Air Quality and Greenhouse Gas Assessment Report – Highway 401 Cobourg to Colborne Widening (GWP 4060-11-00)

FINAL REPORT

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Table of Contents

EXECUTIVE SUMMARY ..... **I**

ABBREVIATIONS ..... **III**

GLOSSARY ..... **VI**

1.0 INTRODUCTION **1.1**
1.1 STUDY AREA 1.1
1.2 STUDY OBJECTIVES 1.1
1.3 PROJECT DESCRIPTION 1.2
1.3.1 Highway 401 ..... 1.2
1.3.2 Lyle Street Interchange Reconfiguration 1.2
1.3.3 Percy Street Interchange Reconfiguration 1.2

2.0 METHODOLOGY **2.1**
2.1 OVERVIEW 2.1
2.2 CONTAMINANTS OF POTENTIAL CONCERN 2.2
2.3 AIR QUALITY CONTAMINANTS 2.2
2.4 GREENHOUSE GASES 2.4

3.0 EXISTING CONDITIONS **3.1**
3.1 CLIMATE 3.1
3.1.1 Temperature 3.1
3.1.2 Precipitation 3.1
3.1.3 Humidity 3.2
3.1.4 Wind Speed and Direction 3.2
3.2 SPECIAL RECEPTORS 3.3
3.3 LOCAL AIR QUALITY 3.5
3.3.1 Available Published Ambient Monitoring Data 3.5
3.3.2 Background Concentration Levels 3.6
3.4 EXISTING GREENHOUSE GAS EMISSIONS 3.10

4.0 EMISSION INVENTORY **4.1**
4.1 VEHICLE EMISSIONS 4.1
4.2 ROAD DUST EMISSIONS 4.2
4.3 GREENHOUSE GAS EMISSIONS 4.3

5.0 AIR DISPERSION MODELLING METHODOLOGY **5.1**
5.1 DISPERSION MODEL USED 5.1
5.2 METEOROLOGICAL DATA SOURCES 5.2
5.3 WIND SPEED AND DIRECTION 5.2
5.4 AVERAGING PERIODS 5.4
5.5 RECEPTORS 5.5

6.0 AIR DISPERSION MODELLING RESULTS – PROJECT ALONE 6.1

7.0 CUMULATIVE EFFECTS ASSESSMENT 7.1
7.1 AIR QUALITY 7.1
7.2 GREENHOUSE GASES 7.3

8.0 AIR QUALITY IMPACTS DURING CONSTRUCTION 8.1

9.0 CONCLUSIONS 9.1

10.0 REFERENCES 10.1

LIST OF TABLES

Table 2-1: Summary of Applicable Air Quality Criteria and Standards 2.3
Table 3-1: Summary of Average Temperature Data 3.1
Table 3-2: Summary of Average Precipitation Data 3.2
Table 3-3: Summary of Average Relative Humidity Data 3.2
Table 3-4: Summary of Wind Data 3.3
Table 3-5: Locations of Sensitive Receptors 3.3
Table 3-6: NAPS Locations Assessed in the Study 3.5
Table 3-7: Summary of CoPC Background Concentrations 3.8
Table 3-8: National and Provincial GHG Emissions 3.10
Table 4-1: Summary of MOVES Inputs 4.1
Table 4-2: Project GHG Emissions 4.3
Table 5-1: Key CAL3QHCR Model Input Parameters 5.1
Table 6-1: Maximum Predicted Concentrations at Special Receptors 6.2
Table 7-1: Maximum Predicted Cumulative Concentrations at Special Receptors 7.2
Table 7-2: GHG Emissions Estimates Compared to Canada and Ontario Totals 7.3

LIST OF FIGURES

Figure 1-1: Study Area 1.1
Figure 5-1: Wind Class Frequency Distribution (2014-2018) 5.3
Figure 5-2: Wind Rose Plot (2014-2018) 5.4

LIST OF APPENDICES

APPENDIX A PREFERRED DESIGN PLANS

APPENDIX B RECEPTOR MAPS

APPENDIX C EMISSION FACTORS

APPENDIX D TRAFFIC VOLUMES AND HOURLY DISTRIBUTION DATA

APPENDIX E GREENHOUSE GAS EMISSIONS

APPENDIX F CAL3QHCR LINKS

APPENDIX G RECEPTOR SPECIFIC MODELLED RESULTS

APPENDIX H BENZO(A)PYRENE CONTOUR PLOTS

Executive Summary

The Ontario Ministry of Transportation (MTO) has retained Stantec Consulting Ltd. (Stantec) to undertake a Planning, Preliminary Design, and Class Environmental Assessment (Class EA) Study on Highway 401 for the Project from 2 km east of Nagle Road to 800 m east of Percy Street (approximately 18 km) for:

- the replacement and rehabilitation of structures;
- interchange modifications;
- establishing the footprint of future six and eight lanes highway configurations to address current and future transportation needs; and
- commuter parking lot improvements.

The objective of this study was to characterize existing air pollutant emissions (2016) and predict air quality effects within the Study Area, between Nagle Road and Percy Street, after implementation of the Project in the future interim build (2031) and future ultimate build (2041) scenarios using background air quality and traffic data. The horizon 2031 and 2041 has only been selected for the analysis purpose and does not represent the actual timing of the widening of the highway. Predicted future emissions and effects with Project implementation are also compared to predicted future emissions and effects without implementation of the Project. Greenhouse gas (GHG) emissions are also evaluated in this study. This study has been completed following guidance from the “Ministry of Transportation Environmental Guide for Assessing and Mitigating the Air Quality Impacts and Greenhouse Gas Emissions of Provincial Transportation Projects” (MTO Guide).

The contaminants of potential concern (CoPCs) selected for this study are based on the most relevant transportation-related contaminants as listed in the MTO Guide and include nitrogen dioxide (NO_2), carbon monoxide (CO), particulate matter with diameter less than 10 micrometres (PM_{10}), particulate matter with diameter less than 2.5 micrometres ($PM_{2.5}$), acrolein, benzene, 1,3-butadiene, benzo(a)pyrene (B(a)P), acetaldehyde and formaldehyde. Greenhouse gas (GHG) emissions in the form of CO2e were also quantified.

Baseline ambient air quality conditions were characterized from historical data obtained from the National Air Pollution Surveillance Network and the Ministry of the Environment, Conservation and Parks for nearby stations to the Study Area.

US EPA’s Motor Vehicle Emission Simulator (MOVES) model (US EPA 2014b) was used to estimate current and future emissions rates from motor vehicles. The US EPA dispersion model, CAL3QHCR was used to predict the maximum 1-hour, 8-hour, 24-hour and annual average ground level concentrations at sensitive receptors for the following five scenarios:

- 2016 – Existing conditions, Highway 401 (4-lanes)
- 2031 – Interim No Build, Highway 401 (4-lanes)
- 2031 – Interim Build, Highway 401 (6 lanes), interim reconfiguration of Lyle Street and Percy Street Interchanges
- 2041 – Ultimate No Build, Highway 401 (6-lanes), reconfiguration of Lyle Street and Percy Street Interchanges
- 2041 – Ultimate Build, Highway 401 (8 lanes), ultimate reconfiguration of Lyle Street and Percy Street Interchanges

The predicted ambient air quality results for each scenario were compared against relevant Ambient Air Quality Criteria (AAQC) and Canadian Ambient Air Quality Standards (CAAQS) while GHG emissions are compared to National and Provincial totals for 2017 and 2030 emissions targets. The following conclusions were made from the air quality and greenhouse gas impact assessment:

- Maximum predicted Project ground level concentrations (GLCs) of CoPCs other than B(a)P are below their relevant AAQC and/or CAAQS at all sensitive receptors for all release scenarios.
- Maximum predicted cumulative GLCs of CoPCs other than B(a)P are below their relevant AAQC and/or CAAQS at all sensitive receptors for all release scenarios.
- Maximum predicted cumulative $PM_{2.5}$ concentrations are below but approaching the annual average CAAQS for all scenarios but are mainly attributable to background concentrations.
- Maximum predicted cumulative benzene concentrations are below but approaching the annual average AAQC for all scenarios but are also mainly attributable to background concentrations.
- Measured concentrations of benzene and $PM_{2.5}$ across Ontario have shown decreasing trends between 2008 and 2017. It is likely that background levels of these contaminants will continue to improve in the future and therefore the background concentrations used in the assessment are conservative.
- Predicted cumulative concentrations of B(a)P exceed the 24-hour and annual AAQCs at all special receptor locations with background concentrations alone exceeding the 24-hour and annual average AAQC by 6% and 130%, respectively. Maximum concentrations from the Project Alone, are however predicted to be below the applicable criteria in the future scenarios, with the background levels being the major contributor to the cumulative exceedances. The concentrations are predicted to decrease in the future ultimate build and ultimate no build scenarios.
- During Project construction, best management practices should be followed to minimize emissions.
- Releases of GHGs from the Project are expected to be insignificant in comparison to the 2017 Canada and Ontario totals and the 2030 emissions targets.

Abbreviations

AADT	Annual Average Daily Traffic
AAQC	Ambient Air Quality Criteria
ADMGO	Air Dispersion Modelling Guideline for Ontario
AP-42	U.S. Environmental Protection Agency Compilation of Air Pollution Emission Estimation Factors Document
CAAQS	Canadian Ambient Air Quality Standards
CAC	Criteria Air Contaminants
CAS	Chemical Abstracts Service
CCME	Canadian Council of Ministers of the Environment
CoPCs	Contaminants of Potential Concern
ECCC	Environment and Climate Change Canada
EA	Environmental Assessment
EPA	*Environmental Protection Act*
GHG	Greenhouse gas
GLC	Ground Level Concentrations
GWP	Global Warming Potential
Max	Maximum
MECP	Ontario Ministry of the Environment, Conservation and Parks
MTO	Ministry of Transportation
N/A	Not Applicable
NAPS	National Air Pollution Surveillance
O. Reg.	Ontario Regulation
Stantec	Stantec Consulting Ltd.
US EPA	United States Environmental Protection Agency
UTM	Universal Transverse Mercator
VMT	Vehicle Mile Travelled
UNITS OF MEASUREMENT	
cm	centimetre
km	kilometre
m	metre

mm	millimetre	
Mass/Weight		
Re. Orders of Magnitude: x 10^2 = x 100, x10^3 = x 1000, etc.		
g	gram	
mg	milligrams	1 x 10^{-3} grams
µg	microgram	1 x 10^{-6} grams
kg	kilogram	1 x 10^3 g
Mg	Megagram	1 x 10^6 g
t	metric tonne	1 x 10^3 kg
lb	pound	1 lb = 453.592 grams
Concentration		
ppm	parts per million	
µg/m^3	micrograms per cubic metre	
Temperature		
°C	degrees Celsius	
Speed		
km/h	kilometres per hour	
Time		
s	second	
hr	hour	
y	year	
Compounds		
B(a)P	Benzo(a)pyrene	
CH_4	Methane	
CO	Carbon Monoxide	
CO_2eq	Carbon Dioxide Equivalent	
THC	Total Hydrocarbons	
TSP	Total Suspended Particulate	
N_2O	Nitrous Oxide	
NO_x	Nitrogen Oxides	
NO_2	Nitrogen Dioxide	
NO	Nitric Oxide	
O_3	Ozone	

PAH	Polycyclic Aromatic Hydrocarbon
PM	Particulate Matter (also referred to as TSP)
PM_{10}	Particulate Matter smaller than 10 microns
$PM_{2.5}$	Particulate Matter smaller than 2.5 microns
VOC	Volatile Organic Compounds

Glossary

Air Contaminant Emissions	For stationary sources, the release or discharge of a pollutant from a facility or operation into the ambient air either by means of a stack, vent or as a fugitive dust, mist or vapour.
Canadian Council of Ministers of the Environment (CCME)	A council made up of environmental ministers from provincial and federal levels of government that proposes nationally consistent environmental standards and objectives to achieve high levels of environmental quality for waste management, air pollution, and toxic chemicals across Canada.
Carbon Monoxide (CO)	A colourless, odourless gas produced by incomplete fossil fuel combustion.
Combustion Product	Substance produced during the burning or oxidation of a material.
Combustion	1. Burning, or rapid oxidation, accompanied by the release of energy in the form of heat and light. 2. Refers to controlled burning of waste, in which heat chemically alters organic compounds, converting into stable compounds such as carbon dioxide and water.
Concentration	In air quality, concentration is defined as the abundance (mass or volume) of a substance suspended in a unit volume of ambient air.
Dust	A term used to describe particles of a solid or liquid that are suspended in air. Also referred to as particulate or suspended particulate.
Mitigation	Measures taken to reduce adverse effects on the environment.
Monitoring	Periodic or continuous surveillance or testing to determine the characteristics of a substance or the level of compliance with statutory requirements and/or pollutant levels in various media or in humans, plants, and animals.
Particulate	A particle of a solid or liquid that is suspended in air.
Particulate Matter	A particle in solid or liquid phase that is suspended in air.
Pollutant	Generally, any substance introduced into the environment that can adversely affect the usefulness of a resource or the health of humans, animals, or ecosystems.

Pollution	Generally, the presence of a substance in the environment that because of its chemical composition or quantity can prevent the functioning of natural processes and produce undesirable environmental and health effects
Receptor	A person, plant or wildlife species that may be affected due to exposure to a contaminant.
United States Environmental Protection Agency AP-42 (US EPA AP-42)	US EPA document Compilation of Air Emission Factors, Volume 1: Stationary Point and Area Sources.

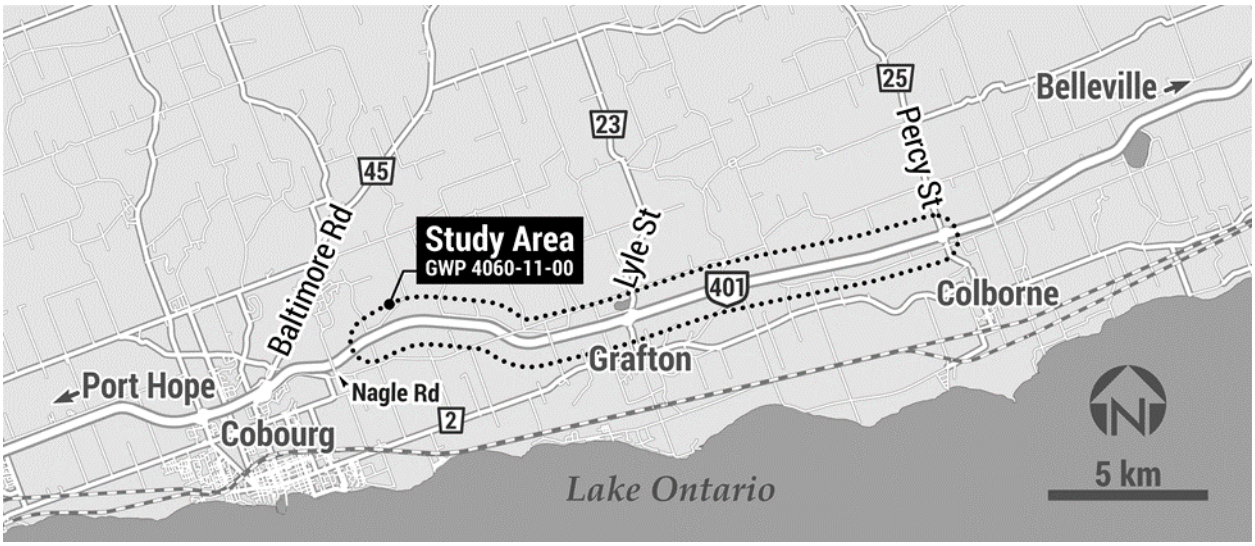
1.0 INTRODUCTION

The Ontario Ministry of Transportation (MTO) has retained Stantec Consulting Ltd. (Stantec) to undertake a Planning, Preliminary Design, and Class Environmental Assessment (Class EA) Study on Highway 401 for the replacement and rehabilitation of structures, interchange modifications, establishing the footprint of future six and eight lanes to address current and future transportation needs, and commuter parking lot improvements, from 2 km east of Nagle Road to 800 m east of Percy Street (approximately 18 km) (the Project).

1.1 STUDY AREA

The Study Area used for assessing potential air contaminant emissions includes the immediate vicinity of the Project along Highway 401, generally between Nagle Road and Percy Street. A map of the Study Area is presented in Figure 1-1.

Figure 1-1: Study Area



1.2 STUDY OBJECTIVES

The objective of this study is to characterize existing air pollutant emissions (2016) and predict air quality effects within the Study Area after implementation of the Project in the future interim build (2031) and future ultimate build (2041) scenarios using background air quality and traffic data. Predicted future emissions and effects with Project implementation are also compared to predicted future emissions and effects without implementation of the Project. Greenhouse gas (GHG) emissions are also evaluated in this study. This study has been completed following guidance from the “Ministry of Transportation Environmental Guide for Assessing and Mitigating the Air Quality Impacts and Greenhouse Gas Emissions of Provincial Transportation Projects” (MTO, 2020).

1.3 PROJECT DESCRIPTION

For the purposes of this study, air quality and GHG impacts are evaluated over the interim build timeframe (2031) and the ultimate build timeframe (2041). The years 2031 and 2041 have been selected for analysis purposes only and do not represent the actual timing of the widening of the highway. The Preferred Design Plans for the Project are provided in Appendix A.

1.3.1 Highway 401

The existing portion of Highway 401 from 2 km east of Nagle Road to Percy Street currently has a total of four travelled lanes (two in each travel direction). The Project will include a roadway extension from four travel lanes to an interim of six lanes (three lanes in each travel direction) and ultimately eight lanes (four lanes in each travel direction).

1.3.2 Lyle Street Interchange Reconfiguration

The existing Lyle Street interchange is a diamond terminal operation consisting of an eastbound and westbound exit ramp from Highway 401 and a single eastbound and westbound on ramp which serves vehicles travelling northbound and southbound on Lyle Street. The Project will include an interim reconfiguration of the Lyle Street Interchange which will include a replacement bridge, replacement off ramps and the addition of two looped on ramps onto Highway 401. One looped on ramp will serve vehicles travelling northbound and southbound on Lyle Street onto eastbound Highway 401 and the other will serve vehicles travelling northbound and southbound on Lyle Street onto westbound Highway 401. The loop on ramps will temporarily service vehicles travelling in both the northbound and southbound directions on Lyle Street until the ultimate configuration is built. The interim build configuration will have a total of four ramps (two exit ramps and two loop on ramps). Ultimately, traffic travelling southbound on Lyle Street will have an on ramp access to westbound Highway 401 and northbound traffic will have an on ramp access to eastbound 401. The ultimate build configuration will have a total of six ramps (two exit ramps and four on ramps).

1.3.3 Percy Street Interchange Reconfiguration

The existing Percy Street interchange consists of two loop ramps serving as on ramps to northbound and southbound traffic on Percy Street, one off ramp from eastbound Highway 401, and one off ramp from westbound Highway 401. The Project will include an interim reconfiguration of the Percy Street interchange which will include a replacement bridge, replacement off ramps, the addition of one loop on ramp serving vehicles travelling southbound on Percy Street onto eastbound Highway 401, one loop on ramp serving vehicles travelling northbound and southbound on Percy Street onto westbound Highway 401 and one on ramp serving traffic travelling northbound on Percy to eastbound Highway 401. The interim build configuration will have a total of five ramps (two exit ramps and three on ramps). Ultimately, traffic travelling southbound on Percy Street will have on ramp access to westbound Highway 401 by way of one additional on ramp. The ultimate build configuration will have a total of six ramps (two exit ramps and four on ramps).

2.0 METHODOLOGY

2.1 OVERVIEW

The assessment of the Project's effect on air quality was performed by conducting dispersion modelling to predict the downwind concentrations of the most relevant transportation-related contaminants and comparing these predictions to regulatory criteria and standards.

The assessment of air quality effects related to the Project consists of the following elements:

- Review the contaminants of interest for consistency with the MTO Guideline.
- Estimate current background concentrations for each relevant transportation-related contaminant using representative historical monitoring data from the nearest Ministry of the Environment, Conservation and Parks (MECP) or National Air Pollution Surveillance (NAPS) station.
- Establish current background emission levels using published provincial and national greenhouse gas (GHG) emissions data.
- Predict tailpipe emissions using the US EPA Motor Vehicle Emission Simulator (MOVES2014b) and estimate road dust emissions using the US EPA AP-42 calculation methodology for Project related traffic.
- Identify critical and representative sensitive receptor locations along the modelled highway segment.
- Predict maximum contaminant concentrations using the US EPA CAL3QHCR atmospheric dispersion model at the critical and sensitive receptors along the modelled highway segment due to emissions from Project-related traffic for all five scenarios.
- Estimate cumulative air quality concentrations by combining the maximum predicted concentrations with background air quality concentrations and compare the results relative to the applicable current and future ambient air quality criteria and standards.
- For receptors where the maximum combined concentration of relevant air contaminants exceeds a criterion, assess the potential frequency of exceeding the air quality criteria and standards through a more detailed assessment of the combined effect of the project-related and background concentrations.
- Estimate GHG emissions for each scenario and compare to the provincial and national GHG emissions levels and targets.
- Qualitatively assess the potential air quality impacts during construction and provide recommendations on construction mitigation measures.

2.2 CONTAMINANTS OF POTENTIAL CONCERN

The air contaminant emission sources expected from the Project are mobile sources that emit combustion gases from burning fossil fuels (e.g., gasoline and diesel) and fugitive dust. Combustion emissions depend on the combustion device type (engine type), the fuel composition, the fuel consumption rate and operating time. Fugitive dust emissions are generated by road traffic during the movement of mobile sources (e.g., cars and trucks). The contaminants of potential concern (CoPCs) selected for this study are based on the most relevant transportation-related contaminants as listed in the MTO Guide (MTO, 2020).

2.3 AIR QUALITY CONTAMINANTS

The expected CoPCs that would likely be emitted during the Project construction and operation are primarily criteria air contaminants (CACs), volatile organic compounds (VOCs) and polycyclic aromatic hydrocarbons (PAHs). CACs include nitrogen oxides (NO_X), carbon monoxide (CO), total suspended particulate matter (TSP), particulate matter less than 10 µm in diameter (PM_{10}) and particulate matter less than 2.5 µm in diameter ($PM_{2.5}$).

NO_x are produced in most combustion processes, consisting of nitric oxide (NO) and nitrogen dioxide (NO_2). NO is a colourless gas with no direct effects on health or vegetation at ambient levels and with no regulatory criteria. NO_2 is the regulated form of NO_x. TSP refers to air borne particles with an aerodynamic diameter of less than 44 µm. Particulate effects on human health are primarily associated with PM_{10} and $PM_{2.5}$ as particles of these sizes can become trapped by the upper airways or in the case of $PM_{2.5}$, can make their way deep into the lungs and become lodged.

Total hydrocarbons (THC) and volatile organic compounds (VOCs) constitute two other groupings of CoPCs for the Project. Key toxic VOCs from fuel combustion processes which are included in the study include benzene, 1,3-butadiene, formaldehyde, acetaldehyde, and acrolein. The compliance status of these speciated VOCs can be used as representatives for determination of compliance of other VOCs.

Polycyclic aromatic hydrocarbons (PAHs) is a subset of total hydrocarbons, of which the key representative substance is benzo(a)pyrene (B(a)P) which can be considered as a surrogate of total PAHs.

A summary of the applicable Ontario Ambient Air Quality Criteria (AAQC) and Canadian Ambient Air Quality Standards (CAAQS) used in this study are presented in Table 2-1.

Table 2-1: Summary of Applicable Air Quality Criteria and Standards

CoPC	CAS	Averaging Period (hours)	Air Quality Criteria/Standard ($\mu g/m^3$)	Regulatory Framework
CO	630-08-0	1	36,200	AAQC
		8	15,700	
NO_2	10102-44-0	1	400	AAQC
			119[A, B]	2020 CAAQS
			83[A, B]	2025 CAAQS
		24	200	AAQC
		Annual	34[A, C]	2020 CAAQS
			24[A, C]	2025 CAAQS
PM_{10}	N/A	24	50[D]	AAQC
$PM_{2.5}$	N/A	24	28[E]	2015 CAAQS
			27[E]	2020 CAAQS
		Annual	10[F]	2015 CAAQS
			8.8[F]	2020 CAAQS
Benzene	71-43-2	24	2.3	AAQC
		Annual	0.45	AAQC
Benzo(a)pyrene[G]	50-32-8	24	0.00005	AAQC
		Annual	0.00001	AAQC
1,3-Butadiene	106-99-0	24	10	AAQC
		Annual	2	AAQC
Formaldehyde	50-00-0	24	65	AAQC
Acetaldehyde	75-07-0	0.5	500	AAQC
		24	500	AAQC
Acrolein	107-02-8	1	4.5	AAQC
		24	0.4	AAQC

Notes:

A. Converted to $\mu g/m^3$ assuming 10°C and 760 mmHg, consistent with the approach for converting AAQCs (MTO, 2020).
B. The 3-year average of the annual 98th percentile daily maximum 1-hour average concentrations.
C. The average over a single calendar year of all the 1-hour average concentrations.
D. AAQC for PM_{10} is an interim AAQC provided as a guide for decision-making.
E. The 3-year average of the annual 98th percentile of the daily 24-hour average concentrations.
F. The 3-year average of the annual average concentrations.
G. As a surrogate of total polycyclic aromatic hydrocarbons (PAHs).

2.4 GREENHOUSE GASES

A greenhouse gas (GHG) is any gas that contributes to potential climate change by trapping heat in the atmosphere. GHGs are known to contribute to warming of the climate, leading to many other changes around the world: in the atmosphere; on land; and in the oceans.

Common GHGs include carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). Other GHGs include hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF_6), and nitrogen trifluoride (NF_3). HFCs and PFCs are used mainly as refrigerants, SF_6 is commonly found in electrical equipment, and NF_3 is used in the plasma etching of silicon wafers. The Project is expected to emit CO_2, CH_4, and N_2O from the combustion of fuels in vehicles and all three of these GHGs are assessed in this study. Other GHGs, such as HFCs, PFCs, SF_6 and NF_3, are not expected to occur in notable quantities related to the Project therefore these gases are not included in the analysis.

GHGs absorb heat radiated by the earth and subsequently warm the atmosphere, leading to what is commonly known as the greenhouse effect. The relative measure of how much heat a GHG absorbs in the atmosphere is characterized as the global warming potential (GWP), relative to CO_2. For this assessment, the GWPs of CO_2, CH_4 and N_2O are 1, 25, and 298, respectively, based on Canada's National Inventory Report 1990-2017 (Environment and Climate Change Canada (ECCC, 2019). Because different GHGs contribute to different extents to the greenhouse effect, the unit of kilotonnes of carbon dioxide equivalent (kt CO_2e) is used to express the total quantity of GHGs. This unit is calculated by multiplying the tonnage emission of each GHG by its global warming potential, then summing the contributions from all relevant GHGs.

As identified in guidance provided on assessing climate change in environmental assessments, "the contribution of an individual project to climate change cannot be measured" (Federal-Provincial-Territorial Committee on Climate Change and Environmental Assessment 2003). Therefore, evaluation of Project effects will focus on estimation of GHG releases and evaluation of Project GHG releases in relation to provincial (Ontario) and national (Canada) GHG totals.

3.0 EXISTING CONDITIONS

Ambient air quality in the Study Area is influenced by emissions from vehicular traffic. Meteorology and climatology play an important role in contaminant formation, dispersion and transport. The local meteorology and ambient air quality data are discussed in this section.

3.1 CLIMATE

The following sections describe the general climatology of the Study Area. The climatology is based on 30-year (1981 to 2010) Canadian Climate Normal data obtained from Environment and Climate Change Canada (ECCC) for the Cobourg STP meteorological station and the Trenton Airport Station which are the closest stations to the centre of the Study Area that contain complete climate normal data.

3.1.1 Temperature

A summary of the daily average, daily maximum and daily minimum temperatures on a monthly basis over the period 1981 to 2010 is presented in Table 3-1. The daily average temperature for the area varies from -5.6°C to 19.9°C with an annual average temperature of 7.5°C.

Table 3-1: Summary of Average Temperature Data

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Daily Average (°C)	-5.6	-4.3	-0.5	5.9	11.7	16.9	19.9	19.4	15.4	9	3.7	-2	7.5
Daily Maximum (°C)	-1.4	0	3.7	10.3	16.4	21.6	24.6	24	19.9	13.1	7.3	1.9	11.8
Daily Minimum (°C)	-9.7	-8.5	-4.6	1.5	6.9	12.1	15.2	14.9	10.8	4.8	0.1	-5.8	3.1

SOURCE: Environment and Climate Change Canada Canadian Climate Normal – Cobourg STP meteorological station

3.1.2 Precipitation

A summary of the monthly average rainfall, snowfall, total precipitation (as equivalent rainfall based on a conversion factor for snowfall to equivalent rainfall of 0.1) and average snow depth on a monthly basis over the period 1981 to 2010 is presented in Table 3-2. The annual average total precipitation for the area is about 890.4 millimetres (mm).

Table 3-2: Summary of Average Precipitation Data

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Rainfall (1) (mm)	34	32.9	42.7	74.3	81.2	80.5	64.8	71.7	93.2	76.3	89.2	53.1	793.9
Snowfall (1) (cm)	32.7	21.2	14.2	1.8	0	0	0	0	0	0	4	22.7	96.5
Precipitation (1) (mm)	66.7	54.1	56.8	76.2	81.2	80.5	64.8	71.7	93.2	76.3	93.2	75.8	890.4
Average Snow Depth (2) (cm)	8	9	4	0	0	0	0	0	0	0	0	4	2

Notes:

[1] SOURCE: Environment and Climate Change Canada Canadian Climate Normal – Cobourg STP meteorological station

[2] SOURCE: Environment and Climate Change Canada Canadian Climate Normal – Trenton Airport meteorological station

3.1.3 Humidity

A summary of the average morning and afternoon relative humidity on a monthly basis over the period 1981 to 2010 is presented in Table 3-3. The annual average relative humidity in the morning is 83.3% and in the afternoon is 63.7%.

Table 3-3: Summary of Average Relative Humidity Data

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Relative Humidity - 0600LST (%)	79.1	79	78.6	78.8	81.6	84.4	85.9	90	90.8	86.9	83.3	81.5	83.3
Average Relative Humidity - 1500LST (%)	71.6	68.7	63	56.8	57	59.6	59.1	60.5	63	63.9	69.1	72.6	63.7

SOURCE: Environment and Climate Change Canada Canadian Climate Normal - Trenton Airport meteorological station

3.1.4 Wind Speed and Direction

The climate normal data with respect to wind speed and directionality are presented in Table 3-4. The annual average wind speed for the area is 13.1 km/h and the most frequent wind direction, on an annual basis, is wind blowing from the southwest.

Table 3-4: Summary of Wind Data

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Speed (km/h)	15.2	14.3	14.4	15	13	11.7	11.4	10.3	11.1	12.5	13.9	14.6	13.1
Most Frequent Direction (1)	W	W	W	SW	SW	SW	SW	SW	SW	SW	W	W	SW
Max Hourly Speed (km/h)	89	74	105	76	64	72	64	63	64	74	80	69	105
Max Gust Speed (km/h)	153	113	145	128	106	119	127	103	116	106	145	154	154
Direction of Max Gust [1]	NW	W	W	W	W	W	SW	W	SW	N	W	W	W

SOURCE: Environment and Climate Change Canada Canadian Climate Normal - Trenton Airport meteorological station
Note: [1] denotes the direction *from which* the wind is blowing most frequently

3.2 SPECIAL RECEPTORS

Special receptors are placed to assess data at points where human activity more regularly takes place. The MTO Guide recommends that the local air quality impacts be studied within a distance of 500 m from a Project at both sensitive (residences) and critical receptors (hospitals, retirement homes, childcare centres, etc.). The special receptors in the Study Area include farmhouses and residences. There are no critical receptors in the Study Area.

Forty-three (43) receptors were identified to be close to the Study Area and are considered to be representative of residences. These receptors, along with potential future receptors (those in the planned development area along Highway 401) were considered in the assessment.

The receptors considered are the nearest to the Project in each direction and are summarized in Table 3-5. The table also presents the UTM coordinates (NAD 83) for each receptor. The locations of the receptors are shown in receptor maps in Appendix B.

Table 3-5: Locations of Sensitive Receptors

Sensitive Receptor ID	Receptor Description	UTM Coordinates		
		Zone	Easting (m)	Northing (m)
R-001	Residence on Cunningham Rd	17	730155.74	4875782.63
R-002	Residence on Van Luven Rd	17	730142.18	4876085.93
R-003	Residence on Payne Rd	17	730586.00	4876335.00
R-004	Residence on Northumberland Heights Rd	17	732360.00	4876576.00
R-005	Residence on Northumberland Heights Rd	17	732432.64	4876601.50

Table 3-5: Locations of Sensitive Receptors

Sensitive Receptor ID	Receptor Description	UTM Coordinates		
		Zone	Easting (m)	Northing (m)
R-006	Residence on Ron Harden Rd	17	732486.52	4876080.22
R-007	Residence on Ron Harden Rd	17	732715.00	4876156.00
R-008	Residence on Northumberland Heights	17	733022.00	4876614.00
R-009	Residence on Craig Rd	17	733519.00	4876460.00
R-010	Residence on Craig Rd	17	733660.00	4876469.00
R-011	Residence on Northumberland Heights	17	734092.53	4876349.48
R-012	Residence on Danforth Rd E	17	733511.00	4875886.00
R-013	Residence on Danforth Rd E	17	733898.00	4875895.00
R-014	Residence on Danforth Rd E	17	734222.00	4875888.00
R-015	Residence on Danforth Rd E	17	734359.15	4875837.68
R-016	Residence on Danforth Rd E	17	734701.74	4876013.50
R-017	Residence on Gully Rd	17	735245.00	4876086.00
R-018	Residence on Gully Rd	17	735538.29	4876097.09
R-019	Residence on Gully Rd	17	735726.00	4876100.00
R-020	Residence on Gully Rd	17	735866.35	4875734.41
R-021	Residence on Massey Rd	17	736223.82	4876207.12
R-022	Residence on Edwardson Rd	17	737161.55	4876471.93
RD-023	Development zone on Brimley (South of 401)	17	737652.03	4876187.58
RD-024	Development zone on Brimley (South of 401)	17	738010.08	4876284.99
R-025	Residence on Lyle Street (South of 401)	17	738284.35	4876350.11
R-026	Residence on Clitheroe Rd	17	738677.00	4876248.00
R-027	Residence on Clitheroe Rd	17	738852.00	4876337.00
R-028	Residence on Lyle (Northeast of 401)	17	738501.00	4877052.00
R-029	Residence on Cherry Hill Road	17	739627.97	4876854.90
R-030	Residence on Shelter Valley Rd	18	260242.01	4877737.16
R-031	Residence on Skyview Rd	18	260895.79	4877382.87
R-032	Residence on Vernonville Rd	18	261901.31	4877504.36
R-033	Residence on Rutherford Rd	18	262714.99	4877930.24
R-034	Residence on Dudley Rd	18	262806.88	4877475.01
R-035	Residence on Heron Rd (South of 401)	18	263782.34	4877678.26
R-036	Residence on Heron Rd (North of 401)	18	263630.52	4878202.53
R-037	Residence on Dudley Rd	18	264540.3	4877673.89
R-038	Residence on Dudley Rd	18	265563.25	4877882.99
R-039	Residence on Dudley Rd	18	266244.05	4878022.3

Table 3-5: Locations of Sensitive Receptors

Sensitive Receptor ID	Receptor Description	UTM Coordinates		
		Zone	Easting (m)	Northing (m)
R-040	Residence on Orchard Rd	18	266875.52	4878188.97
R-041	Residence on Percy (North of 401)	18	267279.38	4878853.00
R-042	Residence on Orchard Rd	18	267337.32	4878181.35
R-043	Residence on Percy (North of 401)	18	267584.61	4878835.94

3.3 LOCAL AIR QUALITY

3.3.1 Available Published Ambient Monitoring Data

Ambient air quality monitoring has been conducted by the National Air Pollution Surveillance Program (NAPS) operated by ECCC in populated regions of Canada. NAPS was established in 1969 with the goal of the program to provide accurate and long-term air quality data of a uniform standard across Canada. The NAPS program continuously measures NO_2, CO, O_3, and $PM_{2.5}$. The NAPS network data for the most recent five years currently available (2014-2018) at the nearest monitoring stations to the Project were reviewed to determine background air quality concentrations. Monitoring station data was reviewed based on proximity to the Study Area, data completeness, proximity of monitoring station to an existing major roadway, having a similar land use to the Study Area, and/or similar population size. The Study Area is characterized as a rural location. The population size of Cobourg is 19,440 and the population of Colborne is 1,577 (Statistics Canada 2017a, b). These features were considered in the selection of the appropriate monitoring station to represent background concentrations in the Study Area. The NAPS stations that were considered for this study are presented in Table 3-6.

Table 3-6: NAPS Locations Assessed in the Study

NAPS ID	Location	Station Name	CoPC [A]	Availability of Data
60104	Rideau & Wurtemburg	Ottawa	CO	2014-2018
60204	467 University Ave. West	Windsor	CO	2014-2018
60430	125 Resources Road	Toronto	CO	2014-2018
60512	Elgin & Kelly	Hamilton	CO	2014-2018
61104	10 Hospital Drive	Peterborough	NO_2, $PM_{2.5}$	2014-2018
61702	2200 Simcoe Street North	Oshawa	NO_2, $PM_{2.5}$	2014-2018
65401	2 Sidney Street	Belleville	NO_2, $PM_{2.5}$	2014-2018
62601	Experimental Farm	Simcoe	BaP	2016-2018[C]
			acetaldehyde, acrolein, formaldehyde	2014-2018
			benzene, 1,3-butadiene	2014-2015, 2017-2018[D]
60211	College & South St. / 928 South St.	Windsor West	benzene, 1,3-butadiene	2013-2017[E]

Table 3-6: NAPS Locations Assessed in the Study

NAPS ID	Location	Station Name	CoPC [A]	Availability of Data
65101	Eagle St. & McCaffrey Rd.	Newmarket	benzene, 1,3-butadiene	2014-2017[E]
61502	West Ave & Homewood	Kitchener	benzene, 1,3-butadiene	2014-2018

Notes:

A. Only contaminants pertinent to this study are listed.

B. Grey shaded locations were selected for the study.

C. Data availability is less than 75% for 2014 and 2015.

D. Data for 2014 and 2015 are available for a 24-hour sampling period. Data availability is less than 75% for 2016. Data for 2017 and 2018 are available for a 4-hour sampling period.

E. Data availability is less than 75% for 2018.

3.3.2 Background Concentration Levels

Background concentrations are used in dispersion modelling to represent the cumulative effect of other emissions sources (i.e., both anthropogenic and biogenic) in addition to the sources being included in the dispersion modelling. The MTO Environmental Guideline for Air Quality (MTO, 2020) recommends that the background pollutant concentration levels to be used in this analysis are the 90th percentile of the most recently measured and complete concentration data from the nearest MECP or ECCC monitoring stations. The use of 90th percentile levels is to account for spatial and temporal variations between the monitoring location(s) and the Study Area, while still providing a conservative assessment. The background levels used in this study were therefore the 90th percentile values for short-term averages. For annual averages, an annual average value was used as the background level.

Background concentrations of the CoPCs were determined from the NAPS station data. The maximum (over all stations) of the 90th percentile concentration over all available years with complete data was considered to be the representative background value for the Project. The maximum, minimum, average and 90th percentile concentrations for applicable time periods for each CoPC are presented in Table 3-7. The following observations were made from the ambient monitoring data:

- The measured maximum 1-hour and 8-hour average CO concentrations at the Ottawa station were well below the applicable 1-hour and 8-hour AAQC of 36,200 µg/m^3 and 15,700 µg/m^3, respectively.
- The measured maximum 1-hour and 24-hour average NO_2 concentrations at the Peterborough station were below the applicable 1-hour and 24-hour AAQC of 400 µg/m^3 and 200 µg/m^3, respectively. The annual average NO_2 concentration is below the current (34 µg/m^3) and future (24 µg/m^3) CAAQS.
- Ambient PM_{10} concentrations were estimated based on $PM_{2.5}$ measurements at the Peterborough station using a ratio of $PM_{2.5}$ / PM_{10} = 0.54 (Lall *et al*, 2004). Based on this estimation methodology, PM_{10} background concentrations are above the 24-hour interim AAQC of 50 µg/m^3 in three of the five years.

- The maximum measured 24-hour average $PM_{2.5}$ concentration is above the 2015 CAAQS of 28 µg/m^3 and the 2020 CAAQS of 27 µg/m^3 in three of the five years.
- An exceedance of the 24-hour AAQC for benzene (2.4 µg/m^3) was measured in one of four years at the Newmarket station. The maximum measured annual average concentrations of benzene did not exceed the annual average AAQC of 0.45 µg/m^3.
- The maximum measured 24-hour and annual average concentrations of BaP at the Simcoe station are above the AAQC in all three years of data.
- The maximum measured 24-hour and annual average 1,3-butadiene concentrations at the Newmarket station were well below the applicable 24-hour and annual average AAQC of 10 µg/m^3 and 2 µg/m^3, respectively.
- The maximum measured 24-hour average formaldehyde concentration at the Simcoe station was well below the applicable 24-hour AAQC of 65 µg/m^3.
- The maximum measured 24-hour average acetaldehyde concentration at the Simcoe station was well below the applicable half-hour and 24-hour AAQC of 500 µg/m^3. Since acetaldehyde is not measured for shorter averaging periods, the 24-hour average concentration was converted to a half-hour concentration using the MECP averaging period conversion factor equation (MECP, 2017).
- The maximum measured 24-hour average acrolein concentration at the Simcoe station was well below the applicable 1-hour and 24-hour AAQC of 4.5 and 0.4 µg/m^3, respectively. Since acrolein is not measured for shorter averaging periods, the 24-hour average concentration was converted to a 1-hour concentration using the MECP averaging period conversion factor equation (MECP, 2017).

Table 3-7: Summary of CoPC Background Concentrations

CoPC	CAS	Averaging Period	Background Concentration (µg/m³)				Air Quality Criteria	Source	% of Criteria
		(hours)	Maximum	Minimum	Mean	90th Percentile	(µg/m³)		
CO	630-08-0	1	1194 [A]	0 [A]	238 [A]	362 [A]	36,200	AAQC	1%
		8	844 [A]	0 [A]	238 [A]	362 [A]	15,700		2%
NO_2	10102-44-0	1	114[A]	-1 [A]	9.4[A]	21.8[A]	400	AAQC	5%
							119	2020 CAAQS	-[B]
							83	2025 CAAQS	-[B]
		24	59[A]	1[A]	9.3[A]	21.2[A]	200	AAQC	11%
		Annual	-	-	9.4[A]	-	34	2020 CAAQS	28%
							24	2025 CAAQS	39%
PM_{10}	N/A	24	59[D]	0 [D]	11.9 [D]	24.1 [D]	50	AAQC	48%
$PM_{2.5}$	N/A	24	32	0	6.4	13.0	28	2015 CAAQS	-[C]
							27	2020 CAAQS	-[C]
		Annual	-	-	6.4	-	10	2015 CAAQS	-[C]
							8.8	2020 CAAQS	-[C]
Benzene	71-43-2	24	2.5	0.091	0.39	0.70	2.3	AAQC	30%
		Annual	-	-	0.39	-	0.45	AAQC	88%
Benzo(a)pyrene	50-32-8	24	0.00043	0	0.000023	0.000053	0.00005	AAQC	106%
		Annual	-	-	0.000023	-	0.00001	AAQC	230%
1,3-Butadiene	106-99-0	24	0.11	0.0030	0.023	0.063	10	AAQC	1%
		Annual	-	-	0.023	-	2	AAQC	1%
Formaldehyde	50-00-0	24	3.7	0.0036	0.69	2.2	65	AAQC	3%
Acetaldehyde	75-07-0	0.5	-	-	-	3.52[E]	500	AAQC	1%
		24	2.0	0	0.46	1.19	500	AAQC	0%

Table 3-7: Summary of CoPC Background Concentrations

CoPC	CAS	Averaging Period	Background Concentration (µg/m^3)				Air Quality Criteria	Source	% of Criteria
		(hours)	Maximum	Minimum	Mean	90th Percentile	(µg/m^3)		
Acrolein	107-02-8	1	-	-	-	0.073[E]	4.5	AAQC	2%
		24	0.072	0	0.0080	0.030	0.4	AAQC	7%

Notes:

A. The monitoring data was converted to µg/m^3 based on a standard temperature of 10°C and pressure of 1 atm.

B. The background hourly NO_2 concentration is not explicitly compared with the CAAQS as the 1-hour CAAQS for NO_2 is referenced to the three-year average of the annual 98th percentile of the daily maximum one-hour average concentrations while the background concentration is the 90th percentile of hourly values, and therefore the calculation basis for these two parameters are inconsistent.

C. Background concentrations of $PM_{2.5}$ are not explicitly compared with the CAAQS as the 24-hour and annual standards are referenced to the 98th percentile daily average concentration averaged over 3 consecutive years, and 3-year average of the annual average concentrations, respectively. The background concentrations are 90th percentile of hourly values and single year annual averages and therefore the calculation basis for these parameters are inconsistent.

D. Background concentrations of PM_{10} are estimated based on a ratio of $PM_{2.5}/PM_{10}$ = 0.54 (Lall *et al,* 2004).

E. Monitoring data are based on 24-hour measurements. The 24-hour background concentration is converted to the appropriate averaging period following guidance in the Air Dispersion Modelling Guideline for Ontario (ADMGO) (MECP, 2017).

3.4 EXISTING GREENHOUSE GAS EMISSIONS

Existing national and provincial GHG emission totals were obtained from Canada's 2017 National Inventory Report and are provided in Table 3-8. The table also shows the national (ECCC, 2020) and provincial (MECP, 2018a) GHG emission reduction targets for 2030.

Table 3-8: National and Provincial GHG Emissions

Year	GHG Emissions (kt CO2e)	
	Canada	**Ontario**
2012	711,000	169,000
2013	722,000	168,000
2014	723,000	166,000
2015	722,000	165,000
2016	708,000	162,000
2017	716,000	159,000
2030 Target	**511,000**	**143,000**

4.0 EMISSION INVENTORY

The methods and results of the air and GHG emissions estimations are provided in this section for the existing, future interim and future ultimate assessment years.

4.1 VEHICLE EMISSIONS

The U.S. EPA Motor Vehicle Emission Simulator (MOVES2014b) was used to estimate existing and future emissions rates from motor vehicle traffic on local roads (US EPA, 2014). MOVES 2014b is the U.S. EPA's tool for estimating vehicle emissions due to the combustion of fuel, brake and tire wear, fuel evaporation, permeation and refueling leaks. MOVES2014b was used to estimate vehicle emissions based on vehicle type, fuel type, road type, model year, and vehicle speed. Vehicle types, distribution and average travel speed were provided by CIMA (Stantec, 2020b). A summary of the MOVES2014b input parameters are provided in Table 4-1.

Table 4-1: Summary of MOVES Inputs

Parameter	Input
Scale	Project Domain
Years	2016, 2031, 2041
Months	January and July
Meteorology	Temperature – Climate Normals from Cobourg STP meteorological station Relative Humidity – Climate Normals from Trenton Airport meteorological station
Source Use Types	Passenger Car Single Unit Short-haul Truck Combination Short-haul Truck
Vehicle Distribution	76% passenger cars, 20% heavy truck, 4% medium truck 84% passenger cars, 10% heavy truck, 6% medium truck 87% passenger cars, 8% heavy truck, 5% medium truck
Fuels	Diesel / Gasoline
Age Distribution	MOVES defaults based on modelling year
Pollutants	CO, NO_2, PM_{10}, $PM_{2.5}$, Benzene, Benzo(a)pyrene, 1,3-Butadiene, Formaldehyde, Acetaldehyde, Acrolein, $CO2_e$
Road Type	Rural Restricted Access, Rural Unrestricted Access
Average Speed	40 km/hr, 60 km/hr, 80 km/hr, 100 km/hr

Emission factors in grams of pollutant emitted per vehicle mile travelled (g/VMT) for vehicle speeds for the above listed vehicle speeds and three vehicle distributions were obtained from MOVES2014b and applied to appropriate links in the dispersion model. Appendix C summarizes the emission factors obtained from MOVES.

Annual average daily traffic (AADT) volumes for the existing (2016) scenario were provided by CIMA+ and were projected to 2031 and 2041 using a no build growth rate of 1.3% and a build growth rate of 2.2% per annum (Stantec, 2020b). Peak hour (AM and PM) traffic volumes for the ultimate build scenario (2041) were provided by CIMA+ (CIMA+, 2020). Peak hour traffic volumes for 2016 and 2031 were estimated using these volumes and the no build and build growth rates. The diurnal variation in traffic levels was provided by CIMA+ and is based on 2016 traffic counts on Highway 401 taken approximately 7.9 km west of the Lyle Street Interchange (Stantec, 2020b). Both AADT and peak hour traffic data were used as inputs to the dispersion model and are provided in Appendix D. The hourly diurnal traffic pattern is also provided in Appendix D.

4.2 ROAD DUST EMISSIONS

In addition to exhaust, tire wear, brake and evaporative emissions, the re-entrainment of road dust is considered as source of PM_{10} and $PM_{2.5}$ from vehicles travelling over paved roads. Emissions resulting from travel on paved roads were quantified using the US EPA AP-42 Chapter 13.2.1 calculation methodology.

The quantity of particulate emissions from resuspension of loose material on the road surface due to vehicles travelling on the Project roadways were calculated using the equation suggested in AP-42, Section 13.2 (US EPA, 2011):

$$E = K \times (SL)^{0.91} \times (w)^{1.02}$$

Where:

E= particulate emission factor (g/VMT)

sL = road surface silt loading (g/m^2):

AADT < 500: 0.6 g/m^2
AADT between 500 – 5,000: 0.2 g/m^2
AADT between 5,000 – 10,000: 0.06 g/m^2
AADT > 10,000: 0.03 g/m^2

W = average weight (tons) of the vehicles traveling the road:

Passenger cars: 1.8 tons
Heavy Trucks: 18 tons
Medium Trucks: 9 tons

K = particle size multiplier of 0.25 (g/VMT) for $PM_{2.5}$ and 1 (g/VMT) for PM_{10}.

The particulate resuspension emission factors were calculated from the above equation and aggregated with the emission factors generated from MOVES2014b for $PM_{2.5}$ and PM_{10}.

The MOVES output emission factors and detailed road dust emissions calculations are presented in Appendix C.

4.3 GREENHOUSE GAS EMISSIONS

The estimation of GHG emissions for the Project follows the same methodology described for air contaminant emissions, using MOVES2014b to predict CO2e emission factors with the same model inputs for the existing, future interim and future ultimate no build and build scenarios. These emission factors were then used to calculate total emissions both with and without implementation of the Project. The total emissions for each case were based on each link's emission factor (g/VMT) and the predicted annual vehicle miles travelled (based on the length and AADT of each link). The detailed GHG emissions calculations are provided in Appendix E and are summarized in Table 4-2.

Table 4-2: Project GHG Emissions

Annual GHG Emissions (t CO2e / year)				
Existing 2016	Interim		Ultimate	
	No Build	Build	No Build	Build
89,173	84,520	96,669	96,330	112,574

The ultimate build scenario represents an increase in GHG emissions of approximately 26% compared to the existing scenario and 17% compared to the ultimate no build scenario. Due to expected improvements in engine technology and cleaner fuels, overall CO2e emissions per vehicle mile travelled are lower in the future but are offset by the expected corresponding increase in vehicle traffic.

5.0 AIR DISPERSION MODELLING METHODOLOGY

Dispersion modelling of CoPCs from vehicle traffic travel on local roads was performed for the following assessment scenarios:

- 2016 – Existing conditions, Highway 401 (4-lanes);
- 2031 – No Build, Highway 401 (4-lanes);
- 2031 – Interim Build, Highway 401 (6 lanes), interim reconfiguration of Lyle Street and Percy Street Interchanges;
- 2041 – Ultimate No Build, Highway 401 (6-lanes), reconfiguration of Lyle Street and Percy Street Interchanges; and
- 2041 – Ultimate Build, Highway 401 (8 lanes), ultimate reconfiguration of Lyle Street and Percy Street Interchanges.

5.1 DISPERSION MODEL USED

The US EPA CAL3QHCR model was used to predict air quality concentrations at the special receptor locations for all five emission scenarios. The model can predict pollutant ground level concentrations (GLCs) from motor vehicles near highways and arterial streets. CAL3QHCR requires inputs such as roadway geometries, receptor locations, meteorological conditions, and vehicular emission factors.

A total of 67 links (road segments) were input into the model for the existing/no build scenarios, 77 links for the future interim build and future ultimate no build scenarios and 80 links for the future ultimate build scenario. Detailed link data for each scenario is included in Appendix F. The links were determined based on the preferred design plans presented in Appendix A and available traffic volumes and hourly distribution data provided by CIMA+ (Stantec, 2020b) presented in Appendix D. Emission factors from MOVES2014b in g/VMT were assigned to each link depending on the predicted vehicle distribution and average travel speed. Table 5-1 summarizes key CAL3QHCR inputs used in the model runs.

Table 5-1: Key CAL3QHCR Model Input Parameters

Parameter	Input
Traffic Data	Peak hourly traffic volumes AADT volumes coupled with local traffic distribution (see Section 4.1)
Deposition Velocity	Deposition velocities selected as per the MTO Guide $PM_{2.5}$: 0.1 cm/s PM_{10}: 0.5 cm/s CO, NO_2, BAP and VOCs: 0 cm/s

Table 5-1: Key CAL3QHCR Model Input Parameters

Parameter	Input
Settling Velocity	Settling velocities selected as per MTO Guide $PM_{2.5}$: 0.02 cm/s PM_{10}: 0.3 cm/s CO, NO_2, BAP and VOCs: 0 cm/s
Surface Roughness Length	The Study Area is dominated by a mixture of forest and crop land (Stantec 2020c) and, therefore, 50 cm for mixed far fields and forest clumps, orchards, scattered buildings was selected
Emission Factor	Emission Factors from MOVES2014b were applied to the appropriate links depending on assigned average vehicle speed and vehicle distribution

5.2 METEOROLOGICAL DATA SOURCES

The local meteorology of the region must be characterized to evaluate the short-term atmospheric dispersion and transport of emissions released by the Project. A five-year (2014-2018) site specific meteorological dataset preprocessed by the MECP was used as an input to the dispersion model with upper air data from Buffalo NY and surface data from Oshawa Airport. Since CAL3QHCR can only process one year of meteorological data for each run, each of the five years' met data were processed individually and the highest predicted ambient concentrations over the 5-years were conservatively determined.

5.3 WIND SPEED AND DIRECTION

The frequency distribution of wind speeds from the site-specific meteorological data set is shown in Figure 5-1. High wind speeds greater than 8.8 m/s occur infrequently, while wind speeds between 3.6 – 5.7 m/s occur the most frequently. A wind rose plot is presented in Figure 5-2. Wind roses are an efficient and convenient means of presenting wind data. The length of the radial barbs gives the total percent frequency of winds from the indicated direction, while portions of the barbs of different widths indicate the frequency associated with each wind speed category. Winds blow most frequently from westerly and south-southeasterly directions.

Figure 5-1: Wind Class Frequency Distribution (2014-2018)

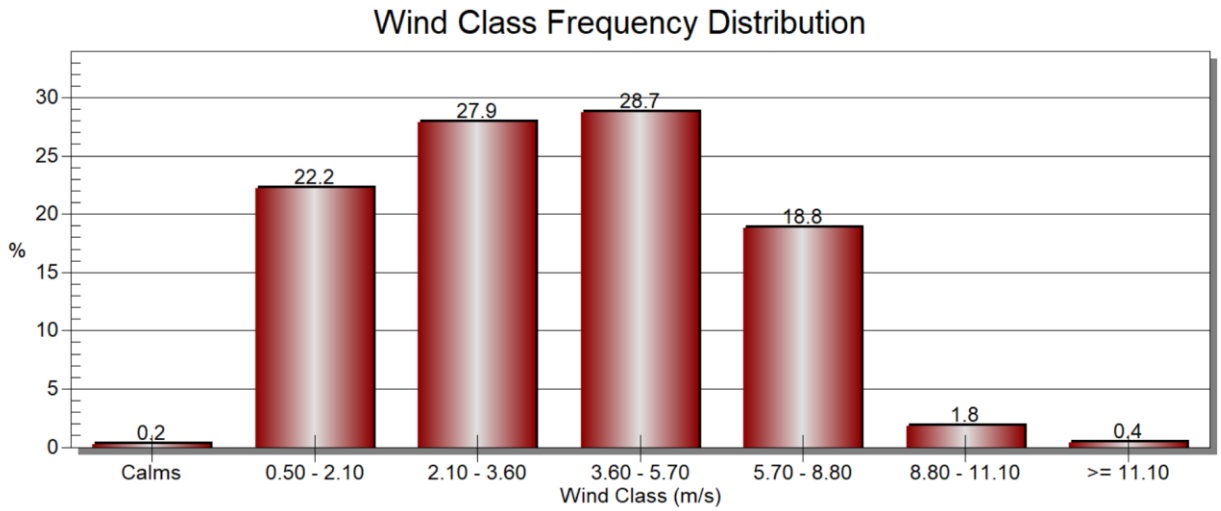
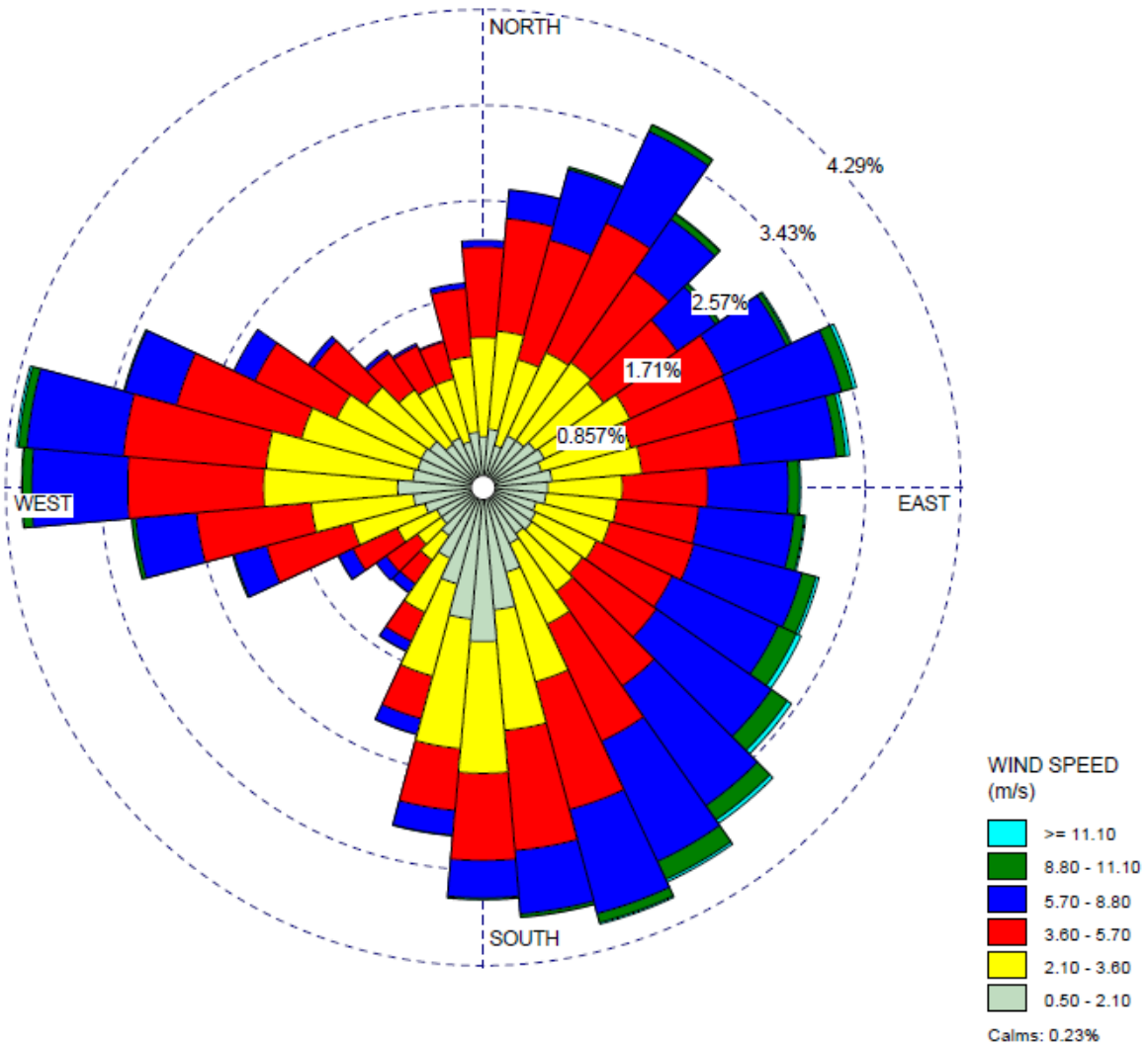


Figure 5-2: Wind Rose Plot (2014-2018)



5.4 AVERAGING PERIODS

CAL3QHCR is capable of predicting concentrations for a variety of averaging times greater than 1-hour. For this Project, the model was run for 1-hour, 8-hour, 24-hour and annual averaging times.

5.5 RECEPTORS

The MTO Guide recommends that the local air quality impacts be studied within a distance of 500 m from the transportation facility, in each direction and at both sensitive (residences) and critical receptors (hospitals, retirement homes, childcare centres, etc.). The choice of a 500 m limit is based on empirical evidence for heavily travelled large highways, which clearly indicates that the concentrations of road-related pollutants drop to within 10% of their background pollution levels over this distance (MTO, 2020).

There are no critical receptors located within 500 m of the project. The locations of the representative sensitive (residence) receptors used to assess compliance with the air quality criteria are shown in Appendix B and summarized in Table 3-5.

6.0 AIR DISPERSION MODELLING RESULTS – PROJECT ALONE

This section presents the results of the dispersion modelling analysis of the existing, interim and ultimate scenarios for the Project build and no build configurations at the special receptor locations discussed in Section 3.2. A summary of the maximum modelled predictions in comparison to the applicable AAQC and/or CAAQS is presented in Table 6-1. Receptor specific modelled predictions are included in Appendix G. Predictions for $PM_{2.5}$ and NO_2 are presented as maximum modelled concentrations and are used for comparison to the applicable CAAQS as CAL3QHCR does not provide outputs that are the appropriate statistical measure required for direct comparison to the standards. Therefore, results for $PM_{2.5}$ and NO_2 presented and discussed in comparison to the CAAQS are considered to be conservative.

The maximum predicted GLCs for all CoPCs are well below their relevant AAQC and/or CAAQS except for B(a)P in all five scenarios. The general trend is a decrease in predicted maximum concentrations over time due to advances in cleaner fuels and emissions control technology, which are anticipated to lower all vehicle contaminant tailpipe emissions in the future.

CACs

Predicted maximum concentrations of CO, NO_2, PM_{10} and $PM_{2.5}$ are well below the relevant AAQC and/or CAAQS for all five scenarios and show a general decrease in the future for both the no build and build scenarios in comparison to existing conditions, except for PM_{10} which is predicted to increase by 3% in the ultimate build scenario. The increase in the predicted maximum PM_{10} GLC may be attributed to the increased volume of vehicles on the road (due to traffic growth) offsetting advances in clean fuel and engine technology. For CACs, there is a small (1-3%) incremental increase in the predicted maximum concentrations for the ultimate build versus ultimate no build scenario due to increases in traffic volume.

VOCs

Predicted maximum concentrations of benzene, 1,3-butadiene, formaldehyde, acetaldehyde and acrolein also show a general decrease in maximum predicted GLCs for the interim and ultimate future scenarios compared to the existing scenario. The contribution from the ultimate build scenario represents less than 1% of the relevant AAQC for all VOCs.

Benzo(a)pyrene

The maximum predicted 24-hour and annual average concentrations of B(a)P for the existing scenario are higher than their respective AAQCs (approximately 3 times higher for the 24-hour average and 3.6 times higher for the annual average concentration). Maximum predicted concentrations are also above the AAQC at each of the sensitive receptor locations as shown in Appendix G. However, the maximum concentrations are predicted to decrease in all four future scenarios. In the future interim build and ultimate build scenarios, the maximum predicted B(a)P GLCs are predicted to be higher than the no build scenarios due to increased traffic volumes. B(a)P concentration plots are presented in Appendix H.

Table 6-1: Maximum Predicted Concentrations at Special Receptors

CoPC	CAS	Maximum Predicted Concentration [A] (µg/m³)					Averaging Period (hours)	Air Quality Objectives/ Criteria (µg/m³)	Regulatory Framework	Percentage of Reference Criteria (%)				
		Existing	Interim No Build	Interim Build	Ultimate No Build	Ultimate Build				Existing	Interim No Build	Interim Build	Ultimate No Build	Ultimate Build
CO	630-08-0	827.3	272.3	266.7	214.2	229.3	1	36,200	AAQC	2%	<1%	<1%	<1%	<1%
		446.1	144.7	144.7	120.6	120.6	8	15,700	AAQC	3%	<1%	<1%	<1%	<1%
NO_2	10102-44-0	45.1	27.5	26.9	28.4	30.0	1	400	AAQC	11%	7%	7%	7%	7%
		45.1	27.5	26.9	28.4	30.0	1	119[B]	2020 CAAQS	38%	23%	23%	24%	25%
		45.1	27.5	26.9	28.4	30.0	1	83[B]	2025 CAAQS	54%	33%	32%	34%	36%
		2.7	1.6	1.8	1.6	2.1	24	200	AAQC	1%	<1%	<1%	<1%	1%
		2.4	1.4	1.4	1.5	1.6	Annual	34[C]	2020 CAAQS	7%	4%	4%	4%	5%
		2.4	1.4	1.4	1.5	1.6	Annual	24[C]	2025 CAAQS	10%	6%	6%	6%	7%
PM_{10}	N/A	5.4	4.9	5.6	5.4	6.9	24	50	AAQC	11%	10%	11%	11%	14%
$PM_{2.5}$	N/A	2.6	1.4	1.6	1.5	1.9	24	28[D]	2015 CAAQS	9%	5%	6%	5%	7%
		2.6	1.4	1.6	1.5	1.9	24	27[D]	2020 CAAQS	9%	5%	6%	5%	7%
		0.6	0.3	0.4	0.4	0.5	Annual	10[E]	2015 CAAQS	6%	3%	4%	4%	5%
		0.6	0.3	0.4	0.4	0.5	Annual	8.8[E]	2020 CAAQS	7%	4%	5%	4%	6%
Benzo(a)pyrene	50-32-8	1.93E-04	2.13E-05	2.43E-05	2.42E-05	3.06E-05	24	5.00E-05	AAQC	386%	43%	49%	48%	61%
		4.66E-05	5.10E-06	6.20E-06	6.20E-06	8.10E-06	Annual	1.00E-05	AAQC	466%	51%	62%	62%	81%
Benzene	71-43-2	0.0439	0.0064	0.0073	0.0048	0.0061	24	2.3	AAQC	2%	<1%	<1%	<1%	<1%
		0.0106	0.0015	0.0019	0.0012	0.0016	Annual	0.45	AAQC	2%	<1%	<1%	<1%	<1%
1,3-Butadiene	106-99-0	8.80E-03	6.61E-04	7.53E-04	1.45E-04	1.84E-04	24	10	AAQC	<1%	<1%	<1%	<1%	<1%
		2.10E-03	1.59E-04	1.92E-04	3.71E-05	4.85E-05	Annual	2	AAQC	<1%	<1%	<1%	<1%	<1%
Formaldehyde	50-00-0	0.20	0.05	0.06	0.04	0.05	24	65	AAQC	<1%	<1%	<1%	<1%	<1%
Acetaldehyde	75-07-0	1.9	0.4	0.4	0.3	0.3	0.5	500	AAQC	<1%	<1%	<1%	<1%	<1%
		0.09	0.02	0.02	0.01	0.02	24	500	AAQC	<1%	<1%	<1%	<1%	<1%
Acrolein	107-02-8	0.27	0.036	0.035	0.042	0.044	1	4.5	AAQC	6%	<1%	<1%	<1%	<1%
		0.016	0.002	0.002	0.002	0.003	24	0.4	AAQC	4%	<1%	<1%	<1%	<1%

Notes:

A. Maximum concentration over the 43 special receptors. Predicted ground level concentrations within the same scenario but different CoCP / averaging period are not necessarily at the same receptor. Similarly, CoPC / averaging periods between different scenarios are not necessarily comparing the same receptor.

B. Requires the 3-year average of the 98th percentile daily maximum 1-hour average concentrations to compare to the 1-hour average CAAQS.

C. Requires the average over a single calendar year of all the 1-hour average concentrations to compare to the annual average CAAQS.

D. Requires the 3-year average of the annual 98th percentile of the daily 24-hour average concentrations to directly compare to the 24-hour average CAAQS.

E. Requires a 3-year average of the annual average concentrations to directly compare to the annual CAAQS.

7.0 CUMULATIVE EFFECTS ASSESSMENT

This section discusses the assessment of background air quality and GHG emissions in order to evaluate the Project's emissions cumulatively and in relation to other existing sources of emissions in the Study Area.

7.1 AIR QUALITY

The maximum predicted GLCs from the air quality dispersion modelling presented in Section 6.0 were added to the background concentrations presented in Section 3.3.2 in order to assess the cumulative effects of the Project with existing air quality levels in the Study Area. A summary of the maximum modelled predictions including background concentrations in comparison to the applicable AAQC and/or CAAQS is presented in Table 7-1. Cumulative predictions for $PM_{2.5}$ and NO_2 are maximum modelled concentrations and are used for a conservative comparison to the applicable CAAQS as CAL3QHCR does not provide predictions in the appropriate statistical measure required for direct comparison to these standards. The model predictions for $PM_{2.5}$ and NO_2 in Table 7-1 are considered to provide conservative comparisons relative to the CAAQS.

The maximum predicted cumulative GLCs for all CoPCs are below their relevant AAQC and/or CAAQS except for B(a)P for all five scenarios.

CACs

Maximum predicted cumulative GLCs of CO, NO_2, PM_{10} and $PM_{2.5}$ remain below their relevant AAQC and/or CAAQS for all five scenarios. The maximum predicted annual average $PM_{2.5}$ GLC is 78% of the standard for the ultimate build scenario and 77% of standard for the ultimate no build scenario, with about 73% of the cumulative concentration being attributable to the background concentration. Recent ambient air quality monitoring data shows a decreasing trend in $PM_{2.5}$ concentrations in Ontario over the past decade (MECP 2019). Based on this trend, it is likely that background $PM_{2.5}$ levels will continue to improve in the future and therefore, the background concentration used in the assessment is conservative.

VOCs

Predicted cumulative concentrations of 1,3-butadiene, formaldehyde, acetaldehyde and acrolein all remain well below their relevant AAQCs even with the addition of background concentrations. The maximum annual average benzene concentration is predicted to be 88% of the AAQC for the ultimate build and no build scenario. The majority (88%) of which is attributable to the existing background concentrations. Ambient air quality monitoring data suggests a decreasing trend in benzene concentrations in Ontario over the past decade (MECP, 2019). Based on this trend, it is likely that background benzene levels will continue to improve in the future and therefore the background concentrations used in the assessment are conservative.

Table 7-1: Maximum Predicted Cumulative Concentrations at Special Receptors

CoPC	CAS	Background Concentration (µg/m³)	Maximum Predicted Cumulative Concentration [A] (µg/m³)					Averaging Period (hours)	Air Quality Objectives/ Criteria (µg/m³)	Regulatory Framework	Percentage of Reference Criteria (%)				
			Existing	Interim No Build	Interim Build	Ultimate No Build	Ultimate Build				Existing	Interim No Build	Interim Build	Ultimate No Build	Ultimate Build
CO	630-08-0	361.7	1188.9	634.0	628.3	575.9	591.0	1	36,200	AAQC	3%	2%	2%	2%	2%
		361.7	807.7	506.3	506.3	482.2	482.2	8	15,700	AAQC	5%	3%	3%	3%	3%
NO_2	10102-44-0	21.8	66.9	49.2	48.7	50.1	51.8	1	400	AAQC	17%	12%	12%	13%	13%
		21.8	66.9	49.2	48.7	50.1	51.8	1	119[B]	2020 CAAQS	56%	41%	41%	42%	43%
		21.8	66.9	49.2	48.7	50.1	51.8	1	83[B]	2025 CAAQS	81%	59%	59%	60%	62%
		21.2	23.8	22.8	23.0	22.8	23.2	24	200	AAQC	12%	11%	12%	11%	12%
		9.4	11.7	10.8	10.8	10.9	11.0	Annual	34[C]	2020 CAAQS	35%	32%	32%	32%	32%
		9.4	11.7	10.8	10.8	10.9	11.0	Annual	24[C]	2025 CAAQS	49%	45%	45%	45%	46%
PM_{10}	N/A	24.1	29.5	29.0	29.6	29.5	30.9	24	50	AAQC	59%	58%	59%	59%	62%
$PM_{2.5}$	N/A	13.0	15.6	14.4	14.6	14.5	14.9	24	28[D]	2015 CAAQS	56%	51%	52%	52%	53%
		13.0	15.6	14.4	14.6	14.5	14.9	24	27[D]	2020 CAAQS	58%	53%	54%	54%	55%
		6.4	7.0	6.7	6.8	6.8	6.9	Annual	10[E]	2015 CAAQS	70%	67%	68%	68%	69%
		6.4	7.0	6.7	6.8	6.8	6.9	Annual	8.8[E]	2020 CAAQS	80%	77%	77%	77%	78%
Benzo(a)pyrene	50-32-8	5.28E-05	2.46E-04	7.41E-05	7.71E-05	7.70E-05	8.34E-05	24	5.00E-05	AAQC	492%	148%	154%	154%	167%
		2.30E-05	6.96E-05	2.81E-05	2.92E-05	2.92E-05	3.11E-05	Annual	1.00E-05	AAQC	696%	281%	292%	292%	311%
Benzene	71-43-2	0.6998	0.7437	0.7062	0.7071	0.7046	0.7059	24	2.3	AAQC	32%	31%	31%	31%	31%
		0.3946	0.4052	0.3961	0.3965	0.3958	0.3962	Annual	0.45	AAQC	90%	88%	88%	88%	88%
1,3-Butadiene	106-99-0	0.0627	0.0715	0.0634	0.0634	0.0628	0.0629	24	10	AAQC	<1%	<1%	<1%	<1%	<1%
		0.0230	0.0251	0.0232	0.0232	0.0231	0.0231	Annual	2	AAQC	1%	1%	1%	1%	1%
Formaldehyde	50-00-0	2.24	2.44	2.29	2.30	2.28	2.29	24	65	AAQC	4%	4%	4%	4%	4%
Acetaldehyde	75-07-0	3.52	5.41	3.91	3.90	3.77	3.78	0.5	500	AAQC	1%	<1%	<1%	<1%	<1%
		1.19	1.28	1.21	1.21	1.20	1.20	24	500	AAQC	<1%	<1%	<1%	<1%	<1%
Acrolein	107-02-8	0.073	0.341	0.109	0.108	0.115	0.117	1	4.5	AAQC	8%	2%	2%	3%	3%
		0.030	0.046	0.032	0.032	0.032	0.033	24	0.4	AAQC	11%	8%	8%	8%	8%

Notes:

A. Maximum cumulative concentration from 43 special receptors. Predicted ground level concentrations within the same scenario but different CoPC / averaging period are not necessarily at the same receptor. Similarly, CoPC / averaging period between different scenarios are not necessarily comparing the same receptor.

B. Requires the 3-year average of the 98th percentile daily maximum 1-hour average concentrations to compare to the 1-hour average CAAQS.

C. Requires the average over a single calendar year of all the 1-hour average concentrations to compare to the annual average CAAQS.

D. Requires the 3-year average of the annual 98th percentile of the daily 24-hour average concentrations to directly compare to the 24-hour average CAAQS.

E. Requires a 3-year average of the annual average concentrations to directly compare to the annual CAAQS.

Benzo(a)pyrene

Predicted cumulative concentrations of B(a)P exceed the 24-hour and annual AAQCs at all special receptor locations, with the background concentrations alone being 6% and 130% above the 24-hour and annual average AAQCs, respectively. Maximum concentrations from the Project Alone, are however predicted to be below the applicable criteria in the future scenarios, with the background levels being the major contributor to the cumulative exceedances. The maximum cumulative B(a)P concentrations are predicted to decrease in the future ultimate build and ultimate no build scenarios due to expected future reductions in vehicle emissions. Concentration contour plots for B(a)P are included in Appendix G.

7.2 GREENHOUSE GASES

To evaluate the potential cumulative effects of GHG emissions due to the Project, estimated emissions with and without implementation of the Project are compared to the existing baseline emissions in Canada and Ontario. Table 7-2 presents the GHG emissions estimates for each of the five scenarios compared to Canada and Ontario 2017 totals and the 2030 emissions targets. The estimated GHG emissions from the ultimate build scenario represents 0.07% of Ontario's total emissions for 2017, and 0.016% of Canada's total emissions for 2017. Furthermore, this represents 0.08% of Ontario's and 0.022% of Canada's 2030 targets, respectively.

The incremental increase in GHG emissions due to the ultimate build scenario, in relation to the ultimate no build scenario is 16.2 kt CO2e per year. This is an incremental increase in the GHG emissions in Ontario of 0.0102% and in Canada of 0.0023% compared to 2017 totals and in Ontario of 0.0114% and in Canada of 0.003 compared to 2030 targets. These potential changes are considered insignificant in relation to the 2017 Canada and Ontario GHG emissions totals and the 2030 emissions targets.

Table 7-2: GHG Emissions Estimates Compared to Canada and Ontario Totals

Scenario	Project (kt CO2e)	Canada				Ontario			
		2017 Total (kt CO2e)	% 2017 Total	2030 Target (kt CO2e)	% of 2030 Target	2017 Total (kt CO2e)	% of 2017 Total	2030 Target (kt CO2e)	% of 2030 Target
Existing	89.2	716,000	0.012%	511,000	0.017%	159,000	0.06%	143,000	0.06%
Interim No Build	84.5		0.012%		0.017%		0.05%		0.06%
Interim Build	96.7		0.014%		0.019%		0.06%		0.07%
Ultimate No Build	96.3		0.013%		0.019%		0.06%		0.07%
Ultimate Build	112.6		0.016%		0.022%		0.07%		0.08%

8.0 AIR QUALITY IMPACTS DURING CONSTRUCTION

During construction of the Project, dust will be the primary CoPC. Other CoPCs such as NO_2 and VOCs will also be emitted from equipment used during construction. As the construction activities will be short-term and intermittent, emissions are expected to be minor provided adequate mitigation measures are implemented. The ECCC guideline “Best Practices for the Reduction of Air Emissions from Construction and Demolition Activities” provides recommendations for mitigation measures to reduce construction emissions. These measures include material wetting or use of chemical suppressants to reduce dust, use of wind barriers and limiting exposed areas which may be a source of dust, and equipment washing. It is recommended that these best management practices be followed during Project construction.

9.0 CONCLUSIONS

The following principal conclusions were made from the air quality and greenhouse gas impact assessment:

- Maximum predicted Project GLCs of CoPCs other than B(a)P are below their relevant AAQC and/or CAAQS at all sensitive receptors for all release scenarios.
- Maximum predicted cumulative GLCs of CoPCs other than B(a)P are below their relevant AAQC and/or CAAQS at all sensitive receptors for all release scenarios.
- Maximum predicted cumulative $PM_{2.5}$ concentrations are below but approaching the annual average CAAQS for all scenarios but are mainly attributable to background concentrations.
- Maximum predicted cumulative benzene concentrations are below but approaching the annual average AAQC for all scenarios but are also mainly attributable to background concentrations.
- Measured concentrations of benzene and $PM_{2.5}$ across Ontario have shown decreasing trends between 2008 and 2017. It is likely that background levels of these contaminants will continue to improve in the future and therefore the background concentrations used in the assessment are conservative.
- Predicted cumulative concentrations of B(a)P exceed the 24-hour and annual AAQCs at all special receptor locations with background concentrations already representing 6% and 130% above the 24-hour and annual average AAQC, respectively. Maximum concentrations from the Project Alone, are however predicted to be below the applicable criteria in the future scenarios, with the background levels being the major contributor to the cumulative exceedances. The concentrations are predicted to decrease in the future ultimate build and ultimate no build scenarios.
- During Project construction, best management practices should be followed to minimize emissions.
- Releases of GHGs from the Project are expected to be insignificant in comparison to the 2017 Canada and Ontario totals and the 2030 emissions targets.

10.0 REFERENCES

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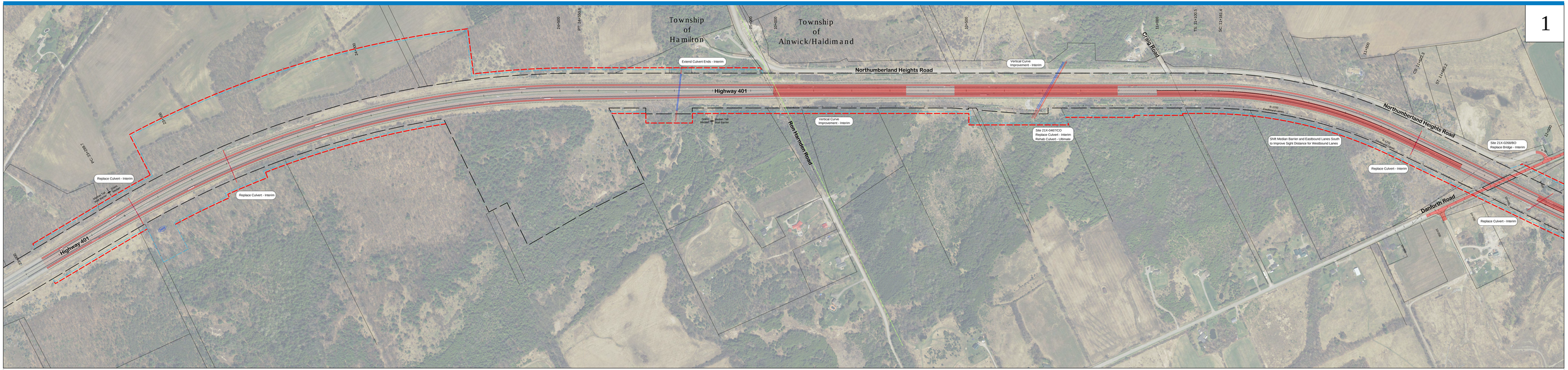
APPENDIX A
Preferred Design Plans

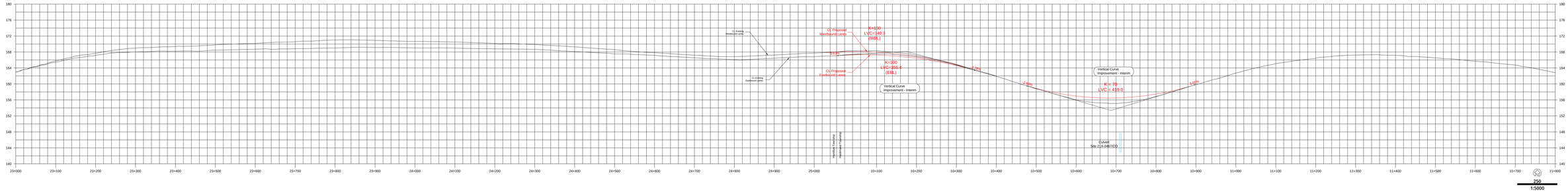
Highway 401 Preferred Plan

LEGEND

- Existing MTO Right-of-Way
- New Roadway - Interim (Future 6-lanes)
- Rehabilitate Existing Roadway - Interim (Future 6-lanes)
- Property Required - Interim (Future 6-lanes)
- New Roadway - Ultimate (Future 8-lanes)
- Additional Property Required - Ultimate (Future 8-lanes)
- Municipal Township Boundary
- Property Fabric (Approximate based on Assessment Mapping)
- Existing Culvert
- New Culvert or Culvert Extension
- Existing Driveway to be Closed
- Property Acquisition
- SWM Potential Stormwater Management Facility
- OB Overhead Bell
- UB Underground Bell
- OH Overhead Hydro
- OBH Overhead Bell & Hydro
- GAS Underground Union Gas
- WM Watermain
- Cell Tower

1





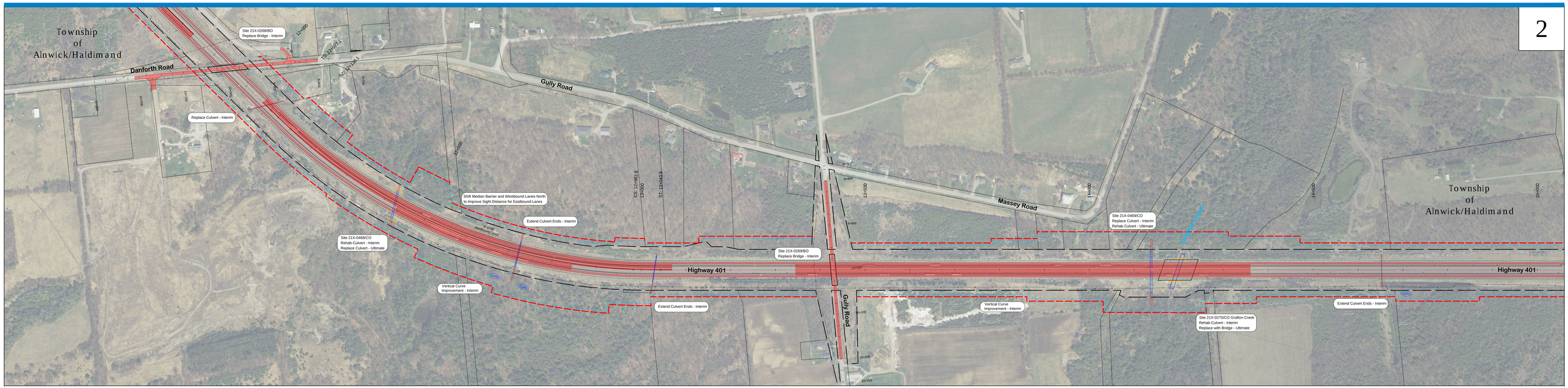
Highway 401 Cobourg To Colborne, GWP 4060-11-00

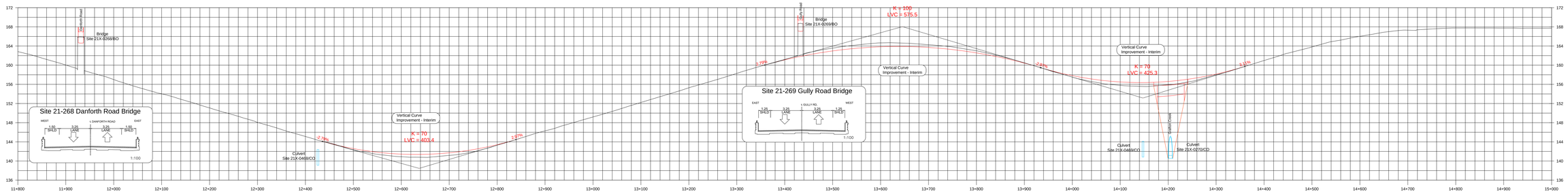
Ontario Stantec highway401cobourgcolborne.ca

Highway 401 Preferred Plan

LEGEND

- Existing MTO Right-of-Way
- New Roadway - Interim (Future 6-lanes)
- Rehabilitate Existing Roadway - Interim (Future 6-lanes)
- Property Required - Interim (Future 6-lanes)
- New Roadway - Ultimate (Future 8-lanes)
- Additional Property Required - Ultimate (Future 8-lanes)
- Proposed Retaining Wall
- Municipal Township Boundary
- Property Fabric (Approximate based on Assessment Mapping)
- Existing Culvert
- New Culvert or Culvert Extension
- Existing Driveway to be Closed
- Property Acquisition
- SWM Potential Stormwater Management Facility
- OB Overhead Bell
- UB Underground Bell
- OH Overhead Hydro
- OBH Overhead Bell & Hydro
- GAS Underground Union Gas
- WM Watermain
- Cell Tower





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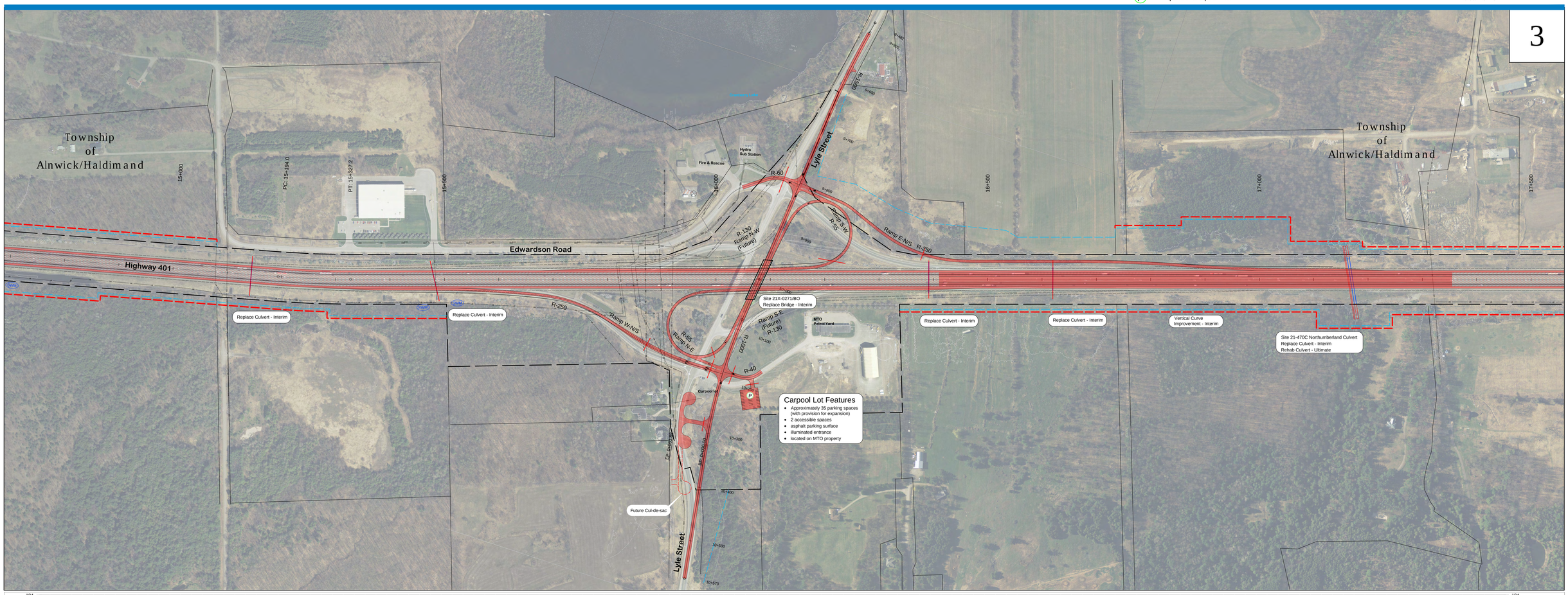
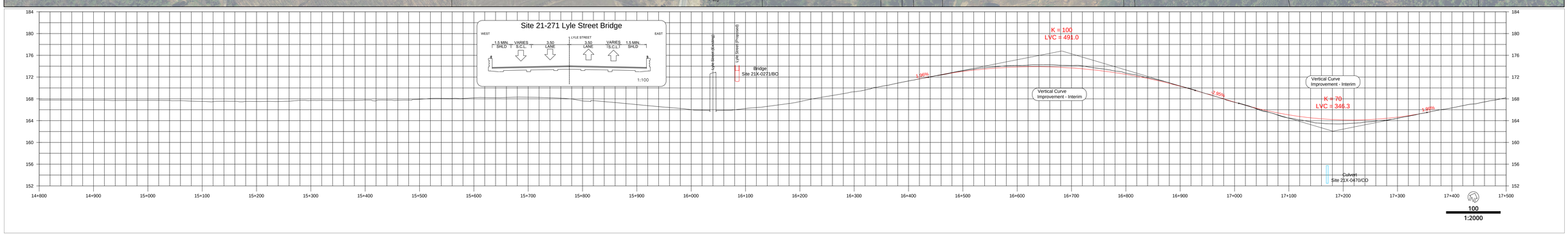
Highway 401 Preferred Plan

LEGEND

- Existing MTO Right-of-Way
- New Roadway - Interim (Future 6-lanes)
- Rehabilitate Existing Roadway - Interim (Future 6-lanes)
- Property Required - Interim (Future 6-lanes)
- New Roadway - Ultimate (Future 8-lanes)
- Additional Property Required - Ultimate (Future 8-lanes)
- Municipal Township Boundary
- Property Fabric (Approximate based on Assessment Mapping)
- Existing Culvert
- New Culvert or Culvert Extension
- Existing Driveway to be Closed
- Property Acquisition
- SWM Potential Stormwater Management Facility
- P Proposed Carpool Lot
- OB Overhead Bell
- UB Underground Bell
- OH Overhead Hydro
- OBH Overhead Bell & Hydro
- GAS Underground Union Gas
- WM Watermain
- Cell Tower

3



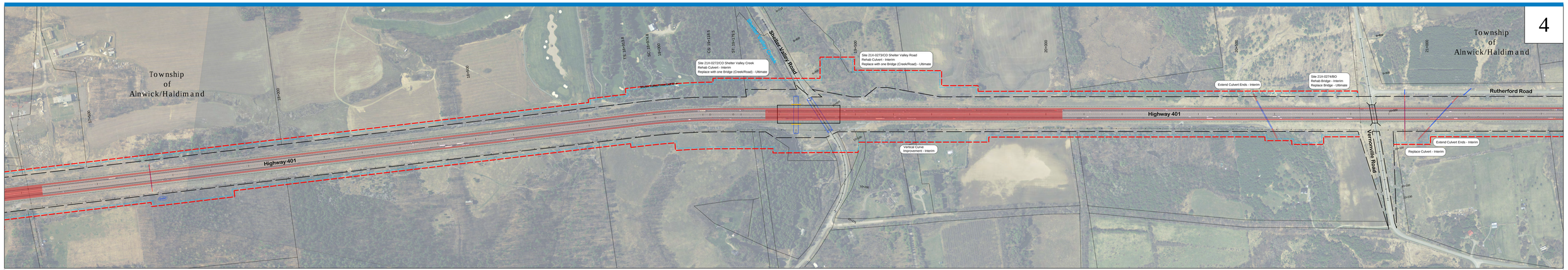


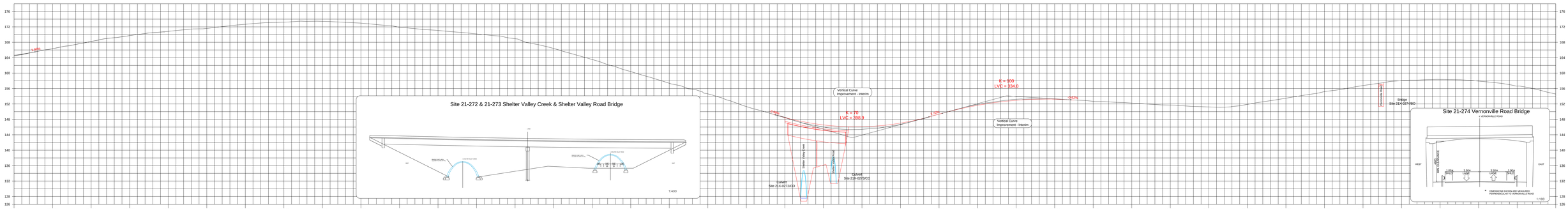
Highway 401 Preferred Plan

LEGEND

- Existing MTO Right-of-Way
- New Roadway - Interim (Future 6-lanes)
- Rehabilitate Existing Roadway - Interim (Future 6-lanes)
- Property Required - Interim (Future 6-lanes)
- New Roadway - Ultimate (Future 8-lanes)
- Additional Property Required - Ultimate (Future 8-lanes)
- Proposed Retaining Wall
- Municipal Township Boundary
- Property Fabric (Approximate based on Assessment Mapping)
- Existing Culvert
- New Culvert or Culvert Extension
- Existing Driveway to be Closed
- Property Acquisition
- SWM Potential Stormwater Management Facility
- OB Overhead Bell
- UB Underground Bell
- OH Overhead Hydro
- OBH Overhead Bell & Hydro
- GAS Underground Union Gas
- WM Watermain
- Cell Tower

4





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Highway 401 Cobourg To Colborne, GWP 4060-11-00

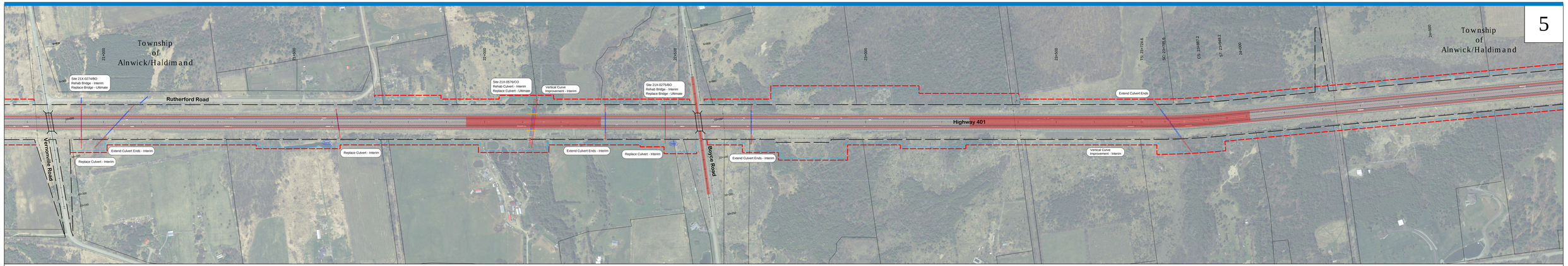
Ontario Stantec highway401cobourgcolborne.ca

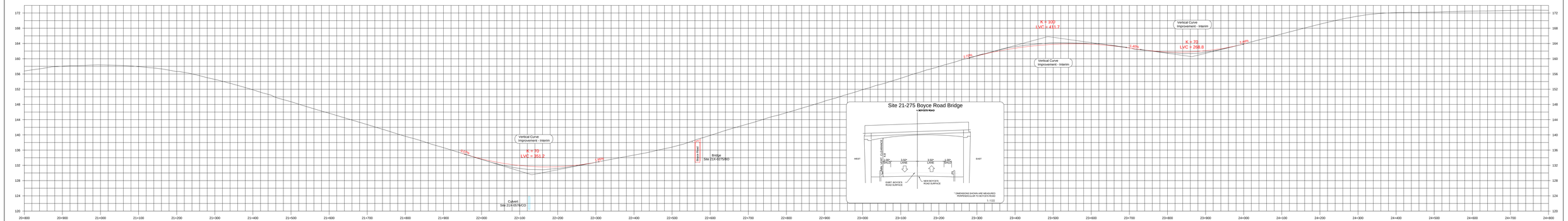
Highway 401 Preferred Plan

LEGEND

- Existing MTO Right-of-Way
- New Roadway - Interim (Future 6-lanes)
- Rehabilitate Existing Roadway - Interim (Future 6-lanes)
- Property Required - Interim (Future 6-lanes)
- New Roadway - Ultimate (Future 8-lanes)
- Additional Property Required - Ultimate (Future 8-lanes)
- Municipal Township Boundary
- Property Fabric (Approximate based on Assessment Mapping)
- Existing Culvert
- New Culvert or Culvert Extension
- Existing Driveway to be Closed
- Property Acquisition
- SWM Potential Stormwater Management Facility
- OB Overhead Bell
- UB Underground Bell
- OH Overhead Hydro
- OBH Overhead Bell & Hydro
- GAS Underground Union Gas
- WM Watermain
- Cell Tower

5





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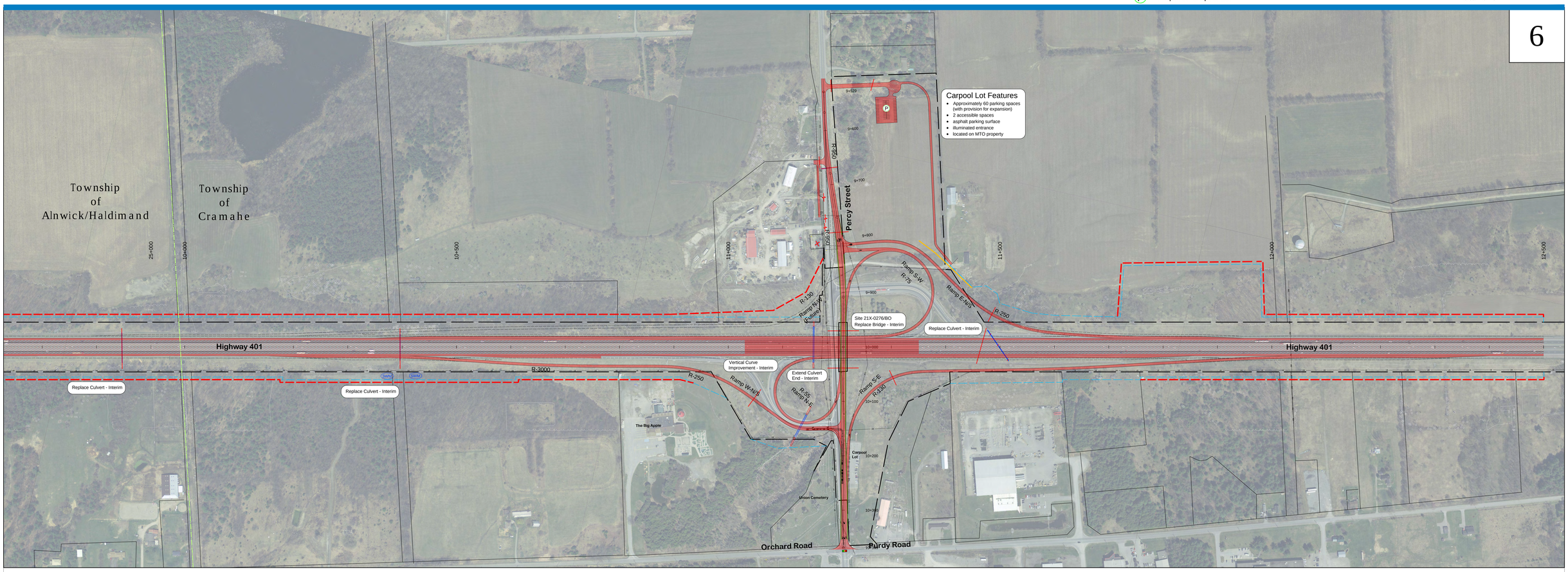
Ontario Stantec highway401cobourgcolborne.ca

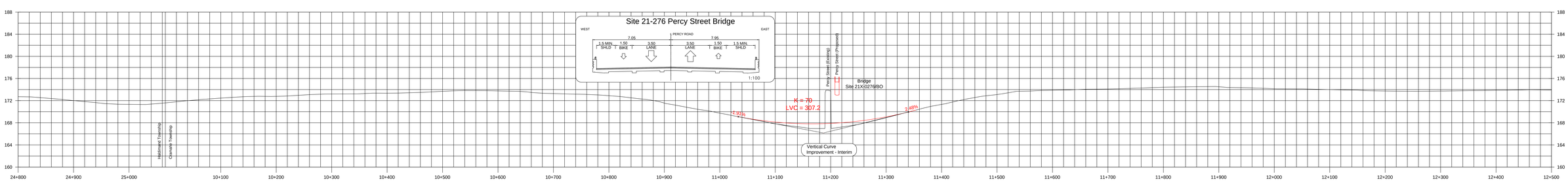
Highway 401 Preferred Plan

LEGEND

- Existing MTO Right-of-Way
- New Roadway - Interim (Future 6-lanes)
- Rehabilitate Existing Roadway - Interim (Future 6-lanes)
- Property Required - Interim (Future 6-lanes)
- New Roadway - Ultimate (Future 8-lanes)
- Additional Property Required - Ultimate (Future 8-lanes)
- Bike Lane
- Proposed Retaining Wall
- Municipal Township Boundary
- Property Fabric (Approximate based on Assessment Mapping)
- Existing Culvert
- New Culvert or Culvert Extension
- Existing Driveway to be Closed
- Property Acquisition
- SWM Potential Stormwater Management Facility
- P Proposed Carpool Lot
- OB Overhead Bell
- UB Underground Bell
- OH Overhead Hydro
- OBH Overhead Bell & Hydro
- GAS Underground Union Gas
- WM Watermain
- Cell Tower

6





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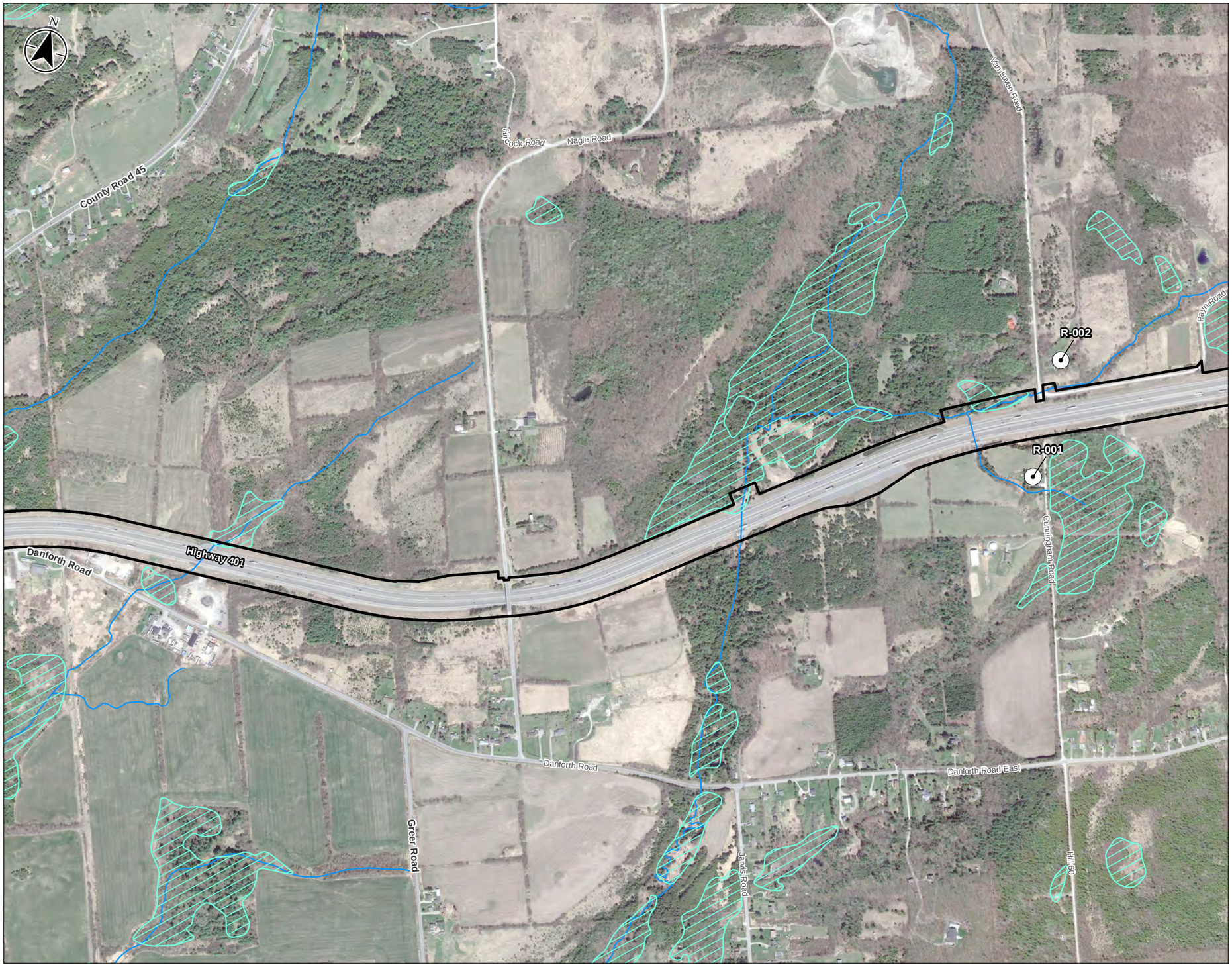
Ontario Stantec highway401cobourgcolborne.ca

APPENDIX B
Receptor Maps



Stantec

Legend

- Receptor
- Watercourse
- Wetland, Not evaluated per OWES
- MTO Right-of-way

0 200 400 Meters

1:10,000 (At original document size of 11x17)

Notes

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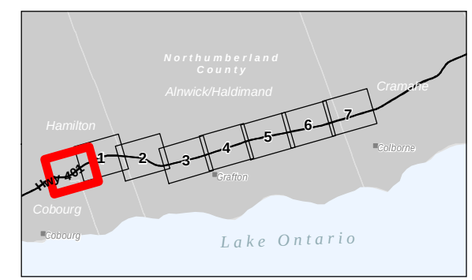

Project Location
County of Northumberland

165001090 REVA
Prepared by SW on 2021-06-27

Client/Project
ONTARIO MINISTRY OF TRANSPORTATION
HIGHWAY 401 PLANNING STUDY COBOURG TO COLBORNE (GWP 4060-11-00)

Figure No.
B - 1

Title
Air Quality and Greenhouse Gas Assessment -Receptor Map

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Stantec

Legend

- Receptor
- Watercourse
- Wetland, Not evaluated per OWES
- MTO Right-of-way

0 200 400 Meters

1:10,000 (At original document size of 11x17)

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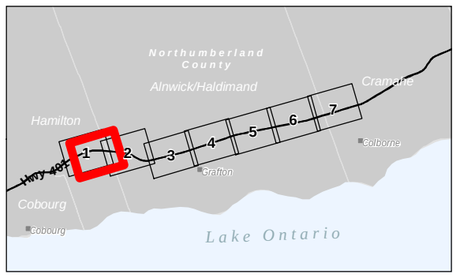

Project Location
County of Northumberland

165001090 REVA
Prepared by SW on 2021-06-27

Client/Project
ONTARIO MINISTRY OF TRANSPORTATION
HIGHWAY 401 PLANNING STUDY COBOURG TO COLBORNE (GWP 4060-11-00)

Figure No.
B - 2

Title
Air Quality and Greenhouse Gas Assessment -Receptor Map

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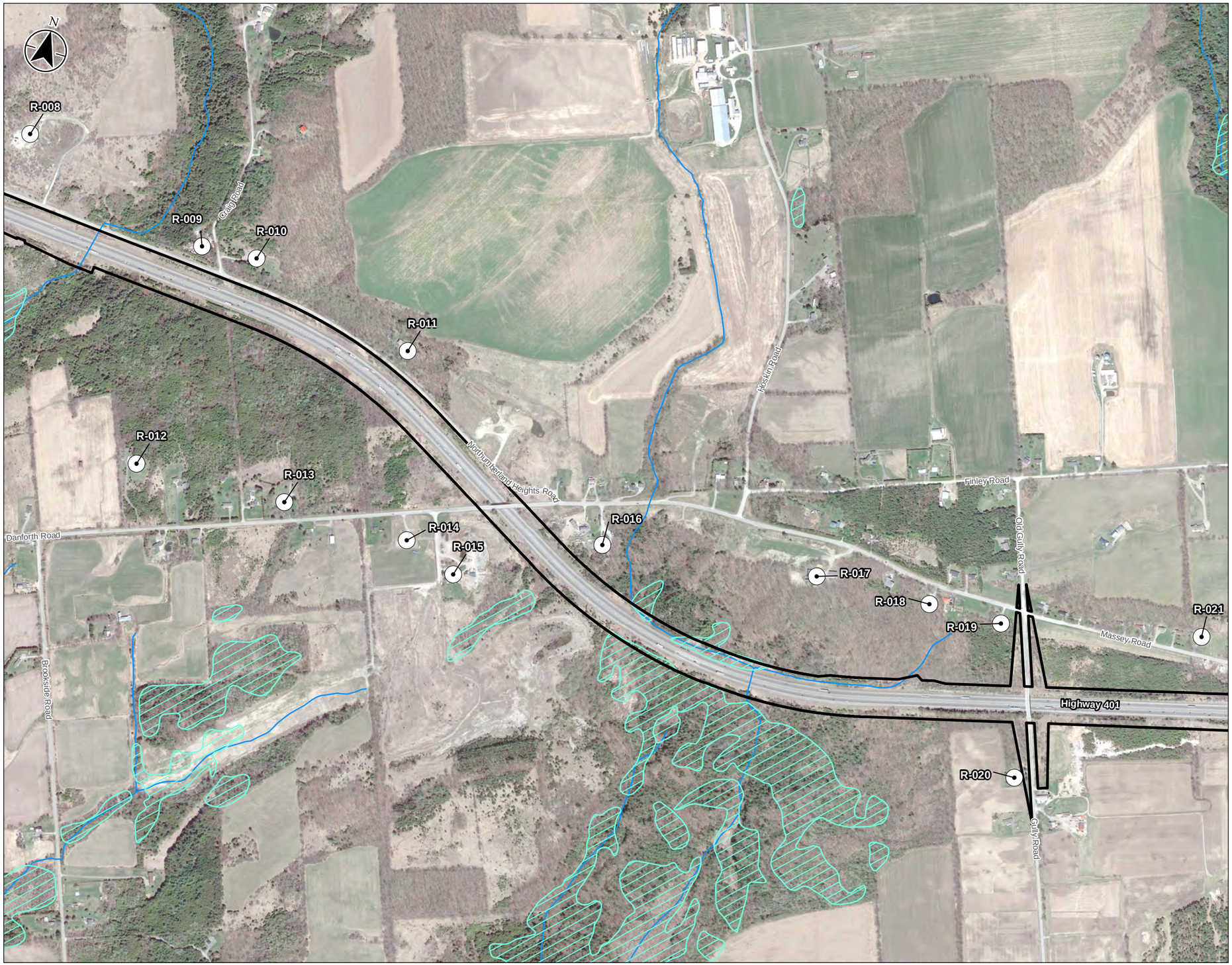

Stantec

Legend

- Receptor
- Watercourse
- Wetland, Not evaluated per OWES
- MTO Right-of-way

0 200 400 Meters

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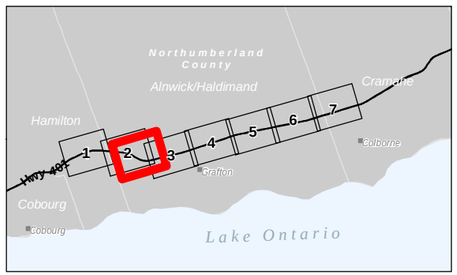

Project Location
County of Northumberland

165001090 REVA
Prepared by SW on 2021-06-27

Client/Project
ONTARIO MINISTRY OF TRANSPORTATION
HIGHWAY 401 PLANNING STUDY COBOURG TO COLBORNE (GWP 4060-11-00)

Figure No.
B - 3

Title
Air Quality and Greenhouse Gas Assessment -Receptor Map

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Stantec

Legend

- Receptor
- Watercourse
- Wetland, Provincially Significant
- Wetland, Not evaluated per OWES
- MTO Right-of-way

0 200 400 Meters

1:10,000 (At original document size of 11x17)

Notes

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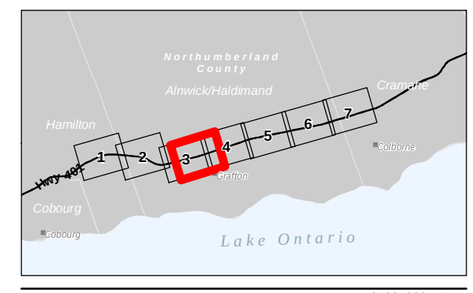

Project Location
County of Northumberland

165001090 REVA
Prepared by SW on 2021-06-27

Client/Project
ONTARIO MINISTRY OF TRANSPORTATION
HIGHWAY 401 PLANNING STUDY COBOURG TO COLBORNE (GWP 4060-11-00)

Figure No.
B - 4

Title
Air Quality and Greenhouse Gas Assessment -Receptor Map

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Stantec

Legend

- Receptor
- Watercourse
- Wetland, Not evaluated per OWES
- MTO Right-of-way

0 200 400 Meters

1:10,000 (At original document size of 11x17)

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
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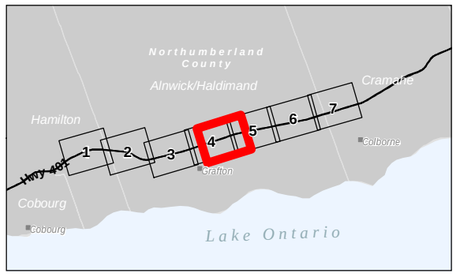

Project Location
County of Northumberland

165001090 REVA
Prepared by SW on 2021-06-27

Client/Project
ONTARIO MINISTRY OF TRANSPORTATION
HIGHWAY 401 PLANNING STUDY COBOURG TO COLBORNE (GWP 4060-11-00)

Figure No.
B - 5

Title
Air Quality and Greenhouse Gas Assessment -Receptor Map

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Stantec

Legend

- Receptor
- Watercourse
- Wetland, Not evaluated per OWES
- MTO Right-of-way

0 200 400 Meters

1:10,000 (At original document size of 11x17)

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
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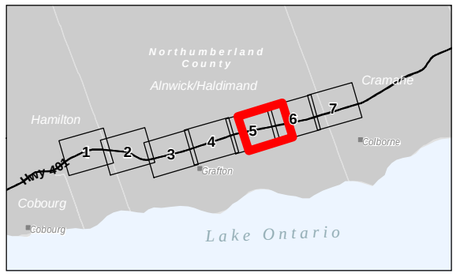
3. Orthoimagery obtained from © Google Satellite Tiles, 2019.



Project Location
County of Northumberland

165001090 REVA
Prepared by SW on 2021-06-27

Client/Project
ONTARIO MINISTRY OF TRANSPORTATION
HIGHWAY 401 PLANNING STUDY COBOURG TO COLBORNE (GWP 4060-11-00)

Figure No.
B - 6

Title
Air Quality and Greenhouse Gas Assessment -Receptor Map

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Stantec

Legend

- Receptor
- Watercourse
- Wetland, Not evaluated per OWES
- MTO Right-of-way

0 200 400 Meters

1:10,000 (At original document size of 11x17)

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
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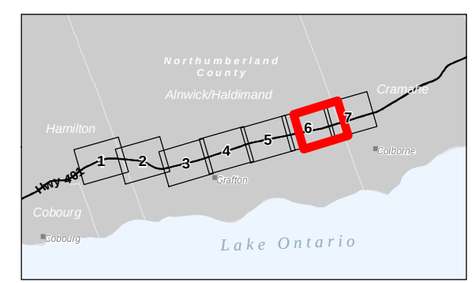

Project Location
County of Northumberland

165001090 REVA
Prepared by SW on 2021-06-27

Client/Project
ONTARIO MINISTRY OF TRANSPORTATION
HIGHWAY 401 PLANNING STUDY COBOURG TO COLBORNE (GWP 4060-11-00)

Figure No.
B - 7

Title
Air Quality and Greenhouse Gas Assessment -Receptor Map

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Stantec

Legend

- Receptor
- Watercourse
- Wetland, Not evaluated per OWES
- MTO Right-of-way

0 200 400 Meters

1:10,000 (At original document size of 11x17)

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
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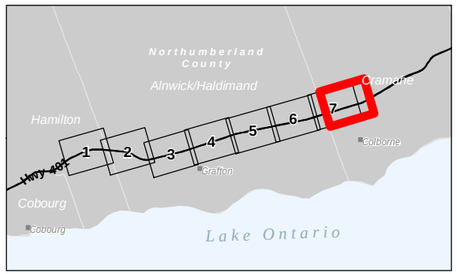

Project Location
County of Northumberland

165001090 REVA
Prepared by SW on 2021-06-27

Client/Project
ONTARIO MINISTRY OF TRANSPORTATION
HIGHWAY 401 PLANNING STUDY COBOURG TO COLBORNE (GWP 4060-11-00)

Figure No.
B - 8

Title
Air Quality and Greenhouse Gas Assessment -Receptor Map

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APPENDIX C
Emission Factors

Summary of g/VMT emission factors by contaminant/ link - 2016 (Including paved road resuspension)

Group Link ID	Link ID	Description	2016 AADT	Peak Vehicle Volume (veh/hour)	Assigned Average Speed km/hr	Assigned Average Speed (mph)	Vehicle Distribution	MOVES Generic Link ID	Pollutant Name and ID										
									Carbon Monoxide	Benzene	1,3-Butadiene	Formaldehyde	Acetaldehyde	Acrolein	Nitrogen Dioxide (NO2)	Benzo(a)pyrene	PM10	PM2.5	CO2 Equivalent
									2	20	24	25	26	27	33	Benzo(a)pyrene	PM10	PM2.5	CO2 Equivalent
EB1	1	EB 401, West of Lyle Street	25,185	3,274	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	2.60233913	0.00252552	0.000548003	0.01140704	0.005250651	0.00092121	0.151333611	1.06506E-05	0.34	0.15	416.871
EB1	2	EB 401, West of Lyle Street	25,185	3,274	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	2.60233913	0.00252552	0.000548003	0.01140704	0.005250651	0.00092121	0.151333611	1.06506E-05	0.34	0.15	416.871
EB1	3	EB 401, West of Lyle Street	25,185	3,274	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	2.60233913	0.00252552	0.000548003	0.01140704	0.005250651	0.00092121	0.151333611	1.06506E-05	0.34	0.15	416.871
EB1	4	EB 401, West of Lyle Street	25,185	3,274	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	2.60233913	0.00252552	0.000548003	0.01140704	0.005250651	0.00092121	0.151333611	1.06506E-05	0.34	0.15	416.871
EB1	5	EB 401, West of Lyle Street	25,185	3,274	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	2.60233913	0.00252552	0.000548003	0.01140704	0.005250651	0.00092121	0.151333611	1.06506E-05	0.34	0.15	416.871
EB1	6	EB 401, West of Lyle Street	25,185	3,274	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	2.60233913	0.00252552	0.000548003	0.01140704	0.005250651	0.00092121	0.151333611	1.06506E-05	0.34	0.15	416.871
EB1	7	EB 401, West of Lyle Street	25,185	3,274	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	2.60233913	0.00252552	0.000548003	0.01140704	0.005250651	0.00092121	0.151333611	1.06506E-05	0.34	0.15	416.871
EB1	8	EB 401, West of Lyle Street	25,185	3,274	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	2.60233913	0.00252552	0.000548003	0.01140704	0.005250651	0.00092121	0.151333611	1.06506E-05	0.34	0.15	416.871
EB1	9	EB 401, West of Lyle Street	25,185	3,274	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	2.60233913	0.00252552	0.000548003	0.01140704	0.005250651	0.00092121	0.151333611	1.06506E-05	0.34	0.15	416.871
EB1	10	EB 401, West of Lyle Street	25,185	3,274	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	2.60233913	0.00252552	0.000548003	0.01140704	0.005250651	0.00092121	0.151333611	1.06506E-05	0.34	0.15	416.871
EB1	11	EB 401, West of Lyle Street	25,185	3,274	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	2.60233913	0.00252552	0.000548003	0.01140704	0.005250651	0.00092121	0.151333611	1.06506E-05	0.34	0.15	416.871
EB1	12	EB 401, West of Lyle Street	25,185	3,274	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	2.60233913	0.00252552	0.000548003	0.01140704	0.005250651	0.00092121	0.151333611	1.06506E-05	0.34	0.15	416.871
EB1	13	EB 401, West of Lyle Street	25,185	3,274	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	2.60233913	0.00252552	0.000548003	0.01140704	0.005250651	0.00092121	0.151333611	1.06506E-05	0.34	0.15	416.871
EB1	14	EB 401, West of Lyle Street	25,185	3,274	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	2.60233913	0.00252552	0.000548003	0.01140704	0.005250651	0.00092121	0.151333611	1.06506E-05	0.34	0.15	416.871
EB1	15	EB 401, West of Lyle Street	25,185	3,274	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	2.60233913	0.00252552	0.000548003	0.01140704	0.005250651	0.00092121	0.151333611	1.06506E-05	0.34	0.15	416.871
EB2	16	EB 401, East of Lyle Street	23,820	3,097	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	2.60233913	0.00252552	0.000548003	0.01140704	0.005250651	0.00092121	0.151333611	1.06506E-05	0.34	0.15	416.871
EB2	17	EB 401, East of Lyle Street	23,820	3,097	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	2.60233913	0.00252552	0.000548003	0.01140704	0.005250651	0.00092121	0.151333611	1.06506E-05	0.34	0.15	416.871
EB2	18	EB 401, East of Lyle Street	23,820	3,097	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	2.60233913	0.00252552	0.000548003	0.01140704	0.005250651	0.00092121	0.151333611	1.06506E-05	0.34	0.15	416.871
WB2	19	WB 401, East of Lyle Street	22,180	2,883	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	2.60233913	0.00252552	0.000548003	0.01140704	0.005250651	0.00092121	0.151333611	1.06506E-05	0.34	0.15	416.871
WB2	20	WB 401, East of Lyle Street	22,180	2,883	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	2.60233913	0.00252552	0.000548003	0.01140704	0.005250651	0.00092121	0.151333611	1.06506E-05	0.34	0.15	416.871
WB2	21	WB 401, East of Lyle Street	22,180	2,883	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	2.60233913	0.00252552	0.000548003	0.01140704	0.005250651	0.00092121	0.151333611	1.06506E-05	0.34	0.15	416.871
WB1	22	WB 401, West of Lyle Street	21,815	2,836	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	2.60233913	0.00252552	0.000548003	0.01140704	0.005250651	0.00092121	0.151333611	1.06506E-05	0.34	0.15	416.871
WB1	23	WB 401, West of Lyle Street	21,815	2,836	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	2.60233913	0.00252552	0.000548003	0.01140704	0.005250651	0.00092121	0.151333611	1.06506E-05	0.34	0.15	416.871
WB1	24	WB 401, West of Lyle Street	21,815	2,836	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	2.60233913	0.00252552	0.000548003	0.01140704	0.005250651	0.00092121	0.151333611	1.06506E-05	0.34	0.15	416.871
WB1	25	WB 401, West of Lyle Street	21,815	2,836	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	2.60233913	0.00252552	0.000548003	0.01140704	0.005250651	0.00092121	0.151333611	1.06506E-05	0.34	0.15	416.871
WB1	26	WB 401, West of Lyle Street	21,815	2,836	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	2.60233913	0.00252552	0.000548003	0.01140704	0.005250651	0.00092121	0.151333611	1.06506E-05	0.34	0.15	416.871
WB1	27	WB 401, West of Lyle Street	21,815	2,836	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	2.60233913	0.00252552	0.000548003	0.01140704	0.005250651	0.00092121	0.151333611	1.06506E-05	0.34	0.15	416.871
WB1	28	WB 401, West of Lyle Street	21,815	2,836	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	2.60233913	0.00252552	0.000548003	0.01140704	0.005250651	0.00092121	0.151333611	1.06506E-05	0.34	0.15	416.871
WB1	29	WB 401, West of Lyle Street	21,815	2,836	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	2.60233913	0.00252552	0.000548003	0.01140704	0.005250651	0.00092121	0.151333611	1.06506E-05	0.34	0.15	416.871
WB1	30	WB 401, West of Lyle Street	21,815	2,836	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	2.60233913	0.00252552	0.000548003	0.01140704	0.005250651	0.00092121	0.151333611	1.06506E-05	0.34	0.15	416.871
WB1	31	WB 401, West of Lyle Street	21,815	2,836	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	2.60233913	0.00252552	0.000548003	0.01140704	0.005250651	0.00092121	0.151333611	1.06506E-05	0.34	0.15	416.871
WB1	32	WB 401, West of Lyle Street	21,815	2,836	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	2.60233913	0.00252552	0.000548003	0.01140704	0.005250651	0.00092121	0.151333611	1.06506E-05	0.34	0.15	416.871
WB1	33	WB 401, West of Lyle Street	21,815	2,836	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	2.60233913	0.00252552	0.000548003	0.01140704	0.005250651	0.00092121	0.151333611	1.06506E-05	0.34	0.15	416.871
WB1	34	WB 401, West of Lyle Street	21,815	2,836	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	2.60233913	0.00252552	0.000548003	0.01140704	0.005250651	0.00092121	0.151333611	1.06506E-05	0.34	0.15	416.871
WB1	35	WB 401, West of Lyle Street	21,815	2,836	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	2.60233913	0.00252552	0.000548003	0.01140704	0.005250651	0.00092121	0.151333611	1.06506E-05	0.34	0.15	416.871
WB1	36	WB 401, West of Lyle Street	21,815	2,836	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	2.60233913	0.00252552	0.000548003	0.01140704	0.005250651	0.00092121	0.151333611	1.06506E-05	0.34	0.15	416.871
IC1	37	Lyle Crossing Road NB/SB	1,140	114	80	49.7	84% Car and 10% Heavy Truck 6% Medium Truck	2	2.86128034	0.002604778	0.000501303	0.0090329	0.004239041	0.000725128	0.144862968	1.11749E-05	1.03	0.32	422.262
IC1	38	Lyle Crossing Road NB/SB	1,140	114	80	49.7	84% Car and 10% Heavy Truck 6% Medium Truck	2	2.86128034	0.002604778	0.000501303	0.0090329	0.004239041	0.000725128	0.144862968	1.11749E-05	1.03	0.32	422.262
IC1	39	Lyle Crossing Road NB/SB	1,140	114	80	49.7	84% Car and 10% Heavy Truck 6% Medium Truck	2	2.86128034	0.002604778	0.000501303	0.0090329	0.004239041	0.000725128	0.144862968	1.11749E-05	1.03	0.32	422.262
IC1	40	Lyle Crossing Road NB/SB	1,140	114	80	49.7	84% Car and 10% Heavy Truck 6% Medium Truck	2	2.86128034	0.002604778	0.000501303	0.0090329	0.004239041	0.000725128	0.144862968	1.11749E-05	1.03	0.32	422.262
R1	41	Exit Ramp EB to NB/SB Lyle	557	56	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	2.87416204	0.002513802	0.000453276	0.00746131	0.003548463	0.000596113	0.126412995	1.05545E-05	0.92	0.28	398.88
R1	42	Exit Ramp EB to NB/SB Lyle	557	56	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	2.87416204	0.002513802	0.000453276	0.00746131	0.003548463	0.000596113	0.126412995	1.05545E-05	0.92	0.28	398.88
R2	43	Exit Ramp WB to NB/SB Lyle	84	8	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	2.87416204	0.002513802	0.000453276	0.00746131	0.003548463	0.000596113	0.126412995	1.05545E-05	2.32	0.63	398.88
R2	44	Exit Ramp WB to NB/SB Lyle	84	8	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	2.87416204	0.002513802	0.000453276	0.00746131	0.003548463	0.000596113	0.126412995	1.05545E-05	2.32	0.63	398.88
R2	45	Exit Ramp WB to NB/SB Lyle	84	8	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	2.87416204	0.002513802	0.000453276	0.00746131	0.003548463	0.000596113	0.126412995	1.05545E-05	2.32	0.63	398.88
R3	46	On Ramp NB/SB Lyle to EB	56	6	60	37.3	87% Car and 8% Heavy Truck 5% Medium Truck	4	3.42020414	0.003005473	0.000546684	0.008956049	0.004257784	0.000714312	0.139855211	1.19486E-05	2.36	0.65	438.649
R3	47	On Ramp NB/SB Lyle to EB	56	6	60	37.3	87% Car and 8% Heavy Truck 5% Medium Truck	4	3.42020414	0.003005473	0.000546684	0.008956049	0.004257784	0.000714312	0.139855211	1.19486E-05	2.36	0.65	438.649
R4	48	On Ramp NB/SB Lyle to WB	313	31	60	37.3	87% Car and 8% Heavy Truck 5% Medium Truck	4	3.42020414	0.003005473	0.000546684	0.008956049	0.004257784	0.000714312	0.139855211	1.19486E-05	2.36	0.65	438.649
R4	49	On Ramp NB/SB Lyle to WB	313	31	60	37.3	87% Car and 8% Heavy Truck 5% Medium Truck	4	3.42020414	0.003005473	0.000546684	0.008956049	0.004257784	0.000714312	0.139855211	1.19486E-05	2.36	0.65	438.649
IC2	50	Percy Crossing Road NB/SB	2,190	219	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	2.87416204	0.002513802	0.000453276	0.00746131	0.003548463	0.000596113	0.126412995	1.05545E-05	0.92	0.28	398.88
IC2	51	Percy Crossing Road NB/SB	2,190	219	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	2.87416204	0.002513802	0.000453276	0.00746131	0.003548463	0.000596113	0.126412995	1.05545E-05	0.92	0.28	398.88
IC2	52	Percy Crossing Road NB/SB	2,190	219	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	2.87416204	0.002513802	0.000453276	0.00746131	0.003548463	0.000596113	0.126412995	1.05545E-05	0.92	0.28	398.88
R5	53	Exit Ramp EB to NB/SB Percy	726	73	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	2.87416204	0.002513802	0.000453276	0.00746131	0.003548463	0.000596113	0.126412995	1.05545E-05	0.92	0.28	398.88
R5	54	Exit Ramp EB to NB/SB Percy	726	73	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	2.87416204	0.002513802	0.000453276	0.00746131	0.003548463	0.000596113	0.126412995	1.05545E-05	0.92	0.28	398.88
R5	55	Exit Ramp EB to NB/SB Percy	726	73	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	2.87416204	0.002513802	0.000453276	0.00746131	0.003548463	0.000596113	0.126412995	1.05545E-05	0.92	0.28	398.88
R5	56	Exit Ramp EB to NB/SB Percy	726	73	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	2.87416204	0.002513802	0.000453276	0.00746131	0.003548463	0.000596113	0.126412995	1.05545E-05	0.92	0.28	398.88
R6	57	Exit Ramp WB to NB/SB Percy	181	18	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	2.87416204	0.002513802	0.000453276	0.00746131	0.003548463	0.000596113	0.126412995	1.05545E-05	2.32	0.63	398.88
R6	58	Exit Ramp WB to NB/SB Percy	181	18	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	2.87416204	0.002513802	0.000453276	0.00746131	0.003548463	0.000596113	0.126412995	1.05545E-05	2.32	0.63	398.88
R6	59	Exit Ramp WB to NB/SB Percy	181	18	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	2.87416204	0.002513802	0.000453276	0.00746131	0.003548463	0.000596113	0.126412995	1.05545E-05	2.32	0.63	398.88
R7	60	On Ramp NB/SB Percy to EB	114	11	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	4.22160454	0.003953272	0.000726102	0.011716838	0.00557989	0.000933962	0.170323397	1.46433E-05	2.43	0.68	535.851
R7	61	On Ramp NB/SB Percy to EB	114	11	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	4.22160454	0.003953272	0.000726102	0.011716838	0.00557989	0.000933962	0.170323397	1.46433E-05	2.43	0.68	535.851
R7	62	On Ramp NB/SB Percy to EB	114	11	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	4.22160454	0.003953272	0.000726102	0.011716838	0.00557989	0.000933962	0.170323397	1.46433E-05	2.43	0.68	535.851
R7	63	On Ramp NB/SB Percy to EB	114	11	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	4.22160454	0.003953272	0.000726102	0.011716838	0.00557989	0.000933962	0.170323397	1.46433E-05	2.43	0.68	535.851
R8	64	On Ramp NB/SB Percy to WB	590	59	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	4.22160454	0.003953272	0.000726102	0.011716838	0.00557989	0.000933962	0.170323397	1.46433E-05	1.03	0.33	535.851
R8	65	On Ramp NB/SB Percy to WB	590	59	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	4.22160454	0.003953272	0.000726102	0.011716838	0.00557989	0.000933962	0.170323397	1.46433E-05	1.03	0.33	535.851
R8	66	On Ramp NB/SB Percy to WB	590	59	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	4.22160454	0.003953272	0.000726102	0.011716838	0.00557989	0.000933962	0.170323397	1.46433E-05	1.03	0.33	535.851
R8	67	On Ramp NB/SB Percy to WB	590	59	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	4.22160454	0.003953272	0.000726102	0.011716838	0.00557989	0.000933962	0.170323397	1.46433E-05	1.03	0.33	535.851

Summary of g/VMT emission factors by contaminant/ link - 2031 No Build (Including paved road resuspension)

Group Link ID	Link ID	Description	2031 AADT	Peak Vehicle Volume (veh/hour)	Assigned Average Speed km/hr	Assigned Average Speed (mph)	Vehicle Distribution	MOVES Generic Link ID	Pollutant Name and ID										
									Carbon Monoxide	Benzene	1,3-Butadiene	Formaldehyde	Acetaldehyde	Acrolein	Nitrogen Dioxide (NO2)	Benzo(a)pyrene	PM10	PM2.5	CO2 Equivalent
									2	20	24	25	26	27	33	Benzo(a)pyrene	PM10	PM2.5	CO2 Equivalent
EB1	1	EB 401, West of Lyle Street	30,569	3,974	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
EB1	2	EB 401, West of Lyle Street	30,569	3,974	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
EB1	3	EB 401, West of Lyle Street	30,569	3,974	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
EB1	4	EB 401, West of Lyle Street	30,569	3,974	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
EB1	5	EB 401, West of Lyle Street	30,569	3,974	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
EB1	6	EB 401, West of Lyle Street	30,569	3,974	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
EB1	7	EB 401, West of Lyle Street	30,569	3,974	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
EB1	8	EB 401, West of Lyle Street	30,569	3,974	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
EB1	9	EB 401, West of Lyle Street	30,569	3,974	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
EB1	10	EB 401, West of Lyle Street	30,569	3,974	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
EB1	11	EB 401, West of Lyle Street	30,569	3,974	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
EB1	12	EB 401, West of Lyle Street	30,569	3,974	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
EB1	13	EB 401, West of Lyle Street	30,569	3,974	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
EB1	14	EB 401, West of Lyle Street	30,569	3,974	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
EB1	15	EB 401, West of Lyle Street	30,569	3,974	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
EB2	16	EB 401, East of Lyle Street	28,912	3,759	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
EB2	17	EB 401, East of Lyle Street	28,912	3,759	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
EB2	18	EB 401, East of Lyle Street	28,912	3,759	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
WB2	19	WB 401, East of Lyle Street	26,922	3,500	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
WB2	20	WB 401, East of Lyle Street	26,922	3,500	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
WB2	21	WB 401, East of Lyle Street	26,922	3,500	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
WB1	22	WB 401, West of Lyle Street	26,479	3,442	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
WB1	23	WB 401, West of Lyle Street	26,479	3,442	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
WB1	24	WB 401, West of Lyle Street	26,479	3,442	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
WB1	25	WB 401, West of Lyle Street	26,479	3,442	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
WB1	26	WB 401, West of Lyle Street	26,479	3,442	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
WB1	27	WB 401, West of Lyle Street	26,479	3,442	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
WB1	28	WB 401, West of Lyle Street	26,479	3,442	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
WB1	29	WB 401, West of Lyle Street	26,479	3,442	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
WB1	30	WB 401, West of Lyle Street	26,479	3,442	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
WB1	31	WB 401, West of Lyle Street	26,479	3,442	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
WB1	32	WB 401, West of Lyle Street	26,479	3,442	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
WB1	33	WB 401, West of Lyle Street	26,479	3,442	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
WB1	34	WB 401, West of Lyle Street	26,479	3,442	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
WB1	35	WB 401, West of Lyle Street	26,479	3,442	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
WB1	36	WB 401, West of Lyle Street	26,479	3,442	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
IC1	37	Lyle Crossing Road NB/SB	1,384	138	80	49.7	84% Car and 10% Heavy Truck 6% Medium Truck	2	0.7611636	0.000351262	2.82861E-05	0.001985856	0.00072872	0.000115527	0.067374101	1.18511E-06	0.95	0.24	322.254
IC1	38	Lyle Crossing Road NB/SB	1,384	138	80	49.7	84% Car and 10% Heavy Truck 6% Medium Truck	2	0.7611636	0.000351262	2.82861E-05	0.001985856	0.00072872	0.000115527	0.067374101	1.18511E-06	0.95	0.24	322.254
IC1	39	Lyle Crossing Road NB/SB	1,384	138	80	49.7	84% Car and 10% Heavy Truck 6% Medium Truck	2	0.7611636	0.000351262	2.82861E-05	0.001985856	0.00072872	0.000115527	0.067374101	1.18511E-06	0.95	0.24	322.254
IC1	40	Lyle Crossing Road NB/SB	1,384	138	80	49.7	84% Car and 10% Heavy Truck 6% Medium Truck	2	0.7611636	0.000351262	2.82861E-05	0.001985856	0.00072872	0.000115527	0.067374101	1.18511E-06	0.95	0.24	322.254
R1	41	Exit Ramp EB to NB/SB Lyle	676	68	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.7706786	0.000333005	2.31072E-05	0.001632394	0.000600777	9.48121E-05	0.056190012	1.16247E-06	0.85	0.21	297.668
R1	42	Exit Ramp EB to NB/SB Lyle	676	68	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.7706786	0.000333005	2.31072E-05	0.001632394	0.000600777	9.48121E-05	0.056190012	1.16247E-06	0.85	0.21	297.668
R2	43	Exit Ramp WB to NB/SB Lyle	102	10	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.7706786	0.000333005	2.31072E-05	0.001632394	0.000600777	9.48121E-05	0.056190012	1.16247E-06	2.24	0.56	297.668
R2	44	Exit Ramp WB to NB/SB Lyle	102	10	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.7706786	0.000333005	2.31072E-05	0.001632394	0.000600777	9.48121E-05	0.056190012	1.16247E-06	2.24	0.56	297.668
R2	45	Exit Ramp WB to NB/SB Lyle	102	10	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.7706786	0.000333005	2.31072E-05	0.001632394	0.000600777	9.48121E-05	0.056190012	1.16247E-06	2.24	0.56	297.668
R3	46	On Ramp NB/SB Lyle to EB	68	7	60	37.3	87% Car and 8% Heavy Truck 5% Medium Truck	4	0.911049681	0.000376078	2.86345E-05	0.002049119	0.000750421	0.000118575	0.063540238	1.29887E-06	2.27	0.57	328.808
R3	47	On Ramp NB/SB Lyle to EB	68	7	60	37.3	87% Car and 8% Heavy Truck 5% Medium Truck	4	0.911049681	0.000376078	2.86345E-05	0.002049119	0.000750421	0.000118575	0.063540238	1.29887E-06	2.27	0.57	328.808
R4	48	On Ramp NB/SB Lyle to WB	380	38	60	37.3	87% Car and 8% Heavy Truck 5% Medium Truck	4	0.911049681	0.000376078	2.86345E-05	0.002049119	0.000750421	0.000118575	0.063540238	1.29887E-06	2.27	0.57	328.808
R4	49	On Ramp NB/SB Lyle to WB	380	38	60	37.3	87% Car and 8% Heavy Truck 5% Medium Truck	4	0.911049681	0.000376078	2.86345E-05	0.002049119	0.000750421	0.000118575	0.063540238	1.29887E-06	2.27	0.57	328.808
IC2	50	Percy Crossing Road NB/SB	2,658	266	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.7706786	0.000333005	2.31072E-05	0.001632394	0.000600777	9.48121E-05	0.056190012	1.16247E-06	0.85	0.21	297.668
IC2	51	Percy Crossing Road NB/SB	2,658	266	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.7706786	0.000333005	2.31072E-05	0.001632394	0.000600777	9.48121E-05	0.056190012	1.16247E-06	0.85	0.21	297.668
IC2	52	Percy Crossing Road NB/SB	2,658	266	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.7706786	0.000333005	2.31072E-05	0.001632394	0.000600777	9.48121E-05	0.056190012	1.16247E-06	0.85	0.21	297.668
R5	53	Exit Ramp EB to NB/SB Percy	881	88	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.7706786	0.000333005	2.31072E-05	0.001632394	0.000600777	9.48121E-05	0.056190012	1.16247E-06	0.85	0.21	297.668
R5	54	Exit Ramp EB to NB/SB Percy	881	88	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.7706786	0.000333005	2.31072E-05	0.001632394	0.000600777	9.48121E-05	0.056190012	1.16247E-06	0.85	0.21	297.668
R5	55	Exit Ramp EB to NB/SB Percy	881	88	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.7706786	0.000333005	2.31072E-05	0.001632394	0.000600777	9.48121E-05	0.056190012	1.16247E-06	0.85	0.21	297.668
R5	56	Exit Ramp EB to NB/SB Percy	881	88	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.7706786	0.000333005	2.31072E-05	0.001632394	0.000600777	9.48121E-05	0.056190012	1.16247E-06	0.85	0.21	297.668
R6	57	Exit Ramp WB to NB/SB Percy	220	22	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.7706786	0.000333005	2.31072E-05	0.001632394	0.000600777	9.48121E-05	0.056190012	1.16247E-06	2.24	0.56	297.668
R6	58	Exit Ramp WB to NB/SB Percy	220	22	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.7706786	0.000333005	2.31072E-05	0.001632394	0.000600777	9.48121E-05	0.056190012	1.16247E-06	2.24	0.56	297.668
R6	59	Exit Ramp WB to NB/SB Percy	220	22	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.7706786	0.000333005	2.31072E-05	0.001632394	0.000600777	9.48121E-05	0.056190012	1.16247E-06	2.24	0.56	297.668
R7	60	On Ramp NB/SB Percy to EB	138	14	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	1.05724049	0.000446079	3.8008E-05	0.002719808	0.000993168	0.000157371	0.07825664	1.60095E-06	2.31	0.58	402.674
R7	61	On Ramp NB/SB Percy to EB	138	14	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	1.05724049	0.000446079	3.8008E-05	0.002719808	0.000993168	0.000157371	0.07825664	1.60095E-06	2.31	0.58	402.674
R7	62	On Ramp NB/SB Percy to EB	138	14	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	1.05724049	0.000446079	3.8008E-05	0.002719808	0.000993168	0.000157371	0.07825664	1.60095E-06	2.31	0.58	402.674
R7	63	On Ramp NB/SB Percy to EB	138	14	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	1.05724049	0.000446079	3.8008E-05	0.002719808	0.000993168	0.000157371	0.07825664	1.60095E-06	2.31	0.58	402.674
R8	64	On Ramp NB/SB Percy to WB	716	72	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	1.05724049	0.000446079	3.8008E-05	0.002719808	0.000993168	0.000157371	0.07825664	1.60095E-06	0.92	0.23	402.674
R8	65	On Ramp NB/SB Percy to WB	716	72	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	1.05724049	0.000446079	3.8008E-05	0.002719808	0.000993168	0.000157371	0.07825664	1.60095E-06	0.92	0.23	402.674
R8	66	On Ramp NB/SB Percy to WB	716	72	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	1.05724049	0.000446079	3.8008E-05	0.002719808	0.000993168	0.000157371	0.07825664	1.60095E-06	0.92	0.23	402.674

Summary of g/VMT emission factors by contaminant/ link - 2031 No Build (Including paved road resuspension)																				
									Pollutant Name and ID											
Group Link ID	Link ID	Description	2031 AADT	Peak Vehicle Volume (veh/hour)	Assigned Average Speed km/hr	Assigned Average Speed (mph)	Vehicle Distribution	MOVES Generic Link ID	Carbon Monoxide	Benzene	1,3-Butadiene	Formaldehyde	Acetaldehyde	Acrolein	Nitrogen Dioxide (NO2)	Benzo(a)pyrene	PM10	PM2.5	CO2 Equivalent
									2	20	24	25	26	27	33	Benzo(a)pyrene	PM10	PM2.5	CO2 Equivalent
R8	67	On Ramp NB/SB Percy to WB	716	72	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	1.05724049	0.000446079	3.8008E-05	0.002719808	0.000993168	0.000157371	0.07825664	1.60095E-06	0.92	0.23	402.674

Summary of g/VMT emission factors by contaminant/ link - 2031 Build (Including paved road resuspension)																			
									Pollutant Name and ID										
Group Link ID	Link ID	Description	2031 AADT	Peak Vehicle Volume (veh/hour)	Assigned Average Speed km/hr	Assigned Average Speed (mph)	Vehicle Distribution	MOVES Generic Link ID	Carbon Monoxide	Benzene	1,3-Butadiene	Formaldehyde	Acetaldehyde	Acrolein	Nitrogen Dioxide (NO2)	Benzo(a)pyrene	PM10	PM2.5	CO2 Equivalent
									2	20	24	25	26	27	33	Benzo(a)pyrene	PM10	PM2.5	CO2 Equivalent
EB1	1	EB 401, West of Lyle Street	34,906	3,811	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
EB1	2	EB 401, West of Lyle Street	34,906	3,811	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
EB1	3	EB 401, West of Lyle Street	34,906	3,811	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
EB1	4	EB 401, West of Lyle Street	34,906	3,811	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
EB1	5	EB 401, West of Lyle Street	34,906	3,811	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
EB1	6	EB 401, West of Lyle Street	34,906	3,811	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
EB1	7	EB 401, West of Lyle Street	34,906	3,811	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
EB1	8	EB 401, West of Lyle Street	34,906	3,811	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
EB1	9	EB 401, West of Lyle Street	34,906	3,811	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
EB1	10	EB 401, West of Lyle Street	34,906	3,811	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
EB1	11	EB 401, West of Lyle Street	34,906	3,811	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
EB1	12	EB 401, West of Lyle Street	34,906	3,811	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
EB1	13	EB 401, West of Lyle Street	34,906	3,811	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
EB1	14	EB 401, West of Lyle Street	34,906	3,811	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
EB1	15	EB 401, West of Lyle Street	34,906	3,811	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
EB2	16	EB 401, East of Lyle Street	33,015	3,190	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
EB2	17	EB 401, East of Lyle Street	33,015	3,190	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
EB2	18	EB 401, East of Lyle Street	33,015	3,190	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
WB2	19	WB 401, East of Lyle Street	30,741	2,970	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
WB2	20	WB 401, East of Lyle Street	30,741	2,970	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
WB2	21	WB 401, East of Lyle Street	30,741	2,970	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
WB1	22	WB 401, West of Lyle Street	30,236	3,301	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
WB1	23	WB 401, West of Lyle Street	30,236	3,301	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
WB1	24	WB 401, West of Lyle Street	30,236	3,301	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
WB1	25	WB 401, West of Lyle Street	30,236	3,301	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
WB1	26	WB 401, West of Lyle Street	30,236	3,301	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
WB1	27	WB 401, West of Lyle Street	30,236	3,301	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
WB1	28	WB 401, West of Lyle Street	30,236	3,301	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
WB1	29	WB 401, West of Lyle Street	30,236	3,301	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
WB1	30	WB 401, West of Lyle Street	30,236	3,301	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
WB1	31	WB 401, West of Lyle Street	30,236	3,301	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
WB1	32	WB 401, West of Lyle Street	30,236	3,301	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
WB1	33	WB 401, West of Lyle Street	30,236	3,301	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
WB1	34	WB 401, West of Lyle Street	30,236	3,301	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
WB1	35	WB 401, West of Lyle Street	30,236	3,301	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
WB1	36	WB 401, West of Lyle Street	30,236	3,301	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.705077592	0.00035007	3.1374E-05	0.00236049	0.000853724	0.000134716	0.075855801	1.04906E-06	0.25	0.07	325.574
IC1	37	Lyle Crossing Road NB/SB	1,580	883	80	49.7	84% Car and 10% Heavy Truck 6% Medium Truck	2	0.7611636	0.000351262	2.82861E-05	0.001985856	0.00072872	0.000115527	0.067374101	1.18511E-06	0.95	0.24	322.254
IC1	38	Lyle Crossing Road NB/SB	1,580	883	80	49.7	84% Car and 10% Heavy Truck 6% Medium Truck	2	0.7611636	0.000351262	2.82861E-05	0.001985856	0.00072872	0.000115527	0.067374101	1.18511E-06	0.95	0.24	322.254
IC1	39	Lyle Crossing Road NB/SB	1,580	883	80	49.7	84% Car and 10% Heavy Truck 6% Medium Truck	2	0.7611636	0.000351262	2.82861E-05	0.001985856	0.00072872	0.000115527	0.067374101	1.18511E-06	0.95	0.24	322.254
IC1	40	Lyle Crossing Road NB/SB	1,580	883	80	49.7	84% Car and 10% Heavy Truck 6% Medium Truck	2	0.7611636	0.000351262	2.82861E-05	0.001985856	0.00072872	0.000115527	0.067374101	1.18511E-06	0.95	0.24	322.254
R1	41	Exit Ramp EB to NB/SB Lyle	772	621	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.7706786	0.000333005	2.31072E-05	0.001632394	0.000600777	9.48121E-05	0.056190012	1.16247E-06	0.85	0.21	297.668
R1	42	Exit Ramp EB to NB/SB Lyle	772	621	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.7706786	0.000333005	2.31072E-05	0.001632394	0.000600777	9.48121E-05	0.056190012	1.16247E-06	0.85	0.21	297.668
R2	43	Exit Ramp WB to NB/SB Lyle	116	94	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.7706786	0.000333005	2.31072E-05	0.001632394	0.000600777	9.48121E-05	0.056190012	1.16247E-06	2.24	0.56	297.668
R2	44	Exit Ramp WB to NB/SB Lyle	116	94	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.7706786	0.000333005	2.31072E-05	0.001632394	0.000600777	9.48121E-05	0.056190012	1.16247E-06	2.24	0.56	297.668
R2	45	Exit Ramp WB to NB/SB Lyle	116	94	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.7706786	0.000333005	2.31072E-05	0.001632394	0.000600777	9.48121E-05	0.056190012	1.16247E-06	2.24	0.56	297.668
IC2	46	Percy Crossing Road NB/SB	3,035	1,680	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.7706786	0.000333005	2.31072E-05	0.001632394	0.000600777	9.48121E-05	0.056190012	1.16247E-06	0.85	0.21	297.668
IC2	47	Percy Crossing Road NB/SB	3,035	1,680	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.7706786	0.000333005	2.31072E-05	0.001632394	0.000600777	9.48121E-05	0.056190012	1.16247E-06	0.85	0.21	297.668
IC2	48	Percy Crossing Road NB/SB	3,035	1,680	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.7706786	0.000333005	2.31072E-05	0.001632394	0.000600777	9.48121E-05	0.056190012	1.16247E-06	0.85	0.21	297.668
R7	49	Exit Ramp EB to NB/SB Percy	1,006	516	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.7706786	0.000333005	2.31072E-05	0.001632394	0.000600777	9.48121E-05	0.056190012	1.16247E-06	0.85	0.21	297.668
R7	50	Exit Ramp EB to NB/SB Percy	1,006	516	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.7706786	0.000333005	2.31072E-05	0.001632394	0.000600777	9.48121E-05	0.056190012	1.16247E-06	0.85	0.21	297.668
R7	51	Exit Ramp EB to NB/SB Percy	1,006	516	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.7706786	0.000333005	2.31072E-05	0.001632394	0.000600777	9.48121E-05	0.056190012	1.16247E-06	0.85	0.21	297.668
R7	52	Exit Ramp EB to NB/SB Percy	1,006	516	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.7706786	0.000333005	2.31072E-05	0.001632394	0.000600777	9.48121E-05	0.056190012	1.16247E-06	0.85	0.21	297.668
R8	53	Exit Ramp WB to NB/SB Percy	251	129	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.7706786	0.000333005	2.31072E-05	0.001632394	0.000600777	9.48121E-05	0.056190012	1.16247E-06	2.24	0.56	297.668
R8	54	Exit Ramp WB to NB/SB Percy	251	129	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.7706786	0.000333005	2.31072E-05	0.001632394	0.000600777	9.48121E-05	0.056190012	1.16247E-06	2.24	0.56	297.668
R8	55	Exit Ramp WB to NB/SB Percy	251	129	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.7706786	0.000333005	2.31072E-05	0.001632394	0.000600777	9.48121E-05	0.056190012	1.16247E-06	2.24	0.56	297.668
R10	56	On Ramp SB Percy to EB	79	40	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	1.05724049	0.000446079	3.8008E-05	0.002719808	0.000993168	0.000157371	0.07825664	1.60095E-06	2.31	0.58	402.674
R10	57	On Ramp SB Percy to EB	79	40	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	1.05724049	0.000446079	3.8008E-05	0.002719808	0.000993168	0.000157371	0.07825664	1.60095E-06	2.31	0.58	402.674
R10	58	On Ramp SB Percy to EB	79	40	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	1.05724049	0.000446079	3.8008E-05	0.002719808	0.000993168	0.000157371	0.07825664	1.60095E-06	2.31	0.58	402.674
R10	59	On Ramp SB Percy to EB	79	40	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	1.05724049	0.000446079	3.8008E-05	0.002719808	0.000993168	0.000157371	0.07825664	1.60095E-06	2.31	0.58	402.674
R11	60	On Ramp NB/SB Percy to WB	502	257	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	1.05724049	0.000446079	3.8008E-05	0.002719808	0.000993168	0.000157371	0.07825664	1.60095E-06	0.92	0.23	402.674
R11+R12	61	On Ramp NB/SB Percy to WB	818	419	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	1.05724049	0.000446079	3.8008E-05	0.002719808	0.000993168	0.000157371	0.07825664	1.60095E-06	0.92	0.23	402.674
R11+R12	62	On Ramp NB/SB Percy to WB	818	419	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	1.05724049	0.000446079	3.8008E-05	0.002719808	0.000993168	0.000157371	0.07825664	1.60095E-06	0.92	0.23	402.674
R11+R12	63	On Ramp NB/SB Percy to WB	818	419	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	1.05724049	0.000446079	3.8008E-05	0.002719808	0.000993168	0.000157371	0.07825664	1.60095E-06	0.92	0.23	402.674
R4	64	On Ramp SB Lyle to EB	58	47	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	1.05724049	0.000446079	3.8008E-05	0.002719808	0.000993168	0.000157371	0.07825664	1.60095E-06	2.31	0.58	402.674
R3+R4	65	On Ramp SB Lyle to EB	77	63	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	1.05724049	0.000446079	3.8008E-05	0.002719808	0.000993168	0.000157371	0.07825664	1.60095E-06	2.31	0.58	402.674
R3+R4	66	On Ramp SB Lyle to EB	77	63	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	1.05724049	0.000446079	3.8008E-05	0.002719808	0.000993168	0.000157371	0.07825664	1.60095E-06	2.31	0.58	402.674
R3+R4	67	On Ramp SB Lyle to EB	77	63	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	1.05724049	0.000446079	3.8008E-05	0.002719808	0.000993168	0.000157371	0.07825664	1.60095E-06	2.31	0.58	402.674
R5	68	On Ramp NB Lyle to WB	313	252	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	1.05724049	0.000446079	3.8008E-05	0.002719808	0.000993168	0.000157371	0.07825664	1.60095E-06	2.31	0.58	402.674
R5	69	On Ramp NB Lyle to WB	313	252	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	1.05724049	0.000446079	3.8008E-05	0.002719808	0.000993168	0.000157371	0.07825664	1.60095E-06	2.31	0.58	402.674
R5+R6	70	On Ramp NB Lyle to WB	434	349	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	1.05724049	0.000446079	3.8008E-05	0.002719808	0.000993168	0.000157371	0.07825664	1.60095E-06	2.31	0.58	402.674

Summary of g/VMT emission factors by contaminant/ link - 2031 Build (Including paved road resuspension)																			
									Pollutant Name and ID										
Group Link ID	Link ID	Description	2031 AADT	Peak Vehicle Volume (veh/hour)	Assigned Average Speed km/hr	Assigned Average Speed (mph)	Vehicle Distribution	MOVES Generic Link ID	Carbon Monoxide	Benzene	1,3-Butadiene	Formaldehyde	Acetaldehyde	Acrolein	Nitrogen Dioxide (NO2)	Benzo(a)pyrene	PM10	PM2.5	CO2 Equivalent
									2	20	24	25	26	27	33	Benzo(a)pyrene	PM10	PM2.5	CO2 Equivalent
R5+R6	71	On Ramp NB Lyle to WB	434	349	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	1.05724049	0.000446079	3.8008E-05	0.002719808	0.000993168	0.000157371	0.07825664	1.60095E-06	2.31	0.58	402.674
R9	72	On Ramp NB Percy to EB	79	40	60	37.3	87% Car and 8% Heavy Truck 5% Medium Truck	4	0.911049681	0.000376078	2.86345E-05	0.002049119	0.000750421	0.000118575	0.063540238	1.29887E-06	2.27	0.57	328.808
R9	73	On Ramp NB Percy to EB	79	40	60	37.3	87% Car and 8% Heavy Truck 5% Medium Truck	4	0.911049681	0.000376078	2.86345E-05	0.002049119	0.000750421	0.000118575	0.063540238	1.29887E-06	2.27	0.57	328.808
R9	74	On Ramp NB Percy to EB	79	40	60	37.3	87% Car and 8% Heavy Truck 5% Medium Truck	4	0.911049681	0.000376078	2.86345E-05	0.002049119	0.000750421	0.000118575	0.063540238	1.29887E-06	2.27	0.57	328.808
R12	75	On Ramp SB Percy to WB	316	162	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	1.05724049	0.000446079	3.8008E-05	0.002719808	0.000993168	0.000157371	0.07825664	1.60095E-06	2.31	0.58	402.674
R6	76	On Ramp SB Lyle to WB	121	97	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	1.05724049	0.000446079	3.8008E-05	0.002719808	0.000993168	0.000157371	0.07825664	1.60095E-06	2.31	0.58	402.674
R3	77	On Ramp NB Lyle to EB	19	16	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	1.05724049	0.000446079	3.8008E-05	0.002719808	0.000993168	0.000157371	0.07825664	1.60095E-06	2.31	0.58	402.674

Summary of g/VMT emission factors by contaminant/ link - 2041 No Build (Including paved road resuspension)																			
									Pollutant Name and ID										
Group Link ID	Link ID	Description	2041 AADT	Peak Vehicle Volume (veh/hour)	Assigned Average Speed km/hr	Assigned Average Speed (mph)	Vehicle Distribution	MOVES Generic Link ID	Carbon Monoxide	Benzene	1,3-Butadiene	Formaldehyde	Acetaldehyde	Acrolein	Nitrogen Dioxide (NO2)	Benzo(a)pyrene	PM10	PM2.5	CO2 Equivalent
									2	20	24	25	26	27	33	Benzo(a)pyrene	PM10	PM2.5	CO2 Equivalent
EB1	1	EB 401, West of Lyle Street	34,784	4,522	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
EB1	2	EB 401, West of Lyle Street	34,784	4,522	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
EB1	3	EB 401, West of Lyle Street	34,784	4,522	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
EB1	4	EB 401, West of Lyle Street	34,784	4,522	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
EB1	5	EB 401, West of Lyle Street	34,784	4,522	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
EB1	6	EB 401, West of Lyle Street	34,784	4,522	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
EB1	7	EB 401, West of Lyle Street	34,784	4,522	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
EB1	8	EB 401, West of Lyle Street	34,784	4,522	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
EB1	9	EB 401, West of Lyle Street	34,784	4,522	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
EB1	10	EB 401, West of Lyle Street	34,784	4,522	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
EB1	11	EB 401, West of Lyle Street	34,784	4,522	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
EB1	12	EB 401, West of Lyle Street	34,784	4,522	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
EB1	13	EB 401, West of Lyle Street	34,784	4,522	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
EB1	14	EB 401, West of Lyle Street	34,784	4,522	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
EB1	15	EB 401, West of Lyle Street	34,784	4,522	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
EB2	16	EB 401, East of Lyle Street	32,899	4,277	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
EB2	17	EB 401, East of Lyle Street	32,899	4,277	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
EB2	18	EB 401, East of Lyle Street	32,899	4,277	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
WB2	19	WB 401, East of Lyle Street	30,634	3,982	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
WB2	20	WB 401, East of Lyle Street	30,634	3,982	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
WB2	21	WB 401, East of Lyle Street	30,634	3,982	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
WB1	22	WB 401, West of Lyle Street	30,129	3,917	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
WB1	23	WB 401, West of Lyle Street	30,129	3,917	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
WB1	24	WB 401, West of Lyle Street	30,129	3,917	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
WB1	25	WB 401, West of Lyle Street	30,129	3,917	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
WB1	26	WB 401, West of Lyle Street	30,129	3,917	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
WB1	27	WB 401, West of Lyle Street	30,129	3,917	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
WB1	28	WB 401, West of Lyle Street	30,129	3,917	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
WB1	29	WB 401, West of Lyle Street	30,129	3,917	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
WB1	30	WB 401, West of Lyle Street	30,129	3,917	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
WB1	31	WB 401, West of Lyle Street	30,129	3,917	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
WB1	32	WB 401, West of Lyle Street	30,129	3,917	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
WB1	33	WB 401, West of Lyle Street	30,129	3,917	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
WB1	34	WB 401, West of Lyle Street	30,129	3,917	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
WB1	35	WB 401, West of Lyle Street	30,129	3,917	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
WB1	36	WB 401, West of Lyle Street	30,129	3,917	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
IC1	37	Lyle Crossing Road NB/SB	1,574	157	80	49.7	84% Car and 10% Heavy Truck 6% Medium Truck	2	0.510565758	0.000211653	4.87692E-06	0.001368989	0.000442268	6.28241E-05	0.059698314	6.62939E-07	0.94	0.23	299.59
IC1	38	Lyle Crossing Road NB/SB	1,574	157	80	49.7	84% Car and 10% Heavy Truck 6% Medium Truck	2	0.510565758	0.000211653	4.87692E-06	0.001368989	0.000442268	6.28241E-05	0.059698314	6.62939E-07	0.94	0.23	299.59
IC1	39	Lyle Crossing Road NB/SB	1,574	157	80	49.7	84% Car and 10% Heavy Truck 6% Medium Truck	2	0.510565758	0.000211653	4.87692E-06	0.001368989	0.000442268	6.28241E-05	0.059698314	6.62939E-07	0.94	0.23	299.59
IC1	40	Lyle Crossing Road NB/SB	1,574	157	80	49.7	84% Car and 10% Heavy Truck 6% Medium Truck	2	0.510565758	0.000211653	4.87692E-06	0.001368989	0.000442268	6.28241E-05	0.059698314	6.62939E-07	0.94	0.23	299.59
R1	41	Exit Ramp EB to NB/SB Lyle	769	77	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.51783232	0.000201629	3.9606E-06	0.001121539	0.000363599	5.14365E-05	0.049477118	6.85786E-07	0.84	0.21	274.768
R1	42	Exit Ramp EB to NB/SB Lyle	769	77	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.51783232	0.000201629	3.9606E-06	0.001121539	0.000363599	5.14365E-05	0.049477118	6.85786E-07	0.84	0.21	274.768
R2	43	Exit Ramp WB to NB/SB Lyle	116	12	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.51783232	0.000201629	3.9606E-06	0.001121539	0.000363599	5.14365E-05	0.049477118	6.85786E-07	0.84	0.21	274.768
R2	44	Exit Ramp WB to NB/SB Lyle	116	12	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.51783232	0.000201629	3.9606E-06	0.001121539	0.000363599	5.14365E-05	0.049477118	6.85786E-07	0.84	0.21	274.768
R2	45	Exit Ramp WB to NB/SB Lyle	116	12	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.51783232	0.000201629	3.9606E-06	0.001121539	0.000363599	5.14365E-05	0.049477118	6.85786E-07	0.84	0.21	274.768
R3	46	On Ramp NB/SB Lyle to EB	77	8	60	37.3	87% Car and 8% Heavy Truck 5% Medium Truck	4	0.591834722	0.000228373	5.07778E-06	0.001427794	0.000461583	6.55147E-05	0.056273299	7.24581E-07	0.87	0.21	304.092
R3	47	On Ramp NB/SB Lyle to EB	77	8	60	37.3	87% Car and 8% Heavy Truck 5% Medium Truck	4	0.591834722	0.000228373	5.07778E-06	0.001427794	0.000461583	6.55147E-05	0.056273299	7.24581E-07	0.87	0.21	304.092
R4	48	On Ramp NB/SB Lyle to WB	432	43	60	37.3	87% Car and 8% Heavy Truck 5% Medium Truck	4	0.591834722	0.000228373	5.07778E-06	0.001427794	0.000461583	6.55147E-05	0.056273299	7.24581E-07	0.87	0.21	304.092
R4	49	On Ramp NB/SB Lyle to WB	432	43	60	37.3	87% Car and 8% Heavy Truck 5% Medium Truck	4	0.591834722	0.000228373	5.07778E-06	0.001427794	0.000461583	6.55147E-05	0.056273299	7.24581E-07	0.87	0.21	304.092
IC2	50	Percy Crossing Road NB/SB	3,025	303	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.51783232	0.000201629	3.9606E-06	0.001121539	0.000363599	5.14365E-05	0.049477118	6.85786E-07	0.84	0.21	274.768
IC2	51	Percy Crossing Road NB/SB	3,025	303	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.51783232	0.000201629	3.9606E-06	0.001121539	0.000363599	5.14365E-05	0.049477118	6.85786E-07	0.84	0.21	274.768
IC2	52	Percy Crossing Road NB/SB	3,025	303	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.51783232	0.000201629	3.9606E-06	0.001121539	0.000363599	5.14365E-05	0.049477118	6.85786E-07	0.84	0.21	274.768
R5	53	Exit Ramp EB to NB/SB Percy	1,003	100	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.51783232	0.000201629	3.9606E-06	0.001121539	0.000363599	5.14365E-05	0.049477118	6.85786E-07	0.84	0.21	274.768
R5	54	Exit Ramp EB to NB/SB Percy	1,003	100	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.51783232	0.000201629	3.9606E-06	0.001121539	0.000363599	5.14365E-05	0.049477118	6.85786E-07	0.84	0.21	274.768
R5	55	Exit Ramp EB to NB/SB Percy	1,003	100	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.51783232	0.000201629	3.9606E-06	0.001121539	0.000363599	5.14365E-05	0.049477118	6.85786E-07	0.84	0.21	274.768
R5	56	Exit Ramp EB to NB/SB Percy	1,003	100	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.51783232	0.000201629	3.9606E-06	0.001121539	0.000363599	5.14365E-05	0.049477118	6.85786E-07	0.84	0.21	274.768
R6	57	Exit Ramp WB to NB/SB Percy	250	25	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.51783232	0.000201629	3.9606E-06	0.001121539	0.000363599	5.14365E-05	0.049477118	6.85786E-07	0.84	0.21	274.768
R6	58	Exit Ramp WB to NB/SB Percy	250	25	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.51783232	0.000201629	3.9606E-06	0.001121539	0.000363599	5.14365E-05	0.049477118	6.85786E-07	0.84	0.21	274.768
R6	59	Exit Ramp WB to NB/SB Percy	250	25	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.51783232	0.000201629	3.9606E-06	0.001121539	0.000363599	5.14365E-05	0.049477118	6.85786E-07	0.84	0.21	274.768
R7	60	On Ramp NB/SB Percy to EB	157	16	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	0.656690738	0.000270797	6.82414E-06	0.001906549	0.000614756	8.75225E-05	0.069599774	8.43758E-07	0.91	0.22	372.842
R7	61	On Ramp NB/SB Percy to EB	157	16	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	0.656690738	0.000270797	6.82414E-06	0.001906549	0.000614756	8.75225E-05	0.069599774	8.43758E-07	0.91	0.22	372.842
R7	62	On Ramp NB/SB Percy to EB	157	16	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	0.656690738	0.000270797	6.82414E-06	0.001906549	0.000614756	8.75225E-05	0.069599774	8.43758E-07	0.91	0.22	372.842
R7	63	On Ramp NB/SB Percy to EB	157	16	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	0.656690738	0.000270797	6.82414E-06	0.001906549	0.000614756	8.75225E-05	0.069599774	8.43758E-07	0.91	0.22	372.842
R8	64	On Ramp NB/SB Percy to WB	815	82	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	0.656690738	0.000270797	6.82414E-06	0.001906549	0.000614756	8.75225E-05	0.069599774	8.43758E-07	0.91	0.22	372.842
R8	65	On Ramp NB/SB Percy to WB	815	82	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	0.656690738	0.000270797	6.82414E-06	0.001906549	0.000614756	8.75225E-05	0.069599774	8.43758E-07	0.91	0.22	372.842
R8	66	On Ramp NB/SB Percy to WB	815	82	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	0.656690738	0.000270797	6.82414E-06	0.001906549	0.000614756	8.75225E-05	0.069599774	8.43758E-07	0.91	0.22	372.842
R8	67	On Ramp NB/SB Percy to WB	815	82	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	0.656690738	0.000270797	6.82414E-06	0.001906549	0.000614756	8.75225E-05	0.069599774	8.43758E-07	0.91	0.22	372.842
R5	68	On Ramp NB Lyle to WB	312	31	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	0.656690738	0.000270797	6.82414E-06	0.001906549	0.000614756	8.75225E-05	0.069599774	8.43758E-07	2.31	0.57	372.842
R5	69	On Ramp NB Lyle to WB	312	31	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	0.656690738	0.000270797	6.82414E-06	0.001906549	0.000614756	8.75225E-05	0.069599774	8.43758E-07	2.31	0.57	372.842
R5+R6	70	On Ramp NB Lyle to WB	432	43	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	0.656690738	0.000270797	6.82414E-06	0.001906549	0.000614756	8.75225E-05	0.069599774	8.43758E-07	2.31	0.57	372.842
R5+R6	71	On Ramp NB Lyle to WB	432	43	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	0.656690738	0.000270797	6.82414E-06	0.001906549	0.000614756	8.75225E-05	0.069599774	8.43758E-07	2.31	0.57	372.842
R9	72	On Ramp NB Percy to EB	79	8	60	37.3	87% Car and 8% Heavy Truck 5% Medium Truck	4	0.591834722	0.000228373	5.07778E-06	0.001427794	0.000461583	6.55147E-05	0.056273299	7.24581E-07	2.26	0.56	304.092
R9	73	On Ramp NB Percy to EB	79	8	60	37.3	87% Car and 8% Heavy Truck 5% Medium Truck	4	0.591834722	0.000228373	5.07778E-06	0.001427794	0.000461583	6.55147E-05	0.056273299	7.24581E-07	2.26	0.56	304.092
R9	74	On Ramp NB Percy to EB	79	8	60	37.3	87% Car and 8% Heavy Truck 5% Medium Truck	4	0.591834722	0.000228373	5.07778E-06	0.001427794	0.000461583	6.55147E-05	0.056273299	7.24581E-07	2.26	0.56	304.092

MTO 401 Coburg to Colbourne EA - MOVES Runs - 2041 No Build

Summary of g/VMT emission factors by contaminant/ link - 2041 No Build (Including paved road resuspension)																			
									Pollutant Name and ID										
Group Link ID	Link ID	Description	2041 AADT	Peak Vehicle Volume (veh/hour)	Assigned Average Speed km/hr	Assigned Average Speed (mph)	Vehicle Distribution	MOVES Generic Link ID	Carbon Monoxide	Benzene	1,3-Butadiene	Formaldehyde	Acetaldehyde	Acrolein	Nitrogen Dioxide (NO2)	Benzo(a)pyrene	PM10	PM2.5	CO2 Equivalent
									2	20	24	25	26	27	33	Benzo(a)pyrene	PM10	PM2.5	CO2 Equivalent
R12	75	On Ramp SB Percy to WB	315	32	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	0.656690738	0.000270797	6.82414E-06	0.001906549	0.000614756	8.75225E-05	0.069599774	8.43758E-07	2.31	0.57	372.842
R6	76	On Ramp SB Lyle to WB	120	12	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	0.656690738	0.000270797	6.82414E-06	0.001906549	0.000614756	8.75225E-05	0.069599774	8.43758E-07	2.31	0.57	372.842
R3	77	On Ramp NB Lyle to EB	19	2	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	0.656690738	0.000270797	6.82414E-06	0.001906549	0.000614756	8.75225E-05	0.069599774	8.43758E-07	2.31	0.57	372.842

Summary of g/VMT emission factors by contaminant/ link - 2041 Build (Including paved road resuspension)																			
									Pollutant Name and ID										
Group Link ID	Link ID	Description	2041 AADT	Peak Vehicle Volume (veh/hour)	Assigned Average Speed km/hr	Assigned Average Speed (mph)	Vehicle Distribution	MOVES Generic Link ID	Carbon Monoxide	Benzene	1,3-Butadiene	Formaldehyde	Acetaldehyde	Acrolein	Nitrogen Dioxide (NO2)	Benzo(a)pyrene	PM10	PM2.5	CO2 Equivalent
									2	20	24	25	26	27	33	Benzo(a)pyrene	PM10	PM2.5	CO2 Equivalent
EB1	1	EB 401, West of Lyle Street	43,392	4,737	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
EB1	2	EB 401, West of Lyle Street	43,392	4,737	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
EB1	3	EB 401, West of Lyle Street	43,392	4,737	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
EB1	4	EB 401, West of Lyle Street	43,392	4,737	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
EB1	5	EB 401, West of Lyle Street	43,392	4,737	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
EB1	6	EB 401, West of Lyle Street	43,392	4,737	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
EB1	7	EB 401, West of Lyle Street	43,392	4,737	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
EB1	8	EB 401, West of Lyle Street	43,392	4,737	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
EB1	9	EB 401, West of Lyle Street	43,392	4,737	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
EB1	10	EB 401, West of Lyle Street	43,392	4,737	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
EB1	11	EB 401, West of Lyle Street	43,392	4,737	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
EB1	12	EB 401, West of Lyle Street	43,392	4,737	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
EB1	13	EB 401, West of Lyle Street	43,392	4,737	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
EB1	14	EB 401, West of Lyle Street	43,392	4,737	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
EB1	15	EB 401, West of Lyle Street	43,392	4,737	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
EB2	16	EB 401, East of Lyle Street	41,041	3,965	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
EB2	17	EB 401, East of Lyle Street	41,041	3,965	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
EB2	18	EB 401, East of Lyle Street	41,041	3,965	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
WB2	19	WB 401, East of Lyle Street	38,215	3,692	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
WB2	20	WB 401, East of Lyle Street	38,215	3,692	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
WB2	21	WB 401, East of Lyle Street	38,215	3,692	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
WB1	22	WB 401, West of Lyle Street	37,586	4,103	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
WB1	23	WB 401, West of Lyle Street	37,586	4,103	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
WB1	24	WB 401, West of Lyle Street	37,586	4,103	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
WB1	25	WB 401, West of Lyle Street	37,586	4,103	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
WB1	26	WB 401, West of Lyle Street	37,586	4,103	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
WB1	27	WB 401, West of Lyle Street	37,586	4,103	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
WB1	28	WB 401, West of Lyle Street	37,586	4,103	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
WB1	29	WB 401, West of Lyle Street	37,586	4,103	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
WB1	30	WB 401, West of Lyle Street	37,586	4,103	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
WB1	31	WB 401, West of Lyle Street	37,586	4,103	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
WB1	32	WB 401, West of Lyle Street	37,586	4,103	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
WB1	33	WB 401, West of Lyle Street	37,586	4,103	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
WB1	34	WB 401, West of Lyle Street	37,586	4,103	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
WB1	35	WB 401, West of Lyle Street	37,586	4,103	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
WB1	36	WB 401, West of Lyle Street	37,586	4,103	100	62.1	76% Car and 20% Heavy Truck 4% Medium Truck	1	0.483381385	0.000214922	6.09605E-06	0.001695031	0.000545492	7.7839E-05	0.067479013	5.5404E-07	0.25	0.06	305.003
IC1	37	Lyle Crossing Road NB/SB	1,964	1,098	80	49.7	84% Car and 10% Heavy Truck 6% Medium Truck	2	0.510565758	0.000211653	4.87692E-06	0.001368989	0.000442268	6.28241E-05	0.059698314	6.62939E-07	0.94	0.23	299.59
IC1	38	Lyle Crossing Road NB/SB	1,964	1,098	80	49.7	84% Car and 10% Heavy Truck 6% Medium Truck	2	0.510565758	0.000211653	4.87692E-06	0.001368989	0.000442268	6.28241E-05	0.059698314	6.62939E-07	0.94	0.23	299.59
IC1	39	Lyle Crossing Road NB/SB	1,964	1,098	80	49.7	84% Car and 10% Heavy Truck 6% Medium Truck	2	0.510565758	0.000211653	4.87692E-06	0.001368989	0.000442268	6.28241E-05	0.059698314	6.62939E-07	0.94	0.23	299.59
IC1	40	Lyle Crossing Road NB/SB	1,964	1,098	80	49.7	84% Car and 10% Heavy Truck 6% Medium Truck	2	0.510565758	0.000211653	4.87692E-06	0.001368989	0.000442268	6.28241E-05	0.059698314	6.62939E-07	0.94	0.23	299.59
R1	41	Exit Ramp EB to NB/SB Lyle	960	772	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.51783232	0.000201629	3.9606E-06	0.001121539	0.000363599	5.14365E-05	0.049477118	6.85786E-07	0.84	0.21	274.768
R1	42	Exit Ramp EB to NB/SB Lyle	960	772	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.51783232	0.000201629	3.9606E-06	0.001121539	0.000363599	5.14365E-05	0.049477118	6.85786E-07	0.84	0.21	274.768
R2	43	Exit Ramp WB to NB/SB Lyle	145	117	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.51783232	0.000201629	3.9606E-06	0.001121539	0.000363599	5.14365E-05	0.049477118	6.85786E-07	2.24	0.56	274.768
R2	44	Exit Ramp WB to NB/SB Lyle	145	117	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.51783232	0.000201629	3.9606E-06	0.001121539	0.000363599	5.14365E-05	0.049477118	6.85786E-07	2.24	0.56	274.768
R2	45	Exit Ramp WB to NB/SB Lyle	145	117	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.51783232	0.000201629	3.9606E-06	0.001121539	0.000363599	5.14365E-05	0.049477118	6.85786E-07	2.24	0.56	274.768
IC2	46	Percy Crossing Road NB/SB	3,773	2,088	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.51783232	0.000201629	3.9606E-06	0.001121539	0.000363599	5.14365E-05	0.049477118	6.85786E-07	0.84	0.21	274.768
IC2	47	Percy Crossing Road NB/SB	3,773	2,088	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.51783232	0.000201629	3.9606E-06	0.001121539	0.000363599	5.14365E-05	0.049477118	6.85786E-07	0.84	0.21	274.768
IC2	48	Percy Crossing Road NB/SB	3,773	2,088	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.51783232	0.000201629	3.9606E-06	0.001121539	0.000363599	5.14365E-05	0.049477118	6.85786E-07	0.84	0.21	274.768
R7	49	Exit Ramp EB to NB/SB Percy	1,251	641	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.51783232	0.000201629	3.9606E-06	0.001121539	0.000363599	5.14365E-05	0.049477118	6.85786E-07	0.84	0.21	274.768
R7	50	Exit Ramp EB to NB/SB Percy	1,251	641	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.51783232	0.000201629	3.9606E-06	0.001121539	0.000363599	5.14365E-05	0.049477118	6.85786E-07	0.84	0.21	274.768
R7	51	Exit Ramp EB to NB/SB Percy	1,251	641	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.51783232	0.000201629	3.9606E-06	0.001121539	0.000363599	5.14365E-05	0.049477118	6.85786E-07	0.84	0.21	274.768
R7	52	Exit Ramp EB to NB/SB Percy	1,251	641	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.51783232	0.000201629	3.9606E-06	0.001121539	0.000363599	5.14365E-05	0.049477118	6.85786E-07	0.84	0.21	274.768
R8	53	Exit Ramp WB to NB/SB Percy	312	160	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.51783232	0.000201629	3.9606E-06	0.001121539	0.000363599	5.14365E-05	0.049477118	6.85786E-07	2.24	0.56	274.768
R8	54	Exit Ramp WB to NB/SB Percy	312	160	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.51783232	0.000201629	3.9606E-06	0.001121539	0.000363599	5.14365E-05	0.049477118	6.85786E-07	2.24	0.56	274.768
R8	55	Exit Ramp WB to NB/SB Percy	312	160	80	49.7	87% Car and 8% Heavy Truck 5% Medium Truck	3	0.51783232	0.000201629	3.9606E-06	0.001121539	0.000363599	5.14365E-05	0.049477118	6.85786E-07	2.24	0.56	274.768
R10	56	On Ramp SB Percy to EB	98	50	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	0.656690738	0.000270797	6.82414E-06	0.001906549	0.000614756	8.75225E-05	0.069599774	8.43758E-07	2.31	0.57	372.842
R10	57	On Ramp SB Percy to EB	98	50	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	0.656690738	0.000270797	6.82414E-06	0.001906549	0.000614756	8.75225E-05	0.069599774	8.43758E-07	2.31	0.57	372.842
R10	58	On Ramp SB Percy to EB	98	50	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	0.656690738	0.000270797	6.82414E-06	0.001906549	0.000614756	8.75225E-05	0.069599774	8.43758E-07	2.31	0.57	372.842
R10	59	On Ramp SB Percy to EB	98	50	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	0.656690738	0.000270797	6.82414E-06	0.001906549	0.000614756	8.75225E-05	0.069599774	8.43758E-07	2.31	0.57	372.842
R11	60	On Ramp NB Percy to WB	624	320	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	0.656690738	0.000270797	6.82414E-06	0.001906549	0.000614756	8.75225E-05	0.069599774	8.43758E-07	0.91	0.22	372.842
R11	61	On Ramp NB Percy to WB	624	320	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	0.656690738	0.000270797	6.82414E-06	0.001906549	0.000614756	8.75225E-05	0.069599774	8.43758E-07	0.91	0.22	372.842
R11	62	On Ramp NB Percy to WB	624	320	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	0.656690738	0.000270797	6.82414E-06	0.001906549	0.000614756	8.75225E-05	0.069599774	8.43758E-07	0.91	0.22	372.842
R11	63	On Ramp NB Percy to WB	624	320	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	0.656690738	0.000270797	6.82414E-06	0.001906549	0.000614756	8.75225E-05	0.069599774	8.43758E-07	0.91	0.22	372.842
R4	64	On Ramp SB Lyle to EB	72	58	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	0.656690738	0.000270797	6.82414E-06	0.001906549	0.000614756	8.75225E-05	0.069599774	8.43758E-07	2.31	0.57	372.842
R4	65	On Ramp SB Lyle to EB	72	58	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	0.656690738	0.000270797	6.82414E-06	0.001906549	0.000614756	8.75225E-05	0.069599774	8.43758E-07	2.31	0.57	372.842
R4	66	On Ramp SB Lyle to EB	72	58	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	0.656690738	0.000270797	6.82414E-06	0.001906549	0.000614756	8.75225E-05	0.069599774	8.43758E-07	2.31	0.57	372.842

Summary of g/VMT emission factors by contaminant/ link - 2041 Build (Including paved road resuspension)																			
									Pollutant Name and ID										
Group Link ID	Link ID	Description	2041 AADT	Peak Vehicle Volume (veh/hour)	Assigned Average Speed km/hr	Assigned Average Speed (mph)	Vehicle Distribution	MOVES Generic Link ID	Carbon Monoxide	Benzene	1,3-Butadiene	Formaldehyde	Acetaldehyde	Acrolein	Nitrogen Dioxide (NO2)	Benzo(a)pyrene	PM10	PM2.5	CO2 Equivalent
									2	20	24	25	26	27	33	Benzo(a)pyrene	PM10	PM2.5	CO2 Equivalent
R4	67	On Ramp SB Lyle to EB	72	58	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	0.656690738	0.000270797	6.82414E-06	0.001906549	0.000614756	8.75225E-05	0.069599774	8.43758E-07	2.31	0.57	372.842
R5	68	On Ramp NB Lyle to WB	389	313	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	0.656690738	0.000270797	6.82414E-06	0.001906549	0.000614756	8.75225E-05	0.069599774	8.43758E-07	2.31	0.57	372.842
R5	69	On Ramp NB Lyle to WB	389	313	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	0.656690738	0.000270797	6.82414E-06	0.001906549	0.000614756	8.75225E-05	0.069599774	8.43758E-07	2.31	0.57	372.842
R5	70	On Ramp NB Lyle to WB	389	313	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	0.656690738	0.000270797	6.82414E-06	0.001906549	0.000614756	8.75225E-05	0.069599774	8.43758E-07	2.31	0.57	372.842
R5	71	On Ramp NB Lyle to WB	389	313	40	24.9	87% Car and 8% Heavy Truck 5% Medium Truck	5	0.656690738	0.000270797	6.82414E-06	0.001906549	0.000614756	8.75225E-05	0.069599774	8.43758E-07	2.31	0.57	372.842
R9	72	On Ramp NB Percy to EB	98	50	60	37.3	87% Car and 8% Heavy Truck 5% Medium Truck	4	0.591834722	0.000228373	5.07778E-06	0.001427794	0.000461583	6.55147E-05	0.056273299	7.24581E-07	2.26	0.56	304.092
R9	73	On Ramp NB Percy to EB	98	50	60	37.3	87% Car and 8% Heavy Truck 5% Medium Truck	4	0.591834722	0.000228373	5.07778E-06	0.001427794	0.000461583	6.55147E-05	0.056273299	7.24581E-07	2.26	0.56	304.092
R9	74	On Ramp NB Percy to EB	98	50	60	37.3	87% Car and 8% Heavy Truck 5% Medium Truck	4	0.591834722	0.000228373	5.07778E-06	0.001427794	0.000461583	6.55147E-05	0.056273299	7.24581E-07	2.26	0.56	304.092
R12	75	On Ramp SB Percy to WB	393	201	60	37.3	87% Car and 8% Heavy Truck 5% Medium Truck	4	0.591834722	0.000228373	5.07778E-06	0.001427794	0.000461583	6.55147E-05	0.056273299	7.24581E-07	2.26	0.56	304.092
R6	76	On Ramp SB Lyle to WB	150	121	60	37.3	87% Car and 8% Heavy Truck 5% Medium Truck	4	0.591834722	0.000228373	5.07778E-06	0.001427794	0.000461583	6.55147E-05	0.056273299	7.24581E-07	2.26	0.56	304.092
R3	77	On Ramp NB Lyle to EB	24	20	60	37.3	87% Car and 8% Heavy Truck 5% Medium Truck	4	0.591834722	0.000228373	5.07778E-06	0.001427794	0.000461583	6.55147E-05	0.056273299	7.24581E-07	2.26	0.56	304.092
R6	78	On Ramp SB Lyle to WB	150	121	60	37.3	87% Car and 8% Heavy Truck 5% Medium Truck	4	0.591834722	0.000228373	5.07778E-06	0.001427794	0.000461583	6.55147E-05	0.056273299	7.24581E-07	2.26	0.56	304.092
R3	79	On Ramp NB Lyle to EB	24	20	60	37.3	87% Car and 8% Heavy Truck 5% Medium Truck	4	0.591834722	0.000228373	5.07778E-06	0.001427794	0.000461583	6.55147E-05	0.056273299	7.24581E-07	2.26	0.56	304.092
R12	80	On Ramp SB Percy to WB	393	201	60	37.3	87% Car and 8% Heavy Truck 5% Medium Truck	4	0.591834722	0.000228373	5.07778E-06	0.001427794	0.000461583	6.55147E-05	0.056273299	7.24581E-07	2.26	0.56	304.092

MTO 401 Coburg to Colbourne EA - Paved Road Emissions - All Scenarios

Road	Average Vehicle Weight [1](tons)	Particle Size Factor k (g/VMT)			Silt Loading	Emission Factor (g/VMT)		
		PM	PM10	PM2.5	g/m^2	PM	PM10	PM2.5
Paved roads (links) with ADT <500. 76% Car and 20% Heavy Truck 4% Medium Truck	5.3	5.24	1	0.25	0.60	18.067	3.448	0.862
Paved roads (links) with ADT between 500-5,000. 76% Car and 20% Heavy Truck 4% Medium Truck	5.3	5.24	1	0.25	0.20	6.648	1.269	0.317
Paved roads (links) with ADT between 5,000-10,000. 76% Car and 20% Heavy Truck 4% Medium Truck	5.3	5.24	1	0.25	0.06	2.223	0.424	0.106
Paved roads (links) with ADT greater than 10,000. 76% Car and 20% Heavy Truck 4% Medium Truck	5.3	5.24	1	0.25	0.03[2]	1.183	0.226	0.056
Paved roads (links) with ADT between 500-5,000. 84% Car and 10% Heavy Truck 6% Medium Truck	3.8	5.24	1	0.25	0.60	12.924	2.466	0.617
Paved roads (links) with ADT between 500-5,000. 84% Car and 10% Heavy Truck 6% Medium Truck	3.8	5.24	1	0.25	0.20	4.756	0.908	0.227
Paved roads (links) with ADT between 5,000-10,000. 84% Car and 10% Heavy Truck 6% Medium Truck	3.8	5.24	1	0.25	0.06	1.590	0.303	0.076
Paved roads (links) with ADT greater than 10,000. 84% Car and 10% Heavy Truck 6% Medium Truck	3.8	5.24	1	0.25	0.03[2]	0.846	0.161	0.040
Paved roads (links) with ADT between 500-5,000. 87% Car and 8% Heavy Truck 5% Medium Truck	3.4	5.24	1	0.25	0.60	11.577	2.209	0.552
Paved roads (links) with ADT between 500-5,000. 87% Car and 8% Heavy Truck 5% Medium Truck	3.4	5.24	1	0.25	0.20	4.260	0.813	0.203
Paved roads (links) with ADT between 5,000-10,000. 87% Car and 8% Heavy Truck 5% Medium Truck	3.4	5.24	1	0.25	0.06	1.424	0.272	0.068
Paved roads (links) with ADT greater than 10,000. 87% Car and 8% Heavy Truck 5% Medium Truck	3.4	5.24	1	0.25	0.03[2]	0.758	0.145	0.036

Notes:

USEPA AP-42 Section 13.2.1 Paved Road for PM Emission Factors

$E = k\,(sL)^{0.91} \times (W)^{1.02}$

Where:

E = particulate emission factor

K = particulate size multiplier for particle size range and units of interest

sL – road surface silt loading

W – average weight (tons) of vehicle travelling the road

(1) Assumes the following vehicle weights:

Passenger cars: 1.8 tons

Heavy Trucks: 18 tons *

Medium Trucks: 9 tons

* average of the full and empty weights of a four-axle tractor semitrailer which was assumed to provide a reasonable surrogate for the average weight distribution of heavy trucks on the highway.

(2) The use of a silt loading of 0.03 g/m^2 instead of 0.015 g/m^2 for AADTs greater than 10,000 results in conservative emission estimates of PM10 and PM2.5 and therefore, conservative predicted concentrations

APPENDIX D

Traffic Volumes and Hourly Distribution Data

					CAL3QHCR Group Link ID		2016 Existing							2031 No Build		2041 No Build		2031 Build		2041 Build	
Grade Separation Site	**Road Segment**	**AADT (2016)**	**Direction**	**MOVES Link ID**	**No Build**	**Build**	**AADT**	**PM Peak Hour Volume**	**Posted Speed**	**% Passenger Cars**	**% Heavy Truck**	**% Medium Truck**	**MOVES Road Type**	**AADT**	**PM Peak Hour Volume**	**AADT**	**PM Peak Hour Volume**	**AADT**	**PM Peak Hour Volume**	**AADT**	**PM Peak Hour Volume**
Highway 401	East of Lyle Street	46000	Eastbound	1	EB2	EB2	23,820	3,097	100	76%	20%	4%	2_Rural Restricted	28,912	3,759	32,899	4,277	33,015	3,190	41,041	3,965
			Westbound	1	WB2	WB2	22,180	2,883	100	76%	20%	4%	2_Rural Restricted	26,922	3,500	30,634	3,982	30,741	2,970	38,215	3,692
	West of Lyle Street	47000	Eastbound	1	EB1	EB1	25,185	3,274	100	76%	20%	4%	2_Rural Restricted	30,569	3,974	34,784	4,522	34,906	3,811	43,392	4,737
			Westbound	1	WB1	WB1	21,815	2,836	100	76%	20%	4%	2_Rural Restricted	26,479	3,442	30,129	3,917	30,236	3,301	37,586	4,103
Lyle Street Interchage	Crossing Roads		Both	2	IC1	IC1	1,140	114	80	84%	10%	6%	3_Rural Unrestricted	1,384	138	1,574	157	1,580	883	1,964	1,098
	Exit Ramp	1010	EB to NB/SB	3	R1	R1	557	56	80	87%	8%	5%	3_Rural Unrestricted	676	68	769	77	772	621	960	772
			WB to NB/SB	3	R2	R2	84	8	80	87%	8%	5%	3_Rural Unrestricted	102	10	116	12	116	94	145	117
	In Ramp		NB to EB	4	R3	R3	14	6	60	87%	8%	5%	3_Rural Unrestricted	68	7	19	2	19	16	24	20
			SB to EB	5		R4	42		40	87%	8%	5%	3_Rural Unrestricted			58	6	58	47	72	58
			NB to WB	5	R4	R5	226	31	40	87%	8%	5%	3_Rural Unrestricted	380	38	312	31	313	252	389	313
			SB to WB	4		R6	87		60	87%	8%	5%	3_Rural Unrestricted			120	12	121	97	150	121
Percy Street Interchange	Crossing Roads		Both	3	IC2	IC2	2,190	219	80	87%	8%	5%	3_Rural Unrestricted	2,658	266	3,025	303	3,035	1,680	3,773	2,088
	Exit Ramp	1610	EB to NB/SB	3	R5	R7	726	73	80	87%	8%	5%	3_Rural Unrestricted	881	88	1,003	100	1,006	516	1,251	641
			WB to NB/SB	3	R6	R8	181	18	80	87%	8%	5%	3_Rural Unrestricted	220	22	250	25	251	129	312	160
	In Ramp		NB to EB	4	R7	R9	57	11	60	87%	8%	5%	3_Rural Unrestricted	138	14	79	8	79	40	98	50
			SB to EB	5		R10	57		40	87%	8%	5%	3_Rural Unrestricted			79	8	79	40	98	50
			NB to WB	5	R8	R11	362	59	40	87%	8%	5%	3_Rural Unrestricted	716	72	500	50	502	257	624	320
			SB to WB	4		R12	228		60	87%	8%	5%	3_Rural Unrestricted			315	32	316	162	393	201

		Traffic Distribution	1%	1%	1%	1%	1%	2%	3%	3%	4%	4%	6%	7%	7%	7%	7%	7%	7%	7%	6%	6%	5%	4%	3%	2%
			Existing (2016) Scenario Hourly Traffic Volumes																							
Group Link ID	**Link ID**	**2016 AADT**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
EB1	1	25,185	336	250	226	216	266	431	658	806	952	1,117	1,468	1,707	1,754	1,807	1,809	1,801	1,668	1,652	1,490	1,423	1,169	958	725	496
EB1	2	25,185	336	250	226	216	266	431	658	806	952	1,117	1,468	1,707	1,754	1,807	1,809	1,801	1,668	1,652	1,490	1,423	1,169	958	725	496
EB1	3	25,185	336	250	226	216	266	431	658	806	952	1,117	1,468	1,707	1,754	1,807	1,809	1,801	1,668	1,652	1,490	1,423	1,169	958	725	496
EB1	4	25,185	336	250	226	216	266	431	658	806	952	1,117	1,468	1,707	1,754	1,807	1,809	1,801	1,668	1,652	1,490	1,423	1,169	958	725	496
EB1	5	25,185	336	250	226	216	266	431	658	806	952	1,117	1,468	1,707	1,754	1,807	1,809	1,801	1,668	1,652	1,490	1,423	1,169	958	725	496
EB1	6	25,185	336	250	226	216	266	431	658	806	952	1,117	1,468	1,707	1,754	1,807	1,809	1,801	1,668	1,652	1,490	1,423	1,169	958	725	496
EB1	7	25,185	336	250	226	216	266	431	658	806	952	1,117	1,468	1,707	1,754	1,807	1,809	1,801	1,668	1,652	1,490	1,423	1,169	958	725	496
EB1	8	25,185	336	250	226	216	266	431	658	806	952	1,117	1,468	1,707	1,754	1,807	1,809	1,801	1,668	1,652	1,490	1,423	1,169	958	725	496
EB1	9	25,185	336	250	226	216	266	431	658	806	952	1,117	1,468	1,707	1,754	1,807	1,809	1,801	1,668	1,652	1,490	1,423	1,169	958	725	496
EB1	10	25,185	336	250	226	216	266	431	658	806	952	1,117	1,468	1,707	1,754	1,807	1,809	1,801	1,668	1,652	1,490	1,423	1,169	958	725	496
EB1	11	25,185	336	250	226	216	266	431	658	806	952	1,117	1,468	1,707	1,754	1,807	1,809	1,801	1,668	1,652	1,490	1,423	1,169	958	725	496
EB1	12	25,185	336	250	226	216	266	431	658	806	952	1,117	1,468	1,707	1,754	1,807	1,809	1,801	1,668	1,652	1,490	1,423	1,169	958	725	496
EB1	13	25,185	336	250	226	216	266	431	658	806	952	1,117	1,468	1,707	1,754	1,807	1,809	1,801	1,668	1,652	1,490	1,423	1,169	958	725	496
EB1	14	25,185	336	250	226	216	266	431	658	806	952	1,117	1,468	1,707	1,754	1,807	1,809	1,801	1,668	1,652	1,490	1,423	1,169	958	725	496
EB1	15	25,185	336	250	226	216	266	431	658	806	952	1,117	1,468	1,707	1,754	1,807	1,809	1,801	1,668	1,652	1,490	1,423	1,169	958	725	496
EB2	16	23,820	317	236	214	204	251	407	622	762	901	1,056	1,389	1,615	1,659	1,709	1,711	1,703	1,578	1,562	1,410	1,346	1,105	906	686	469
EB2	17	23,820	317	236	214	204	251	407	622	762	901	1,056	1,389	1,615	1,659	1,709	1,711	1,703	1,578	1,562	1,410	1,346	1,105	906	686	469
EB2	18	23,820	317	236	214	204	251	407	622	762	901	1,056	1,389	1,615	1,659	1,709	1,711	1,703	1,578	1,562	1,410	1,346	1,105	906	686	469
WB2	19	22,180	296	220	199	190	234	379	579	710	839	983	1,293	1,504	1,545	1,592	1,593	1,586	1,469	1,454	1,313	1,254	1,029	844	639	436
WB2	20	22,180	296	220	199	190	234	379	579	710	839	983	1,293	1,504	1,545	1,592	1,593	1,586	1,469	1,454	1,313	1,254	1,029	844	639	436
WB2	21	22,180	296	220	199	190	234	379	579	710	839	983	1,293	1,504	1,545	1,592	1,593	1,586	1,469	1,454	1,313	1,254	1,029	844	639	436
WB1	22	21,815	291	216	196	187	230	373	570	698	825	967	1,272	1,479	1,519	1,565	1,567	1,560	1,445	1,431	1,291	1,233	1,012	830	628	429
WB1	23	21,815	291	216	196	187	230	373	570	698	825	967	1,272	1,479	1,519	1,565	1,567	1,560	1,445	1,431	1,291	1,233	1,012	830	628	429
WB1	24	21,815	291	216	196	187	230	373	570	698	825	967	1,272	1,479	1,519	1,565	1,567	1,560	1,445	1,431	1,291	1,233	1,012	830	628	429
WB1	25	21,815	291	216	196	187	230	373	570	698	825	967	1,272	1,479	1,519	1,565	1,567	1,560	1,445	1,431	1,291	1,233	1,012	830	628	429
WB1	26	21,815	291	216	196	187	230	373	570	698	825	967	1,272	1,479	1,519	1,565	1,567	1,560	1,445	1,431	1,291	1,233	1,012	830	628	429
WB1	27	21,815	291	216	196	187	230	373	570	698	825	967	1,272	1,479	1,519	1,565	1,567	1,560	1,445	1,431	1,291	1,233	1,012	830	628	429
WB1	28	21,815	291	216	196	187	230	373	570	698	825	967	1,272	1,479	1,519	1,565	1,567	1,560	1,445	1,431	1,291	1,233	1,012	830	628	429
WB1	29	21,815	291	216	196	187	230	373	570	698	825	967	1,272	1,479	1,519	1,565	1,567	1,560	1,445	1,431	1,291	1,233	1,012	830	628	429
WB1	30	21,815	291	216	196	187	230	373	570	698	825	967	1,272	1,479	1,519	1,565	1,567	1,560	1,445	1,431	1,291	1,233	1,012	830	628	429
WB1	31	21,815	291	216	196	187	230	373	570	698	825	967	1,272	1,479	1,519	1,565	1,567	1,560	1,445	1,431	1,291	1,233	1,012	830	628	429
WB1	32	21,815	291	216	196	187	230	373	570	698	825	967	1,272	1,479	1,519	1,565	1,567	1,560	1,445	1,431	1,291	1,233	1,012	830	628	429
WB1	33	21,815	291	216	196	187	230	373	570	698	825	967	1,272	1,479	1,519	1,565	1,567	1,560	1,445	1,431	1,291	1,233	1,012	830	628	429
WB1	34	21,815	291	216	196	187	230	373	570	698	825	967	1,272	1,479	1,519	1,565	1,567	1,560	1,445	1,431	1,291	1,233	1,012	830	628	429
WB1	35	21,815	291	216	196	187	230	373	570	698	825	967	1,272	1,479	1,519	1,565	1,567	1,560	1,445	1,431	1,291	1,233	1,012	830	628	429
WB1	36	21,815	291	216	196	187	230	373	570	698	825	967	1,272	1,479	1,519	1,565	1,567	1,560	1,445	1,431	1,291	1,233	1,012	830	628	429
IC1	37	1,140	15	11	10	10	12	19	30	36	43	51	66	77	79	82	82	82	76	75	67	64	53	43	33	22
IC1	38	1,140	15	11	10	10	12	19	30	36	43	51	66	77	79	82	82	82	76	75	67	64	53	43	33	22
IC1	39	1,140	15	11	10	10	12	19	30	36	43	51	66	77	79	82	82	82	76	75	67	64	53	43	33	22
IC1	40	1,140	15	11	10	10	12	19	30	36	43	51	66	77	79	82	82	82	76	75	67	64	53	43	33	22
R1	41	557	7	6	5	5	6	10	15	18	21	25	32	38	39	40	40	40	37	37	33	31	26	21	16	11
R1	42	557	7	6	5	5	6	10	15	18	21	25	32	38	39	40	40	40	37	37	33	31	26	21	16	11
R2	43	84	1	1	1	1	1	1	2	3	3	4	5	6	6	6	6	6	6	6	5	5	4	3	2	2
R2	44	84	1	1	1	1	1	1	2	3	3	4	5	6	6	6	6	6	6	6	5	5	4	3	2	2
R2	45	84	1	1	1	1	1	1	2	3	3	4	5	6	6	6	6	6	6	6	5	5	4	3	2	2
R3	46	56	1	1	1	0	1	1	1	2	2	2	3	4	4	4	4	4	4	4	3	3	3	2	2	1
R3	47	56	1	1	1	0	1	1	1	2	2	2	3	4	4	4	4	4	4	4	3	3	3	2	2	1
R4	48	313	4	3	3	3	3	5	8	10	12	14	18	21	22	22	22	22	21	21	19	18	15	12	9	6
R4	49	313	4	3	3	3	3	5	8	10	12	14	18	21	22	22	22	22	21	21	19	18	15	12	9	6
IC2	50	2,190	29	22	20	19	23	37	57	70	83	97	128	148	153	157	157	157	145	144	130	124	102	83	63	43
IC2	51	2,190	29	22	20	19	23	37	57	70	83	97	128	148	153	157	157	157	145	144	130	124	102	83	63	43
IC2	52	2,190	29	22	20	19	23	37	57	70	83	97	128	148	153	157	157	157	145	144	130	124	102	83	63	43
R5	53	726	10	7	7	6	8	12	19	23	27	32	42	49	51	52	52	52	48	48	43	41	34	28	21	14
R5	54	726	10	7	7	6	8	12	19	23	27	32	42	49	51	52	52	52	48	48	43	41	34	28	21	14
R5	55	726	10	7	7	6	8	12	19	23	27	32	42	49	51	52	52	52	48	48	43	41	34	28	21	14
R5	56	726	10	7	7	6	8	12	19	23	27	32	42	49	51	52	52	52	48	48	43	41	34	28	21	14
R6	57	181	2	2	2	2	2	3	5	6	7	8	11	12	13	13	13	13	12	12	11	10	8	7	5	4
R6	58	181	2	2	2	2	2	3	5	6	7	8	11	12	13	13	13	13	12	12	11	10	8	7	5	4
R6	59	181	2	2	2	2	2	3	5	6	7	8	11	12	13	13	13	13	12	12	11	10	8	7	5	4
R7	60	114	2	1	1	1	1	2	3	4	4	5	7	8	8	8	8	8	8	7	7	6	5	4	3	2
R7	61	114	2	1	1	1	1	2	3	4	4	5	7	8	8	8	8	8	8	7	7	6	5	4	3	2
R7	62	114	2	1	1	1	1	2	3	4	4	5	7	8	8	8	8	8	8	7	7	6	5	4	3	2
R7	63	114	2	1	1	1	1	2	3	4	4	5	7	8	8	8	8	8	8	7	7	6	5	4	3	2
R8	64	590	8	6	5	5	6	10	15	19	22	26	34	40	41	42	42	42	39	39	35	33	27	22	17	12
R8	65	590	8	6	5	5	6	10	15	19	22	26	34	40	41	42	42	42	39	39	35	33	27	22	17	12
R8	66	590	8	6	5	5	6	10	15	19	22	26	34	40	41	42	42	42	39	39	35	33	27	22	17	12
R8	67	590	8	6	5	5	6	10	15	19	22	26	34	40	41	42	42	42	39	39	35	33	27	22	17	12

		Traffic Distribution	1%	1%	1%	1%	1%	2%	3%	3%	4%	4%	6%	7%	7%	7%	7%	7%	7%	7%	6%	6%	5%	4%	3%	2%
			Future (2031) No Build Hourly Traffic Volumes																							
Group Link ID	**Link ID**	**2031 AADT**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
EB1	1	30,569	407	303	274	262	322	523	798	978	1,156	1,355	1,782	2,072	2,129	2,193	2,196	2,185	2,025	2,005	1,809	1,728	1,418	1,163	881	601
EB1	2	30,569	407	303	274	262	322	523	798	978	1,156	1,355	1,782	2,072	2,129	2,193	2,196	2,185	2,025	2,005	1,809	1,728	1,418	1,163	881	601
EB1	3	30,569	407	303	274	262	322	523	798	978	1,156	1,355	1,782	2,072	2,129	2,193	2,196	2,185	2,025	2,005	1,809	1,728	1,418	1,163	881	601
EB1	4	30,569	407	303	274	262	322	523	798	978	1,156	1,355	1,782	2,072	2,129	2,193	2,196	2,185	2,025	2,005	1,809	1,728	1,418	1,163	881	601
EB1	5	30,569	407	303	274	262	322	523	798	978	1,156	1,355	1,782	2,072	2,129	2,193	2,196	2,185	2,025	2,005	1,809	1,728	1,418	1,163	881	601
EB1	6	30,569	407	303	274	262	322	523	798	978	1,156	1,355	1,782	2,072	2,129	2,193	2,196	2,185	2,025	2,005	1,809	1,728	1,418	1,163	881	601
EB1	7	30,569	407	303	274	262	322	523	798	978	1,156	1,355	1,782	2,072	2,129	2,193	2,196	2,185	2,025	2,005	1,809	1,728	1,418	1,163	881	601
EB1	8	30,569	407	303	274	262	322	523	798	978	1,156	1,355	1,782	2,072	2,129	2,193	2,196	2,185	2,025	2,005	1,809	1,728	1,418	1,163	881	601
EB1	9	30,569	407	303	274	262	322	523	798	978	1,156	1,355	1,782	2,072	2,129	2,193	2,196	2,185	2,025	2,005	1,809	1,728	1,418	1,163	881	601
EB1	10	30,569	407	303	274	262	322	523	798	978	1,156	1,355	1,782	2,072	2,129	2,193	2,196	2,185	2,025	2,005	1,809	1,728	1,418	1,163	881	601
EB1	11	30,569	407	303	274	262	322	523	798	978	1,156	1,355	1,782	2,072	2,129	2,193	2,196	2,185	2,025	2,005	1,809	1,728	1,418	1,163	881	601
EB1	12	30,569	407	303	274	262	322	523	798	978	1,156	1,355	1,782	2,072	2,129	2,193	2,196	2,185	2,025	2,005	1,809	1,728	1,418	1,163	881	601
EB1	13	30,569	407	303	274	262	322	523	798	978	1,156	1,355	1,782	2,072	2,129	2,193	2,196	2,185	2,025	2,005	1,809	1,728	1,418	1,163	881	601
EB1	14	30,569	407	303	274	262	322	523	798	978	1,156	1,355	1,782	2,072	2,129	2,193	2,196	2,185	2,025	2,005	1,809	1,728	1,418	1,163	881	601
EB1	15	30,569	407	303	274	262	322	523	798	978	1,156	1,355	1,782	2,072	2,129	2,193	2,196	2,185	2,025	2,005	1,809	1,728	1,418	1,163	881	601
EB2	16	28,912	385	287	260	248	305	495	755	925	1,093	1,282	1,686	1,960	2,014	2,075	2,077	2,067	1,915	1,896	1,711	1,634	1,342	1,100	833	569
EB2	17	28,912	385	287	260	248	305	495	755	925	1,093	1,282	1,686	1,960	2,014	2,075	2,077	2,067	1,915	1,896	1,711	1,634	1,342	1,100	833	569
EB2	18	28,912	385	287	260	248	305	495	755	925	1,093	1,282	1,686	1,960	2,014	2,075	2,077	2,067	1,915	1,896	1,711	1,634	1,342	1,100	833	569
WB2	19	26,922	359	267	242	231	284	460	703	861	1,018	1,194	1,570	1,825	1,875	1,932	1,934	1,925	1,783	1,765	1,593	1,521	1,249	1,025	775	530
WB2	20	26,922	359	267	242	231	284	460	703	861	1,018	1,194	1,570	1,825	1,875	1,932	1,934	1,925	1,783	1,765	1,593	1,521	1,249	1,025	775	530
WB2	21	26,922	359	267	242	231	284	460	703	861	1,018	1,194	1,570	1,825	1,875	1,932	1,934	1,925	1,783	1,765	1,593	1,521	1,249	1,025	775	530
WB1	22	26,479	353	263	238	227	279	453	692	847	1,001	1,174	1,544	1,795	1,844	1,900	1,902	1,893	1,754	1,736	1,567	1,496	1,229	1,008	763	521
WB1	23	26,479	353	263	238	227	279	453	692	847	1,001	1,174	1,544	1,795	1,844	1,900	1,902	1,893	1,754	1,736	1,567	1,496	1,229	1,008	763	521
WB1	24	26,479	353	263	238	227	279	453	692	847	1,001	1,174	1,544	1,795	1,844	1,900	1,902	1,893	1,754	1,736	1,567	1,496	1,229	1,008	763	521
WB1	25	26,479	353	263	238	227	279	453	692	847	1,001	1,174	1,544	1,795	1,844	1,900	1,902	1,893	1,754	1,736	1,567	1,496	1,229	1,008	763	521
WB1	26	26,479	353	263	238	227	279	453	692	847	1,001	1,174	1,544	1,795	1,844	1,900	1,902	1,893	1,754	1,736	1,567	1,496	1,229	1,008	763	521
WB1	27	26,479	353	263	238	227	279	453	692	847	1,001	1,174	1,544	1,795	1,844	1,900	1,902	1,893	1,754	1,736	1,567	1,496	1,229	1,008	763	521
WB1	28	26,479	353	263	238	227	279	453	692	847	1,001	1,174	1,544	1,795	1,844	1,900	1,902	1,893	1,754	1,736	1,567	1,496	1,229	1,008	763	521
WB1	29	26,479	353	263	238	227	279	453	692	847	1,001	1,174	1,544	1,795	1,844	1,900	1,902	1,893	1,754	1,736	1,567	1,496	1,229	1,008	763	521
WB1	30	26,479	353	263	238	227	279	453	692	847	1,001	1,174	1,544	1,795	1,844	1,900	1,902	1,893	1,754	1,736	1,567	1,496	1,229	1,008	763	521
WB1	31	26,479	353	263	238	227	279	453	692	847	1,001	1,174	1,544	1,795	1,844	1,900	1,902	1,893	1,754	1,736	1,567	1,496	1,229	1,008	763	521
WB1	32	26,479	353	263	238	227	279	453	692	847	1,001	1,174	1,544	1,795	1,844	1,900	1,902	1,893	1,754	1,736	1,567	1,496	1,229	1,008	763	521
WB1	33	26,479	353	263	238	227	279	453	692	847	1,001	1,174	1,544	1,795	1,844	1,900	1,902	1,893	1,754	1,736	1,567	1,496	1,229	1,008	763	521
WB1	34	26,479	353	263	238	227	279	453	692	847	1,001	1,174	1,544	1,795	1,844	1,900	1,902	1,893	1,754	1,736	1,567	1,496	1,229	1,008	763	521
WB1	35	26,479	353	263	238	227	279	453	692	847	1,001	1,174	1,544	1,795	1,844	1,900	1,902	1,893	1,754	1,736	1,567	1,496	1,229	1,008	763	521
WB1	36	26,479	353	263	238	227	279	453	692	847	1,001	1,174	1,544	1,795	1,844	1,900	1,902	1,893	1,754	1,736	1,567	1,496	1,229	1,008	763	521
IC1	37	1,384	18	14	12	12	15	24	36	44	52	61	81	94	96	99	99	99	92	91	82	78	64	53	40	27
IC1	38	1,384	18	14	12	12	15	24	36	44	52	61	81	94	96	99	99	99	92	91	82	78	64	53	40	27
IC1	39	1,384	18	14	12	12	15	24	36	44	52	61	81	94	96	99	99	99	92	91	82	78	64	53	40	27
IC1	40	1,384	18	14	12	12	15	24	36	44	52	61	81	94	96	99	99	99	92	91	82	78	64	53	40	27
R1	41	676	9	7	6	6	7	12	18	22	26	30	39	46	47	49	49	48	45	44	40	38	31	26	19	13
R1	42	676	9	7	6	6	7	12	18	22	26	30	39	46	47	49	49	48	45	44	40	38	31	26	19	13
R2	43	102	1	1	1	1	1	2	3	3	4	5	6	7	7	7	7	7	7	7	6	6	5	4	3	2
R2	44	102	1	1	1	1	1	2	3	3	4	5	6	7	7	7	7	7	7	7	6	6	5	4	3	2
R2	45	102	1	1	1	1	1	2	3	3	4	5	6	7	7	7	7	7	7	7	6	6	5	4	3	2
R3	46	68	1	1	1	1	1	1	2	2	3	3	4	5	5	5	5	5	5	4	4	4	3	3	2	1
R3	47	68	1	1	1	1	1	1	2	2	3	3	4	5	5	5	5	5	5	4	4	4	3	3	2	1
R4	48	380	5	4	3	3	4	6	10	12	14	17	22	26	26	27	27	27	25	25	22	21	18	14	11	7
R4	49	380	5	4	3	3	4	6	10	12	14	17	22	26	26	27	27	27	25	25	22	21	18	14	11	7
IC2	50	2,658	35	26	24	23	28	45	69	85	101	118	155	180	185	191	191	190	176	174	157	150	123	101	77	52
IC2	51	2,658	35	26	24	23	28	45	69	85	101	118	155	180	185	191	191	190	176	174	157	150	123	101	77	52
IC2	52	2,658	35	26	24	23	28	45	69	85	101	118	155	180	185	191	191	190	176	174	157	150	123	101	77	52
R5	53	881	12	9	8	8	9	15	23	28	33	39	51	60	61	63	63	63	58	58	52	50	41	34	25	17
R5	54	881	12	9	8	8	9	15	23	28	33	39	51	60	61	63	63	63	58	58	52	50	41	34	25	17
R5	55	881	12	9	8	8	9	15	23	28	33	39	51	60	61	63	63	63	58	58	52	50	41	34	25	17
R5	56	881	12	9	8	8	9	15	23	28	33	39	51	60	61	63	63	63	58	58	52	50	41	34	25	17
R6	57	220	3	2	2	2	2	4	6	7	8	10	13	15	15	16	16	16	15	14	13	12	10	8	6	4
R6	58	220	3	2	2	2	2	4	6	7	8	10	13	15	15	16	16	16	15	14	13	12	10	8	6	4
R6	59	220	3	2	2	2	2	4	6	7	8	10	13	15	15	16	16	16	15	14	13	12	10	8	6	4
R7	60	138	2	1	1	1	1	2	4	4	5	6	8	9	10	10	10	10	9	9	8	8	6	5	4	3
R7	61	138	2	1	1	1	1	2	4	4	5	6	8	9	10	10	10	10	9	9	8	8	6	5	4	3
R7	62	138	2	1	1	1	1	2	4	4	5	6	8	9	10	10	10	10	9	9	8	8	6	5	4	3
R7	63	138	2	1	1	1	1	2	4	4	5	6	8	9	10	10	10	10	9	9	8	8	6	5	4	3
R8	64	716	10	7	6	6	8	12	19	23	27	32	42	49	50	51	51	51	47	47	42	40	33	27	21	14
R8	65	716	10	7	6	6	8	12	19	23	27	32	42	49	50	51	51	51	47	47	42	40	33	27	21	14
R8	66	716	10	7	6	6	8	12	19	23	27	32	42	49	50	51	51	51	47	47	42	40	33	27	21	14
R8	67	716	10	7	6	6	8	12	19	23	27	32	42	49	50	51	51	51	47	47	42	40	33	27	21	14

		Traffic Distribution	1%	1%	1%	1%	1%	2%	3%	3%	4%	4%	6%	7%	7%	7%	7%	7%	7%	7%	6%	6%	5%	4%	3%	2%
			Future (2031) Build Hourly Traffic Volumes																							
Group Link ID	**Link ID**	**2031 AADT**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
EB1	1	34,906	465	346	313	299	368	597	912	1,117	1,320	1,548	2,035	2,366	2,431	2,505	2,508	2,495	2,312	2,289	2,066	1,973	1,620	1,328	1,005	687
EB1	2	34,906	465	346	313	299	368	597	912	1,117	1,320	1,548	2,035	2,366	2,431	2,505	2,508	2,495	2,312	2,289	2,066	1,973	1,620	1,328	1,005	687
EB1	3	34,906	465	346	313	299	368	597	912	1,117	1,320	1,548	2,035	2,366	2,431	2,505	2,508	2,495	2,312	2,289	2,066	1,973	1,620	1,328	1,005	687
EB1	4	34,906	465	346	313	299	368	597	912	1,117	1,320	1,548	2,035	2,366	2,431	2,505	2,508	2,495	2,312	2,289	2,066	1,973	1,620	1,328	1,005	687
EB1	5	34,906	465	346	313	299	368	597	912	1,117	1,320	1,548	2,035	2,366	2,431	2,505	2,508	2,495	2,312	2,289	2,066	1,973	1,620	1,328	1,005	687
EB1	6	34,906	465	346	313	299	368	597	912	1,117	1,320	1,548	2,035	2,366	2,431	2,505	2,508	2,495	2,312	2,289	2,066	1,973	1,620	1,328	1,005	687
EB1	7	34,906	465	346	313	299	368	597	912	1,117	1,320	1,548	2,035	2,366	2,431	2,505	2,508	2,495	2,312	2,289	2,066	1,973	1,620	1,328	1,005	687
EB1	8	34,906	465	346	313	299	368	597	912	1,117	1,320	1,548	2,035	2,366	2,431	2,505	2,508	2,495	2,312	2,289	2,066	1,973	1,620	1,328	1,005	687
EB1	9	34,906	465	346	313	299	368	597	912	1,117	1,320	1,548	2,035	2,366	2,431	2,505	2,508	2,495	2,312	2,289	2,066	1,973	1,620	1,328	1,005	687
EB1	10	34,906	465	346	313	299	368	597	912	1,117	1,320	1,548	2,035	2,366	2,431	2,505	2,508	2,495	2,312	2,289	2,066	1,973	1,620	1,328	1,005	687
EB1	11	34,906	465	346	313	299	368	597	912	1,117	1,320	1,548	2,035	2,366	2,431	2,505	2,508	2,495	2,312	2,289	2,066	1,973	1,620	1,328	1,005	687
EB1	12	34,906	465	346	313	299	368	597	912	1,117	1,320	1,548	2,035	2,366	2,431	2,505	2,508	2,495	2,312	2,289	2,066	1,973	1,620	1,328	1,005	687
EB1	13	34,906	465	346	313	299	368	597	912	1,117	1,320	1,548	2,035	2,366	2,431	2,505	2,508	2,495	2,312	2,289	2,066	1,973	1,620	1,328	1,005	687
EB1	14	34,906	465	346	313	299	368	597	912	1,117	1,320	1,548	2,035	2,366	2,431	2,505	2,508	2,495	2,312	2,289	2,066	1,973	1,620	1,328	1,005	687
EB1	15	34,906	465	346	313	299	368	597	912	1,117	1,320	1,548	2,035	2,366	2,431	2,505	2,508	2,495	2,312	2,289	2,066	1,973	1,620	1,328	1,005	687
EB2	16	33,015	440	327	296	283	348	565	862	1,056	1,249	1,464	1,925	2,238	2,300	2,369	2,372	2,360	2,187	2,165	1,954	1,866	1,532	1,256	951	650
EB2	17	33,015	440	327	296	283	348	565	862	1,056	1,249	1,464	1,925	2,238	2,300	2,369	2,372	2,360	2,187	2,165	1,954	1,866	1,532	1,256	951	650
EB2	18	33,015	440	327	296	283	348	565	862	1,056	1,249	1,464	1,925	2,238	2,300	2,369	2,372	2,360	2,187	2,165	1,954	1,866	1,532	1,256	951	650
WB2	19	30,741	410	305	276	264	324	526	803	984	1,163	1,363	1,792	2,084	2,141	2,206	2,208	2,198	2,036	2,016	1,819	1,737	1,426	1,170	885	605
WB2	20	30,741	410	305	276	264	324	526	803	984	1,163	1,363	1,792	2,084	2,141	2,206	2,208	2,198	2,036	2,016	1,819	1,737	1,426	1,170	885	605
WB2	21	30,741	410	305	276	264	324	526	803	984	1,163	1,363	1,792	2,084	2,141	2,206	2,208	2,198	2,036	2,016	1,819	1,737	1,426	1,170	885	605
WB1	22	30,236	403	300	272	259	319	517	790	968	1,143	1,341	1,763	2,050	2,106	2,170	2,172	2,162	2,003	1,983	1,789	1,709	1,403	1,151	871	595
WB1	23	30,236	403	300	272	259	319	517	790	968	1,143	1,341	1,763	2,050	2,106	2,170	2,172	2,162	2,003	1,983	1,789	1,709	1,403	1,151	871	595
WB1	24	30,236	403	300	272	259	319	517	790	968	1,143	1,341	1,763	2,050	2,106	2,170	2,172	2,162	2,003	1,983	1,789	1,709	1,403	1,151	871	595
WB1	25	30,236	403	300	272	259	319	517	790	968	1,143	1,341	1,763	2,050	2,106	2,170	2,172	2,162	2,003	1,983	1,789	1,709	1,403	1,151	871	595
WB1	26	30,236	403	300	272	259	319	517	790	968	1,143	1,341	1,763	2,050	2,106	2,170	2,172	2,162	2,003	1,983	1,789	1,709	1,403	1,151	871	595
WB1	27	30,236	403	300	272	259	319	517	790	968	1,143	1,341	1,763	2,050	2,106	2,170	2,172	2,162	2,003	1,983	1,789	1,709	1,403	1,151	871	595
WB1	28	30,236	403	300	272	259	319	517	790	968	1,143	1,341	1,763	2,050	2,106	2,170	2,172	2,162	2,003	1,983	1,789	1,709	1,403	1,151	871	595
WB1	29	30,236	403	300	272	259	319	517	790	968	1,143	1,341	1,763	2,050	2,106	2,170	2,172	2,162	2,003	1,983	1,789	1,709	1,403	1,151	871	595
WB1	30	30,236	403	300	272	259	319	517	790	968	1,143	1,341	1,763	2,050	2,106	2,170	2,172	2,162	2,003	1,983	1,789	1,709	1,403	1,151	871	595
WB1	31	30,236	403	300	272	259	319	517	790	968	1,143	1,341	1,763	2,050	2,106	2,170	2,172	2,162	2,003	1,983	1,789	1,709	1,403	1,151	871	595
WB1	32	30,236	403	300	272	259	319	517	790	968	1,143	1,341	1,763	2,050	2,106	2,170	2,172	2,162	2,003	1,983	1,789	1,709	1,403	1,151	871	595
WB1	33	30,236	403	300	272	259	319	517	790	968	1,143	1,341	1,763	2,050	2,106	2,170	2,172	2,162	2,003	1,983	1,789	1,709	1,403	1,151	871	595
WB1	34	30,236	403	300	272	259	319	517	790	968	1,143	1,341	1,763	2,050	2,106	2,170	2,172	2,162	2,003	1,983	1,789	1,709	1,403	1,151	871	595
WB1	35	30,236	403	300	272	259	319	517	790	968	1,143	1,341	1,763	2,050	2,106	2,170	2,172	2,162	2,003	1,983	1,789	1,709	1,403	1,151	871	595
WB1	36	30,236	403	300	272	259	319	517	790	968	1,143	1,341	1,763	2,050	2,106	2,170	2,172	2,162	2,003	1,983	1,789	1,709	1,403	1,151	871	595
IC1	37	1,580	21	16	14	14	17	27	41	51	60	70	92	107	110	113	114	113	105	104	93	89	73	60	46	31
IC1	38	1,580	21	16	14	14	17	27	41	51	60	70	92	107	110	113	114	113	105	104	93	89	73	60	46	31
IC1	39	1,580	21	16	14	14	17	27	41	51	60	70	92	107	110	113	114	113	105	104	93	89	73	60	46	31
IC1	40	1,580	21	16	14	14	17	27	41	51	60	70	92	107	110	113	114	113	105	104	93	89	73	60	46	31
R1	41	772	10	8	7	7	8	13	20	25	29	34	45	52	54	55	55	55	51	51	46	44	36	29	22	15
R1	42	772	10	8	7	7	8	13	20	25	29	34	45	52	54	55	55	55	51	51	46	44	36	29	22	15
R2	43	116	2	1	1	1	1	2	3	4	4	5	7	8	8	8	8	8	8	8	7	7	5	4	3	2
R2	44	116	2	1	1	1	1	2	3	4	4	5	7	8	8	8	8	8	8	8	7	7	5	4	3	2
R2	45	116	2	1	1	1	1	2	3	4	4	5	7	8	8	8	8	8	8	8	7	7	5	4	3	2
IC2	46	3,035	40	30	27	26	32	52	79	97	115	135	177	206	211	218	218	217	201	199	180	172	141	115	87	60
IC2	47	3,035	40	30	27	26	32	52	79	97	115	135	177	206	211	218	218	217	201	199	180	172	141	115	87	60
IC2	48	3,035	40	30	27	26	32	52	79	97	115	135	177	206	211	218	218	217	201	199	180	172	141	115	87	60
R7	49	1,006	13	10	9	9	11	17	26	32	38	45	59	68	70	72	72	72	67	66	60	57	47	38	29	20
R7	50	1,006	13	10	9	9	11	17	26	32	38	45	59	68	70	72	72	72	67	66	60	57	47	38	29	20
R7	51	1,006	13	10	9	9	11	17	26	32	38	45	59	68	70	72	72	72	67	66	60	57	47	38	29	20
R7	52	1,006	13	10	9	9	11	17	26	32	38	45	59	68	70	72	72	72	67	66	60	57	47	38	29	20
R8	53	251	3	2	2	2	3	4	7	8	9	11	15	17	17	18	18	18	17	16	15	14	12	10	7	5
R8	54	251	3	2	2	2	3	4	7	8	9	11	15	17	17	18	18	18	17	16	15	14	12	10	7	5
R8	55	251	3	2	2	2	3	4	7	8	9	11	15	17	17	18	18	18	17	16	15	14	12	10	7	5
R10	56	79	1	1	1	1	1	1	2	3	3	4	5	5	6	6	6	6	5	5	5	4	4	3	2	2
R10	57	79	1	1	1	1	1	1	2	3	3	4	5	5	6	6	6	6	5	5	5	4	4	3	2	2
R10	58	79	1	1	1	1	1	1	2	3	3	4	5	5	6	6	6	6	5	5	5	4	4	3	2	2
R10	59	79	1	1	1	1	1	1	2	3	3	4	5	5	6	6	6	6	5	5	5	4	4	3	2	2
R11	60	502	7	5	5	4	5	9	13	16	19	22	29	34	35	36	36	36	33	33	30	28	23	19	14	10
R11+R12	61	818	11	8	7	7	9	14	21	26	31	36	48	55	57	59	59	58	54	54	48	46	38	31	24	16
R11+R12	62	818	11	8	7	7	9	14	21	26	31	36	48	55	57	59	59	58	54	54	48	46	38	31	24	16
R11+R12	63	818	11	8	7	7	9	14	21	26	31	36	48	55	57	59	59	58	54	54	48	46	38	31	24	16
R4	64	58	1	1	1	0	1	1	2	2	2	3	3	4	4	4	4	4	4	4	3	3	3	2	2	1
R3+R4	65	77	1	1	1	1	1	1	2	2	3	3	4	5	5	6	6	6	5	5	5	4	4	3	2	2
R3+R4	66	77	1	1	1	1	1	1	2	2	3	3	4	5	5	6	6	6	5	5	5	4	4	3	2	2
R3+R4	67	77	1	1	1	1	1	1	2	2	3	3	4	5	5	6	6	6	5	5	5	4	4	3	2	2
R5	68	313	4	3	3	3	3	5	8	10	12	14	18	21	22	22	22	22	21	21	19	18	15	12	9	6
R5	69	313	4	3	3	3	3	5	8	10	12	14	18	21	22	22	22	22	21	21	19	18	15	12	9	6

			Future (2031) Build Hourly Traffic Volumes																							
Group Link ID	**Link ID**	**2031 AADT**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
R5+R6	70	434	6	4	4	4	5	7	11	14	16	19	25	29	30	31	31	31	29	28	26	25	20	17	13	9
R5+R6	71	434	6	4	4	4	5	7	11	14	16	19	25	29	30	31	31	31	29	28	26	25	20	17	13	9
R9	72	79	1	1	1	1	1	1	2	3	3	4	5	5	6	6	6	6	5	5	5	4	4	3	2	2
R9	73	79	1	1	1	1	1	1	2	3	3	4	5	5	6	6	6	6	5	5	5	4	4	3	2	2
R9	74	79	1	1	1	1	1	1	2	3	3	4	5	5	6	6	6	6	5	5	5	4	4	3	2	2
R12	75	316	4	3	3	3	3	5	8	10	12	14	18	21	22	23	23	23	21	21	19	18	15	12	9	6
R6	76	121	2	1	1	1	1	2	3	4	5	5	7	8	8	9	9	9	8	8	7	7	6	5	3	2
R3	77	19	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0

		Traffic Distribution	1%	1%	1%	1%	1%	2%	3%	3%	4%	4%	6%	7%	7%	7%	7%	7%	7%	7%	6%	6%	5%	4%	3%	2%
			Future (2041) No Build Hourly Traffic Volumes																							
Group Link ID	**Link ID**	**2041 AADT**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
EB1	1	34,784	464	345	312	298	367	595	908	1,113	1,315	1,542	2,028	2,358	2,423	2,496	2,499	2,487	2,304	2,281	2,058	1,966	1,614	1,324	1,002	684
EB1	2	34,784	464	345	312	298	367	595	908	1,113	1,315	1,542	2,028	2,358	2,423	2,496	2,499	2,487	2,304	2,281	2,058	1,966	1,614	1,324	1,002	684
EB1	3	34,784	464	345	312	298	367	595	908	1,113	1,315	1,542	2,028	2,358	2,423	2,496	2,499	2,487	2,304	2,281	2,058	1,966	1,614	1,324	1,002	684
EB1	4	34,784	464	345	312	298	367	595	908	1,113	1,315	1,542	2,028	2,358	2,423	2,496	2,499	2,487	2,304	2,281	2,058	1,966	1,614	1,324	1,002	684
EB1	5	34,784	464	345	312	298	367	595	908	1,113	1,315	1,542	2,028	2,358	2,423	2,496	2,499	2,487	2,304	2,281	2,058	1,966	1,614	1,324	1,002	684
EB1	6	34,784	464	345	312	298	367	595	908	1,113	1,315	1,542	2,028	2,358	2,423	2,496	2,499	2,487	2,304	2,281	2,058	1,966	1,614	1,324	1,002	684
EB1	7	34,784	464	345	312	298	367	595	908	1,113	1,315	1,542	2,028	2,358	2,423	2,496	2,499	2,487	2,304	2,281	2,058	1,966	1,614	1,324	1,002	684
EB1	8	34,784	464	345	312	298	367	595	908	1,113	1,315	1,542	2,028	2,358	2,423	2,496	2,499	2,487	2,304	2,281	2,058	1,966	1,614	1,324	1,002	684
EB1	9	34,784	464	345	312	298	367	595	908	1,113	1,315	1,542	2,028	2,358	2,423	2,496	2,499	2,487	2,304	2,281	2,058	1,966	1,614	1,324	1,002	684
EB1	10	34,784	464	345	312	298	367	595	908	1,113	1,315	1,542	2,028	2,358	2,423	2,496	2,499	2,487	2,304	2,281	2,058	1,966	1,614	1,324	1,002	684
EB1	11	34,784	464	345	312	298	367	595	908	1,113	1,315	1,542	2,028	2,358	2,423	2,496	2,499	2,487	2,304	2,281	2,058	1,966	1,614	1,324	1,002	684
EB1	12	34,784	464	345	312	298	367	595	908	1,113	1,315	1,542	2,028	2,358	2,423	2,496	2,499	2,487	2,304	2,281	2,058	1,966	1,614	1,324	1,002	684
EB1	13	34,784	464	345	312	298	367	595	908	1,113	1,315	1,542	2,028	2,358	2,423	2,496	2,499	2,487	2,304	2,281	2,058	1,966	1,614	1,324	1,002	684
EB1	14	34,784	464	345	312	298	367	595	908	1,113	1,315	1,542	2,028	2,358	2,423	2,496	2,499	2,487	2,304	2,281	2,058	1,966	1,614	1,324	1,002	684
EB1	15	34,784	464	345	312	298	367	595	908	1,113	1,315	1,542	2,028	2,358	2,423	2,496	2,499	2,487	2,304	2,281	2,058	1,966	1,614	1,324	1,002	684
EB2	16	32,899	438	326	295	282	347	563	859	1,053	1,244	1,459	1,918	2,230	2,291	2,361	2,363	2,352	2,179	2,157	1,947	1,859	1,527	1,252	948	647
EB2	17	32,899	438	326	295	282	347	563	859	1,053	1,244	1,459	1,918	2,230	2,291	2,361	2,363	2,352	2,179	2,157	1,947	1,859	1,527	1,252	948	647
EB2	18	32,899	438	326	295	282	347	563	859	1,053	1,244	1,459	1,918	2,230	2,291	2,361	2,363	2,352	2,179	2,157	1,947	1,859	1,527	1,252	948	647
WB2	19	30,634	408	304	275	263	323	524	800	980	1,158	1,358	1,786	2,077	2,134	2,198	2,201	2,190	2,029	2,009	1,813	1,731	1,421	1,166	882	603
WB2	20	30,634	408	304	275	263	323	524	800	980	1,158	1,358	1,786	2,077	2,134	2,198	2,201	2,190	2,029	2,009	1,813	1,731	1,421	1,166	882	603
WB2	21	30,634	408	304	275	263	323	524	800	980	1,158	1,358	1,786	2,077	2,134	2,198	2,201	2,190	2,029	2,009	1,813	1,731	1,421	1,166	882	603
WB1	22	30,129	401	299	271	258	318	515	787	964	1,139	1,336	1,757	2,043	2,099	2,162	2,164	2,154	1,996	1,976	1,783	1,703	1,398	1,147	868	593
WB1	23	30,129	401	299	271	258	318	515	787	964	1,139	1,336	1,757	2,043	2,099	2,162	2,164	2,154	1,996	1,976	1,783	1,703	1,398	1,147	868	593
WB1	24	30,129	401	299	271	258	318	515	787	964	1,139	1,336	1,757	2,043	2,099	2,162	2,164	2,154	1,996	1,976	1,783	1,703	1,398	1,147	868	593
WB1	25	30,129	401	299	271	258	318	515	787	964	1,139	1,336	1,757	2,043	2,099	2,162	2,164	2,154	1,996	1,976	1,783	1,703	1,398	1,147	868	593
WB1	26	30,129	401	299	271	258	318	515	787	964	1,139	1,336	1,757	2,043	2,099	2,162	2,164	2,154	1,996	1,976	1,783	1,703	1,398	1,147	868	593
WB1	27	30,129	401	299	271	258	318	515	787	964	1,139	1,336	1,757	2,043	2,099	2,162	2,164	2,154	1,996	1,976	1,783	1,703	1,398	1,147	868	593
WB1	28	30,129	401	299	271	258	318	515	787	964	1,139	1,336	1,757	2,043	2,099	2,162	2,164	2,154	1,996	1,976	1,783	1,703	1,398	1,147	868	593
WB1	29	30,129	401	299	271	258	318	515	787	964	1,139	1,336	1,757	2,043	2,099	2,162	2,164	2,154	1,996	1,976	1,783	1,703	1,398	1,147	868	593
WB1	30	30,129	401	299	271	258	318	515	787	964	1,139	1,336	1,757	2,043	2,099	2,162	2,164	2,154	1,996	1,976	1,783	1,703	1,398	1,147	868	593
WB1	31	30,129	401	299	271	258	318	515	787	964	1,139	1,336	1,757	2,043	2,099	2,162	2,164	2,154	1,996	1,976	1,783	1,703	1,398	1,147	868	593
WB1	32	30,129	401	299	271	258	318	515	787	964	1,139	1,336	1,757	2,043	2,099	2,162	2,164	2,154	1,996	1,976	1,783	1,703	1,398	1,147	868	593
WB1	33	30,129	401	299	271	258	318	515	787	964	1,139	1,336	1,757	2,043	2,099	2,162	2,164	2,154	1,996	1,976	1,783	1,703	1,398	1,147	868	593
WB1	34	30,129	401	299	271	258	318	515	787	964	1,139	1,336	1,757	2,043	2,099	2,162	2,164	2,154	1,996	1,976	1,783	1,703	1,398	1,147	868	593
WB1	35	30,129	401	299	271	258	318	515	787	964	1,139	1,336	1,757	2,043	2,099	2,162	2,164	2,154	1,996	1,976	1,783	1,703	1,398	1,147	868	593
WB1	36	30,129	401	299	271	258	318	515	787	964	1,139	1,336	1,757	2,043	2,099	2,162	2,164	2,154	1,996	1,976	1,783	1,703	1,398	1,147	868	593
IC1	37	1,574	21	16	14	14	17	27	41	50	60	70	92	107	110	113	113	113	104	103	93	89	73	60	45	31
IC1	38	1,574	21	16	14	14	17	27	41	50	60	70	92	107	110	113	113	113	104	103	93	89	73	60	45	31
IC1	39	1,574	21	16	14	14	17	27	41	50	60	70	92	107	110	113	113	113	104	103	93	89	73	60	45	31
IC1	40	1,574	21	16	14	14	17	27	41	50	60	70	92	107	110	113	113	113	104	103	93	89	73	60	45	31
R1	41	769	10	8	7	7	8	13	20	25	29	34	45	52	54	55	55	55	51	50	46	43	36	29	22	15
R1	42	769	10	8	7	7	8	13	20	25	29	34	45	52	54	55	55	55	51	50	46	43	36	29	22	15
R2	43	116	2	1	1	1	1	2	3	4	4	5	7	8	8	8	8	8	8	8	7	7	5	4	3	2
R2	44	116	2	1	1	1	1	2	3	4	4	5	7	8	8	8	8	8	8	8	7	7	5	4	3	2
R2	45	116	2	1	1	1	1	2	3	4	4	5	7	8	8	8	8	8	8	8	7	7	5	4	3	2
R3	46	77	1	1	1	1	1	1	2	2	3	3	4	5	5	6	6	6	5	5	5	4	4	3	2	2
R3	47	77	1	1	1	1	1	1	2	2	3	3	4	5	5	6	6	6	5	5	5	4	4	3	2	2
R4	48	432	6	4	4	4	5	7	11	14	16	19	25	29	30	31	31	31	29	28	26	24	20	16	12	9
R4	49	432	6	4	4	4	5	7	11	14	16	19	25	29	30	31	31	31	29	28	26	24	20	16	12	9
IC2	50	3,025	40	30	27	26	32	52	79	97	114	134	176	205	211	217	217	216	200	198	179	171	140	115	87	60
IC2	51	3,025	40	30	27	26	32	52	79	97	114	134	176	205	211	217	217	216	200	198	179	171	140	115	87	60
IC2	52	3,025	40	30	27	26	32	52	79	97	114	134	176	205	211	217	217	216	200	198	179	171	140	115	87	60
R5	53	1,003	13	10	9	9	11	17	26	32	38	44	58	68	70	72	72	72	66	66	59	57	47	38	29	20
R5	54	1,003	13	10	9	9	11	17	26	32	38	44	58	68	70	72	72	72	66	66	59	57	47	38	29	20
R5	55	1,003	13	10	9	9	11	17	26	32	38	44	58	68	70	72	72	72	66	66	59	57	47	38	29	20
R5	56	1,003	13	10	9	9	11	17	26	32	38	44	58	68	70	72	72	72	66	66	59	57	47	38	29	20
R6	57	250	3	2	2	2	3	4	7	8	9	11	15	17	17	18	18	18	17	16	15	14	12	10	7	5
R6	58	250	3	2	2	2	3	4	7	8	9	11	15	17	17	18	18	18	17	16	15	14	12	10	7	5
R6	59	250	3	2	2	2	3	4	7	8	9	11	15	17	17	18	18	18	17	16	15	14	12	10	7	5
R7	60	157	2	2	1	1	2	3	4	5	6	7	9	11	11	11	11	11	10	10	9	9	7	6	5	3
R7	61	157	2	2	1	1	2	3	4	5	6	7	9	11	11	11	11	11	10	10	9	9	7	6	5	3
R7	62	157	2	2	1	1	2	3	4	5	6	7	9	11	11	11	11	11	10	10	9	9	7	6	5	3
R7	63	157	2	2	1	1	2	3	4	5	6	7	9	11	11	11	11	11	10	10	9	9	7	6	5	3
R8	64	815	11	8	7	7	9	14	21	26	31	36	48	55	57	58	59	58	54	53	48	46	38	31	23	16
R8	65	815	11	8	7	7	9	14	21	26	31	36	48	55	57	58	59	58	54	53	48	46	38	31	23	16
R8	66	815	11	8	7	7	9	14	21	26	31	36	48	55	57	58	59	58	54	53	48	46	38	31	23	16
R8	67	815	11	8	7	7	9	14	21	26	31	36	48	55	57	58	59	58	54	53	48	46	38	31	23	16
R5	68	312	4	3	3	3	3	5	8	10	12	14	18	21	22	22	22	22	21	20	18	18	14	12	9	6
R5	69	312	4	3	3	3	3	5	8	10	12	14	18	21	22	22	22	22	21	20	18	18	14	12	9	6
R5+R6	70	432	6	4	4	4	5	7	11	14	16	19	25	29	30	31	31	31	29	28	26	24	20	16	12	9
R5+R6	71	432	6	4	4	4	5	7	11	14	16	19	25	29	30	31	31	31	29	28	26	24	20	16	12	9
R9	72	79	1	1	1	1	1	1	2	3	3	4	5	5	6	6	6	6	5	5	5	4	4	3	2	2

			Future (2041) No Build Hourly Traffic Volumes																							
Group Link ID	**Link ID**	**2041 AADT**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
R9	73	79	1	1	1	1	1	1	2	3	3	4	5	5	6	6	6	6	5	5	5	4	4	3	2	2
R9	74	79	1	1	1	1	1	1	2	3	3	4	5	5	6	6	6	6	5	5	5	4	4	3	2	2
R12	75	315	4	3	3	3	3	5	8	10	12	14	18	21	22	23	23	23	21	21	19	18	15	12	9	6
R6	76	120	2	1	1	1	1	2	3	4	5	5	7	8	8	9	9	9	8	8	7	7	6	5	3	2
R3	77	19	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0

		Traffic Distribution	1%	1%	1%	1%	1%	2%	3%	3%	4%	4%	6%	7%	7%	7%	7%	7%	7%	7%	6%	6%	5%	4%	3%	2%
			Future (2041) Build Hourly Traffic Volumes																							
Group Link ID	**Link ID**	**2041 AADT**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
EB1	1	43,392	578	430	390	372	458	742	1,133	1,389	1,641	1,924	2,530	2,942	3,022	3,114	3,117	3,102	2,874	2,846	2,568	2,452	2,013	1,651	1,250	854
EB1	2	43,392	578	430	390	372	458	742	1,133	1,389	1,641	1,924	2,530	2,942	3,022	3,114	3,117	3,102	2,874	2,846	2,568	2,452	2,013	1,651	1,250	854
EB1	3	43,392	578	430	390	372	458	742	1,133	1,389	1,641	1,924	2,530	2,942	3,022	3,114	3,117	3,102	2,874	2,846	2,568	2,452	2,013	1,651	1,250	854
EB1	4	43,392	578	430	390	372	458	742	1,133	1,389	1,641	1,924	2,530	2,942	3,022	3,114	3,117	3,102	2,874	2,846	2,568	2,452	2,013	1,651	1,250	854
EB1	5	43,392	578	430	390	372	458	742	1,133	1,389	1,641	1,924	2,530	2,942	3,022	3,114	3,117	3,102	2,874	2,846	2,568	2,452	2,013	1,651	1,250	854
EB1	6	43,392	578	430	390	372	458	742	1,133	1,389	1,641	1,924	2,530	2,942	3,022	3,114	3,117	3,102	2,874	2,846	2,568	2,452	2,013	1,651	1,250	854
EB1	7	43,392	578	430	390	372	458	742	1,133	1,389	1,641	1,924	2,530	2,942	3,022	3,114	3,117	3,102	2,874	2,846	2,568	2,452	2,013	1,651	1,250	854
EB1	8	43,392	578	430	390	372	458	742	1,133	1,389	1,641	1,924	2,530	2,942	3,022	3,114	3,117	3,102	2,874	2,846	2,568	2,452	2,013	1,651	1,250	854
EB1	9	43,392	578	430	390	372	458	742	1,133	1,389	1,641	1,924	2,530	2,942	3,022	3,114	3,117	3,102	2,874	2,846	2,568	2,452	2,013	1,651	1,250	854
EB1	10	43,392	578	430	390	372	458	742	1,133	1,389	1,641	1,924	2,530	2,942	3,022	3,114	3,117	3,102	2,874	2,846	2,568	2,452	2,013	1,651	1,250	854
EB1	11	43,392	578	430	390	372	458	742	1,133	1,389	1,641	1,924	2,530	2,942	3,022	3,114	3,117	3,102	2,874	2,846	2,568	2,452	2,013	1,651	1,250	854
EB1	12	43,392	578	430	390	372	458	742	1,133	1,389	1,641	1,924	2,530	2,942	3,022	3,114	3,117	3,102	2,874	2,846	2,568	2,452	2,013	1,651	1,250	854
EB1	13	43,392	578	430	390	372	458	742	1,133	1,389	1,641	1,924	2,530	2,942	3,022	3,114	3,117	3,102	2,874	2,846	2,568	2,452	2,013	1,651	1,250	854
EB1	14	43,392	578	430	390	372	458	742	1,133	1,389	1,641	1,924	2,530	2,942	3,022	3,114	3,117	3,102	2,874	2,846	2,568	2,452	2,013	1,651	1,250	854
EB1	15	43,392	578	430	390	372	458	742	1,133	1,389	1,641	1,924	2,530	2,942	3,022	3,114	3,117	3,102	2,874	2,846	2,568	2,452	2,013	1,651	1,250	854
EB2	16	41,041	547	407	369	352	433	702	1,072	1,313	1,552	1,820	2,393	2,782	2,859	2,945	2,948	2,934	2,718	2,691	2,429	2,319	1,904	1,562	1,182	808
EB2	17	41,041	547	407	369	352	433	702	1,072	1,313	1,552	1,820	2,393	2,782	2,859	2,945	2,948	2,934	2,718	2,691	2,429	2,319	1,904	1,562	1,182	808
EB2	18	41,041	547	407	369	352	433	702	1,072	1,313	1,552	1,820	2,393	2,782	2,859	2,945	2,948	2,934	2,718	2,691	2,429	2,319	1,904	1,562	1,182	808
WB2	19	38,215	509	379	343	328	403	654	998	1,223	1,445	1,694	2,228	2,591	2,662	2,742	2,745	2,732	2,531	2,506	2,261	2,160	1,773	1,454	1,101	752
WB2	20	38,215	509	379	343	328	403	654	998	1,223	1,445	1,694	2,228	2,591	2,662	2,742	2,745	2,732	2,531	2,506	2,261	2,160	1,773	1,454	1,101	752
WB2	21	38,215	509	379	343	328	403	654	998	1,223	1,445	1,694	2,228	2,591	2,662	2,742	2,745	2,732	2,531	2,506	2,261	2,160	1,773	1,454	1,101	752
WB1	22	37,586	501	373	338	322	396	643	982	1,203	1,421	1,667	2,191	2,548	2,618	2,697	2,700	2,687	2,489	2,465	2,224	2,124	1,744	1,430	1,083	740
WB1	23	37,586	501	373	338	322	396	643	982	1,203	1,421	1,667	2,191	2,548	2,618	2,697	2,700	2,687	2,489	2,465	2,224	2,124	1,744	1,430	1,083	740
WB1	24	37,586	501	373	338	322	396	643	982	1,203	1,421	1,667	2,191	2,548	2,618	2,697	2,700	2,687	2,489	2,465	2,224	2,124	1,744	1,430	1,083	740
WB1	25	37,586	501	373	338	322	396	643	982	1,203	1,421	1,667	2,191	2,548	2,618	2,697	2,700	2,687	2,489	2,465	2,224	2,124	1,744	1,430	1,083	740
WB1	26	37,586	501	373	338	322	396	643	982	1,203	1,421	1,667	2,191	2,548	2,618	2,697	2,700	2,687	2,489	2,465	2,224	2,124	1,744	1,430	1,083	740
WB1	27	37,586	501	373	338	322	396	643	982	1,203	1,421	1,667	2,191	2,548	2,618	2,697	2,700	2,687	2,489	2,465	2,224	2,124	1,744	1,430	1,083	740
WB1	28	37,586	501	373	338	322	396	643	982	1,203	1,421	1,667	2,191	2,548	2,618	2,697	2,700	2,687	2,489	2,465	2,224	2,124	1,744	1,430	1,083	740
WB1	29	37,586	501	373	338	322	396	643	982	1,203	1,421	1,667	2,191	2,548	2,618	2,697	2,700	2,687	2,489	2,465	2,224	2,124	1,744	1,430	1,083	740
WB1	30	37,586	501	373	338	322	396	643	982	1,203	1,421	1,667	2,191	2,548	2,618	2,697	2,700	2,687	2,489	2,465	2,224	2,124	1,744	1,430	1,083	740
WB1	31	37,586	501	373	338	322	396	643	982	1,203	1,421	1,667	2,191	2,548	2,618	2,697	2,700	2,687	2,489	2,465	2,224	2,124	1,744	1,430	1,083	740
WB1	32	37,586	501	373	338	322	396	643	982	1,203	1,421	1,667	2,191	2,548	2,618	2,697	2,700	2,687	2,489	2,465	2,224	2,124	1,744	1,430	1,083	740
WB1	33	37,586	501	373	338	322	396	643	982	1,203	1,421	1,667	2,191	2,548	2,618	2,697	2,700	2,687	2,489	2,465	2,224	2,124	1,744	1,430	1,083	740
WB1	34	37,586	501	373	338	322	396	643	982	1,203	1,421	1,667	2,191	2,548	2,618	2,697	2,700	2,687	2,489	2,465	2,224	2,124	1,744	1,430	1,083	740
WB1	35	37,586	501	373	338	322	396	643	982	1,203	1,421	1,667	2,191	2,548	2,618	2,697	2,700	2,687	2,489	2,465	2,224	2,124	1,744	1,430	1,083	740
WB1	36	37,586	501	373	338	322	396	643	982	1,203	1,421	1,667	2,191	2,548	2,618	2,697	2,700	2,687	2,489	2,465	2,224	2,124	1,744	1,430	1,083	740
IC1	37	1,964	26	19	18	17	21	34	51	63	74	87	115	133	137	141	141	140	130	129	116	111	91	75	57	39
IC1	38	1,964	26	19	18	17	21	34	51	63	74	87	115	133	137	141	141	140	130	129	116	111	91	75	57	39
IC1	39	1,964	26	19	18	17	21	34	51	63	74	87	115	133	137	141	141	140	130	129	116	111	91	75	57	39
IC1	40	1,964	26	19	18	17	21	34	51	63	74	87	115	133	137	141	141	140	130	129	116	111	91	75	57	39
R1	41	960	13	10	9	8	10	16	25	31	36	43	56	65	67	69	69	69	64	63	57	54	45	37	28	19
R1	42	960	13	10	9	8	10	16	25	31	36	43	56	65	67	69	69	69	64	63	57	54	45	37	28	19
R2	43	145	2	1	1	1	2	2	4	5	5	6	8	10	10	10	10	10	10	10	9	8	7	6	4	3
R2	44	145	2	1	1	1	2	2	4	5	5	6	8	10	10	10	10	10	10	10	9	8	7	6	4	3
R2	45	145	2	1	1	1	2	2	4	5	5	6	8	10	10	10	10	10	10	10	9	8	7	6	4	3
IC2	46	3,773	50	37	34	32	40	65	99	121	143	167	220	256	263	271	271	270	250	247	223	213	175	144	109	74
IC2	47	3,773	50	37	34	32	40	65	99	121	143	167	220	256	263	271	271	270	250	247	223	213	175	144	109	74
IC2	48	3,773	50	37	34	32	40	65	99	121	143	167	220	256	263	271	271	270	250	247	223	213	175	144	109	74
R7	49	1,251	17	12	11	11	13	21	33	40	47	55	73	85	87	90	90	89	83	82	74	71	58	48	36	25
R7	50	1,251	17	12	11	11	13	21	33	40	47	55	73	85	87	90	90	89	83	82	74	71	58	48	36	25
R7	51	1,251	17	12	11	11	13	21	33	40	47	55	73	85	87	90	90	89	83	82	74	71	58	48	36	25
R7	52	1,251	17	12	11	11	13	21	33	40	47	55	73	85	87	90	90	89	83	82	74	71	58	48	36	25
R8	53	312	4	3	3	3	3	5	8	10	12	14	18	21	22	22	22	22	21	20	18	18	14	12	9	6
R8	54	312	4	3	3	3	3	5	8	10	12	14	18	21	22	22	22	22	21	20	18	18	14	12	9	6
R8	55	312	4	3	3	3	3	5	8	10	12	14	18	21	22	22	22	22	21	20	18	18	14	12	9	6
R10	56	98	1	1	1	1	1	2	3	3	4	4	6	7	7	7	7	7	6	6	6	6	5	4	3	2
R10	57	98	1	1	1	1	1	2	3	3	4	4	6	7	7	7	7	7	6	6	6	6	5	4	3	2
R10	58	98	1	1	1	1	1	2	3	3	4	4	6	7	7	7	7	7	6	6	6	6	5	4	3	2
R10	59	98	1	1	1	1	1	2	3	3	4	4	6	7	7	7	7	7	6	6	6	6	5	4	3	2
R11	60	624	8	6	6	5	7	11	16	20	24	28	36	42	43	45	45	45	41	41	37	35	29	24	18	12
R11	61	624	8	6	6	5	7	11	16	20	24	28	36	42	43	45	45	45	41	41	37	35	29	24	18	12
R11	62	624	8	6	6	5	7	11	16	20	24	28	36	42	43	45	45	45	41	41	37	35	29	24	18	12
R11	63	624	8	6	6	5	7	11	16	20	24	28	36	42	43	45	45	45	41	41	37	35	29	24	18	12
R4	64	72	1	1	1	1	1	1	2	2	3	3	4	5	5	5	5	5	5	5	4	4	3	3	2	1
R4	65	72	1	1	1	1	1	1	2	2	3	3	4	5	5	5	5	5	5	5	4	4	3	3	2	1
R4	66	72	1	1	1	1	1	1	2	2	3	3	4	5	5	5	5	5	5	5	4	4	3	3	2	1
R4	67	72	1	1	1	1	1	1	2	2	3	3	4	5	5	5	5	5	5	5	4	4	3	3	2	1
R5	68	389	5	4	3	3	4	7	10	12	15	17	23	26	27	28	28	28	26	26	23	22	18	15	11	8
R5	69	389	5	4	3	3	4	7	10	12	15	17	23	26	27	28	28	28	26	26	23	22	18	15	11	8

			Future (2041) Build Hourly Traffic Volumes																							
Group Link ID	**Link ID**	**2041 AADT**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
R5	70	389	5	4	3	3	4	7	10	12	15	17	23	26	27	28	28	28	26	26	23	22	18	15	11	8
R5	71	389	5	4	3	3	4	7	10	12	15	17	23	26	27	28	28	28	26	26	23	22	18	15	11	8
R9	72	98	1	1	1	1	1	2	3	3	4	4	6	7	7	7	7	7	6	6	6	6	5	4	3	2
R9	73	98	1	1	1	1	1	2	3	3	4	4	6	7	7	7	7	7	6	6	6	6	5	4	3	2
R9	74	98	1	1	1	1	1	2	3	3	4	4	6	7	7	7	7	7	6	6	6	6	5	4	3	2
R12	75	393	5	4	4	3	4	7	10	13	15	17	23	27	27	28	28	28	26	26	23	22	18	15	11	8
R6	76	150	2	1	1	1	2	3	4	5	6	7	9	10	10	11	11	11	10	10	9	8	7	6	4	3
R3	77	24	0	0	0	0	0	0	1	1	1	1	1	2	2	2	2	2	2	2	1	1	1	1	1	0
R6	78	150	2	1	1	1	2	3	4	5	6	7	9	10	10	11	11	11	10	10	9	8	7	6	4	3
R3	79	24	0	0	0	0	0	0	1	1	1	1	1	2	2	2	2	2	2	2	1	1	1	1	1	0
R12	80	393	5	4	4	3	4	7	10	13	15	17	23	27	27	28	28	28	26	26	23	22	18	15	11	8

APPENDIX E
Greenhouse Gas Emissions

MTO 401 Cobourg to Colborne EA - Greenhouse Gas Emissions (Existing & No Build)

Link[1]	Start of Link		End of Link		Length (m)[2]	Length (miles)	AADT[3]		Annual Miles travelled (VMT/ year)[4]		CO2 Equivalent Emission Factor (g/VMT)[5]		Annual CO2 Equivalent Emissions (t CO2e/ year)[6]	
							2016	2031	2016	2031	2016	2031	2016	2031
	Easting (m)	Northing (m)	Easting (m)	Northing (m)			Existing	No Build	Existing	No Build	Existing	No Build	Existing	No Build
1	728973	4875119	729089	4875172	128	0.08	25,185	30,569	730,449	886,603	417	326	305	289
2	729089	4875172	729225	4875261	163	0.10	25,185	30,569	930,055	1,128,880	417	326	388	368
3	729225	4875261	729928	4875825	901	0.56	25,185	30,569	5,147,406	6,247,808	417	326	2,146	2,034
4	729928	4875825	730614	4876151	759	0.47	25,185	30,569	4,335,699	5,262,576	417	326	1,807	1,713
5	730614	4876154	731216	4876396	649	0.40	25,185	30,569	3,707,239	4,499,765	417	326	1,545	1,465
6	731216	4876396	731561	4876464	351	0.22	25,185	30,569	2,004,283	2,432,755	417	326	836	792
7	731561	4876464	731929	4876482	369	0.23	25,185	30,569	2,106,802	2,557,189	417	326	878	833
8	731929	4876482	733730	4876324	1808	1.12	25,185	30,569	10,325,667	12,533,068	417	326	4,304	4,080
9	733730	4876324	734146	4876194	435	0.27	25,185	30,569	2,487,336	3,019,073	417	326	1,037	983
10	734146	4876194	734674	4875890	610	0.38	25,185	30,569	3,482,717	4,227,245	417	326	1,452	1,376
11	734674	4875890	734879	4875819	217	0.13	25,185	30,569	1,239,338	1,504,281	417	326	517	490
12	734879	4875819	735157	4875775	282	0.17	25,185	30,569	1,608,636	1,952,527	417	326	671	636
13	735157	4875776	735379	4875799	223	0.14	25,185	30,569	1,275,814	1,548,555	417	326	532	504
14	735374	4875800	737708	4876380	2405	1.49	25,185	30,569	13,739,750	16,677,007	417	326	5,728	5,430
15	737707	4876382	738359	4876591	684	0.43	25,185	30,569	3,909,614	4,745,404	417	326	1,630	1,545
16	738380	4876598	741226	4877530	2995	1.86	23,820	28,912	16,180,571	19,639,491	417	326	6,745	6,394
17	741220	4877524	746022	4878509	4902	3.05	23,820	28,912	26,481,717	32,142,712	417	326	11,039	10,465
18	746011	4878505	748230	4879191	2322	1.44	23,820	28,912	12,546,195	15,228,194	417	326	5,230	4,958
19	748233	4879213	745997	4878530	2337	1.45	22,180	26,922	11,758,115	14,271,955	417	326	4,902	4,647
20	745987	4878533	741201	4877548	4886	3.04	22,180	26,922	24,580,515	29,835,736	417	326	10,247	9,714
21	741201	4877548	738375	4876617	2975	1.85	22,180	26,922	14,964,708	18,164,105	417	326	6,238	5,914
22	738358	4876612	737687	4876391	706	0.44	21,815	26,479	3,493,979	4,240,984	417	326	1,457	1,381
23	737688	4876394	735380	4875815	2379	1.48	21,815	26,479	11,771,276	14,287,949	417	326	4,907	4,652
24	735377	4875820	735161	4875796	217	0.13	21,815	26,479	1,074,915	1,304,730	417	326	448	425
25	735155	4875794	734877	4875832	280	0.17	21,815	26,479	1,387,780	1,684,484	417	326	579	548
26	734879	4875834	734676	4875902	215	0.13	21,815	26,479	1,063,567	1,290,955	417	326	443	420
27	734678	4875903	734152	4876214	611	0.38	21,815	26,479	3,021,509	3,667,501	417	326	1,260	1,194
28	734154	4876214	733727	4876346	447	0.28	21,815	26,479	2,210,200	2,682,736	417	326	921	873
29	733727	4876349	731915	4876505	1818	1.13	21,815	26,479	8,996,618	10,920,075	417	326	3,750	3,555
30	731919	4876510	731540	4876493	379	0.24	21,815	26,479	1,875,803	2,276,845	417	326	782	741
31	731536	4876496	731192	4876421	352	0.22	21,815	26,479	1,739,774	2,111,733	417	326	725	688
32	731198	4876426	730611	4876168	642	0.40	21,815	26,479	3,174,528	3,853,235	417	326	1,323	1,255
33	730606	4876165	729907	4875829	776	0.48	21,815	26,479	3,837,049	4,657,401	417	326	1,600	1,516
34	729908	4875835	729200	4875262	910	0.57	21,815	26,479	4,502,973	5,465,699	417	326	1,877	1,779
35	729204	4875267	729073	4875182	156	0.10	21,815	26,479	772,201	937,296	417	326	322	305
36	729071	4875182	728966	4875135	116	0.07	21,815	26,479	572,188	694,521	417	326	239	226
37	738443	4876065	738344	4876341	293	0.18	1,140	1,384	75,805	92,030	422	322	32	30
38	738344	4876343	738363	4876554	212	0.13	1,140	1,384	54,779	66,504	422	322	23	21

MTO 401 Cobourg to Colborne EA - Greenhouse Gas Emissions (Existing & No Build)

Link[1]	Start of Link		End of Link		Length (m)[2]	Length (miles)	AADT[3]		Annual Miles travelled (VMT/ year)[4]		CO2 Equivalent Emission Factor (g/VMT)[5]		Annual CO2 Equivalent Emissions (t CO2e/ year)[6]	
							2016	2031	2016	2031	2016	2031	2016	2031
	Easting (m)	Northing (m)	Easting (m)	Northing (m)			Existing	No Build	Existing	No Build	Existing	No Build	Existing	No Build
39	738364	4876558	738375	4876653	95	0.06	1,140	1,384	24,597	29,861	422	322	10	10
40	738374	4876655	738466	4877130	484	0.30	1,140	1,384	125,104	151,881	422	322	53	49
41	737851	4876418	738065	4876472	221	0.14	557	676	27,887	33,845	399	298	11	10
42	738065	4876472	738342	4876424	281	0.17	557	676	35,466	43,043	399	298	14	13
43	738803	4876770	738636	4876725	173	0.11	84	102	3,295	4,001	399	298	1	1
44	738637	4876724	738536	4876739	103	0.06	84	102	1,954	2,373	399	298	1	1
45	738537	4876741	738403	4876784	141	0.09	84	102	2,680	3,254	399	298	1	1
46	738361	4876499	738523	4876633	211	0.13	56	68	2,677	3,251	439	329	1	1
47	738524	4876636	738660	4876684	145	0.09	56	68	1,840	2,234	439	329	1	1
48	738372	4876662	738219	4876577	175	0.11	313	380	12,417	15,075	439	329	5	5
49	738218	4876576	738115	4876537	110	0.07	313	380	7,798	9,468	439	329	3	3
50	748358	4878864	748255	4879156	310	0.19	2,190	2,658	153,758	186,615	399	298	61	56
51	748254	4879158	748220	4879252	100	0.06	2,190	2,658	49,601	60,201	399	298	20	18
52	748220	4879251	748118	4879541	307	0.19	2,190	2,658	152,557	185,158	399	298	61	55
53	747918	4879087	748073	4879120	158	0.10	726	881	26,072	31,638	399	298	10	9
54	748068	4879119	748172	4879050	125	0.08	726	881	20,594	24,991	399	298	8	7
55	748173	4879052	748223	4879039	51	0.03	726	881	8,342	10,123	399	298	3	3
56	748224	4879039	748280	4879058	59	0.04	726	881	9,789	11,879	399	298	4	4
57	748640	4879340	748469	4879296	176	0.11	181	220	7,243	8,804	399	298	3	3
58	748471	4879299	748349	4879353	134	0.08	181	220	5,511	6,699	399	298	2	2
59	748349	4879352	748210	4879307	146	0.09	181	220	5,998	7,290	399	298	2	2
60	748276	4879070	748212	4879050	67	0.04	114	138	1,729	2,092	536	403	1	1
61	748215	4879051	748158	4879073	61	0.04	114	138	1,569	1,900	536	403	1	1
62	748158	4879073	748148	4879141	68	0.04	114	138	1,766	2,138	536	403	1	1
63	748151	4879138	748229	4879184	91	0.06	114	138	2,349	2,843	536	403	1	1
64	748211	4879296	748347	4879341	144	0.09	590	716	19,239	23,348	536	403	10	9
65	748346	4879342	748385	4879315	48	0.03	590	716	6,385	7,749	536	403	3	3
66	748387	4879315	748373	4879266	51	0.03	590	716	6,821	8,278	536	403	4	3
67	748372	4879264	748243	4879213	139	0.09	590	716	18,535	22,493	536	403	10	9
Total	-	-	-	-	-	-	-	-	-	-	-	-	89,173	84,520

Notes:

1. Link ID and coordinates selected based on available road traffic data.
2. Calculated based on each link's starting and ending coordinates. Sample calculation:Length (m) = SQRT((Y_2-Y_1)^2+(X_2-X_1)^2)
3. 2016 Existing AADT provided by CIMA. A 1.3% annual growth rate was applied to existing volumes to project future No Build traffic volumes.
4. Annual Vehicle miles travelled in one year (VMT/year) = AADT x Link Length (mil) x 365 day/year
5. MOVES emission factor assigned to each link.
6. Annual CO_2 Equivalent Emissions (kg CO_{2e}/ year) = Annual miles travelled per year (VMT/year) x Weighted CO_2 Emission Factor (g/VMT) / 1000 g / kg / 1000 kg/tonne

MTO 401 Cobourg to Colborne EA - Greenhouse Gas Emissions (2031 Build)

Link[1]	Start of Link		End of Link		Length (m)[2]	Length (miles)	AADT[3]	Annual Miles travelled (VMT/ year)[4]	CO2 Equivalent Emission Factor (g/VMT)[5]	Annual CO2 Equivalent Emissions (t CO2e/ year)[6]
							2031	2031	2031	2031
	Easting (m)	Northing (m)	Easting (m)	Northing (m)			Build	Build	Build	Build
1	728973	4875119	729089	4875172	128	0.08	34,906	1,012,391	326	330
2	729089	4875172	729225	4875261	163	0.10	34,906	1,289,041	326	420
3	729225	4875261	729928	4875825	901	0.56	34,906	7,134,221	326	2,323
4	729928	4875825	730940	4876304	1120	0.70	34,906	8,866,918	326	2,887
5	730940	4876304	731216	4876396	291	0.18	34,906	2,304,496	326	750
6	731216	4876396	731561	4876464	351	0.22	34,906	2,777,904	326	904
7	731561	4876464	731929	4876482	369	0.23	34,906	2,919,993	326	951
8	731929	4876482	733730	4876324	1808	1.12	34,906	14,311,206	326	4,659
9	733730	4876324	734146	4876194	435	0.27	34,906	3,447,407	326	1,122
10	734146	4876194	734674	4875890	610	0.38	34,906	4,826,989	326	1,572
11	734674	4875890	734879	4875819	217	0.13	34,906	1,717,702	326	559
12	734879	4875819	735157	4875775	282	0.17	34,906	2,229,543	326	726
13	735157	4875776	735379	4875799	223	0.14	34,906	1,768,258	326	576
14	735374	4875800	737708	4876380	2405	1.49	34,906	19,043,069	326	6,200
15	737707	4876382	738398	4876604	725	0.45	34,906	5,742,525	326	1,870
16	738415	4876609	741226	4877530	2958	1.84	33,015	22,152,381	326	7,212
17	741220	4877524	746022	4878509	4902	3.05	33,015	36,704,194	326	11,950
18	746011	4878505	748248	4879196	2341	1.45	33,015	17,529,982	326	5,707
19	748242	4879216	745997	4878530	2347	1.46	30,741	16,361,845	326	5,327
20	745987	4878533	741201	4877548	4886	3.04	30,741	34,068,062	326	11,092
21	741201	4877548	738418	4876631	2930	1.82	30,741	20,430,465	326	6,652
22	738402	4876625	737687	4876391	753	0.47	30,236	5,161,171	326	1,680
23	737688	4876394	735380	4875815	2379	1.48	30,236	16,315,210	326	5,312
24	735377	4875820	735161	4875796	217	0.13	30,236	1,489,852	326	485
25	735155	4875794	734877	4875832	280	0.17	30,236	1,923,489	326	626
26	734879	4875834	734676	4875902	215	0.13	30,236	1,474,124	326	480
27	734678	4875903	734152	4876214	611	0.38	30,236	4,187,868	326	1,363
28	734154	4876214	733727	4876346	447	0.28	30,236	3,063,379	326	997
29	733727	4876349	731915	4876505	1818	1.13	30,236	12,469,481	326	4,060
30	731919	4876510	731540	4876493	379	0.24	30,236	2,599,898	326	846
31	731536	4876496	731192	4876421	352	0.22	30,236	2,411,359	326	785
32	731198	4876426	730912	4876312	308	0.19	30,236	2,111,123	326	687
33	730910	4876313	729907	4875829	1114	0.69	30,236	7,638,005	326	2,487
34	729908	4875835	729200	4875262	910	0.57	30,236	6,241,206	326	2,032
35	729204	4875267	729073	4875182	156	0.10	30,236	1,070,285	326	348
36	729071	4875182	728966	4875135	116	0.07	30,236	793,064	326	258
37	738443	4876065	738396	4876408	346	0.22	1,580	123,994	322	40
38	738396	4876409	738402	4876568	159	0.10	1,580	56,901	322	18

MTO 401 Cobourg to Colborne EA - Greenhouse Gas Emissions (2031 Build)

Link[1]	Start of Link		End of Link		Length (m)[2]	Length (miles)	AADT[3]	Annual Miles travelled (VMT/ year)[4]	CO2 Equivalent Emission Factor (g/VMT)[5]	Annual CO2 Equivalent Emissions (t CO2e/ year)[6]
							2031	2031	2031	2031
	Easting (m)	Northing (m)	Easting (m)	Northing (m)			Build	Build	Build	Build
39	738403	4876570	738413	4876658	89	0.06	1,580	31,786	322	10
40	738413	4876659	738466	4877130	474	0.29	1,580	169,958	322	55
41	737851	4876418	738098	4876474	253	0.16	772	44,335	298	13
42	738099	4876473	738392	4876429	297	0.18	772	51,945	298	15
43	739143	4876878	738692	4876746	470	0.29	116	12,356	298	4
44	738690	4876747	738529	4876793	168	0.10	116	4,407	298	1
45	738527	4876793	738443	4876804	84	0.05	116	2,216	298	1
46	748358	4878864	748283	4879115	262	0.16	3,035	180,135	298	54
47	748283	4879114	748229	4879292	186	0.12	3,035	127,959	298	38
48	748229	4879292	748089	4879633	369	0.23	3,035	253,714	298	76
49	747557	4878971	747981	4879082	438	0.27	1,006	99,962	298	30
50	747982	4879082	748079	4879079	97	0.06	1,006	22,159	298	7
51	748079	4879079	748206	4879038	134	0.08	1,006	30,643	298	9
52	748207	4879037	748277	4879054	72	0.04	1,006	16,507	298	5
53	748640	4879340	748467	4879351	173	0.11	251	9,861	298	3
54	748468	4879353	748312	4879419	170	0.11	251	9,657	298	3
55	748310	4879421	748204	4879384	113	0.07	251	6,412	298	2
56	748266	4879149	748268	4879088	61	0.04	79	1,101	403	0
57	748267	4879087	748181	4879068	89	0.06	79	1,587	403	1
58	748181	4879068	748161	4879135	70	0.04	79	1,249	403	1
59	748161	4879135	748248	4879184	100	0.06	79	1,790	403	1
60	748247	4879253	748257	4879374	122	0.08	502	13,836	403	6
61	748258	4879375	748344	4879379	86	0.05	818	16,000	403	6
62	748345	4879379	748371	4879302	81	0.05	818	14,951	403	6
63	748371	4879302	748255	4879224	140	0.09	818	25,931	403	10
64	738393	4876523	738371	4876467	60	0.04	58	793	403	0
65	738370	4876469	738293	4876453	79	0.05	77	1,371	403	1
66	738293	4876456	738280	4876529	74	0.05	77	1,288	403	1
67	738281	4876530	738396	4876593	132	0.08	77	2,297	403	1
68	738423	4876714	738445	4876768	59	0.04	313	4,170	403	2
69	738446	4876768	738517	4876776	71	0.04	313	5,072	403	2
70	738516	4876775	738524	4876717	59	0.04	434	5,779	403	2
71	738523	4876716	738421	4876649	122	0.08	434	11,997	403	5
72	748320	4879007	748311	4879071	64	0.04	79	1,152	329	0
73	748312	4879071	748377	4879190	135	0.08	79	2,420	329	1
74	748375	4879189	748851	4879360	506	0.31	79	9,059	329	3
75	748205	4879354	748255	4879374	54	0.03	316	3,860	403	2
76	738429	4876784	738505	4876777	76	0.05	121	2,086	403	1
77	738394	4876453	738323	4876456	71	0.04	19	308	403	0

MTO 401 Cobourg to Colborne EA - Greenhouse Gas Emissions (2031 Build)

Link[1]	Start of Link		End of Link		Length (m)[2]	Length (miles)	AADT[3]	Annual Miles travelled (VMT/ year)[4]	CO2 Equivalent Emission Factor (g/VMT)[5]	Annual CO2 Equivalent Emissions (t CO2e/ year)[6]
							2031	2031	2031	2031
	Easting (m)	Northing (m)	Easting (m)	Northing (m)			Build	Build	Build	Build
Total	-	-	-	-	-	-		-	-	96,669

Notes:

1. Link ID and coordinates selected based on available road traffic data.
2. Calculated based on each link's starting and ending coordinates. Sample calculation:Length (m) = SQRT((Y_2-Y_1)^2+(X_2-X_1)^2)
3. 2016 Existing AADT provided by CIMA. A 2.2% annual growth rate was applied to existing volumes to project future Build traffic volumes.
4. Annual Vehicle miles travelled in one year (VMT/year) = AADT x Link Length (mil) x 365 day/year
5. MOVES emission factor assigned to each link.
6. Annual CO_2 Equivalent Emissions (kg CO_{2e}/ year) = Annual miles travelled per year (VMT/year) x Weighted CO_2 Emission Factor (g/VMT) / 1000 g / kg / 1000 kg/tonne

MTO 401 Cobourg to Colborne EA - Greenhouse Gas Emissions (2041 No Build)

Link[1]	Start of Link		End of Link		Length (m)[2]	Length (miles)	AADT[3]	Annual Miles travelled (VMT/ year)[4]	CO2 Equivalent Emission Factor (g/VMT)[5]	Annual CO2 Equivalent Emissions (t CO2e/ year)[6]
							2041	2041	2041	2041
	Easting (m)	Northing (m)	Easting (m)	Northing (m)			No Build	No Build	No Build	No Build
1	728973	4875119	729089	4875172	128	0.08	34,784	1,008,852	326	328
2	729089	4875172	729225	4875261	163	0.10	34,784	1,284,535	326	418
3	729225	4875261	729928	4875825	901	0.56	34,784	7,109,286	326	2,315
4	729928	4875825	730940	4876304	1120	0.70	34,784	8,835,927	326	2,877
5	730940	4876304	731216	4876396	291	0.18	34,784	2,296,442	326	748
6	731216	4876396	731561	4876464	351	0.22	34,784	2,768,195	326	901
7	731561	4876464	731929	4876482	369	0.23	34,784	2,909,787	326	947
8	731929	4876482	733730	4876324	1808	1.12	34,784	14,261,187	326	4,643
9	733730	4876324	734146	4876194	435	0.27	34,784	3,435,358	326	1,118
10	734146	4876194	734674	4875890	610	0.38	34,784	4,810,118	326	1,566
11	734674	4875890	734879	4875819	217	0.13	34,784	1,711,699	326	557
12	734879	4875819	735157	4875775	282	0.17	34,784	2,221,751	326	723
13	735157	4875776	735379	4875799	223	0.14	34,784	1,762,078	326	574
14	735374	4875800	737708	4876380	2405	1.49	34,784	18,976,512	326	6,178
15	737707	4876382	738398	4876604	725	0.45	34,784	5,722,454	326	1,863
16	738415	4876609	741226	4877530	2958	1.84	32,899	22,074,547	326	7,187
17	741220	4877524	746022	4878509	4902	3.05	32,899	36,575,232	326	11,908
18	746011	4878505	748248	4879196	2341	1.45	32,899	17,468,389	326	5,687
19	748242	4879216	745997	4878530	2347	1.46	30,634	16,304,895	326	5,308
20	745987	4878533	741201	4877548	4886	3.04	30,634	33,949,481	326	11,053
21	741201	4877548	738418	4876631	2930	1.82	30,634	20,359,353	326	6,628
22	738402	4876625	737687	4876391	753	0.47	30,129	5,142,906	326	1,674
23	737688	4876394	735380	4875815	2379	1.48	30,129	16,257,473	326	5,293
24	735377	4875820	735161	4875796	217	0.13	30,129	1,484,580	326	483
25	735155	4875794	734877	4875832	280	0.17	30,129	1,916,682	326	624
26	734879	4875834	734676	4875902	215	0.13	30,129	1,468,907	326	478
27	734678	4875903	734152	4876214	611	0.38	30,129	4,173,048	326	1,359
28	734154	4876214	733727	4876346	447	0.28	30,129	3,052,538	326	994
29	733727	4876349	731915	4876505	1818	1.13	30,129	12,425,354	326	4,045
30	731919	4876510	731540	4876493	379	0.24	30,129	2,590,697	326	843
31	731536	4876496	731192	4876421	352	0.22	30,129	2,402,826	326	782
32	731198	4876426	730912	4876312	308	0.19	30,129	2,103,652	326	685
33	730910	4876313	729907	4875829	1114	0.69	30,129	7,610,975	326	2,478
34	729908	4875835	729200	4875262	910	0.57	30,129	6,219,119	326	2,025
35	729204	4875267	729073	4875182	156	0.10	30,129	1,066,498	326	347
36	729071	4875182	728966	4875135	116	0.07	30,129	790,257	326	257
37	738443	4876065	738396	4876408	346	0.22	1,574	123,523	322	40
38	738396	4876409	738402	4876568	159	0.10	1,574	56,685	322	18

MTO 401 Cobourg to Colborne EA - Greenhouse Gas Emissions (2041 No Build)

Link[1]	Start of Link		End of Link		Length (m)[2]	Length (miles)	AADT[3]	Annual Miles travelled (VMT/ year)[4]	CO2 Equivalent Emission Factor (g/VMT)[5]	Annual CO2 Equivalent Emissions (t CO2e/ year)[6]
							2041	2041	2041	2041
	Easting (m)	Northing (m)	Easting (m)	Northing (m)			No Build	No Build	No Build	No Build
39	738403	4876570	738413	4876658	89	0.06	1,574	31,666	322	10
40	738413	4876659	738466	4877130	474	0.29	1,574	169,312	322	55
41	737851	4876418	738098	4876474	253	0.16	769	44,163	298	13
42	738099	4876473	738392	4876429	297	0.18	769	51,743	298	15
43	739143	4876878	738692	4876746	470	0.29	116	12,356	298	4
44	738690	4876747	738529	4876793	168	0.10	116	4,407	298	1
45	738527	4876793	738443	4876804	84	0.05	116	2,216	298	1
46	748358	4878864	748283	4879115	262	0.16	3,025	179,542	298	53
47	748283	4879114	748229	4879292	186	0.12	3,025	127,538	298	38
48	748229	4879292	748089	4879633	369	0.23	3,025	252,878	298	75
49	747557	4878971	747981	4879082	438	0.27	1,003	99,664	298	30
50	747982	4879082	748079	4879079	97	0.06	1,003	22,093	298	7
51	748079	4879079	748206	4879038	134	0.08	1,003	30,552	298	9
52	748207	4879037	748277	4879054	72	0.04	1,003	16,458	298	5
53	748640	4879340	748467	4879351	173	0.11	250	9,821	298	3
54	748468	4879353	748312	4879419	170	0.11	250	9,618	298	3
55	748310	4879421	748204	4879384	113	0.07	250	6,386	298	2
56	748266	4879149	748268	4879088	61	0.04	79	1,101	403	0
57	748267	4879087	748181	4879068	89	0.06	79	1,587	403	1
58	748181	4879068	748161	4879135	70	0.04	79	1,249	403	1
59	748161	4879135	748248	4879184	100	0.06	79	1,790	403	1
60	748247	4879253	748257	4879374	122	0.08	500	13,781	403	6
61	748258	4879375	748344	4879379	86	0.05	815	15,941	403	6
62	748345	4879379	748371	4879302	81	0.05	815	14,896	403	6
63	748371	4879302	748255	4879224	140	0.09	815	25,836	403	10
64	738393	4876523	738371	4876467	60	0.04	58	793	403	0
65	738370	4876469	738293	4876453	79	0.05	77	1,371	403	1
66	738293	4876456	738280	4876529	74	0.05	77	1,288	403	1
67	738281	4876530	738396	4876593	132	0.08	77	2,297	403	1
68	738423	4876714	738445	4876768	59	0.04	312	4,156	403	2
69	738446	4876768	738517	4876776	71	0.04	312	5,056	403	2
70	738516	4876775	738524	4876717	59	0.04	432	5,752	403	2
71	738523	4876716	738421	4876649	122	0.08	432	11,941	403	5
72	748320	4879007	748311	4879071	64	0.04	79	1,152	329	0
73	748312	4879071	748377	4879190	135	0.08	79	2,420	329	1
74	748375	4879189	748851	4879360	506	0.31	79	9,059	329	3
75	748205	4879354	748255	4879374	54	0.03	315	3,848	403	2
76	738429	4876784	738505	4876777	76	0.05	120	2,068	403	1
77	738394	4876453	738323	4876456	71	0.04	19	308	403	0

MTO 401 Cobourg to Colborne EA - Greenhouse Gas Emissions (2041 No Build)

Link[1]	Start of Link		End of Link		Length (m)[2]	Length (miles)	AADT[3]	Annual Miles travelled (VMT/ year)[4]	CO2 Equivalent Emission Factor (g/VMT)[5]	Annual CO2 Equivalent Emissions (t CO2e/ year)[6]
							2041	2041	2041	2041
	Easting (m)	Northing (m)	Easting (m)	Northing (m)			No Build	No Build	No Build	No Build
Total	-	-	-	-	-	-		-	-	96,330

Notes:

1. Link ID and coordinates selected based on available road traffic data.
2. Calculated based on each link's starting and ending coordinates. Sample calculation:Length (m) = SQRT((Y_2-Y_1)^2+(X_2-X_1)^2)
3. 2016 Existing AADT provided by CIMA. A 1.3% annual growth rate was applied to existing volumes to project future No Build traffic volumes.
4. Annual Vehicle miles travelled in one year (VMT/year) = AADT x Link Length (mil) x 365 day/year
5. MOVES emission factor assigned to each link.
6. Annual CO_2 Equivalent Emissions (kg CO_{2e}/ year) = Annual miles travelled per year (VMT/year) x Weighted CO_2 Emission Factor (g/VMT) / 1000 g / kg / 1000 kg/tonne

MTO 401 Cobourg to Colborne EA - Greenhouse Gas Emissions (2041 Build)

Link[1]	Start of Link		End of Link		Length (m)[2]	Length (miles)	AADT[3]	Annual Miles travelled (VMT/ year)[4]	CO2 Equivalent Emission Factor (g/VMT)[5]	Annual CO2 Equivalent Emissions (t CO2e/ year)[6]
							2041	2041	2041	2041
	Easting (m)	Northing (m)	Easting (m)	Northing (m)			Build	Build	Build	Build
1	728973	4875119	729089	4875172	128	0.08	43,392	1,258,513	305	384
2	729089	4875172	729225	4875261	163	0.10	43,392	1,602,420	305	489
3	729225	4875261	729928	4875825	901	0.56	43,392	8,868,622	305	2,705
4	729928	4875825	730614	4876151	759	0.47	43,392	7,470,097	305	2,278
5	730614	4876154	731216	4876396	649	0.40	43,392	6,387,319	305	1,948
6	731216	4876396	731561	4876464	351	0.22	43,392	3,453,240	305	1,053
7	731561	4876464	731929	4876482	369	0.23	43,392	3,629,872	305	1,107
8	731929	4876482	733730	4876324	1808	1.12	43,392	17,790,404	305	5,426
9	733730	4876324	734146	4876194	435	0.27	43,392	4,285,506	305	1,307
10	734146	4876194	734674	4875890	610	0.38	43,392	6,000,478	305	1,830
11	734674	4875890	734879	4875819	217	0.13	43,392	2,135,293	305	651
12	734879	4875819	735157	4875775	282	0.17	43,392	2,771,568	305	845
13	735157	4875776	735379	4875799	223	0.14	43,392	2,198,139	305	670
14	735374	4875800	737708	4876380	2405	1.49	43,392	23,672,631	305	7,220
15	737707	4876382	738398	4876604	725	0.45	43,392	7,138,591	305	2,177
16	738415	4876609	741226	4877530	2958	1.84	41,041	27,537,661	305	8,399
17	741220	4877524	746022	4878509	4902	3.05	41,041	45,627,043	305	13,916
18	746011	4878505	748248	4879196	2341	1.45	41,041	21,791,549	305	6,646
19	748242	4879216	745997	4878530	2347	1.46	38,215	20,339,869	305	6,204
20	745987	4878533	741201	4877548	4886	3.04	38,215	42,350,964	305	12,917
21	741201	4877548	738418	4876631	2930	1.82	38,215	25,397,684	305	7,746
22	738402	4876625	737687	4876391	753	0.47	37,586	6,415,788	305	1,957
23	737688	4876394	735380	4875815	2379	1.48	37,586	20,281,236	305	6,186
24	735377	4875820	735161	4875796	217	0.13	37,586	1,852,017	305	565
25	735155	4875794	734877	4875832	280	0.17	37,586	2,391,065	305	729
26	734879	4875834	734676	4875902	215	0.13	37,586	1,832,465	305	559
27	734678	4875903	734152	4876214	611	0.38	37,586	5,205,888	305	1,588
28	734154	4876214	733727	4876346	447	0.28	37,586	3,808,049	305	1,161
29	733727	4876349	731915	4876505	1818	1.13	37,586	15,500,659	305	4,728
30	731919	4876510	731540	4876493	379	0.24	37,586	3,231,901	305	986
31	731536	4876496	731192	4876421	352	0.22	37,586	2,997,531	305	914
32	731198	4876426	730611	4876168	642	0.40	37,586	5,469,541	305	1,668
33	730606	4876165	729907	4875829	776	0.48	37,586	6,611,018	305	2,016
34	729908	4875835	729200	4875262	910	0.57	37,586	7,758,366	305	2,366
35	729204	4875267	729073	4875182	156	0.10	37,586	1,330,458	305	406
36	729071	4875182	728966	4875135	116	0.07	37,586	985,848	305	301
37	738443	4876065	738396	4876408	346	0.22	1,964	154,129	300	46
38	738396	4876409	738402	4876568	159	0.10	1,964	70,730	300	21

MTO 401 Cobourg to Colborne EA - Greenhouse Gas Emissions (2041 Build)

Link[1]	Start of Link		End of Link		Length (m)[2]	Length (miles)	AADT[3]	Annual Miles travelled (VMT/ year)[4]	CO2 Equivalent Emission Factor (g/VMT)[5]	Annual CO2 Equivalent Emissions (t CO2e/ year)[6]
							2041	2041	2041	2041
	Easting (m)	Northing (m)	Easting (m)	Northing (m)			Build	Build	Build	Build
39	738403	4876570	738413	4876658	89	0.06	1,964	39,512	300	12
40	738413	4876659	738466	4877130	474	0.29	1,964	211,264	300	63
41	737851	4876418	738098	4876474	253	0.16	960	55,132	275	15
42	738099	4876473	738392	4876429	297	0.18	960	64,595	275	18
43	739143	4876878	738692	4876746	470	0.29	145	15,445	275	4
44	738690	4876747	738529	4876793	168	0.10	145	5,509	275	2
45	738527	4876793	738443	4876804	84	0.05	145	2,771	275	1
46	748358	4878864	748283	4879115	262	0.16	3,773	223,937	275	62
47	748283	4879114	748229	4879292	186	0.12	3,773	159,074	275	44
48	748229	4879292	748089	4879633	369	0.23	3,773	315,408	275	87
49	747557	4878971	747981	4879082	438	0.27	1,251	124,307	275	34
50	747982	4879082	748079	4879079	97	0.06	1,251	27,555	275	8
51	748079	4879079	748206	4879038	134	0.08	1,251	38,106	275	10
52	748207	4879037	748277	4879054	72	0.04	1,251	20,528	275	6
53	748640	4879340	748467	4879351	173	0.11	312	12,257	275	3
54	748468	4879353	748312	4879419	170	0.11	312	12,003	275	3
55	748310	4879421	748204	4879384	113	0.07	312	7,970	275	2
56	748266	4879149	748268	4879088	61	0.04	98	1,365	373	1
57	748267	4879087	748181	4879068	89	0.06	98	1,969	373	1
58	748181	4879068	748161	4879135	70	0.04	98	1,550	373	1
59	748161	4879135	748248	4879184	100	0.06	98	2,221	373	1
60	748247	4879253	748257	4879374	122	0.08	624	17,198	373	6
61	748258	4879375	748344	4879379	86	0.05	624	12,205	373	5
62	748345	4879379	748371	4879302	81	0.05	624	11,405	373	4
63	748371	4879302	748255	4879224	140	0.09	624	19,781	373	7
64	738393	4876523	738371	4876467	60	0.04	72	984	373	0
65	738370	4876469	738293	4876453	79	0.05	72	1,282	373	0
66	738293	4876456	738280	4876529	74	0.05	72	1,204	373	0
67	738281	4876530	738396	4876593	132	0.08	72	2,148	373	1
68	738423	4876714	738445	4876768	59	0.04	389	5,182	373	2
69	738446	4876768	738517	4876776	71	0.04	389	6,304	373	2
70	738516	4876775	738524	4876717	59	0.04	389	5,180	373	2
71	738523	4876716	738421	4876649	122	0.08	389	10,753	373	4
72	748320	4879007	748311	4879071	64	0.04	98	1,430	304	0
73	748312	4879071	748377	4879190	135	0.08	98	3,002	304	1
74	748375	4879189	748851	4879360	506	0.31	98	11,237	304	3
75	748193	4879351	748122	4879207	161	0.10	393	14,336	304	4
76	738414	4876723	738347	4876637	109	0.07	150	3,710	304	1
77	738403	4876502	738470	4876598	117	0.07	24	637	304	0

MTO 401 Cobourg to Colborne EA - Greenhouse Gas Emissions (2041 Build)

Link[1]	Start of Link		End of Link		Length (m)[2]	Length (miles)	AADT[3]	Annual Miles travelled (VMT/ year)[4]	CO2 Equivalent Emission Factor (g/VMT)[5]	Annual CO2 Equivalent Emissions (t CO2e/ year)[6]
							2041	2041	2041	2041
	Easting (m)	Northing (m)	Easting (m)	Northing (m)			Build	Build	Build	Build
78	738342	4876634	737693	4876401	690	0.43	150	23,475	304	7
79	738472	4876595	739132	4876833	701	0.44	24	3,818	304	1
80	748119	4879209	747234	4878917	933	0.58	393	83,127	304	25
Total	-	-	-	-	-	-		-	-	112,574

Notes:

1. Link ID and coordinates selected based on available road traffic data.
2. Calculated based on each link's starting and ending coordinates. Sample calculation:Length (m) = SQRT((Y_2-Y_1)^2+(X_2-X_1)^2)
3. 2016 Existing AADT provided by CIMA. A 2.2% annual growth rate was applied to existing volumes to project future Build traffic volumes.
4. Annual Vehicle miles travelled in one year (VMT/year) = AADT x Link Length (mil) x 365 day/year
5. MOVES emission factor assigned to each link.
6. Annual CO_2 Equivalent Emissions (kg CO_{2e}/ year) = Annual miles travelled per year (VMT/year) x Weighted CO_2 Emission Factor (g/VMT) / 1000 g / kg / 1000 kg/tonne

APPENDIX F

CAL3QHCR Links

EXISTING (2016) SCENARIO									
Link	Link Type	Start of Link Easting (m)	Start of Link Northing (m)	End of Link Easting (m)	End of Link Northing (m)	Link Height (m)	Mixing Zone Width (m)	Link Description	Traffic Volume ID
1	AG	728972.59	4875118.71	729089.05	4875171.52	0.35	17.10	EB 401, West of Lyle Street	EB1
2	AG	729089.05	4875171.52	729225.15	4875260.90	0.35	17.10	EB 401, West of Lyle Street	EB1
3	AG	729225.15	4875260.90	729928.09	4875824.80	0.35	17.10	EB 401, West of Lyle Street	EB1
4	AG	729928.09	4875824.80	730613.56	4876150.83	0.35	17.10	EB 401, West of Lyle Street	EB1
5	AG	730614.49	4876153.63	731216.43	4876396.34	0.35	13.40	EB 401, West of Lyle Street	EB1
6	AG	731216.43	4876396.34	731560.75	4876463.94	0.35	13.40	EB 401, West of Lyle Street	EB1
7	AG	731560.75	4876463.94	731929.16	4876481.73	0.35	13.40	EB 401, West of Lyle Street	EB1
8	AG	731929.16	4876481.73	733730.01	4876324.15	0.35	13.40	EB 401, West of Lyle Street	EB1
9	AG	733730.01	4876324.15	734145.67	4876194.35	0.35	13.40	EB 401, West of Lyle Street	EB1
10	AG	734145.67	4876194.35	734674.26	4875890.45	0.35	13.40	EB 401, West of Lyle Street	EB1
11	AG	734674.26	4875890.45	734878.99	4875818.61	0.35	13.40	EB 401, West of Lyle Street	EB1
12	AG	734878.99	4875818.61	735157.26	4875775.26	0.35	13.40	EB 401, West of Lyle Street	EB1
13	AG	735156.64	4875775.66	735378.74	4875799.26	0.35	13.40	EB 401, West of Lyle Street	EB1
14	AG	735374.12	4875799.69	737708.38	4876380.49	0.35	13.40	EB 401, West of Lyle Street	EB1
15	AG	737707.29	4876381.65	738358.98	4876590.90	0.35	13.40	EB 401, West of Lyle Street	EB1
16	AG	738379.96	4876597.75	741226.28	4877529.93	0.35	13.40	EB 401, East of Lyle Street	EB2
17	AG	741219.62	4877524.48	746021.54	4878509.23	0.35	13.40	EB 401, East of Lyle Street	EB2
18	AG	746011.07	4878504.67	748229.76	4879190.75	0.35	13.40	EB 401, East of Lyle Street	EB2
19	AG	748232.53	4879212.88	745997.24	4878529.57	0.35	13.40	WB 401, East of Lyle Street	WB2
20	AG	745986.92	4878533.49	741201.03	4877547.69	0.35	13.40	WB 401, East of Lyle Street	WB2
21	AG	741200.65	4877548.42	738375.24	4876617.46	0.35	13.40	WB 401, East of Lyle Street	WB2
22	AG	738357.81	4876611.88	737687.21	4876390.52	0.35	13.40	WB 401, West of Lyle Street	WB1
23	AG	737687.91	4876393.80	735380.11	4875815.46	0.35	13.40	WB 401, West of Lyle Street	WB1
24	AG	735377.27	4875820.19	735161.34	4875796.20	0.35	13.40	WB 401, West of Lyle Street	WB1
25	AG	735155.34	4875794.20	734877.43	4875832.19	0.35	13.40	WB 401, West of Lyle Street	WB1
26	AG	734879.43	4875834.19	734675.50	4875902.16	0.35	13.40	WB 401, West of Lyle Street	WB1
27	AG	734677.86	4875903.44	734152.04	4876214.02	0.35	13.40	WB 401, West of Lyle Street	WB1
28	AG	734153.77	4876213.60	733727.18	4876346.17	0.35	13.40	WB 401, West of Lyle Street	WB1
29	AG	733726.66	4876348.85	731915.00	4876504.82	0.35	13.40	WB 401, West of Lyle Street	WB1
30	AG	731919.19	4876509.92	731540.42	4876493.45	0.35	13.40	WB 401, West of Lyle Street	WB1
31	AG	731535.71	4876495.81	731192.23	4876420.52	0.35	13.40	WB 401, West of Lyle Street	WB1
32	AG	731198.38	4876425.98	730610.87	4876168.09	0.35	13.40	WB 401, West of Lyle Street	WB1
33	AG	730605.99	4876165.33	729907.30	4875828.77	0.35	17.10	WB 401, West of Lyle Street	WB1
34	AG	729907.57	4875835.21	729200.38	4875262.32	0.35	17.10	WB 401, West of Lyle Street	WB1
35	AG	729203.78	4875267.42	729072.88	4875182.42	0.35	17.10	WB 401, West of Lyle Street	WB1
36	AG	729071.18	4875182.42	728965.79	4875134.82	0.35	17.10	WB 401, West of Lyle Street	WB1
37	AG	738443.39	4876064.85	738343.57	4876340.53	0.29	13.40	Lyle Crossing Road NB/SB	IC1
38	AG	738343.57	4876343.33	738363.27	4876554.28	0.29	13.40	Lyle Crossing Road NB/SB	IC1
39	BR	738363.73	4876558.38	738374.71	4876652.87	7.49	13.40	Lyle Crossing Road NB/SB	IC1
40	AG	738374.45	4876654.81	738466.19	4877129.90	0.29	13.40	Lyle Crossing Road NB/SB	IC1
41	AG	737850.86	4876418.46	738064.90	4876472.47	0.26	9.70	Exit Ramp EB to NB/SB Lyle	R1
42	AG	738065.16	4876471.70	738341.78	4876423.76	0.26	9.70	Exit Ramp EB to NB/SB Lyle	R1
43	AG	738803.05	4876769.71	738635.95	4876724.99	0.26	9.70	Exit Ramp WB to NB/SB Lyle	R2
44	AG	738637.42	4876724.50	738535.84	4876738.73	0.26	9.70	Exit Ramp WB to NB/SB Lyle	R2
45	AG	738537.11	4876741.47	738402.97	4876783.83	0.26	9.70	Exit Ramp WB to NB/SB Lyle	R2
46	AG	738360.61	4876499.07	738523.19	4876633.21	0.26	9.70	On Ramp NB/SB Lyle to EB	R3
47	AG	738523.50	4876636.10	738660.06	4876684.39	0.26	9.70	On Ramp NB/SB Lyle to EB	R3
48	AG	738371.86	4876661.75	738218.70	4876577.25	0.26	9.70	On Ramp NB/SB Lyle to WB	R4
49	AG	738217.94	4876576.50	738115.34	4876537.27	0.26	9.70	On Ramp NB/SB Lyle to WB	R4
50	AG	748358.38	4878864.09	748255.19	4879155.95	0.26	13.40	Percy Crossing Road NB/SB	IC2
51	BR	748253.60	4879158.23	748219.80	4879252.20	7.56	13.40	Percy Crossing Road NB/SB	IC2
52	AG	748219.55	4879251.27	748118.10	4879541.18	0.26	13.40	Percy Crossing Road NB/SB	IC2
53	AG	747917.79	4879087.25	748072.62	4879120.42	0.26	9.70	Exit Ramp EB to NB/SB Percy	R5
54	AG	748067.70	4879119.19	748172.15	4879050.38	0.26	9.70	Exit Ramp EB to NB/SB Percy	R5
55	AG	748173.38	4879051.61	748222.53	4879039.32	0.26	9.70	Exit Ramp EB to NB/SB Percy	R5
56	AG	748223.76	4879039.32	748280.28	4879057.76	0.26	9.70	Exit Ramp EB to NB/SB Percy	R5
57	AG	748639.83	4879339.89	748469.03	4879295.66	0.26	9.70	Exit Ramp WB to NB/SB Percy	R6
58	AG	748471.49	4879299.34	748348.61	4879353.41	0.26	9.70	Exit Ramp WB to NB/SB Percy	R6
59	AG	748348.61	4879352.18	748209.75	4879306.72	0.26	9.70	Exit Ramp WB to NB/SB Percy	R6
60	AG	748276.11	4879069.56	748212.21	4879049.90	0.26	9.70	On Ramp NB/SB Percy to EB	R7
61	AG	748214.67	4879051.13	748158.14	4879073.24	0.26	9.70	On Ramp NB/SB Percy to EB	R7
62	AG	748158.14	4879073.24	748148.31	4879140.83	0.26	9.70	On Ramp NB/SB Percy to EB	R7
63	AG	748150.77	4879138.37	748229.41	4879183.84	0.26	9.70	On Ramp NB/SB Percy to EB	R7
64	AG	748210.98	4879295.66	748347.38	4879341.12	0.26	9.70	On Ramp NB/SB Percy to WB	R8
65	AG	748346.15	4879342.35	748385.47	4879315.32	0.26	9.70	On Ramp NB/SB Percy to WB	R8
66	AG	748386.70	4879315.32	748373.18	4879266.17	0.26	9.70	On Ramp NB/SB Percy to WB	R8
67	AG	748371.95	4879263.71	748242.93	4879213.33	0.26	9.70	On Ramp NB/SB Percy to WB	R8

Future (2031) No Build									
Link	Link Type	Start of Link Easting (m)	Start of Link Northing (m)	End of Link Easting (m)	End of Link Northing (m)	Link Height (m)	Mixing Zone Width (m)	Link Description	Traffic Volume ID
1	AG	728972.59	4875118.71	729089.05	4875171.52	0.35	17.10	EB 401, West of Lyle Street	EB1
2	AG	729089.05	4875171.52	729225.15	4875260.90	0.35	17.10	EB 401, West of Lyle Street	EB1
3	AG	729225.15	4875260.90	729928.09	4875824.80	0.35	17.10	EB 401, West of Lyle Street	EB1
4	AG	729928.09	4875824.80	730613.56	4876150.83	0.35	17.10	EB 401, West of Lyle Street	EB1
5	AG	730614.49	4876153.63	731216.43	4876396.34	0.35	13.40	EB 401, West of Lyle Street	EB1
6	AG	731216.43	4876396.34	731560.75	4876463.94	0.35	13.40	EB 401, West of Lyle Street	EB1
7	AG	731560.75	4876463.94	731929.16	4876481.73	0.35	13.40	EB 401, West of Lyle Street	EB1
8	AG	731929.16	4876481.73	733730.01	4876324.15	0.35	13.40	EB 401, West of Lyle Street	EB1
9	AG	733730.01	4876324.15	734145.67	4876194.35	0.35	13.40	EB 401, West of Lyle Street	EB1
10	AG	734145.67	4876194.35	734674.26	4875890.45	0.35	13.40	EB 401, West of Lyle Street	EB1
11	AG	734674.26	4875890.45	734878.99	4875818.61	0.35	13.40	EB 401, West of Lyle Street	EB1
12	AG	734878.99	4875818.61	735157.26	4875775.26	0.35	13.40	EB 401, West of Lyle Street	EB1
13	AG	735156.64	4875775.66	735378.74	4875799.26	0.35	13.40	EB 401, West of Lyle Street	EB1
14	AG	735374.12	4875799.69	737708.38	4876380.49	0.35	13.40	EB 401, West of Lyle Street	EB1
15	AG	737707.29	4876381.65	738358.98	4876590.90	0.35	13.40	EB 401, West of Lyle Street	EB1
16	AG	738379.96	4876597.75	741226.28	4877529.93	0.35	13.40	EB 401, East of Lyle Street	EB2
17	AG	741219.62	4877524.48	746021.54	4878509.23	0.35	13.40	EB 401, East of Lyle Street	EB2
18	AG	746011.07	4878504.67	748229.76	4879190.75	0.35	13.40	EB 401, East of Lyle Street	EB2
19	AG	748232.53	4879212.88	745997.24	4878529.57	0.35	13.40	WB 401, East of Lyle Street	WB2
20	AG	745986.92	4878533.49	741201.03	4877547.69	0.35	13.40	WB 401, East of Lyle Street	WB2
21	AG	741200.65	4877548.42	738375.24	4876617.46	0.35	13.40	WB 401, East of Lyle Street	WB2
22	AG	738357.81	4876611.88	737687.21	4876390.52	0.35	13.40	WB 401, West of Lyle Street	WB1
23	AG	737687.91	4876393.80	735380.11	4875815.46	0.35	13.40	WB 401, West of Lyle Street	WB1
24	AG	735377.27	4875820.19	735161.34	4875796.20	0.35	13.40	WB 401, West of Lyle Street	WB1
25	AG	735155.34	4875794.20	734877.43	4875832.19	0.35	13.40	WB 401, West of Lyle Street	WB1
26	AG	734879.43	4875834.19	734675.50	4875902.16	0.35	13.40	WB 401, West of Lyle Street	WB1
27	AG	734677.86	4875903.44	734152.04	4876214.02	0.35	13.40	WB 401, West of Lyle Street	WB1
28	AG	734153.77	4876213.60	733727.18	4876346.17	0.35	13.40	WB 401, West of Lyle Street	WB1
29	AG	733726.66	4876348.85	731915.00	4876504.82	0.35	13.40	WB 401, West of Lyle Street	WB1
30	AG	731919.19	4876509.92	731540.42	4876493.45	0.35	13.40	WB 401, West of Lyle Street	WB1
31	AG	731535.71	4876495.81	731192.23	4876420.52	0.35	13.40	WB 401, West of Lyle Street	WB1
32	AG	731198.38	4876425.98	730610.87	4876168.09	0.35	13.40	WB 401, West of Lyle Street	WB1
33	AG	730605.99	4876165.33	729907.30	4875828.77	0.35	17.10	WB 401, West of Lyle Street	WB1
34	AG	729907.57	4875835.21	729200.38	4875262.32	0.35	17.10	WB 401, West of Lyle Street	WB1
35	AG	729203.78	4875267.42	729072.88	4875182.42	0.35	17.10	WB 401, West of Lyle Street	WB1
36	AG	729071.18	4875182.42	728965.79	4875134.82	0.35	17.10	WB 401, West of Lyle Street	WB1
37	AG	738443.39	4876064.85	738343.57	4876340.53	0.29	13.40	Lyle Crossing Road NB/SB	IC1
38	AG	738343.57	4876343.33	738363.27	4876554.28	0.29	13.40	Lyle Crossing Road NB/SB	IC1
39	BR	738363.73	4876558.38	738374.71	4876652.87	7.49	13.40	Lyle Crossing Road NB/SB	IC1
40	AG	738374.45	4876654.81	738466.19	4877129.90	0.29	13.40	Lyle Crossing Road NB/SB	IC1
41	AG	737850.86	4876418.46	738064.90	4876472.47	0.26	9.70	Exit Ramp EB to NB/SB Lyle	R1
42	AG	738065.16	4876471.70	738341.78	4876423.76	0.26	9.70	Exit Ramp EB to NB/SB Lyle	R1
43	AG	738803.05	4876769.71	738635.95	4876724.99	0.26	9.70	Exit Ramp WB to NB/SB Lyle	R2
44	AG	738637.42	4876724.50	738535.84	4876738.73	0.26	9.70	Exit Ramp WB to NB/SB Lyle	R2
45	AG	738537.11	4876741.47	738402.97	4876783.83	0.26	9.70	Exit Ramp WB to NB/SB Lyle	R2
46	AG	738360.61	4876499.07	738523.19	4876633.21	0.26	9.70	On Ramp NB/SB Lyle to EB	R3
47	AG	738523.50	4876636.10	738660.06	4876684.39	0.26	9.70	On Ramp NB/SB Lyle to EB	R3
48	AG	738371.86	4876661.75	738218.70	4876577.25	0.26	9.70	On Ramp NB/SB Lyle to WB	R4
49	AG	738217.94	4876576.50	738115.34	4876537.27	0.26	9.70	On Ramp NB/SB Lyle to WB	R4
50	AG	748358.38	4878864.09	748255.19	4879155.95	0.26	13.40	Percy Crossing Road NB/SB	IC2
51	BR	748253.60	4879158.23	748219.80	4879252.20	7.56	13.40	Percy Crossing Road NB/SB	IC2
52	AG	748219.55	4879251.27	748118.10	4879541.18	0.26	13.40	Percy Crossing Road NB/SB	IC2
53	AG	747917.79	4879087.25	748072.62	4879120.42	0.26	9.70	Exit Ramp EB to NB/SB Percy	R5
54	AG	748067.70	4879119.19	748172.15	4879050.38	0.26	9.70	Exit Ramp EB to NB/SB Percy	R5
55	AG	748173.38	4879051.61	748222.53	4879039.32	0.26	9.70	Exit Ramp EB to NB/SB Percy	R5
56	AG	748223.76	4879039.32	748280.28	4879057.76	0.26	9.70	Exit Ramp EB to NB/SB Percy	R5
57	AG	748639.83	4879339.89	748469.03	4879295.66	0.26	9.70	Exit Ramp WB to NB/SB Percy	R6
58	AG	748471.49	4879299.34	748348.61	4879353.41	0.26	9.70	Exit Ramp WB to NB/SB Percy	R6
59	AG	748348.61	4879352.18	748209.75	4879306.72	0.26	9.70	Exit Ramp WB to NB/SB Percy	R6
60	AG	748276.11	4879069.56	748212.21	4879049.90	0.26	9.70	On Ramp NB/SB Percy to EB	R7
61	AG	748214.67	4879051.13	748158.14	4879073.24	0.26	9.70	On Ramp NB/SB Percy to EB	R7
62	AG	748158.14	4879073.24	748148.31	4879140.83	0.26	9.70	On Ramp NB/SB Percy to EB	R7
63	AG	748150.77	4879138.37	748229.41	4879183.84	0.26	9.70	On Ramp NB/SB Percy to EB	R7
64	AG	748210.98	4879295.66	748347.38	4879341.12	0.26	9.70	On Ramp NB/SB Percy to WB	R8
65	AG	748346.15	4879342.35	748385.47	4879315.32	0.26	9.70	On Ramp NB/SB Percy to WB	R8
66	AG	748386.70	4879315.32	748373.18	4879266.17	0.26	9.70	On Ramp NB/SB Percy to WB	R8
67	AG	748371.95	4879263.71	748242.93	4879213.33	0.26	9.70	On Ramp NB/SB Percy to WB	R8

Future (2031) Build									
Link	Link Type	Start of Link Easting (m)	Start of Link Northing (m)	End of Link Easting (m)	End of Link Northing (m)	Link Height (m)	Mixing Zone Width (m)	Link Description	Traffic Volume ID
1	AG	728972.59	4875118.71	729089.05	4875171.52	0.35	17.10	EB 401, West of Lyle Street	EB1
2	AG	729089.05	4875171.52	729225.15	4875260.90	0.35	17.10	EB 401, West of Lyle Street	EB1
3	AG	729225.15	4875260.90	729928.09	4875824.80	0.35	17.10	EB 401, West of Lyle Street	EB1
4	AG	729928.09	4875824.80	730940.26	4876304.35	0.35	17.10	EB 401, West of Lyle Street	EB1
5	AG	730940.26	4876304.35	731216.43	4876396.34	0.35	17.10	EB 401, West of Lyle Street	EB1
6	AG	731216.43	4876396.34	731560.75	4876463.94	0.35	17.10	EB 401, West of Lyle Street	EB1
7	AG	731560.75	4876463.94	731929.16	4876481.73	0.35	17.10	EB 401, West of Lyle Street	EB1
8	AG	731929.16	4876481.73	733730.01	4876324.15	0.35	17.10	EB 401, West of Lyle Street	EB1
9	AG	733730.01	4876324.15	734145.67	4876194.35	0.35	17.10	EB 401, West of Lyle Street	EB1
10	AG	734145.67	4876194.35	734674.26	4875890.45	0.35	17.10	EB 401, West of Lyle Street	EB1
11	AG	734674.26	4875890.45	734878.99	4875818.61	0.35	17.10	EB 401, West of Lyle Street	EB1
12	AG	734878.99	4875818.61	735157.26	4875775.26	0.35	17.10	EB 401, West of Lyle Street	EB1
13	AG	735156.64	4875775.66	735378.74	4875799.26	0.35	17.10	EB 401, West of Lyle Street	EB1
14	AG	735374.12	4875799.69	737708.38	4876380.49	0.35	17.10	EB 401, West of Lyle Street	EB1
15	AG	737707.29	4876381.65	738397.76	4876603.92	0.35	17.10	EB 401, West of Lyle Street	EB1
16	AG	738414.87	4876608.83	741226.28	4877529.93	0.35	17.10	EB 401, East of Lyle Street	EB2
17	AG	741219.62	4877524.48	746021.54	4878509.23	0.35	17.10	EB 401, East of Lyle Street	EB2
18	AG	746011.07	4878504.67	748247.80	4879196.02	0.35	17.10	EB 401, East of Lyle Street	EB2
19	AG	748241.51	4879215.55	745997.24	4878529.57	0.35	17.10	WB 401, East of Lyle Street	WB2
20	AG	745986.92	4878533.49	741201.03	4877547.69	0.35	17.10	WB 401, East of Lyle Street	WB2
21	AG	741200.65	4877548.42	738417.63	4876631.04	0.35	17.10	WB 401, East of Lyle Street	WB2
22	AG	738402.41	4876624.90	737687.21	4876390.52	0.35	17.10	WB 401, West of Lyle Street	WB1
23	AG	737687.91	4876393.80	735380.11	4875815.46	0.35	17.10	WB 401, West of Lyle Street	WB1
24	AG	735377.27	4875820.19	735161.34	4875796.20	0.35	17.10	WB 401, West of Lyle Street	WB1
25	AG	735155.34	4875794.20	734877.43	4875832.19	0.35	17.10	WB 401, West of Lyle Street	WB1
26	AG	734879.43	4875834.19	734675.50	4875902.16	0.35	17.10	WB 401, West of Lyle Street	WB1
27	AG	734677.86	4875903.44	734152.04	4876214.02	0.35	17.10	WB 401, West of Lyle Street	WB1
28	AG	734153.77	4876213.60	733727.18	4876346.17	0.35	17.10	WB 401, West of Lyle Street	WB1
29	AG	733726.66	4876348.85	731915.00	4876504.82	0.35	17.10	WB 401, West of Lyle Street	WB1
30	AG	731919.19	4876509.92	731540.42	4876493.45	0.35	17.10	WB 401, West of Lyle Street	WB1
31	AG	731535.71	4876495.81	731192.23	4876420.52	0.35	17.10	WB 401, West of Lyle Street	WB1
32	AG	731198.38	4876425.98	730912.40	4876312.00	0.35	17.10	WB 401, West of Lyle Street	WB1
33	AG	730910.23	4876313.24	729907.30	4875828.77	0.35	17.10	WB 401, West of Lyle Street	WB1
34	AG	729907.57	4875835.21	729200.38	4875262.32	0.35	17.10	WB 401, West of Lyle Street	WB1
35	AG	729203.78	4875267.42	729072.88	4875182.42	0.35	17.10	WB 401, West of Lyle Street	WB1
36	AG	729071.18	4875182.42	728965.79	4875134.82	0.35	17.10	WB 401, West of Lyle Street	WB1
37	AG	738443.39	4876064.85	738396.48	4876407.67	0.29	13.40	Lyle Crossing Road NB/SB	IC1
38	AG	738396.38	4876408.95	738401.68	4876567.65	0.29	13.40	Lyle Crossing Road NB/SB	IC1
39	BR	738403.14	4876569.90	738413.11	4876658.04	8.29	13.40	Lyle Crossing Road NB/SB	IC1
40	AG	738413.10	4876658.59	738466.19	4877129.90	0.29	13.40	Lyle Crossing Road NB/SB	IC1
41	AG	737850.86	4876418.46	738097.91	4876474.01	0.26	9.70	Exit Ramp EB to NB/SB Lyle	R1
42	AG	738098.94	4876473.24	738392.34	4876429.30	0.26	13.40	Exit Ramp EB to NB/SB Lyle	R1
43	AG	739142.53	4876878.28	738692.04	4876745.55	0.26	9.70	Exit Ramp WB to NB/SB Lyle	R2
44	AG	738690.03	4876747.28	738528.76	4876792.63	0.26	9.70	Exit Ramp WB to NB/SB Lyle	R2
45	AG	738527.07	4876793.28	738443.47	4876803.72	0.26	9.70	Exit Ramp WB to NB/SB Lyle	R2
46	AG	748358.38	4878864.09	748282.68	4879114.60	0.26	13.40	Percy Crossing Road NB/SB	IC2
47	BR	748282.68	4879113.91	748229.27	4879291.97	7.66	13.40	Percy Crossing Road NB/SB	IC2
48	AG	748228.93	4879291.93	748089.43	4879633.09	0.26	13.40	Percy Crossing Road NB/SB	IC2
49	AG	747557.16	4878970.96	747980.99	4879081.94	0.26	9.70	Exit Ramp EB to NB/SB Percy	R7
50	AG	747981.50	4879081.55	748078.58	4879078.74	0.26	9.70	Exit Ramp EB to NB/SB Percy	R7
51	AG	748078.59	4879078.86	748206.44	4879037.73	0.26	9.70	Exit Ramp EB to NB/SB Percy	R7
52	AG	748206.94	4879037.29	748277.24	4879054.42	0.26	9.70	Exit Ramp EB to NB/SB Percy	R7
53	AG	748639.83	4879339.89	748467.00	4879351.42	0.26	9.70	Exit Ramp WB to NB/SB Percy	R8
54	AG	748468.45	4879353.08	748312.17	4879419.04	0.26	9.70	Exit Ramp WB to NB/SB Percy	R8
55	AG	748310.04	4879420.59	748203.55	4879383.87	0.26	9.70	Exit Ramp WB to NB/SB Percy	R8
56	AG	748265.69	4879149.36	748268.41	4879087.99	0.26	9.70	On Ramp SB Percy to EB	R10
57	AG	748267.29	4879087.23	748180.85	4879067.78	0.26	9.70	On Ramp SB Percy to EB	R10
58	AG	748180.85	4879067.98	748160.91	4879134.80	0.26	9.70	On Ramp SB Percy to EB	R10
59	AG	748160.99	4879135.27	748248.25	4879183.94	0.26	9.70	On Ramp SB Percy to EB	R10
60	AG	748246.73	4879252.84	748256.70	4879373.95	0.26	9.70	On Ramp NB/SB Percy to WB	R11
61	AG	748258.07	4879374.53	748344.19	4879379.02	0.26	9.70	On Ramp NB/SB Percy to WB	R11+R12
62	AG	748345.10	4879378.70	748370.58	4879302.24	0.26	9.70	On Ramp NB/SB Percy to WB	R11+R12
63	AG	748371.40	4879301.56	748255.34	4879223.68	0.26	9.70	On Ramp NB/SB Percy to WB	R11+R12
64	AG	738392.62	4876523.04	738371.15	4876466.74	0.26	9.70	On Ramp SB Lyle to EB	R4
65	AG	738370.19	4876469.13	738293.38	4876452.91	0.26	9.70	On Ramp SB Lyle to EB	R3+R4
66	AG	738292.91	4876456.25	738279.55	4876528.76	0.26	9.70	On Ramp SB Lyle to EB	R3+R4
67	AG	738280.98	4876530.19	738396.43	4876593.17	0.26	9.70	On Ramp SB Lyle to EB	R3+R4
68	AG	738422.94	4876713.57	738445.28	4876767.89	0.26	9.70	On Ramp NB Lyle to WB	R5
69	AG	738445.76	4876768.36	738516.85	4876775.52	0.26	9.70	On Ramp NB Lyle to WB	R5
70	AG	738516.37	4876775.04	738524.01	4876716.83	0.26	9.70	On Ramp NB Lyle to WB	R5+R6
71	AG	738523.05	4876716.36	738421.42	4876649.08	0.26	9.70	On Ramp NB Lyle to WB	R5+R6
72	AG	748319.73	4879007.42	748311.21	4879071.18	0.26	9.70	On Ramp NB Percy to EB	R9
73	AG	748312.48	4879071.40	748377.32	4879189.90	0.26	9.70	On Ramp NB Percy to EB	R9
74	AG	748375.45	4879189.08	748851.14	4879360.33	0.26	9.70	On Ramp NB Percy to EB	R9
75	AG	748205.24	4879354.48	748255.34	4879374.25	0.26	9.70	On Ramp SB Percy to WB	R12
76	AG	738429.36	4876784.47	738505.02	4876777.32	0.29	9.70	On Ramp SB Lyle to WB	R6
77	AG	738394.05	4876453.27	738322.68	4876456.38	0.29	9.70	On Ramp NB Lyle to EB	R3

Future (2041) No Build									
Link	Link Type	Start of Link Easting (m)	Start of Link Northing (m)	End of Link Easting (m)	End of Link Northing (m)	Link Height (m)	Mixing Zone Width (m)	Link Description	Traffic Volume ID
1	AG	728972.59	4875118.71	729089.05	4875171.52	0.35	17.10	EB 401, West of Lyle Street	EB1
2	AG	729089.05	4875171.52	729225.15	4875260.90	0.35	17.10	EB 401, West of Lyle Street	EB1
3	AG	729225.15	4875260.90	729928.09	4875824.80	0.35	17.10	EB 401, West of Lyle Street	EB1
4	AG	729928.09	4875824.80	730940.26	4876304.35	0.35	17.10	EB 401, West of Lyle Street	EB1
5	AG	730940.26	4876304.35	731216.43	4876396.34	0.35	17.10	EB 401, West of Lyle Street	EB1
6	AG	731216.43	4876396.34	731560.75	4876463.94	0.35	17.10	EB 401, West of Lyle Street	EB1
7	AG	731560.75	4876463.94	731929.16	4876481.73	0.35	17.10	EB 401, West of Lyle Street	EB1
8	AG	731929.16	4876481.73	733730.01	4876324.15	0.35	17.10	EB 401, West of Lyle Street	EB1
9	AG	733730.01	4876324.15	734145.67	4876194.35	0.35	17.10	EB 401, West of Lyle Street	EB1
10	AG	734145.67	4876194.35	734674.26	4875890.45	0.35	17.10	EB 401, West of Lyle Street	EB1
11	AG	734674.26	4875890.45	734878.99	4875818.61	0.35	17.10	EB 401, West of Lyle Street	EB1
12	AG	734878.99	4875818.61	735157.26	4875775.26	0.35	17.10	EB 401, West of Lyle Street	EB1
13	AG	735156.64	4875775.66	735378.74	4875799.26	0.35	17.10	EB 401, West of Lyle Street	EB1
14	AG	735374.12	4875799.69	737708.38	4876380.49	0.35	17.10	EB 401, West of Lyle Street	EB1
15	AG	737707.29	4876381.65	738397.76	4876603.92	0.35	17.10	EB 401, West of Lyle Street	EB1
16	AG	738414.87	4876608.83	741226.28	4877529.93	0.35	17.10	EB 401, East of Lyle Street	EB2
17	AG	741219.62	4877524.48	746021.54	4878509.23	0.35	17.10	EB 401, East of Lyle Street	EB2
18	AG	746011.07	4878504.67	748247.80	4879196.02	0.35	17.10	EB 401, East of Lyle Street	EB2
19	AG	748241.51	4879215.55	745997.24	4878529.57	0.35	17.10	WB 401, East of Lyle Street	WB2
20	AG	745986.92	4878533.49	741201.03	4877547.69	0.35	17.10	WB 401, East of Lyle Street	WB2
21	AG	741200.65	4877548.42	738417.63	4876631.04	0.35	17.10	WB 401, East of Lyle Street	WB2
22	AG	738402.41	4876624.90	737687.21	4876390.52	0.35	17.10	WB 401, West of Lyle Street	WB1
23	AG	737687.91	4876393.80	735380.11	4875815.46	0.35	17.10	WB 401, West of Lyle Street	WB1
24	AG	735377.27	4875820.19	735161.34	4875796.20	0.35	17.10	WB 401, West of Lyle Street	WB1
25	AG	735155.34	4875794.20	734877.43	4875832.19	0.35	17.10	WB 401, West of Lyle Street	WB1
26	AG	734879.43	4875834.19	734675.50	4875902.16	0.35	17.10	WB 401, West of Lyle Street	WB1
27	AG	734677.86	4875903.44	734152.04	4876214.02	0.35	17.10	WB 401, West of Lyle Street	WB1
28	AG	734153.77	4876213.60	733727.18	4876346.17	0.35	17.10	WB 401, West of Lyle Street	WB1
29	AG	733726.66	4876348.85	731915.00	4876504.82	0.35	17.10	WB 401, West of Lyle Street	WB1
30	AG	731919.19	4876509.92	731540.42	4876493.45	0.35	17.10	WB 401, West of Lyle Street	WB1
31	AG	731535.71	4876495.81	731192.23	4876420.52	0.35	17.10	WB 401, West of Lyle Street	WB1
32	AG	731198.38	4876425.98	730912.40	4876312.00	0.35	17.10	WB 401, West of Lyle Street	WB1
33	AG	730910.23	4876313.24	729907.30	4875828.77	0.35	17.10	WB 401, West of Lyle Street	WB1
34	AG	729907.57	4875835.21	729200.38	4875262.32	0.35	17.10	WB 401, West of Lyle Street	WB1
35	AG	729203.78	4875267.42	729072.88	4875182.42	0.35	17.10	WB 401, West of Lyle Street	WB1
36	AG	729071.18	4875182.42	728965.79	4875134.82	0.35	17.10	WB 401, West of Lyle Street	WB1
37	AG	738443.39	4876064.85	738396.48	4876407.67	0.29	13.40	Lyle Crossing Road NB/SB	IC1
38	AG	738396.38	4876408.95	738401.68	4876567.65	0.29	13.40	Lyle Crossing Road NB/SB	IC1
39	BR	738403.14	4876569.90	738413.11	4876658.04	8.29	13.40	Lyle Crossing Road NB/SB	IC1
40	AG	738413.10	4876658.59	738466.19	4877129.90	0.29	13.40	Lyle Crossing Road NB/SB	IC1
41	AG	737850.86	4876418.46	738097.91	4876474.01	0.26	9.70	Exit Ramp EB to NB/SB Lyle	R1
42	AG	738098.94	4876473.24	738392.34	4876429.30	0.26	13.40	Exit Ramp EB to NB/SB Lyle	R1
43	AG	739142.53	4876878.28	738692.04	4876745.55	0.26	9.70	Exit Ramp WB to NB/SB Lyle	R2
44	AG	738690.03	4876747.28	738528.76	4876792.63	0.26	9.70	Exit Ramp WB to NB/SB Lyle	R2
45	AG	738527.07	4876793.28	738443.47	4876803.72	0.26	9.70	Exit Ramp WB to NB/SB Lyle	R2
46	AG	748358.38	4878864.09	748282.68	4879114.60	0.26	13.40	Percy Crossing Road NB/SB	IC2
47	BR	748282.68	4879113.91	748229.27	4879291.97	7.66	13.40	Percy Crossing Road NB/SB	IC2
48	AG	748228.93	4879291.93	748089.43	4879633.09	0.26	13.40	Percy Crossing Road NB/SB	IC2
49	AG	747557.16	4878970.96	747980.99	4879081.94	0.26	9.70	Exit Ramp EB to NB/SB Percy	R7
50	AG	747981.50	4879081.55	748078.58	4879078.74	0.26	9.70	Exit Ramp EB to NB/SB Percy	R7
51	AG	748078.59	4879078.86	748206.44	4879037.73	0.26	9.70	Exit Ramp EB to NB/SB Percy	R7
52	AG	748206.94	4879037.29	748277.24	4879054.42	0.26	9.70	Exit Ramp EB to NB/SB Percy	R7
53	AG	748639.83	4879339.89	748467.00	4879351.42	0.26	9.70	Exit Ramp WB to NB/SB Percy	R8
54	AG	748468.45	4879353.08	748312.17	4879419.04	0.26	9.70	Exit Ramp WB to NB/SB Percy	R8
55	AG	748310.04	4879420.59	748203.55	4879383.87	0.26	9.70	Exit Ramp WB to NB/SB Percy	R8
56	AG	748265.69	4879149.36	748268.41	4879087.99	0.26	9.70	On Ramp SB Percy to EB	R10
57	AG	748267.29	4879087.23	748180.85	4879067.78	0.26	9.70	On Ramp SB Percy to EB	R10
58	AG	748180.85	4879067.98	748160.91	4879134.80	0.26	9.70	On Ramp SB Percy to EB	R10
59	AG	748160.99	4879135.27	748248.25	4879183.94	0.26	9.70	On Ramp SB Percy to EB	R10
60	AG	748246.73	4879252.84	748256.70	4879373.95	0.26	9.70	On Ramp NB/SB Percy to WB	R11
61	AG	748258.07	4879374.53	748344.19	4879379.02	0.26	9.70	On Ramp NB/SB Percy to WB	R11+R12
62	AG	748345.10	4879378.70	748370.58	4879302.24	0.26	9.70	On Ramp NB/SB Percy to WB	R11+R12
63	AG	748371.40	4879301.56	748255.34	4879223.68	0.26	9.70	On Ramp NB/SB Percy to WB	R11+R12
64	AG	738392.62	4876523.04	738371.15	4876466.74	0.26	9.70	On Ramp SB Lyle to EB	R4
65	AG	738370.19	4876469.13	738293.38	4876452.91	0.26	9.70	On Ramp SB Lyle to EB	R3+R4
66	AG	738292.91	4876456.25	738279.55	4876528.76	0.26	9.70	On Ramp SB Lyle to EB	R3+R4
67	AG	738280.98	4876530.19	738396.43	4876593.17	0.26	9.70	On Ramp SB Lyle to EB	R3+R4
68	AG	738422.94	4876713.57	738445.28	4876767.89	0.26	9.70	On Ramp NB Lyle to WB	R5
69	AG	738445.76	4876768.36	738516.85	4876775.52	0.26	9.70	On Ramp NB Lyle to WB	R5
70	AG	738516.37	4876775.04	738524.01	4876716.83	0.26	9.70	On Ramp NB Lyle to WB	R5+R6
71	AG	738523.05	4876716.36	738421.42	4876649.08	0.26	9.70	On Ramp NB Lyle to WB	R5+R6
72	AG	748319.73	4879007.42	748311.21	4879071.18	0.26	9.70	On Ramp NB Percy to EB	R9
73	AG	748312.48	4879071.40	748377.32	4879189.90	0.26	9.70	On Ramp NB Percy to EB	R9
74	AG	748375.45	4879189.08	748851.14	4879360.33	0.26	9.70	On Ramp NB Percy to EB	R9
75	AG	748205.24	4879354.48	748255.34	4879374.25	0.26	9.70	On Ramp SB Percy to WB	R12
76	AG	738429.36	4876784.47	738505.02	4876777.32	0.29	9.70	On Ramp SB Lyle to WB	R6
77	AG	738394.05	4876453.27	738322.68	4876456.38	0.29	9.70	On Ramp NB Lyle to EB	R3

Future (2041) Build									
Link	Link Type	Start of Link Easting (m)	Start of Link Northing (m)	End of Link Easting (m)	End of Link Northing (m)	Link Height (m)	Mixing Zone Width (m)	Link Description	Traffic Volume ID
1	AG	728972.59	4875118.71	729089.05	4875171.52	0.35	17.10	EB 401, West of Lyle Street	EB1
2	AG	729089.05	4875171.52	729225.15	4875260.90	0.35	17.10	EB 401, West of Lyle Street	EB1
3	AG	729225.15	4875260.90	729928.09	4875824.80	0.35	17.10	EB 401, West of Lyle Street	EB1
4	AG	729928.09	4875824.80	730613.56	4876150.83	0.35	17.10	EB 401, West of Lyle Street	EB1
5	AG	730614.49	4876153.63	731216.43	4876396.34	0.35	20.80	EB 401, West of Lyle Street	EB1
6	AG	731216.43	4876396.34	731560.75	4876463.94	0.35	20.80	EB 401, West of Lyle Street	EB1
7	AG	731560.75	4876463.94	731929.16	4876481.73	0.35	20.80	EB 401, West of Lyle Street	EB1
8	AG	731929.16	4876481.73	733730.01	4876324.15	0.35	20.80	EB 401, West of Lyle Street	EB1
9	AG	733730.01	4876324.15	734145.67	4876194.35	0.35	20.80	EB 401, West of Lyle Street	EB1
10	AG	734145.67	4876194.35	734674.26	4875890.45	0.35	20.80	EB 401, West of Lyle Street	EB1
11	AG	734674.26	4875890.45	734878.99	4875818.61	0.35	20.80	EB 401, West of Lyle Street	EB1
12	AG	734878.99	4875818.61	735157.26	4875775.26	0.35	20.80	EB 401, West of Lyle Street	EB1
13	AG	735156.64	4875775.66	735378.74	4875799.26	0.35	20.80	EB 401, West of Lyle Street	EB1
14	AG	735374.12	4875799.69	737708.38	4876380.49	0.35	20.80	EB 401, West of Lyle Street	EB1
15	AG	737707.29	4876381.65	738397.76	4876603.92	0.35	20.80	EB 401, West of Lyle Street	EB1
16	AG	738414.87	4876608.83	741226.28	4877529.93	0.35	20.80	EB 401, East of Lyle Street	EB2
17	AG	741219.62	4877524.48	746021.54	4878509.23	0.35	20.80	EB 401, East of Lyle Street	EB2
18	AG	746011.07	4878504.67	748247.80	4879196.02	0.35	20.80	EB 401, East of Lyle Street	EB2
19	AG	748241.51	4879215.55	745997.24	4878529.57	0.35	20.80	WB 401, East of Lyle Street	WB2
20	AG	745986.92	4878533.49	741201.03	4877547.69	0.35	20.80	WB 401, East of Lyle Street	WB2
21	AG	741200.65	4877548.42	738417.63	4876631.04	0.35	20.80	WB 401, East of Lyle Street	WB2
22	AG	738402.41	4876624.90	737687.21	4876390.52	0.35	20.80	WB 401, West of Lyle Street	WB1
23	AG	737687.91	4876393.80	735380.11	4875815.46	0.35	20.80	WB 401, West of Lyle Street	WB1
24	AG	735377.27	4875820.19	735161.34	4875796.20	0.35	20.80	WB 401, West of Lyle Street	WB1
25	AG	735155.34	4875794.20	734877.43	4875832.19	0.35	20.80	WB 401, West of Lyle Street	WB1
26	AG	734879.43	4875834.19	734675.50	4875902.16	0.35	20.80	WB 401, West of Lyle Street	WB1
27	AG	734677.86	4875903.44	734152.04	4876214.02	0.35	20.80	WB 401, West of Lyle Street	WB1
28	AG	734153.77	4876213.60	733727.18	4876346.17	0.35	20.80	WB 401, West of Lyle Street	WB1
29	AG	733726.66	4876348.85	731915.00	4876504.82	0.35	20.80	WB 401, West of Lyle Street	WB1
30	AG	731919.19	4876509.92	731540.42	4876493.45	0.35	20.80	WB 401, West of Lyle Street	WB1
31	AG	731535.71	4876495.81	731192.23	4876420.52	0.35	20.80	WB 401, West of Lyle Street	WB1
32	AG	731198.38	4876425.98	730610.98	4876167.83	0.35	20.80	WB 401, West of Lyle Street	WB1
33	AG	730605.99	4876165.33	729907.30	4875828.77	0.35	17.10	WB 401, West of Lyle Street	WB1
34	AG	729907.57	4875835.21	729200.38	4875262.32	0.35	17.10	WB 401, West of Lyle Street	WB1
35	AG	729203.78	4875267.42	729072.88	4875182.42	0.35	17.10	WB 401, West of Lyle Street	WB1
36	AG	729071.18	4875182.42	728965.79	4875134.82	0.35	17.10	WB 401, West of Lyle Street	WB1
37	AG	738443.39	4876064.85	738396.48	4876407.67	0.29	13.40	Lyle Crossing Road NB/SB	IC1
38	AG	738396.38	4876408.95	738401.68	4876567.65	0.29	13.40	Lyle Crossing Road NB/SB	IC1
39	BR	738403.14	4876569.90	738413.11	4876658.04	8.29	13.40	Lyle Crossing Road NB/SB	IC1
40	AG	738413.10	4876658.59	738466.19	4877129.90	0.29	13.40	Lyle Crossing Road NB/SB	IC1
41	AG	737850.86	4876418.46	738097.91	4876474.01	0.26	9.70	Exit Ramp EB to NB/SB Lyle	R1
42	AG	738098.94	4876473.24	738392.34	4876429.30	0.26	13.40	Exit Ramp EB to NB/SB Lyle	R1
43	AG	739142.53	4876878.28	738692.04	4876745.55	0.26	9.70	Exit Ramp WB to NB/SB Lyle	R2
44	AG	738690.03	4876747.28	738528.76	4876792.63	0.26	9.70	Exit Ramp WB to NB/SB Lyle	R2
45	AG	738527.07	4876793.28	738443.47	4876803.72	0.26	9.70	Exit Ramp WB to NB/SB Lyle	R2
46	AG	748358.38	4878864.09	748282.68	4879114.60	0.26	13.40	Percy Crossing Road NB/SB	IC2
47	BR	748282.68	4879113.91	748229.27	4879291.97	7.66	13.40	Percy Crossing Road NB/SB	IC2
48	AG	748228.93	4879291.93	748089.43	4879633.09	0.26	13.40	Percy Crossing Road NB/SB	IC2
49	AG	747557.16	4878970.96	747980.99	4879081.94	0.26	9.70	Exit Ramp EB to NB/SB Percy	R7
50	AG	747981.50	4879081.55	748078.58	4879078.74	0.26	9.70	Exit Ramp EB to NB/SB Percy	R7
51	AG	748078.59	4879078.86	748206.44	4879037.73	0.26	9.70	Exit Ramp EB to NB/SB Percy	R7
52	AG	748206.94	4879037.29	748277.24	4879054.42	0.26	9.70	Exit Ramp EB to NB/SB Percy	R7
53	AG	748639.83	4879339.89	748467.00	4879351.42	0.26	9.70	Exit Ramp WB to NB/SB Percy	R8
54	AG	748468.45	4879353.08	748312.17	4879419.04	0.26	9.70	Exit Ramp WB to NB/SB Percy	R8
55	AG	748310.04	4879420.59	748203.55	4879383.87	0.26	9.70	Exit Ramp WB to NB/SB Percy	R8
56	AG	748265.69	4879149.36	748268.41	4879087.99	0.26	9.70	On Ramp SB Percy to EB	R10
57	AG	748267.29	4879087.23	748180.85	4879067.78	0.26	9.70	On Ramp SB Percy to EB	R10
58	AG	748180.85	4879067.98	748160.91	4879134.80	0.26	9.70	On Ramp SB Percy to EB	R10
59	AG	748160.99	4879135.27	748248.25	4879183.94	0.26	9.70	On Ramp SB Percy to EB	R10
60	AG	748246.73	4879252.84	748256.70	4879373.95	0.26	9.70	On Ramp NB Percy to WB	R11
61	AG	748258.07	4879374.53	748344.19	4879379.02	0.26	9.70	On Ramp NB Percy to WB	R11
62	AG	748345.10	4879378.70	748370.58	4879302.24	0.26	9.70	On Ramp NB Percy to WB	R11
63	AG	748371.40	4879301.56	748255.34	4879223.68	0.26	9.70	On Ramp NB Percy to WB	R11
64	AG	738392.62	4876523.04	738371.15	4876466.74	0.26	9.70	On Ramp SB Lyle to EB	R4
65	AG	738370.19	4876469.13	738293.38	4876452.91	0.26	9.70	On Ramp SB Lyle to EB	R4
66	AG	738292.91	4876456.25	738279.55	4876528.76	0.26	9.70	On Ramp SB Lyle to EB	R4
67	AG	738280.98	4876530.19	738396.43	4876593.17	0.26	9.70	On Ramp SB Lyle to EB	R4
68	AG	738422.94	4876713.57	738445.28	4876767.89	0.26	9.70	On Ramp NB Lyle to WB	R5
69	AG	738445.76	4876768.36	738516.85	4876775.52	0.26	9.70	On Ramp NB Lyle to WB	R5
70	AG	738516.37	4876775.04	738524.01	4876716.83	0.26	9.70	On Ramp NB Lyle to WB	R5
71	AG	738523.05	4876716.36	738421.42	4876649.08	0.26	9.70	On Ramp NB Lyle to WB	R5
72	AG	748319.73	4879007.42	748311.21	4879071.18	0.26	9.70	On Ramp NB Percy to EB	R9
73	AG	748312.48	4879071.40	748377.32	4879189.90	0.26	9.70	On Ramp NB Percy to EB	R9
74	AG	748375.45	4879189.08	748851.14	4879360.33	0.26	9.70	On Ramp NB Percy to EB	R9
75	AG	748193.03	4879351.42	748122.31	4879206.96	0.26	9.70	On Ramp SB Percy to WB	R12
76	AG	738414.40	4876722.96	738346.88	4876637.33	0.29	9.70	On Ramp SB Lyle to WB	R6
77	AG	738403.15	4876501.89	738470.44	4876597.67	0.29	9.70	On Ramp NB Lyle to EB	R3
78	AG	738342.01	4876634.29	737692.60	4876400.97	0.29	9.70	On Ramp SB Lyle to WB	R6
79	AG	738471.81	4876594.74	739131.57	4876832.65	0.29	9.70	On Ramp NB Lyle to EB	R3
80	AG	748119.43	4879208.51	747233.69	4878916.56	0.26	9.70	On Ramp SB Percy to WB	R12

APPENDIX G

Receptor Specific Modelled Results

EXISTING (2016) SCENARIO																			
Background Concentration (µg/m^3)	362	362	21.8	21.2	9.4	24.1	13.0	6.4	5.3E-05	2.3E-05	0.70	0.39	0.063	0.023	2.2	3.5	1.2	0.073	0.030
Predicted Project Concentrations (µg/m^3)																			
Receptor ID	CO	CO	NO_2	NO_2	NO_2	PM_{10}	$PM_{2.5}$	$PM_{2.5}$	B(a)P	B(a)P	Benzene	Benzene	1,3-Butadiene	1,3-Butadiene	Formaldehyde	Acetaldehyde	Acetaldehyde	Acrolein	Acrolein
	1-hr	8-hr	1-hr	24-hr	annual	24-hr	24-hr	annual	24-hr	annual	24-hr	annual	24-hr	annual	24-hr	0.5-hr	24-hr	1-hr	24-hr
R-001	317.7	217.0	17.3	1.6	2.3	3.4	1.6	0.5	1.2E-04	3.8E-05	0.027	0.0085	0.0054	0.0017	0.12	0.7	0.06	0.10	0.010
R-002	627.7	409.9	34.2	2.7	2.1	5.4	2.6	0.5	1.9E-04	4.1E-05	0.044	0.0093	0.0088	0.0019	0.20	1.4	0.09	0.20	0.016
R-003	703.2	385.8	38.3	2.4	1.8	4.9	2.3	0.5	1.8E-04	3.4E-05	0.040	0.0078	0.008	0.0016	0.18	1.6	0.09	0.23	0.014
R-004	656.6	337.6	35.8	2.2	2.2	4.4	2.1	0.6	1.6E-04	4.3E-05	0.036	0.0099	0.0072	0.002	0.16	1.5	0.08	0.21	0.013
R-005	592.5	289.3	32.3	2.0	1.9	3.8	1.9	0.5	1.5E-04	3.7E-05	0.033	0.0084	0.0066	0.0017	0.15	1.4	0.07	0.19	0.012
R-006	286.2	192.9	15.6	1.1	1.4	2.0	1.0	0.3	8.3E-05	2.1E-05	0.019	0.0049	0.0038	0.001	0.09	0.7	0.04	0.09	0.007
R-007	322.7	217.0	17.6	1.3	1.7	2.4	1.2	0.3	9.6E-05	2.6E-05	0.022	0.0059	0.0044	0.0012	0.10	0.7	0.05	0.10	0.008
R-008	516.1	265.2	28.1	1.7	1.5	3.4	1.7	0.4	1.3E-04	2.9E-05	0.029	0.0065	0.0058	0.0013	0.13	1.2	0.06	0.17	0.010
R-009	827.3	385.8	45.1	2.5	2.3	5.2	2.4	0.6	1.8E-04	4.7E-05	0.042	0.0106	0.0084	0.0021	0.19	1.9	0.09	0.27	0.015
R-010	620.5	289.3	33.8	1.9	2.0	3.9	1.8	0.5	1.4E-04	4.0E-05	0.032	0.009	0.0063	0.0018	0.14	1.4	0.07	0.20	0.011
R-011	801.0	446.1	43.7	2.0	2.1	4.0	1.9	0.5	1.4E-04	4.0E-05	0.033	0.0092	0.0066	0.0018	0.15	1.8	0.07	0.26	0.012
R-012	324.7	217.0	17.7	1.2	1.2	2.1	1.1	0.3	8.8E-05	2.0E-05	0.020	0.0045	0.004	0.0009	0.09	0.7	0.04	0.11	0.007
R-013	387.8	253.2	21.1	1.4	1.5	2.6	1.3	0.3	1.0E-04	2.3E-05	0.024	0.0053	0.0047	0.0011	0.11	0.9	0.05	0.13	0.009
R-014	497.1	325.5	27.1	1.8	1.9	3.5	1.7	0.4	1.3E-04	3.1E-05	0.030	0.007	0.0061	0.0014	0.14	1.1	0.06	0.16	0.011
R-015	579.4	373.7	31.6	2.1	2.0	4.0	2.0	0.4	1.5E-04	3.3E-05	0.035	0.0074	0.0069	0.0015	0.16	1.3	0.07	0.19	0.012
R-016	690.6	301.4	37.6	1.9	2.4	3.9	1.9	0.6	1.4E-04	4.5E-05	0.032	0.0103	0.0064	0.0021	0.15	1.6	0.07	0.22	0.012
R-017	425.1	180.8	23.2	1.2	1.4	2.3	1.1	0.3	8.7E-05	2.6E-05	0.020	0.0059	0.004	0.0012	0.09	1.0	0.04	0.14	0.007
R-018	351.8	192.9	19.2	1.4	1.5	2.7	1.3	0.4	1.0E-04	2.8E-05	0.023	0.0064	0.0046	0.0013	0.10	0.8	0.05	0.11	0.008
R-019	388.1	217.0	21.1	1.6	1.7	3.2	1.5	0.4	1.1E-04	3.2E-05	0.026	0.0072	0.0052	0.0014	0.12	0.9	0.06	0.13	0.009
R-020	629.1	277.3	34.3	1.9	1.9	3.7	1.8	0.4	1.4E-04	3.1E-05	0.031	0.007	0.0062	0.0014	0.14	1.4	0.07	0.20	0.011
R-021	411.9	217.0	22.4	1.7	1.8	3.5	1.6	0.4	1.2E-04	3.3E-05	0.028	0.0076	0.0056	0.0015	0.13	0.9	0.06	0.13	0.010
R-022	438.7	204.9	23.9	1.7	1.6	3.2	1.6	0.4	1.2E-04	3.0E-05	0.028	0.0069	0.0055	0.0014	0.13	1.0	0.06	0.14	0.010
R-023	477.0	289.3	26.0	1.7	2.0	3.5	1.6	0.4	1.2E-04	3.1E-05	0.028	0.0071	0.0057	0.0014	0.13	1.1	0.06	0.15	0.010
R-024	485.6	277.3	26.5	1.7	1.9	3.5	1.7	0.4	1.3E-04	3.1E-05	0.029	0.007	0.0057	0.0014	0.13	1.1	0.06	0.16	0.010
R-025	480.8	265.2	26.2	1.6	1.8	3.3	1.6	0.4	1.2E-04	2.9E-05	0.027	0.0067	0.0054	0.0013	0.12	1.1	0.06	0.16	0.010
R-026	360.3	180.8	19.6	1.1	1.2	2.2	1.0	0.2	7.8E-05	1.8E-05	0.018	0.004	0.0036	0.0008	0.08	0.8	0.04	0.12	0.006
R-027	372.8	192.9	20.3	1.1	1.2	2.2	1.1	0.2	8.0E-05	1.9E-05	0.018	0.0042	0.0037	0.0008	0.08	0.9	0.04	0.12	0.007
R-028	365.5	156.7	19.9	1.1	1.1	2.5	1.1	0.3	8.4E-05	2.1E-05	0.019	0.0048	0.0038	0.001	0.09	0.8	0.04	0.12	0.007
R-029	531.7	289.3	28.9	1.8	2.2	3.6	1.7	0.5	1.3E-04	3.5E-05	0.029	0.0079	0.0058	0.0016	0.13	1.2	0.06	0.17	0.011
R-030	328.0	192.9	17.9	1.4	1.3	2.8	1.3	0.3	1.0E-04	2.5E-05	0.023	0.0058	0.0046	0.0012	0.10	0.8	0.05	0.11	0.008
R-031	435.3	229.1	23.7	1.6	2.0	3.1	1.5	0.4	1.2E-04	3.1E-05	0.026	0.0071	0.0052	0.0014	0.12	1.0	0.06	0.14	0.009
R-032	415.2	229.1	22.6	1.5	1.9	3.0	1.4	0.4	1.1E-04	3.0E-05	0.025	0.0068	0.005	0.0014	0.11	1.0	0.05	0.13	0.009
R-033	684.8	337.6	37.3	2.4	2.2	4.3	2.2	0.6	1.8E-04	4.4E-05	0.040	0.0099	0.008	0.002	0.18	1.6	0.09	0.22	0.015
R-034	289.3	168.8	15.8	1.1	1.3	2.1	1.0	0.3	8.0E-05	2.1E-05	0.018	0.0047	0.0036	0.0009	0.08	0.7	0.04	0.09	0.007
R-035	346.8	192.9	18.9	1.3	1.5	2.5	1.2	0.3	9.4E-05	2.4E-05	0.021	0.0054	0.0043	0.0011	0.10	0.8	0.05	0.11	0.008
R-036	424.6	192.9	23.1	1.4	1.2	2.4	1.2	0.3	1.0E-04	2.4E-05	0.023	0.0054	0.0046	0.0011	0.10	1.0	0.05	0.14	0.008
R-037	287.2	180.8	15.6	1.1	1.2	2.0	1.0	0.2	7.7E-05	1.8E-05	0.018	0.0042	0.0035	0.0008	0.08	0.7	0.04	0.09	0.006
R-038	353.1	192.9	19.2	1.2	1.3	2.3	1.1	0.3	8.8E-05	1.9E-05	0.020	0.0044	0.004	0.0009	0.09	0.8	0.04	0.11	0.007
R-039	404.5	192.9	22.0	1.3	1.2	2.3	1.2	0.2	9.2E-05	1.9E-05	0.021	0.0042	0.0042	0.0008	0.10	0.9	0.04	0.13	0.008
R-040	464.9	204.9	25.3	1.3	1.2	2.4	1.2	0.2	9.6E-05	1.8E-05	0.022	0.0042	0.0044	0.0008	0.10	1.1	0.05	0.15	0.008
R-041	312.1	168.8	17.0	1.2	0.9	2.5	1.2	0.3	8.7E-05	1.8E-05	0.020	0.0041	0.004	0.0008	0.09	0.7	0.04	0.10	0.007
R-042	388.2	168.8	21.2	1.1	0.8	2.0	1.0	0.2	8.2E-05	1.3E-05	0.019	0.0029	0.0037	0.0006	0.08	0.9	0.04	0.13	0.007
R-043	417.5	217.0	22.7	1.5	0.6	2.9	1.4	0.2	1.1E-04	1.1E-05	0.025	0.0024	0.005	0.0005	0.11	1.0	0.05	0.13	0.009
Maximum	827.3	446.1	45.1	2.7	2.4	5.4	2.6	0.6	1.9E-04	4.7E-05	0.044	0.0106	0.0088	0.0021	0.20	1.9	0.09	0.27	0.016

Note:

1. Maximum predicted concentrations are presented in the table.

FUTURE INTERIM NO BUILD SCENARIO

Background Concentration (µg/m^3)	362	362	21.8	21.2	9.4	24.1	13.0	6.4	5.3E-05	2.3E-05	0.70	0.39	0.063	0.023	2.2	3.5	1.2	0.073	0.030
	Predicted Project Concentrations (µg/m^3)																		
Receptor ID	CO	CO	NO_2	NO_2	NO_2	PM_{10}	$PM_{2.5}$	$PM_{2.5}$	B(a)P	B(a)P	Benzene	Benzene	1,3-Butadiene	1,3-Butadiene	Formaldehyde	Acetaldehyde	Acetaldehyde	Acrolein	Acrolein
	1-hr	8-hr	1-hr	24-hr	annual	24-hr	24-hr	annual	24-hr	annual	24-hr	annual	24-hr	annual	24-hr	0.5-hr	24-hr	1-hr	24-hr
R-001	104.6	72.3	10.5	1.0	1.4	3.1	0.9	0.3	1.3E-05	4.1E-06	0.004	1.2E-03	4.0E-04	1.3E-04	0.03	0.15	0.01	0.01	0.001
R-002	206.6	132.6	20.8	1.6	1.3	4.9	1.4	0.3	2.1E-05	4.5E-06	0.006	1.4E-03	6.6E-04	1.4E-04	0.05	0.30	0.02	0.03	0.002
R-003	231.5	120.6	23.3	1.5	1.1	4.4	1.3	0.3	2.0E-05	3.8E-06	0.006	1.1E-03	6.0E-04	1.2E-04	0.05	0.33	0.02	0.03	0.002
R-004	216.2	108.5	21.8	1.3	1.3	4.0	1.2	0.3	1.7E-05	4.8E-06	0.005	1.4E-03	5.4E-04	1.5E-04	0.04	0.31	0.02	0.03	0.002
R-005	195.1	96.4	19.7	1.2	1.1	3.4	1.0	0.3	1.6E-05	4.1E-06	0.005	1.2E-03	5.0E-04	1.3E-04	0.04	0.28	0.01	0.03	0.002
R-006	94.2	60.3	9.5	0.7	0.8	1.8	0.6	0.2	9.2E-06	2.4E-06	0.003	7.0E-04	2.8E-04	7.3E-05	0.02	0.14	0.01	0.01	0.001
R-007	106.2	72.3	10.7	0.8	1.0	2.2	0.7	0.2	1.1E-05	2.9E-06	0.003	9.0E-04	3.3E-04	8.9E-05	0.03	0.15	0.01	0.01	0.001
R-008	170.0	84.4	17.1	1.1	0.9	3.1	0.9	0.2	1.4E-05	3.2E-06	0.004	9.0E-04	4.3E-04	9.8E-05	0.03	0.24	0.01	0.02	0.001
R-009	272.3	132.6	27.5	1.5	1.4	4.7	1.3	0.3	2.0E-05	5.1E-06	0.006	1.5E-03	6.3E-04	1.6E-04	0.05	0.39	0.02	0.04	0.002
R-010	204.3	96.4	20.6	1.2	1.2	3.5	1.0	0.3	1.5E-05	4.4E-06	0.005	1.3E-03	4.8E-04	1.4E-04	0.04	0.29	0.01	0.03	0.002
R-011	263.7	144.7	26.6	1.2	1.3	3.6	1.1	0.3	1.6E-05	4.4E-06	0.005	1.3E-03	4.9E-04	1.4E-04	0.04	0.38	0.01	0.04	0.002
R-012	106.9	72.3	10.8	0.7	0.8	1.9	0.6	0.1	9.7E-06	2.2E-06	0.003	6.0E-04	3.0E-04	6.7E-05	0.02	0.15	0.01	0.01	0.001
R-013	127.7	84.4	12.9	0.9	0.9	2.3	0.7	0.2	1.2E-05	2.6E-06	0.003	8.0E-04	3.6E-04	8.0E-05	0.03	0.18	0.01	0.02	0.001
R-014	163.6	108.5	16.5	1.1	1.2	3.1	1.0	0.2	1.5E-05	3.4E-06	0.004	1.0E-03	4.6E-04	1.1E-04	0.04	0.23	0.01	0.02	0.002
R-015	190.7	120.6	19.2	1.3	1.2	3.6	1.1	0.2	1.7E-05	3.6E-06	0.005	1.1E-03	5.2E-04	1.1E-04	0.04	0.27	0.02	0.03	0.002
R-016	227.4	96.4	22.9	1.2	1.4	3.5	1.0	0.3	1.6E-05	5.0E-06	0.005	1.5E-03	4.8E-04	1.6E-04	0.04	0.33	0.01	0.03	0.002
R-017	140.0	60.3	14.1	0.7	0.8	2.1	0.6	0.2	9.6E-06	2.9E-06	0.003	9.0E-04	3.0E-04	8.9E-05	0.02	0.20	0.01	0.02	0.001
R-018	115.9	60.3	11.7	0.8	0.9	2.4	0.7	0.2	1.1E-05	3.1E-06	0.003	9.0E-04	3.4E-04	9.6E-05	0.03	0.17	0.01	0.02	0.001
R-019	127.8	72.3	12.9	1.0	1.0	2.9	0.8	0.2	1.3E-05	3.5E-06	0.004	1.0E-03	3.9E-04	1.1E-04	0.03	0.18	0.01	0.02	0.001
R-020	207.1	96.4	20.9	1.1	1.2	3.3	1.0	0.2	1.5E-05	3.4E-06	0.005	1.0E-03	4.7E-04	1.1E-04	0.04	0.30	0.01	0.03	0.002
R-021	135.6	72.3	13.7	1.0	1.1	3.2	0.9	0.2	1.4E-05	3.7E-06	0.004	1.1E-03	4.2E-04	1.1E-04	0.03	0.19	0.01	0.02	0.001
R-022	144.4	72.3	14.5	1.0	1.0	2.9	0.9	0.2	1.3E-05	3.3E-06	0.004	1.0E-03	4.1E-04	1.0E-04	0.03	0.21	0.01	0.02	0.001
R-023	157.1	96.4	15.8	1.0	1.2	3.1	0.9	0.2	1.4E-05	3.4E-06	0.004	1.0E-03	4.3E-04	1.1E-04	0.03	0.23	0.01	0.02	0.001
R-024	159.9	96.4	16.1	1.1	1.2	3.1	0.9	0.2	1.4E-05	3.4E-06	0.004	1.0E-03	4.3E-04	1.0E-04	0.03	0.23	0.01	0.02	0.001
R-025	158.3	84.4	16.0	1.0	1.1	3.0	0.9	0.2	1.3E-05	3.2E-06	0.004	1.0E-03	4.1E-04	1.0E-04	0.03	0.23	0.01	0.02	0.001
R-026	118.6	60.3	11.9	0.7	0.7	2.0	0.6	0.1	8.6E-06	2.0E-06	0.003	6.0E-04	2.7E-04	6.1E-05	0.02	0.17	0.01	0.02	0.001
R-027	122.7	60.3	12.4	0.7	0.7	2.0	0.6	0.1	8.9E-06	2.0E-06	0.003	6.0E-04	2.7E-04	6.3E-05	0.02	0.18	0.01	0.02	0.001
R-028	120.3	48.2	12.1	0.7	0.7	2.3	0.7	0.2	9.2E-06	2.3E-06	0.003	7.0E-04	2.9E-04	7.2E-05	0.02	0.17	0.01	0.02	0.001
R-029	175.0	96.4	17.6	1.1	1.3	3.3	0.9	0.3	1.4E-05	3.8E-06	0.004	1.1E-03	4.4E-04	1.2E-04	0.03	0.25	0.01	0.02	0.001
R-030	108.0	60.3	10.9	0.8	0.8	2.5	0.7	0.2	1.1E-05	2.8E-06	0.003	8.0E-04	3.5E-04	8.7E-05	0.03	0.15	0.01	0.01	0.001
R-031	143.3	72.3	14.4	1.0	1.2	2.8	0.8	0.2	1.3E-05	3.5E-06	0.004	1.0E-03	3.9E-04	1.1E-04	0.03	0.21	0.01	0.02	0.001
R-032	136.7	72.3	13.8	0.9	1.2	2.7	0.8	0.2	1.2E-05	3.3E-06	0.004	1.0E-03	3.8E-04	1.0E-04	0.03	0.20	0.01	0.02	0.001
R-033	225.4	108.5	22.7	1.5	1.4	3.9	1.2	0.3	2.0E-05	4.8E-06	0.006	1.4E-03	6.1E-04	1.5E-04	0.05	0.32	0.02	0.03	0.002
R-034	95.2	60.3	9.6	0.7	0.8	1.9	0.6	0.1	8.9E-06	2.3E-06	0.003	7.0E-04	2.7E-04	7.0E-05	0.02	0.14	0.01	0.01	0.001
R-035	114.2	60.3	11.5	0.8	0.9	2.3	0.7	0.2	1.0E-05	2.6E-06	0.003	8.0E-04	3.2E-04	8.2E-05	0.02	0.16	0.01	0.02	0.001
R-036	139.8	60.3	14.1	0.8	0.8	2.2	0.7	0.2	1.1E-05	2.6E-06	0.003	8.0E-04	3.4E-04	8.1E-05	0.03	0.20	0.01	0.02	0.001
R-037	94.5	60.3	9.5	0.6	0.7	1.8	0.6	0.1	8.5E-06	2.0E-06	0.003	6.0E-04	2.6E-04	6.3E-05	0.02	0.14	0.01	0.01	0.001
R-038	116.2	60.3	11.7	0.7	0.8	2.1	0.6	0.1	9.7E-06	2.1E-06	0.003	6.0E-04	3.0E-04	6.7E-05	0.02	0.17	0.01	0.02	0.001
R-039	133.2	60.3	13.4	0.8	0.7	2.1	0.6	0.1	1.0E-05	2.0E-06	0.003	6.0E-04	3.2E-04	6.3E-05	0.02	0.19	0.01	0.02	0.001
R-040	153.1	72.3	15.4	0.8	0.7	2.1	0.7	0.1	1.1E-05	2.0E-06	0.003	6.0E-04	3.3E-04	6.3E-05	0.03	0.22	0.01	0.02	0.001
R-041	102.7	60.3	10.4	0.7	0.5	2.4	0.7	0.2	9.6E-06	2.0E-06	0.003	6.0E-04	3.0E-04	5.8E-05	0.02	0.15	0.01	0.01	0.001
R-042	127.8	60.3	12.9	0.7	0.5	1.8	0.6	0.1	9.0E-06	1.4E-06	0.003	4.0E-04	2.8E-04	4.3E-05	0.02	0.18	0.01	0.02	0.001
R-043	137.4	72.3	13.8	0.9	0.3	2.6	0.8	0.1	1.2E-05	1.2E-06	0.004	4.0E-04	3.7E-04	3.6E-05	0.03	0.20	0.01	0.02	0.001
Maximum	272.3	144.7	27.5	1.6	1.5	4.9	1.4	0.3	2.1E-05	5.1E-06	0.006	1.5E-03	6.6E-04	1.6E-04	0.05	0.39	0.02	0.04	0.002

Note:

1. Maximum predicted concentrations are presented in the table.

FUTURE INTERIM BUILD SCENARIO

Background Concentration (µg/m^3)	362	362	21.8	21.2	9.4	24.1	13.0	6.4	5.3E-05	2.3E-05	0.70	0.39	0.063	0.023	2.2	3.5	1.2	0.073	0.030
	Predicted Project Concentrations (µg/m^3)																		
Receptor ID	CO	CO	NO_2	NO_2	NO_2	PM_{10}	$PM_{2.5}$	$PM_{2.5}$	B(a)P	B(a)P	Benzene	Benzene	1,3-Butadiene	1,3-Butadiene	Formaldehyde	Acetaldehyde	Acetaldehyde	Acrolein	Acrolein
	1-hr	8-hr	1-hr	24-hr	annual	24-hr	24-hr	annual	24-hr	annual	24-hr	annual	24-hr	annual	24-hr	0.5-hr	24-hr	1-hr	24-hr
R-001	101.4	72.3	10.2	1.1	1.4	3.5	1.0	0.3	1.5E-05	4.7E-06	0.005	1.4E-03	4.6E-04	1.5E-04	0.04	0.1	0.01	0.01	0.002
R-002	197.5	132.6	19.9	1.8	1.2	5.6	1.6	0.3	2.4E-05	5.2E-06	0.007	1.6E-03	7.5E-04	1.6E-04	0.06	0.3	0.02	0.03	0.002
R-003	222.7	120.6	22.4	1.7	1.1	5.0	1.5	0.3	2.3E-05	4.5E-06	0.007	1.3E-03	7.1E-04	1.4E-04	0.05	0.3	0.02	0.03	0.002
R-004	210.7	108.5	21.2	1.6	1.3	4.7	1.4	0.4	2.1E-05	5.8E-06	0.006	1.7E-03	6.4E-04	1.8E-04	0.05	0.3	0.02	0.03	0.002
R-005	189.9	96.4	19.1	1.4	1.1	4.0	1.2	0.3	1.9E-05	4.9E-06	0.006	1.5E-03	5.8E-04	1.5E-04	0.04	0.3	0.02	0.03	0.002
R-006	88.0	60.3	8.8	0.8	0.8	2.1	0.7	0.2	1.1E-05	2.8E-06	0.003	8.0E-04	3.3E-04	8.6E-05	0.03	0.1	0.01	0.01	0.001
R-007	98.6	72.3	9.9	0.9	1.0	2.6	0.8	0.2	1.2E-05	3.4E-06	0.004	1.0E-03	3.8E-04	1.1E-04	0.03	0.1	0.01	0.01	0.001
R-008	165.0	84.4	16.6	1.2	0.9	3.6	1.1	0.3	1.6E-05	3.8E-06	0.005	1.1E-03	5.1E-04	1.2E-04	0.04	0.2	0.01	0.02	0.002
R-009	266.7	120.6	26.9	1.8	1.4	5.5	1.6	0.4	2.4E-05	6.2E-06	0.007	1.9E-03	7.4E-04	1.9E-04	0.06	0.4	0.02	0.04	0.002
R-010	199.2	96.4	20.1	1.4	1.2	4.2	1.2	0.4	1.8E-05	5.3E-06	0.005	1.6E-03	5.6E-04	1.6E-04	0.04	0.3	0.02	0.03	0.002
R-011	257.1	144.7	25.9	1.4	1.3	4.2	1.2	0.4	1.9E-05	5.4E-06	0.006	1.6E-03	5.8E-04	1.7E-04	0.05	0.4	0.02	0.03	0.002
R-012	103.2	72.3	10.4	0.9	0.7	2.2	0.7	0.2	1.1E-05	2.5E-06	0.003	8.0E-04	3.5E-04	7.9E-05	0.03	0.1	0.01	0.01	0.001
R-013	122.7	84.4	12.4	1.0	0.9	2.7	0.9	0.2	1.3E-05	3.0E-06	0.004	9.0E-04	4.2E-04	9.4E-05	0.03	0.2	0.01	0.02	0.001
R-014	158.8	108.5	16.0	1.3	1.2	3.7	1.1	0.3	1.7E-05	4.0E-06	0.005	1.2E-03	5.3E-04	1.3E-04	0.04	0.2	0.02	0.02	0.002
R-015	183.2	120.6	18.5	1.5	1.2	4.2	1.3	0.3	2.0E-05	4.3E-06	0.006	1.3E-03	6.1E-04	1.3E-04	0.05	0.3	0.02	0.02	0.002
R-016	221.7	96.4	22.3	1.4	1.4	4.1	1.2	0.4	1.8E-05	6.1E-06	0.006	1.8E-03	5.7E-04	1.9E-04	0.04	0.3	0.02	0.03	0.002
R-017	133.9	60.3	13.5	0.9	0.8	2.5	0.7	0.2	1.1E-05	3.4E-06	0.003	1.0E-03	3.5E-04	1.1E-04	0.03	0.2	0.01	0.02	0.001
R-018	113.4	60.3	11.4	1.0	0.9	2.8	0.8	0.2	1.3E-05	3.7E-06	0.004	1.1E-03	4.0E-04	1.1E-04	0.03	0.2	0.01	0.02	0.001
R-019	118.7	72.3	11.9	1.1	1.0	3.3	1.0	0.3	1.5E-05	4.2E-06	0.004	1.3E-03	4.6E-04	1.3E-04	0.04	0.2	0.01	0.02	0.002
R-020	199.5	84.4	20.1	1.3	1.2	3.9	1.1	0.3	1.8E-05	4.1E-06	0.005	1.2E-03	5.4E-04	1.3E-04	0.04	0.3	0.02	0.03	0.002
R-021	124.9	72.3	12.5	1.2	1.1	3.7	1.1	0.3	1.6E-05	4.4E-06	0.005	1.3E-03	5.0E-04	1.4E-04	0.04	0.2	0.01	0.02	0.002
R-022	129.2	60.3	12.9	1.2	1.0	3.3	1.0	0.3	1.6E-05	4.0E-06	0.005	1.2E-03	4.8E-04	1.2E-04	0.04	0.2	0.01	0.02	0.002
R-023	152.4	96.4	15.4	1.2	1.2	3.7	1.1	0.3	1.6E-05	4.1E-06	0.005	1.2E-03	5.0E-04	1.3E-04	0.04	0.2	0.01	0.02	0.002
R-024	155.0	84.4	15.6	1.2	1.2	3.7	1.1	0.3	1.6E-05	4.0E-06	0.005	1.2E-03	5.0E-04	1.2E-04	0.04	0.2	0.01	0.02	0.002
R-025	153.6	84.4	15.5	1.2	1.2	3.5	1.0	0.3	1.5E-05	3.8E-06	0.005	1.1E-03	4.8E-04	1.2E-04	0.04	0.2	0.01	0.02	0.002
R-026	119.4	60.3	11.9	0.8	0.7	2.4	0.7	0.2	1.0E-05	2.3E-06	0.003	7.0E-04	3.1E-04	7.2E-05	0.02	0.2	0.01	0.02	0.001
R-027	122.6	60.3	12.3	0.8	0.7	2.4	0.7	0.2	1.0E-05	2.4E-06	0.003	7.0E-04	3.2E-04	7.5E-05	0.02	0.2	0.01	0.02	0.001
R-028	103.8	60.3	10.4	0.8	0.8	2.8	0.8	0.2	1.1E-05	2.8E-06	0.003	9.0E-04	3.3E-04	8.6E-05	0.03	0.1	0.01	0.01	0.001
R-029	168.1	84.4	16.8	1.3	1.2	3.8	1.1	0.3	1.7E-05	4.6E-06	0.005	1.4E-03	5.2E-04	1.4E-04	0.04	0.2	0.02	0.02	0.002
R-030	97.2	60.3	9.7	1.0	0.7	2.9	0.9	0.2	1.3E-05	3.3E-06	0.004	1.0E-03	4.0E-04	1.0E-04	0.03	0.1	0.01	0.01	0.001
R-031	125.0	60.3	12.5	1.1	1.1	3.3	1.0	0.3	1.5E-05	4.1E-06	0.005	1.2E-03	4.6E-04	1.3E-04	0.04	0.2	0.01	0.02	0.002
R-032	119.7	72.3	12.0	1.1	1.0	3.2	0.9	0.3	1.4E-05	4.0E-06	0.004	1.2E-03	4.4E-04	1.2E-04	0.03	0.2	0.01	0.02	0.001
R-033	198.9	96.4	20.0	1.7	1.2	4.7	1.4	0.4	2.3E-05	5.8E-06	0.007	1.7E-03	7.0E-04	1.8E-04	0.05	0.3	0.02	0.03	0.002
R-034	84.4	48.2	8.4	0.8	0.7	2.2	0.7	0.2	1.0E-05	2.7E-06	0.003	8.0E-04	3.2E-04	8.3E-05	0.02	0.1	0.01	0.01	0.001
R-035	101.5	60.3	10.1	0.9	0.8	2.6	0.8	0.2	1.2E-05	3.1E-06	0.004	9.0E-04	3.7E-04	9.7E-05	0.03	0.1	0.01	0.01	0.001
R-036	123.8	60.3	12.4	1.0	0.7	2.6	0.8	0.2	1.3E-05	3.1E-06	0.004	9.0E-04	4.0E-04	9.7E-05	0.03	0.2	0.01	0.02	0.001
R-037	83.8	48.2	8.4	0.8	0.6	2.1	0.6	0.2	9.9E-06	2.4E-06	0.003	7.0E-04	3.1E-04	7.5E-05	0.02	0.1	0.01	0.01	0.001
R-038	101.8	48.2	10.2	0.9	0.7	2.5	0.7	0.2	1.1E-05	2.6E-06	0.003	8.0E-04	3.5E-04	7.9E-05	0.03	0.1	0.01	0.01	0.001
R-039	116.3	60.3	11.7	0.9	0.7	2.4	0.8	0.2	1.2E-05	2.4E-06	0.004	7.0E-04	3.7E-04	7.5E-05	0.03	0.2	0.01	0.02	0.001
R-040	133.6	60.3	13.5	0.9	0.7	2.5	0.8	0.2	1.2E-05	2.4E-06	0.004	7.0E-04	3.9E-04	7.6E-05	0.03	0.2	0.01	0.02	0.001
R-041	89.9	48.2	9.0	0.9	0.8	2.7	0.8	0.2	1.2E-05	2.3E-06	0.004	7.0E-04	3.6E-04	6.9E-05	0.03	0.1	0.01	0.01	0.001
R-042	112.0	48.2	11.3	0.8	0.5	2.1	0.7	0.1	1.1E-05	1.7E-06	0.003	5.0E-04	3.2E-04	5.2E-05	0.03	0.2	0.01	0.01	0.001
R-043	144.8	72.3	13.7	1.1	0.4	3.3	1.0	0.1	1.4E-05	1.5E-06	0.004	4.0E-04	4.4E-04	4.5E-05	0.03	0.2	0.01	0.02	0.001
Maximum	266.7	144.7	26.9	1.8	1.4	5.6	1.6	0.4	2.4E-05	6.2E-06	0.007	1.9E-03	7.5E-04	1.9E-04	0.06	0.4	0.02	0.04	0.002

Note:

1. Maximum predicted concentrations are presented in the table.

FUTURE ULTIMATE NO BUILD SCENARIO

Background Concentration (µg/m³)	362	362	21.8	21.2	9.4	24.1	13.0	6.4	5.3E-05	2.3E-05	0.70	0.39	0.063	0.023	2.2	3.5	1.2	0.073	0.030
	Predicted Project Concentrations (µg/m³)																		
Receptor ID	CO 1-hr	CO 8-hr	NO_2 1-hr	NO_2 24-hr	NO_2 annual	PM_{10} 24-hr	$PM_{2.5}$ 24-hr	$PM_{2.5}$ annual	B(a)P 24-hr	B(a)P annual	Benzene 24-hr	Benzene annual	1,3-Butadiene 24-hr	1,3-Butadiene annual	Formaldehyde 24-hr	Acetaldehyde 0.5-hr	Acetaldehyde 24-hr	Acrolein 1-hr	Acrolein 24-hr
R-001	81.4	60.3	10.8	2.7	1.4	3.4	0.9	0.3	1.5E-05	4.7E-06	0.003	9.0E-04	8.9E-05	2.8E-05	0.03	0.1	0.01	0.02	0.002
R-002	160.6	108.5	21.3	4.4	1.3	5.4	1.5	0.3	2.4E-05	5.2E-06	0.005	1.0E-03	1.5E-04	3.1E-05	0.04	0.2	0.01	0.03	0.002
R-003	180.7	96.4	23.9	4.1	1.1	4.9	1.4	0.3	2.3E-05	4.4E-06	0.005	9.0E-04	1.4E-04	2.7E-05	0.04	0.2	0.01	0.04	0.002
R-004	169.3	84.4	22.4	3.7	1.4	4.6	1.3	0.4	2.0E-05	5.8E-06	0.004	1.2E-03	1.2E-04	3.5E-05	0.03	0.2	0.01	0.03	0.002
R-005	152.5	72.3	20.2	3.4	1.2	3.9	1.1	0.3	1.9E-05	4.9E-06	0.004	1.0E-03	1.1E-04	2.9E-05	0.03	0.2	0.01	0.03	0.002
R-006	73.5	48.2	9.7	1.9	0.9	2.0	0.6	0.2	1.1E-05	2.8E-06	0.002	6.0E-04	6.4E-05	1.7E-05	0.02	0.1	0.01	0.01	0.001
R-007	82.2	60.3	10.9	2.2	1.1	2.5	0.7	0.2	1.2E-05	3.4E-06	0.003	7.0E-04	7.4E-05	2.0E-05	0.02	0.1	0.01	0.02	0.001
R-008	132.6	72.3	17.6	3.0	0.9	3.5	1.0	0.2	1.6E-05	3.8E-06	0.003	8.0E-04	9.8E-05	2.3E-05	0.03	0.2	0.01	0.03	0.002
R-009	214.2	96.4	28.4	4.3	1.5	5.4	1.5	0.4	2.4E-05	6.2E-06	0.005	1.2E-03	1.4E-04	3.7E-05	0.04	0.3	0.01	0.04	0.002
R-010	160.0	72.3	21.2	3.3	1.3	4.1	1.1	0.3	1.8E-05	5.2E-06	0.004	1.0E-03	1.1E-04	3.1E-05	0.03	0.2	0.01	0.03	0.002
R-011	206.6	120.6	27.4	3.4	1.3	4.1	1.1	0.3	1.9E-05	5.3E-06	0.004	1.1E-03	1.1E-04	3.2E-05	0.03	0.2	0.01	0.04	0.002
R-012	83.1	60.3	11.0	2.0	0.8	2.2	0.7	0.2	1.1E-05	2.5E-06	0.002	5.0E-04	6.8E-05	1.5E-05	0.02	0.1	0.01	0.02	0.001
R-013	98.4	72.3	13.0	2.4	0.9	2.7	0.8	0.2	1.3E-05	3.0E-06	0.003	6.0E-04	8.0E-05	1.8E-05	0.02	0.1	0.01	0.02	0.001
R-014	127.4	84.4	16.9	3.1	1.2	3.6	1.0	0.2	1.7E-05	4.0E-06	0.003	8.0E-04	1.0E-04	2.4E-05	0.03	0.2	0.01	0.03	0.002
R-015	147.0	96.4	19.4	3.5	1.3	4.1	1.2	0.3	2.0E-05	4.3E-06	0.004	9.0E-04	1.2E-04	2.6E-05	0.03	0.2	0.01	0.03	0.002
R-016	178.2	72.3	23.6	3.3	1.5	4.0	1.1	0.4	1.8E-05	6.0E-06	0.004	1.2E-03	1.1E-04	3.6E-05	0.03	0.2	0.01	0.03	0.002
R-017	107.7	48.2	14.2	2.0	0.9	2.4	0.7	0.2	1.1E-05	3.4E-06	0.002	7.0E-04	6.8E-05	2.0E-05	0.02	0.1	0.01	0.02	0.001
R-018	91.1	48.2	12.1	2.3	1.0	2.7	0.8	0.2	1.3E-05	3.7E-06	0.003	7.0E-04	7.8E-05	2.2E-05	0.02	0.1	0.01	0.02	0.001
R-019	99.2	60.3	13.1	2.7	1.1	3.3	0.9	0.3	1.5E-05	4.2E-06	0.003	8.0E-04	8.9E-05	2.5E-05	0.03	0.1	0.01	0.02	0.002
R-020	160.3	72.3	21.2	3.1	1.2	3.8	1.1	0.2	1.7E-05	4.0E-06	0.004	8.0E-04	1.0E-04	2.4E-05	0.03	0.2	0.01	0.03	0.002
R-021	105.4	60.3	13.9	2.9	1.1	3.6	1.0	0.3	1.6E-05	4.4E-06	0.003	9.0E-04	9.6E-05	2.6E-05	0.03	0.1	0.01	0.02	0.002
R-022	112.1	48.2	14.8	2.8	1.0	3.3	0.9	0.2	1.6E-05	4.0E-06	0.003	8.0E-04	9.3E-05	2.4E-05	0.03	0.1	0.01	0.02	0.002
R-023	122.5	72.3	16.2	2.9	1.3	3.6	1.0	0.3	1.6E-05	4.1E-06	0.003	8.0E-04	9.7E-05	2.5E-05	0.03	0.1	0.01	0.02	0.002
R-024	124.7	72.3	16.5	2.9	1.2	3.6	1.0	0.3	1.6E-05	4.0E-06	0.003	8.0E-04	9.7E-05	2.4E-05	0.03	0.1	0.01	0.02	0.002
R-025	123.3	72.3	16.3	2.8	1.2	3.4	1.0	0.3	1.5E-05	3.8E-06	0.003	8.0E-04	9.2E-05	2.3E-05	0.03	0.1	0.01	0.02	0.002
R-026	92.3	48.2	12.2	1.8	0.7	2.3	0.7	0.2	1.0E-05	2.3E-06	0.002	5.0E-04	6.0E-05	1.4E-05	0.02	0.1	0.01	0.02	0.001
R-027	95.5	48.2	12.6	1.9	0.8	2.3	0.7	0.2	1.0E-05	2.4E-06	0.002	5.0E-04	6.2E-05	1.4E-05	0.02	0.1	0.01	0.02	0.001
R-028	93.4	36.2	12.4	1.9	0.7	2.7	0.8	0.2	1.1E-05	2.8E-06	0.002	6.0E-04	6.4E-05	1.6E-05	0.02	0.1	0.01	0.02	0.001
R-029	136.8	72.3	18.1	3.0	1.4	3.7	1.0	0.3	1.7E-05	4.5E-06	0.003	9.0E-04	1.0E-04	2.7E-05	0.03	0.2	0.01	0.03	0.002
R-030	84.0	48.2	11.1	2.3	0.9	2.9	0.8	0.2	1.3E-05	3.3E-06	0.003	7.0E-04	7.8E-05	2.0E-05	0.02	0.1	0.01	0.02	0.001
R-031	111.8	60.3	14.8	2.7	1.3	3.2	0.9	0.3	1.5E-05	4.1E-06	0.003	8.0E-04	8.9E-05	2.5E-05	0.03	0.1	0.01	0.02	0.002
R-032	106.7	60.3	14.1	2.6	1.2	3.1	0.9	0.2	1.4E-05	3.9E-06	0.003	8.0E-04	8.5E-05	2.4E-05	0.02	0.1	0.01	0.02	0.001
R-033	175.8	84.4	23.3	4.1	1.4	4.6	1.3	0.4	2.3E-05	5.8E-06	0.005	1.2E-03	1.4E-04	3.5E-05	0.04	0.2	0.01	0.03	0.002
R-034	74.3	48.2	9.8	1.8	0.8	2.2	0.6	0.2	1.0E-05	2.7E-06	0.002	5.0E-04	6.1E-05	1.6E-05	0.02	0.1	0.01	0.01	0.001
R-035	89.2	48.2	11.8	2.2	1.0	2.6	0.7	0.2	1.2E-05	3.1E-06	0.002	6.0E-04	7.2E-05	1.9E-05	0.02	0.1	0.01	0.02	0.001
R-036	108.5	48.2	14.4	2.3	0.8	2.5	0.7	0.2	1.3E-05	3.1E-06	0.003	6.0E-04	7.7E-05	1.9E-05	0.02	0.1	0.01	0.02	0.001
R-037	73.2	48.2	9.7	1.8	0.8	2.1	0.6	0.1	9.9E-06	2.4E-06	0.002	5.0E-04	5.9E-05	1.4E-05	0.02	0.1	0.00	0.01	0.001
R-038	90.2	48.2	11.9	2.0	0.8	2.4	0.7	0.2	1.1E-05	2.5E-06	0.002	5.0E-04	6.8E-05	1.5E-05	0.02	0.1	0.01	0.02	0.001
R-039	103.3	48.2	13.7	2.1	0.8	2.4	0.7	0.2	1.2E-05	2.4E-06	0.002	5.0E-04	7.1E-05	1.5E-05	0.02	0.1	0.01	0.02	0.001
R-040	118.7	48.2	15.7	2.2	0.8	2.4	0.7	0.2	1.2E-05	2.4E-06	0.003	5.0E-04	7.4E-05	1.5E-05	0.02	0.1	0.01	0.02	0.001
R-041	79.6	48.2	10.5	2.1	0.5	2.7	0.7	0.2	1.2E-05	2.3E-06	0.002	5.0E-04	6.9E-05	1.3E-05	0.02	0.1	0.01	0.02	0.001
R-042	99.0	48.2	13.1	1.9	0.5	2.0	0.6	0.1	1.1E-05	1.7E-06	0.002	3.0E-04	6.3E-05	1.0E-05	0.02	0.1	0.01	0.02	0.001
R-043	109.2	60.3	14.3	2.5	0.4	3.3	0.9	0.1	1.4E-05	1.5E-06	0.003	3.0E-04	8.5E-05	8.6E-06	0.02	0.1	0.01	0.02	0.001
Maximum	214.2	120.6	28.4	4.4	1.5	5.4	1.5	0.4	2.4E-05	6.2E-06	0.005	1.2E-03	1.5E-04	3.7E-05	0.04	0.3	0.01	0.04	0.002

Note:

1. Maximum predicted concentrations are presented in the table.

FUTURE ULTIMATE BUILD SCENARIO

Background Concentration (µg/m³)	362	362	21.8	21.2	9.4	24.1	13.0	6.4	5.3E-05	2.3E-05	0.70	0.39	0.063	0.023	2.2	3.5	1.2	0.073	0.030
	Predicted Project Concentrations (µg/m³)																		
Receptor ID	CO	CO	NO_2	NO_2	NO_2	PM_{10}	$PM_{2.5}$	$PM_{2.5}$	B(a)P	B(a)P	Benzene	Benzene	1,3-Butadiene	1,3-Butadiene	Formaldehyde	Acetaldehyde	Acetaldehyde	Acrolein	Acrolein
	1-hr	8-hr	1-hr	24-hr	annual	24-hr	24-hr	annual	24-hr	annual	24-hr	annual	24-hr	annual	24-hr	0.5-hr	24-hr	1-hr	24-hr
R-001	86.9	60.3	11.4	1.3	1.5	4.3	1.1	0.4	1.9E-05	5.9E-06	0.004	1.2E-03	1.1E-04	3.5E-05	0.03	0.1	0.01	0.02	0.002
R-002	169.1	108.5	22.1	2.1	1.4	6.8	1.9	0.4	3.0E-05	6.5E-06	0.006	1.3E-03	1.8E-04	3.9E-05	0.05	0.2	0.02	0.03	0.003
R-003	191.3	108.5	25.0	2.0	1.2	6.2	1.7	0.4	2.9E-05	5.7E-06	0.006	1.1E-03	1.7E-04	3.4E-05	0.05	0.2	0.01	0.04	0.003
R-004	181.3	96.4	23.7	1.8	1.5	5.9	1.6	0.5	2.6E-05	7.5E-06	0.005	1.5E-03	1.6E-04	4.5E-05	0.04	0.2	0.01	0.04	0.003
R-005	163.2	84.4	21.3	1.6	1.3	5.0	1.4	0.4	2.4E-05	6.3E-06	0.005	1.3E-03	1.4E-04	3.8E-05	0.04	0.2	0.01	0.03	0.002
R-006	74.6	48.2	9.7	0.9	0.9	2.6	0.8	0.2	1.4E-05	3.6E-06	0.003	7.0E-04	8.1E-05	2.1E-05	0.02	0.1	0.01	0.01	0.001
R-007	85.2	60.3	11.1	1.0	1.1	3.2	0.9	0.3	1.5E-05	4.4E-06	0.003	9.0E-04	9.3E-05	2.6E-05	0.03	0.1	0.01	0.02	0.002
R-008	142.1	72.3	18.6	1.4	1.0	4.5	1.3	0.3	2.1E-05	4.9E-06	0.004	1.0E-03	1.3E-04	2.9E-05	0.04	0.2	0.01	0.03	0.002
R-009	229.3	108.5	30.0	2.1	1.6	6.9	1.9	0.5	3.1E-05	8.1E-06	0.006	1.6E-03	1.8E-04	4.9E-05	0.05	0.3	0.02	0.04	0.003
R-010	171.7	84.4	22.5	1.6	1.4	5.2	1.4	0.4	2.3E-05	6.8E-06	0.005	1.4E-03	1.4E-04	4.1E-05	0.04	0.2	0.01	0.03	0.002
R-011	221.0	120.6	28.9	1.6	1.4	5.3	1.5	0.4	2.4E-05	7.0E-06	0.005	1.4E-03	1.5E-04	4.2E-05	0.04	0.3	0.01	0.04	0.002
R-012	89.3	60.3	11.7	1.0	0.8	2.7	0.8	0.2	1.4E-05	3.2E-06	0.003	6.0E-04	8.5E-05	1.9E-05	0.02	0.1	0.01	0.02	0.001
R-013	107.1	72.3	14.0	1.1	1.0	3.3	1.0	0.2	1.7E-05	3.9E-06	0.003	8.0E-04	1.0E-04	2.3E-05	0.03	0.1	0.01	0.02	0.002
R-014	137.3	84.4	17.9	1.5	1.3	4.5	1.3	0.3	2.2E-05	5.2E-06	0.004	1.0E-03	1.3E-04	3.1E-05	0.04	0.2	0.01	0.03	0.002
R-015	160.3	108.5	20.9	1.7	1.4	5.2	1.5	0.3	2.5E-05	5.5E-06	0.005	1.1E-03	1.5E-04	3.3E-05	0.04	0.2	0.01	0.03	0.003
R-016	191.0	84.4	25.0	1.6	1.6	5.1	1.4	0.5	2.3E-05	7.9E-06	0.005	1.6E-03	1.4E-04	4.7E-05	0.04	0.2	0.01	0.04	0.002
R-017	116.3	48.2	15.2	1.0	0.9	3.1	0.9	0.3	1.4E-05	4.4E-06	0.003	9.0E-04	8.6E-05	2.6E-05	0.02	0.1	0.01	0.02	0.001
R-018	96.1	48.2	12.6	1.1	1.0	3.5	1.0	0.3	1.7E-05	4.8E-06	0.003	1.0E-03	9.9E-05	2.9E-05	0.03	0.1	0.01	0.02	0.002
R-019	102.0	60.3	13.2	1.3	1.1	4.2	1.1	0.3	1.9E-05	5.4E-06	0.004	1.1E-03	1.1E-04	3.2E-05	0.03	0.1	0.01	0.02	0.002
R-020	173.4	72.3	22.7	1.5	1.3	4.9	1.4	0.3	2.2E-05	5.2E-06	0.005	1.0E-03	1.3E-04	3.1E-05	0.04	0.2	0.01	0.03	0.002
R-021	107.2	60.3	13.9	1.4	1.2	4.6	1.3	0.4	2.0E-05	5.7E-06	0.004	1.1E-03	1.2E-04	3.4E-05	0.03	0.1	0.01	0.02	0.002
R-022	110.6	60.3	14.3	1.3	1.1	4.2	1.2	0.3	2.0E-05	5.1E-06	0.004	1.0E-03	1.2E-04	3.1E-05	0.03	0.1	0.01	0.02	0.002
R-023	131.0	72.3	17.1	1.4	1.4	4.5	1.3	0.3	2.1E-05	5.3E-06	0.004	1.1E-03	1.2E-04	3.2E-05	0.04	0.2	0.01	0.03	0.002
R-024	133.3	72.3	17.4	1.4	1.4	4.6	1.3	0.3	2.1E-05	5.2E-06	0.004	1.0E-03	1.2E-04	3.1E-05	0.04	0.2	0.01	0.03	0.002
R-025	131.9	72.3	17.2	1.3	1.4	4.4	1.2	0.3	2.0E-05	4.9E-06	0.004	1.0E-03	1.2E-04	2.9E-05	0.03	0.2	0.01	0.03	0.002
R-026	102.1	48.2	13.3	0.9	0.8	2.9	0.8	0.2	1.3E-05	3.0E-06	0.003	6.0E-04	7.6E-05	1.8E-05	0.02	0.1	0.01	0.02	0.001
R-027	104.9	60.3	13.6	0.9	0.8	2.9	0.8	0.2	1.3E-05	3.1E-06	0.003	6.0E-04	7.8E-05	1.8E-05	0.02	0.1	0.01	0.02	0.001
R-028	88.9	48.2	11.6	0.9	0.9	3.4	1.0	0.3	1.4E-05	3.6E-06	0.003	7.0E-04	8.1E-05	2.1E-05	0.02	0.1	0.01	0.02	0.001
R-029	144.7	72.3	18.8	1.5	1.4	4.9	1.3	0.4	2.2E-05	5.9E-06	0.004	1.2E-03	1.3E-04	3.5E-05	0.04	0.2	0.01	0.03	0.002
R-030	83.4	48.2	10.8	1.1	0.8	3.6	1.0	0.3	1.7E-05	4.3E-06	0.003	9.0E-04	9.9E-05	2.6E-05	0.03	0.1	0.01	0.02	0.002
R-031	107.3	60.3	14.0	1.3	1.2	4.0	1.1	0.3	1.9E-05	5.3E-06	0.004	1.1E-03	1.1E-04	3.2E-05	0.03	0.1	0.01	0.02	0.002
R-032	102.8	60.3	13.3	1.2	1.2	4.0	1.1	0.3	1.8E-05	5.1E-06	0.004	1.0E-03	1.1E-04	3.1E-05	0.03	0.1	0.01	0.02	0.002
R-033	170.8	84.4	22.3	1.9	1.4	5.8	1.7	0.5	2.9E-05	7.6E-06	0.006	1.5E-03	1.7E-04	4.5E-05	0.05	0.2	0.01	0.03	0.003
R-034	72.6	36.2	9.4	0.9	0.8	2.7	0.8	0.2	1.3E-05	3.4E-06	0.003	7.0E-04	7.8E-05	2.1E-05	0.02	0.1	0.01	0.01	0.001
R-035	87.4	48.2	11.3	1.0	0.9	3.3	0.9	0.2	1.5E-05	4.0E-06	0.003	8.0E-04	9.2E-05	2.4E-05	0.03	0.1	0.01	0.02	0.002
R-036	106.1	48.2	13.8	1.1	0.8	3.2	0.9	0.2	1.6E-05	4.0E-06	0.003	8.0E-04	9.6E-05	2.4E-05	0.03	0.1	0.01	0.02	0.002
R-037	71.7	48.2	9.4	0.8	0.7	2.6	0.8	0.2	1.3E-05	3.1E-06	0.003	6.0E-04	7.6E-05	1.9E-05	0.02	0.1	0.01	0.01	0.001
R-038	87.0	48.2	11.4	1.0	0.8	3.0	0.9	0.2	1.4E-05	3.3E-06	0.003	7.0E-04	8.7E-05	2.0E-05	0.02	0.1	0.01	0.02	0.001
R-039	99.6	48.2	13.0	1.0	0.7	3.0	0.9	0.2	1.5E-05	3.1E-06	0.003	6.0E-04	8.9E-05	1.9E-05	0.03	0.1	0.01	0.02	0.002
R-040	114.3	48.2	14.9	1.1	0.8	3.1	0.9	0.2	1.6E-05	3.1E-06	0.003	6.0E-04	9.4E-05	1.9E-05	0.03	0.1	0.01	0.02	0.002
R-041	76.9	48.2	10.0	1.0	0.9	3.4	0.9	0.3	1.5E-05	3.0E-06	0.003	6.0E-04	8.7E-05	1.7E-05	0.02	0.1	0.01	0.01	0.002
R-042	95.7	36.2	12.5	0.9	0.6	2.6	0.8	0.2	1.3E-05	2.2E-06	0.003	4.0E-04	7.9E-05	1.3E-05	0.02	0.1	0.01	0.02	0.001
R-043	121.8	60.3	15.1	1.2	0.5	4.2	1.2	0.2	1.8E-05	1.8E-06	0.004	4.0E-04	1.1E-04	1.1E-05	0.03	0.1	0.01	0.02	0.002
Maximum	229.3	120.6	30.0	2.1	1.6	6.9	1.9	0.5	3.1E-05	8.1E-06	0.006	1.6E-03	1.8E-04	4.9E-05	0.05	0.3	0.02	0.04	0.003

Note:

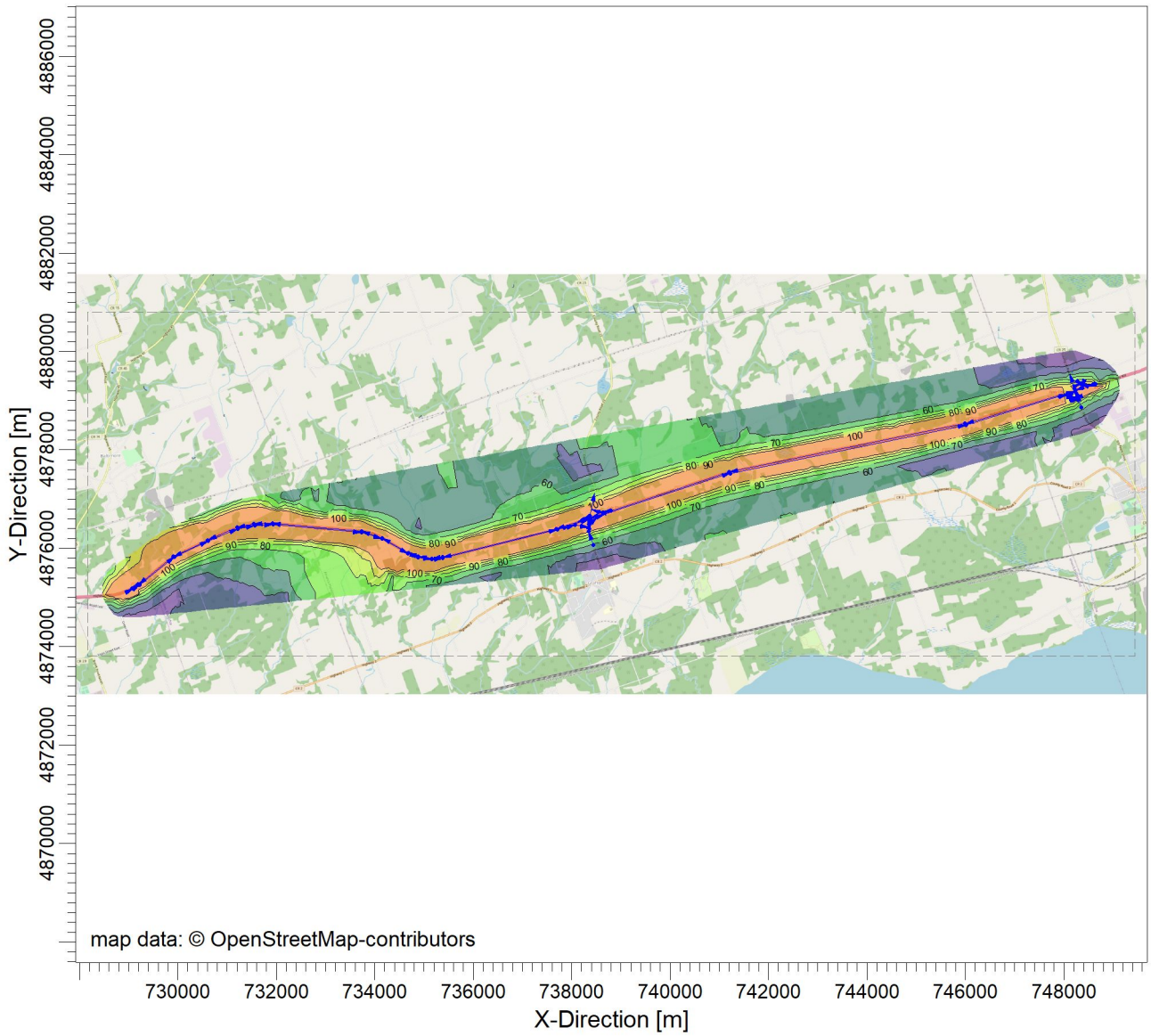
1. Maximum predicted concentrations are presented in the table.

APPENDIX H

Benzo(a)pyrene Contour Plots

PROJECT TITLE:

Existing Scenario
Predicted 24-Hour Concentrations for Benzo(a)pyrene without Background (pg/m3)



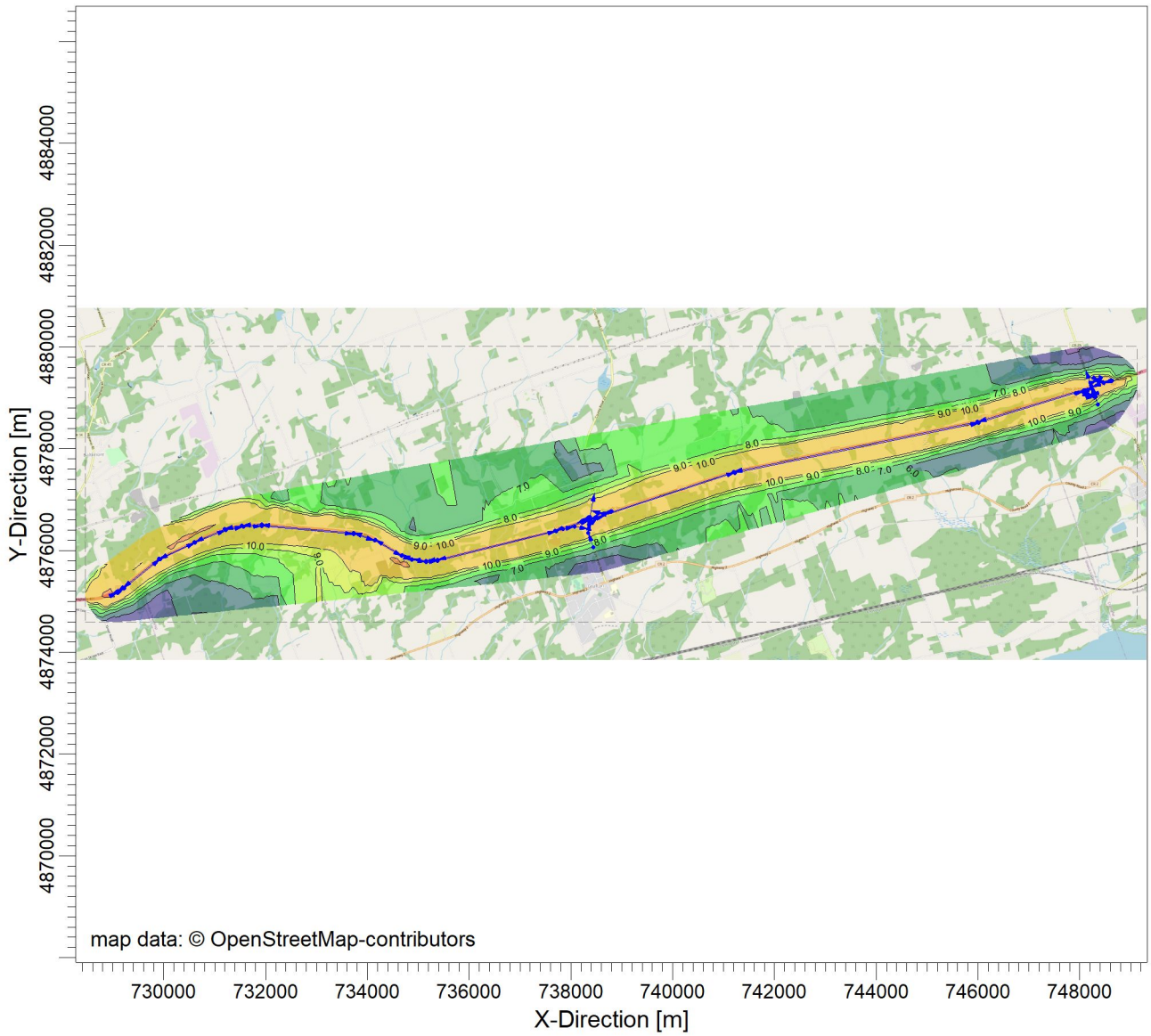
Contours pg/m**3

31 40 50 60 70 80 90 100 193

COMMENTS:	MODEL:		COMPANY NAME:	
2017 met year	**CAL3QHCR**		**Stantec Consulting Ltd.**	
	MAX: **192.57**			
	LINKS: **67**	RECEPTORS: **1362**		
	SCALE: 1:136,953 0 4 m		DATE: **12/4/2020**	PROJECT / PLOT NO.:

PROJECT TITLE:

Future Interim No Build Scenario
Predicted 24-Hour Concentrations for Benzo(a)pyrene without Background (pg/m3)



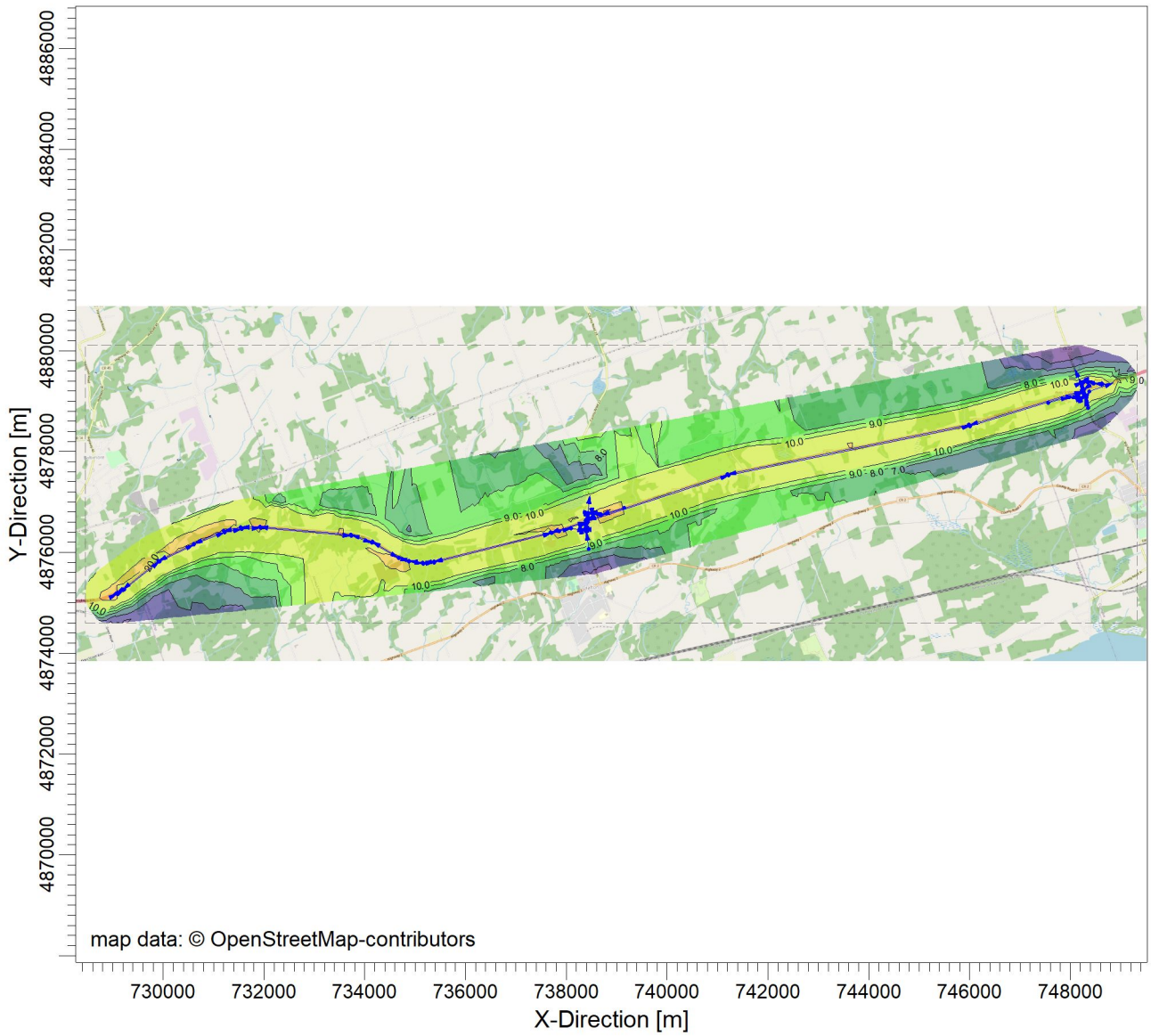
Contours pg/m**3

3.8 4.0 5.0 6.0 7.0 8.0 9.0 10.0 20.0 23.0

COMMENTS:	MODEL:		COMPANY NAME:	
2017 met year	**CAL3QHCR**		**Stantec Consulting Ltd.**	
	MAX: **23.02**			
	LINKS: **67**	RECEPTORS: **1362**		
	SCALE: 1:132,457 0 4 m		DATE: **12/4/2020**	PROJECT / PLOT NO.:

PROJECT TITLE:

Future Interim Build Scenario
Predicted 24-Hour Concentrations for Benzo(a)pyrene without Background (pg/m3)



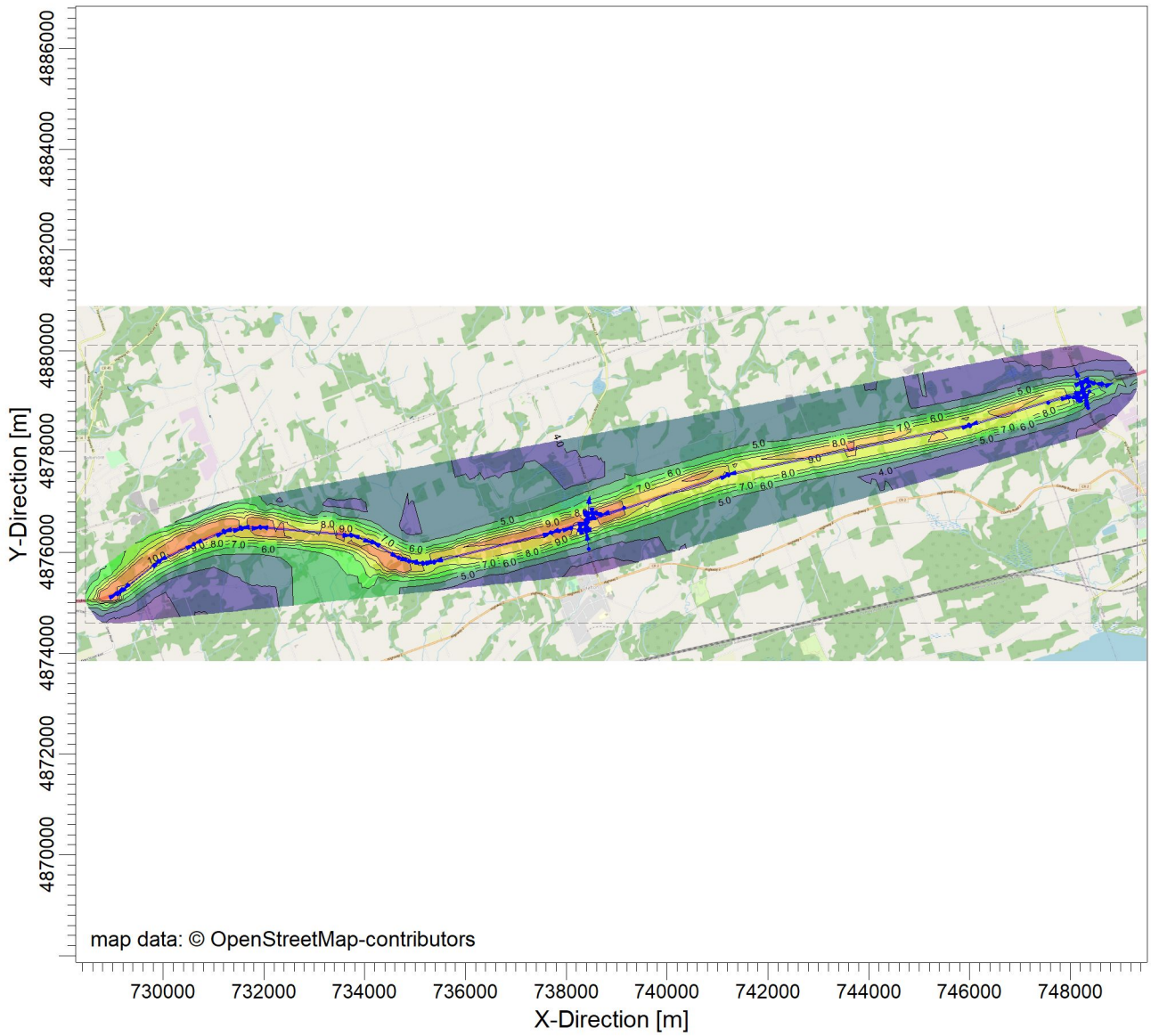
Contours pg/m**3

4.1 5.0 6.0 7.0 8.0 9.0 10.0 20.0 30.0 31.7

COMMENTS:	MODEL:		COMPANY NAME:	
2017 met year	**CAL3QHCR**		**Stantec Consulting Ltd.**	
	MAX: **31.73**			
	LINKS: **77**	RECEPTORS: **1374**		
	SCALE: 1:133,742 0 4 m		DATE: **12/4/2020**	PROJECT / PLOT NO.:

PROJECT TITLE:

Future Ultimate No Build Scenario
Predicted 24-Hour Concentrations for Benzo(a)pyrene without Background (pg/m3)



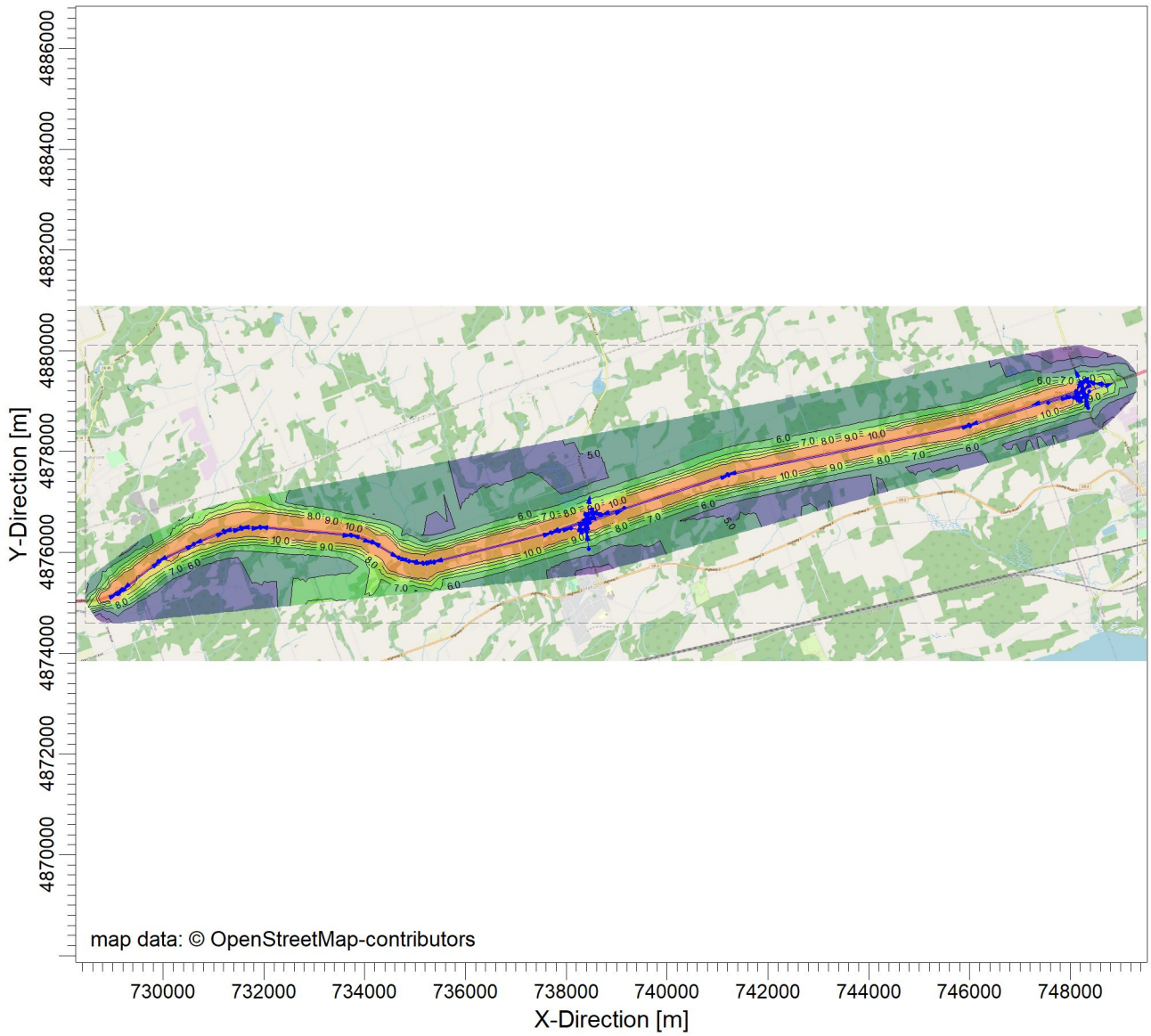
Contours pg/m**3

2.2 3.0 4.0 5.0 6.0 7.0 8.0 9.0 10.0 16.7

COMMENTS:	MODEL:		COMPANY NAME:	
2017 met year	**CAL3QHCR**		**Stantec Consulting Ltd.**	
	MAX: **16.74**			
	LINKS: **77**	RECEPTORS: **1374**		
	SCALE: 1:133,742 0 4 m		DATE: **12/4/2020**	PROJECT / PLOT NO.:

PROJECT TITLE:

Future Ultimate Build Scenario
Predicted 24-Hour Concentrations for Benzo(a)pyrene without Background (pg/m3)



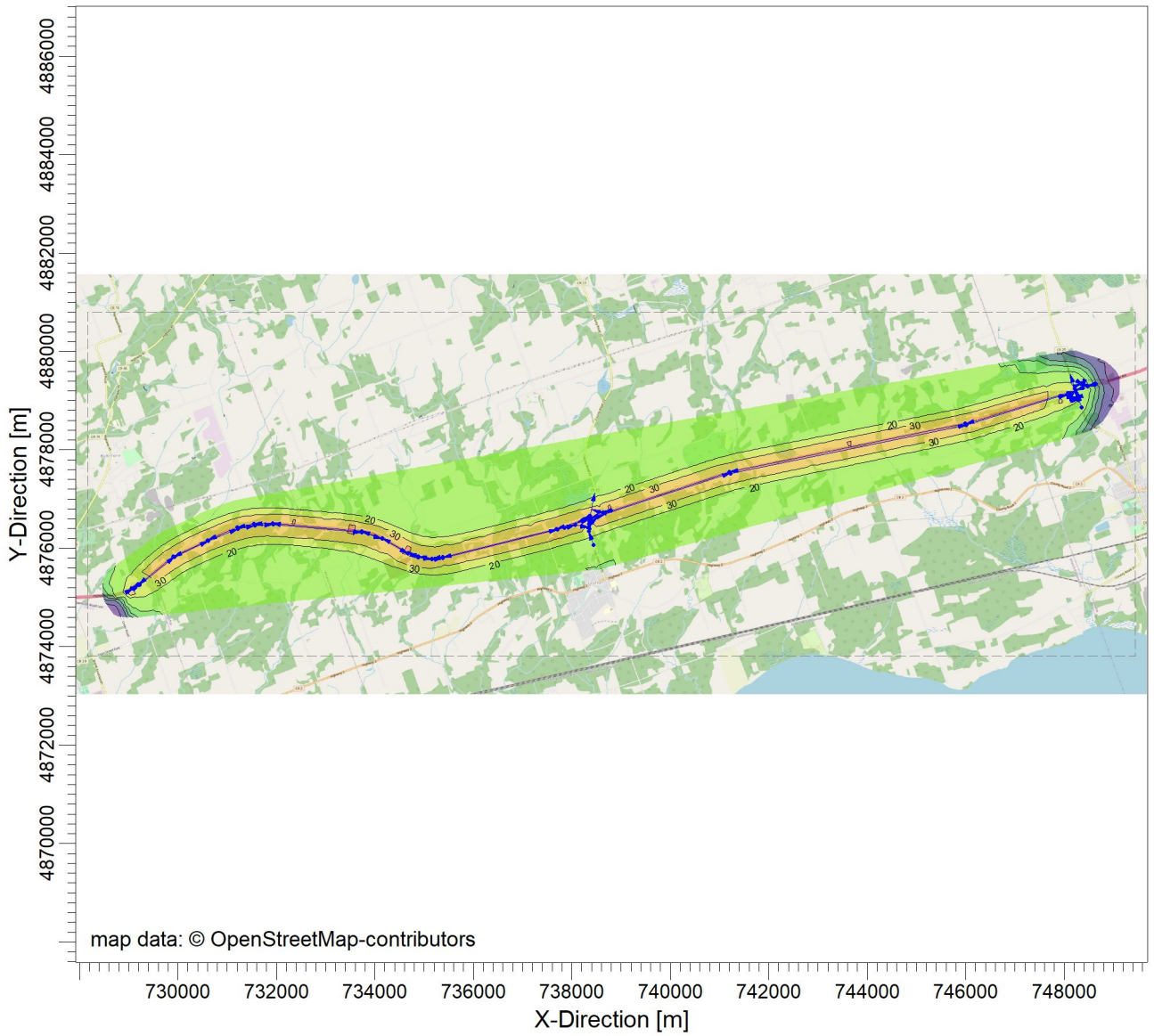
Contours pg/m**3

3.2 4.0 5.0 6.0 7.0 8.0 9.0 10.0 19.9

COMMENTS:	MODEL:		COMPANY NAME:	
2014 met year	**CAL3QHCR**		**Stantec Consulting Ltd.**	
	MAX: **19.94**			
	LINKS: **80**	RECEPTORS: **1376**		
	SCALE: 1:133,742 0 4 m		DATE: **12/4/2020**	PROJECT / PLOT NO.:

PROJECT TITLE:

Existing Scenario
Predicted Annual Concentrations for Benzo(a)pyrene without Background (pg/m3)



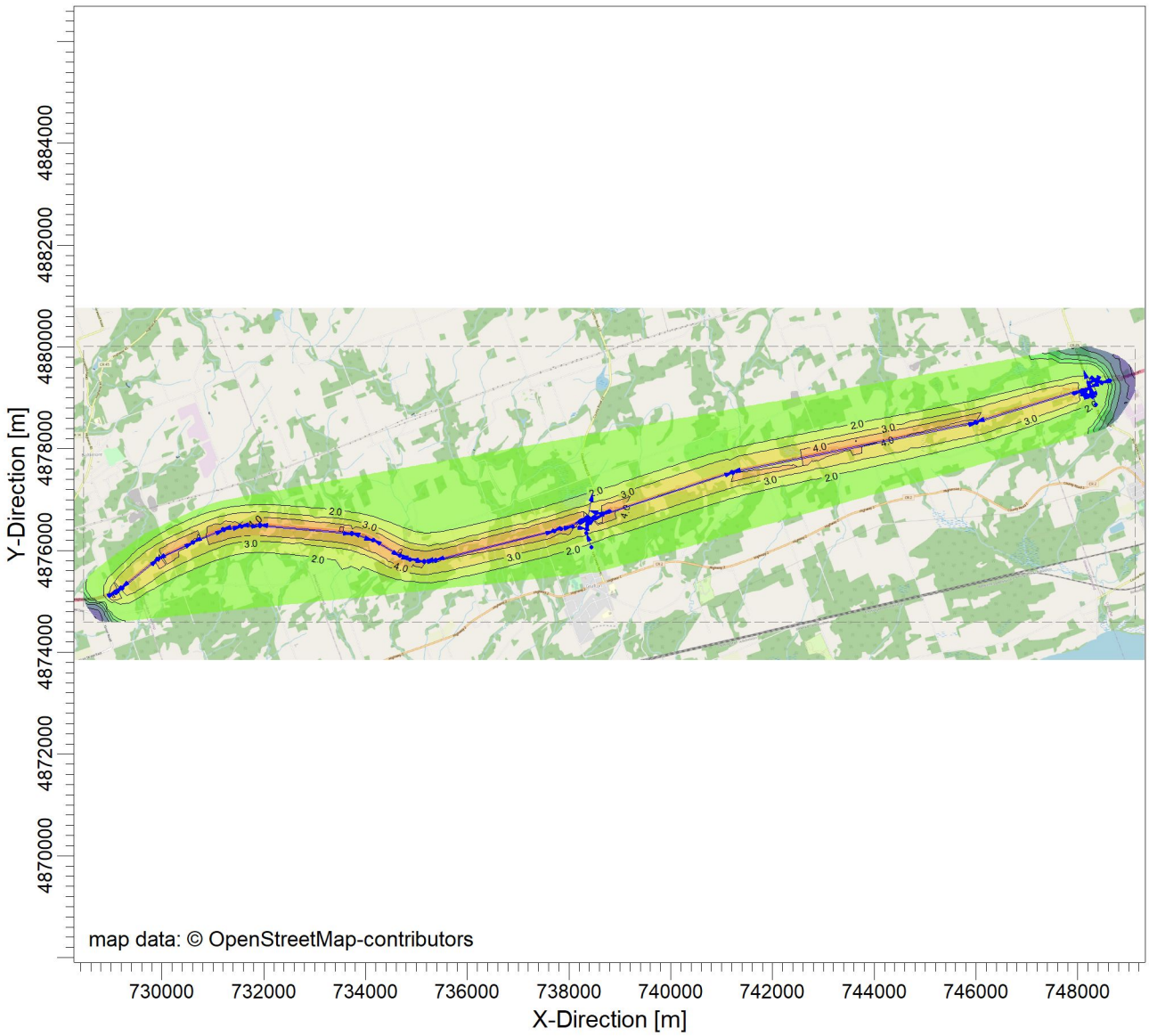
Contours pg/m**3

4 5 6 7 8 10 20 30 40 44

COMMENTS:	MODEL:		COMPANY NAME:	
2017 met year	**CAL3QHCR**		**Stantec Consulting Ltd.**	
	MAX: **43.99**			
	LINKS: **67**	RECEPTORS: **1362**		
	SCALE: 1:136,953 0 4 m		DATE: **12/4/2020**	PROJECT / PLOT NO.:

PROJECT TITLE:

Future Interim No Build Scenario
Predicted Annual Concentrations for Benzo(a)pyrene without Background (pg/m3)



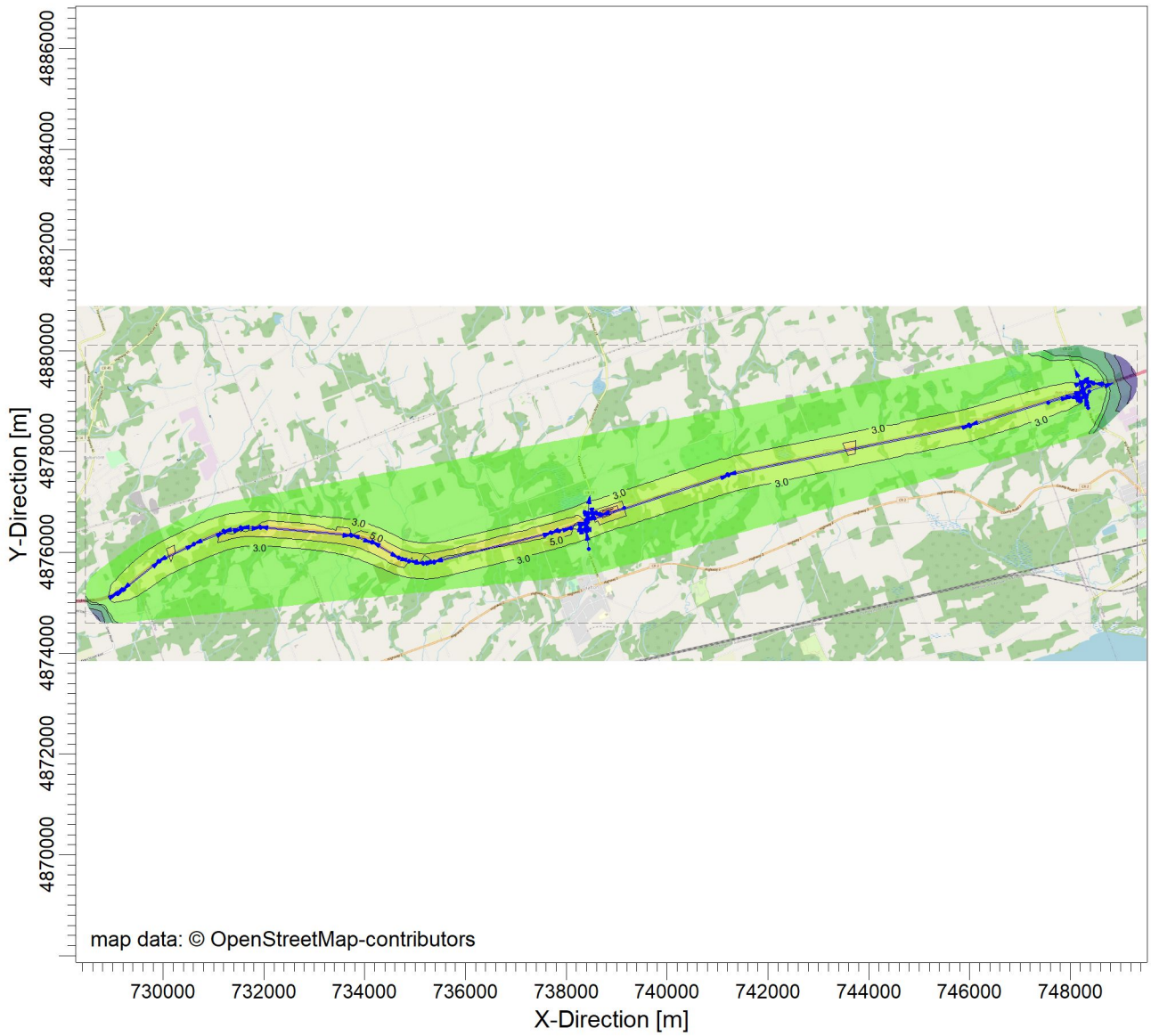
Contours pg/m**3

0.5 0.5 0.6 0.7 0.8 0.9 1.0 2.0 3.0 4.0 5.0 5.3

COMMENTS:	MODEL:		COMPANY NAME:	
2017 met year	**CAL3QHCR**		**Stantec Consulting Ltd.**	
	MAX: **5.26**			
	LINKS: **67**	RECEPTORS: **1362**		
	SCALE: 1:132,457 0 4 m		DATE: **12/4/2020**	PROJECT / PLOT NO.:

PROJECT TITLE:

Future Interim Build Scenario
Predicted Annual Concentrations for Benzo(a)pyrene without Background (pg/m3)



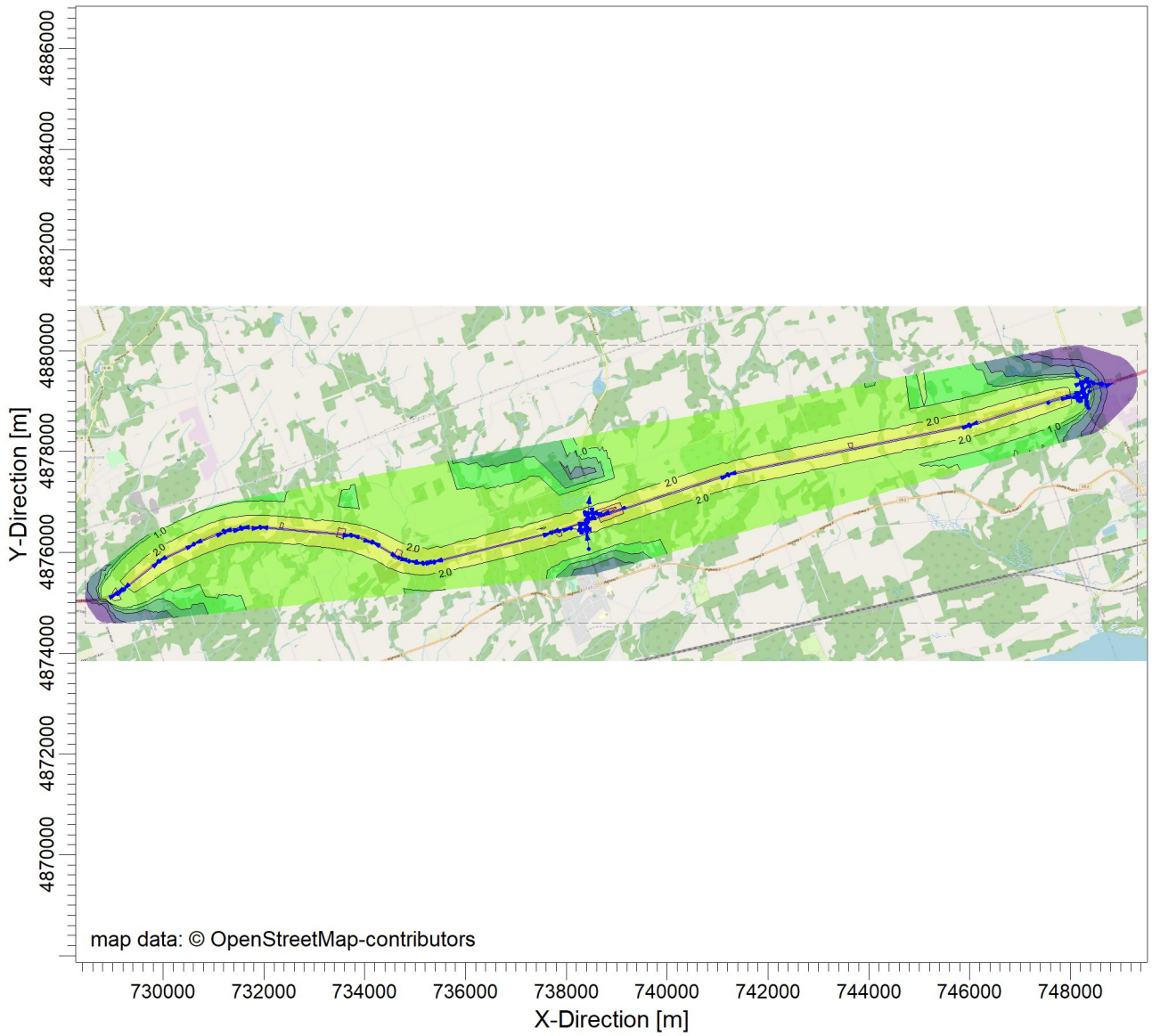
Contours pg/m**3

0.5 0.5 0.6 0.7 0.9 1.0 3.0 5.0 7.0 8.0 8.8

COMMENTS:	MODEL:		COMPANY NAME:	
2017 met year	**CAL3QHCR**		**Stantec Consulting Ltd.**	
	MAX: **8.85**			
	LINKS: **77**	RECEPTORS: **1374**		
	SCALE: 1:133,742 0 4 m		DATE: **12/4/2020**	PROJECT / PLOT NO.:

PROJECT TITLE:

Future Ultimate No Build Scenario
Predicted Annual Concentrations for Benzo(a)pyrene without Background (pg/m3)



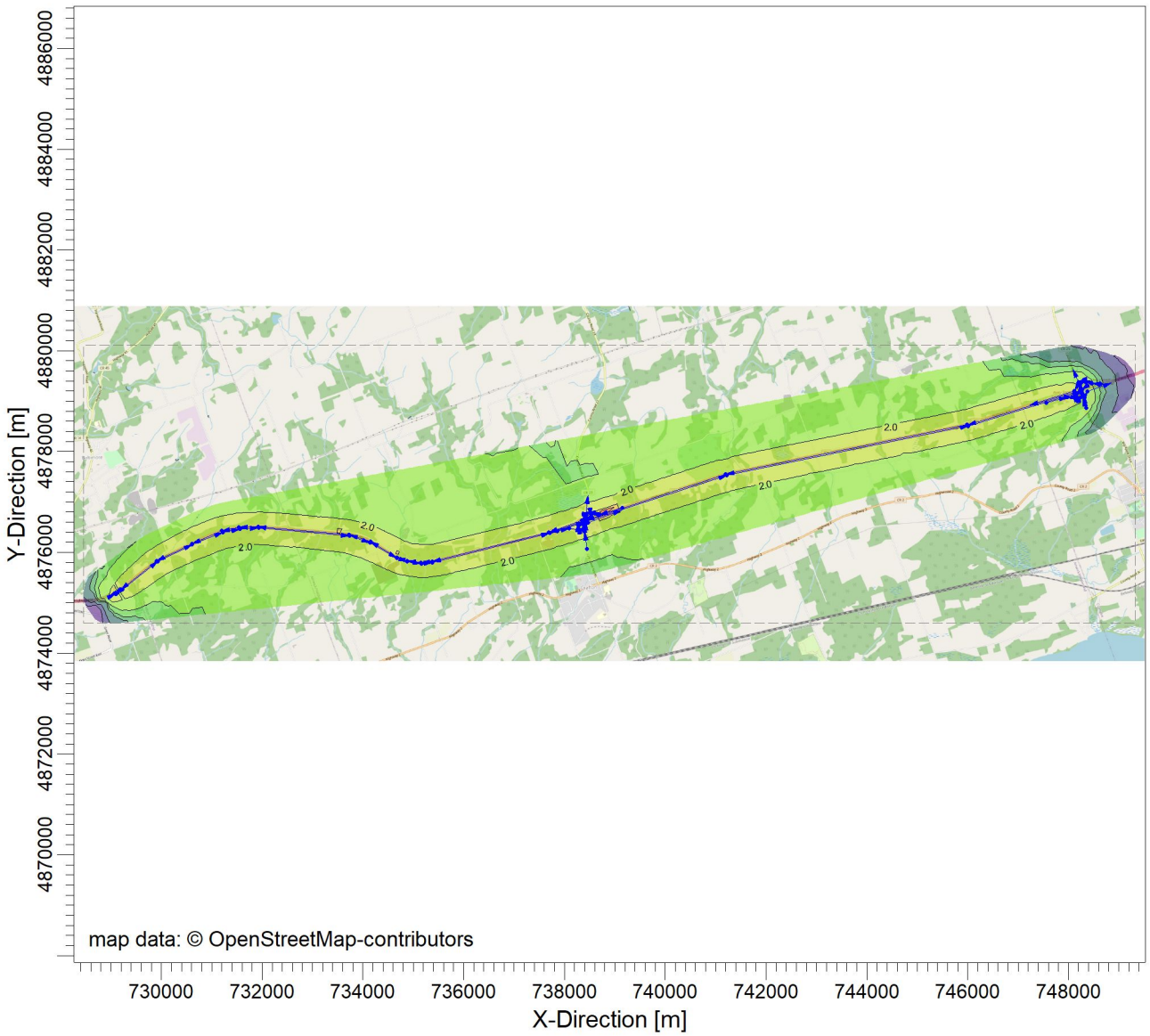
Contours pg/m**3

0.3 0.5 0.6 0.8 0.9 1.0 2.0 3.0 4.0 4.7

COMMENTS:	MODEL:		COMPANY NAME:	
2017 met year	**CAL3QHCR**		**Stantec Consulting Ltd.**	
	MAX: **4.66**			
	LINKS: **77**	RECEPTORS: **1374**		
	SCALE: 1:133,742 0 4 m		DATE: **12/4/2020**	PROJECT / PLOT NO.:

PROJECT TITLE:

Future Ultimate Build Scenario
Predicted Annual Concentrations for Benzo(a)pyrene without Background (pg/m3)



Contours pg/m**3

0.3 0.4 0.5 0.7 0.8 1.0 2.0 4.0 5.0 5.7

COMMENTS:	MODEL:		COMPANY NAME:	
2014 met year	**CAL3QHCR**		**Stantec Consulting Ltd.**	
	MAX: **5.73**			
	LINKS: **80**	RECEPTORS: **1376**		
	SCALE: 1:133,742 0 4 m		DATE: **12/4/2020**	PROJECT / PLOT NO.:

CALRoads View - Lakes Environmental Software C:\Users\ascruz\OneDrive - Stantec\Desktop\CAL3\2041_b\Runs\BAP_fullgrid_run\BAP_2041_b_grid_2014_ann\BAP_2041_b_grid_2014_ann.clv