-2%
R6	0.003	0.8%	0.06	16%	0.001	0.4%	0.06	15%	-53%	-3%
R7	0.005	1.2%	0.06	16%	0.003	0.7%	0.06	16%	-43%	-3%
R8	0.002	0.6%	0.06	16%	0.001	0.3%	0.06	15%	-43%	-2%
R9	0.004	1.1%	0.06	16%	0.003	0.8%	0.06	16%	-26%	-2%
R10	0.001	0.3%	0.06	15%	0.001	0.3%	0.06	15%	-24%	<0.01%
R11	0.002	0.4%	0.06	15%	0.001	0.3%	0.06	15%	-22%	<0.01%
R12	0.002	0.5%	0.06	16%	0.002	0.4%	0.06	15%	-21%	<0.01%
R13	0.002	0.5%	0.06	15%	0.001	0.3%	0.06	15%	-25%	<0.01%
R14	0.001	0.4%	0.06	15%	0.001	0.3%	0.06	15%	-26%	<0.01%
R15	0.002	0.4%	0.06	15%	0.001	0.3%	0.06	15%	-20%	<0.01%
R16	0.002	0.5%	0.06	15%	0.001	0.3%	0.06	15%	-45%	-1%
R17	0.002	0.6%	0.06	16%	0.001	0.3%	0.06	15%	-46%	-2%
R18	0.002	0.5%	0.06	15%	0.001	0.3%	0.06	15%	-45%	-1%
R19	0.002	0.4%	0.06	15%	0.001	0.2%	0.06	15%	-45%	-1%
R20	0.002	0.4%	0.06	15%	0.001	0.2%	0.06	15%	-45%	-1%
R21	0.002	0.4%	0.06	15%	0.001	0.2%	0.06	15%	-45%	-1%
R22	0.001	0.4%	0.06	15%	0.001	0.2%	0.06	15%	-45%	-1%
R23	0.001	0.3%	0.06	15%	0.001	0.2%	0.06	15%	-45%	<0.01%
R24	0.001	0.3%	0.06	15%	0.001	0.2%	0.06	15%	-44%	<0.01%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 0.4 µg/m³
[2] Average Background Concentration = 0.06 µg/m³

Scenario 3 - End of Stage 4 of Preferred Alternative

24-Hour Ammonia Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 3				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
Max GLC	8.5	9%	12	12%	8.5	9%	12	12%	<0.01%	<0.01%
R1	0.2	0.2%	3.3	3%	0.2	0%	3	3%	1%	<0.01%
R2	0.1	0.1%	3.3	3%	0.1	0%	3	3%	-2%	<0.01%
R3	0.3	0.3%	3.5	3%	0.4	0%	3	3%	<0.01%	<0.01%
R4	0.2	0.2%	3.3	3%	0.2	0%	3	3%	-10%	<0.01%
R5	0.3	0.3%	3.4	3%	0.3	0%	3	3%	<0.01%	<0.01%
R6	0.3	0.3%	3.4	3%	0.3	0%	3	3%	<0.01%	<0.01%
R7	0.4	0.4%	3.5	3%	0.4	0%	3	3%	<0.01%	<0.01%
R8	0.2	0.2%	3.3	3%	0.2	0%	3	3%	2%	<0.01%
R9	0.8	0.8%	3.9	4%	0.8	1%	4	4%	<0.01%	<0.01%
R10	0.3	0.3%	3.4	3%	0.3	0%	3	3%	<0.01%	<0.01%
R11	0.3	0.3%	3.4	3%	0.3	0%	3	3%	<0.01%	<0.01%
R12	0.5	0.5%	3.6	4%	0.5	0%	4	4%	<0.01%	<0.01%
R13	0.3	0.3%	3.4	3%	0.3	0%	3	3%	<0.01%	<0.01%
R14	0.2	0.2%	3.3	3%	0.2	0%	3	3%	<0.01%	<0.01%
R15	0.4	0.4%	3.5	3%	0.4	0%	3	3%	<0.01%	<0.01%
R16	0.1	0.1%	3.2	3%	0.1	0%	3	3%	<0.01%	<0.01%
R17	0.2	0.2%	3.3	3%	0.2	0%	3	3%	<0.01%	<0.01%
R18	0.2	0.2%	3.3	3%	0.2	0%	3	3%	<0.01%	<0.01%
R19	0.1	0.1%	3.3	3%	0.2	0%	3	3%	1%	<0.01%
R20	0.1	0.1%	3.3	3%	0.1	0%	3	3%	1%	<0.01%
R21	0.1	0.1%	3.3	3%	0.1	0%	3	3%	<0.01%	<0.01%
R22	0.1	0.1%	3.2	3%	0.1	0%	3	3%	<0.01%	<0.01%
R23	0.1	0.1%	3.2	3%	0.1	0%	3	3%	1%	<0.01%
R24	0.1	0.1%	3.2	3%	0.1	0%	3	3%	<0.01%	<0.01%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 100 µg/m³
[2] Average Background Concentration = 3.11 µg/m³

1-Hour Sulphur Dioxide Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 3				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
Max GLC	75	75%	77	77%	75	75%	77	77%	<0.01%	<0.01%
R1	8	8%	10	10%	8	8%	10	10%	<0.01%	<0.01%
R2	10	10%	12	12%	10	10%	12	12%	<0.01%	<0.01%
R3	12	12%	14	14%	12	12%	14	14%	<0.01%	<0.01%
R4	11	11%	13	13%	11	11%	13	13%	<0.01%	<0.01%
R5	9	9%	12	12%	9	9%	12	12%	<0.01%	<0.01%
R6	14	14%	16	16%	14	14%	16	16%	<0.01%	<0.01%
R7	21	21%	24	24%	21	21%	24	24%	<0.01%	<0.01%
R8	10	10%	12	12%	10	10%	12	12%	<0.01%	<0.01%
R9	26	26%	28	28%	26	26%	28	28%	<0.01%	<0.01%
R10	19	19%	22	22%	19	19%	22	22%	<0.01%	<0.01%
R11	18	18%	21	21%	18	18%	21	21%	<0.01%	<0.01%
R12	22	22%	25	25%	22	22%	25	25%	<0.01%	<0.01%
R13	20	20%	22	22%	20	20%	22	22%	<0.01%	<0.01%
R14	12	12%	15	15%	12	12%	15	15%	<0.01%	<0.01%
R15	23	23%	25	25%	23	23%	25	25%	<0.01%	<0.01%
R16	9	9%	11	11%	9	9%	11	11%	<0.01%	<0.01%
R17	10	10%	12	12%	10	10%	12	12%	<0.01%	<0.01%
R18	9	9%	11	11%	9	9%	11	11%	<0.01%	<0.01%
R19	8	8%	10	10%	8	8%	10	10%	<0.01%	<0.01%
R20	8	8%	10	10%	8	8%	10	10%	<0.01%	<0.01%
R21	7	7%	10	10%	7	7%	10	10%	<0.01%	<0.01%
R22	7	7%	9	9%	7	7%	9	9%	<0.01%	<0.01%
R23	6	6%	9	9%	6	6%	9	9%	<0.01%	<0.01%
R24	6	6%	8	8%	6	6%	8	8%	<0.01%	<0.01%
STR1	28	28%	31	31%	28	28%	31	31%	<0.01%	<0.01%

Notes:
[1] Criteria = 100 µg/m³
[2] Average Background Concentration = 2.4 µg/m³

Scenario 3 - End of Stage 4 of Preferred Alternative

Table 12J-9: Annual Sulphur Dioxide Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 3				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
Max GLC	2.0	20%	3.4	34%	2.0	20.2%	3.4	34%	<0.01%	<0.01%
R1	0.17	2%	1.6	16%	0.17	2%	1.6	16%	<0.01%	<0.01%
R2	0.22	2%	1.6	16%	0.22	2%	1.6	16%	<0.01%	<0.01%
R3	0.24	2%	1.6	16%	0.23	2%	1.6	16%	<0.01%	<0.01%
R4	0.24	2%	1.6	16%	0.24	2%	1.6	16%	<0.01%	<0.01%
R5	0.21	2%	1.6	16%	0.21	2%	1.6	16%	<0.01%	<0.01%
R6	0.22	2%	1.6	16%	0.22	2%	1.6	16%	<0.01%	<0.01%
R7	0.27	3%	1.7	17%	0.27	3%	1.7	17%	<0.01%	<0.01%
R8	0.22	2%	1.6	16%	0.22	2%	1.6	16%	<0.01%	<0.01%
R9	0.32	3%	1.7	17%	0.32	3%	1.7	17%	<0.01%	<0.01%
R10	0.12	1%	1.5	15%	0.12	1%	1.5	15%	<0.01%	<0.01%
R11	0.17	2%	1.6	16%	0.17	2%	1.6	16%	<0.01%	<0.01%
R12	0.26	3%	1.7	17%	0.26	3%	1.7	17%	<0.01%	<0.01%
R13	0.23	2%	1.6	16%	0.23	2%	1.6	16%	<0.01%	<0.01%
R14	0.19	2%	1.6	16%	0.19	2%	1.6	16%	<0.01%	<0.01%
R15	0.19	2%	1.6	16%	0.19	2%	1.6	16%	<0.01%	<0.01%
R16	0.17	2%	1.6	16%	0.17	2%	1.6	16%	<0.01%	<0.01%
R17	0.21	2%	1.6	16%	0.21	2%	1.6	16%	<0.01%	<0.01%
R18	0.18	2%	1.6	16%	0.18	2%	1.6	16%	<0.01%	<0.01%
R19	0.16	2%	1.6	16%	0.16	2%	1.6	16%	<0.01%	<0.01%
R20	0.15	2%	1.6	16%	0.15	2%	1.6	16%	<0.01%	<0.01%
R21	0.14	1%	1.5	15%	0.14	1%	1.5	15%	<0.01%	<0.01%
R22	0.12	1%	1.5	15%	0.12	1%	1.5	15%	<0.01%	<0.01%
R23	0.12	1%	1.5	15%	0.12	1%	1.5	15%	<0.01%	<0.01%
R24	0.11	1%	1.5	15%	0.11	1%	1.5	15%	<0.01%	<0.01%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 10 µg/m³
[2] Average Background Concentration = 1.4 µg/m³

1-Hour Nitrogen Oxides Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 3				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
Max GLC	184	46%	205	51%	179	45%	200	50%	-3%	-2%
R1	46	12%	67	17%	46	11%	67	17%	-2%	-1%
R2	85	21%	106	27%	42	11%	63	16%	-50%	-40%
R3	51	13%	72	18%	26	6%	47	12%	-50%	-35%
R4	95	24%	116	29%	50	13%	71	18%	-47%	-39%
R5	55	14%	76	19%	33	8%	54	13%	-40%	-29%
R6	40	10%	61	15%	24	6%	45	11%	-40%	-26%
R7	77	19%	98	25%	72	18%	93	23%	-6%	-5%
R8	38	9%	59	15%	37	9%	58	15%	-2%	-1%
R9	62	15%	83	21%	60	15%	81	20%	-3%	-2%
R10	18	5%	39	10%	17	4%	38	10%	-6%	-3%
R11	22	6%	43	11%	22	5%	43	11%	-1%	<0.01%
R12	26	6%	47	12%	26	7%	47	12%	<0.01%	<0.01%
R13	27	7%	48	12%	27	7%	48	12%	<0.01%	<0.01%
R14	24	6%	45	11%	23	6%	44	11%	-2%	<0.01%
R15	34	8%	55	14%	28	7%	49	12%	-19%	-12%
R16	41	10%	62	16%	41	10%	62	15%	-1%	<0.01%
R17	58	14%	79	20%	57	14%	78	19%	-2%	-1%
R18	49	12%	70	17%	48	12%	69	17%	-1%	-1%
R19	45	11%	66	16%	44	11%	65	16%	-2%	-1%
R20	40	10%	61	15%	40	10%	61	15%	-2%	-1%
R21	33	8%	54	13%	32	8%	53	13%	-2%	<0.01%
R22	31	8%	52	13%	31	8%	52	13%	<0.01%	<0.01%
R23	30	7%	51	13%	29	7%	50	13%	<0.01%	<0.01%
R24	26	7%	47	12%	26	7%	47	12%	<0.01%	<0.01%
STR1	54	13%	75	19%	47	12%	68	17%	-12%	-9%

Notes:
[1] Criteria = 400 µg/m³
[2] Average Background Concentration = 21.0 µg/m³

Scenario 3 - End of Stage 4 of Preferred Alternative

24-Hour Nitrogen Oxides Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 3				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
Max GLC	31	16%	50	25%	31	16%	50	25%	<0.01%	<0.01%
R1	3	1%	22	11%	3	1%	22	11%	-2%	<0.01%
R2	5	2%	24	12%	3	1%	22	11%	-37%	-7%
R3	5	2%	24	12%	3	2%	22	11%	-38%	-8%
R4	6	3%	25	13%	4	2%	23	11%	-41%	-10%
R5	3	1%	22	11%	2	1%	21	11%	-24%	-3%
R6	4	2%	23	12%	2	1%	22	11%	-37%	-6%
R7	7	4%	26	13%	8	4%	27	13%	2%	<0.01%
R8	3	1%	22	11%	3	1%	22	11%	-2%	<0.01%
R9	6	3%	25	12%	6	3%	25	12%	-1%	<0.01%
R10	2	1%	21	11%	2	1%	21	10%	-5%	<0.01%
R11	2	1%	21	11%	2	1%	21	11%	<0.01%	<0.01%
R12	3	2%	23	11%	3	2%	22	11%	<0.01%	<0.01%
R13	3	1%	22	11%	3	1%	22	11%	<0.01%	<0.01%
R14	3	2%	22	11%	3	2%	22	11%	<0.01%	<0.01%
R15	3	1%	22	11%	3	1%	22	11%	<0.01%	<0.01%
R16	2	1%	22	11%	2	1%	21	11%	-6%	<0.01%
R17	3	2%	22	11%	3	1%	22	11%	-1%	<0.01%
R18	3	1%	22	11%	2	1%	22	11%	-11%	-1%
R19	2	1%	22	11%	2	1%	21	11%	-2%	<0.01%
R20	2	1%	21	11%	2	1%	21	11%	-2%	<0.01%
R21	2	1%	21	11%	2	1%	21	11%	-1%	<0.01%
R22	2	1%	21	11%	2	1%	21	11%	<0.01%	<0.01%
R23	2	1%	21	10%	2	1%	21	10%	4%	<0.01%
R24	2	1%	21	10%	2	1%	21	10%	5%	<0.01%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 200 µg/m³
[2] Average Background Concentration = 19.1 µg/m³

24-Hour Dioxins and Furans Predicted Concentrations

Receptor ID	Existing Conditions				Preferred Alternative - Scenario 3				Percentage Change from Existing Conditions to Preferred Alternative	
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Percentage Change Without Background (%)	Percentage Change With Background (%)
Max GLC	0.001	0.99%	0.02	21%	0.001	0.99%	0.02	21%	<0.01%	<0.01%
R1	0.00004	0.04%	0.02	20%	0.00004	0.04%	0.02	20%	<0.01%	<0.01%
R2	0.00007	0.07%	0.02	20%	0.00007	0.07%	0.02	20%	<0.01%	<0.01%
R3	0.00008	0.08%	0.02	20%	0.00008	0.08%	0.02	20%	<0.01%	<0.01%
R4	0.00007	0.07%	0.02	20%	0.00007	0.07%	0.02	20%	<0.01%	<0.01%
R5	0.00007	0.07%	0.02	20%	0.00007	0.07%	0.02	20%	<0.01%	<0.01%
R6	0.00008	0.08%	0.02	20%	0.00008	0.08%	0.02	20%	<0.01%	<0.01%
R7	0.00008	0.08%	0.02	20%	0.00008	0.08%	0.02	20%	<0.01%	<0.01%
R8	0.00005	0.05%	0.02	20%	0.00005	0.05%	0.02	20%	<0.01%	<0.01%
R9	0.00011	0.11%	0.02	20%	0.00011	0.11%	0.02	20%	<0.01%	<0.01%
R10	0.00004	0.04%	0.02	20%	0.00004	0.04%	0.02	20%	<0.01%	<0.01%
R11	0.00007	0.07%	0.02	20%	0.00007	0.07%	0.02	20%	<0.01%	<0.01%
R12	0.00011	0.11%	0.02	20%	0.00011	0.11%	0.02	20%	<0.01%	<0.01%
R13	0.00009	0.09%	0.02	20%	0.00009	0.09%	0.02	20%	<0.01%	<0.01%
R14	0.00007	0.07%	0.02	20%	0.00007	0.07%	0.02	20%	<0.01%	<0.01%
R15	0.00009	0.09%	0.02	20%	0.00009	0.09%	0.02	20%	<0.01%	<0.01%
R16	0.00005	0.05%	0.02	20%	0.00005	0.05%	0.02	20%	<0.01%	<0.01%
R17	0.00005	0.05%	0.02	20%	0.00005	0.05%	0.02	20%	<0.01%	<0.01%
R18	0.00005	0.05%	0.02	20%	0.00005	0.05%	0.02	20%	<0.01%	<0.01%
R19	0.00004	0.04%	0.02	20%	0.00004	0.04%	0.02	20%	<0.01%	<0.01%
R20	0.00004	0.04%	0.02	20%	0.00004	0.04%	0.02	20%	<0.01%	<0.01%
R21	0.00004	0.04%	0.02	20%	0.00004	0.04%	0.02	20%	<0.01%	<0.01%
R22	0.00004	0.04%	0.02	20%	0.00004	0.04%	0.02	20%	<0.01%	<0.01%
R23	0.00003	0.03%	0.02	20%	0.00003	0.03%	0.02	20%	<0.01%	<0.01%
R24	0.00003	0.03%	0.02	20%	0.00003	0.03%	0.02	20%	<0.01%	<0.01%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 0.1 pg TEQ/m³
[2] Average Background Concentration = 0.02 pg TEQ/m³

5O

All Scenarios – Predicted Concentrations and Frequency Analysis, Odour

Appendix 5O: Odour Concentrations and Frequency Analysis - Preferred Alternative #2, Scenario 1 - End of Stage 1 - Landfill Only

Receptor ID	X (m)	Y (m)		Events > 1 OU		Events > 3 OU		Events > 5 OU	
				2011-2015		2011-2015		2011-2015	
			2011-2015	Count	Frequency of Exceedance	Count	Frequency of Exceedance	Count	Frequency of Exceedance
R1	428327.31	4759332.56	3.7	423	1.0%	6	0.01%	0	0.0%
R2	429414.24	4759098.79	3.3	469	1.1%	40	0.1%	0	0.0%
R3	429921.47	4758863.88	2.2	427	1.0%	0	0.0%	0	0.0%
R4	429363.12	4759026.83	3.5	607	1.4%	51	0.1%	0	0.0%
R5	429934.00	4759042.69	2.4	325	0.8%	0	0.0%	0	0.0%
R6	430005.36	4758899.97	2.2	307	0.7%	0	0.0%	0	0.0%
R7	428174.25	4758397.58	2.2	1259	2.9%	0	0.0%	0	0.0%
R8	427821.35	4758837.66	2.7	529	1.2%	0	0.0%	0	0.0%
R9	428196.76	4757770.76	2.6	877	2.1%	0	0.0%	0	0.0%
R10	428463.76	4756292.64	2.5	149	0.3%	0	0.0%	0	0.0%
R11	428874.32	4756180.28	2.4	141	0.3%	0	0.0%	0	0.0%
R12	429315.18	4756206.39	2.6	220	0.5%	0	0.0%	0	0.0%
R13	429640.43	4756197.51	2.5	155	0.4%	0	0.0%	0	0.0%
R14	430163.71	4756347.16	2.2	137	0.3%	0	0.0%	0	0.0%
R15	428283.03	4756641.42	2.5	215	0.5%	0	0.0%	0	0.0%
R16	427797.18	4759046.66	2.7	424	1.0%	0	0.0%	0	0.0%
R17	428304.63	4759209.20	4.0	467	1.1%	11	0.03%	0	0.0%
R18	428205.52	4759268.66	3.8	411	1.0%	2	0.005%	0	0.0%
R19	428304.63	4759399.49	3.5	379	0.9%	4	0.009%	0	0.0%
R20	428312.56	4759462.92	3.8	354	0.8%	1	0.002%	0	0.0%
R21	428336.34	4759518.42	3.4	333	0.8%	1	0.002%	0	0.0%
R22	428364.09	4759661.14	2.8	276	0.6%	0	0.0%	0	0.0%
R23	428368.06	4759744.39	2.8	252	0.6%	0	0.0%	0	0.0%
R24	428415.63	4759906.93	2.6	201	0.5%	0	0.0%	0	0.0%
STR1 - Daytime	428319.45	4757589.64	2.9	66	0.2%	0	0.0%	0	0.0%

Notes:

[1] Working face, leachate manholes, etc. use measured odour emissions from June 2023 testing.

Appendix 5O: Odour Concentrations and Frequency Analysis - Preferred Alternative #2, Scenario 2 - End of Stage 2 - Landfill Only

Receptor ID	X (m)	Y (m)		Events > 1 OU		Events > 3 OU		Events > 5 OU	
				2011-2015		2011-2015		2011-2015	
			2011-2015	Count	Frequency of Exceedance	Count	Frequency of Exceedance	Count	Frequency of Exceedance
R1	428327.31	4759332.56	2.2	244	0.6%	0	0.0%	0	0.0%
R2	429414.24	4759098.79	4.2	323	0.8%	1	0.002%	0	0.0%
R3	429921.47	4758863.88	2.0	260	0.6%	0	0.0%	0	0.0%
R4	429363.12	4759026.83	4.4	402	0.9%	4	0.01%	0	0.0%
R5	429934.00	4759042.69	2.6	217	0.5%	0	0.0%	0	0.0%
R6	430005.36	4758899.97	1.9	200	0.5%	0	0.0%	0	0.0%
R7	428174.25	4758397.58	2.0	704	1.6%	0	0.0%	0	0.0%
R8	427821.35	4758837.66	1.5	340	0.8%	0	0.0%	0	0.0%
R9	428196.76	4757770.76	2.3	516	1.2%	0	0.0%	0	0.0%
R10	428463.76	4756292.64	1.9	123	0.3%	0	0.0%	0	0.0%
R11	428874.32	4756180.28	1.8	78	0.2%	0	0.0%	0	0.0%
R12	429315.18	4756206.39	2.0	147	0.3%	0	0.0%	0	0.0%
R13	429640.43	4756197.51	1.9	105	0.2%	0	0.0%	0	0.0%
R14	430163.71	4756347.16	1.6	83	0.2%	0	0.0%	0	0.0%
R15	428283.03	4756641.42	1.9	137	0.3%	0	0.0%	0	0.0%
R16	427797.18	4759046.66	1.4	255	0.6%	0	0.0%	0	0.0%
R17	428304.63	4759209.20	2.2	297	0.7%	0	0.0%	0	0.0%
R18	428205.52	4759268.66	2.0	265	0.6%	0	0.0%	0	0.0%
R19	428304.63	4759399.49	2.2	214	0.5%	0	0.0%	0	0.0%
R20	428312.56	4759462.92	2.1	198	0.5%	0	0.0%	0	0.0%
R21	428336.34	4759518.42	2.1	201	0.5%	0	0.0%	0	0.0%
R22	428364.09	4759661.14	2.1	160	0.4%	0	0.0%	0	0.0%
R23	428368.06	4759744.39	2.0	131	0.3%	0	0.0%	0	0.0%
R24	428415.63	4759906.93	2.0	120	0.3%	0	0.0%	0	0.0%
STR1 - Daytime	428319.45	4757589.64	2.5	32	0.1%	0	0.0%	0	0.0%

Notes:

[1] Final Cover Area from existing (closed) landfill uses weighted average odour emissions - based on June 2023 testing for the hotspot area and October 2023 testing for the remainder of the closed landfill area. A weighted average emission rate was developed based on the conservative assumption that 1% if the cover area is a hotspot and the portion of the existing landfill under final cover.

[2] Final Cover Areas on the landfill expansion use measured odour emissions from October 2023 testing only.

[3] Interim Cover Area uses average of measured odour emissions from June 2023 and October 2023 testing.

[4] Working face, leachate manholes, etc. use measured odour emissions from June 2023 testing.

Appendix 5O: Odour Concentrations and Frequency Analysis - Preferred Alternative #2, Scenario 3 - End of Stage 4 - Landfill Only

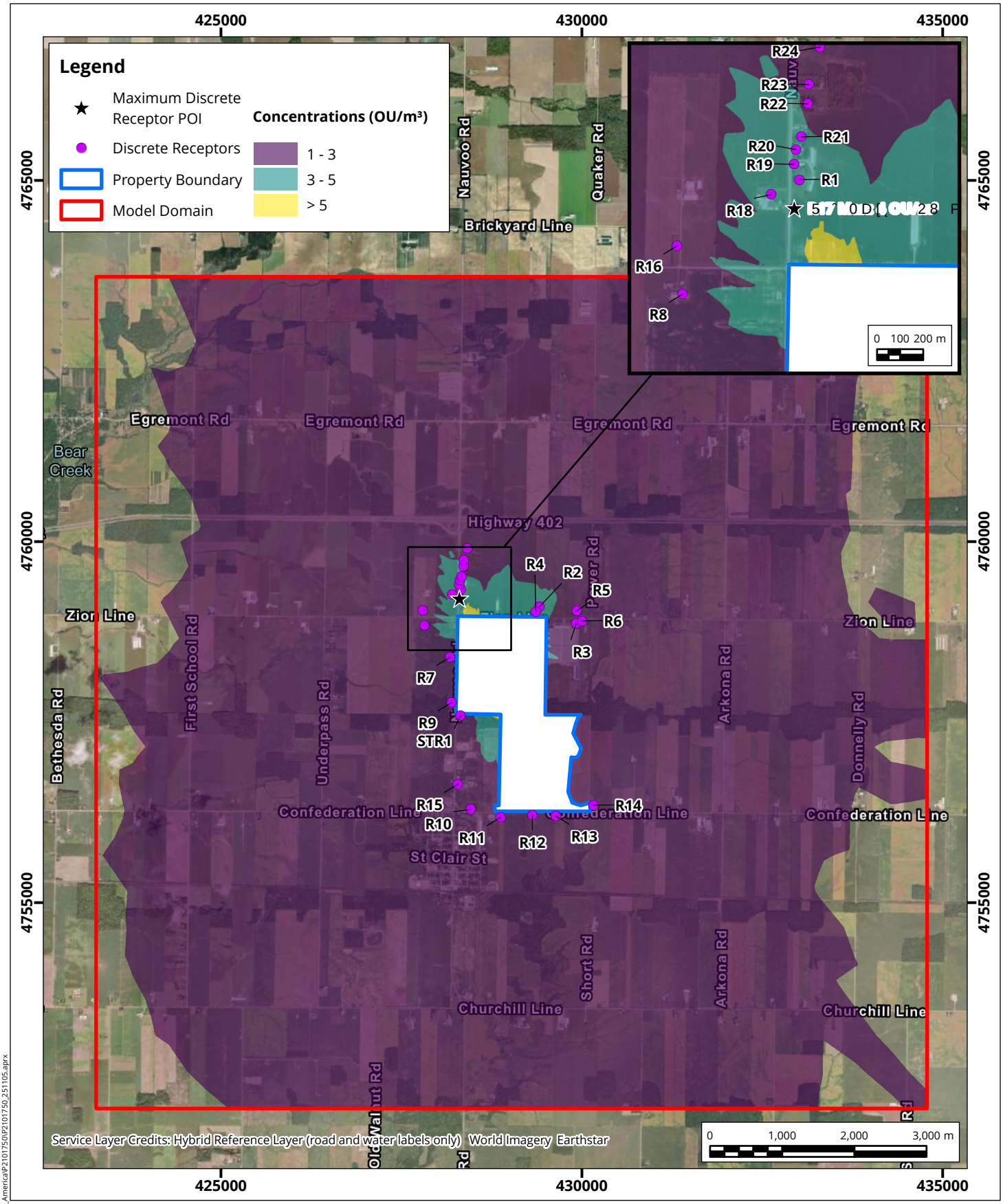
Receptor ID	X (m)	Y (m)	Maximum Concentration (OU/m^3)	Events > 1 OU		Events > 3 OU		Events > 5 OU	
				Count (over 5 years)	Frequency of Exceedance	Count (over 5 years)	Frequency of Exceedance	Count (over 5 years)	Frequency of Exceedance
R1	428327.31	4759332.56	1.5	83	0.2%	0	0.0%	0	0.0%
R2	429414.24	4759098.79	2.9	153	0.4%	0	0.0%	0	0.0%
R3	429921.47	4758863.88	1.8	83	0.2%	0	0.0%	0	0.0%
R4	429363.12	4759026.83	3.0	192	0.4%	1	0.002%	0	0.0%
R5	429934.00	4759042.69	1.7	87	0.2%	0	0.0%	0	0.0%
R6	430005.36	4758899.97	1.8	71	0.2%	0	0.0%	0	0.0%
R7	428174.25	4758397.58	1.7	163	0.4%	0	0.0%	0	0.0%
R8	427821.35	4758837.66	1.3	20	0.0%	0	0.0%	0	0.0%
R9	428196.76	4757770.76	1.8	153	0.4%	0	0.0%	0	0.0%
R10	428463.76	4756292.64	1.6	59	0.1%	0	0.0%	0	0.0%
R11	428874.32	4756180.28	1.5	12	0.03%	0	0.0%	0	0.0%
R12	429315.18	4756206.39	1.6	77	0.2%	0	0.0%	0	0.0%
R13	429640.43	4756197.51	1.4	50	0.1%	0	0.0%	0	0.0%
R14	430163.71	4756347.16	1.2	19	0.04%	0	0.0%	0	0.0%
R15	428283.03	4756641.42	1.5	74	0.2%	0	0.0%	0	0.0%
R16	427797.18	4759046.66	1.2	11	0.03%	0	0.0%	0	0.0%
R17	428304.63	4759209.20	1.4	103	0.2%	0	0.0%	0	0.0%
R18	428205.52	4759268.66	1.3	100	0.2%	0	0.0%	0	0.0%
R19	428304.63	4759399.49	1.4	72	0.2%	0	0.0%	0	0.0%
R20	428312.56	4759462.92	1.4	69	0.2%	0	0.0%	0	0.0%
R21	428336.34	4759518.42	1.4	69	0.2%	0	0.0%	0	0.0%
R22	428364.09	4759661.14	1.5	56	0.1%	0	0.0%	0	0.0%
R23	428368.06	4759744.39	1.4	57	0.1%	0	0.0%	0	0.0%
R24	428415.63	4759906.93	1.4	56	0.1%	0	0.0%	0	0.0%
STR1 - Daytime Only	428319.45	4757589.64	1.9	15	0.04%	0	0.0%	0.00	0.0%

Final Cover Area from existing (closed) landfill uses weighted average odour emissions - based on June 2023 testing for the hotspot area and October 2023 testing for the remainder of the closed landfill area. A weighted average emission rate was developed based on the conservative assumption that 1% if the cover area is a hotspot and the portion of the existing landfill under final cover.

Emissions for the final cover areas on the expansion landfill were based on interim cover samples taken in October of 2023. Interim cover conditions achieve a collection efficiency of 75%, interim cover flux rates were scaled to consider 90% on final cover areas.
Interim Cover Area uses average of measured odour emissions from June 2023 and October 2023 testing.
Working face, leachate manholes, etc. use measured odour emissions from June 2023 testing.

5P

All Scenarios – Concentration Isopleths, Odour



Predicted 10-Minute Odour Concentration (in OU/m³)

Scenario 1: 2034

Map Projection: NAD 1983 UTM Zone 17N

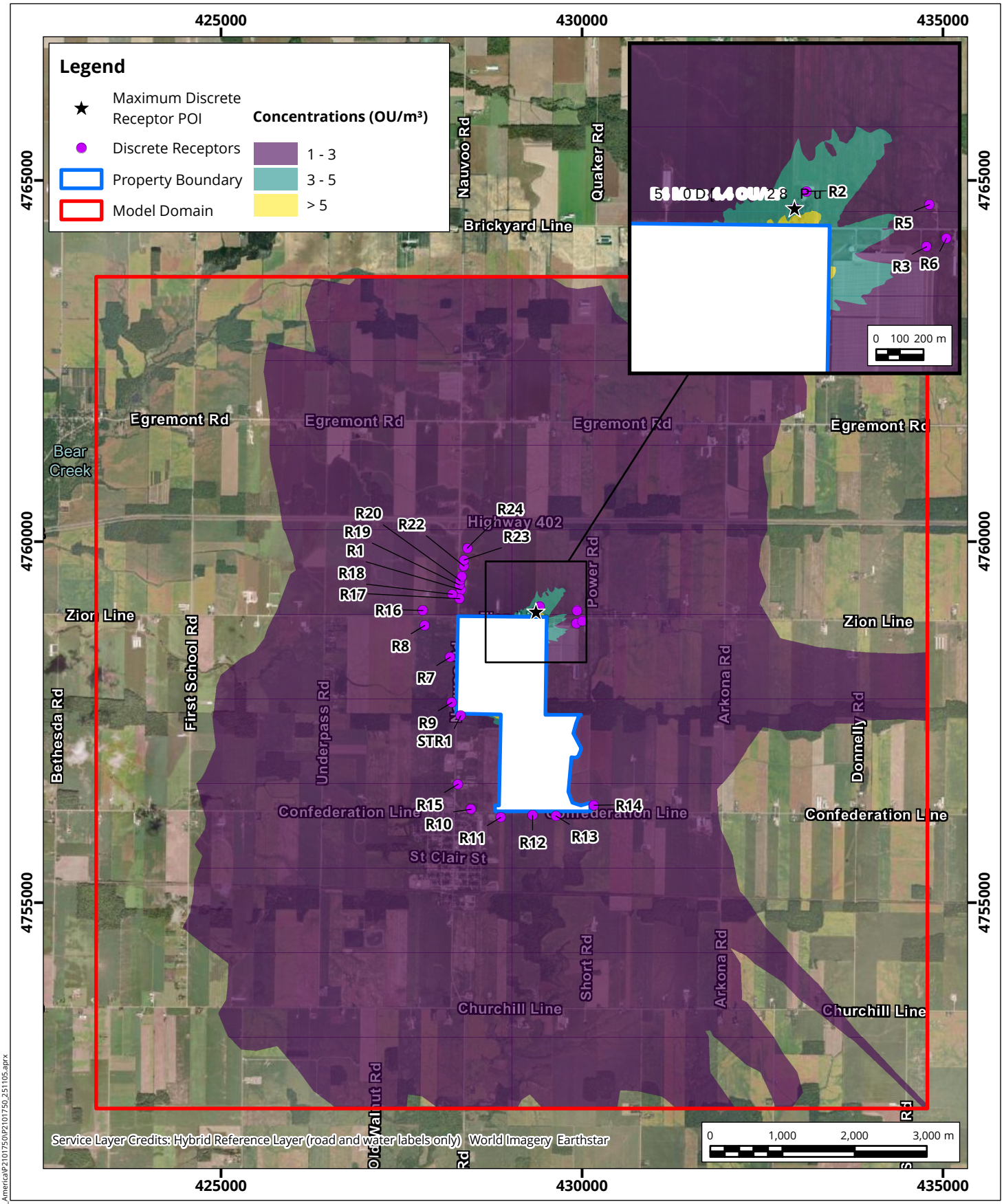
Twin Creeks Environmental Centre - Watford, Ontario

True North

Project #: 2101750

Drawn by: PIP	Figure: 5P-1
Approx. Scale:	1:72,000
Date Revised: Nov 12, 2025	

Map Document: C:\WorkingFolder\Jobs_America\P2101750\P2101750_251105.aprx



Predicted 10-Minute Odour Concentration (in OU/m³)

Scenario 2: 2037

Map Projection: NAD 1983 UTM Zone 17N

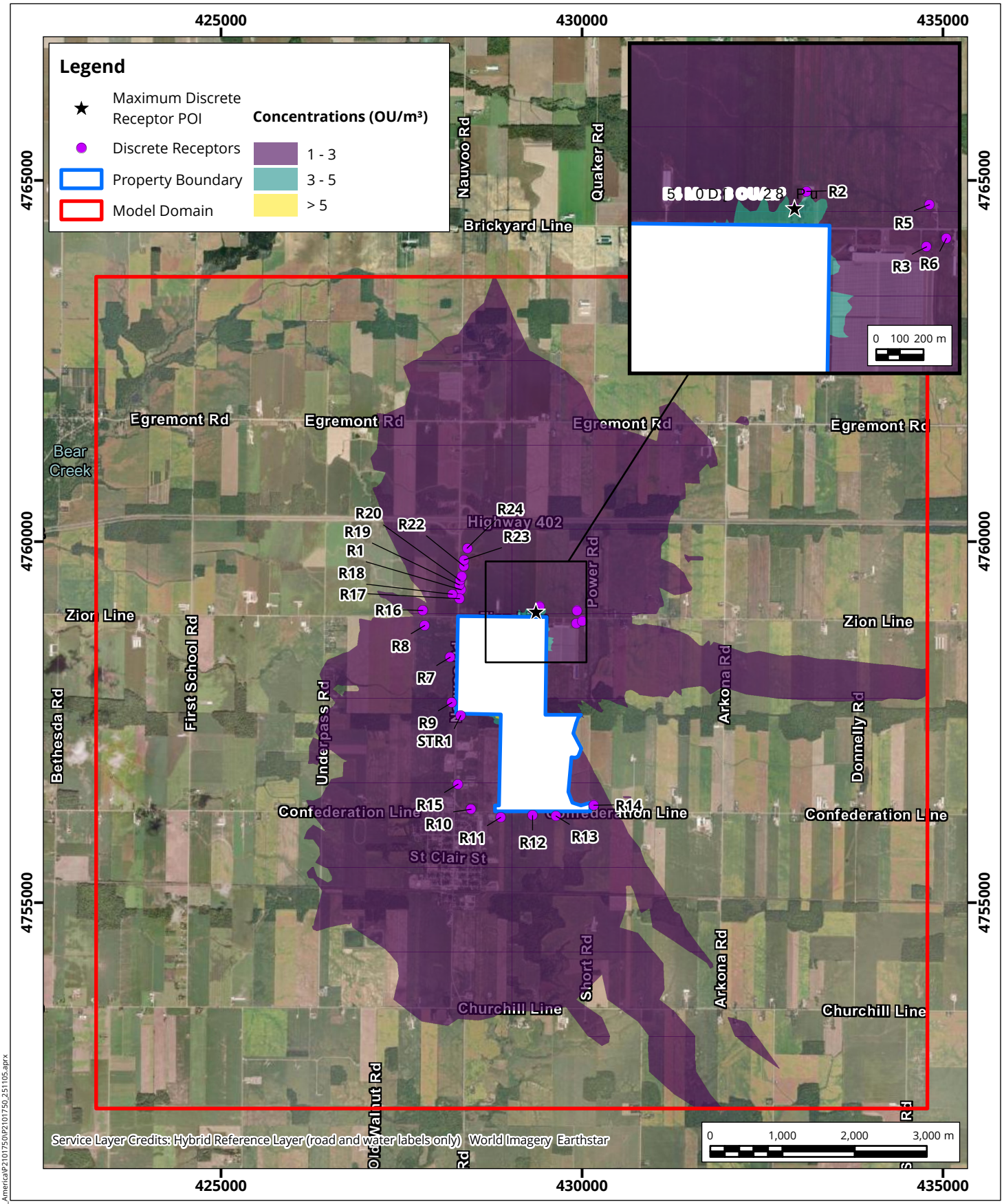
Twin Creeks Environmental Centre - Watford, Ontario

Project #: 2101750

True North

Drawn by: PIP	Figure: 5P-2
Approx. Scale:	1:72,000
Date Revised: Nov 12, 2025	

Map Document: C:\WorkingFolder\Jobs_America\P2101750\P2101750_251105.aprx



Predicted 10-Minute Odour Concentration (in OU/m³)

Scenario 3: 2042

Map Projection: NAD 1983 UTM Zone 17N

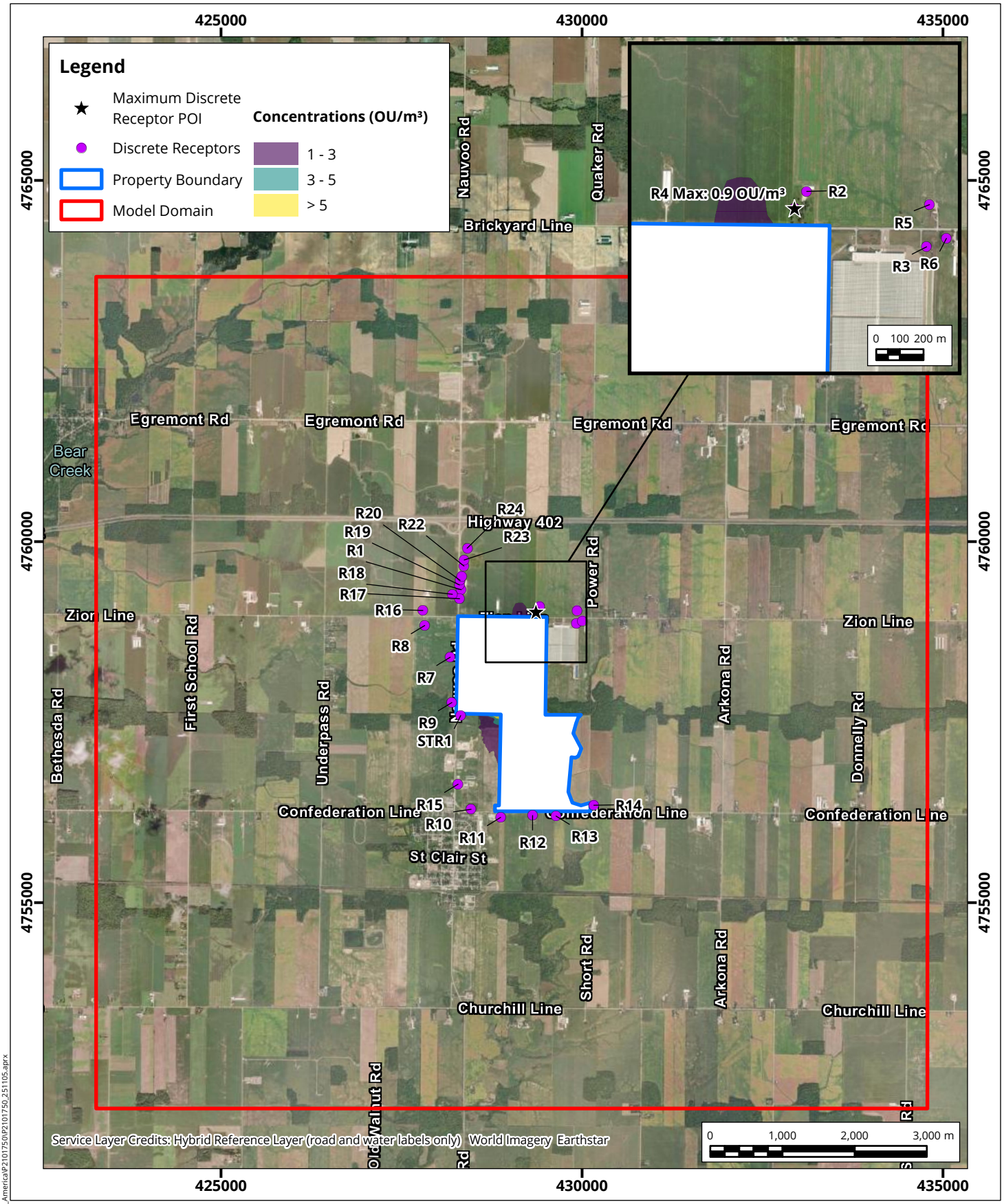
Twin Creeks Environmental Centre - Watford, Ontario

Project #: 2101750

True North

Drawn by: PIP	Figure: 5P-3
Approx. Scale:	1:72,000
Date Revised: Nov 12, 2025	

Map Document: C:\WorkingFolder\Jobs_America\P2101750\P2101750_251105.aprx



Predicted 10-Minute Odour Concentration (in OU/m³)

Scenario 4: No-Build

Map Projection: NAD 1983 UTM Zone 17N

Twin Creeks Environmental Centre - Watford, Ontario

Project #: 2101750

True North

Drawn by: PIP	Figure: FP-4
Approx. Scale:	1:72,000
Date Revised: Nov 12, 2025	

Map Document: C:\WorkingFolder\Jobs_America\P2101750\P2101750_251105.aprx

Comparison of Worse-case Odour Impacts, All Scenarios vs Future Baseline

5Q

Comparison of Worse-case Odour Impacts, All Scenarios vs Future Baseline

Appendix 5Q: Comparison of Worse-case Odour Impacts Compared to Future Baseline

Summary of Odour Dispersion Modelling Results - Existing Conditions

Contaminant	Existing Conditions				
	Maximum Concentration at a Receptor (OU/m^3)	Receptor Location for Maximum Concentration	Number of Receptors Potentially Affected	Maximum Frequency of Exceedance of Criteria at a Receptor	Receptor Location for Maximum Frequency of Exceedance
Odour	3.5	R4	6	1.0%	R4

Summary of Odour Dispersion Modelling Results - Preferred Alternative Scenario 1

Contaminant	Preferred Alternative - Scenario 1				
	Maximum Concentration at a Receptor (OU/m^3)	Receptor Location for Maximum Concentration	Number of Receptors Potentially Affected	Maximum Frequency of Exceedance of Criteria at a Receptor	Receptor Location for Maximum Frequency of Exceedance
Odour	4.0	R17	19	2.9%	R7

Summary of Odour Dispersion Modelling Results - Preferred Alternative Scenario 2

Contaminant	Preferred Alternative - Scenario 2				
	Maximum Concentration at a Receptor (OU/m^3)	Receptor Location for Maximum Concentration	Number of Receptors Potentially Affected	Maximum Frequency of Exceedance of Criteria at a Receptor	Receptor Location for Maximum Frequency of Exceedance
Odour	4.4	R4	12	1.6%	R7

Summary of Odour Dispersion Modelling Results - Preferred Alternative Scenario 3

Contaminant	Preferred Alternative - Scenario 3				
	Maximum Concentration at a Receptor (OU/m^3)	Receptor Location for Maximum Concentration	Number of Receptors Potentially Affected	Maximum Frequency of Exceedance of Criteria at a Receptor	Receptor Location for Maximum Frequency of Exceedance
Odour	3.0	R4	0	0.4%	R4

5Q

Comparison of Worse-case Odour Impacts, All Scenarios vs Future Baseline

Appendix 5Q: Comparison of Worse-case Odour Impacts Compared to Future Baseline

Summary of Odour Dispersion Modelling Results - Existing Conditions

Contaminant	Existing Conditions				
	Maximum Concentration at a Receptor (OU/m^3)	Receptor Location for Maximum Concentration	Number of Receptors Potentially Affected	Maximum Frequency of Exceedance of Criteria at a Receptor	Receptor Location for Maximum Frequency of Exceedance
Odour	3.5	R4	6	1.0%	R4

Summary of Odour Dispersion Modelling Results - Preferred Alternative Scenario 1

Contaminant	Preferred Alternative - Scenario 1				
	Maximum Concentration at a Receptor (OU/m^3)	Receptor Location for Maximum Concentration	Number of Receptors Potentially Affected	Maximum Frequency of Exceedance of Criteria at a Receptor	Receptor Location for Maximum Frequency of Exceedance
Odour	4.0	R17	19	2.9%	R7

Summary of Odour Dispersion Modelling Results - Preferred Alternative Scenario 2

Contaminant	Preferred Alternative - Scenario 2				
	Maximum Concentration at a Receptor (OU/m^3)	Receptor Location for Maximum Concentration	Number of Receptors Potentially Affected	Maximum Frequency of Exceedance of Criteria at a Receptor	Receptor Location for Maximum Frequency of Exceedance
Odour	4.4	R4	12	1.6%	R7

Summary of Odour Dispersion Modelling Results - Preferred Alternative Scenario 3

Contaminant	Preferred Alternative - Scenario 3				
	Maximum Concentration at a Receptor (OU/m^3)	Receptor Location for Maximum Concentration	Number of Receptors Potentially Affected	Maximum Frequency of Exceedance of Criteria at a Receptor	Receptor Location for Maximum Frequency of Exceedance
Odour	3.0	R4	0	0.4%	R4

5R

Scenario 3 – Emissions Calculations, Greenhouse Gas

Old Landfill, Expansion Landfill, and Vertical Expansion Landfill (Year 2042), Greenhouse, RNG Production, and Flaring

Year	Waste Acceptance Years (Inclusive)	Scenario	LANDGEM Emission Rate Landfill Gas (scf/min)	LANDGEM Emission Rate Carbon Dioxide (tonnes/yr)	Landfill Gas Collection Coverage (%)	Landfill Gas Collection Efficiency (%) [1]	Carbon Dioxide Collected (tonnes/year)	Carbon Dioxide to RNG (tonnes/year) [5]	Carbon Dioxide to Flare (tonnes/year)	Methane to Flare (tonnes/year)	Flare Destruction Efficiency (%) [2]	Flare Emission Rate (tonnes/yr) [4]	Fugitive Carbon Dioxide Emission Rate (tonnes/yr)	Fugitive Methane Emission Rate (tonnes/yr)	Oxidation of Methane in Landfill Cover (%) [3]	Mound Emission Rate Carbon Dioxide (Controlled) (tonnes/yr)	Total Annual Carbon Dioxide Emissions (tonnes/yr)
2042	1972-2004	Old Landfill	1.22E+02	1.60E+03	100%	70%	1.12E+03	3.44E+02	6.90E+02	2.73E+02	99.7%	1.44E+03	4.80E+02	1.90E+02	10%	5.32E+02	2.31E+03
2042	2005-2019	Expansion Landfill Phases 1 to 3	1.83E+03	2.40E+04	100%	86%	2.07E+04	6.34E+03	1.27E+04	5.03E+03	99.7%	2.65E+04	3.29E+03	1.30E+03	10%	3.65E+03	3.65E+04
2042	2020-2024	Expansion Landfill Phases 4 to 5	2.06E+03	2.69E+04	100%	85%	2.28E+04	7.01E+03	1.41E+04	5.55E+03	99.7%	2.93E+04	4.11E+03	1.62E+03	10%	4.55E+03	4.08E+04
2042	2025-2028 [6]	Expansion Landfill Phases 6 to 7	2.00E+03	2.62E+04	100%	83%	2.18E+04	6.69E+03	1.34E+04	5.30E+03	99.7%	2.80E+04	4.39E+03	1.73E+03	10%	4.86E+03	3.95E+04
2042	n/a [6]	Expansion Landfill Phases 8 to 9	0.00E+00	0.00E+00	100%	0%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	99.7%	0.00E+00	0.00E+00	0.00E+00	10%	0.00E+00	0.00E+00
2042	2028-2034	Vertical Expansion Stage 1	2.45E+03	3.20E+04	100%	90%	2.88E+04	8.85E+03	1.77E+04	7.01E+03	99.7%	3.70E+04	3.20E+03	1.26E+03	10%	3.55E+03	4.94E+04
2042	2028-2037	Vertical Expansion Stage 2	3.17E+03	4.14E+04	100%	83%	3.42E+04	1.05E+04	2.11E+04	8.32E+03	99.7%	4.39E+04	7.22E+03	2.85E+03	10%	8.00E+03	6.24E+04
2042	2037-2039	Vertical Expansion Stage 3	1.68E+03	2.20E+04	100%	90%	1.98E+04	6.09E+03	1.22E+04	4.82E+03	99.7%	2.54E+04	2.20E+03	8.70E+02	10%	2.44E+03	3.40E+04
2042	2039-2042	Vertical Expansion Stage 4	2.15E+03	2.81E+04	100%	75%	2.11E+04	6.48E+03	1.30E+04	5.13E+03	99.7%	2.71E+04	7.04E+03	2.78E+03	10%	7.80E+03	4.14E+04
2042	2005-2042	Total	1.55E+04	2.02E+05			1.70E+05	5.23E+04	1.05E+05	4.14E+04		2.19E+05	3.19E+04	1.26E+04		3.54E+04	3.06E+05

Notes:
[1] Government of Canada. (2024). Canada Gazette, Part 1, Volume 158, Number 26: Regulations Respecting the Reduction in the Release of Methane (Waste Sector). https://canadagazette.gc.ca/rp-pr/p1/2024/2024-06-29/html/reg5-eng.html
The proposed regulatory scenario assumed 75% landfill gas collection efficiency at open, regulated landfills and 90% at closed, regulated landfills. It is assumed that landfills that comply with the proposed regulations would achieve these collection efficiencies which are noted in this reference as highest achievable industry standards. Based on expected progression of final cover over completed landfill areas by 2042, an estimate was calculated for landfill gas collection efficiency for each of the filling phases and stages.
[2] Environment and Climate Change Canada, National Inventory Report 2022 Part 2, Section A3.6.1.2.1 suggests efficiency of combustion by flaring at 99.7%.
[3] Environment and Climate Change Canada. (2022). National Inventory Report 1990-2022: Greenhouse Gas Sources and Sinks in Canada, Part 2. Section A3.6.1.2.1
[4] Flare emissions estimation includes carbon dioxide resulting from the combustion of methane as described in Equation 6, AP-42 Section 2.4 Municipal Solid Waste Landfills
[5] Assumed 100% loss of carbon dioxide in the landfill gas transferred to RNG during RNG processing.
[6] The planned start of filling for the Vertical Expansion is 2028 when elevation 265.7 masl is reached. The side slopes would be filled/increased first so that final cover can then be applied on the completed side slopes. Waste quantities for 2028 to 2031 that had been assigned to Expansion Landfill Phases 6 through 9 in the Existing Conditions assessment have been reassigned to Vertical Expansion Stage 1 and Stage 2.

Sample Calculations, Year 2042

Carbon Dioxide Collected (Old Landfill) = (LANDGEM Emission Rate CO_2) * (Landfill Gas Collection Coverage) * (Landfill Gas Collection Efficiency)
= 1600.4 * 1.00 * 0.70
= 1.12E+03 tonnes/year

Carbon Dioxide to RNG (Old Landfill) = ((CO_2 Collected) - (CO_2 Transferred as Biogas to Greenhouse)) * (Percentage RNG Plant LFG Flowrate / LFG Collected) * (Percentage On-spec RNG Delivery)
= (1120.3 - 1120.3 * 0.077) * 0.665 * 0.500
= 3.44E+02 tonnes/year

Carbon Dioxide to Flare (Old Landfill) = (CO_2 Collected) - (CO_2 Transferred as Biogas to Greenhouse) - (CO_2 Transferred to RNG)
= 1120.3 - 1120.3 * 0.077 - 344
= 6.90E+02 tonnes/year

Flare Emission Rate (Old Landfill) = (CO_2 to Flare) + (Methane to Flare) * (Flare Destruction Efficiency) * (Ratio of Molecular Weight CO_2 : CH_4)
= 690.2 + 273 * 0.997 * 2.75
= 1.44E+03 tonnes/year

Fugitive Carbon Dioxide Emission Rate (Old Landfill) = (LANDGEM Emission Rate CO_2) - (LANDGEM Emission Rate CO2) * (Landfill Gas Collection Coverage) * (Landfill Gas Collection Efficiency)
= 1600.4 - 1600.4 * 1.00 * 0.70
= 4.80E+02 tonnes/year

Calculation of Mound Emission Rate (Controlled) (Old Landfill) = (Fugitive Carbon Dioxide Emission Rate) + (Fugitive Methane Emission Rate) * (Percentage Oxidation of Methane in Landfill Cover) * (Ratio of Molecular Weight CO_2:CH_4)
= 480.1 + 189.6 * 0.10 * 2.75
= 5.32E+02 tonnes/year

Calculation of Total Annual CO2 Emission Rate (Old Landfill) = Mound Emission Rate + Flare Emission Rate + Carbon Dioxide Lost During RNG Processing
= 532.2 + 1437.4 + 344
= 2.31E+03 tonnes/year

Greenhouse Gas Emissions Calculations, Stationary Combustion

RWDI# 2101750

Table 2a. GHG Emissions from the Combustion of Natural Gas for the Amine Reboiler (SourceID AMINE) [1]

Name of GHG	Annual Hours of Operation (hours/yr)	Volume of Natural Gas Combusted [2] (scfm)	Volume of Natural Gas Combusted [2] (Sm^3/yr)	Emission Factor [3]		Emission (tonnes/yr)	Global Warming Potential (GWP) [4]	CO_2e Emission (tonnes/yr)
Carbon Dioxide (CO_2)	8,760	64	952,533	1,067.26	lb/hr	4,241	1	4,240.7
Methane (CH_4)	8,760	64	952,533	0.013	lb/hr	0.05	28	1.4
Nitrous Oxide (N_2O)	8,760	64	952,533	0.033	g/m^3	0.03	265	8.3
							Total Annual GHG Emissions:	**4,251**

Notes:

[1] CO_2 and CH_4 emissions generated by the stationary combustion of natural gas were calculated using emission factors provided by the equipment supplier; an emission factor for N_2O was not provided by the supplier and emissions were calculated using Equation 2-13 under Section 2.B of Canada's Greenhouse Gas Quantification Requirements (GGQR), December 2022.
[2] Annual volume of natural gas combusted assuming continuous operation and inlet natural gas flow of 64 scfm as provided by the equipment supplier.
[3] For CO_2 and CH_4, emission factors provided by equipment supplier. For N_2O, emission factor for "Manufacturing Industries" from Table 2-5 in Canada's GGQR, December 2022.
[4] Schedule 1 of Ontario Regulation 390/18 as amended by Ontario Regulation 563/22, December 13, 2022.

Table 2b. GHG Emissions from the Combustion of Diesel (Stationary Sources, Generators GEN1, GEN2, GEN3, GEN4) [1]

Name of GHG	Fuel Consumption [2] (L/hr)	Annual Hours of Operation (Combined) (hr)	Volume of Diesel Combusted (kL)	Emission Factor [3] (kg/kL)	Emission (tonnes/yr)	Global Warming Potential (GWP) [4]	CO_2e Emission (tonnes/yr)
Carbon Dioxide (CO_2)	85.65	480	41.11	2,681	110	1	110.2
Methane (CH_4)	85.65	480	41.11	0.078	0.00321	28	0.090
Nitrous Oxide (N_2O)	85.65	480	41.11	0.02	0.00082	265	0.218
						Total Annual GHG Emissions:	**110.5**

Notes:

[1] Emergency generators are not in continuous use and typically will not be significant sources of greenhouse gas emissions. Five days of operation, annually, are assumed. CO_2 emissions were calculated using Equation 2-2 under Section 2.A.2 of Canada's GGQR, December 2022; CH_4 and N_2O emissions were calculated using equation 2-13 under Section 2.B of Canada's GGQR, December 2022.
[2] Fuel consumption from specification sheet for GEN4 at 100% load (Cummins QSN14, 487 hp)
[3] From Table 2-2 for CO_2 in Canada's GGQR, December 2022; for CH_4 and N_2O emissions, the emission factors are from Table 2-7 for "Diesel - All industry - stationary combustion" in Canada's GGQR, December 2022.
[4] Schedule 1 of Ontario Regulation 390/18 as amended by Ontario Regulation 563/22, December 13, 2022.

Appendix 5R: Tailpipe Emissions, CO_2

CO_2 Emissions per vehicle pass for variable traffic		(Total CO_2 emissions per roadway, tonnes / hour, for each hour of the day)																							
Tailpipe Emissions Rate (g/s)	Tailpipe Emissions Rate (tonne/h)	Source ID	12 AM	1 AM	2 AM	3 AM	4 AM	5 AM	6 AM	7 AM	8 AM	9 AM	10 AM	11 AM	12 PM	1 PM	2 PM	3 PM	4 PM	5 PM	6 PM	7 PM	8 PM	9 PM	10 PM	11 PM	Daily
0.095877603	0.000345159	PR01	0	0	0	0	0	0	0	0.0310989	0.0229531	0.0208821	0.0258524	0.0254382	0.0286827	0.0205715	0.0185351	0.0091467	0.0061784	0.0061784	0.0061784	0	0	0	0	0	0.2216959
0	0	PR01Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	UR02Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	PR04A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	PR04AZ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0.280970758	0.001011495	BR06	0	0	0	0	0	0	0	0.0911357	0.0672644	0.0611954	0.0643311	0.0631173	0.0726253	0.0488552	0.0428874	0.0149701	0.0062713	0.0062713	0.0062713	0	0	0	0	0	0.5451957
0	0	BR06Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	BR06Y	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	PR08Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	PR08Y	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	UR09AZ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	UR09AY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	UR09BZ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	UR09BY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	UR11Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	UR11Y	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0.26764666	0.000963528	UR12	0	0	0	0	0	0	0	0.0868139	0.0640746	0.0582934	0.0612804	0.0601241	0.0691813	0.0465384	0.0408536	0.0142602	0.0059739	0.0059739	0.0059739	0	0	0	0	0	0.5193416
0	0	UR12Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	UR12Y	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	PR13Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	PR14Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	UR17Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	UR18Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0.31707627	0.001141475	PR04B	0	0	0	0	0	0	0	0.1028469	0.0759081	0.0690592	0.0725978	0.071228	0.0819579	0.0551332	0.0483985	0.0168938	0.0070771	0.0070771	0.0070771	0	0	0	0	0	0.6152548
0	0	PR04BZ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0.195761752	0.000704742	PR04C	0	0	0	0	0	0	0	0.0317134	0.0233974	0.0213537	0.0224108	0.021988	0.0253002	0.0169843	0.0149405	0.0052151	0.0021847	0.0021847	0.0021847	0	0	0	0	0	0.1898576
0	0	PR04CZ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0																										
1.749750904	0.006299103	IDLE01	0	0	0	0	0	0	0	0.0062991	0.0062991	0.0062991	0.0062991	0.0062991	0.0062991	0.0062991	0.0062991	0.0062991	0.0062991	0.0062991	0.0062991	0	0	0	0	0	0.0755892
1.749750904	0.006299103	IDLE02	0	0	0	0	0	0	0	0.0062991	0.0062991	0.0062991	0.0062991	0.0062991	0.0062991	0.0062991	0.0062991	0.0062991	0.0062991	0.0062991	0.0062991	0	0	0	0	0	0.0755892
0	0	DOZE2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	DOZE4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	DOZE2CAP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	DOZE2SS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.06E+00		All "Y" and "Z" Roads and Dozers	0	0	0	0	0	0	1.0624184	1.0624184	1.0624184	1.0624184	1.0624184	1.0624184	1.0624184	1.0624184	1.0624184	1.0624184	1.0624184	1.0624184	1.0624184	1.0624184	0	0	0	0	14.873858
		Total (tonnes/hour)	0	0	0	0	0	0	1.0624184	1.4186253	1.3286143	1.3058006	1.3214891	1.3169123	1.3527641	1.2630993	1.2406317	1.1355026	1.102702	1.102702	1.102702	1.0624184	0	0	0	0	17.116382
#operating days / week	6	Total (tonnes/year)	0	0	0	0	0	0	332.3852	443.82706	415.66646	408.52904	413.43731	412.00542	423.22193	395.16963	388.1405	355.25011	344.98819	344.98819	344.98819	332.3852	0	0	0	0	5354.9824

Appendix 5R: Tailpipe Emissions, CH_4

CH_4 Emissions per vehicle pass for variable traffic

(Total CH_4 emissions per roadway, tonnes / hour, for each hour of the day)

Tailpipe Emissions Rate (g/s)	Tailpipe Emissions Rate (tonne/h)	Source ID	12 AM	1 AM	2 AM	3 AM	4 AM	5 AM	6 AM	7 AM	8 AM	9 AM	10 AM	11 AM	12 PM	1 PM	2 PM	3 PM	4 PM	5 PM	6 PM	7 PM	8 PM	9 PM	10 PM	11 PM	Daily
2.73315E-06	9.83934E-09	PR01	0	0	0	0	0	0	0	8.865E-07	6.543E-07	5.953E-07	7.478E-07	7.36E-07	8.304E-07	5.953E-07	5.362E-07	2.499E-07	1.683E-07	1.683E-07	1.683E-07	0	0	0	0	0	6.337E-06
0	0	PR01Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	UR02Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	PR04A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	PR04AZ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8.00954E-06	2.88343E-08	BR06	0	0	0	0	0	0	0	2.598E-06	1.917E-06	1.744E-06	1.863E-06	1.828E-06	2.102E-06	1.413E-06	1.24E-06	4.094E-07	1.701E-07	1.701E-07	1.701E-07	0	0	0	0	0	1.563E-05
0	0	BR06Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	BR06Y	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	PR08Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	PR08Y	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	UR09AZ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	UR09AY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	UR09BZ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	UR09BY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	UR11Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	UR11Y	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7.62971E-06	2.7467E-08	UR12	0	0	0	0	0	0	0	2.475E-06	1.827E-06	1.662E-06	1.774E-06	1.741E-06	2.002E-06	1.346E-06	1.181E-06	3.9E-07	1.621E-07	1.621E-07	1.621E-07	0	0	0	0	0	1.488E-05
0	0	UR12Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	UR12Y	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	PR13Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	PR14Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	UR17Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	UR18Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9.03878E-06	3.25396E-08	PR04B	0	0	0	0	0	0	0	2.932E-06	2.164E-06	1.969E-06	2.102E-06	2.063E-06	2.372E-06	1.594E-06	1.399E-06	4.621E-07	1.92E-07	1.92E-07	1.92E-07	0	0	0	0	0	1.763E-05
0	0	PR04BZ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5.58051E-06	2.00898E-08	PR04C	0	0	0	0	0	0	0	9.04E-07	6.67E-07	6.087E-07	6.489E-07	6.368E-07	7.333E-07	4.922E-07	4.319E-07	1.426E-07	6.027E-08	6.027E-08	6.027E-08	0	0	0	0	0	5.446E-06
0	0	PR04CZ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0																										
8.44061E-05	3.03862E-07	IDLE01	0	0	0	0	0	0	0	3.039E-07	3.039E-07	3.039E-07	3.039E-07	3.039E-07	3.039E-07	3.039E-07	3.039E-07	3.039E-07	3.039E-07	3.039E-07	3.039E-07	0	0	0	0	0	3.646E-06
8.44061E-05	3.03862E-07	IDLE02	0	0	0	0	0	0	0	3.039E-07	3.039E-07	3.039E-07	3.039E-07	3.039E-07	3.039E-07	3.039E-07	3.039E-07	3.039E-07	3.039E-07	3.039E-07	3.039E-07	0	0	0	0	0	3.646E-06
0	0	DOZE2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	DOZE4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	DOZE2CAP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	DOZE2SS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.70E-06		All "Y" and "Z" Roads and Dozers	0	0	0	0	0	0	1.703E-06	1.703E-06	1.703E-06	1.703E-06	1.703E-06	1.703E-06	1.703E-06	1.703E-06	1.703E-06	1.703E-06	1.703E-06	1.703E-06	1.703E-06	1.703E-06	0	0	0	0	2.384E-05
		Total (tonnes/hour)	0	0	0	0	0	0	1.703E-06	1.211E-05	9.54E-06	8.889E-06	9.446E-06	9.316E-06	1.035E-05	7.751E-06	7.099E-06	3.964E-06	3.063E-06	3.063E-06	3.063E-06	1.703E-06	0	0	0	0	9.106E-05
#operating days / week	6	Total (tonnes/year)	0	0	0	0	0	0	0.0005327	0.0037873	0.0029845	0.0027811	0.0029553	0.0029145	0.0032383	0.002425	0.0022209	0.0012403	0.0009583	0.0009583	0.0009583	0.0005327	0	0	0	0	0.0284873

Appendix 5R: Tailpipe Emissions, N_2O

N_2O Emissions per vehicle pass for variable traffic		(Total N_2O emissions per roadway, tonnes / hour, for each hour of the day)																								
Tailpipe Emissions Rate (g/s)	Tailpipe Emissions Rate	Source ID	12 AM	1 AM	2 AM	3 AM	4 AM	5 AM	6 AM	7 AM	8 AM	9 AM	10 AM	11 AM	12 PM	1 PM	2 PM	3 PM	4 PM	5 PM	6 PM	7 PM	8 PM	9 PM	10 PM	11 PM	Daily
5.59698E-07	2.01491E-09	PR01	0	0	0	0	0	0	0	1.8154E-07	1.3399E-07	1.219E-07	1.761E-07	1.7328E-07	1.9545E-07	1.4004E-07	1.2634E-07	5.5209E-08	3.7276E-08	3.7276E-08	3.7276E-08	0	0	0	0	0	1.4157E-06
0	0	PR01Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	UR02Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	PR04A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	PR04AZ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.6402E-06	5.90474E-09	BR06	0	0	0	0	0	0	0	5.3202E-07	3.9266E-07	3.5724E-07	4.3813E-07	4.3046E-07	4.9541E-07	3.3303E-07	2.9228E-07	9.0342E-08	3.779E-08	3.779E-08	3.779E-08	0	0	0	0	0	3.4749E-06
0	0	BR06Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	BR06Y	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	PR08Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	PR08Y	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	UR09AZ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	UR09AY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	UR09BZ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	UR09BY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	UR11Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	UR11Y	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.56242E-06	5.62472E-09	UR12	0	0	0	0	0	0	0	5.0679E-07	3.7404E-07	3.403E-07	4.1735E-07	4.1004E-07	4.7191E-07	3.1723E-07	2.7842E-07	8.6058E-08	3.5998E-08	3.5998E-08	3.5998E-08	0	0	0	0	0	3.3102E-06
0	0	UR12Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	UR12Y	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	PR13Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	PR14Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	UR17Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	UR18Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.85098E-06	6.66351E-09	PR04B	0	0	0	0	0	0	0	6.0038E-07	4.4312E-07	4.0314E-07	4.9443E-07	4.8577E-07	5.5907E-07	3.7582E-07	3.2984E-07	1.0195E-07	4.2646E-08	4.2646E-08	4.2646E-08	0	0	0	0	0	3.9215E-06
0	0	PR04BZ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.14279E-06	4.11403E-09	PR04C	0	0	0	0	0	0	0	1.8513E-07	1.3659E-07	1.2466E-07	1.5263E-07	1.4975E-07	1.7238E-07	1.1602E-07	1.0162E-07	3.1678E-08	1.3165E-08	1.3165E-08	1.3165E-08	0	0	0	0	0	1.2099E-06
0	0	PR04CZ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0																										
2.70385E-05	9.73386E-08	IDLE01	0	0	0	0	0	0	0	9.7339E-08	9.7339E-08	9.7339E-08	9.7339E-08	9.7339E-08	9.7339E-08	9.7339E-08	9.7339E-08	9.7339E-08	9.7339E-08	9.7339E-08	9.7339E-08	0	0	0	0	0	1.1681E-06
2.70385E-05	9.73386E-08	IDLE02	0	0	0	0	0	0	0	9.7339E-08	9.7339E-08	9.7339E-08	9.7339E-08	9.7339E-08	9.7339E-08	9.7339E-08	9.7339E-08	9.7339E-08	9.7339E-08	9.7339E-08	9.7339E-08	0	0	0	0	0	1.1681E-06
0	0	DOZE2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	DOZE4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	DOZE2CAP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	DOZE2SS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2.32E-07	All "Y" and "Z" Roads and Dozers	0	0	0	0	0	0	2.3205E-07	2.3205E-07	2.3205E-07	2.3205E-07	2.3205E-07	2.3205E-07	2.3205E-07	2.3205E-07	2.3205E-07	2.3205E-07	2.3205E-07	2.3205E-07	2.3205E-07	2.3205E-07	0	0	0	0	3.2486E-06
		Total (tonnes/hour)	0	0	0	0	0	0	2.3205E-07	2.4326E-06	1.9071E-06	1.774E-06	2.1054E-06	2.076E-06	2.3209E-06	1.7089E-06	1.5552E-06	7.9196E-07	5.936E-07	5.936E-07	5.936E-07	2.3205E-07	0	0	0	0	1.8917E-05
#operating days / week	6	Total (tonnes/year)	0	0	0	0	0	0	7.2597E-05	0.00076105	0.00059666	0.00055499	0.00065868	0.0006495	0.00072612	0.00053463	0.00048656	0.00024777	0.00018571	0.00018571	0.00018571	7.2597E-05	0	0	0	0	0.0059183

Appendix 5R: Fugitive Methane Emissions

RWDI# 2101750

Twin Creeks Environmental Centre

Old Landfill, Expansion Landfill, and Vertical Expansion Landfill (Year 2042), Greenhouse, RNG Production, and Flaring

Year	Waste Acceptance Years (Inclusive)	Scenario	LANDGEM Emission Rate Landfill Gas (tonnes/year)	LANDGEM Emission Rate Landfill Gas (m^3/year)	LANDGEM Emission Rate Landfill Gas (scf/min)	LANDGEM Emission Rate Methane (tonnes/year)	LANDGEM Emission Rate Methane (m^3/year)	Landfill Gas Collection Coverage (%)	Landfill Gas Collection Efficiency (%) [1]	Landfill Gas Collected (m^3/year)	Methane Collected (tonnes/year)	Methane Collected (m^3/year)
2042	1972-2004	Old Landfill	2.30E+03	1.82E+06	1.22E+02	6.32E+02	9.47E+05	100%	70%	1.27E+06	4.42E+02	6.63E+05
2042	2005-2019	Expansion Landfill Phases 1 to 3	3.44E+04	2.73E+07	1.83E+03	9.46E+03	1.42E+07	100%	86%	2.35E+07	8.16E+03	1.22E+07
2042	2020-2024	Expansion Landfill Phases 4 to 5	3.87E+04	3.06E+07	2.06E+03	1.06E+04	1.59E+07	100%	85%	2.60E+07	9.01E+03	1.35E+07
2042	2025-2028 [6]	Expansion Landfill Phases 6 to 7	3.76E+04	2.98E+07	2.00E+03	1.03E+04	1.55E+07	100%	83%	2.48E+07	8.61E+03	1.29E+07
2042	n/a [6]	Expansion Landfill Phases 8 to 9	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	100%	0%	0.00E+00	0.00E+00	0.00E+00
2042	2028-2034	Vertical Expansion Stage 1	4.60E+04	3.64E+07	2.45E+03	1.26E+04	1.89E+07	100%	90%	3.28E+07	1.14E+04	1.70E+07
2042	2028-2037	Vertical Expansion Stage 2	5.95E+04	4.71E+07	3.17E+03	1.64E+04	2.45E+07	100%	83%	3.89E+07	1.35E+04	2.02E+07
2042	2037-2039	Vertical Expansion Stage 3	3.16E+04	2.51E+07	1.68E+03	8.70E+03	1.30E+07	100%	90%	2.26E+07	7.83E+03	1.17E+07
2042	2039-2042	Vertical Expansion Stage 4	4.04E+04	3.20E+07	2.15E+03	1.11E+04	1.67E+07	100%	75%	2.40E+07	8.33E+03	1.25E+07
2042	2005-2042	Total	2.91E+05	2.30E+08	1.55E+04	7.99E+04	1.20E+08			1.94E+08	6.73E+04	1.01E+08

Year	Waste Acceptance Years (Inclusive)	Scenario	Landfill Gas Collected (m^3/year)	Landfill Gas to Greenhouse (m^3/year)	Landfill Gas to RNG / Flare (m^3/year)	Landfill Gas to RNG (m^3/year)	Landfill Gas to Flare (m^3/year)	Methane to Flare (m^3/year)	Methane to Flare (tonnes/year)	Flare Destruction Efficiency (%) [2]	Flare Methane Emission Rate (tonnes/yr)	Fugitive Methane Emission Rate (tonnes/yr)	Oxidation of Methane in Landfill Cover (%) [3]	Mound Emission Rate (Controlled) (tonnes/yr)	Total Annual Methane Emissions (tonnes/yr)	Global Warming Potential (100-year CO_2 equivalent) [4]	Total Annual Methane Emissions (tCO_2e/yr)
2042	1972-2004	Old Landfill	1.27E+06	9.79E+04	1.18E+06	3.92E+05	7.86E+05	4.08E+05	2.73E+02	99.7%	8.18E-01	1.90E+02	10%	1.71E+02	1.71E+02	28	4.80E+03
2042	2005-2019	Expansion Landfill Phases 1 to 3	2.35E+07	1.81E+06	2.17E+07	7.22E+06	1.45E+07	7.53E+06	5.03E+03	99.7%	1.51E+01	1.30E+03	10%	1.17E+03	1.19E+03	28	3.32E+04
2042	2020-2024	Expansion Landfill Phases 4 to 5	2.60E+07	1.99E+06	2.40E+07	7.98E+06	1.60E+07	8.32E+06	5.55E+03	99.7%	1.67E+01	1.62E+03	10%	1.46E+03	1.48E+03	28	4.13E+04
2042	2025-2028 [6]	Expansion Landfill Phases 6 to 7	2.48E+07	1.90E+06	2.29E+07	7.62E+06	1.53E+07	7.95E+06	5.30E+03	99.7%	1.59E+01	1.73E+03	10%	1.56E+03	1.57E+03	28	4.41E+04
2042	n/a [6]	Expansion Landfill Phases 8 to 9	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	99.7%	0.00E+00	0.00E+00	10%	0.00E+00	0.00E+00	28	0.00E+00
2042	2028-2034	Vertical Expansion Stage 1	3.28E+07	2.52E+06	3.03E+07	1.01E+07	2.02E+07	1.05E+07	7.01E+03	99.7%	2.10E+01	1.26E+03	10%	1.14E+03	1.16E+03	28	3.24E+04
2042	2028-2037	Vertical Expansion Stage 2	3.89E+07	2.99E+06	3.59E+07	1.20E+07	2.40E+07	1.25E+07	8.32E+03	99.7%	2.50E+01	2.85E+03	10%	2.57E+03	2.59E+03	28	7.25E+04
2042	2037-2039	Vertical Expansion Stage 3	2.26E+07	1.73E+06	2.08E+07	6.93E+06	1.39E+07	7.23E+06	4.82E+03	99.7%	1.45E+01	8.70E+02	10%	7.83E+02	7.97E+02	28	2.23E+04
2042	2039-2042	Vertical Expansion Stage 4	2.40E+07	1.84E+06	2.22E+07	7.38E+06	1.48E+07	7.70E+06	5.13E+03	99.7%	1.54E+01	2.78E+03	10%	2.50E+03	2.52E+03	28	7.04E+04
2042	2005-2042	Total	1.94E+08	1.49E+07	1.79E+08	5.95E+07	1.19E+08	6.21E+07	4.14E+04		1.24E+02	1.26E+04		1.13E+04	1.15E+04		3.21E+05

Direct-Use of Biogas at Twin Creeks Greenhouse

Annual Landfill Gas to Twin Creeks Greenhouse (m^3)	14,883,335	[5]
Percentage of Landfill Gas Collected (%)	7.7%	
Methane Concentration in Landfill Gas (%)	52%	
Annual Methane to Twin Creeks Greenhouse (m^3)	7.74E+06	
Energy Content LFG Methane (Btu/m^3 methane)	35,738	[6]
Energy Content Natural Gas (Btu/m^3 natural gas)	35,300	[6]
GHG Intensity of Natural Gas (kg CO_2e / m^3 of natural gas)	2.464	[6]
GHG Avoided by Displacing Pipeline Natural Gas (tonnes CO_2e)	**1.93E+04**	

Renewable Natural Gas Production

Maximum RNG Plant LFG Flow Rate (scf/min)	8.00E+03	[7]
Maximum RNG Plant LFG Flow Rate (m^3/year)	1.19E+08	
Percentage, RNG Plant LFG Flowrate vs LFG Collected (%)	66.53%	
Percentage On-Spec RNG Delivery (%)	50.00%	[8]
Methane Concentration in LFG (%)	52.00%	
Annual Methane to RNG Plant (m^3)	3.10E+07	
Fugitive Methane Lost During Upgrading (%)	2.00%	[6]
Upgrading Efficiency (Conversion of Methane in LFG to RNG) (%)	94.00%	[6]
Energy Content LFG Methane (Btu/m^3 methane)	35738	[6]
Energy Content Natural Gas (Btu/m^3 natural gas)	35300	[6]
GHG Intensity of Natural Gas (kg CO_2e / m^3 of natural gas)	2.464	[6]
GHG Avoided by Displacing Pipeline Natural Gas (tonnes CO_2e)	**7.11E+04**	

Notes:

[1] Government of Canada. (2024). Canada Gazette, Part 1, Volume 158, Number 26: Regulations Respecting the Reduction in the Release of Methane (Waste Sector). https://canadagazette.gc.ca/rp-pr/p1/2024/2024-06-29/html/reg5-eng.html

The proposed regulatory scenario assumed 75% landfill gas collection efficiency at open, regulated landfills and 90% at closed, regulated landfills. It is assumed that landfills that comply with the proposed regulations would achieve these collection efficiencies which are noted in this reference as highest achievable industry standards.

[2] Environment and Climate Change Canada, National Inventory Report 2022 Part 2, Section A3.6.1.2.1 suggests efficiency of combustion by flaring at 99.7%.

[3] Environment and Climate Change Canada. (2022). National Inventory Report 1990-2022: Greenhouse Gas Sources and Sinks in Canada, Part 2. Section A3.6.1.2.1

[4] Environment and Climate Change Canada. (2024). Global warming potentials. https://www.canada.ca/en/environment-climate-change/services/climate-change/greenhouse-gas-emissions/quantification-guidance/global-warming-potentials.html

[5] Assumed for this assessment to demonstrate benefit of transfer of landfill gas for direct-use at the greenhouse.

[6] Environment and Climate Change Canada. (2022). Greenhouse Gas Calculator for Organic Waste Management: Methodology Report. Section 7.

[7] RWDI. (2023). Twin Creeks Landfill: Emission Summary and Dispersion Modelling Report.

[8] Assumed percentage of time on-spec RNG is distributed through the natural gas distribution network.

Sample Calculations, Year 2042

Methane Collected (Old Landfill) = (LANDGEM Emission Rate CO_2) * (Landfill Gas Collection Coverage) * (Landfill Gas Collection Efficiency)
= 631.9 * 1.00 * 0.70
= 4.42E+02 tonnes/year

Methane to RNG (Old Landfill) = ((Methane Collected) - (Methane Transferred as Biogas to Greenhouse)) * (Percentage RNG Plant LFG Flowrate / LFG Collected) * (Percentage On-spec RNG Delivery)
= (442.3 - 442 * 0.077) * 0.665 * 0.500
= 1.36E+02 tonnes/year

Methane to Flare (Old Landfill) = (Methane Collected) - (Methane Transferred as Biogas to Greenhouse) - (Methane Transferred to RNG)
= 442.3 - 442 * 0.077 - 135.8
= 2.73E+02 tonnes/year

Flare Emission Rate (Old Landfill) = (Methane to Flare) * (1 - Flare Destruction Efficiency)
= 273 * (1 - 0.997)
= 8.18E-01 tonnes/year

Fugitive Methane Emission Rate (Old Landfill) = (LANDGEM Emission Rate Methane) - (Methane Collected)
= 631.9 - 442.3
= 1.90E+02 tonnes/year

Calculation of Mound Emission Rate (Controlled) (Old Landfill) = (Fugitive Methane Emission Rate) * (1 - Percentage Oxidation of Methane in Landfill Cover)
= 189.6 * (1 - 0.10)
= 1.71E+02 tonnes/year

Calculation of Total Annual Methane Emission Rate (Old Landfill) = (Mound Emission Rate) + (Flare Emission Rate)
= 170.6 + 0.8
= 1.71E+02 tonnes/year

Calculation of GHG Avoided by Displacing Pipeline Natural Gas = (Volume of Methane to Greenhouse) * (Energy Content LFG Methane) / (Energy Content Natural Gas) * (GHG Intensity of Natural Gas)
= (7739334 * 35738 / 35300 * 2.464) / 1,000 kg/tonne
= 1.93E+04 tonnes/year

Calculation of GHG Avoided by Displacing Pipeline Natural Gas = (Volume of Methane to RNG) * (1 - Fugitive Loss) * (Upgrade Efficiency) * (Energy Content LFG Methane) / (Energy Content Natural Gas) * (GHG Intensity of Natural Gas)
= (30957336 * (1 - 0.02) * 0.94 * 35738 / 35300 * 2.464) / 1,000 kg/tonne
= 7.11E+04 tonnes/year

6A

Comparison of Dust Results from the Preferred Alternative to the "Do Nothing" Alternative

Comparion of Dust Results from the Preferred Alternative to the "Do Nothing" Alternative

Without Mitigation

Annual TSP Predicted Concentrations

Receptor ID	"Do Nothing" Alternative				Preferred Alternative - Scenario 1				Preferred Alternative - Scenario 2				Preferred Alternative - Scenario 3 No Mitigation			
	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]
R1	0.15	0%	24	40%	6	10%	30	50%	4	6%	27	46%	3	5%	27	45%
R2	0.17	0%	24	40%	8	13%	31	52%	13	22%	37	62%	8	14%	32	54%
R3	0.17	0%	24	40%	6	9%	29	49%	8	13%	31	52%	6	10%	30	50%
R4	0.19	0%	24	40%	9	15%	33	55%	19	31%	42	71%	11	18%	34	57%
R5	0.15	0%	24	40%	5	8%	29	48%	7	11%	30	51%	5	8%	29	48%
R6	0.16	0%	24	40%	5	8%	29	48%	6	11%	30	50%	5	9%	29	49%
R7	0.22	0%	24	40%	10	16%	33	56%	7	11%	31	51%	7	11%	31	51%
R8	0.19	0%	24	40%	6	10%	30	49%	4	6%	28	46%	3	6%	27	45%
R9	0.19	0%	24	40%	7	12%	31	52%	6	11%	30	50%	6	11%	30	50%
R10	0.07	0%	24	40%	2	3%	26	43%	2	3%	26	43%	2	3%	26	43%
R11	0.10	0%	24	40%	2	4%	26	43%	2	3%	26	43%	2	3%	26	43%
R12	0.14	0%	24	40%	3	5%	27	45%	3	5%	27	45%	3	5%	27	45%
R13	0.13	0%	24	40%	4	6%	27	46%	3	5%	27	45%	3	5%	27	45%
R14	0.11	0%	24	40%	4	6%	27	46%	3	5%	27	45%	3	5%	27	45%
R15	0.10	0%	24	40%	2	4%	26	44%	2	4%	26	43%	2	4%	26	43%
R16	0.14	0%	24	40%	4	7%	28	47%	3	5%	27	45%	3	5%	27	44%
R17	0.18	0%	24	40%	7	12%	31	52%	4	7%	28	47%	4	6%	28	46%
R18	0.15	0%	24	40%	6	9%	30	49%	3	6%	27	45%	3	5%	27	45%
R19	0.13	0%	24	40%	5	9%	29	49%	3	6%	27	45%	3	5%	27	45%
R20	0.13	0%	24	40%	5	8%	29	48%	3	5%	27	45%	3	5%	27	44%
R21	0.12	0%	24	40%	4	7%	28	47%	3	5%	27	45%	3	5%	27	44%
R22	0.10	0%	24	40%	3	6%	27	45%	3	4%	26	44%	2	4%	26	44%
R23	0.09	0%	24	40%	3	5%	27	45%	2	4%	26	44%	2	3%	26	43%
R24	0.08	0%	24	40%	2	4%	26	44%	2	3%	26	43%	2	3%	26	43%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 8.8 µg/m³
[2] Average Background Concentration = 7 µg/m³

24-Hour TSP Predicted Concentrations

Receptor ID	"Do Nothing" Alternative				Preferred Alternative - Scenario 1				Preferred Alternative - Scenario 2				Preferred Alternative - Scenario 3 No Mitigation			
	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]
R1	1.20	1%	47	39%	97	80%	142	119%	51	42%	96	80%	48	40%	94	78%
R2	1.00	1%	47	39%	77	64%	123	102%	198	165%	243	203%	136	114%	182	152%
R3	0.96	1%	47	39%	58	48%	104	86%	71	59%	117	98%	73	61%	119	99%
R4	1.05	1%	47	39%	88	73%	133	111%	253	211%	299	249%	170	141%	215	180%
R5	0.85	1%	47	39%	60	50%	106	89%	75	62%	121	101%	64	53%	110	92%
R6	0.93	1%	47	39%	54	45%	100	83%	67	56%	113	94%	68	56%	114	95%
R7	2.45	2%	48	40%	142	118%	188	157%	139	116%	185	154%	129	107%	175	146%
R8	2.08	2%	48	40%	87	72%	133	111%	68	57%	114	95%	68	57%	114	95%
R9	1.58	1%	47	40%	121	101%	167	139%	124	104%	170	142%	124	104%	170	142%
R10	0.70	1%	47	39%	56	47%	102	85%	61	51%	106	89%	59	49%	105	87%
R11	0.93	1%	47	39%	51	43%	97	81%	46	39%	92	77%	46	38%	92	77%
R12	1.35	1%	47	39%	88	74%	134	112%	85	71%	131	109%	82	68%	128	107%
R13	1.10	1%	47	39%	98	82%	144	120%	90	75%	136	113%	91	76%	137	114%
R14	1.21	1%	47	39%	80	67%	126	105%	63	53%	109	91%	64	53%	110	92%
R15	1.37	1%	47	39%	69	57%	114	95%	62	52%	108	90%	61	51%	107	89%
R16	1.25	1%	47	39%	84	70%	129	108%	64	53%	110	92%	63	52%	108	90%
R17	1.60	1%	47	40%	131	109%	177	148%	50	41%	96	80%	54	45%	100	83%
R18	1.33	1%	47	39%	130	108%	176	146%	46	38%	92	77%	47	39%	93	77%
R19	1.13	1%	47	39%	88	74%	134	112%	49	41%	95	79%	51	43%	97	81%
R20	1.00	1%	47	39%	78	65%	124	104%	42	35%	88	74%	57	47%	103	85%
R21	0.87	1%	47	39%	79	66%	125	104%	39	33%	85	71%	55	46%	101	84%
R22	0.75	1%	47	39%	84	70%	130	108%	44	37%	90	75%	38	32%	84	70%
R23	0.75	1%	47	39%	81	68%	127	106%	41	34%	87	72%	42	35%	88	73%
R24	0.79	1%	47	39%	71	59%	117	98%	48	40%	94	78%	58	48%	104	86%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 27 µg/m³
[2] 90th Percentile Background Concentration = 12 µg/m³
[3] Results based on the 3-year average of the annual 98th percentile of the daily 24-hour average concentrations

24-Hour PM10 Predicted Concentrations

Receptor ID	"Do Nothing" Alternative				Preferred Alternative - Scenario 1				Preferred Alternative - Scenario 2				Preferred Alternative - Scenario 3 No Mitigation			
	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]
R1	1.20	2%	20	41%	34	69%	54	107%	19	37%	38	76%	18	36%	37	74%
R2	1.00	2%	20	41%	27	54%	46	93%	69	138%	88	177%	48	97%	68	135%
R3	0.96	2%	20	40%	20	40%	39	78%	25	51%	45	89%	26	51%	45	90%
R4	1.05	2%	20	41%	31	62%	50	100%	87	175%	107	213%	60	119%	79	158%
R5	0.85	2%	20	40%	21	42%	40	81%	27	54%	46	92%	23	46%	42	84%
R6	0.93	2%	20	40%	19	37%	38	76%	24	48%	43	86%	24	48%	43	86%
R7	2.45	5%	22	43%	54	108%	73	146%	52	104%	71	142%	48	95%	67	134%
R8	2.08	4%	21	43%	33	65%	52	104%	25	51%	45	89%	25	50%	44	89%
R9	1.58	3%	21	42%	43	85%	62	124%	44	87%	63	126%	43	87%	63	125%
R10	0.70	1%	20	40%	22	43%	41	82%	23	46%	42	85%	22	45%	42	84%
R11	0.93	2%	20	40%	20	39%	39	78%	17	34%	36	72%	17	34%	36	72%
R12	1.35	3%	21	41%	33	65%	52	104%	32	63%	51	102%	30	61%	50	100%
R13	1.10	2%	20	41%	37	73%	56	112%	34	67%	53	106%	34	68%	53	107%
R14	1.21	2%	20	41%	30	59%	49	98%	23	47%	43	85%	24	47%	43	86%
R15	1.37	3%	21	41%	26	51%	45	90%	23	46%	42	85%	23	45%	42	84%
R16	1.25	2%	21	41%	30	59%	49	98%	24	47%	43	86%	23	46%	42	85%
R17	1.60	3%	21	42%	45	90%	64	128%	19	38%	38	76%	20	40%	39	78%
R18	1.33	3%	21	41%	47	94%	66	132%	17	34%	36	73%	18	35%	37	74%
R19	1.13	2%	20	41%	32	63%	51	102%	18	36%	38	75%	19	38%	38	77%
R20	1.00	2%	20	41%	30	59%	49	98%	16	31%	35	70%	21	42%	40	81%
R21	0.87	2%	20	40%	31	63%	51	101%	15	30%	34	69%	21	41%	40	80%
R22	0.75	1%	20	40%	33	66%	52	105%	16	33%	36	71%	14	29%	34	68%
R23	0.75	1%	20	40%	32	64%	51	103%	15	30%	34	69%	16	32%	35	71%
R24	0.79	2%	20	40%	28	55%	47	94%	18	37%	38	75%	23	45%	42	84%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 50 µg/m³
[2] 90th Percentile Background Concentration = 19 µg/m³

24-Hour PM2.5 Predicted Concentrations (CAAQS)

Receptor ID	"Do Nothing" Alternative				Preferred Alternative - Scenario 1				Preferred Alternative - Scenario 2				Preferred Alternative - Scenario 3 No Mitigation			
	Maximum Modelled Concentration Without Background(µg/m³) [3]	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria with Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³) [3]	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria with Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³) [3]	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria with Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³) [3]	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria with Background (%) [1]
R1	1.01	4%	13	50%	5	18%	17	63%	3	10%	15	55%	3	13%	15	58%
R2	0.90	4%	13	49%	3	13%	16	58%	8	28%	20	73%	6	34%	18	79%
R3	0.78	4%	13	49%	3	10%	15	55%	4	15%	16	60%	4	17%	16	62%
R4	0.95	4%	13	49%	4	14%	16	59%	10	37%	22	82%	7	41%	19	86%
R5	0.69	3%	13	48%	2	9%	15	54%	4	14%	16	59%	3	20%	15	65%
R6	0.75	3%	13	49%	2	9%	15	54%	4	14%	16	59%	3	16%	15	61%
R7	1.63	9%	14	54%	7	27%	19	72%	4	16%	17	62%	4	27%	17	72%
R8	1.48	8%	14	53%	5	17%	17	62%	3	11%	15	56%	3	16%	15	61%
R9	1.09	6%	13	51%	5	18%	17	63%	4	17%	17	62%	5	21%	17	66%
R10	0.57	3%	13	48%	3	10%	15	55%	3	10%	15	55%	3	15%	15	60%
R11	0.71	3%	13	49%	3	11%	15	56%	2	8%	14	53%	2	14%	14	59%
R12	1.01	5%	13	50%	4	15%	16	60%	4	14%	16	59%	4	21%	16	67%
R13	0.90	4%	13	49%	4	15%	16	60%	3	11%	15	57%	3	27%	15	72%
R14	0.83	4%	13	50%	4	13%	16	58%	3	11%	15	57%	3	16%	15	61%
R15	0.87	5%	13	50%	3	11%	15	56%	3	11%	15	56%	3	16%	15	61%
R16	0.97	5%	13	50%	4	16%	17	61%	3	10%	15	56%	3	13%	15	58%
R17	1.30	6%	13	51%	7	25%	19	70%	3	12%	15	57%	3	16%	15	61%
R18	1.10	5%	13	50%	6	23%	18	68%	3	11%	15	56%	2	13%	15	59%
R19	0.94	4%	13	49%	5	17%	17	62%	2	9%	15	54%	3	13%	15	58%
R20	0.86	4%	13	49%	5	17%	17	62%	2	9%	15	54%	3	15%	15	60%

R21	0.76	3%	13	48%	4	16%	17	61%	2	9%	15	54%	3	14%	15	60%
R22	0.66	3%	13	48%	4	13%	16	59%	2	9%	15	54%	2	11%	14	56%
R23	0.63	3%	13	48%	3	12%	16	58%	2	8%	14	54%	2	11%	14	56%
R24	0.56	3%	13	48%	3	9%	15	54%	2	7%	14	52%	2	16%	14	62%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

[1] Criteria = 27 µg/m³
[2] 90th Percentile Background Concentration = 12 µg/m³
[3] Results based on the 3-year average of the annual 98th percentile of the daily 24-hour average concentrations

Annual PM2.5 Predicted Concentrations

Receptor ID	"Do Nothing" Alternative				Preferred Alternative - Scenario 1				Preferred Alternative - Scenario 2				Preferred Alternative - Scenario 3 No Mitigation			
	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]
R1	0.14	2%	7.0	80%	0.5	6%	7.4	84%	0.3	4%	7.2	82%	0.3	4%	7.2	82%
R2	0.17	2%	7.1	80%	0.6	7%	7.5	85%	0.9	10%	7.8	89%	0.6	7%	7.5	85%
R3	0.16	2%	7.0	80%	0.4	5%	7.3	83%	0.6	6%	7.5	85%	0.5	6%	7.4	84%
R4	0.18	2%	7.1	80%	0.7	7%	7.5	86%	1.3	14%	8.1	93%	0.8	9%	7.7	87%
R5	0.14	2%	7.0	80%	0.4	4%	7.3	83%	0.5	6%	7.4	84%	0.4	5%	7.3	83%
R6	0.15	2%	7.0	80%	0.4	5%	7.3	83%	0.5	6%	7.4	84%	0.4	5%	7.3	83%
R7	0.19	2%	7.1	80%	0.8	9%	7.6	87%	0.5	6%	7.4	84%	0.5	6%	7.4	84%
R8	0.19	2%	7.1	80%	0.5	6%	7.4	84%	0.4	4%	7.2	82%	0.4	4%	7.2	82%
R9	0.18	2%	7.1	80%	0.5	6%	7.4	84%	0.5	5%	7.4	84%	0.5	5%	7.4	84%
R10	0.06	1%	7.0	79%	0.2	2%	7.1	80%	0.2	2%	7.0	80%	0.2	2%	7.0	80%
R11	0.08	1%	7.0	79%	0.2	2%	7.1	81%	0.2	2%	7.1	80%	0.2	2%	7.1	80%
R12	0.12	1%	7.0	80%	0.3	3%	7.2	82%	0.3	3%	7.2	81%	0.3	3%	7.2	81%
R13	0.11	1%	7.0	80%	0.3	4%	7.2	82%	0.3	3%	7.2	81%	0.3	3%	7.2	81%
R14	0.11	1%	7.0	79%	0.3	4%	7.2	82%	0.3	3%	7.2	81%	0.3	3%	7.2	81%
R15	0.09	1%	7.0	79%	0.2	3%	7.1	81%	0.2	2%	7.1	81%	0.2	2%	7.1	81%
R16	0.14	2%	7.0	80%	0.4	4%	7.3	83%	0.3	3%	7.2	82%	0.3	3%	7.2	81%
R17	0.17	2%	7.1	80%	0.6	7%	7.5	85%	0.4	4%	7.3	83%	0.4	4%	7.3	82%
R18	0.14	2%	7.0	80%	0.5	6%	7.4	84%	0.3	4%	7.2	82%	0.3	3%	7.2	82%
R19	0.13	1%	7.0	80%	0.4	5%	7.3	83%	0.3	3%	7.2	82%	0.3	3%	7.2	82%
R20	0.12	1%	7.0	80%	0.4	4%	7.3	83%	0.3	3%	7.2	82%	0.3	3%	7.2	81%
R21	0.11	1%	7.0	80%	0.4	4%	7.3	82%	0.3	3%	7.2	81%	0.3	3%	7.2	81%
R22	0.10	1%	7.0	79%	0.3	3%	7.2	82%	0.2	3%	7.1	81%	0.2	3%	7.1	81%
R23	0.09	1%	7.0	79%	0.3	3%	7.2	81%	0.2	3%	7.1	81%	0.2	2%	7.1	81%
R24	0.08	1%	7.0	79%	0.2	3%	7.1	81%	0.2	2%	7.1	80%	0.2	2%	7.1	80%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

[1] Criteria = 8.8 µg/m³
[2] Average Background Concentration = 7 µg/m³

With Mitigation

Annual TSP Predicted Concentrations

Receptor ID	"Do Nothing" Alternative				Preferred Alternative - Scenario 1 Mitigated				Preferred Alternative - Scenario 2 Mitigated				Preferred Alternative - Scenario 3 Mitigated			
	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]
R1	0.15	0%	24	40%	6	9%	29	49%	3	5%	27	45%	3	4%	27	44%
R2	0.17	0%	24	40%	7	11%	31	51%	12	20%	36	60%	7	12%	31	52%
R3	0.17	0%	24	40%	5	8%	29	48%	7	11%	31	51%	5	8%	29	48%
R4	0.19	0%	24	40%	8	13%	32	53%	17	29%	41	69%	9	16%	33	55%
R5	0.15	0%	24	40%	4	7%	28	46%	6	9%	30	49%	4	7%	28	47%
R6	0.16	0%	24	40%	4	7%	28	47%	6	9%	30	49%	4	7%	28	47%
R7	0.22	0%	24	40%	8	13%	32	53%	5	8%	29	48%	5	8%	29	48%
R8	0.19	0%	24	40%	5	8%	29	48%	3	5%	27	45%	3	4%	27	44%
R9	0.19	0%	24	40%	5	8%	28	47%	4	6%	28	46%	4	7%	28	46%
R10	0.07	0%	24	40%	1	2%	25	42%	1	2%	25	42%	1	2%	25	42%
R11	0.10	0%	24	40%	2	3%	26	43%	2	3%	25	42%	2	3%	25	42%
R12	0.14	0%	24	40%	3	5%	27	44%	2	4%	26	44%	2	4%	26	44%
R13	0.13	0%	24	40%	3	5%	27	45%	3	4%	26	44%	3	4%	26	44%
R14	0.11	0%	24	40%	3	5%	27	45%	3	5%	27	44%	3	4%	27	44%
R15	0.10	0%	24	40%	2	3%	26	43%	2	3%	26	43%	2	3%	26	43%
R16	0.14	0%	24	40%	4	6%	28	46%	2	4%	26	44%	2	4%	26	43%
R17	0.18	0%	24	40%	7	11%	31	51%	3	6%	27	45%	3	5%	27	45%

R18	0.15	0%	24	40%	5	8%	29	48%	3	5%	27	45%	3	4%	26	44%
R19	0.13	0%	24	40%	5	8%	29	48%	3	5%	27	44%	2	4%	26	44%
R20	0.13	0%	24	40%	4	7%	28	47%	3	4%	26	44%	2	4%	26	44%
R21	0.12	0%	24	40%	4	6%	28	46%	3	4%	26	44%	2	4%	26	44%
R22	0.10	0%	24	40%	3	5%	27	45%	2	4%	26	43%	2	3%	26	43%
R23	0.09	0%	24	40%	3	4%	27	44%	2	3%	26	43%	2	3%	26	43%
R24	0.08	0%	24	40%	2	4%	26	43%	2	3%	26	43%	2	3%	25	42%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 8.8 µg/m³
[2] Average Background Concentration = 7 µg/m³

24-Hour TSP Predicted Concentrations

Receptor ID	"Do Nothing" Alternative				Preferred Alternative - Scenario 1 Mitigated				Preferred Alternative - Scenario 2 Mitigated				Preferred Alternative - Scenario 3 Mitigated			
	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]
R1	1.20	1%	47	39%	86	72%	132	110%	44	36%	89	75%	37	31%	83	69%
R2	1.00	1%	47	39%	72	60%	118	98%	184	153%	230	192%	123	102%	169	140%
R3	0.96	1%	47	39%	49	41%	95	79%	71	59%	117	97%	54	45%	100	83%
R4	1.05	1%	47	39%	85	71%	131	109%	235	196%	281	234%	151	126%	197	164%
R5	0.85	1%	47	39%	40	33%	86	71%	70	58%	115	96%	60	50%	105	88%
R6	0.93	1%	47	39%	46	38%	92	76%	66	55%	112	94%	50	41%	96	80%
R7	2.45	2%	48	40%	114	95%	160	133%	104	87%	150	125%	94	78%	140	116%
R8	2.08	2%	48	40%	78	65%	124	103%	50	42%	96	80%	50	42%	96	80%
R9	1.58	1%	47	40%	63	52%	109	91%	68	57%	114	95%	64	53%	110	91%
R10	0.70	1%	47	39%	43	36%	89	74%	47	39%	93	78%	45	38%	91	76%
R11	0.93	1%	47	39%	46	39%	92	77%	38	32%	84	70%	38	31%	84	70%
R12	1.35	1%	47	39%	66	55%	112	94%	63	52%	108	90%	60	50%	106	88%
R13	1.10	1%	47	39%	81	68%	127	106%	73	61%	119	99%	74	62%	120	100%
R14	1.21	1%	47	39%	60	50%	106	89%	48	40%	93	78%	48	40%	93	78%
R15	1.37	1%	47	39%	45	38%	91	76%	40	33%	86	72%	40	33%	86	72%
R16	1.25	1%	47	39%	79	66%	125	104%	50	42%	96	80%	47	39%	93	78%
R17	1.60	1%	47	40%	118	98%	164	137%	46	38%	92	77%	48	40%	94	78%
R18	1.33	1%	47	39%	126	105%	172	143%	42	35%	88	73%	43	36%	89	74%
R19	1.13	1%	47	39%	79	66%	125	104%	43	36%	89	74%	42	35%	88	73%
R20	1.00	1%	47	39%	69	58%	115	96%	35	29%	81	68%	50	42%	96	80%
R21	0.87	1%	47	39%	66	55%	112	93%	34	29%	80	67%	52	43%	98	81%
R22	0.75	1%	47	39%	69	57%	115	96%	43	36%	89	74%	34	29%	80	67%
R23	0.75	1%	47	39%	67	56%	113	94%	40	34%	86	72%	31	26%	77	64%
R24	0.79	1%	47	39%	58	49%	104	87%	35	29%	81	67%	45	37%	91	75%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 27 µg/m³
[2] 90th Percentile Background Concentration = 12 µg/m³
[3] Results based on the 3-year average of the annual 98th percentile of the daily 24-hour average concentrations

24-Hour PM10 Predicted Concentrations

Receptor ID	"Do Nothing" Alternative				Preferred Alternative - Scenario 1 Mitigated				Preferred Alternative - Scenario 2 Mitigated				Preferred Alternative - Scenario 3 Mitigated			
	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]
R1	1.20	2%	20	41%	30	61%	50	100%	16	32%	35	71%	14	28%	33	66%
R2	1.00	2%	20	41%	25	51%	45	89%	64	128%	83	166%	43	86%	62	125%
R3	0.96	2%	20	40%	18	37%	38	75%	25	50%	44	89%	19	39%	39	77%
R4	1.05	2%	20	41%	30	60%	49	99%	81	161%	100	200%	53	105%	72	144%
R5	0.85	2%	20	40%	15	30%	34	69%	25	50%	44	89%	22	43%	41	82%
R6	0.93	2%	20	40%	17	34%	36	73%	24	48%	43	86%	18	36%	37	75%
R7	2.45	5%	22	43%	47	95%	67	133%	40	80%	59	119%	36	72%	55	110%
R8	2.08	4%	21	43%	30	59%	49	98%	19	39%	39	77%	19	38%	38	77%
R9	1.58	3%	21	42%	24	48%	43	87%	26	52%	45	90%	24	48%	43	86%
R10	0.70	1%	20	40%	17	33%	36	72%	18	36%	37	75%	17	35%	37	73%
R11	0.93	2%	20	40%	18	36%	37	74%	14	28%	33	67%	14	28%	33	67%
R12	1.35	3%	21	41%	25	50%	44	88%	24	48%	43	86%	23	45%	42	84%

R13	1.10	2%	20	41%	31	61%	50	100%	28	55%	47	94%	28	56%	47	94%
R14	1.21	2%	20	41%	24	47%	43	86%	19	38%	38	76%	19	38%	38	76%
R15	1.37	3%	21	41%	17	35%	37	73%	15	30%	34	68%	15	30%	34	68%
R16	1.25	2%	21	41%	28	56%	47	95%	19	37%	38	76%	18	36%	37	74%
R17	1.60	3%	21	42%	42	84%	61	123%	17	34%	36	72%	18	36%	37	74%
R18	1.33	3%	21	41%	46	91%	65	130%	15	30%	34	69%	16	33%	36	71%
R19	1.13	2%	20	41%	28	56%	47	95%	16	31%	35	70%	16	31%	35	70%
R20	1.00	2%	20	41%	25	51%	45	90%	13	26%	32	65%	19	37%	38	76%
R21	0.87	2%	20	40%	26	53%	46	91%	13	26%	32	64%	19	38%	38	77%
R22	0.75	1%	20	40%	28	55%	47	94%	16	32%	35	70%	12	24%	31	63%
R23	0.75	1%	20	40%	27	53%	46	92%	15	30%	34	68%	11	22%	30	60%
R24	0.79	2%	20	40%	23	45%	42	84%	13	27%	33	65%	18	35%	37	74%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

[1] Criteria = 50 µg/m³

[2] 90th Percentile Background Concentration = 19 µg/m³

24-Hour PM2.5 Predicted Concentrations (CAAQS)

Receptor ID	"Do Nothing" Alternative				Preferred Alternative - Scenario 1 Mitigated				Preferred Alternative - Scenario 2 Mitigated				Preferred Alternative - Scenario 3 Mitigated			
	Maximum Modelled Concentration Without Background(µg/m³) [3]	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria with Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³) [3]	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria with Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³) [3]	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria with Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³) [3]	Percentage of Criteria without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria with Background (%) [1]
R1	1.01	4%	13	50%	5	17%	17	62%	2	9%	15	54%	3	13%	15	58%
R2	0.90	4%	13	49%	3	12%	16	57%	7	27%	19	72%	5	32%	17	77%
R3	0.78	4%	13	49%	2	9%	15	54%	4	13%	16	58%	3	17%	15	62%
R4	0.95	4%	13	49%	4	14%	16	59%	10	36%	22	81%	6	38%	19	83%
R5	0.69	3%	13	48%	2	8%	14	53%	4	14%	16	59%	3	19%	15	64%
R6	0.75	3%	13	49%	2	8%	14	53%	3	12%	15	57%	3	15%	15	61%
R7	1.63	9%	14	54%	7	25%	19	70%	4	15%	16	60%	4	22%	16	67%
R8	1.48	8%	14	53%	4	15%	16	60%	3	10%	15	55%	3	14%	15	59%
R9	1.09	6%	13	51%	4	13%	16	58%	4	13%	16	58%	4	16%	16	61%
R10	0.57	3%	13	48%	2	8%	14	54%	2	9%	15	54%	3	13%	15	58%
R11	0.71	3%	13	49%	3	10%	15	55%	2	8%	14	53%	2	13%	14	58%
R12	1.01	5%	13	50%	4	13%	16	58%	4	13%	16	58%	4	18%	16	64%
R13	0.90	4%	13	49%	4	14%	16	59%	3	11%	15	56%	3	24%	15	69%
R14	0.83	4%	13	50%	3	12%	15	57%	3	11%	15	56%	3	13%	15	59%
R15	0.87	5%	13	50%	3	11%	15	56%	3	10%	15	55%	3	15%	15	60%
R16	0.97	5%	13	50%	4	15%	16	60%	2	9%	15	54%	2	12%	15	57%
R17	1.30	6%	13	51%	7	25%	19	70%	3	11%	15	56%	3	15%	15	61%
R18	1.10	5%	13	50%	6	22%	18	67%	3	10%	15	55%	2	13%	15	58%
R19	0.94	4%	13	49%	4	15%	16	60%	2	9%	14	54%	3	12%	15	57%
R20	0.86	4%	13	49%	4	16%	16	61%	2	8%	14	54%	3	14%	15	59%
R21	0.76	3%	13	48%	4	15%	16	60%	2	8%	14	53%	2	14%	15	59%
R22	0.66	3%	13	48%	4	13%	16	58%	2	9%	14	54%	2	10%	14	55%
R23	0.63	3%	13	48%	3	12%	15	57%	2	8%	14	53%	2	11%	14	56%
R24	0.56	3%	13	48%	2	9%	15	54%	2	7%	14	52%	2	14%	14	60%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

[1] Criteria = 27 µg/m³

[2] 90th Percentile Background Concentration = 12 µg/m³

[3] Results based on the 3-year average of the annual 98th percentile of the daily 24-hour average concentrations

Annual PM2.5 Predicted Concentrations

Receptor ID	"Do Nothing" Alternative				Preferred Alternative - Scenario 1 Mitigated				Preferred Alternative - Scenario 2 Mitigated				Preferred Alternative - Scenario 3 Mitigated			
	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background(µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]
R1	0.14	2%	7.0	80%	0.5	5%	7.4	84%	0.3	4%	7.2	82%	0.3	3%	7.2	82%
R2	0.17	2%	7.1	80%	0.5	6%	7.4	84%	0.9	10%	7.8	88%	0.6	7%	7.5	85%
R3	0.16	2%	7.0	80%	0.4	5%	7.3	83%	0.5	6%	7.4	84%	0.5	5%	7.3	83%
R4	0.18	2%	7.1	80%	0.6	7%	7.5	85%	1.2	14%	8.1	92%	0.7	8%	7.6	87%
R5	0.14	2%	7.0	80%	0.4	4%	7.2	82%	0.5	5%	7.4	84%	0.4	4%	7.3	83%
R6	0.15	2%	7.0	80%	0.4	4%	7.3	82%	0.5	5%	7.4	84%	0.4	5%	7.3	83%
R7	0.19	2%	7.1	80%	0.7	8%	7.6	86%	0.5	5%	7.4	84%	0.5	6%	7.4	84%
R8	0.19	2%	7.1	80%	0.5	6%	7.4	84%	0.3	4%	7.2	82%	0.3	4%	7.2	82%
R9	0.18	2%	7.1	80%	0.5	5%	7.3	83%	0.4	4%	7.3	83%	0.4	5%	7.3	83%

R10	0.06	1%	7.0	79%	0.2	2%	7.1	80%	0.1	2%	7.0	80%	0.1	2%	7.0	80%
R11	0.08	1%	7.0	79%	0.2	2%	7.1	81%	0.2	2%	7.1	80%	0.2	2%	7.1	80%
R12	0.12	1%	7.0	80%	0.3	3%	7.2	82%	0.2	3%	7.1	81%	0.3	3%	7.1	81%
R13	0.11	1%	7.0	80%	0.3	3%	7.2	82%	0.3	3%	7.1	81%	0.3	3%	7.1	81%
R14	0.11	1%	7.0	79%	0.3	3%	7.2	82%	0.3	3%	7.2	81%	0.3	3%	7.2	81%
R15	0.09	1%	7.0	79%	0.2	3%	7.1	81%	0.2	2%	7.1	80%	0.2	2%	7.1	81%
R16	0.14	2%	7.0	80%	0.4	4%	7.3	83%	0.3	3%	7.2	81%	0.3	3%	7.1	81%
R17	0.17	2%	7.1	80%	0.6	7%	7.5	85%	0.4	4%	7.3	82%	0.3	4%	7.2	82%
R18	0.14	2%	7.0	80%	0.5	5%	7.4	84%	0.3	3%	7.2	82%	0.3	3%	7.2	82%
R19	0.13	1%	7.0	80%	0.4	5%	7.3	83%	0.3	3%	7.2	82%	0.3	3%	7.2	81%
R20	0.12	1%	7.0	80%	0.4	4%	7.3	83%	0.3	3%	7.2	81%	0.3	3%	7.1	81%
R21	0.11	1%	7.0	80%	0.4	4%	7.2	82%	0.3	3%	7.2	81%	0.2	3%	7.1	81%
R22	0.10	1%	7.0	79%	0.3	3%	7.2	82%	0.2	3%	7.1	81%	0.2	2%	7.1	81%
R23	0.09	1%	7.0	79%	0.3	3%	7.2	81%	0.2	2%	7.1	81%	0.2	2%	7.1	80%
R24	0.08	1%	7.0	79%	0.2	3%	7.1	81%	0.2	2%	7.1	80%	0.2	2%	7.1	80%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

[1] Criteria = 8.8 µg/m³

[2] Average Background Concentration = 7 µg/m³

6B

Comparison of LFG Results from the Preferred Alternative to the "Do Nothing" Alternative

Comparion of LFG Results from the Preferred Alternative to the "Do Nothing" Alternative

With Mitigation

24-Hour Hydrogen Sulphide Predicted Concentrations

Receptor ID	"Do Nothing Alternative"				Preferred Alternative - Scenario 1				Preferred Alternative - Scenario 2				Preferred Alternative - Scenario 3			
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]
Max GLC	0.85	12.2%	6.5	92%	0.85	12.2%	6.5	92%	0.85	12.2%	6.5	92%	0.85	12.2%	6.5	92%
R1	0.04	0.6%	5.6	81%	0.04	0.6%	5.6	81%	0.04	0.6%	5.6	81%	0.04	0.6%	5.6	81%
R2	0.07	1.0%	5.7	81%	0.07	1.0%	5.7	81%	0.07	1.0%	5.7	81%	0.07	1.0%	5.7	81%
R3	0.07	1.0%	5.7	81%	0.07	1.0%	5.7	81%	0.07	1.0%	5.7	81%	0.07	1.0%	5.7	81%
R4	0.07	1.0%	5.7	81%	0.07	1.0%	5.7	81%	0.07	1.0%	5.7	81%	0.07	1.0%	5.7	81%
R5	0.06	0.9%	5.7	81%	0.06	0.9%	5.7	81%	0.06	0.9%	5.7	81%	0.06	0.9%	5.7	81%
R6	0.07	0.9%	5.7	81%	0.07	0.9%	5.7	81%	0.07	0.9%	5.7	81%	0.07	0.9%	5.7	81%
R7	0.07	0.9%	5.7	81%	0.07	0.9%	5.7	81%	0.07	0.9%	5.7	81%	0.07	0.9%	5.7	81%
R8	0.04	0.6%	5.6	81%	0.05	0.6%	5.6	81%	0.04	0.6%	5.6	81%	0.04	0.6%	5.6	81%
R9	0.10	1.4%	5.7	81%	0.10	1.5%	5.7	81%	0.10	1.5%	5.7	81%	0.10	1.4%	5.7	81%
R10	0.04	0.5%	5.6	81%	0.04	0.5%	5.6	81%	0.04	0.5%	5.6	81%	0.04	0.5%	5.6	81%
R11	0.06	0.9%	5.7	81%	0.06	0.9%	5.7	81%	0.06	0.9%	5.7	81%	0.06	0.9%	5.7	81%
R12	0.10	1.4%	5.7	81%	0.10	1.4%	5.7	81%	0.10	1.4%	5.7	81%	0.10	1.4%	5.7	81%
R13	0.08	1.1%	5.7	81%	0.08	1.1%	5.7	81%	0.08	1.1%	5.7	81%	0.08	1.1%	5.7	81%
R14	0.06	0.9%	5.7	81%	0.07	1.0%	5.7	81%	0.07	1.0%	5.7	81%	0.07	0.9%	5.7	81%
R15	0.08	1.1%	5.7	81%	0.08	1.1%	5.7	81%	0.08	1.1%	5.7	81%	0.08	1.1%	5.7	81%
R16	0.04	0.6%	5.6	81%	0.04	0.6%	5.6	81%	0.04	0.6%	5.6	81%	0.04	0.6%	5.6	81%
R17	0.04	0.6%	5.6	81%	0.04	0.6%	5.6	81%	0.04	0.6%	5.6	81%	0.04	0.6%	5.6	81%
R18	0.04	0.6%	5.6	81%	0.04	0.6%	5.6	81%	0.04	0.6%	5.6	81%	0.04	0.6%	5.6	81%
R19	0.04	0.5%	5.6	81%	0.04	0.6%	5.6	81%	0.04	0.6%	5.6	81%	0.04	0.6%	5.6	81%
R20	0.04	0.5%	5.6	81%	0.04	0.6%	5.6	81%	0.04	0.5%	5.6	81%	0.04	0.5%	5.6	81%
R21	0.04	0.5%	5.6	81%	0.04	0.5%	5.6	81%	0.04	0.5%	5.6	81%	0.04	0.5%	5.6	81%
R22	0.03	0.5%	5.6	80%	0.03	0.5%	5.6	80%	0.03	0.5%	5.6	80%	0.03	0.5%	5.6	80%
R23	0.03	0.4%	5.6	80%	0.03	0.5%	5.6	80%	0.03	0.4%	5.6	80%	0.03	0.4%	5.6	80%
R24	0.03	0.4%	5.6	80%	0.03	0.4%	5.6	80%	0.03	0.4%	5.6	80%	0.03	0.4%	5.6	80%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

[1] Criteria = 7 µg/m³

[2] 90th Percentile Background Concentration based on all wind directions = 5.6 µg/m³

10-Minute Hydrogen Sulphide Predicted Concentrations

Receptor ID	"Do Nothing Alternative"				Preferred Alternative - Scenario 1				Preferred Alternative - Scenario 2				Preferred Alternative - Scenario 3			
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]
R1	0.40	3.1%	22.9	176%	0.45	3.5%	23.0	177%	0.43	3.3%	22.9	177%	0.44	3%	22.96	177%
R2	0.34	2.6%	22.9	176%	0.34	2.6%	22.9	176%	0.34	2.6%	22.9	176%	0.34	3%	22.85	176%
R3	0.37	2.8%	22.9	176%	0.37	2.8%	22.9	176%	0.37	2.8%	22.9	176%	0.37	3%	22.89	176%
R4	0.39	3.0%	22.9	176%	0.39	3.0%	22.9	176%	0.39	3.0%	22.9	176%	0.39	3%	22.91	176%
R5	0.30	2.3%	22.8	176%	0.30	2.3%	22.8	176%	0.30	2.3%	22.8	176%	0.30	2%	22.82	176%
R6	0.33	2.5%	22.8	176%	0.33	2.6%	22.8	176%	0.33	2.6%	22.8	176%	0.33	3%	22.85	176%
R7	0.41	3.1%	22.9	176%	0.41	3.2%	22.9	176%	0.41	3.2%	22.9	176%	0.41	3%	22.93	176%
R8	0.34	2.6%	22.9	176%	0.36	2.7%	22.9	176%	0.35	2.7%	22.9	176%	0.36	3%	22.87	176%
R9	0.59	4.6%	23.1	178%	0.59	4.6%	23.1	178%	0.59	4.6%	23.1	178%	0.59	5%	23.11	178%
R10	0.28	2.2%	22.8	175%	0.28	2.2%	22.8	175%	0.28	2.2%	22.8	175%	0.28	2%	22.80	175%
R11	0.32	2.5%	22.8	176%	0.33	2.5%	22.8	176%	0.33	2.5%	22.8	176%	0.33	3%	22.84	176%
R12	0.38	2.9%	22.9	176%	0.39	3.0%	22.9	176%	0.39	3.0%	22.9	176%	0.39	3%	22.91	176%
R13	0.37	2.8%	22.9	176%	0.37	2.9%	22.9	176%	0.37	2.9%	22.9	176%	0.37	3%	22.89	176%
R14	0.36	2.8%	22.9	176%	0.36	2.8%	22.9	176%	0.36	2.8%	22.9	176%	0.36	3%	22.88	176%
R15	0.43	3.3%	22.9	177%	0.43	3.3%	22.9	177%	0.43	3.3%	22.9	177%	0.43	3%	22.95	177%
R16	0.33	2.6%	22.9	176%	0.35	2.7%	22.9	176%	0.34	2.6%	22.9	176%	0.35	3%	22.87	176%
R17	0.38	2.9%	22.9	176%	0.42	3.3%	22.9	176%	0.40	3.1%	22.9	176%	0.42	3%	22.93	176%
R18	0.35	2.7%	22.9	176%	0.39	3.0%	22.9	176%	0.36	2.8%	22.9	176%	0.38	3%	22.90	176%
R19	0.40	3.1%	22.9	176%	0.45	3.4%	23.0	177%	0.43	3.3%	22.9	177%	0.42	3%	22.93	176%
R20	0.40	3.1%	22.9	176%	0.45	3.5%	23.0	177%	0.44	3.4%	23.0	177%	0.44	3%	22.96	177%
R21	0.40	3.1%	22.9	176%	0.45	3.5%	23.0	177%	0.44	3.4%	23.0	177%	0.44	3%	22.96	177%
R22	0.39	3.0%	22.9	176%	0.43	3.3%	23.0	177%	0.42	3.3%	22.9	176%	0.43	3%	22.94	176%

R23	0.38	2.9%	22.9	176%	0.42	3.3%	22.9	176%	0.41	3.2%	22.9	176%	0.42	3%	22.93	176%
R24	0.36	2.7%	22.9	176%	0.39	3.0%	22.9	176%	0.38	2.9%	22.9	176%	0.39	3%	22.90	176%
STR1	0.76	5.9%	23.3	179%	0.76	5.9%	23.3	179%	0.76	5.9%	23.3	179%	0.76	6%	23.28	179%

Notes:

[1] Criteria = 13 µg/m³

[2] 90th Percentile Background Concentration based on all wind directions = 22.5 µg/m³

10-Minute Total Reduced Sulphur Predicted Concentrations

Receptor ID	"Do Nothing Alternative"				Preferred Alternative - Scenario 1				Preferred Alternative - Scenario 2				Preferred Alternative - Scenario 3			
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]
R1	0.46	3.6%	44.7	344%	0.75	5.8%	45.0	346%	0.59	4.5%	44.8	345%	0.49	4%	44.72	344%
R2	0.99	7.6%	45.2	348%	0.99	7.6%	45.2	348%	0.99	7.6%	45.2	348%	0.99	8%	45.23	348%
R3	0.49	3.8%	44.7	344%	0.76	5.8%	45.0	346%	0.61	4.7%	44.8	345%	0.50	4%	44.74	344%
R4	1.15	8.8%	45.4	349%	1.15	8.8%	45.4	349%	1.15	8.8%	45.4	349%	1.15	9%	45.38	349%
R5	0.50	3.8%	44.7	344%	0.74	5.7%	45.0	346%	0.61	4.7%	44.8	345%	0.52	4%	44.75	344%
R6	0.45	3.5%	44.7	344%	0.72	5.6%	45.0	346%	0.58	4.5%	44.8	345%	0.48	4%	44.71	344%
R7	0.41	3.2%	44.6	343%	0.63	4.9%	44.9	345%	0.50	3.8%	44.7	344%	0.41	3%	44.65	343%
R8	0.36	2.8%	44.6	343%	0.59	4.6%	44.8	345%	0.48	3.7%	44.7	344%	0.36	3%	44.59	343%
R9	0.59	4.6%	44.8	345%	0.68	5.2%	44.9	345%	0.59	4.6%	44.8	345%	0.59	5%	44.82	345%
R10	0.39	3.0%	44.6	343%	0.56	4.3%	44.8	345%	0.43	3.3%	44.7	344%	0.39	3%	44.62	343%
R11	0.52	4.0%	44.8	344%	0.53	4.1%	44.8	344%	0.53	4.1%	44.8	344%	0.52	4%	44.75	344%
R12	0.60	4.6%	44.8	345%	0.64	4.9%	44.9	345%	0.62	4.8%	44.9	345%	0.60	5%	44.83	345%
R13	0.55	4.2%	44.8	344%	0.65	5.0%	44.9	345%	0.61	4.7%	44.8	345%	0.55	4%	44.79	345%
R14	0.46	3.5%	44.7	344%	0.67	5.1%	44.9	345%	0.58	4.5%	44.8	345%	0.49	4%	44.72	344%
R15	0.43	3.3%	44.7	344%	0.58	4.5%	44.8	345%	0.46	3.6%	44.7	344%	0.43	3%	44.66	344%
R16	0.36	2.8%	44.6	343%	0.60	4.6%	44.8	345%	0.49	3.7%	44.7	344%	0.37	3%	44.60	343%
R17	0.45	3.4%	44.7	344%	0.77	5.9%	45.0	346%	0.61	4.7%	44.8	345%	0.47	4%	44.70	344%
R18	0.43	3.3%	44.7	344%	0.76	5.8%	45.0	346%	0.60	4.6%	44.8	345%	0.45	3%	44.68	344%
R19	0.46	3.6%	44.7	344%	0.73	5.6%	45.0	346%	0.57	4.4%	44.8	345%	0.49	4%	44.72	344%
R20	0.47	3.6%	44.7	344%	0.71	5.5%	44.9	346%	0.56	4.3%	44.8	345%	0.50	4%	44.73	344%
R21	0.47	3.6%	44.7	344%	0.70	5.4%	44.9	346%	0.57	4.4%	44.8	345%	0.51	4%	44.74	344%
R22	0.46	3.5%	44.7	344%	0.69	5.3%	44.9	346%	0.56	4.3%	44.8	345%	0.51	4%	44.74	344%
R23	0.45	3.5%	44.7	344%	0.69	5.3%	44.9	346%	0.56	4.3%	44.8	345%	0.50	4%	44.73	344%
R24	0.44	3.4%	44.7	344%	0.67	5.1%	44.9	345%	0.56	4.3%	44.8	345%	0.48	4%	44.72	344%
STR1	0.76	5.9%	45.0	346%	0.76	5.9%	45.0	346%	0.76	5.9%	45.0	346%	0.76	6%	44.99	346%

Notes:

[1] Criteria = 13 µg/m³

[2] 90th Percentile Background Concentration based on all wind directions = 44.2 µg/m³

24-Hour Total Reduced Sulphur Predicted Concentrations

Receptor ID	"Do Nothing Alternative"				Preferred Alternative - Scenario 1				Preferred Alternative - Scenario 2				Preferred Alternative - Scenario 3			
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]
Max GLC	0.85	12.2%	11.9	169%	0.86	12.2%	11.9	169%	0.86	12.2%	11.9	169%	0.85	12.2%	11.9	169%
R1	0.04	0.6%	11.0	158%	0.08	1.2%	11.1	158%	0.07	1.0%	11.1	158%	0.05	0.7%	11.0	158%
R2	0.09	1.3%	11.1	158%	0.12	1.7%	11.1	159%	0.11	1.5%	11.1	159%	0.09	1.4%	11.1	158%
R3	0.08	1.1%	11.1	158%	0.10	1.5%	11.1	159%	0.09	1.3%	11.1	158%	0.08	1.1%	11.1	158%
R4	0.10	1.5%	11.1	159%	0.13	1.8%	11.1	159%	0.12	1.7%	11.1	159%	0.10	1.5%	11.1	159%
R5	0.07	1.0%	11.1	158%	0.10	1.5%	11.1	159%	0.09	1.3%	11.1	158%	0.07	1.0%	11.1	158%
R6	0.07	1.0%	11.1	158%	0.09	1.3%	11.1	158%	0.08	1.2%	11.1	158%	0.07	1.0%	11.1	158%
R7	0.08	1.1%	11.1	158%	0.14	2.0%	11.1	159%	0.11	1.6%	11.1	159%	0.08	1.2%	11.1	158%
R8	0.06	0.8%	11.1	158%	0.11	1.6%	11.1	159%	0.09	1.2%	11.1	158%	0.06	0.9%	11.1	158%
R9	0.11	1.5%	11.1	159%	0.16	2.2%	11.2	159%	0.12	1.7%	11.1	159%	0.11	1.5%	11.1	159%
R10	0.04	0.6%	11.0	158%	0.06	0.8%	11.1	158%	0.04	0.6%	11.0	158%	0.04	0.6%	11.0	158%
R11	0.07	0.9%	11.1	158%	0.07	1.0%	11.1	158%	0.07	1.0%	11.1	158%	0.07	0.9%	11.1	158%
R12	0.10	1.4%	11.1	159%	0.10	1.5%	11.1	159%	0.10	1.5%	11.1	159%	0.10	1.5%	11.1	159%
R13	0.08	1.2%	11.1	158%	0.08	1.2%	11.1	158%	0.08	1.2%	11.1	158%	0.08	1.2%	11.1	158%
R14	0.07	1.0%	11.1	158%	0.08	1.2%	11.1	158%	0.08	1.1%	11.1	158%	0.07	1.0%	11.1	158%
R15	0.08	1.1%	11.1	158%	0.08	1.1%	11.1	158%	0.08	1.1%	11.1	158%	0.08	1.1%	11.1	158%
R16	0.05	0.6%	11.0	158%	0.09	1.2%	11.1	158%	0.07	0.9%	11.1	158%	0.05	0.7%	11.0	158%
R17	0.05	0.8%	11.1	158%	0.10	1.5%	11.1	159%	0.08	1.2%	11.1	158%	0.06	0.8%	11.1	158%
R18	0.05	0.7%	11.0	158%	0.09	1.3%	11.1	158%	0.08	1.1%	11.1	158%	0.05	0.8%	11.1	158%

R19	0.04	0.6%	11.0	158%	0.07	1.1%	11.1	158%	0.06	0.9%	11.1	158%	0.05	0.7%	11.0	158%
R20	0.04	0.6%	11.0	158%	0.07	1.0%	11.1	158%	0.06	0.8%	11.1	158%	0.04	0.6%	11.0	158%
R21	0.04	0.6%	11.0	158%	0.06	0.9%	11.1	158%	0.05	0.7%	11.1	158%	0.04	0.6%	11.0	158%
R22	0.04	0.5%	11.0	158%	0.05	0.8%	11.1	158%	0.04	0.6%	11.0	158%	0.04	0.5%	11.0	158%
R23	0.04	0.5%	11.0	158%	0.05	0.8%	11.1	158%	0.04	0.6%	11.0	158%	0.04	0.5%	11.0	158%
R24	0.04	0.5%	11.0	158%	0.05	0.7%	11.1	158%	0.05	0.6%	11.0	158%	0.04	0.5%	11.0	158%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

[1] Criteria = 7 µg/m³

[2] 90th Percentile Background Concentration based on all wind directions = 11 µg/m³

24-Hour Benzene Predicted Concentrations

Receptor ID	"Do Nothing Alternative"				Preferred Alternative - Scenario 1				Preferred Alternative - Scenario 2				Preferred Alternative - Scenario 3			
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]
Max GLC	0.32	14.1%	0.9	38%	0.57	24.7%	1.1	49%	0.32	14.1%	0.9	38%	0.32	14.1%	0.9	38%
R1	0.01	0.6%	0.6	25%	0.09	3.9%	0.6	28%	0.05	2.0%	0.6	26%	0.04	1.7%	0.6	26%
R2	0.02	0.9%	0.6	25%	0.07	3.0%	0.6	27%	0.12	5.4%	0.7	30%	0.12	5.4%	0.7	30%
R3	0.02	0.9%	0.6	25%	0.05	2.1%	0.6	26%	0.05	2.1%	0.6	26%	0.07	3.0%	0.6	27%
R4	0.02	1.0%	0.6	25%	0.07	3.2%	0.6	28%	0.15	6.4%	0.7	31%	0.15	6.5%	0.7	31%
R5	0.02	0.7%	0.6	25%	0.04	1.8%	0.6	26%	0.05	2.1%	0.6	26%	0.05	2.1%	0.6	26%
R6	0.02	0.9%	0.6	25%	0.04	1.9%	0.6	26%	0.05	2.1%	0.6	26%	0.05	2.2%	0.6	26%
R7	0.02	1.0%	0.6	25%	0.07	3.2%	0.6	27%	0.08	3.6%	0.6	28%	0.07	3.0%	0.6	27%
R8	0.02	0.7%	0.6	25%	0.07	3.1%	0.6	27%	0.05	2.1%	0.6	26%	0.04	1.9%	0.6	26%
R9	0.03	1.5%	0.6	26%	0.07	3.2%	0.6	27%	0.06	2.7%	0.6	27%	0.05	2.1%	0.6	26%
R10	0.02	0.9%	0.6	25%	0.04	1.6%	0.6	26%	0.04	1.6%	0.6	26%	0.03	1.4%	0.6	26%
R11	0.02	0.9%	0.6	25%	0.04	1.6%	0.6	26%	0.04	1.6%	0.6	26%	0.03	1.3%	0.6	26%
R12	0.03	1.3%	0.6	26%	0.06	2.6%	0.6	27%	0.05	2.2%	0.6	27%	0.05	2.0%	0.6	26%
R13	0.02	0.8%	0.6	25%	0.05	2.0%	0.6	26%	0.04	1.7%	0.6	26%	0.04	1.5%	0.6	26%
R14	0.02	0.8%	0.6	25%	0.05	2.3%	0.6	27%	0.04	1.8%	0.6	26%	0.03	1.5%	0.6	26%
R15	0.02	1.0%	0.6	25%	0.04	1.7%	0.6	26%	0.04	1.5%	0.6	26%	0.03	1.2%	0.6	26%
R16	0.01	0.5%	0.6	25%	0.07	3.0%	0.6	27%	0.04	1.8%	0.6	26%	0.04	1.6%	0.6	26%
R17	0.02	0.7%	0.6	25%	0.11	4.7%	0.7	29%	0.05	2.4%	0.6	27%	0.05	2.0%	0.6	26%
R18	0.01	0.6%	0.6	25%	0.07	3.1%	0.6	27%	0.05	2.2%	0.6	26%	0.04	1.8%	0.6	26%
R19	0.01	0.6%	0.6	25%	0.08	3.4%	0.6	28%	0.04	1.8%	0.6	26%	0.04	1.6%	0.6	26%
R20	0.01	0.5%	0.6	25%	0.06	2.6%	0.6	27%	0.04	1.6%	0.6	26%	0.03	1.3%	0.6	26%
R21	0.01	0.5%	0.6	25%	0.05	2.1%	0.6	26%	0.03	1.5%	0.6	26%	0.03	1.2%	0.6	25%
R22	0.01	0.4%	0.6	25%	0.04	1.6%	0.6	26%	0.03	1.1%	0.6	25%	0.02	1.1%	0.6	25%
R23	0.01	0.4%	0.6	25%	0.03	1.4%	0.6	26%	0.02	1.0%	0.6	25%	0.03	1.1%	0.6	25%
R24	0.01	0.3%	0.6	25%	0.03	1.3%	0.6	26%	0.02	0.9%	0.6	25%	0.02	0.9%	0.6	25%
STR1	NA	N/A	N/A	N/A	NA	N/A	N/A	N/A	NA	N/A	N/A	N/A	NA	N/A	N/A	N/A

Notes:

[1] Criteria = 2.3 µg/m³

[2] 90th Percentile Background Concentration = 0.56 µg/m³

Annual Benzene Predicted Concentrations

Receptor ID	"Do Nothing Alternative"				Preferred Alternative - Scenario 1				Preferred Alternative - Scenario 2				Preferred Alternative - Scenario 3			
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]
Max GLC	0.035	7.7%	0.4	96%	0.04	9.4%	0.4	98%	0.040	9.0%	0.4	98%	0.04	8.6%	0.4	97%
R1	0.001	0.3%	0.4	89%	0.01	1.3%	0.4	90%	0.004	0.9%	0.4	90%	0.00	0.7%	0.4	89%
R2	0.002	0.5%	0.4	89%	0.01	1.6%	0.4	90%	0.009	2.0%	0.4	91%	0.01	1.6%	0.4	90%
R3	0.002	0.4%	0.4	89%	0.01	1.3%	0.4	90%	0.006	1.4%	0.4	90%	0.01	1.2%	0.4	90%
R4	0.003	0.6%	0.4	89%	0.01	2.0%	0.4	91%	0.012	2.7%	0.4	91%	0.009	2.1%	0.4	91%
R5	0.002	0.3%	0.4	89%	0.01	1.2%	0.4	90%	0.006	1.3%	0.4	90%	0.005	1.0%	0.4	90%
R6	0.002	0.4%	0.4	89%	0.01	1.2%	0.4	90%	0.006	1.3%	0.4	90%	0.00	1.1%	0.4	90%
R7	0.003	0.7%	0.4	89%	0.01	2.6%	0.4	91%	0.009	2.1%	0.4	91%	0.01	1.8%	0.4	90%
R8	0.001	0.3%	0.4	89%	0.01	1.5%	0.4	90%	0.005	1.0%	0.4	90%	0.00	0.9%	0.4	90%
R9	0.003	0.8%	0.4	89%	0.01	2.0%	0.4	91%	0.008	1.7%	0.4	90%	0.01	1.4%	0.4	90%
R10	0.001	0.2%	0.4	89%	0.003	0.6%	0.4	89%	0.002	0.5%	0.4	89%	0.00	0.4%	0.4	89%
R11	0.001	0.3%	0.4	89%	0.003	0.7%	0.4	89%	0.003	0.6%	0.4	89%	0.00	0.5%	0.4	89%

R12	0.002	0.4%	0.4	89%	0.004	0.8%	0.4	90%	0.003	0.7%	0.4	89%	0.00	0.7%	0.4	89%
R13	0.001	0.3%	0.4	89%	0.003	0.7%	0.4	89%	0.003	0.6%	0.4	89%	0.00	0.6%	0.4	89%
R14	0.001	0.3%	0.4	89%	0.003	0.6%	0.4	89%	0.002	0.5%	0.4	89%	0.00	0.5%	0.4	89%
R15	0.001	0.3%	0.4	89%	0.003	0.6%	0.4	89%	0.003	0.6%	0.4	89%	0.00	0.5%	0.4	89%
R16	0.001	0.3%	0.4	89%	0.01	1.3%	0.4	90%	0.004	0.8%	0.4	90%	0.00	0.7%	0.4	89%
R17	0.001	0.3%	0.4	89%	0.01	1.7%	0.4	90%	0.004	1.0%	0.4	90%	0.004	0.9%	0.4	90%
R18	0.001	0.3%	0.4	89%	0.01	1.4%	0.4	90%	0.004	0.9%	0.4	90%	0.003	0.8%	0.4	89%
R19	0.001	0.2%	0.4	89%	0.01	1.1%	0.4	90%	0.004	0.8%	0.4	89%	0.003	0.7%	0.4	89%
R20	0.001	0.2%	0.4	89%	0.005	1.0%	0.4	90%	0.003	0.7%	0.4	89%	0.003	0.6%	0.4	89%
R21	0.001	0.2%	0.4	89%	0.004	1.0%	0.4	90%	0.003	0.7%	0.4	89%	0.003	0.6%	0.4	89%
R22	0.001	0.2%	0.4	89%	0.004	0.8%	0.4	90%	0.003	0.6%	0.4	89%	0.002	0.5%	0.4	89%
R23	0.001	0.2%	0.4	89%	0.003	0.7%	0.4	89%	0.003	0.6%	0.4	89%	0.002	0.5%	0.4	89%
R24	0.001	0.2%	0.4	89%	0.003	0.6%	0.4	89%	0.002	0.5%	0.4	89%	0.00	0.4%	0.4	89%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

[1] Criteria = 0.45 µg/m³

[2] Average Background Concentration = 0.40 µg/m³

24-Hour Vinyl Chloride Predicted Concentrations

Receptor ID	"Do Nothing Alternative"				Preferred Alternative - Scenario 1				Preferred Alternative - Scenario 2				Preferred Alternative - Scenario 3			
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]
Max GLC	0.41	40.9%	0.5	46%	0.41	40.9%	0.5	46%	0.41	40.9%	0.5	46%	0.409	40.9%	0.46	46%
R1	0.01	1.1%	0.1	6%	0.02	2.1%	0.1	7%	0.02	1.9%	0.1	7%	0.016	1.6%	0.07	7%
R2	0.01	1.2%	0.1	6%	0.03	3.0%	0.1	8%	0.03	2.6%	0.1	8%	0.021	2.1%	0.07	7%
R3	0.02	2.2%	0.1	7%	0.03	2.9%	0.1	8%	0.03	2.8%	0.1	8%	0.025	2.5%	0.08	8%
R4	0.01	1.3%	0.1	6%	0.03	3.3%	0.1	8%	0.03	2.9%	0.1	8%	0.023	2.3%	0.07	7%
R5	0.02	1.5%	0.1	7%	0.02	2.4%	0.1	7%	0.02	2.2%	0.1	7%	0.019	1.9%	0.07	7%
R6	0.02	2.1%	0.1	7%	0.03	2.7%	0.1	8%	0.03	2.6%	0.1	8%	0.024	2.4%	0.08	8%
R7	0.02	2.2%	0.1	7%	0.03	3.5%	0.1	9%	0.03	3.2%	0.1	8%	0.027	2.7%	0.08	8%
R8	0.01	1.2%	0.1	6%	0.02	2.2%	0.1	7%	0.02	2.0%	0.1	7%	0.017	1.7%	0.07	7%
R9	0.04	4.3%	0.1	9%	0.05	4.5%	0.1	10%	0.04	4.4%	0.1	10%	0.044	4.4%	0.09	9%
R10	0.02	2.2%	0.1	7%	0.03	2.6%	0.1	8%	0.03	2.6%	0.1	8%	0.024	2.4%	0.08	8%
R11	0.02	2.0%	0.1	7%	0.03	2.6%	0.1	8%	0.03	2.5%	0.1	8%	0.023	2.3%	0.07	7%
R12	0.03	3.2%	0.1	8%	0.04	4.1%	0.1	9%	0.04	3.9%	0.1	9%	0.037	3.7%	0.09	9%
R13	0.02	1.8%	0.1	7%	0.03	2.7%	0.1	8%	0.03	2.6%	0.1	8%	0.023	2.3%	0.07	7%
R14	0.02	1.8%	0.1	7%	0.03	2.8%	0.1	8%	0.03	2.6%	0.1	8%	0.023	2.3%	0.07	7%
R15	0.02	2.5%	0.1	8%	0.03	2.9%	0.1	8%	0.03	2.8%	0.1	8%	0.027	2.7%	0.08	8%
R16	0.01	0.9%	0.1	6%	0.02	1.8%	0.1	7%	0.02	1.6%	0.1	7%	0.014	1.4%	0.06	6%
R17	0.01	1.4%	0.1	7%	0.02	2.4%	0.1	7%	0.02	2.1%	0.1	7%	0.019	1.9%	0.07	7%
R18	0.01	1.3%	0.1	6%	0.02	2.2%	0.1	7%	0.02	2.0%	0.1	7%	0.016	1.6%	0.07	7%
R19	0.01	1.1%	0.1	6%	0.02	2.0%	0.1	7%	0.02	1.8%	0.1	7%	0.015	1.5%	0.07	7%
R20	0.01	1.0%	0.1	6%	0.02	1.8%	0.1	7%	0.02	1.6%	0.1	7%	0.014	1.4%	0.07	7%
R21	0.01	0.9%	0.1	6%	0.02	1.7%	0.1	7%	0.02	1.5%	0.1	7%	0.013	1.3%	0.06	6%
R22	0.01	0.8%	0.1	6%	0.01	1.4%	0.1	7%	0.01	1.3%	0.1	6%	0.011	1.1%	0.06	6%
R23	0.01	0.7%	0.1	6%	0.01	1.3%	0.1	6%	0.01	1.2%	0.1	6%	0.010	1.0%	0.06	6%
R24	0.01	0.7%	0.1	6%	0.01	1.1%	0.1	6%	0.01	1.0%	0.1	6%	0.009	0.9%	0.06	6%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

[1] Criteria = 1 µg/m³

[2] Average Background Concentration = 0.05 µg/m³

Annual Vinyl Chloride Predicted Concentrations

Receptor ID	"Do Nothing Alternative"				Preferred Alternative - Scenario 1				Preferred Alternative - Scenario 2				Preferred Alternative - Scenario 3			
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]
Max GLC	0.044	22.0%	0.10	48%	0.047	23.3%	0.1	49%	0.0460	23.0%	0.10	49%	0.045	22.6%	0.10	48%
R1	0.001	0.4%	0.05	26%	0.002	0.9%	0.1	26%	0.0016	0.8%	0.05	26%	0.001	0.7%	0.05	26%
R2	0.001	0.7%	0.05	26%	0.003	1.4%	0.1	27%	0.0026	1.3%	0.05	27%	0.002	1.1%	0.05	27%
R3	0.001	0.7%	0.05	26%	0.003	1.3%	0.1	27%	0.0024	1.2%	0.05	27%	0.002	1.0%	0.05	27%
R4	0.002	0.8%	0.05	26%	0.003	1.7%	0.1	27%	0.0030	1.5%	0.05	27%	0.002	1.2%	0.05	27%
R5	0.001	0.5%	0.05	26%	0.002	1.1%	0.1	27%	0.0020	1.0%	0.05	27%	0.002	0.8%	0.05	26%
R6	0.001	0.6%	0.05	26%	0.002	1.2%	0.1	27%	0.0022	1.1%	0.05	27%	0.002	0.9%	0.05	26%
R7	0.002	1.0%	0.05	27%	0.005	2.4%	0.1	28%	0.0042	2.1%	0.06	28%	0.003	1.7%	0.05	27%

R8	0.001	0.5%	0.05	26%	0.002	1.1%	0.1	27%	0.0020	1.0%	0.05	27%	0.002	0.8%	0.05	26%
R9	0.003	1.7%	0.05	27%	0.005	2.6%	0.1	28%	0.0048	2.4%	0.06	28%	0.004	2.1%	0.06	28%
R10	0.001	0.5%	0.05	26%	0.002	0.8%	0.1	26%	0.0014	0.7%	0.05	26%	0.001	0.7%	0.05	26%
R11	0.001	0.7%	0.05	26%	0.002	1.0%	0.1	26%	0.0018	0.9%	0.05	26%	0.002	0.8%	0.05	26%
R12	0.002	0.9%	0.05	26%	0.002	1.2%	0.1	27%	0.0023	1.2%	0.05	27%	0.002	1.1%	0.05	27%
R13	0.001	0.7%	0.05	26%	0.002	1.0%	0.1	27%	0.0019	0.9%	0.05	26%	0.002	0.9%	0.05	26%
R14	0.001	0.6%	0.05	26%	0.002	0.8%	0.1	26%	0.0015	0.8%	0.05	26%	0.001	0.7%	0.05	26%
R15	0.001	0.7%	0.05	26%	0.002	0.9%	0.1	26%	0.0017	0.9%	0.05	26%	0.002	0.8%	0.05	26%
R16	0.001	0.4%	0.05	26%	0.002	0.9%	0.1	26%	0.0016	0.8%	0.05	26%	0.001	0.7%	0.05	26%
R17	0.001	0.5%	0.05	26%	0.002	1.0%	0.1	27%	0.0018	0.9%	0.05	26%	0.001	0.7%	0.05	26%
R18	0.001	0.4%	0.05	26%	0.002	0.9%	0.1	26%	0.0016	0.8%	0.05	26%	0.001	0.7%	0.05	26%
R19	0.001	0.4%	0.05	26%	0.002	0.8%	0.1	26%	0.0015	0.7%	0.05	26%	0.001	0.6%	0.05	26%
R20	0.001	0.4%	0.05	26%	0.002	0.8%	0.1	26%	0.0014	0.7%	0.05	26%	0.001	0.6%	0.05	26%
R21	0.001	0.3%	0.05	26%	0.001	0.7%	0.1	26%	0.0013	0.7%	0.05	26%	0.001	0.6%	0.05	26%
R22	0.001	0.3%	0.05	26%	0.001	0.6%	0.1	26%	0.0012	0.6%	0.05	26%	0.001	0.5%	0.05	26%
R23	0.001	0.3%	0.05	26%	0.001	0.6%	0.1	26%	0.0011	0.5%	0.05	26%	0.001	0.5%	0.05	26%
R24	0.001	0.3%	0.05	26%	0.001	0.5%	0.1	26%	0.0010	0.5%	0.05	26%	0.001	0.4%	0.05	26%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 0.2 µg/m³
[2] Average Background Concentration = 0.05 µg/m³

24-Hour 1,2-Dichloroethane Predicted Concentrations

Receptor ID	"Do Nothing Alternative"				Preferred Alternative - Scenario 1				Preferred Alternative - Scenario 2				Preferred Alternative - Scenario 3			
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]
Max GLC	0.31	15.3%	0.40	20%	0.31	15.3%	0.4	20%	0.307	15.3%	0.40	20%	0.31	15.3%	0.40	20%
R1	0.01	0.4%	0.10	5%	0.02	0.9%	0.1	6%	0.015	0.7%	0.11	5%	0.013	0.6%	0.11	5%
R2	0.01	0.5%	0.10	5%	0.02	1.2%	0.1	6%	0.023	1.1%	0.12	6%	0.019	0.9%	0.11	6%
R3	0.02	0.8%	0.11	6%	0.02	1.1%	0.1	6%	0.022	1.1%	0.12	6%	0.019	1.0%	0.11	6%
R4	0.01	0.5%	0.11	5%	0.03	1.3%	0.1	6%	0.025	1.3%	0.12	6%	0.021	1.0%	0.12	6%
R5	0.01	0.6%	0.11	5%	0.02	0.9%	0.1	6%	0.017	0.9%	0.11	6%	0.015	0.7%	0.11	5%
R6	0.02	0.8%	0.11	6%	0.02	1.1%	0.1	6%	0.020	1.0%	0.12	6%	0.019	0.9%	0.11	6%
R7	0.02	0.8%	0.11	6%	0.03	1.4%	0.1	6%	0.025	1.2%	0.12	6%	0.021	1.1%	0.12	6%
R8	0.01	0.5%	0.10	5%	0.02	0.9%	0.1	6%	0.016	0.8%	0.11	6%	0.014	0.7%	0.11	5%
R9	0.03	1.6%	0.13	6%	0.03	1.7%	0.1	6%	0.033	1.7%	0.13	6%	0.032	1.6%	0.13	6%
R10	0.02	0.9%	0.11	6%	0.02	1.1%	0.1	6%	0.021	1.1%	0.12	6%	0.020	1.0%	0.11	6%
R11	0.02	0.8%	0.11	6%	0.02	1.1%	0.1	6%	0.020	1.0%	0.12	6%	0.019	0.9%	0.11	6%
R12	0.02	1.2%	0.12	6%	0.03	1.6%	0.1	6%	0.031	1.6%	0.13	6%	0.029	1.4%	0.12	6%
R13	0.01	0.7%	0.11	5%	0.02	1.1%	0.1	6%	0.020	1.0%	0.12	6%	0.018	0.9%	0.11	6%
R14	0.01	0.7%	0.11	5%	0.02	1.1%	0.1	6%	0.021	1.0%	0.12	6%	0.018	0.9%	0.11	6%
R15	0.02	1.0%	0.11	6%	0.02	1.1%	0.1	6%	0.022	1.1%	0.12	6%	0.021	1.1%	0.12	6%
R16	0.01	0.4%	0.10	5%	0.01	0.7%	0.1	5%	0.013	0.6%	0.11	5%	0.011	0.5%	0.11	5%
R17	0.01	0.5%	0.11	5%	0.02	1.0%	0.1	6%	0.017	0.8%	0.11	6%	0.015	0.7%	0.11	5%
R18	0.01	0.5%	0.10	5%	0.02	0.9%	0.1	6%	0.016	0.8%	0.11	6%	0.013	0.7%	0.11	5%
R19	0.01	0.4%	0.10	5%	0.02	0.8%	0.1	6%	0.014	0.7%	0.11	5%	0.012	0.6%	0.11	5%
R20	0.01	0.4%	0.10	5%	0.01	0.7%	0.1	6%	0.013	0.7%	0.11	5%	0.011	0.6%	0.11	5%
R21	0.01	0.3%	0.10	5%	0.01	0.7%	0.1	5%	0.012	0.6%	0.11	5%	0.010	0.5%	0.11	5%
R22	0.01	0.3%	0.10	5%	0.01	0.6%	0.1	5%	0.010	0.5%	0.11	5%	0.009	0.4%	0.10	5%
R23	0.01	0.3%	0.10	5%	0.01	0.5%	0.1	5%	0.010	0.5%	0.10	5%	0.008	0.4%	0.10	5%
R24	0.01	0.3%	0.10	5%	0.01	0.5%	0.1	5%	0.008	0.4%	0.10	5%	0.007	0.3%	0.10	5%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 2 µg/m³
[2] Average Background Concentration = 0.10 µg/m³

Annual 1,2-Dichloroethane Predicted Concentrations

Receptor ID	"Do Nothing Alternative"				Preferred Alternative - Scenario 1				Preferred Alternative - Scenario 2				Preferred Alternative - Scenario 3			
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]
Max GLC	0.032	7.9%	0.09	23%	0.034	8.5%	0.1	23%	0.033	8.4%	0.09	23%	0.03	8.2%	0.09	23%
R1	0.001	0.2%	0.06	15%	0.001	0.4%	0.1	15%	0.001	0.3%	0.06	15%	0.001	0.3%	0.06	15%
R2	0.001	0.3%	0.06	15%	0.002	0.6%	0.1	16%	0.002	0.5%	0.06	16%	0.002	0.4%	0.06	15%
R3	0.001	0.3%	0.06	15%	0.002	0.5%	0.1	16%	0.002	0.5%	0.06	15%	0.002	0.4%	0.06	15%

R4	0.001	0.3%	0.06	15%	0.003	0.7%	0.1	16%	0.003	0.6%	0.06	16%	0.002	0.5%	0.06	16%
R5	0.001	0.2%	0.06	15%	0.002	0.4%	0.1	15%	0.002	0.4%	0.06	15%	0.001	0.3%	0.06	15%
R6	0.001	0.2%	0.06	15%	0.002	0.5%	0.1	15%	0.002	0.4%	0.06	15%	0.001	0.4%	0.06	15%
R7	0.002	0.4%	0.06	15%	0.004	1.0%	0.1	16%	0.003	0.8%	0.06	16%	0.003	0.7%	0.06	16%
R8	0.001	0.2%	0.06	15%	0.002	0.5%	0.1	15%	0.002	0.4%	0.06	15%	0.001	0.3%	0.06	15%
R9	0.002	0.6%	0.06	16%	0.004	1.0%	0.1	16%	0.004	0.9%	0.06	16%	0.003	0.8%	0.06	16%
R10	0.001	0.2%	0.06	15%	0.001	0.3%	0.1	15%	0.001	0.3%	0.06	15%	0.001	0.3%	0.06	15%
R11	0.001	0.3%	0.06	15%	0.002	0.4%	0.1	15%	0.001	0.4%	0.06	15%	0.001	0.3%	0.06	15%
R12	0.001	0.3%	0.06	15%	0.002	0.5%	0.1	15%	0.002	0.5%	0.06	15%	0.002	0.4%	0.06	15%
R13	0.001	0.3%	0.06	15%	0.002	0.4%	0.1	15%	0.001	0.4%	0.06	15%	0.001	0.3%	0.06	15%
R14	0.001	0.2%	0.06	15%	0.001	0.3%	0.1	15%	0.001	0.3%	0.06	15%	0.001	0.3%	0.06	15%
R15	0.001	0.3%	0.06	15%	0.001	0.4%	0.1	15%	0.001	0.3%	0.06	15%	0.001	0.3%	0.06	15%
R16	0.001	0.2%	0.06	15%	0.001	0.4%	0.1	15%	0.001	0.3%	0.06	15%	0.001	0.3%	0.06	15%
R17	0.001	0.2%	0.06	15%	0.002	0.4%	0.1	15%	0.001	0.4%	0.06	15%	0.001	0.3%	0.06	15%
R18	0.001	0.2%	0.06	15%	0.002	0.4%	0.1	15%	0.001	0.3%	0.06	15%	0.001	0.3%	0.06	15%
R19	0.001	0.1%	0.06	15%	0.001	0.3%	0.1	15%	0.001	0.3%	0.06	15%	0.001	0.2%	0.06	15%
R20	0.001	0.1%	0.06	15%	0.001	0.3%	0.1	15%	0.001	0.3%	0.06	15%	0.001	0.2%	0.06	15%
R21	0.001	0.1%	0.06	15%	0.001	0.3%	0.1	15%	0.001	0.3%	0.06	15%	0.001	0.2%	0.06	15%
R22	0.000	0.1%	0.06	15%	0.001	0.3%	0.1	15%	0.001	0.2%	0.06	15%	0.001	0.2%	0.06	15%
R23	0.000	0.1%	0.06	15%	0.001	0.2%	0.1	15%	0.001	0.2%	0.06	15%	0.001	0.2%	0.06	15%
R24	0.000	0.1%	0.06	15%	0.001	0.2%	0.1	15%	0.001	0.2%	0.06	15%	0.001	0.2%	0.06	15%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 0.4 µg/m³
[2] Average Background Concentration = 0.06 µg/m³

24-Hour Ammonia Predicted Concentrations

Receptor ID	"Do Nothing Alternative"				Preferred Alternative - Scenario 1				Preferred Alternative - Scenario 2				Preferred Alternative - Scenario 3			
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]
Max GLC	8.5	9%	11.6	12%	8.53	8.5%	11.6	12%	8.53	8.5%	11.6	12%	8.5	9%	12	12%
R1	0.2	0%	3.3	3%	0.16	0.2%	3.3	3%	0.16	0.2%	3.3	3%	0.2	0%	3	3%
R2	0.1	0%	3.2	3%	0.14	0.1%	3.2	3%	0.16	0.2%	3.3	3%	0.1	0%	3	3%
R3	0.3	0%	3.5	3%	0.35	0.3%	3.5	3%	0.35	0.4%	3.5	3%	0.4	0%	3	3%
R4	0.1	0%	3.3	3%	0.15	0.1%	3.3	3%	0.19	0.2%	3.3	3%	0.2	0%	3	3%
R5	0.2	0%	3.4	3%	0.25	0.3%	3.4	3%	0.25	0.3%	3.4	3%	0.3	0%	3	3%
R6	0.3	0%	3.4	3%	0.33	0.3%	3.4	3%	0.33	0.3%	3.4	3%	0.3	0%	3	3%
R7	0.3	0%	3.5	3%	0.36	0.4%	3.5	3%	0.36	0.4%	3.5	3%	0.4	0%	3	3%
R8	0.2	0%	3.3	3%	0.19	0.2%	3.3	3%	0.18	0.2%	3.3	3%	0.2	0%	3	3%
R9	0.8	1%	3.9	4%	0.81	0.8%	3.9	4%	0.80	0.8%	3.9	4%	0.8	1%	4	4%
R10	0.3	0%	3.4	3%	0.27	0.3%	3.4	3%	0.27	0.3%	3.4	3%	0.3	0%	3	3%
R11	0.3	0%	3.4	3%	0.31	0.3%	3.4	3%	0.30	0.3%	3.4	3%	0.3	0%	3	3%
R12	0.5	0%	3.6	4%	0.49	0.5%	3.6	4%	0.48	0.5%	3.6	4%	0.5	0%	4	4%
R13	0.3	0%	3.4	3%	0.28	0.3%	3.4	3%	0.28	0.3%	3.4	3%	0.3	0%	3	3%
R14	0.2	0%	3.3	3%	0.23	0.2%	3.3	3%	0.23	0.2%	3.3	3%	0.2	0%	3	3%
R15	0.4	0%	3.5	3%	0.38	0.4%	3.5	3%	0.38	0.4%	3.5	3%	0.4	0%	3	3%
R16	0.1	0%	3.2	3%	0.15	0.2%	3.3	3%	0.14	0.1%	3.3	3%	0.1	0%	3	3%
R17	0.2	0%	3.3	3%	0.21	0.2%	3.3	3%	0.21	0.2%	3.3	3%	0.2	0%	3	3%
R18	0.2	0%	3.3	3%	0.20	0.2%	3.3	3%	0.20	0.2%	3.3	3%	0.2	0%	3	3%
R19	0.1	0%	3.3	3%	0.15	0.2%	3.3	3%	0.15	0.1%	3.3	3%	0.2	0%	3	3%
R20	0.1	0%	3.3	3%	0.15	0.2%	3.3	3%	0.15	0.1%	3.3	3%	0.1	0%	3	3%
R21	0.1	0%	3.2	3%	0.15	0.1%	3.3	3%	0.14	0.1%	3.3	3%	0.1	0%	3	3%
R22	0.1	0%	3.2	3%	0.12	0.1%	3.2	3%	0.12	0.1%	3.2	3%	0.1	0%	3	3%
R23	0.1	0%	3.2	3%	0.11	0.1%	3.2	3%	0.10	0.1%	3.2	3%	0.1	0%	3	3%
R24	0.1	0%	3.2	3%	0.11	0.1%	3.2	3%	0.10	0.1%	3.2	3%	0.1	0%	3	3%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 100 µg/m³
[2] Average Background Concentration = 3.11 µg/m³

1-Hour Sulphur Dioxide Predicted Concentrations

Receptor ID	"Do Nothing Alternative"				Preferred Alternative - Scenario 1				Preferred Alternative - Scenario 2				Preferred Alternative - Scenario 3			
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]

Max GLC	75	75%	77	77%	74.68	74.7%	77.1	77%	75	75%	77	77%	75	75%	77	77%
R1	8	8%	10	10%	7.83	7.8%	10.2	10%	8	8%	10	10%	8	8%	10	10%
R2	10	10%	12	12%	9.79	9.8%	12.2	12%	10	10%	12	12%	10	10%	12	12%
R3	12	12%	14	14%	11.82	11.8%	14.2	14%	12	12%	14	14%	12	12%	14	14%
R4	11	11%	13	13%	11.06	11.1%	13.5	13%	11	11%	13	13%	11	11%	13	13%
R5	9	9%	12	12%	9.31	9.3%	11.7	12%	9	9%	12	12%	9	9%	12	12%
R6	14	14%	16	16%	13.59	13.6%	16.0	16%	14	14%	16	16%	14	14%	16	16%
R7	21	21%	24	24%	21.23	21.2%	23.6	24%	21	21%	24	24%	21	21%	24	24%
R8	10	10%	12	12%	9.82	9.8%	12.2	12%	10	10%	12	12%	10	10%	12	12%
R9	26	26%	28	28%	25.88	25.9%	28.3	28%	26	26%	28	28%	26	26%	28	28%
R10	19	19%	22	22%	19.46	19.5%	21.9	22%	19	19%	22	22%	19	19%	22	22%
R11	18	18%	21	21%	18.34	18.3%	20.7	21%	18	18%	21	21%	18	18%	21	21%
R12	22	22%	25	25%	22.23	22.2%	24.6	25%	22	22%	25	25%	22	22%	25	25%
R13	20	20%	22	22%	19.92	19.9%	22.3	22%	20	20%	22	22%	20	20%	22	22%
R14	12	12%	15	15%	12.46	12.5%	14.9	15%	12	12%	15	15%	12	12%	15	15%
R15	23	23%	25	25%	22.82	22.8%	25.2	25%	23	23%	25	25%	23	23%	25	25%
R16	9	9%	11	11%	8.88	8.9%	11.3	11%	9	9%	11	11%	9	9%	11	11%
R17	10	10%	12	12%	9.61	9.6%	12.0	12%	10	10%	12	12%	10	10%	12	12%
R18	9	9%	11	11%	8.92	8.9%	11.3	11%	9	9%	11	11%	9	9%	11	11%
R19	8	8%	10	10%	7.85	7.9%	10.3	10%	8	8%	10	10%	8	8%	10	10%
R20	8	8%	10	10%	7.73	7.7%	10.1	10%	8	8%	10	10%	8	8%	10	10%
R21	7	7%	10	10%	7.43	7.4%	9.8	10%	7	7%	10	10%	7	7%	10	10%
R22	7	7%	9	9%	6.67	6.7%	9.1	9%	7	7%	9	9%	7	7%	9	9%
R23	6	6%	9	9%	6.28	6.3%	8.7	9%	6	6%	9	9%	6	6%	9	9%
R24	6	6%	8	8%	5.83	5.8%	8.2	8%	6	6%	8	8%	6	6%	8	8%
STR1	28	28%	31	31%	28.18	28.2%	30.6	31%	28	28%	31	31%	28	28%	31	31%

Notes:
[1] Criteria = 100 µg/m³
[2] Average Background Concentration = 2.4 µg/m³

Annual Sulphur Dioxide Predicted Concentrations

Receptor ID	"Do Nothing Alternative"				Preferred Alternative - Scenario 1				Preferred Alternative - Scenario 2				Preferred Alternative - Scenario 3			
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]
Max GLC	2.02	20.2%	3.4	34%	2.02	20.2%	3.4	34%	2.02	20.2%	3.4	34%	2.0	20.2%	3.4	34%
R1	0.17	1.7%	1.6	16%	0.17	1.7%	1.6	16%	0.17	1.7%	1.6	16%	0.17	2%	1.6	16%
R2	0.22	2.2%	1.6	16%	0.22	2.2%	1.6	16%	0.22	2.2%	1.6	16%	0.22	2%	1.6	16%
R3	0.23	2.3%	1.6	16%	0.23	2.3%	1.6	16%	0.23	2.3%	1.6	16%	0.23	2%	1.6	16%
R4	0.24	2.4%	1.6	16%	0.24	2.4%	1.6	16%	0.24	2.4%	1.6	16%	0.24	2%	1.6	16%
R5	0.20	2.0%	1.6	16%	0.21	2.1%	1.6	16%	0.21	2.1%	1.6	16%	0.21	2%	1.6	16%
R6	0.22	2.2%	1.6	16%	0.22	2.2%	1.6	16%	0.22	2.2%	1.6	16%	0.22	2%	1.6	16%
R7	0.27	2.7%	1.7	17%	0.27	2.7%	1.7	17%	0.27	2.7%	1.7	17%	0.27	3%	1.7	17%
R8	0.22	2.2%	1.6	16%	0.22	2.2%	1.6	16%	0.22	2.2%	1.6	16%	0.22	2%	1.6	16%
R9	0.32	3.2%	1.7	17%	0.32	3.2%	1.7	17%	0.32	3.2%	1.7	17%	0.32	3%	1.7	17%
R10	0.12	1.2%	1.5	15%	0.12	1.2%	1.5	15%	0.12	1.2%	1.5	15%	0.12	1%	1.5	15%
R11	0.17	1.7%	1.6	16%	0.17	1.7%	1.6	16%	0.17	1.7%	1.6	16%	0.17	2%	1.6	16%
R12	0.26	2.6%	1.7	17%	0.26	2.6%	1.7	17%	0.26	2.6%	1.7	17%	0.26	3%	1.7	17%
R13	0.23	2.3%	1.6	16%	0.23	2.3%	1.6	16%	0.23	2.3%	1.6	16%	0.23	2%	1.6	16%
R14	0.19	1.9%	1.6	16%	0.19	1.9%	1.6	16%	0.19	1.9%	1.6	16%	0.19	2%	1.6	16%
R15	0.19	1.9%	1.6	16%	0.19	1.9%	1.6	16%	0.19	1.9%	1.6	16%	0.19	2%	1.6	16%
R16	0.17	1.7%	1.6	16%	0.17	1.7%	1.6	16%	0.17	1.7%	1.6	16%	0.17	2%	1.6	16%
R17	0.21	2.1%	1.6	16%	0.21	2.1%	1.6	16%	0.21	2.1%	1.6	16%	0.21	2%	1.6	16%
R18	0.18	1.8%	1.6	16%	0.18	1.8%	1.6	16%	0.18	1.8%	1.6	16%	0.18	2%	1.6	16%
R19	0.16	1.6%	1.6	16%	0.16	1.6%	1.6	16%	0.16	1.6%	1.6	16%	0.16	2%	1.6	16%
R20	0.15	1.5%	1.6	16%	0.15	1.5%	1.6	16%	0.15	1.5%	1.6	16%	0.15	2%	1.6	16%
R21	0.14	1.4%	1.5	15%	0.14	1.4%	1.5	15%	0.14	1.4%	1.5	15%	0.14	1%	1.5	15%
R22	0.12	1.2%	1.5	15%	0.12	1.2%	1.5	15%	0.12	1.2%	1.5	15%	0.12	1%	1.5	15%
R23	0.12	1.2%	1.5	15%	0.12	1.2%	1.5	15%	0.12	1.2%	1.5	15%	0.12	1%	1.5	15%
R24	0.11	1.1%	1.5	15%	0.11	1.1%	1.5	15%	0.11	1.1%	1.5	15%	0.11	1%	1.5	15%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
[1] Criteria = 10 µg/m³
[2] Average Background Concentration = 1.4 µg/m³

1-Hour Nitrogen Oxides Predicted Concentrations

Receptor ID	"Do Nothing Alternative"				Preferred Alternative - Scenario 1				Preferred Alternative - Scenario 2				Preferred Alternative - Scenario 3			
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]
Max GLC	70	18%	91	23%	196.35	49.1%	217.3	54%	180	45%	201	50%	179	45%	200	50%
R1	9	2%	30	7%	53.56	13.4%	74.6	19%	47	12%	68	17%	46	11%	67	17%
R2	6	2%	27	7%	35.22	8.8%	56.2	14%	74	18%	95	24%	42	11%	63	16%
R3	8	2%	29	7%	25.04	6.3%	46.0	12%	39	10%	60	15%	26	6%	47	12%
R4	7	2%	28	7%	36.40	9.1%	57.4	14%	102	25%	123	31%	50	13%	71	18%
R5	6	2%	27	7%	23.59	5.9%	44.6	11%	43	11%	64	16%	33	8%	54	13%
R6	7	2%	28	7%	23.83	6.0%	44.8	11%	36	9%	57	14%	24	6%	45	11%
R7	8	2%	29	7%	73.33	18.3%	94.3	24%	73	18%	94	23%	72	18%	93	23%
R8	8	2%	29	7%	41.24	10.3%	62.2	16%	38	9%	59	15%	37	9%	58	15%
R9	12	3%	33	8%	63.22	15.8%	84.2	21%	61	15%	82	21%	60	15%	81	20%
R10	12	3%	33	8%	14.20	3.6%	35.2	9%	17	4%	38	10%	17	4%	38	10%
R11	12	3%	33	8%	27.65	6.9%	48.6	12%	22	6%	43	11%	22	5%	43	11%
R12	13	3%	34	8%	28.12	7.0%	49.1	12%	26	7%	47	12%	26	7%	47	12%
R13	13	3%	34	8%	33.64	8.4%	54.6	14%	28	7%	49	12%	27	7%	48	12%
R14	10	2%	31	8%	25.57	6.4%	46.6	12%	24	6%	45	11%	23	6%	44	11%
R15	13	3%	34	9%	24.83	6.2%	45.8	11%	31	8%	52	13%	28	7%	49	12%
R16	7	2%	28	7%	42.70	10.7%	63.7	16%	41	10%	62	16%	41	10%	62	15%
R17	9	2%	30	7%	63.78	15.9%	84.8	21%	58	15%	79	20%	57	14%	78	19%
R18	8	2%	29	7%	64.69	16.2%	85.7	21%	49	12%	70	17%	48	12%	69	17%
R19	9	2%	30	7%	50.76	12.7%	71.8	18%	45	11%	66	17%	44	11%	65	16%
R20	9	2%	30	7%	51.79	12.9%	72.8	18%	40	10%	61	15%	40	10%	61	15%
R21	9	2%	30	7%	50.34	12.6%	71.3	18%	33	8%	54	13%	32	8%	53	13%
R22	8	2%	29	7%	41.60	10.4%	62.6	16%	32	8%	53	13%	31	8%	52	13%
R23	8	2%	29	7%	37.74	9.4%	58.7	15%	30	8%	51	13%	29	7%	50	13%
R24	7	2%	28	7%	37.03	9.3%	58.0	15%	27	7%	48	12%	26	7%	47	12%
STR1	16	4%	37	9%	56.21	14.1%	77.2	19%	50	12%	71	18%	47	12%	68	17%

Notes:
[1] Criteria = 400 µg/m³
[2] Average Background Concentration = 21.0 µg/m³

24-Hour Nitrogen Oxides Predicted Concentrations

Receptor ID	"Do Nothing Alternative"				Preferred Alternative - Scenario 1				Preferred Alternative - Scenario 2				Preferred Alternative - Scenario 3			
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]
Max GLC	145	73%	164	82%	31.23	15.6%	50.3	25%	31	16%	50	25%	31	16%	50	25%
R1	1	1%	20	10%	3.82	1.9%	22.9	11%	3	1%	22	11%	3	1%	22	11%
R2	2	1%	21	11%	2.45	1.2%	21.6	11%	5	2%	24	12%	3	1%	22	11%
R3	2	1%	22	11%	2.86	1.4%	22.0	11%	4	2%	23	11%	3	2%	22	11%
R4	2	1%	21	11%	2.48	1.2%	21.6	11%	6	3%	26	13%	4	2%	23	11%
R5	2	1%	21	11%	2.64	1.3%	21.7	11%	3	1%	22	11%	2	1%	21	11%
R6	2	1%	21	11%	2.61	1.3%	21.7	11%	4	2%	23	11%	2	1%	22	11%
R7	2	1%	21	11%	7.86	3.9%	27.0	13%	8	4%	27	13%	8	4%	27	13%
R8	2	1%	21	10%	4.13	2.1%	23.2	12%	3	2%	22	11%	3	1%	22	11%
R9	4	2%	23	11%	5.73	2.9%	24.8	12%	6	3%	25	12%	6	3%	25	12%
R10	1	1%	20	10%	1.84	0.9%	20.9	10%	2	1%	21	11%	2	1%	21	10%
R11	2	1%	21	11%	2.26	1.1%	21.4	11%	2	1%	21	11%	2	1%	21	11%
R12	3	2%	22	11%	3.40	1.7%	22.5	11%	3	2%	23	11%	3	2%	22	11%
R13	3	1%	22	11%	2.68	1.3%	21.8	11%	3	1%	22	11%	3	1%	22	11%
R14	2	1%	22	11%	3.41	1.7%	22.5	11%	3	2%	22	11%	3	2%	22	11%
R15	3	1%	22	11%	2.73	1.4%	21.8	11%	3	1%	22	11%	3	1%	22	11%
R16	1	1%	21	10%	3.38	1.7%	22.5	11%	3	1%	22	11%	2	1%	21	11%
R17	1	1%	20	10%	3.83	1.9%	22.9	11%	3	2%	22	11%	3	1%	22	11%
R18	1	1%	20	10%	3.49	1.7%	22.6	11%	3	1%	22	11%	2	1%	22	11%
R19	1	1%	20	10%	3.30	1.6%	22.4	11%	2	1%	22	11%	2	1%	21	11%
R20	1	1%	20	10%	3.05	1.5%	22.2	11%	2	1%	21	11%	2	1%	21	11%
R21	1	1%	20	10%	2.88	1.4%	22.0	11%	2	1%	21	11%	2	1%	21	11%
R22	1	1%	20	10%	2.29	1.1%	21.4	11%	2	1%	21	11%	2	1%	21	11%
R23	1	0%	20	10%	2.01	1.0%	21.1	11%	2	1%	21	10%	2	1%	21	10%
R24	1	0%	20	10%	1.73	0.9%	20.8	10%	2	1%	21	10%	2	1%	21	10%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

[1] Criteria = 200 µg/m³

[2] Average Background Concentration = 19.1 µg/m³

24-Hour Dioxins and Furans Predicted Concentrations

Receptor ID	"Do Nothing Alternative"				Preferred Alternative - Scenario 1				Preferred Alternative - Scenario 2				Preferred Alternative - Scenario 3			
	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (pg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (pg/m³) [2]	Percentage of Criteria With Background (%) [1]	Maximum Modelled Concentration Without Background (µg/m³)	Percentage of Criteria Without Background (%) [1]	Maximum Modelled Concentration With Background (µg/m³) [2]	Percentage of Criteria With Background (%) [1]
Max GLC	0.00099	0.99%	0.02	21%	0.00099	1.0%	0.021	21%	0.00099	0.99%	0.02	21%	0.001	0.99%	0.02	21%
R1	0.00004	0.04%	0.02	20%	0.00004	0.0%	0.020	20%	0.00004	0.04%	0.02	20%	0.00004	0.04%	0.02	20%
R2	0.00007	0.07%	0.02	20%	0.00007	0.1%	0.020	20%	0.00007	0.07%	0.02	20%	0.00007	0.07%	0.02	20%
R3	0.00008	0.08%	0.02	20%	0.00008	0.1%	0.020	20%	0.00008	0.08%	0.02	20%	0.00008	0.08%	0.02	20%
R4	0.00007	0.07%	0.02	20%	0.00007	0.1%	0.020	20%	0.00007	0.07%	0.02	20%	0.00007	0.07%	0.02	20%
R5	0.00007	0.07%	0.02	20%	0.00007	0.1%	0.020	20%	0.00007	0.07%	0.02	20%	0.00007	0.07%	0.02	20%
R6	0.00008	0.08%	0.02	20%	0.00008	0.1%	0.020	20%	0.00008	0.08%	0.02	20%	0.00008	0.08%	0.02	20%
R7	0.00008	0.08%	0.02	20%	0.00008	0.1%	0.020	20%	0.00008	0.08%	0.02	20%	0.00008	0.08%	0.02	20%
R8	0.00005	0.05%	0.02	20%	0.00005	0.1%	0.020	20%	0.00005	0.05%	0.02	20%	0.00005	0.05%	0.02	20%
R9	0.00011	0.11%	0.02	20%	0.00011	0.1%	0.020	20%	0.00011	0.11%	0.02	20%	0.00011	0.11%	0.02	20%
R10	0.00004	0.04%	0.02	20%	0.00004	0.0%	0.020	20%	0.00004	0.04%	0.02	20%	0.00004	0.04%	0.02	20%
R11	0.00007	0.07%	0.02	20%	0.00007	0.1%	0.020	20%	0.00007	0.07%	0.02	20%	0.00007	0.07%	0.02	20%
R12	0.00011	0.11%	0.02	20%	0.00011	0.1%	0.020	20%	0.00011	0.11%	0.02	20%	0.00011	0.11%	0.02	20%
R13	0.00009	0.09%	0.02	20%	0.00009	0.1%	0.020	20%	0.00009	0.09%	0.02	20%	0.00009	0.09%	0.02	20%
R14	0.00007	0.07%	0.02	20%	0.00007	0.1%	0.020	20%	0.00007	0.07%	0.02	20%	0.00007	0.07%	0.02	20%
R15	0.00009	0.09%	0.02	20%	0.00009	0.1%	0.020	20%	0.00009	0.09%	0.02	20%	0.00009	0.09%	0.02	20%
R16	0.00005	0.05%	0.02	20%	0.00005	0.1%	0.020	20%	0.00005	0.05%	0.02	20%	0.00005	0.05%	0.02	20%
R17	0.00005	0.05%	0.02	20%	0.00005	0.1%	0.020	20%	0.00005	0.05%	0.02	20%	0.00005	0.05%	0.02	20%
R18	0.00005	0.05%	0.02	20%	0.00005	0.1%	0.020	20%	0.00005	0.05%	0.02	20%	0.00005	0.05%	0.02	20%
R19	0.00004	0.04%	0.02	20%	0.00004	0.0%	0.020	20%	0.00004	0.04%	0.02	20%	0.00004	0.04%	0.02	20%
R20	0.00004	0.04%	0.02	20%	0.00004	0.0%	0.020	20%	0.00004	0.04%	0.02	20%	0.00004	0.04%	0.02	20%
R21	0.00004	0.04%	0.02	20%	0.00004	0.0%	0.020	20%	0.00004	0.04%	0.02	20%	0.00004	0.04%	0.02	20%
R22	0.00004	0.04%	0.02	20%	0.00004	0.0%	0.020	20%	0.00004	0.04%	0.02	20%	0.00004	0.04%	0.02	20%
R23	0.00003	0.03%	0.02	20%	0.00003	0.0%	0.020	20%	0.00003	0.03%	0.02	20%	0.00003	0.03%	0.02	20%
R24	0.00003	0.03%	0.02	20%	0.00003	0.0%	0.020	20%	0.00003	0.03%	0.02	20%	0.00003	0.03%	0.02	20%
STR1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

[1] Criteria = 0.1 pg TEQ/m³

[2] Average Background Concentration = 0.02 pg TEQ/m³

6C

Comparison of Odour Results from the Preferred Alternative to the "Do Nothing" Alternative

Appendix 6C: Comparion of Odour Results from the Preferred Alternative to the "Do Nothing" Alternative

Exceedances of 10-minute Odour Criteria by Scenario - 1 OU/m³

Receptor ID	"Do Nothing"			Scenario 1			Scenario 2			Scenario 3		
	Freq (%)	Hours per Year	Max Conc (µg/m³)	Freq (%)	Hours per Year	Max Conc (µg/m³)	Freq (%)	Hours per Year	Max Conc (µg/m³)	Freq (%)	Hours per Year	Max Conc (µg/m³)
R1	0%	0	0.7	1.0%	85	3.7	0.6%	49	2.2	0.2%	17	1.5
R2	0%	0	0.9	1.1%	94	3.3	0.8%	65	4.2	0.4%	31	2.9
R3	0%	0	0.7	1.0%	85	2.2	0.6%	52	2.0	0.2%	17	1.8
R4	0%	0	0.9	1.4%	121	3.5	0.9%	80	4.4	0.4%	38	3.0
R5	0%	0	0.7	0.8%	65	2.4	0.5%	43	2.6	0.2%	17	1.7
R6	0%	0	0.7	0.7%	61	2.2	0.5%	40	1.9	0.2%	14	1.8
R7	0%	0	0.7	2.9%	252	2.2	1.6%	141	2.0	0.4%	33	1.7
R8	0%	0	0.6	1.2%	106	2.7	0.8%	68	1.5	0.0%	4	1.3
R9	0%	0	0.7	2.1%	175	2.6	1.2%	103	2.3	0.4%	31	1.8
R10	0%	0	0.7	0.3%	30	2.5	0.3%	25	1.9	0.1%	12	1.6
R11	0%	0	0.7	0.3%	28	2.4	0.2%	16	1.8	0.0%	2	1.5
R12	0%	0	0.7	0.5%	44	2.6	0.3%	29	2.0	0.2%	15	1.6
R13	0%	0	0.6	0.4%	31	2.5	0.2%	21	1.9	0.1%	10	1.4
R14	0%	0	0.5	0.3%	27	2.2	0.2%	17	1.6	0.0%	4	1.2
R15	0%	0	0.7	0.5%	43	2.5	0.3%	27	1.9	0.2%	15	1.5
R16	0%	0	0.6	1.0%	85	2.7	0.6%	51	1.4	0.0%	2	1.2
R17	0%	0	0.6	1.1%	93	4.0	0.7%	59	2.2	0.2%	21	1.4
R18	0%	0	0.6	1.0%	82	3.8	0.6%	53	2.0	0.2%	20	1.3
R19	0%	0	0.7	0.9%	76	3.5	0.5%	43	2.2	0.2%	14	1.4
R20	0%	0	0.7	0.8%	71	3.8	0.5%	40	2.1	0.2%	14	1.4
R21	0%	0	0.7	0.8%	67	3.4	0.5%	40	2.1	0.2%	14	1.4
R22	0%	0	0.7	0.6%	55	2.8	0.4%	32	2.1	0.1%	11	1.5
R23	0%	0	0.7	0.6%	50	2.8	0.3%	26	2.0	0.1%	11	1.4
R24	0%	0	0.7	0.5%	40	2.6	0.3%	24	2.0	0.1%	11	1.4
STR1	0%	0	0.8	0.2%	13	2.9	0.1%	6	2.5	0.0%	3	1.9

Notes
[1] Criteria = 1 OU/m³
[2] Exceedances per year have been rounded to the nearest full day.
[3] Exceedances at STR1 were assessed for daytime hours only (6:00 am to 6:00 pm).

Exceedances of 10-minute Odour Criteria by Scenario - 3 OU/m³

Receptor ID	"Do Nothing"			Scenario 1			Scenario 2			Scenario 3		
	Freq (%)	Hours per Year	Max Conc (µg/m³)	Freq (%)	Hours per Year	Max Conc (µg/m³)	Freq (%)	Hours per Year	Max Conc (µg/m³)	Freq (%)	Hours per Year	Max Conc (µg/m³)
R1	0%	0	0.7	0.01%	1	3.7	0%	0	2.2	0%	0	1.5
R2	0%	0	0.9	0.1%	8	3.3	0.002%	<1	4.2	0.0%	0	2.9
R3	0%	0	0.7	0%	0	2.2	0%	0	2.0	0%	0	1.8
R4	0%	0	0.9	0.1%	10	3.5	0.01%	<1	4.4	0.002%	<1	3.0
R5	0%	0	0.7	0%	0	2.4	0%	0	2.6	0%	0	1.7
R6	0%	0	0.7	0%	0	2.2	0%	0	1.9	0%	0	1.8
R7	0%	0	0.7	0%	0	2.2	0%	0	2.0	0%	0	1.7
R8	0%	0	0.6	0%	0	2.7	0%	0	1.5	0%	0	1.3
R9	0%	0	0.7	0%	0	2.6	0%	0	2.3	0%	0	1.8
R10	0%	0	0.7	0%	0	2.5	0%	0	1.9	0%	0	1.6
R11	0%	0	0.7	0%	0	2.4	0%	0	1.8	0%	0	1.5
R12	0%	0	0.7	0%	0	2.6	0%	0	2.0	0%	0	1.6
R13	0%	0	0.6	0%	0	2.5	0%	0	1.9	0%	0	1.4
R14	0%	0	0.5	0%	0	2.2	0%	0	1.6	0%	0	1.2
R15	0%	0	0.7	0%	0	2.5	0%	0	1.9	0%	0	1.5
R16	0%	0	0.6	0%	0	2.7	0%	0	1.4	0%	0	1.2
R17	0%	0	0.6	0.03%	2	4.0	0%	0	2.2	0%	0	1.4
R18	0%	0	0.6	0.005%	<1	3.8	0%	0	2.0	0%	0	1.3
R19	0%	0	0.7	0.01%	<1	3.5	0%	0	2.2	0%	0	1.4
R20	0%	0	0.7	0.002%	<1	3.8	0%	0	2.1	0%	0	1.4
R21	0%	0	0.7	0.002%	<1	3.4	0%	0	2.1	0%	0	1.4
R22	0%	0	0.7	0%	0	2.8	0%	0	2.1	0%	0	1.5
R23	0%	0	0.7	0%	0	2.8	0%	0	2.0	0%	0	1.4
R24	0%	0	0.7	0%	0	2.6	0%	0	2.0	0%	0	1.4
STR1	0%	0	0.8	0%	0	2.9	0%	0	2.5	0%	0	1.9

Notes
[1] Criteria = 3 OU/m³
[2] Exceedances per year have been rounded to the nearest full day.
[3] Exceedances at STR1 were assessed for daytime hours only (6:00 am to 6:00 pm).

Exceedances of 10-minute Odour Criteria by Scenario - 5 OU/m³

Receptor ID	"Do Nothing"			Scenario 1			Scenario 2			Scenario 3		
	Freq (%)	Hours per Year	Max Conc (µg/m³)	Freq (%)	Hours per Year	Max Conc (µg/m³)	Freq (%)	Hours per Year	Max Conc (µg/m³)	Freq (%)	Hours per Year	Max Conc (µg/m³)
R1	0%	0	0.7	0%	0	3.7	0%	0	2.2	0%	0	1.5
R2	0%	0	0.9	0%	0	3.3	0%	0	4.2	0%	0	2.9
R3	0%	0	0.7	0%	0	2.2	0%	0	2.0	0%	0	1.8
R4	0%	0	0.9	0%	0	3.5	0%	0	4.4	0%	0	3.0
R5	0%	0	0.7	0%	0	2.4	0%	0	2.6	0%	0	1.7
R6	0%	0	0.7	0%	0	2.2	0%	0	1.9	0%	0	1.8
R7	0%	0	0.7	0%	0	2.2	0%	0	2.0	0%	0	1.7
R8	0%	0	0.6	0%	0	2.7	0%	0	1.5	0%	0	1.3
R9	0%	0	0.7	0%	0	2.6	0%	0	2.3	0%	0	1.8
R10	0%	0	0.7	0%	0	2.5	0%	0	1.9	0%	0	1.6
R11	0%	0	0.7	0%	0	2.4	0%	0	1.8	0%	0	1.5
R12	0%	0	0.7	0%	0	2.6	0%	0	2.0	0%	0	1.6
R13	0%	0	0.6	0%	0	2.5	0%	0	1.9	0%	0	1.4
R14	0%	0	0.5	0%	0	2.2	0%	0	1.6	0%	0	1.2
R15	0%	0	0.7	0%	0	2.5	0%	0	1.9	0%	0	1.5
R16	0%	0	0.6	0%	0	2.7	0%	0	1.4	0%	0	1.2
R17	0%	0	0.6	0%	0	4.0	0%	0	2.2	0%	0	1.4
R18	0%	0	0.6	0%	0	3.8	0%	0	2.0	0%	0	1.3
R19	0%	0	0.7	0%	0	3.5	0%	0	2.2	0%	0	1.4
R20	0%	0	0.7	0%	0	3.8	0%	0	2.1	0%	0	1.4
R21	0%	0	0.7	0%	0	3.4	0%	0	2.1	0%	0	1.4
R22	0%	0	0.7	0%	0	2.8	0%	0	2.1	0%	0	1.5
R23	0%	0	0.7	0%	0	2.8	0%	0	2.0	0%	0	1.4
R24	0%	0	0.7	0%	0	2.6	0%	0	2.0	0%	0	1.4
STR1	0%	0	0.8	0%	0	2.9	0%	0	2.5	0%	0	1.9

Notes

[1] Criteria = 5 OU/m³

[2] Exceedances per year have been rounded to the nearest full day.

[3] Exceedances at STR1 were assessed for daytime hours only (6:00 am to 6:00 pm).