APPENDIX H

AIR QUALITY ASSESSMENT REPORT

AIR QUALITY ANALYSIS REPORT

FOR

SPADINA SUBWAY EXTENTION – EA

FROM DOWNSVIEW STATION
TO STEELES WEST STATION

Project No.: 33015347

Prepared for:

TORONTO TRANSIT COMMISSION

January 30, 2006

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EXECUTIVE SUMMARY

The Toronto Transit Commission (TTC) and the City of Toronto commenced an Environmental Assessment (EA) study (the Undertaking) in 2004 to determine the best alignment and station locations for a future subway extension from Downsview Station to the proposed Steeles Avenue Station (via York University). If the subway is constructed, trips currently made by automobile can be made by transit instead, hence the impact of the Spadina Subway Extension on air quality on a regional scale, will in general, be positive. Also, a new report from the Victoria Transport Policy Institute in Canada, that evaluates rail transit benefits based on a comprehensive analysis of transport system performance in U.S. cities, found that cities with larger, well-established rail systems have significantly higher per capita transit ridership, lower average per capita vehicle ownership and mileage, less traffic congestion, lower traffic death rates, lower consumer transportation expenditures resulting in large energy conservation than otherwise comparable cities and obtained other benefits typically associated with reduced emissions. Furthermore, future development around the proposed stations is likely to be more transit-oriented, which reduces the rate of growth of automobile traffic. However, localized areas of air quality degradation could occur from operation of the subway extension where stations with commuter parking and bus terminal facilities providing public transit links are proposed. As part of this study, an investigation of potential impacts on air quality in the local area from (a) construction activities and (b) vehicular emissions has been conducted for the preferred design to evaluate and quantify, where possible, these impacts.

As part of the Spadina Subway Extension from Downsview Station, the construction of four (4) subway stations and affiliated parking is proposed. The study area is roughly bounded by Sheppard Avenue (south), Black Creek (west), Wilmington Avenue / Dufferin Street (east) and Highway 7 (north). The two areas which will be most influenced by the subway extension are the stations that contain bus interchanges and commuter parking facilities, specifically:

i. Finch/Keele area in the vicinity of the proposed Finch West Station.

ii. Jane/Steeles and Keele/Steeles area in the vicinity of the proposed Steeles West Station.

Emissions can occur during construction of the Undertaking, over a relatively short time period, and from the ongoing operation of the Undertaking, particularly vehicular emissions.

The impact from construction activities related to the Undertaking will be associated primarily with emissions of Suspended Particulate Matter (SPM) in the air and dustfall on objects such as cars and windows resulting from open-pit and cut and cover construction techniques, demolition, and carryout by construction vehicles, leading to grinding and re-suspension of construction dust by regular traffic on public roads. These emissions could result in off-site concentrations that exceed the MOE standards if uncontrolled and affect nearby residences and commercial establishments as well as pedestrians. In order to meet the provincial standards, control efficiencies ranging up to 70% and 95% respectively, may be required.

To promote compliance with MOE's criteria, the TTC Master Specifications 05-06-28 requires that contractors incorporate mitigation or control measures into construction activities as specified in the

Controls and Methods Plan. The MOE expects that emission from construction operations comply with the O. Reg. 419/05 SPM criteria, therefore, control measures articulated in the Controls and Methods Plan will need to be carried out and monitored diligently in order to comply with MOE's requirements.

The primary impact from vehicular emissions are associated with carbon monoxide (CO) and nitrogen oxides (NOx), (comprised of two principal components, nitric oxide (NO) and nitrogen dioxide (NO_2)), and to a lesser extent particulate matter (PM) which is further divided into three size fractions; Suspended Particulate Matter (SPM) with a Particle size less than 44 microns, PM_{10} with particle sizes less than 10 micron and $PM_{2.5}$ with particle sizes less than 2.5 micron. Other pollutants, primarily benzene, 1,3-butadiene, formaldehyde, acetaldehyde and acrolein, collectively known as Air Toxics, have also been associated with emissions from vehicles, particularly the heavy duty diesel vehicle (HDDV) category (which does not include buses); however, since HDDVs are not expected to be a significant aspect of the operation of the subway system, emissions of these air toxics were not evaluated.

To protect human health and the environment, the MOE has established maximum allowable exposure limits for NO_2, CO, SPM and dust fall. The criteria for NO_2, CO, dustfall and SPM are specified in the recently enacted Ontario Regulation (O.Reg. 419/05) and/or in the Ontario Ambient Air Quality Criteria (AAQC). Currently, no provincial standard or criterion is available for $PM_{2.5}$ or NO. Recognition of health impacts from $PM_{2.5}$ has resulted in the enactment of Canada-wide standards for this size fraction that will take effect in 2010. $PM_{2.5}$ emanating from vehicle exhaust may have more serious health effects than ordinary dust because of both the size and chemical composition. Therefore, the pollutants used for assessing the impact to air quality were based on CO, NO_2 and $PM_{2.5}$.

The existing ambient air quality conditions for the project area are based on the most recently available data published by the Ministry of the Environment, *Air Quality Report* (2003) from the closest monitoring stations to the project area for which data was available. The closest monitoring station which provided NO_2 and $PM_{2.5}$ is the Toronto North Station located on Hendon Avenue, near Yonge Street and Finch Avenue. Data for CO concentrations are based on the measurements at the Toronto Downtown Station. A review of data for the project area indicates that CO and NO_2 concentrations are well below the Ontario AAQC. Ambient $PM_{2.5}$ concentrations, at the 90^{th} percentile level are at 60% of the proposed federal standard that will come into effect in 2010, however, maximum $PM_{2.5}$ concentrations have exceeded the proposed limit on occasion.

The concentrations of air pollutants from vehicular emissions due to the Undertaking were predicted by conducting mathematical modeling using US-EPA CAL3QHC for intersections, with fleet-averaged emission factors for the projected traffic volume for the year 2021 calculated using the Mobile 6.2C emission factor model. Meteorological conditions, particularly a wind speed of 1 m/s (3.6 km/hr) were used which is considered to be more conservative than actual meteorological data and generate worst-case pollutant concentrations.

Two scenarios were selected for the detailed assessment of local traffic impacts at the Steeles and Finch West Station areas based on projected traffic volumes for 2021:

i. The "do nothing" scenario, which takes into account the projected traffic volume for 2021 without the proposed transit development (also referred to as the "Future No-Build" or "Future Background"); and

ii. The "Future Build", which takes into account the projected traffic volume for 2021 and new trips generated from the operation of the subway and bus terminals assuming that construction is completed before 2021.

Calculations for the Future No-Build Scenario were modelled at the existing traffic intersections based on projected traffic increases. Emissions in the Future Build Scenario were based on the project traffic increase plus emissions from traffic accessing the station, traffic at new intersections, vehicles idling in the passenger drop-off/pick-up areas and parking facilities, and idling buses providing public transit links at the on-site bus terminals. Background pollutant concentrations were included in the modeling results for both the Future No Build and Future Build Scenario. No attempt was made to predict changes to background concentrations in 2021.

As the locations of the emission sources (including drop-off areas, parking facilities, bus terminals) for the Steeles West Station are stretched out over a very large area and as some of the intersections within the area have Levels of Service (LOS) designations of 'C' or better, this study focused on worst case locations or "hot spots" within the subway station area. These hot spots were determined to be:

i) Two (2) intersections with LOS designation 'E' and/or 'F' (Jane/Steeles, Keele/Steeles).
i) Three (3) bus terminal facilities and associated commuter parking/passenger pick-up and drop-off areas.

Similar locations at the Finch West Station area were determined to be:

i) Three (3) intersections with LOS designation 'E' and/or 'F' (Finch/Romsfield, Finch/Keele and Four Winds Drive/Keele).
ii) One (1) bus terminal facility, associated commuter parking and passenger pick-up /drop-off area.

A comparison of the predicted maximum concentrations as a percentage of the applicable criteria for $PM_{2.5}$, CO and NOx of all the model runs based on the worst-case conditions discussed above are presented for the locations near the two subway stations at Steeles and Finch. The "incremental change" is the increase in pollutant concentrations from Future No Build to Future Build, directly attributable to the Undertaking.

The maximum concentrations and their locations for the modeled pollutants are presented below assuming that the background concentrations at the 90^{th} percentile remain the same in 2021 as in 2003. Since background concentrations represent the largest source of contaminants in the case of $PM_{2.5}$, changes in background levels may have a significant effect on $PM_{2.5}$ concentrations at the local level.

- *Carbon monoxide emissions will reach 40% of criteria (at Keele/Steeles intersection under the Future Build Scenario) with an incremental change of 3% over the No-Build Scenario.*
- *$PM_{2.5}$ emissions will reach 67% of criteria (at Keele/Steeles intersection under the Future Build Scenario) with an incremental change of 1.4% over the No-Build Scenario.*
- *NOx emissions may reach 85% of the criteria if it is assumed that all NOx emissions are emitted in the form of NO_2 (at Keele/Steeles intersection under the Future Build Scenario), with an incremental change of 5% over the No-Build Scenario. This is a conservative assumption. A corresponding value of 65% of the criteria resulting from the application of the Ambient Ratio Conversion Method would be more realistic.*
- *The change in pollutant concentrations from Future No Build to Future Build will likely not exceed 6% even at the local level during peak hour traffic, in spite of a forecasted increase in traffic volume of 9-25% from the No-Build Scenario.*

In general, results from modeling CO, NOx and $PM_{2.5}$ at the selected locations, indicate that the operation of the expanded Spadina Subway is not likely to have a significant impact on air quality at the local level. The impact on air quality at York University, though not modeled, is assumed to improve due to the removal of idling buses within the University premises.

1.0 INTRODUCTION

The Toronto Transit Commission (TTC) and the City of Toronto commenced an Environmental Assessment (EA) study in Fall 2004 to find the best alignment and station locations for a future subway extension from Downsview to Steeles Avenue Station (via York University). As part of this study, an investigation of potential impacts to air quality including mitigation strategies was conducted by considering two scenarios, with and without the subway extension (Future No-build and Future Build).

With the subway in place, trips currently made by automobile, can be made by transit, hence the impact to the Spadina Subway Extension on a regional scale, will in general, be good. A new report out from the Victoria Transport Policy Institute (Todd Litman, 2005) that evaluates rail transit benefits, based on a comprehensive analysis of transport system performance in U.S. cities, finds that cities with larger, well-established rail systems have significantly higher per capita transit ridership, lower average per capita vehicle ownership and mileage, less traffic congestion, lower traffic death rates, lower consumer transportation expenditures resulting in large energy conservation and reduced emission benefits than otherwise comparable cities. Furthermore, future development around the proposed stations is likely to be more transit-oriented, which reduces the rate of growth of automobile traffic. However localized areas of air quality degradation could occur from the subway extension where stations with commuter parking and bus terminal facilities are proposed leading to increased localized traffic and resulting emissions from both free flowing and idling traffic to drop-off areas, parking facilities as well as bus terminals providing public transit links. It should be noted that an air quality impact assessment was conducted by Rowan, Williams, Davies and Irwin (November, 1992) as part of an earlier EA for extension of the Spadina Subway with the line going even further and looping back to Yonge Street and Finch Avenue, parallel to Steeles Avenue. Air quality impacts did not exceed criteria existing at the time of the study.

2.0 PROJECT DESCRIPTION

The study area is roughly bounded by Sheppard Avenue (south), Black Creek (west), Wilmington Avenue / Dufferin Street (east) and Highway 7 (north). As part of the Spadina Subway Extension from Downsview Station to Steeles West Station, the construction of four (4) subway stations and affiliated parking is proposed:

Table 2.0 – Proposed Subway Station Descriptions

Proposed Station	Commuter Parking Proposed
Sheppard Avenue West	No
Finch West	Yes
York University Station	No
Steeles West	Yes

A plan showing the locations of these proposed subway stations is provided in Exhibit 7.1-Recommended Undertaking, in the main Environmental Assessment Report for the Spadina Subway Extension.

3.0 EXISTING AIR QUALITY ENVIRONMENT

3.1 Ambient Air Quality Criteria

Air pollutants associated directly with vehicular traffic are carbon monoxide (CO), nitrogen oxides (NOx), with two principal components, NO and NO_2, and to a lesser extent particulate matter (PM) denoted by size fractions as PM_{10} and $PM_{2.5}$ included in the Suspended Particulate Matter (SPM) designation. Five other pollutants, benzene, 1,3-butadiene, formaldehyde, acetaldehyde and acrolein, collectively known as Air Toxics, have also been related to emissions from vehicles, particularly the heavy duty diesel vehicle (HDDV) category. As HDDV's are not likely to be a major factor in a public transit Undertaking, the pollutants used for assessing the impact to air quality was determined to be CO, NOx, and PM.

The relevant criteria to evaluate NO_2 and CO concentrations as well as for Suspended Particulate Matter (SPM) for particle diameters less than 44 microns are found in the Ontario Ambient Air Quality Criteria (Ontario AAQC) carried forward into the newly enacted Regulation, O. Reg. 419/05. Currently, no provincial standard or criterion is available for $PM_{2.5}$ or NO. Recognition of health impacts from $PM_{2.5}$ has resulted in the enactment of Canada-wide standards for this size fraction. $PM_{2.5}$ emanating from vehicle exhaust may have more serious health effects than ordinary dust because of both the size and chemical composition. $PM_{2.5}$ can travel deep into the pulmonary system transporting noxious chemicals such as benzene. The federal government is in the process of implementing a Canada-Wide Standard (CWS) for $PM_{2.5}$ only. The CWS $PM_{2.5}$ standard will come into effect by 2010.

3.2 Metropolitan Toronto Air Quality

The existing ambient air quality conditions for the project area are based on the most recent measurements (2003) from the closest monitoring stations to the project area for which data was available. The closest monitoring station to the project area is the Toronto North station located on Hendon Avenue, near Yonge Street and Finch Avenue. According to the most recent publicly available report entitled "Air Quality in Ontario 2003" (MOE, 2003), the pollutants relevant to this study that are monitored at this location are NO_2 and $PM_{2.5}$. Data for CO concentrations are based on the 2003 measurements at the Toronto Downtown station located approximately 15 kilometres south of the project area.

3.2.1 MOE Monitoring Station Results

Table 3.2-1 presents the applicable AAQC and CWS, along with the 2003 measurements at the Toronto North or Toronto Downtown stations.

Table 3.2-1
Ambient Air Quality Summary (2003)

Pollutants (Unit)	Average Time	Criteria (1)	90th Percentile (4)	Maximum Concentrations	Number of Times Above Criteria
$PM_{2.5}$ ($\mu g/m^3$) (2)	24-hour	30	18	46 (24h)	7
Suspended Particulate Matter (<44 µ) ($\mu g/m^3$)	24-hour	100	NA	NA	NA
NO_2 (ppb) (2)	1-hour	200	38	79	0
	24-hour	100	NA	57	0
CO (ppm) (3)	1-hour	30	0.75	2.4	0
	8-hour	13	NA	1.42	0
NOx (ppb)	1-hour	NS	60	395	?
	24-hour	NS	NA	155	NA

Notes: (1) The criterion for $PM_{2.5}$ is the federal standard published in Canada-wide standards for Particulate Matter (PM) and Ozone adopted by the Canadian Council of Ministers (July, 2000)
(2) The pollutant measured at the Toronto North station.
(3) The pollutant measured at the Toronto Downtown station.
(4) If the 90th percentile value is 60 ppb, then 90 percent of the data are equal to or below 60 ppb.
NA - Not Available.
NS - No Standard.

3.2.2 Background Concentrations

The 90th percentile level was selected to represent the background concentration. This is considered a very conservative input value for modeling, and deemed suitable by the MOE as confirmed by discussions during the project work with Dr. Robert Bloxam, Senior Leader, Modelling, Environmental Modelling and Data Analysis Branch.

3.3 Air Quality in the Vicinity of the Spadina Subway Extension

As shown in Table 3.2-1 in the 2003 MOE Air Quality Report, both the 1-hour and 24-hour 2003 NO_2 levels, as well as the 1-hour and 8-hour levels for CO were well below the applicable criteria. The project area is not identified as having particular concerns because of the exceedences.

The measured $PM_{2.5}$ concentrations in 2003 were at 60 percent of the proposed federal standard, based on the 90th percentile concentration. It is noted however, that the $PM_{2.5}$ maximum concentration exceeeded the criteria several times.

Based on Table 3.2-1 presented above, it is concluded that the background concentrations in the Study Area are well below the Ontario AAQC for CO and NO_2, while the maximum 24-h $PM_{2.5}$ concentrations may exceed, on occasion, the federal proposed standard that will come into effect in 2010, though the average will likely remain below the standard.

3.4 Climatology

3.4.1 Dispersion Climatology

The main meteorological parameters affecting dispersion of pollutants are wind, stability of the atmosphere and mixing height. The rate of dilution and trajectory of a polluted air parcel is determined by wind speed and direction. Atmospheric stability determines the rate at which dilution occurs through turbulent diffusion in horizontal and vertical directions. Both mechanical and buoyant processes lead to turbulent diffusion. The mixing height sets the upper limit to dispersion of pollutants and is characterized by the depth of the atmosphere that is convectively unstable. The US EPA intersection modeling software provides an opportunity to either use actual meteorological data for wind speed, stability and mixing height in the CAL3QHCR version or a user defined worst-case scenario in the CAL3QHC version. Further analysis relating to selection of parameters in order to determine choice of software used is detailed below.

3.4.2 Wind Climate

Dispersion is greatest with strong winds and least with light winds. Canadian climate normals for the period 1971 to 2000 are available from Environment Canada (EPA, 2005) for Toronto Lester B. Pearson International Airport (LBPIA). Average wind speeds range from 11.2 km/h in the height of summer (August) to 17.8 km/h on average in January. However, to model the worst-case scenario, a wind speed of 3.6 km/h (1 m/s) is typically chosen as a default value.

The most frequent wind direction is from the Northwest (NW), except in the Fall when it veers SW. For dispersion modeling, the worst case is identified by modeling wind directions through all 360 degrees in 10^{o} increments.

3.4.3 Atmospheric Stability

For diffusion studies, atmospheric stability is classified into several categories, ranging from A to F. Class D refers to neutral stability, classes E to F indicate stable conditions, while classes A through C denote unstable atmospheric conditions. In a neutrally stable atmosphere, mechanical turbulence generated by the surface roughness and wind dominate over buoyancy efforts generated by heating or cooling of the air. In a convective or unstable atmosphere, positive buoyancy effects dominate over mechanical turbulence and cause air to rise rapidly enhancing further turbulence and therefore, accelerated diffusion of pollutants. Because of the heat generated in urban settings, the formation of stability class F is rare. Hence, for worst case prediction of dispersion, a stability class of E or D is appropriate. To represent the worst-case a stability class of E was chosen.

3.4.4 Mixing Height

The mixing height is increased by turbulent mixing generated from rising hot air. Therefore, seasonally the mixing height is greater during summer than in winter and on a daily basis, the maximum height tends to occur when solar heating is at its peak and the atmosphere is highly convective. The lowest average heights occur under very light wind conditions during the early morning hours as the surface starts to warm by solar heating. No regular program to measure

temperature profiles is conducted at LBPIA to determine mixing heights. In the 1992 Air Quality Assessment conducted by RWDI, the mixing height was derived using the closest publicly available dataset obtained from Buffalo, New York airport. It ranged from 2,100 m on a summer afternoon to 450 m on a summer morning. As reported in Table B-11 (RWDI, 1992), the average annual mixing height for the analyzed period from 1984 to 1987 was 298 m for wind speeds of 0-7 km/h, compared to a winter value of 199 m. Analysis of a more recent data set from 1996 to 2000 for Buffalo available at the MOE website, (www.ene.gov.on.ca/envision/air/regulations/metdata), indicated that for wind speeds of 0-7 km/h the mixing height averaged closer to1000 m. According to the guideline for CAL3QHC used for intersection modeling, the mixing height has minimal effect until the value is well below 100 m. By default a mixing height of 1,000 m is used in modeling in the absence of site-specific data. For modeling purposes, RWDI used 300 m. Results obtained from a sensitivity analysis for mixing heights, conducted by URS, where the input value was varied from 1500 m to 5m for the Finch West Station, indicated that the model became sensitive to the input values only below 100 m. The more conservative value of 300 m was selected in keeping with the previous 1992 assessment even though the average mixing height is closer to the default value of 1000m.

A sensitivity analysis was conducted by URS using CAL3QHCR with real meteorological data input for the period 1996 to 2000 and compared to results obtained with CAL3QHC based on a user-defined worst-case scenario for the Finch West Station. Maximum concentrations obtained with CAL3QHC were higher than those from CAL3QHCR, hence the CAL3QHC software version was chosen.

4.0 PREDICTING THE EFFECTS OF THE UNDERTAKING

4.1 Approach to Effect Prediction

The effects of the undertaking on the atmospheric environment were predicted using a semi-quantitative assessment for construction impacts and mathematical modeling techniques for vehicular traffic (Mobile 6.2C and CAL3QHC) and compared to applicable criteria. Mobile 6.2C, the Canadianized version the US EPA Mobile 6.2, calculates emission factors for a fleet of vehicles, which are used in the US EPA CAL3QHC model to assess dispersed pollutant concentrations at selected receptors. In addition, the impact of the undertaking was determined by subtracting the concentration of applicable pollutants in the No-Build Scenario from the Build-Scenario.

4.2 Criteria and Standards

4.2.1 Air Quality Standards and Criteria for Construction

Emissions from construction and demolition activities are covered by Regulation 419/05, Section 37. The emission (contaminant) of concern is primarily fugitive dust. The Regulation states that:

> " no person shall (a) construct, alter, demolish, drill, blast, crush or screen anything or cause or permit the construction, alteration, demolition, drilling, blasting, crushing or

> screening of anything so that a contaminant is carried beyond the limits of the property…,
>
> to an extent or degree greater than that which would result if every step necessary to control the emission of the contaminant were implemented".

The MOE expects that construction operations meet Regulation 419/05 requirements. In order to do so, the proponent would be expected to comply with applicable provincial standards related to dust emissions: Suspended Particulate Matter (SPM) and dustfall promulgated as ½ hour Point of Impingement (POI) standards. The POI limit for SPM and dustfall are 100 $\mu g/m^3$ and 8,000 $\mu g/m^3$, respectively.

4.2.2 Air Quality Standards and Criteria for Vehicular Emissions

Applicable air quality standards and criteria are summarized in Table 3.2-1 and discussed in Section 3.2.

4.3 Construction Impacts

Activities associated with the development of the Spadina Subway Extension, may include demolition of existing structures and surfaces and construction of new structures and surfaces. Both of these activities may be a source of emissions of total suspended particulate matter (TSP), commonly referred to as dust. Since these sources are not discharged from a specific source or exhaust stack, they are referred to as fugitive dust sources.

4.3.1 Sources of Fugitive Dust

Specific sources of fugitive dust during demolition activities may include:

- Destruction by explosion or wrecking ball,
- Handling and transfer systems of building material (bulldozing, stockpiling, truck loading),
- Wind erosion from exposed debris piles and exposed area,
- Vehicular travel on unpaved area, and
- Mud and dirt carry-out onto paved surfaces.

Specific sources of fugitive dust during construction activities may include:

- Site preparation (excavation, drilling, blasting),
- Storage piles,
- Wind erosion from material piles and exposed work areas,
- Handling and transfer systems of building material,
- Vehicular travel on unpaved area (prior to and during road construction),
- Road surfaces, and
- Fabrication processes.

Although TSP emissions from these sources typically occur over short periods of time, they may have a substantial temporary impact on local air quality, especially during dry conditions during high wind speed events.

The approach to estimating emissions from construction sites is based on the emission rate developed by the US EPA of 2.7 tonnes per hectare of construction per month of activity. Further assumptions are used to estimate a month of activity, which is generally taken to be 5 working days per week and 8 hours per day, leading to 4.7 g/s/ha, assuming a month is 160 hours.

Based on the above, the previous EIA for the study area reported TSP concentrations for two typical scenarios: one (1) hectare construction site, (2) a 30 m wide strip representing a cut and cover area. As the assumptions and modeling approach would be the same, if conducted for this undertaking, leading to identical results, the effort was not duplicated.

4.3.2 Survey of Sensitive Areas

The areas of construction will be situated within developed residential and commercial area of northwest Toronto, bordering Vaughan. At most of the construction areas, these residential and commercial areas, as well as pedestrian areas such as sidewalks, will border the construction sites. For this reason, dust mitigation procedures must be in place in order to minimize the impact to neighboring developments and pedestrian areas. These measures are further discussed in Section 5.2.2.

4.4 Vehicle Exhaust Impact Prediction

4.4.1 Scenarios Examined

The following two scenarios were selected for the detailed assessment of local traffic.

i) 2021 traffic projections with no transit development (Future Background or Future No-Build).
ii) 2021 traffic projections with subway and bus stations in place (Future Build).

A 2021 development horizon was utilized to assess future traffic conditions (Traffic reports for Finch and Steeles Stations, Appendix N, Main Report). It is expected that the planning process and construction of the proposed TTC Spadina Subway Extension could be built and completed within the next ten years. For the purpose of the traffic assessment, a 2021 horizon year was selected to reflect this potential construction as well as several years of operation. It is acknowledged that 2021 is a very long-term horizon period, and is atypical for an analysis of this nature. Notwithstanding, the year 2021 has been selected to reflect conditions several years after subway construction and to be consistent with the comprehensive Transportation Impact Report prepared for the subway alternatives and evaluations phase of the study.

The two areas which will be most influenced by the subway are those stations with bus interchanges and commuter parking facilities resulting in increased localized traffic to drop-off areas, parking facilities as well as bus terminals providing public transit links. These locations are:

i) Finch/Keele area in the vicinity of the Finch West Station.
ii) Keele/Steeles area in the vicinity of the Steeles West Station.

Modeled locations are shown in Figure 4.4.1-1. As the source locations (passenger pick-up and drop-off (PPUDO) areas, parking facilities, bus terminals) are stretched out over a very large area and as some of the intersections within the area have Levels of Service (LOS) designations of C or better, this study focuses on "hot spots" or worst case locations within the Steeles West Station area. For the Steeles West Station area, modeling was conducted for:

i) Two (2) intersections with LOS designations E and F (Keele/Steeles and Jane/Steeles).
ii) Three (3) bus terminals and associated commuter parking/passenger pick-up and drop-off (PPUDO) facilities.

In the Finch West Station area, the impacted intersections with LOS ranking of E or F and the future bus terminal and associated commuter parking/(PPUDO) facility were modeled as a single area since their proposed locations are within sufficiently close distances. The impacted intersections chosen for modeling are Finch/Romstead, Finch/Keele and Keele/Four Winds Drive.

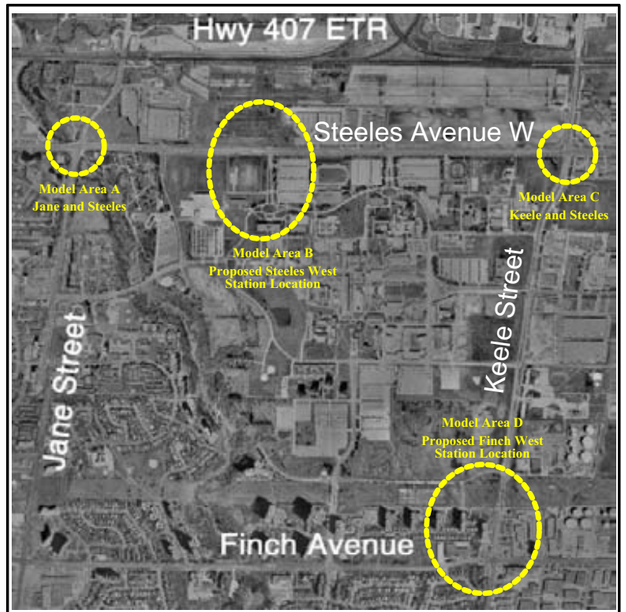
4.4.2 Traffic Emissions Estimation and Background Pollutant Levels

The MOBILE6.2C model was used to estimate emission factors for CO, $PM_{2.5}$, and NO_x. MOBILE6.2, the latest version of the MOBILE model, was designed by the United States Environmental Protection Agency (U.S. EPA) to address a wide variety of air pollution modeling needs (U.S. EPA, 2003). MOBILE6.2 generates emission factors for a fleet of vehicles as a function of the mix and age of the fleet, calendar year, ambient temperature, speed, fuel characteristics, and presence and absence of an inspection and maintenance (I/M) program and is described as the composite emission factor. MOBILE6.2 can also generate sector specific emission factors as the composite emission factor cannot be used in special situations such as car parking facilities or bus terminals.

MOBILE6.2C developed by Environmental Canada (EC, 2005) is the Canadian version of the MOBILE6.2 model and was modified to more accurately reflect Canadian conditions. MOBILE6.2C has the exact same input data requirements as MOBILE6.2 (EC, 2003).

4.4.2.1 MOBILE 6.2C Input Parameters

Model input data for the subject analyses were prepared based on a sample input file obtained from the MOE (2005) and the "MOBILE6.2C Canadian Supplemental Users' Guide" (EC, 2003). The "User's Guide to MOBILE6.1 and MOBILE6.2: Mobile Source Emission Factor Model" developed by the U.S. EPA was also used for model input preparation. The local vehicle age distribution data and mileage accumulation rates obtained from the MOE (2005) were used as input to MOBILE6.2C. The MOBILE6.2C model default vehicle mix data were used in the emission factor modeling analyses, and these data are presented in Table 4.4.2.1.1.



Model Locations

Spadina Subway Extension – EA, Air Quality Assessment
Downsview Station to Steeles Avenue

Toronto Transit Commission
Toronto, Ontario

Figure 4.4.1-1
33015347, January 2006

Table 4.4.2.1.1 – Vehicle Mix Data

Vehicle Type	Percent of Total
Light-Duty Gasoline Vehicles (LDGV)	26.70%
Light-Duty Gasoline Trucks 1 and 2 (LDGT12)	42.10%
Light-Duty Gasoline Trucks 3 and 4 (LDGT34)	13.94%
Heavy-Duty Gasoline Vehicles (HDGV)	3.91%
Light-Duty Diesel Vehicles (LDDV)	0.27%
Light-Duty Diesel Trucks (LDDT)	1.26%
Heavy-Duty Diesel Vehicles (HDDV)	11.46%
Motorcycles (MC)	0.36%
Total	100%

According to the U.S. EPA User's Guide, the model allows the choice of January 1 or July 1 as evaluation months in the model runs (U.S. EPA, 2003). The daily minimum and maximum temperatures corresponding to these two months recommended by the MOE (MOE, 2005) were selected to estimate emission factors for the subject air pollutants. In addition, the fuel Reid vapour pressure (RVP) values for January and July recommended by the MOE were used. The temperature data and RVP values used in the modeling runs are presented in Table 4.4.2.1.2. Additional inputs into the MOBILE6.2C using the applicable unit format (imperial) are also presented in Table 4.4.2.1.2. For variables not specifically identified in Table 4.4, MOBILE6.2C default values were used.

Table 4.4.2.1.2 – MOBILE6.2C Input Parameters

Input Information	Value and Source
Ambient Temperature	January Minimum: 25.3 °F (-3.7 °C) January Maximum: 36.9 °F (2.7 °C) July Minimum: 64.9 °F (18.3 °C) July Maximum: 86.2 °F (30.1 °C)
Vehicle Speed	2.5 miles per hour (4 km/h) 5.0 miles per hour (8 km/h) 10 miles per hour (16 km/h) 18.6 miles per hour (30 km/h)
Province	Ontario
Operating Year (Horizon Year)	2021
Reid Vapour Pressure	January RVP: 14.7 psi (101.3 kPa) July RVP: 8.9 psi (61.3 kPa)
Vehicle Operating Mode	Model default values 100% Cold Start

The MOBILE6.2C model does not directly generate composite vehicle idling emission rates. The composite idling emission rates were derived based on the instructions provided in the U.S. EPA technical guidance (U.S. EPA, 2002). MOBILE6.2C was first run using an average speed distribution that assigns all vehicle miles traveled (VMT) to the 2.5 miles per hour (mph) average speed bin and the arterial/collector driving cycle set. The resulting emission rate (in grams per mile)

is multiplied by the average speed (2.5 mph) to give the idling emission rate (in grams per hour), as expressed below:

Idling emission rate = Emissions at 2.5 mph * Average speed (2.5 mph).

The estimated vehicle emission factors for CO, NO_x, and $PM_{2.5}$ are provided in Tables 4.4.2.1.1 to 4.4.2.1.5, respectively. Idling emission factors are provided in Tables 4.4.2.1.3A to 4.4.2.1.5A. MOBILE6.2C modeling input and output files are included in Appendix E. Imperial units are used to be consistent with model input file data given in Appendices.

Exhaust emissions in the real world does have both a cold start effect (higher emissions at cold start for gasoline vehicles) which increases with decreasing temperature (there are some Alaskan test data that shows this) and a speed effect (in that there is generally more transient operation at lower speeds, and transients increase of emissions in both gasoline and diesel vehicles). However MOBILE 6.2C only relies on the standard Federal Test Procedure (FTP) for PM emissions hence there is no temperature and speed correction and no effect is expected between the 100% cold-start versus the default.

The US EPA has only given the model the ability to change the calendar year (defines the fleet mix) as a variable that affects PM. Hence PM rates remain virtually constant.

Table 4.4.3.1.3 - Estimated Composite CO Emission Factors

Speeds Operating Conditions	Passenger Cars (g/mile)	Diesel Buses (g/mile)	All Vehicles (g/mile)
2.5 mph Model Default Data	28.190	3.264	22.459
5.0 mph Model Default Data	18.860	2.664	15.583
10.0 mph Model Default Data	14.420	1.837	11.905
18.65 mph Model Default Data	12.520	1.072	10.070
2.5 mph 100% Cold Start	35.900	3.264	28.424
5.0 mph 100% Cold Start	26.580	2.664	21.549
10.0 mph 100% Cold Start	22.140	1.837	17.871
18.65 mph 100% Cold Start	20.230	1.072	16.036

Table 4.4.3.1.3A - Estimated Idling CO Emission Factors

Speeds Operating Conditions	Passenger Cars (g/hr)	Diesel Buses (g/hr)	All Vehicles (g/hr)
Idling Model Default Data	70.475	8.160	56.148
Idling 100% Cold Start	89.750	8.160	71.060

Table 4.4.3.1.4 – Estimated Composite NO_x Emission Factors

Speeds Operating Conditions	Passenger Cars (g/mile)	Diesel Buses (g/mile)	All Vehicles (g/mile)
2.5 mph Model Default Data	0.435	4.769	0.540
5.0 mph Model Default Data	0.372	4.278	0.481
10.0 mph Model Default Data	0.306	3.535	0.400
18.65 mph Model Default Data	0.247	2.761	0.326
2.5 mph 100% Cold Start	0.452	4.769	0.555
5.0 mph 100% Cold Start	0.390	4.278	0.496
10.0 mph 100% Cold Start	0.324	3.535	0.415
18.65 mph 100% Cold Start	0.265	2.761	0.341

Table 4.4.3.1.4A – Estimated Idling NOx Emission Factors

Speeds Operating Conditions	Passenger Cars (g/hr)	Diesel Buses (g/hr)	All Vehicles (g/hr)
Idling Model Default Data	1.088	11.923	1.350
Idling 100% Cold Start	1.130	11.923	1.388

Table 4.4.3.1.5 – Estimated Composite $PM_{2.5}$ Emission Factors

Speeds Operating Conditions	Passenger Cars (g/mile)	Diesel Buses (g/mile)	All Vehicles (g/mile)
2.5 mph Model Default Start Data	0.0112	0.0906	0.0164
5.0 mph Model Default Start Data	0.0112	0.0906	0.0164
10.0 mph Model Default Start Data	0.0112	0.0906	0.0164
18.65 mph Model Default Start Data	0.0112	0.0906	0.0164
2.5 mph 100% Cold Start	0.0112	0.0906	0.0164
5.0 mph 100% Cold Start	0.0112	0.0906	0.0164
10.0 mph 100% Cold Start	0.0112	0.0906	0.0164
18.65 mph 100% Cold Start	0.0112	0.0906	0.0164

Table 4.4.3.1.5 A – Estimated Composite $PM_{2.5}$ Emission Factors

Speeds Operating Conditions	Passenger Cars (g/hr)	Diesel Buses (g/hr)	All Vehicles (g/hr)
Idling Model Default Start Data	0.0280	0.2265	0.0410
Idling 100% Cold Start	0.0280	0.2265	0.0410

The higher predicted air pollutant emission factors from either January or July were then selected based on traffic speed at modeled locations as input to the subsequent CAL3QHC dispersion modeling analyses to estimate the maximum air pollutant concentrations.

4.4.3 Dispersion Modelling

4.4.3.1 Traffic Volumes and Intersection Light Cycles

STEELES WEST STATION

Traffic volumes at Steeles/Jane and Steeles/Keele intersections were obtained from the *Traffic Impact Study, TTC Spadina Subway Extension, Steeles West Station, City of Toronto,* (Appendix N of the main report), with specific reference to the following Figures and Tables.

Future Background:

Figure 4-1 – Future Background A.M. Peak Hour Traffic Volumes (Steeles West Station)
Figure 4-2 – Future Background P.M. Peak Hour Traffic Volumes (Steeles West Station)

Future Total:

Figure 6-1 – Future Total A.M. Peak Hour Traffic Volumes (Steeles West Station)
Figure 6-2 – Future Total P.M. Peak Hour Traffic Volumes (Steeles West Station)

LOS and Delay Summary Table:

Table 6-1. Steeles West Station: Summary of Intersection Operations – All Traffic Conditions.

The maximum number of new trips generated at the Keele/Steeles intersection due to the undertaking was determined to be 24% as a percentage of future background traffic in the eastbound direction, during the PM peak-hour, whereas at Jane and Steeles, the maximum number of new trips generated was 19% in the eastbound direction during the AM peak-hour. Hence the total delay time for the PM peak hour traffic exceeded that of the AM peak hour values indicating greater potential for queuing and resulting idling emissions, and was selected to represent the worst-case scenario for all locations, except at the Jane and Steeles intersection where delay times indicated the AM peak-hour to be the worst-case.

FINCH WEST STATION

Traffic volumes at Finch/Keele and Keele/Four Winds intersections were obtained from the traffic impact studies undertaken in support of this EA. (*Traffic Impact Study*, *Spadina Subway Extension, Finch West Station, City of Toronto*, Appendix N of the main report), with specific reference to the following figures and tables.

Future Background:

Figure 4-2 – Future Background P.M. Peak Hour Traffic Volumes (Finch West Station).

Future Total:

Figure 6-2 – Future Total P.M. Peak Hour Traffic Volumes (Finch West Station).

LOS and Delay Summary Tables:

Table 6-1. Finch West Station: Summary of Intersection Operations – All Traffic Conditions.

The maximum number of new trips generated at the Finch/Keele intersection as a percentage of future background traffic was determined to be 9% in the southbound direction, during the PM peak-hour.

The LOS and Delay Summary Tables indicated that the PM peak-hour represented the worst-case for all intersections except in the case of Jane/Steeles, where the AM peak-hour delay times were greater than the PM peak-hour values.

Intersection signal times were computed by the URS Traffic & Network Planning Group and a summary is presented in Appendix F of this report.

4.4.3.2 Receptor and Roadway Co-ordinates

Receptor locations and street coordinates for the two study areas were selected during a site visit conducted in October 2005 and through detailed evaluation of the station and roadway plans. Receptor locations were placed 1.8 m above grade at identified sensitive locations (bus stops and building entrances). Also grids of receptor locations were created as part of the modeling process.

4.4.3.3 Surface Roughness

Surface roughness is an evaluation of the profile of a surface which affects the local turbulence of the air flow and therefore influences the spread of the plume. This height is proportional to the physical dimensions of the obstacles to air flow. As the intersections are located in an urban area the corresponding value of 321 cm was selected.

4.4.3.4 Meteorological Conditions

The selection of meteorological inputs into the CAL3QHC dispersion model presented in the input matrix below were discussed in detail in Section 3.4. These conditions represent meteorological assumptions that are considered to be conservative and will generate worst-case pollutant concentrations.

Table 4.4.3.4 - Input Matrix for CAL3QHC

	One-hour Meteorological Conditions
Parameter	CO, NOx
Wind Speed	1.0 m/s
Stability Class	E
Mixing Height	300 m
Background Concentrations (90^{th} percentile)	CO (0.75 ppm), NOx (60 ppb), NO_2 (38 ppb); $PM_{2.5}$ (18 µg/m^3)
Surface Roughness (cm)	321
Wind Direction	Worst case as identified by applying 10^o increments to a full directional circle (360^0)
Link Type	At grade or bridge (at Jane/Steeles)
Link Height (m)	0 (at grade); 6m at Bridge
Mixing Zone Width (m)	Lane width(/s) + 3 m on either side of regular moving links (Queue link mixing zone width = lane width)
Settling velocity* for PM10 and PM 2.5	0.5 cm/s
Depositional velocity* for PM10 and PM 2.5	0.1 m/s

* From Richard Countess et al., (2001), " Methodology for estimating fugitive windblown and mechanically re-suspended road dust emissions applicable for Regional Scale Air Quality Modelling", Report prepared for the Western Governors Association as referenced in the Ontario Ministry of Transportation Air quality Impact Assessment for the QEW widening report, July 2004.

4.4.4 Prediction of Worst-Case Pollutant Levels

Two scenarios (2021 Build, 2021 No Build) were modeled for the selected alternative, Option 1A, using the US-EPA CAL3QHC software package for intersections, bus terminals and parking lots selected at the Finch and Steeles West areas. The total delay time for the PM peak hour traffic exceeded that of the AM peak hour values indicating greater potential for queuing and resulting idling emissions, and hence was selected to represent the worst-case scenario for all locations, except at the Jane and Steeles intersection where delay times indicated the AM peak-hour to be the worst-case, as discussed in Section 4.4.3.1. PM peak hour-traffic volumes and intersection signal light cycles were used in all instances except at Jane and Steeles.

The following table summarizes the model runs carried out for the Undertaking for the intersections at each of the two station areas. Only the three build runs were modeled for the bus terminal area/commuter parking/passenger drop-off areas resulting in 24 model runs.

Table 4.4.4 - Intersection Model Runs

Run Number	Scenario	Contaminant	Averaging Time	Predicted Averaging Time	Traffic Information
1	Future Background PM[1]	NOx	1 hour	1-hr NOx; 24-hr NOx	PM Future Background
2	Future Background PM[1]	CO	1 hour	1-hr CO; 8-hr CO	PM Future Background
3	Future Background PM[1]	$PM_{2.5}$	1 hour	24-hr $PM_{2.5}$	PM Future Background
4	Future Build PM[1]	NOx	1 hour	1-hr NOx; 24-hr NOx	PM Future Total, Option 1A
5	Future Build PM[1]	CO	1 hour	1-hr CO; 8-hr CO	PM Future Total, Option 1A
6	Future Build PM[1]	$PM_{2.5}$	1 hour	24-hr $PM_{2.5}$	PM Future Total, Option 1A

Notes:
(1)- AM conditions were selected to model the Jane/Steeles intersection.

Discrete receptors were located at the existing bus stands, drop-off area and known residential properties. Also grid receptors were modeled based on a tier system of grids (100 m grid for the entire study area and 15 m at the intersections). The maximum receptor concentrations from 1-hour model runs were prorated to the 8-hr peak average and 24-hour daily concentration using approved EPA persistence factors of 0.7 and 0.4, respectively (Guideline for modeling Carbon Monoxide from Roadway Intersections, USEPA, 1992).

The commuter parking facilities were modeled assuming that the worst-case scenario was represented during PM peak hour when the predicted total traffic volume for 2021 emptied out during a 1-hour period.

Traffic speed in the free flow links within the car parking facilities/passenger pick-up/drop-off (PPUDO) areas as well as in the bypass lanes within bus terminals was assumed to be 8 km/h in order to model the worst-case scenario using emission factors derived from Mobile 6.2C.

The current CAL3QHC model has no clear provision to model idling traffic such as cars in parking facilities prior to driving off and buses at bus-bays, hence this traffic was modeled as "pseudo-free flow links" based on the queue link methodology described in the CAL3QHC guideline (p.14).

A "psuedofree flow link" is a link having emissions due to an idling vehicle, but simulated in the model as a moving (free flow) vehicle. As the CAL3QHC model requires an emission factor in gram/mile for free flow links, and idling emission factors are in grams/hour, the latter has to be converted to obtain the correct unit format as illustrated below. In order to do so, an average length of 12.2 metres (0.0076 miles) per bus (TTC Design Manual, Volume 2) and an average idling time of 4 minutes (0.067 hours) were used for the buses (per email communication, dated December 12, 2005 from Bill Dawson, Service Planning Department, Toronto Transit Commission). Given an idling emission factor of 8.160 g/hr for CO derived from Mobile 6.2C default settings (Table 4.5A),

$$\text{the "psuedo free flow link" emission factor} = \frac{8.160\ \text{g/hr} \times 0.067\ \text{hrs}}{0.0076\ \text{miles}} = 71.76\ \text{g/mile}.$$

Similar calculations were made to derive "psuedofree flow link" emission factors for passenger vehicles starting up prior to driving off during the peak PM hour from the car parking facilities. A

time of 15 seconds and 100% cold-start emission factors were used for idling passenger vehicles. A speed of 8 kmph was assumed for passenger vehicles exiting the parking facilities and corresponding 100% cold-start emission factors at equivalent speeds were used as input parameters. As traffic volume projections for 2021 show significant under-utilization of some of the facilities, especially the car parking facility at the Steeles West Station, a sensitivity analysis was conducted by using the design capacity volume and NOx as the test pollutant, by assuming that the total volume (2500) emptied in 1-hour, in order to determine if any future exceedences are likely. The predicted peak-hour traffic volume for the Steeles West Station is estimated to be 730 compared to a designed capacity volume of 2500 in the Traffic Analysis Report (Appendix N of the main report). Hence less than 30% of the total facility would be filled during the peak hour. The test runs indicated that emissions from the undertaking will not exceed NOx criteria if the facility was used at full capacity, even though impacts to traffic flow is more than likely based on the current design of exits/entrances. As the impact to air quality based on the design capacity volume (2500) was below the NOx criteria, modeling was conducted with predicted traffic volumes for both stations. The occupancy of the parking facility lots was determined by prorating the predicted peak-hour traffic volume to the designed parking capacity while taking the volume assignment by entrances into the facility into consideration.

As vehicles driving into PPUDO areas tend to wait longer to pick-up passengers, an average time of 7 minutes was used to model idling traffic at PPUDO areas. Mobile 6.2C default idling emission factors instead of 100% cold-start idling emission factors were used for vehicles idling at PPUDOs as the drivers would not likely be switching off engines while waiting to pick up passengers.

The ambient ratio method (AMB) was used to determine NO_2 emissions from the modeled NOx concentrations based on the mean ambient NO_2 to NO ratio of background concentrations listed in the 2003 Air Quality report. The ratio was determined to be 0.6 (NO_2 to NO). In addition, the Ozone Limiting Method, Tier 1 screening method (OLM/ARM Work Group, November 1997) was employed to determine worst-case NO_2 concentrations using Tier 1 screening, which assumes that all NOx concentrations are equivalent to NO_2.

5.0 RESULTS OF PREDICTION EFFECTS

5.1 Construction Effects

5.1.1 Suspended Particulate Matter Concentrations

As specific details for modeling emissions from construction sites are not available at this stage of the Undertaking, modeling was not attempted. Historically, modeling based on simulated scenarios and standard emission factors has predicted that the provincial standard for SPM would be exceeded up to 475 m from a one-hectare construction site perimeter operated approximately 160 hours per month, and that the provincial standard for dustfall would be exceeded up to 200 m. (RWDI, 1992). In order to meet the provincial standards, the control efficiency needed would be 70% and 95%, respectively.

The MOE expects that construction operations meet Regulation 419/05 requirements. For this reason, a work plan should be required in the contract specifications to ensure that control measures are carried out diligently.

5.1.2 Dust Mitigation Measures

Construction and demolition activities may result in TSP emissions exceeding applicable environmental air quality standards around the construction site, particularly during stable atmospheric stability, dry conditions and low wind speeds.

To reduce emission, a number of control measures are available, depending on the sources. A detailed description of appropriate measures are provided in the document *Best Practices for the Reduction of Air Emissions From Construction and Demolition Activities*, March, 2005 (BPREA), Prepared by Cheminfo Services Inc. for Environment Canada.

For demolition activities, typical measures include:

- Practice dismantling rather than demolition using explosives or wrecking ball,
- Minimize drop heights for debris,
- Enclose chutes and cover bins when debris is allowed to fall,
- Use fogging or misting systems in contained or enclosed places,
- Include wind barriers, such as wind fences (or natural vegetation on long projects) to reduce wind erosion,
- Recognize windy conditions and reduce certain activities or apply additional dust suppressant,
- Maintain a clean area by vacuuming or sweeping accumulations of debris,
- Practices for loading debris,
- Minimize the quantity and length of time debris is stored on site,
- Control mud and dirt trackout onto public streets, and
- Secure loads and cover haul trucks.

During construction activities, similar control methods can be used as well as:

- Conduct excavation and grading activities in phases, to minimize the extent of disturbed area present and the length of time it is exposed.
- Use barriers to minimize wind erosion, including snow fencing, natural vegetation left in strategic places during clearing and material berming.
- Implement surface improvements to unpaved road surfaces, including, paving as soon as practical, and use of material with a low silt content.

Since construction activities are generally of short duration, the use of wet suppression and wind speed reduction are generally the most common, efficient and cost effective approaches; however, other control technologies are often used for specific situations. The efficiency of these control methods can vary significantly.

The Western Regional Air Partnership's (WRAP) Dust Emissions Joint Forum (DEJF), has prepared guidance manual, Fugitive Dust Handbook, that was adapted from Section 13.2.5 of EPA's *Compilation of Air Pollutant Emission Factors (AP-42)*. January 1995. The manual relies primarily on United States Environmental Protection Agencies AP-42 monitoring data, with additional references to alternative estimation and control methods adopted by state and local control agencies in the WRAP region. The manual provides the following summary of several control methods, for various sources.

Table 5.1.2 - Efficiency of Dust Mitigation Measures

Construction/Demolition	Water unpaved surfaces	10 – 74%
	Limit on-site vehicle speed to 15 mph	57%
	Apply dust suppressant to unpaved areas	84%
	Prohibit activities during high winds	98%
Materials Handling	Implement wet suppression	50 – 70%
Paved Roads	Sweep streets	4 – 26%
	Minimize trackout	40 – 80%
	Remove deposits on road ASAP	>90%
Unpaved Roads	Limit vehicle speed to 25 mph	44%
	Apply water	10 – 74%
	Apply dust suppressant	84%
	Pave the surface	>90%
Wind Erosion (agricultural, open area, and storage piles)	Plant trees or shrubs as a windbreak	25%
	Create cross-wind ridges	24 – 93%
	Erect artificial wind barriers	4 – 88%
	Apply dust suppressant or gravel	84%
	Revegetate; apply cover crop	90%
	Water exposed area before high winds	90%

As noted above, the application of water can provide a significant reduction under for a variety of sources. *Table 5: Guidance on Applying Water at Construction Sites, and Table 6: Guidance on Applying Dust Suppressants/Stabilizers at Construction Sites,* included in the BPREA provides specific instruction for using wet suppression methods at construction/demolition sites and are reproduced below.

5.1.2.1 Response to and Control of Dust Problems

Studies referenced above on dust levels associated with construction/demolition activities have shown that the maximum dust levels will be generated under stable atmospheric stability, dry conditions and low wind speeds. To promote compliance with MOE's criteria, the Toronto Transit Commission Master Specifications 05-06-28 requires that contractors incorporate mitigation or control measures into construction activities. The MOE expects that emission from construction operations comply with the O. Reg. 419/05 SPM criteria, therefore, control measures articulated in the Controls and Methods Plan will need to be carried out diligently under contractual specifications. Such measures include, but are not limited to:

- Develop a comprehensive environmental Controls and Methods Plan of the whole process of dust control.
- Cover or wet down dry materials to prevent blowing dust and debris.
- Prevent dust from blowing across the Site and from leaving the Site, in particular frequently wet paved and unpaved temporary roads and excavated areas.
- Comply with provincial ordinances and Engineer's requirements regarding minimizing of dust and airborne pollution.
- Wash down the streets within the Work Site on a weekly basis and as additionally directed by the Engineer.
- Securely cover excavated material being removed from the Site and all fill materials being delivered to the Site to prevent blowing of dust or fines into the streets and haul routes.
- Application of calcium chloride shall be kept to minimum and shall be restricted to vehicle right-of-way. In close proximity to watercourses, frequent applications of water shall be preferred method. Obtain the Engineer's approval before chemicals for dust control are used.

These mitigation measures may not completely eliminate dust emissions from construction and demolition activities; however, the measure should reduce emissions to a level that minimize impacts of dust on the areas surrounding the construction site. When construction and/or demolition activities are likely to cause dust emission, air monitoring must be conducted prior to beginning activities to establish a baseline value for the quantity of SPM in the air. During construction and/or demolition operations where dust is being created, air quality monitoring must be conducted to establish the level of particulate matter in the air. Following construction and/or demolition operations where dust was created, confirmatory tests must be conducted to quantify the level of particulate matter in the air. The conditions under which monitoring will be conducted, as well as mitigation measures that will be implemented if high SPM concentrations are identified must be specified in the Controls and Methods Plan.

5.2 Traffic Effects

5.2.1 Results of Dispersion Modelling

The maximum concentration determined from each of the model runs is summarized in Table 5.2.1A and Table 5.2.1B. Modelling was based on the worst-case meteorological conditions defined in Section 4.4.3.4, traffic volume forecast for 2021 provided by the City of Toronto and background concentrations derived from 90th percentile MOE air quality data for 2003. Meteorological conditions, particularly a wind speed of 1 m/s (3.6 km/hr) represent assumptions that are considered to be more conservative than actual meteorological data and will generate worst-case pollutant concentrations. Detailed analytical results from the current modeling runs based on the premise mentioned above are presented in Appendices A to D-1. An example of the CAL3QHC input/output files is included in Appendix D-2 for the Finch West Station Area.

6.0 SUMMARY AND CONCLUSIONS

6.1 Construction Effects

As specific details for modelling emissions from construction sites are not available at this stage of the Undertaking, computer modelling was not attempted. Historically, modelling based on simulated scenarios and using standard emission factors were conducted and are discussed in the report. The historical modeling predicted that the provincial standard for TSP could be exceeded up to 475 m from a one-hectare construction site perimeter, assuming operating approximately 160 hours per month, and that the provincial standard for dust fall would be exceeded up to 200 m from the construction site. The MOE expects that emission from construction operations comply with the O. Reg. 419/05 SPM criteria, therefore, a work plan should be required in the contract specifications to ensure that control measures are diligently carried out. In order to meet the provincial standards, control efficiencies of 70% and 95%, respectively would be required.

6.2 Traffic Effects

A comparison of the predicted maximum concentrations as a percentage of the applicable criteria for $PM_{2.5}$, CO and NOx of all the model runs based on the worst-case conditions discussed in Section 5.2.1, are presented above in Tables 6.2.1 and 6.2.2 for the locations near the two subway stations at Steeles and Finch. The incremental value provides a measure of the impact resulting from the Undertaking.

These results assume that the future background concentrations remain the same in 2021 as in 2003. Since background concentrations represent the largest source of contaminants in the case of $PM_{2.5}$, changes in background levels may have a significant effect on PM2.5 concentrations at the local level.

Table 5.2.1-A - Summary and Analysis of CAL3QHC Modelling Results for CO and $PM_{2.5}$
Spadina Subway Extension EA-Air Quality Assessment
Toronto Transit Extension
URS Canada Inc., Project 33015347

Area	Figure ID (Figures show Max Modelled Values at 10^o Increments)	Run ID	Option	Parameter	Background Included in Model Run? (Y/N)	Model Units	Max Model Concentration 1-hr Avg @ 10^o Increments	Max Model Concentration 1-hr Avg @ 1^o Increments	Background Concentration (90th Percentile)	Modelled Maximum Concentration 1-hr Avg (Including Background)	% of Criteria 1-hr Avg	Calculated Maximum Concentration 8-hr Avg (Converted using persistence factor=0.7)	Percentage of Criteria 8-hr Avg	Calculated Maximum Concentration 24-hr Avg (Converted using persistence factor=0.4)	Percentage of Criteria 24-hr Avg
Jane and Steeles, Intersection Only	Fig A-5	Run A-2	No Build	CO	Yes	ppm	5.20	5.30	0.75	5.30	17.7%	3.94	30.3%	NA	NA
Jane and Steeles, Intersection Only	Fig A-6	Run A-3	No Build	$PM_{2.5}$	Yes	$\mu g/m^3$	21.0	21.0	18.0	21.0	NA	NA	NA	19.2	64.0%
Jane and Steeles, Intersection Only	Fig A-8	Run A-5	Build	CO	Yes	ppm	5.30	5.40	0.75	5.40	18.0%	4.01	30.8%	NA	NA
Jane and Steeles, Intersection Only	Fig A-9	Run A-6	Build	$PM_{2.5}$	Yes	$\mu g/m^3$	22.0	22.0	18.0	22.0	NA	NA	NA	19.6	65.3%
Steeles Station, Commuter Parking, PPUDO	Fig B-6	Run B-2	Build	CO	Yes	ppm	3.80	4.10	0.75	4.10	13.7%	3.10	23.8%	NA	NA
Steeles Station, Commuter Parking, PPUDO	Fig B-7	Run B-3	Build	$PM_{2.5}$	Yes	$\mu g/m^3$	19.0	19.0	18.0	19.0	NA	NA	NA	18.4	61.3%
Steeles Station, All Bus Terminals	Fig B-9	Run B-5	Build	CO	Yes	ppm	0.82	0.83	0.75	0.83	2.8%	0.80	6.2%	NA	NA
Steeles Station, All Bus Terminals	Fig B-10	Run B-6	Build	$PM_{2.5}$	Yes	$\mu g/m^3$	20.0	20.0	18.0	20.0	NA	NA	NA	18.8	62.7%
Steeles Station, Total (sum of CP, PPUDO, Terminals)		B-2 + B-5	Build	CO	Yes	ppm	3.87	4.18	0.75	4.18	13.9%	3.15	24.2%	NA	NA
Steeles Station, Total (sum of CP, PPUDO, Terminals)		B-3 + B-6	Build	$PM_{2.5}$	Yes	$\mu g/m^3$	21.0	21.0	18.0	21.0	NA	NA	NA	19.2	64.0%
Keele and Steeles, Intersection Only	Fig C-5	Run C-2	No Build	CO	Yes	ppm	6.60	6.60	0.75	6.60	22.0%	4.85	37.3%	NA	NA
Keele and Steeles, Intersection Only	Fig C-6	Run C-3	No Build	$PM_{2.5}$	Yes	$\mu g/m^3$	22.0	22.0	18.0	22.0	NA	NA	NA	19.6	65.3%
Keele and Steeles, Intersection Only	Fig C-8	Run C-5	Build	CO	Yes	ppm	7.10	7.20	0.75	7.20	24.0%	5.27	40.5%	NA	NA
Keele and Steeles, Intersection Only	Fig C-9	Run C-6	Build	$PM_{2.5}$	Yes	$\mu g/m^3$	22.0	23.0	18.0	23.0	NA	NA	NA	20.0	66.7%
Finch Station, 3 Intersections, Parking, PPUDO, Terminal	Fig D-7	Run D-2	No Build	CO	Yes	ppm	4.80	4.90	0.75	4.90	16.3%	3.66	28.1%	NA	NA
Finch Station, 3 Intersections, Parking, PPUDO, Terminal	Fig D-8	Run D-3	No Build	$PM_{2.5}$	Yes	$\mu g/m^3$	21.0	21.0	18.0	21.0	NA	NA	NA	19.2	64.0%
Finch Station, 3 Intersections, Parking, PPUDO, Terminal	Fig D-10	Run D-5	Build	CO	Yes	ppm	4.90	5.10	0.75	5.10	17.0%	3.80	29.2%	NA	NA
Finch Station, 3 Intersections, Parking, PPUDO, Terminal	Fig D-11	Run D-6	Build	$PM_{2.5}$	Yes	$\mu g/m^3$	21.0	21.0	18.0	21.0	NA	NA	NA	19.2	64.0%

Table 5.2.1-B - Summary and Analysis of CAL3QHC Modelling Results for NOx
Spadina Subway Extension EA-Air Quality Assessment
Toronto Transit Extension
URS Canada Inc., Project 33015347

										Conversion of NOx to NO_2									
										Ambient Ratio Method (ARM) Assume NO_2 is 60% of Modelled NOx Concentration					Ozone Limiting Method (OLM) Screening Assume NO_2 is 100% of Modelled NOx Concentration				
Area	Figure ID (Figures show Max Modelled Values at 10^o Increments)	Run ID	Option	Parameter	Background Included in Model Run? (Y/N)	Model Units	Modelled NOx Concentration 1-hr Avg @ 10^o Increments	Modelled NOx Concentration 1-hr Avg @ 1^o Increments	Background Concentration (90th Percentile)	NO_2 Concentration 1-hr Avg ARM (No Background)	NO_2 Concentration 1-hr Avg ARM (With Background)	% of Criteria 1-hr Avg ARM	NO_2 Concentration 24 hr Avg ARM (Converted using persistence factor=0.4) (With Background)	Percentage of Criteria 24-hr Avg ARM	NO_2 Concentration 1-hr Avg OLM (No Background)	NO_2 Concentration 1-hr Avg OLM (With Background)	Percentage of Criteria 1-hr Avg OLM	NO_2 Concentration 24 hr Avg OLM (Converted using persistence factor=0.4) (With Background)	Percentage of Criteria 24-hr Avg OLM
										$\mu g\ NO_2/m^3$	$\mu g\ NO_2/m^3$	%	$\mu g\ NO_2/m^3$	%	$\mu g\ NO_2/m^3$	$\mu g\ NO_2/m^3$	%	$\mu g\ NO_2/m^3$	%
Jane and Steeles, Intersection Only	Fig A-4	Run A-1	No Build	NOx	**No**	$\mu g/m^3$	138	139	71.5 (38 ppb) as NO2	83	155	41.2%	105	55.7%	139	211	55.9%	127	67.6%
Jane and Steeles, Intersection Only	Fig A-7	Run A-4	Build	NOx	**No**	$\mu g/m^3$	153	154	71.5 (38 ppb) as NO2	92	164	43.6%	108	57.6%	154	226	59.9%	133	70.7%
Steeles Station, Commuter Parking, PPUDO	Fig B-5	Run B-1	Build	NOx	**No**	$\mu g/m^3$	61	61	71.5 (38 ppb) as NO2	37	108	28.7%	86	45.8%	61	133	35.2%	96	51.0%
Steeles Station, All Bus Terminals	Fig B-8	Run B-4	Build	NOx	**No**	$\mu g/m^3$	129	131	71.5 (38 ppb) as NO2	79	150	39.9%	103	54.7%	131	203	53.8%	124	65.9%
Steeles Station, Total (sum of CP, PPUDO, Terminals)		B-1 + B-4	Build	NOx	No	$\mu g/m^3$	190	192	71.5 (38 ppb) as NO2	115	187	49.6%	118	62.5%	192	264	70.0%	148	78.8%
Keele and Steeles, Intersection Only	Fig C-4	Run C-1	No Build	NOx	**No**	$\mu g/m^3$	188	188	71.5 (38 ppb) as NO2	113	184	49.0%	117	62.0%	188	260	69.0%	147	78.0%
Keele and Steeles, Intersection Only	Fig C-7	Run C-4	Build	NOx	**No**	$\mu g/m^3$	210	211	71.5 (38 ppb) as NO2	127	198	52.6%	122	64.9%	211	283	75.1%	156	82.9%
Finch Station, 3 Intersections, Parking, PPUDO, Terminal	Fig D-6	Run D-1	No Build	NOx	**No**	$\mu g/m^3$	144	144	71.5 (38 ppb) as NO2	86	158	42.0%	106	56.4%	144	216	57.3%	129	68.6%
Finch Station, 3 Intersections, Parking, PPUDO, Terminal	Fig D-9	Run D-4	Build	NOx	**No**	$\mu g/m^3$	146	147	71.5 (38 ppb) as NO2	88	160	42.4%	107	56.8%	147	219	58.1%	130	69.3%

Notes:
NA-Applicable Standards Not Available
No Build-Future Background Scenario without addition of subway station and accessory facilities (bus terminals and car parking facilities).
Build-Future Background Scenario with addition of subway station and accessory facilities (bus terminals and car parking facilities).
NO_2 background concentration given as 38 ppb, in Ontario Ministry of the Environment, Air Quality of Ontario 2003 Report, converted to ug/m^3
Ozone Limiting Method (OLM) Screening, Assumes 100% of Modelled NOx is NO_2
Ambient Ratio Method - NO_2 is 60% of the total NOx emissions. Based on the Ontario Ministry of the Environment, Air Quality of Ontario 2003 Report, Ambient Air Quality Monitoring 90th percentile values.
Persistence factor to convert 1-hr peak average into 8- hr average 0.7
Persistence factor to convert 1-hr peak average into 24-hr average 0.4

			Background as a Percentage of 1-hr Criteria	Background as a Percentage of 8-hr Criteria	Background as a Percentage of 24-hr Criteria
CO 1-hr Criteria	30	ppm	3%		
CO 8-hr Criteria	13	ppm		6%	
$PM_{2.5}$ 24-hour	30	$\mu g/m^3$			60%
NO_2 1-hr	200	ppb (376.3 $\mu g/m^3$)	19%		
NO_2 24-hr	100	ppb (188.1 $\mu g/m^3$)			38%

Table 6.2.1 - Maximum Modelled Concentrations as a Percentage of Criteria Steeles West Station

Pollutants (Unit)	Average Time	Criteria[1]	2003 Background Concentration[4] (As Percentage of Criteria)	Percentage of Criteria		**Incremental Change (%)**	Percentage of Criteria		**Incremental Change (%)**	Bus Terminal/Car Parking and PPUDO
				Jane/Steeles Intersection			Keele/Steeles Intersection			Steeles West Station
				Future No-Build	Future Build		Future No-Build	Future Build		Future Build
CO (ppm)	1-hour	30(ppm)	0.75 (3%)	17.7	18.0	0.3	22.0	24.0	2.0	13.9
	8-hour	13(ppm)	0.75 (6%)	30.3	30.8	0.5	37.3	**40.5**	**3.2**	24.2
$PM_{2.5}$ ($\mu g/m^3$)	24-hour	30($\mu g/m^3$)	18 (60%)	64.0	65.3	1.3	65.3	**66.7**	**1.4**	64.0
NO_2 (ppb)[2]	1-hour	200(ppb)	38 (19%)	41.2	43.6	2.4	49.0	52.6	3.6	49.6
	24-hour	100(ppb)	38 (38%)	55.7	57.6	1.9	62.0	64.9	2.9	62.5
NO_2 (ppb)[3]	1-hour	200(ppb)	38 (19%)	55.9	59.9	4.0	69.0	75.1	**6.1**	70.0
	24-hour	100(ppb)	38 (38%)	67.6	70.7	3.1	78.0	**82.9**	4.9	78.8

Table 6.2.2 - Maximum Modelled Concentrations as a Percentage of Criteria Finch West Station

Pollutants (Unit)	Average Time	Criteria[1]	2003 Background Concentration[4] (As Percentage of Criteria)	Percentage of Criteria		**Increment al Change (%)**
				Finch Station Area		
				Future No-Build	Future Build	
CO (ppm)	1-hour	30(ppm)	0.75 (3%)	16.3	17.0	0.7
	8-hour	13(ppm)	0.75 (6%)	28.1	29.2	1.1
$PM_{2.5}$ ($\mu g/m^3$)	24-hour	30($\mu g/m^3$)	18 (60%)	64.0	64.0	0
NO_2 (ppb)[2]	1-hour	200(ppb)	38 (19%)	42.0	42.4	0.4
	24-hour	100(ppb)	38 (38%)	56.4	56.8	0.4
NO_2 (ppb)[3]	1-hour	200(ppb)	38 (19%)	57.3	58.1	0.8
	24-hour	100(ppb)	38 (38%)	68.6	69.3	0.7

Notes: (1) The criterion for $PM_{2.5}$ is the federal standard published in Canada-wide standards for Particulate Matter (PM) and Ozone adopted by the Canadian Council of Ministers (July, 2000)
(2) NO_2 calculated with the Ambient Ratio Method Based on the Ministry of Environment, Air Quality of Ontario (2003) report average background concentration ratio of NO_2/NO of 0.6.
(3) NO_2 calculated using Tier 1 screening, Ozone Limiting Method, which assumes all NOx is NO_2.
(4) 90th percentile of 2003 Background Concentration (i.e., if value is 60 ppb, then 90 percent of the data are equal to or below 60 ppb.
(5) An incremental value for the Bus Terminal/Car Parking and PPUDO area could not be calculated as the area would be undeveloped in the No-Build Scenario and hence was not modeled.
(6) NA-Not Applicable.

82.9 - Maximum modeled concentration.

As shown in Tables 6.2.1 and 6.2.2, the maximum concentrations and their locations for the modeled pollutants are as follows:

- *Carbon monoxide emissions will reach 40% of criteria (at Keele/Steeles intersection under the Future Build Scenario) with an incremental change of 3% over the No-Build Scenario.*
- *$PM_{2.5}$ emissions will reach 67% of criteria (at Keele/Steeles intersection under the Future Build Scenario) with an incremental change of 1.4% over the No-Build Scenario.*
- *NOx emissions may reach 85% of the criteria if it is assumed that all NOx emissions are emitted in the form of NO_2 (at Keele/Steeles intersection under the Future Build Scenario), with an incremental change of 5% over the No-Build Scenario. This is a conservative assumption. A corresponding value of 65% of the criteria resulting from the application of the Ambient Ratio Conversion Method would be more realistic.*
- *The change in pollutants concentrations from Future No Build to Future Build will likely not exceed 6% even at the local level during peak hour traffic, in spite of a forecasted increase in traffic volume of 9-25% from the No-Build Scenario.*

In general, results from modeling CO, NOx and $PM_{2.5}$ at the selected locations, indicate that the operation of the expanded Spadina Subway is not likely to have a significant impact on air quality at the local level. The impact on air quality at York University, though not modeled, is assumed to improve due to the removal of idling buses within the University premises.

Warranty

URS warrants that its services are performed, within the limits prescribed by its clients, in a manner consistent with that level of care and skill ordinarily exercised by members of the same profession practicing in the same locality under similar conditions at the time the services are performed. No other warranty or representation, either expressed or implied, is included in URS' proposals, contracts or reports.

Limitations

URS' reports are based, in part, upon the application of scientific and engineering principles and professional judgment to certain facts with resultant subjective interpretations. The findings, opinions and recommendations that are made relate exclusively to URS' specific agreement for services, certain facts presently known to URS and our current understanding of Site conditions.

URS' reports are intended to be used in their entirety and no excerpts may be taken to be representative of the entire reports. Where more than one report is prepared related to the same Site, all documents and reports should be referred to for a more advanced discussion of technical details, and should be reviewed prior to any reliance, decisions or actions being taken on the basis of the reports.

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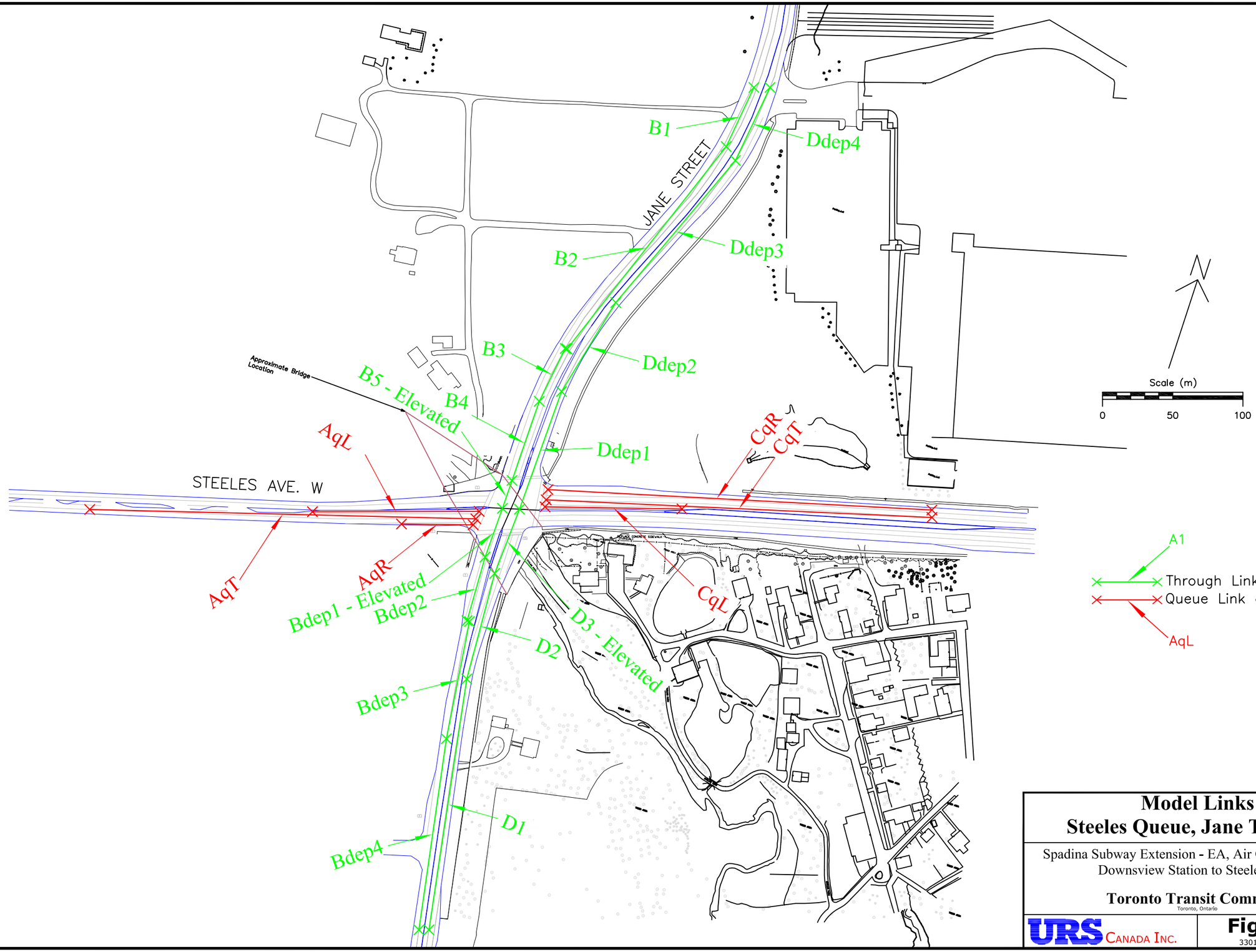
URS Canada Inc., Technical Memorandum, TTC Spadina Subway Extension, Finch West Station, City of Toronto, (Appendix N of the main report).

Project: 33015347 *Spadina Subway Extension – Environmental Assessment*
Toronto Transit Commission *Air Quality Assessment*

APPENDIX A

JANE AND STEELES INTERSECTION ANALYSIS



Model Links
Steeles Queue, Jane Through

Spadina Subway Extension - EA, Air Quality Assessment
Downsview Station to Steeles Avenue

Toronto Transit Commission
Toronto, Ontario

URS Canada Inc.

Figure A-1
33015347, January 2006

App A - Figures, Jane-Steeles, Jan12'06.dwg

JANE STREET

STEELES AVE. W

Approximate Bridge Location

BqT

BqR

BqL

DqL

DqR

DqT

Cdep3

Cdep2

Cdep1 - Elevated

C2

C1

A1

A2

A3 Elevated

Adep1 Elevated

Adep2

Adep3

Scale (m)

0 50 100

A1 Through Link and ID

Queue Link and ID AqL

Model Links
Steeles Through, Jane Queue

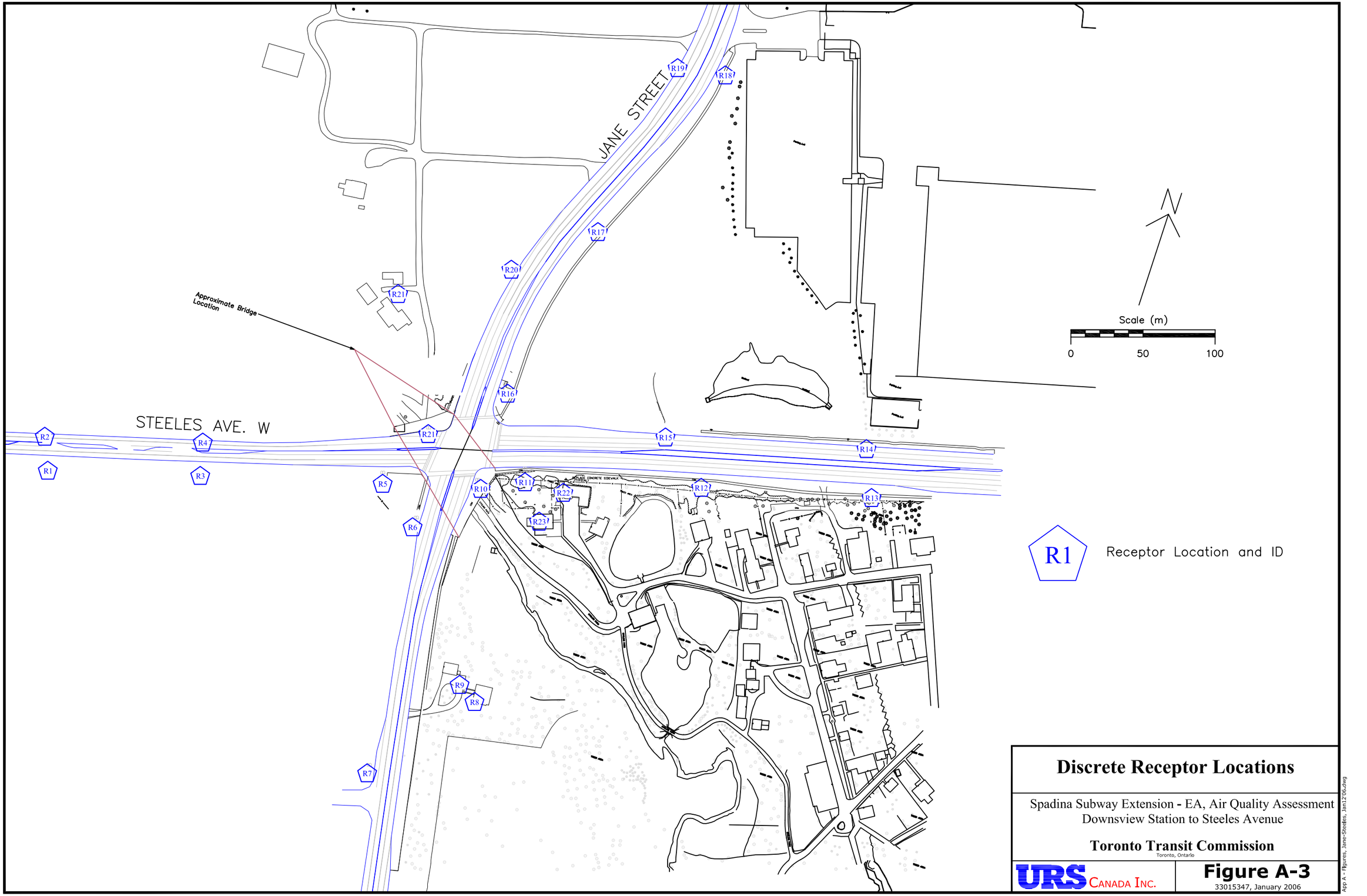
Spadina Subway Extension - EA, Air Quality Assessment
Downsview Station to Steeles Avenue

Toronto Transit Commission
Toronto, Ontario

URS Canada Inc.

Figure A-2
33015347, January 2006

App A - Figures, Jane-Steeles, Jan1206.dwg



R1 Receptor Location and ID

Discrete Receptor Locations

Spadina Subway Extension - EA, Air Quality Assessment
Downsview Station to Steeles Avenue

Toronto Transit Commission
Toronto, Ontario

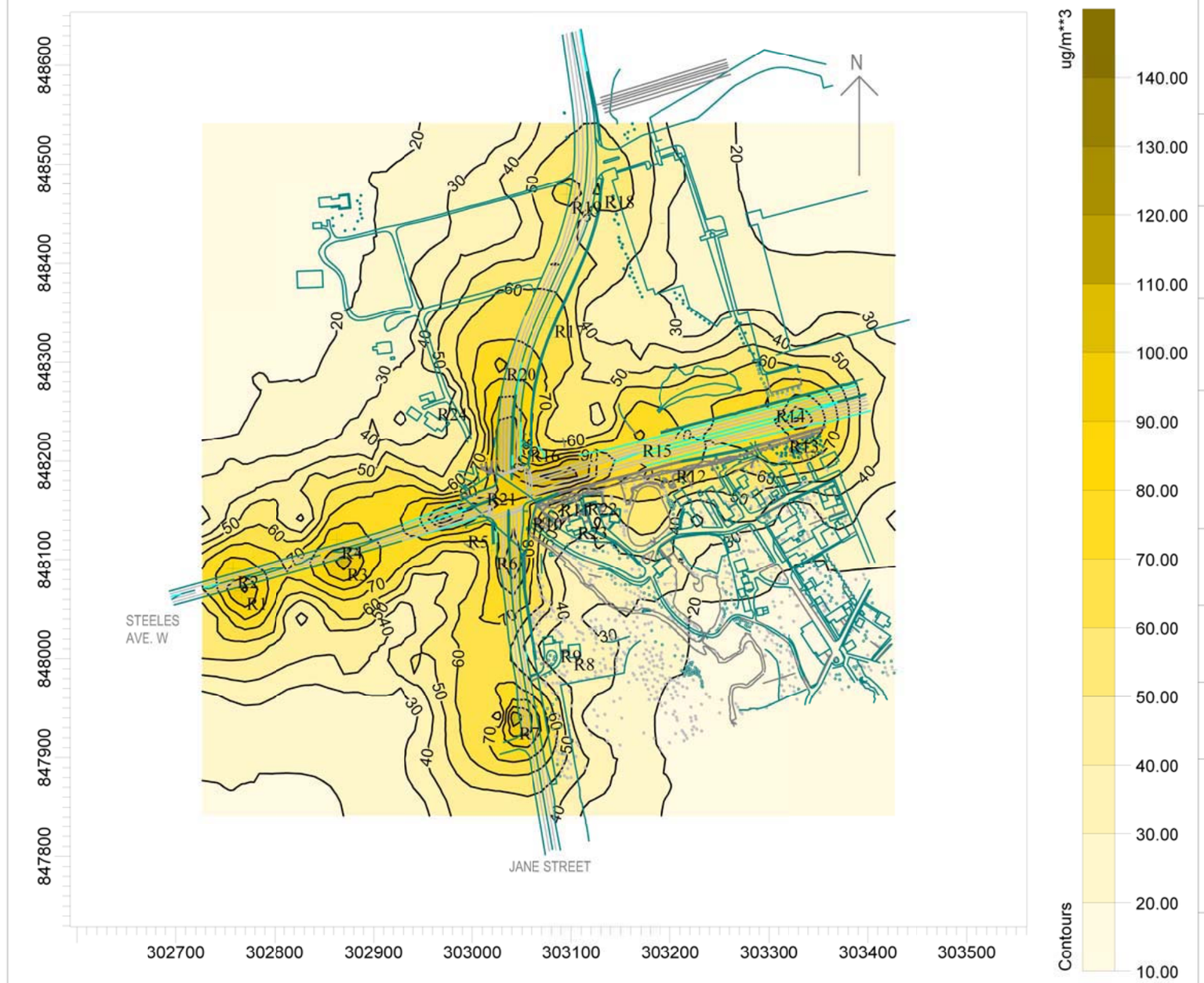
URS Canada Inc.

Figure A-3
33015347, January 2006

App A - Figures, Jane-Steeles, Jan12'06.dwg

PROJECT TITLE:

Figure A-4 Run A-1, Jane & Steeles, No-Build, NOx
AM Peak Hour Traffic Data



COMMENTS:

Run A-1, No Build NOx

Background Concentration - Not Added

MODEL:	POLLUTANT:
CAL3QHC	**Particulate**
MAX:	UNITS:
138.00	**ug/m**3**
LINKS:	RECEPTORS:
39	**188**

COMPANY NAME:

URS Canada

MODELER:

MSM

DATE:

1/18/2006

SCALE: 1:6,099,839

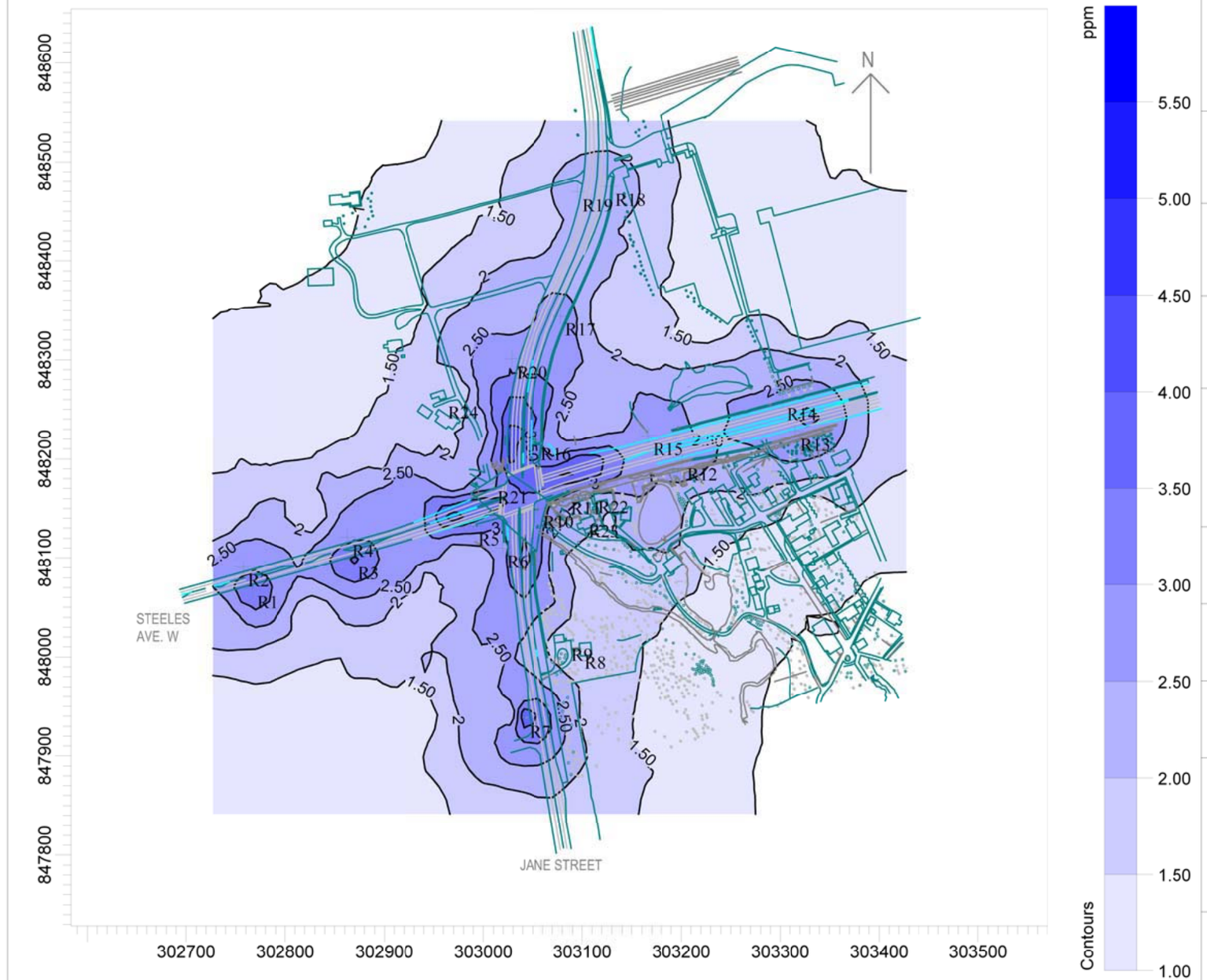
0 100 m

PROJECT / PLOT NO.:

33015347

PROJECT TITLE:

Figure A-5 Run A-2, Jane & Steeles, No-Build, CO
AM Peak Hour Traffic Data



COMMENTS:

Run A-2 - No Build, CO

Background Concentration - 0.75 ppm

MODEL:	POLLUTANT:
CAL3QHC	**CO**
MAX:	UNITS:
5.20	**ppm**
LINKS:	RECEPTORS:
39	**188**

COMPANY NAME:

URS Canada

MODELER:

MSM

DATE:

1/18/2006

SCALE: 1:6,107,722

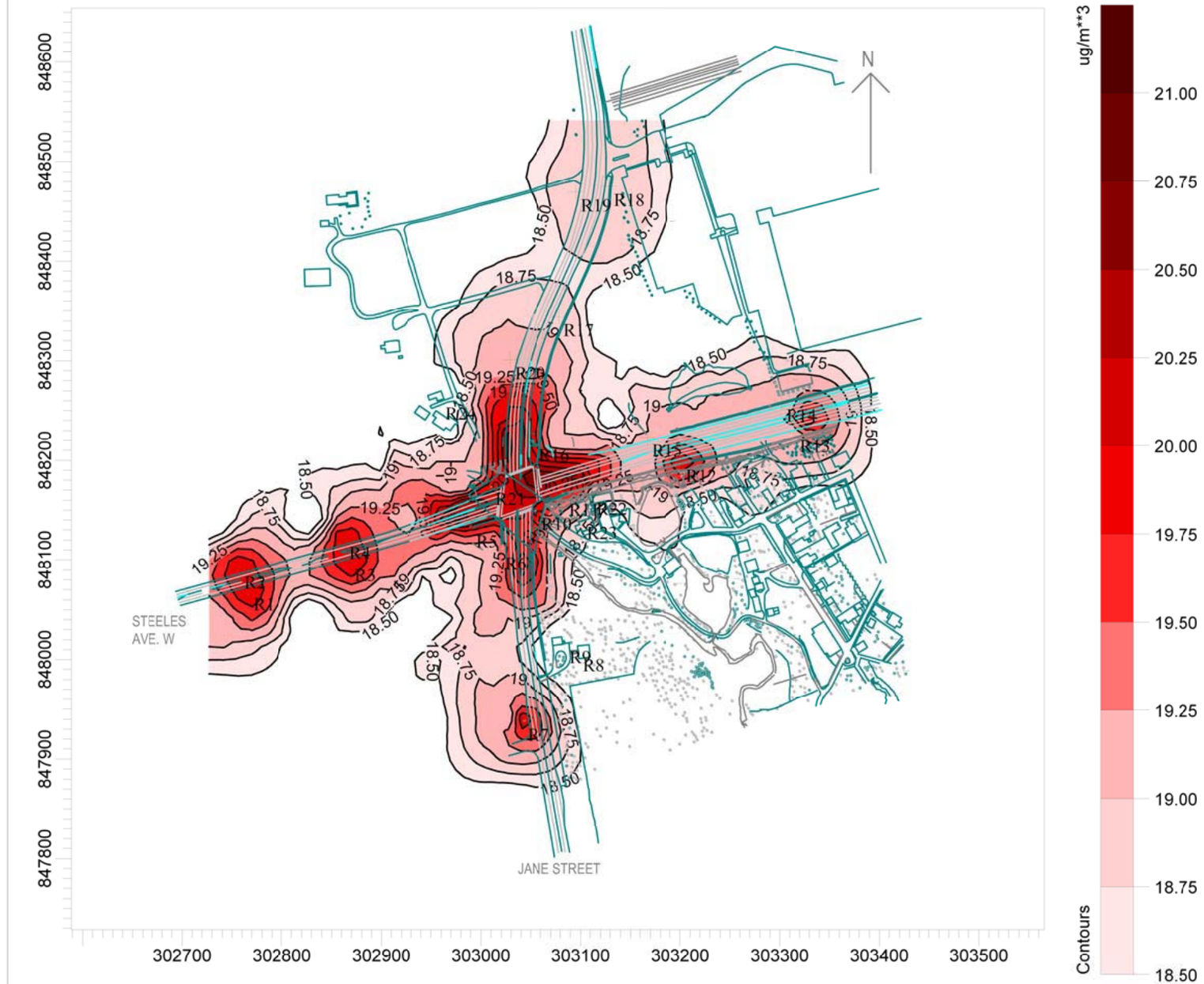
0 100 m

PROJECT / PLOT NO.:

33015347

PROJECT TITLE:

Figure A-6 Run A-3 - Jane & Steeles, No-Build, PM2.5
AM Peak Hour Traffic Data



ug/m**3
Contours
21.00
20.75
20.50
20.25
20.00
19.75
19.50
19.25
19.00
18.75
18.50

COMMENTS:

Run A-3 - No Build PM2.5

Background Concentration - 18 ug/m**3

MODEL:	POLLUTANT:
CAL3QHC	**Particulate**
MAX:	UNITS:
21.00	**ug/m**3**
LINKS:	RECEPTORS:
39	**188**

COMPANY NAME:

URS Canada

MODELER:

MSM

DATE:

1/18/2006

SCALE: 1:6,103,818

0 100 m

PROJECT / PLOT NO.:

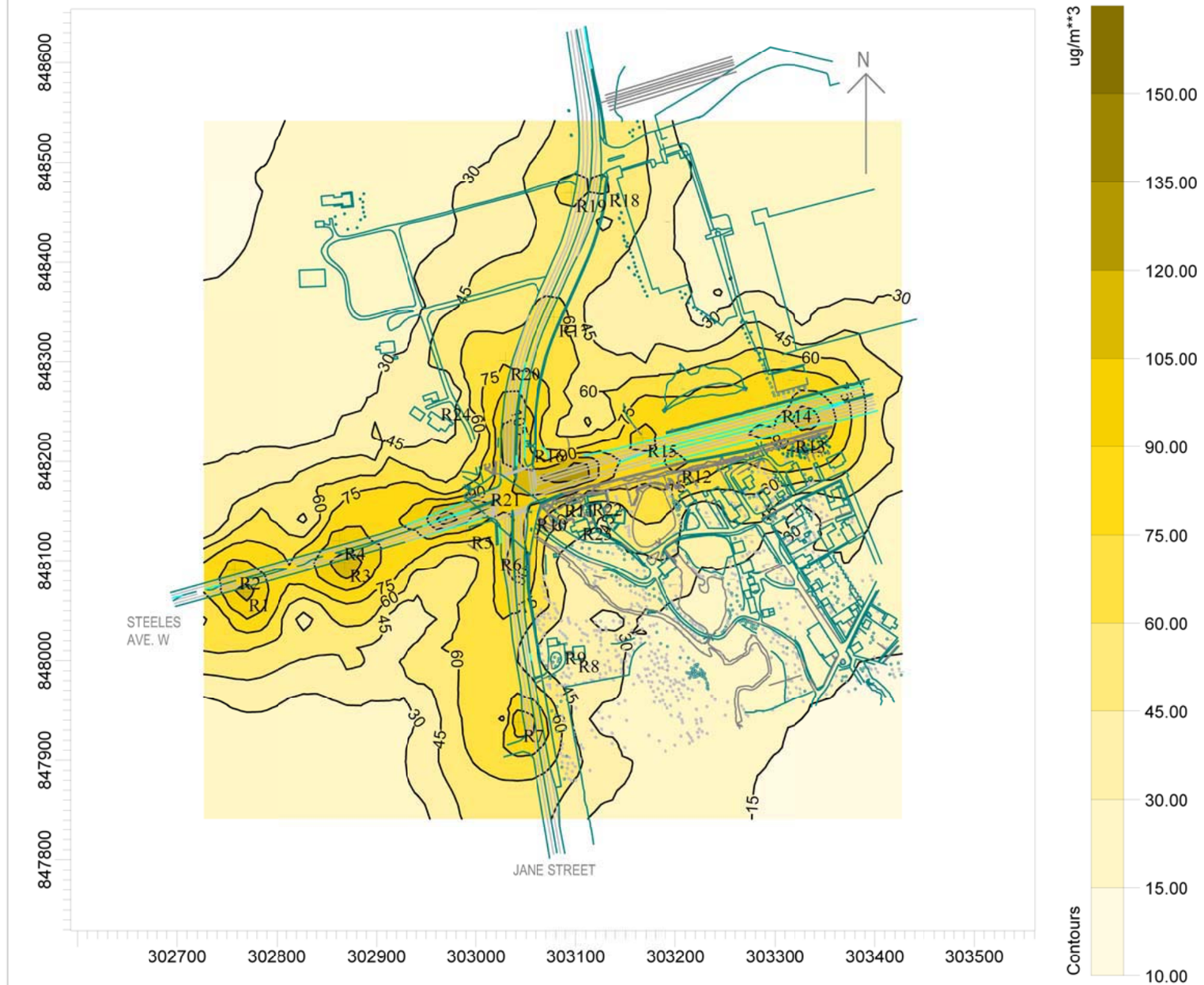
33015347

CALRoads View - Lakes Environmental Software

C:\33015347-TTC\Models\Appendix A - Jane-Steeles Intersection Only\AM Traffic Model Runs\Run A-3, Jane, No-Build, PM2.5\Run A-3, Jane, No Build, PM2.5, Jan 17'06.clv

PROJECT TITLE:

Figure A-7 Run A-4, Jane & Steeles, Build, NOx
AM Peak Hour Traffic Data



COMMENTS:

Run A-4 - Build, NOx

Background Concentration - Not Added

MODEL:	POLLUTANT:
CAL3QHC	**Particulate**
MAX:	UNITS:
153.00	**ug/m**3**
LINKS:	RECEPTORS:
39	**188**

COMPANY NAME:

URS Canada

MODELER:

MSM

DATE:

1/18/2006

SCALE: 1:6,099,839

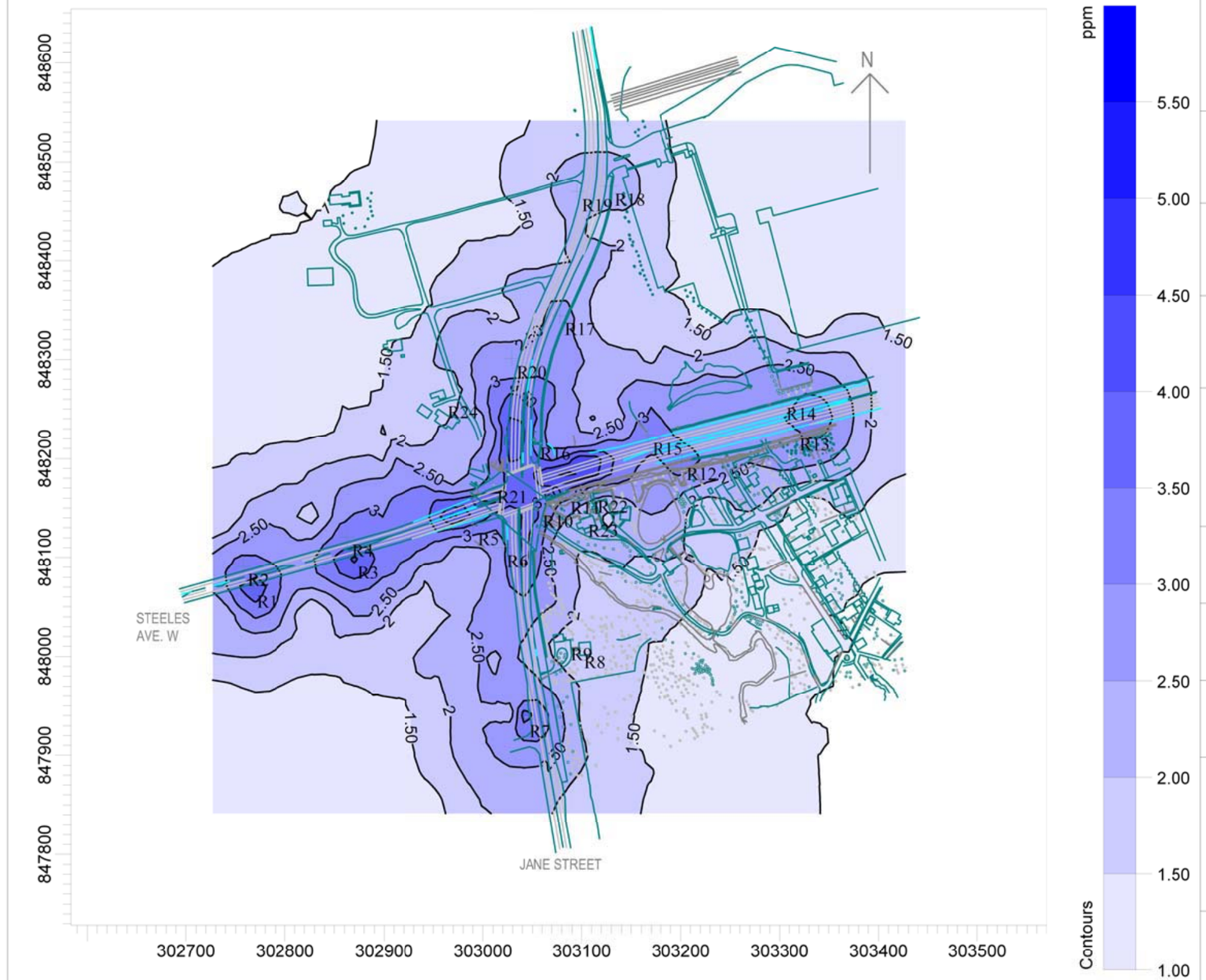
0 100 m

PROJECT / PLOT NO.:

33015347

PROJECT TITLE:

Figure A-8 Run A-5, Jane & Steeles, Build, CO
AM Peak Hour Traffic Data



ppm
5.50
5.00
4.50
4.00
3.50
3.00
2.50
2.00
1.50
1.00
Contours

COMMENTS:

Run A-5 - Build, CO

Background Concentration - 0.75 ppm

MODEL:	POLLUTANT:
CAL3QHC	**CO**
MAX:	UNITS:
5.30	**ppm**
LINKS:	RECEPTORS:
39	**188**

COMPANY NAME:

URS Canada

MODELER:

MSM

DATE:

1/18/2006

SCALE: 1:6,107,722

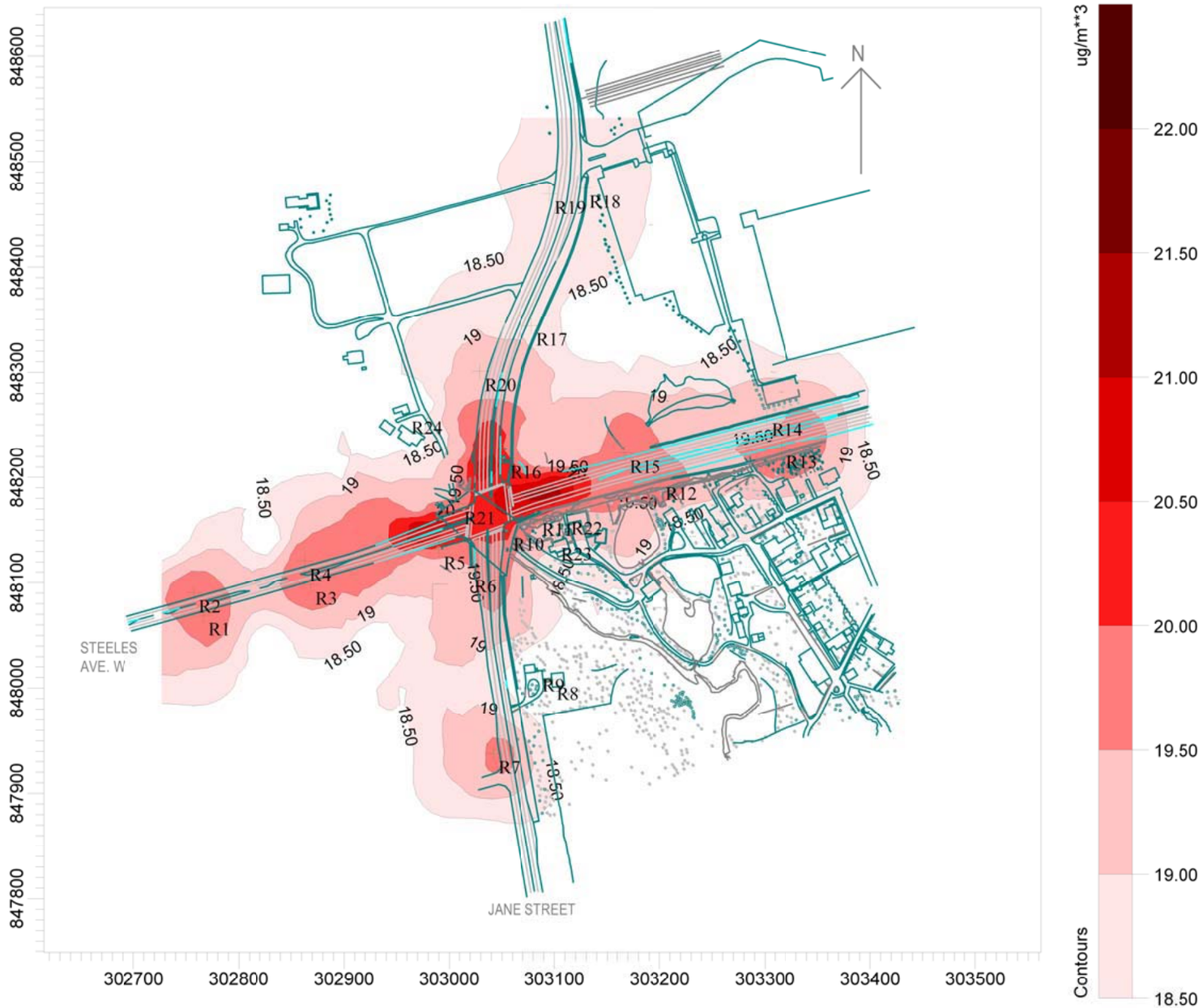
0 100 m

PROJECT / PLOT NO.:

33015347

PROJECT TITLE:

Figure A-9 Run A-6, Jane & Steeles, Build, PM2.5
AM Peak Hour Traffic Data



COMMENTS:

Run A-6 Build, PM2.5

Background Concentration - 18 ug/m**3

MODEL:	POLLUTANT:
CAL3QHC	**Particulate**
MAX:	UNITS:
22.00	**ug/m**3**
LINKS:	RECEPTORS:
39	**188**

COMPANY NAME:

URS Canada

MODELER:

MSM

DATE:

1/18/2006

SCALE: 1:5,918,623

0 100 m

PROJECT / PLOT NO.:

33015347

TABLE A-1

Jane and Steeles, Intersection, Link Information
Spadina Subway Extension - EA, Air Quality Assessment
Toronto Transit Commission
URS Canada Inc. Project: 33015347

Regular Links

Direction of Link	Link ID	TYP	X1 (m) UTM	Y1 (m) UTM	X2 (m) UTM	Y2 (m) UTM	HL (m)	No. Lanes in Link	Width of Lanes(s) (m)	WL Link Width (m)	Speed (km/hr)	EFL PM2.5 (g/veh-mile)	EFL CO (g/veh-mile)	EFL NOx (g/veh-mile)	Run A - 1,2,3 Future Background (No - Build) AM Traffic Data VPHL (# veh /hr/link)	Run A - 4,5,6 Future Total (Build) (Option 1A) AM Traffic Data VPHL (# veh /hr/link)
East Bound	**A1**	AG	302,752.827	848,072.355	302,904.622	848,115.423	0	2	7.2	13.2	30	0.0164	10.070	0.326	1,929	2,300
East Bound	**A2**	AG	302,904.219	848,117.188	303,005.963	848,149.616	0	3	10.8	16.8	30	0.0164	10.070	0.326	1,929	2,300
East Bound	**A3**	**Bridge**	303,005.963	848,149.616	303,037.352	848,159.067	**6**	3	10.8	16.8	30	0.0164	10.070	0.326	1,929	2,300
East Bound	**Adep1**	**Bridge**	303,037.352	848,159.067	303,056.432	848,164.812	**6**	3	10.8	16.8	30	0.0164	10.070	0.326	2,089	2,520
East Bound	**Adep2**	AG	303,056.432	848,164.812	303,163.427	848,197.592	0	3	10.8	16.8	30	0.0164	10.070	0.326	2,089	2,520
East Bound	**Adep3**	AG	303,163.427	848,197.592	303,329.038	848,240.478	0	3	10.8	16.8	30	0.0164	10.070	0.326	2,089	2,520
West Bound	**C1**	AG	303,324.575	848,254.185	303,152.110	848,208.821	0	3	10.8	16.8	30	0.0164	10.070	0.326	1,696	1,931
West Bound	**C2**	AG	303,152.576	848,207.153	303,038.803	848,173.336	0	4	14.4	20.4	30	0.0164	10.070	0.326	1,696	1,931
West Bound	**Cdep1**	**Bridge**	303,038.803	848,173.336	302,995.222	848,159.152	**6**	3	10.8	16.8	30	0.0164	10.070	0.326	1,474	1,649
West Bound	**Cdep2**	AG	302,996.150	848,156.937	302,919.169	848,128.988	0	2	7.2	13.2	30	0.0164	10.070	0.326	1,474	1,649
West Bound	**Cdep3**	AG	302,919.169	848,128.988	302,750.058	848,080.866	0	2	7.2	13.2	30	0.0164	10.070	0.326	1,474	1,649
South Bound	**B1**	AG	303,109.732	848,504.592	303,103.998	848,458.487	0	3	10.8	16.8	30	0.0164	10.070	0.326	1,510	1,558
South Bound	**B2**	AG	303,103.998	848,458.487	303,040.808	848,286.332	0	3	10.8	16.8	30	0.0164	10.070	0.326	1,510	1,558
South Bound	**B3**	AG	303,039.475	848,286.203	303,033.517	848,244.759	0	3	10.8	16.8	30	0.0164	10.070	0.326	1,510	1,558
South Bound	**B4**	AG	303,033.517	848,244.759	303,032.512	848,185.107	0	4	14.4	20.4	30	0.0164	10.070	0.326	1,510	1,558
South Bound	**B5**	**Bridge**	303,032.512	848,185.107	303,032.159	848,164.110	**6**	4	14.4	20.4	30	0.0164	10.070	0.326	1,510	1,558
South Bound	**Bdep1**	**Bridge**	303,032.159	848,164.110	303,031.138	848,127.265	**6**	3	10.8	16.8	30	0.0164	10.070	0.326	1,327	1,391
South Bound	**Bdep2**	AG	303,031.138	848,127.265	303,032.936	848,080.162	0	3	10.8	16.8	30	0.0164	10.070	0.326	1,327	1,391
South Bound	**Bdep3**	AG	303,034.805	848,080.187	303,044.953	847,995.665	0	2	7.2	13.2	30	0.0164	10.070	0.326	1,327	1,391
South Bound	**Bdep4**	AG	303,044.953	847,995.665	303,068.487	847,860.198	0	2	7.2	13.2	30	0.0164	10.070	0.326	1,327	1,391
North Bound	**D1**	AG	303,075.273	847,862.406	303,045.622	848,040.686	0	2	7.2	13.2	30	0.0164	10.070	0.326	1,303	1,401
North Bound	**D2**	AG	303,045.622	848,040.686	303,041.250	848,118.288	0	2	7.2	13.2	30	0.0164	10.070	0.326	1,303	1,401
North Bound	**D3**	**Bridge**	303,041.250	848,118.288	303,043.900	848,167.264	**6**	4	14.4	20.4	30	0.0164	10.070	0.326	1,303	1,401
North Bound	**Ddep1**	AG	303,043.900	848,167.264	303,046.428	848,256.291	0	2	7.2	13.2	30	0.0164	10.070	0.326	1,548	1,630
North Bound	**Ddep2**	AG	303,046.428	848,256.291	303,063.587	848,328.484	0	2	7.2	13.2	30	0.0164	10.070	0.326	1,548	1,630
North Bound	**Ddep3**	AG	303,063.587	848,328.484	303,113.300	848,451.071	0	2	7.2	13.2	30	0.0164	10.070	0.326	1,548	1,630
North Bound	**Ddep4**	AG	303,113.300	848,451.071	303,120.628	848,508.138	0	2	7.2	13.2	30	0.0164	10.070	0.3260	1,548	1,630

Queue Links

Direction	Link ID	TYP	X1 (m) UTM	Y1 (m) UTM	X2 (m) UTM	Y2 (m) UTM	HL (m)	No. Lanes in Link	WL Width of Link (m)	I-EF PM2.5 (g/hr)	I-EF CO (g/hr)	I-EF NOx (g/hr)	SFR	ST	AT	VPHL*	CAVG (s)	RAVG (s)	YFAC (s)	VPHL*	CAVG (s)	RAVG (s)	YFAC (s)
East Bound	**AqL**	AG	303,017.102	848,156.930	302,904.217	848,119.936	0	1	3.6	0.041	56.148	1.350	1,900	1	3	164	120	62	2	164	120	60	2
East Bound	**AqT**	AG	303,016.465	848,151.124	302,752.827	848,072.355	0	2	7.2	0.041	56.148	1.350	1,900	1	3	1,605	120	70	2	1,976	120	68	2
East Bound	**AqR**	AG	303,015.955	848,146.477	302,967.241	848,131.242	0	1	3.6	0.041	56.148	1.350	1,900	1	3	160	120	70	2	160	120	68	2
West Bound	**CqL**	AG	303,060.672	848,174.535	303,153.917	848,203.258	0	1	3.6	0.041	56.148	1.350	1,900	1	3	155	120	62	2	193	120	60	2
West Bound	**CqR**	AG	303,058.871	848,186.844	303,323.450	848,257.643	0	1	3.6	0.041	56.148	1.350	1,900	1	3	299	120	70	2	321	120	68	2
West Bound	**CqT**	AG	303,059.941	848,179.532	303,325.095	848,252.588	0	2	7.2	0.041	56.148	1.350	1,900	1	3	1,242	120	70	2	1,417	120	68	2
South Bound	**BqL**	AG	303,037.717	848,189.394	303,038.838	848,245.520	0	1	3.6	0.041	56.148	1.350	1,900	1	3	347	120	68	2	369	120	68	2
South Bound	**BqR**	AG	303,027.108	848,185.404	303,031.916	848,276.759	0	1	3.6	0.041	56.148	1.350	1,900	1	3	151	120	85	2	151	120	78	2
South Bound	**BqT**	AG	303,032.541	848,187.447	303,037.765	848,276.847	0	2	7.2	0.041	56.148	1.350	1,900	1	3	1,012	120	85	2	1,038	120	78	2
North Bound	**DqL**	AG	303,039.233	848,145.901	303,040.119	848,084.787	0	1	3.6	0.041	56.148	1.350	1,900	1	3	81	120	68	2	81	120	78	2
North Bound	**DqR**	AG	303,050.238	848,150.102	303,049.826	848,128.930	0	1	3.6	0.041	56.148	1.350	1,900	1	3	137	120	85	2	175	120	85	2
North Bound	**DqT**	AG	303,044.934	848,148.077	303,043.121	847,851.943	0	2	7.2	0.041	56.148	1.350	1,900	1	3	1,085	120	85	2	1,145	120	85	2

Note:

Typ	Link Type, AG - at grade, FL - fill, BR - Bridge, DP - Depression
HL	Source Height (in meters)
Width	Width of link (number of lanes * width of lane) Regular link Lane Width includes 3m on either side of link
Speed	Speed from calculation of emission factor (km/hr)
EFL	Emission Factor (g/veh-mile)
WL	Mixing zone width (m)
VPHL	Traffic Volume on Link(Veh/hr)
I-EF	Idle Emission Factor (g/hr)
CAVG	Average total cycle length (s)
ST	Signal Type, 1-pretimed, 2-actuated, 3-semi-actuated (default=1)
AT	Arrival type, 1-Worst, 2-below average, 3-average, 4-above average, 5-best progression (default is 3)
RAVG	Average red total signal cycle length (s)
YFAC	Clearance Lost Time (s) (Time lost getting queue in motion)
SFR	Saturation Flow Rate (veh/hr/lane) (vehicles per hour of effective green time, vphg)

AM data is considered worst case due to delay times and traffic volumes. Modelling will be done using AM data and then 8 hour peak average and 24 hour daily average will be calculated from AM Peak hour output.
For PM2.5 Modelling - Deposition Velocity =0.5 cm/sec, Settling Velecity = 10 cm/sec

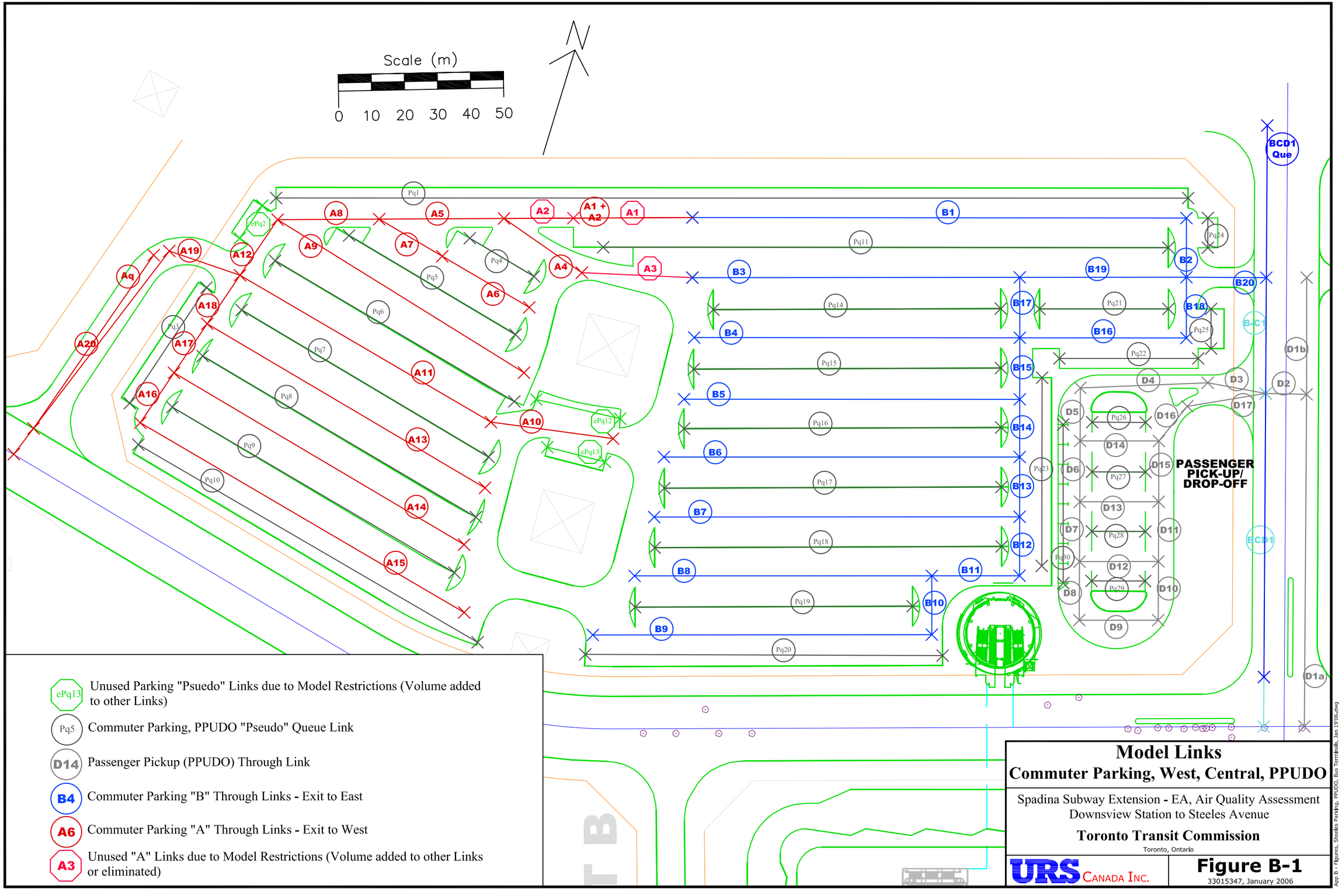
TABLE A-2

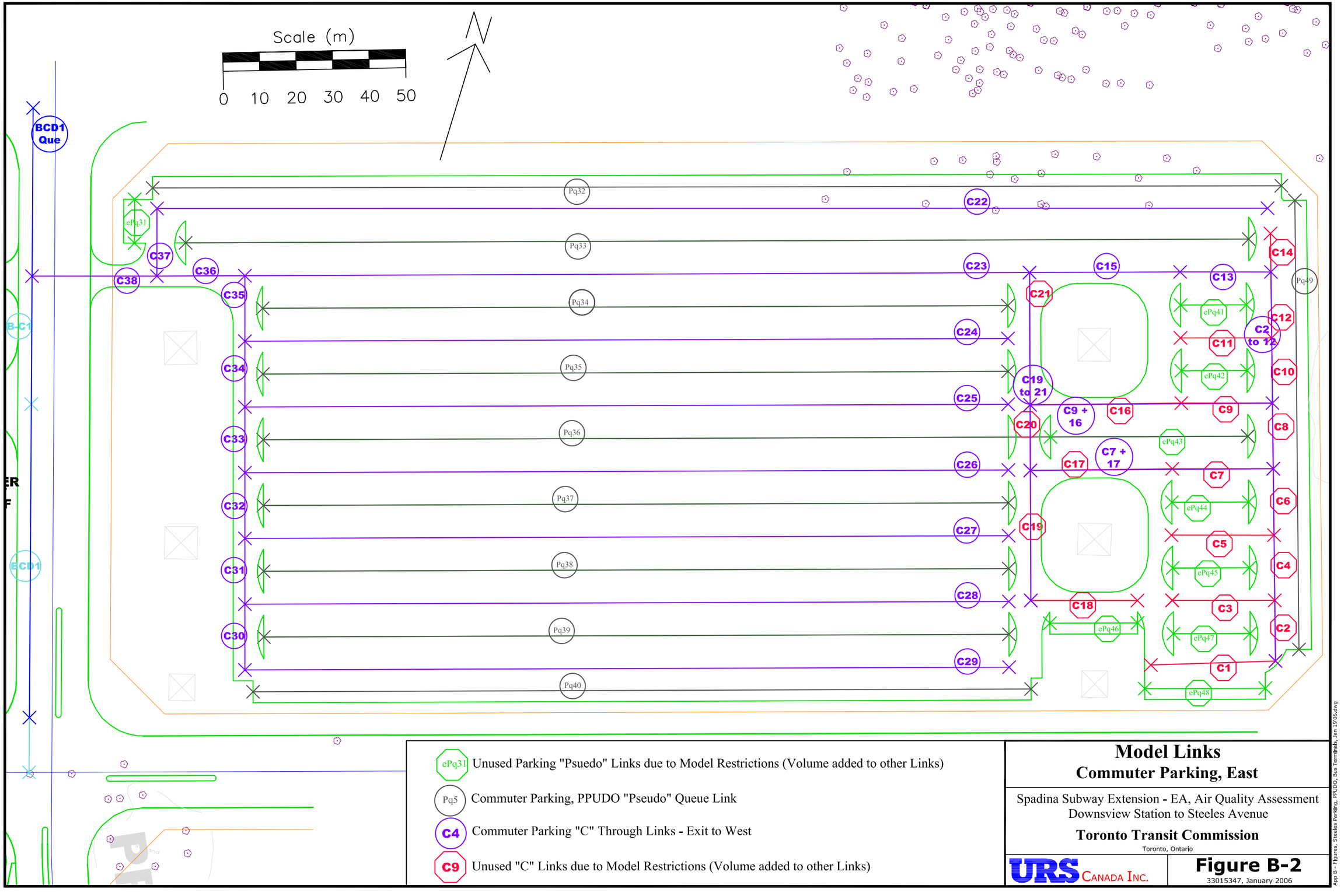
Jane and Steeles Intersection, Discrete Receptors
Spadina Subway Extension - EA, Air Quality Assessment
Toronto Transit Commission
URS Canada Inc. Project: 33015347

Receptor ID	X UTM (m)	Y UTM (m)	Description
R1	302,766.695	848,068.793	South Side of Steeles
R2	302,757.470	848,090.573	North Side of Steeles
R3	302,868.360	848,098.090	South Side of Steeles
R4	302,862.878	848,120.583	North Side of Steeles
R5	302,990.337	848,131.972	Bus Stop, South Side of Steeles
R6	303,019.384	848,109.777	Bus Stop, West side of Jane
R7	303,042.245	847,937.804	Bus Stop, West side of Jane
R8	303,097.715	848,007.831	House, East side of Jane
R9	303,084.214	848,015.895	Garage, East side of Jane
R10	303,056.055	848,149.673	Bus Stop, East side of Jane
R11	303,083.831	848,163.521	Bus Stop, South side of Steeles
R12	303,201.251	848,197.721	South Side of Steeles
R13	303,315.723	848,227.551	South Side of Steeles
R14	303,301.881	848,258.673	North Side of Steeles
R15	303,166.864	848,223.238	North Side of Steeles
R16	303,053.409	848,218.265	Bus Stop, East side of Jane
R17	303,078.272	848,344.180	East Side of Jane
R18	303,128.622	848,474.862	East Side of Jane
R19	303,095.626	848,469.402	West Side of Jane
R20	303,029.260	848,300.811	West Side of Jane
R21	303,009.682	848,174.590	Bus stop, NW corner
R22	303,111.360	848,164.839	House, South East Corner
R23	303,101.663	848,140.601	House, South East Corner
R24	302,959.788	848,260.468	House, North West Corner

APPENDIX B

STEELES WEST STATION ANALYSIS


Scale (m)
0 10 20 30 40 50
A1
A1 + A2
A2
A3
A4
A5
A6
A7
A8
A9
A10
A11
A12
A13
A14
A15
A16
A17
A18
A19
A20
Aq
ePq2
ePq12
ePq13
Pq1
Pq3
Pq4
Pq5
Pq6
Pq7
Pq8
Pq9
Pq10
B1
B2
B3
B4
B5
B6
B7
B8
B9
B10
B11
B12
B13
B14
B15
B16
B17
B18
B19
B20
Pq11
Pq14
Pq15
Pq16
Pq17
Pq18
Pq19
Pq20
Pq21
Pq22
Pq23
Pq24
Pq25
Pq26
Pq27
Pq28
Pq29
Pq30
BCD1 Que
B-C1
BCD1
D1a
D1b
D2
D3
D4
D5
D6
D7
D8
D9
D10
D11
D12
D13
D14
D15
D16
D17
PASSENGER PICK-UP/ DROP-OFF
ePq13 Unused Parking "Psuedo" Links due to Model Restrictions (Volume added to other Links)
Pq5 Commuter Parking, PPUDO "Pseudo" Queue Link
D14 Passenger Pickup (PPUDO) Through Link
B4 Commuter Parking "B" Through Links - Exit to East
A6 Commuter Parking "A" Through Links - Exit to West
A3 Unused "A" Links due to Model Restrictions (Volume added to other Links or eliminated)
Model Links
Commuter Parking, West, Central, PPUDO
Spadina Subway Extension - EA, Air Quality Assessment
Downsview Station to Steeles Avenue
Toronto Transit Commission
Toronto, Ontario
URS CANADA INC.
Figure B-1
33015347, January 2006
App B - Figures, Steeles Parking, PPUDO, Bus Terminals, Jan 19'06.dwg



ePq31 Unused Parking "Psuedo" Links due to Model Restrictions (Volume added to other Links)

Pq5 Commuter Parking, PPUDO "Pseudo" Queue Link

C4 Commuter Parking "C" Through Links - Exit to West

C9 Unused "C" Links due to Model Restrictions (Volume added to other Links)

Model Links
Commuter Parking, East

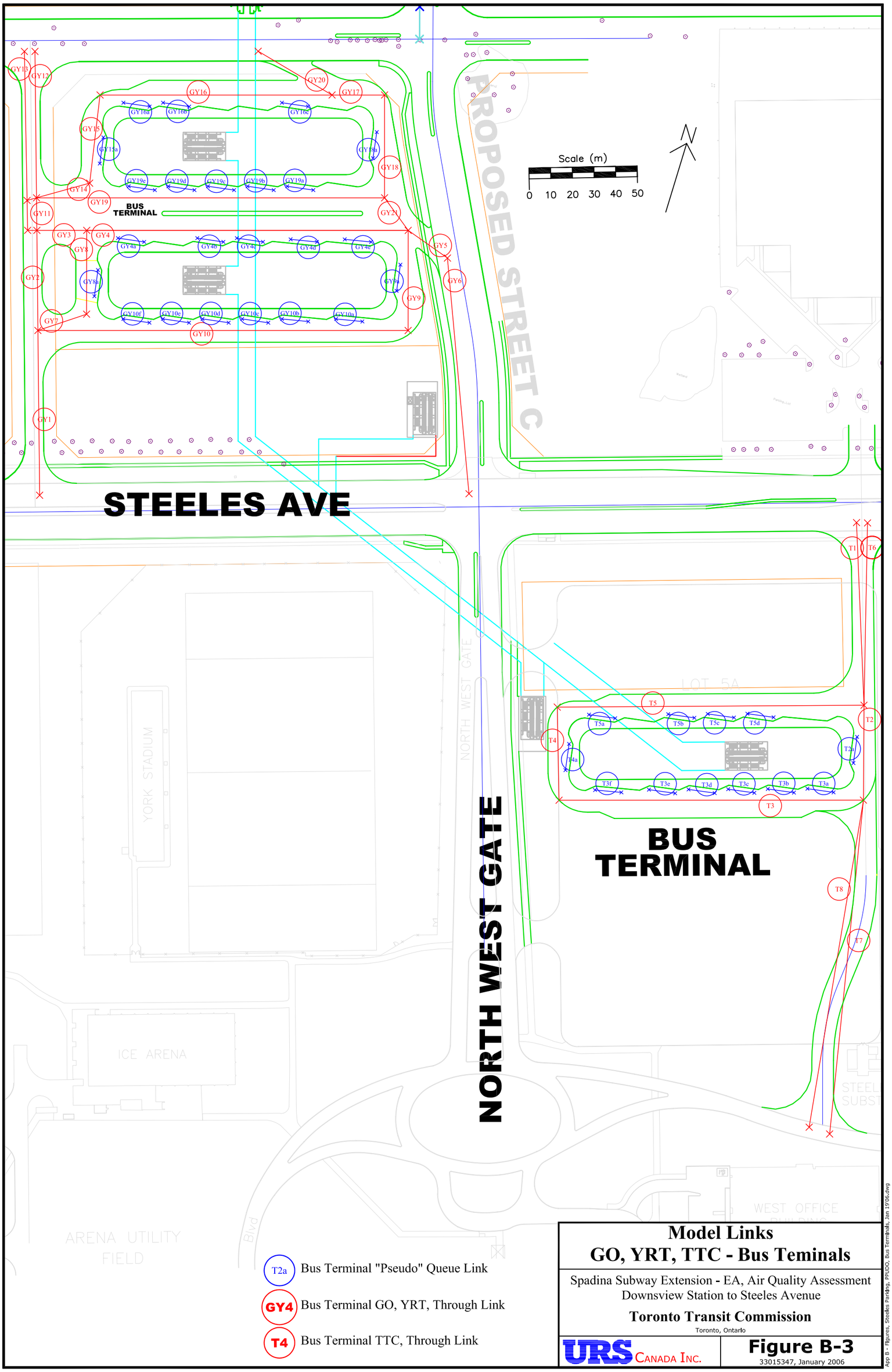
Spadina Subway Extension - EA, Air Quality Assessment
Downsview Station to Steeles Avenue

Toronto Transit Commission
Toronto, Ontario

URS Canada Inc.

Figure B-2
33015347, January 2006

App B - Figures, Steeles Parking, PPUDO, Bus Terminals, Jan 19'06.dwg



T2a Bus Terminal "Pseudo" Queue Link

GY4 Bus Terminal GO, YRT, Through Link

T4 Bus Terminal TTC, Through Link

Model Links
GO, YRT, TTC - Bus Teminals

Spadina Subway Extension - EA, Air Quality Assessment
Downsview Station to Steeles Avenue

Toronto Transit Commission

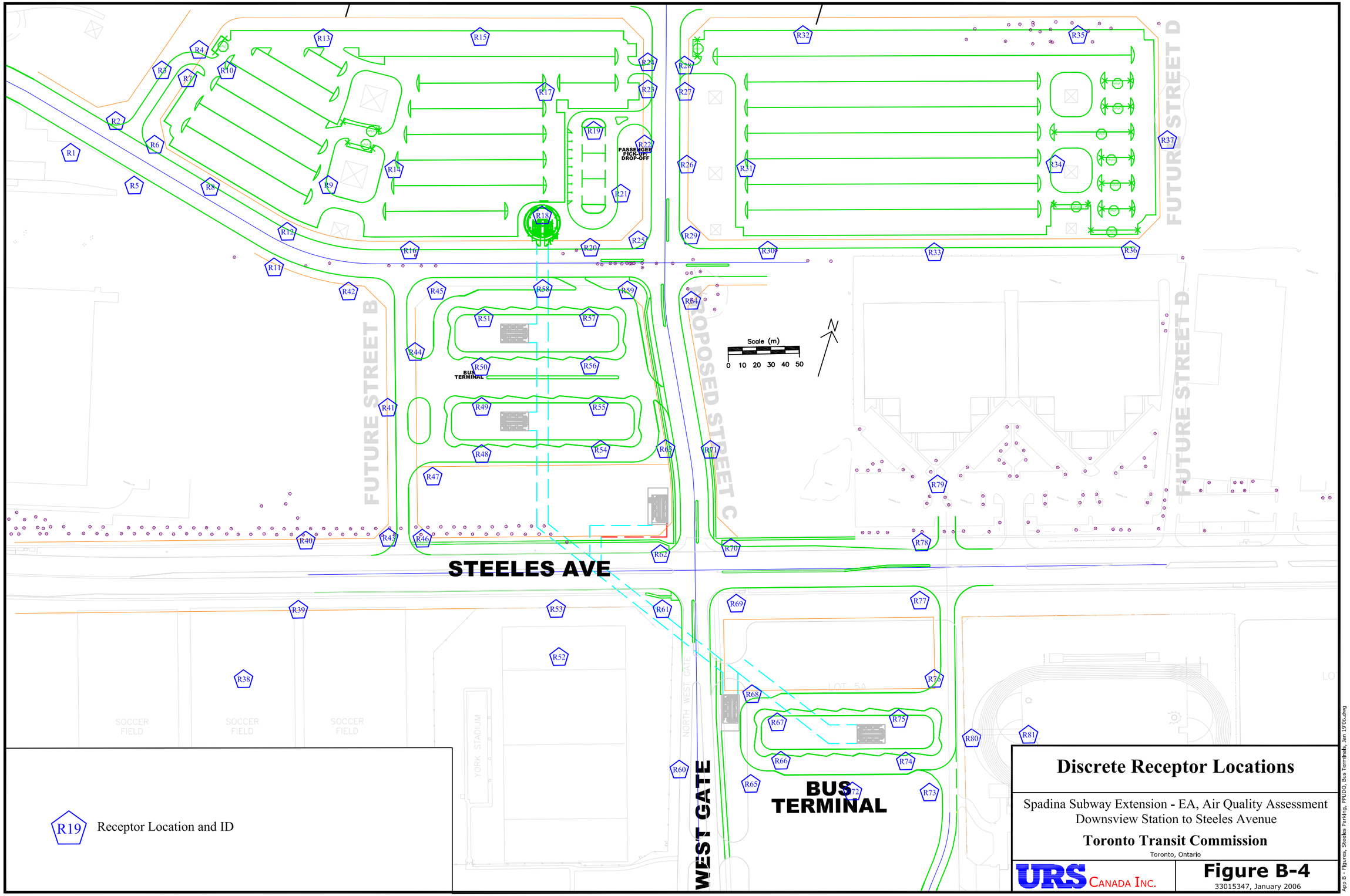
Toronto, Ontario

URS Canada Inc.

Figure B-3

33015347, January 2006

App B - Figures, Steeles Parking, PWOOO, Bus Terminals, Jan 19'06.dwg



Discrete Receptor Locations

Spadina Subway Extension - EA, Air Quality Assessment
Downsview Station to Steeles Avenue

Toronto Transit Commission

Toronto, Ontario

URS CANADA INC.

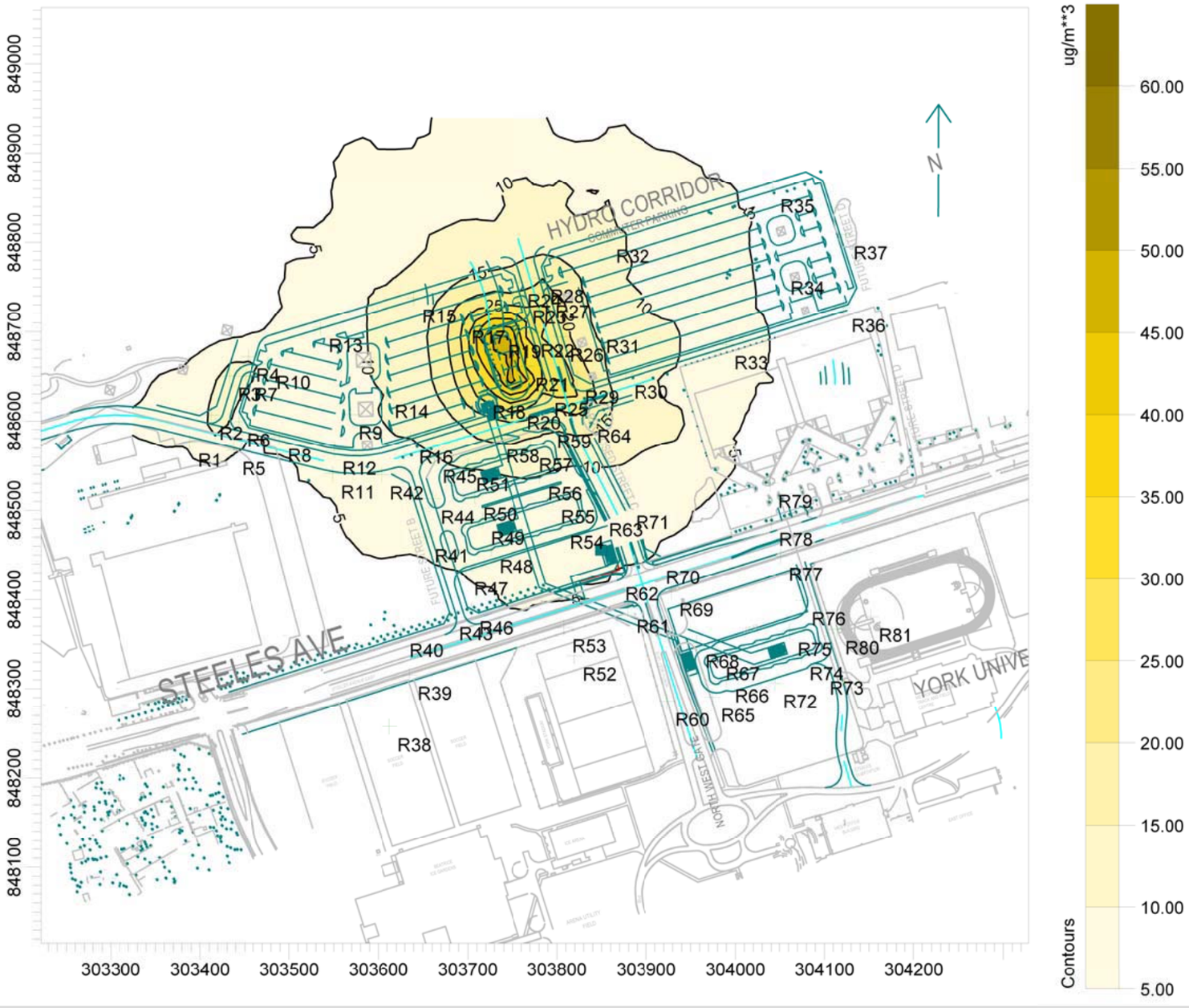
Figure B-4

33015347, January 2006

App B - Figures, Steeles Parking, PPUDO, Bus Terminals, Jan 19'06.dwg

PROJECT TITLE:

Figure B-5 Run B-1, Steeles Station, Commuter Parking, PPUDO, NOx
PM Peak Hour Traffic Data



COMMENTS:

Run B-1

Background NOx Concentration, Not Used

MODEL:	POLLUTANT:
CAL3QHC	**Particulate**
MAX:	UNITS:
61.00	**ug/m**3**
LINKS:	RECEPTORS:
120	**772**

COMPANY NAME:

URS Canada

MODELER:

MSM

DATE:

1/23/2006

SCALE: 1:6,913,387

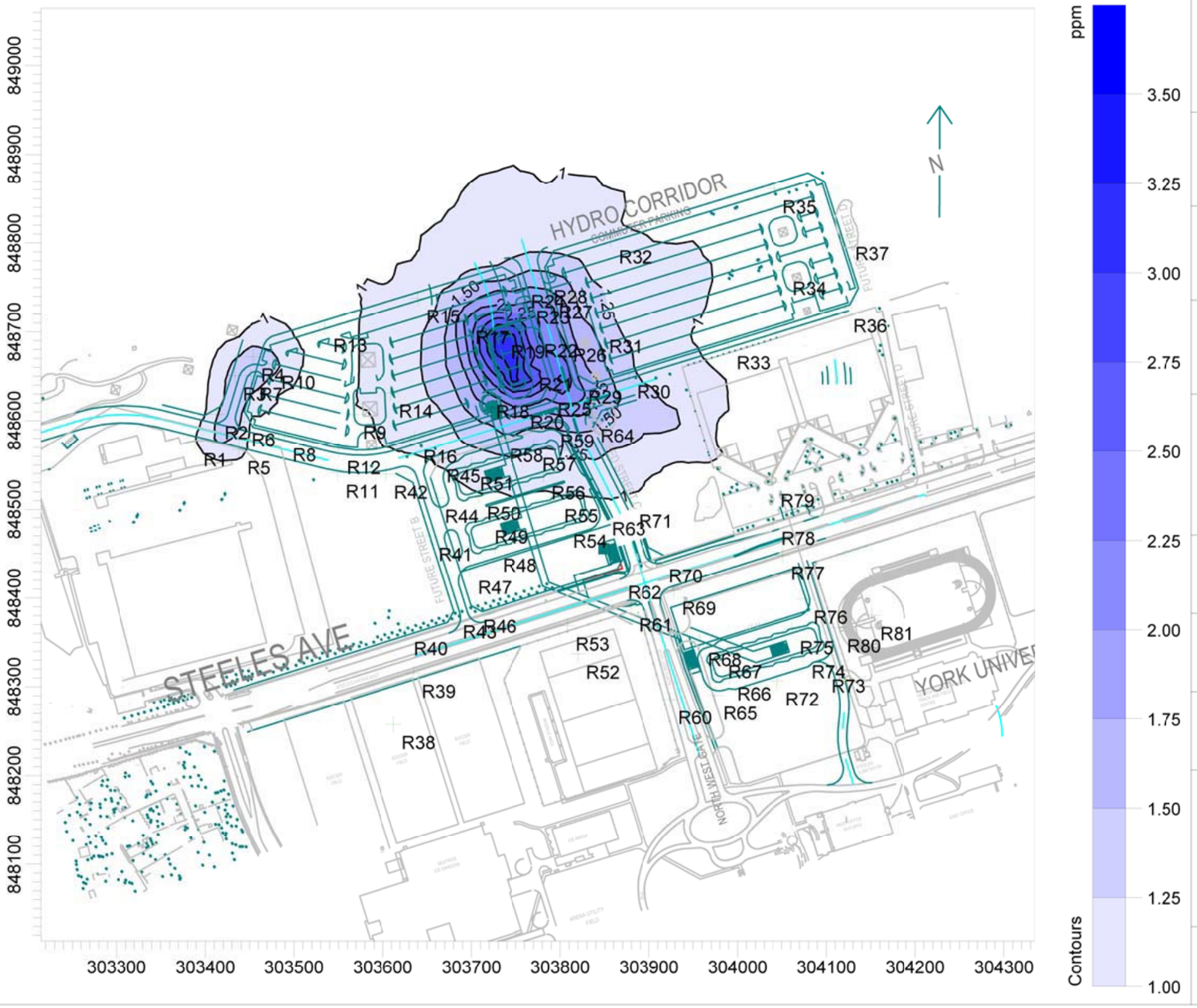
0 200 m

PROJECT / PLOT NO.:

33015347

PROJECT TITLE:

Figure B-6 Run B-2, Steeles, Commuter Parking, PPUDO, CO
PM Peak Hour Traffic Data



COMMENTS:

Run B-2

Background CO
Concentration = 0.75 ppm

MODEL:	POLLUTANT:
CAL3QHC	**CO**
MAX:	UNITS:
3.80	**ppm**
LINKS:	RECEPTORS:
120	**772**

COMPANY NAME:

URS Canada

MODELER:

MSM

DATE:

1/23/2006

SCALE: 1:6,933,285

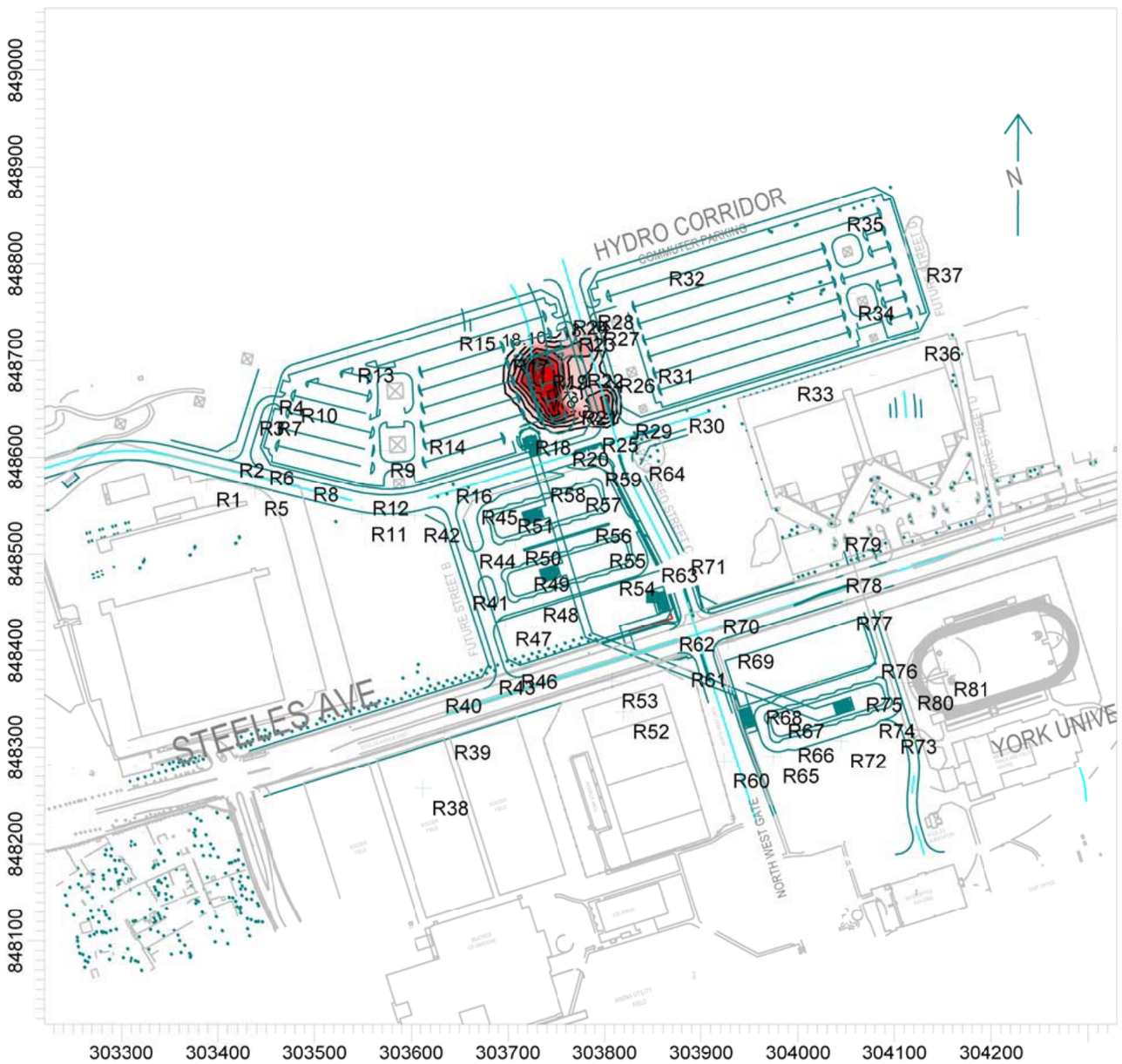
0 200 m

PROJECT / PLOT NO.:

33015347

PROJECT TITLE:

Figure B-7 Run B-3, Steeles, Commuter Parking, PPUDO, PM2.5
PM Peak Hour Traffic Data



COMMENTS:

Run B-3

Background PM2.5
Concentration = 18 ug/m**3

MODEL:	POLLUTANT:
CAL3QHC	**Particulate**
MAX:	UNITS:
19.00	**ug/m**3**
LINKS:	RECEPTORS:
120	**772**

COMPANY NAME:

URS Canada

MODELER:

MSM

DATE:

1/23/2006

SCALE: 1:6,928,377

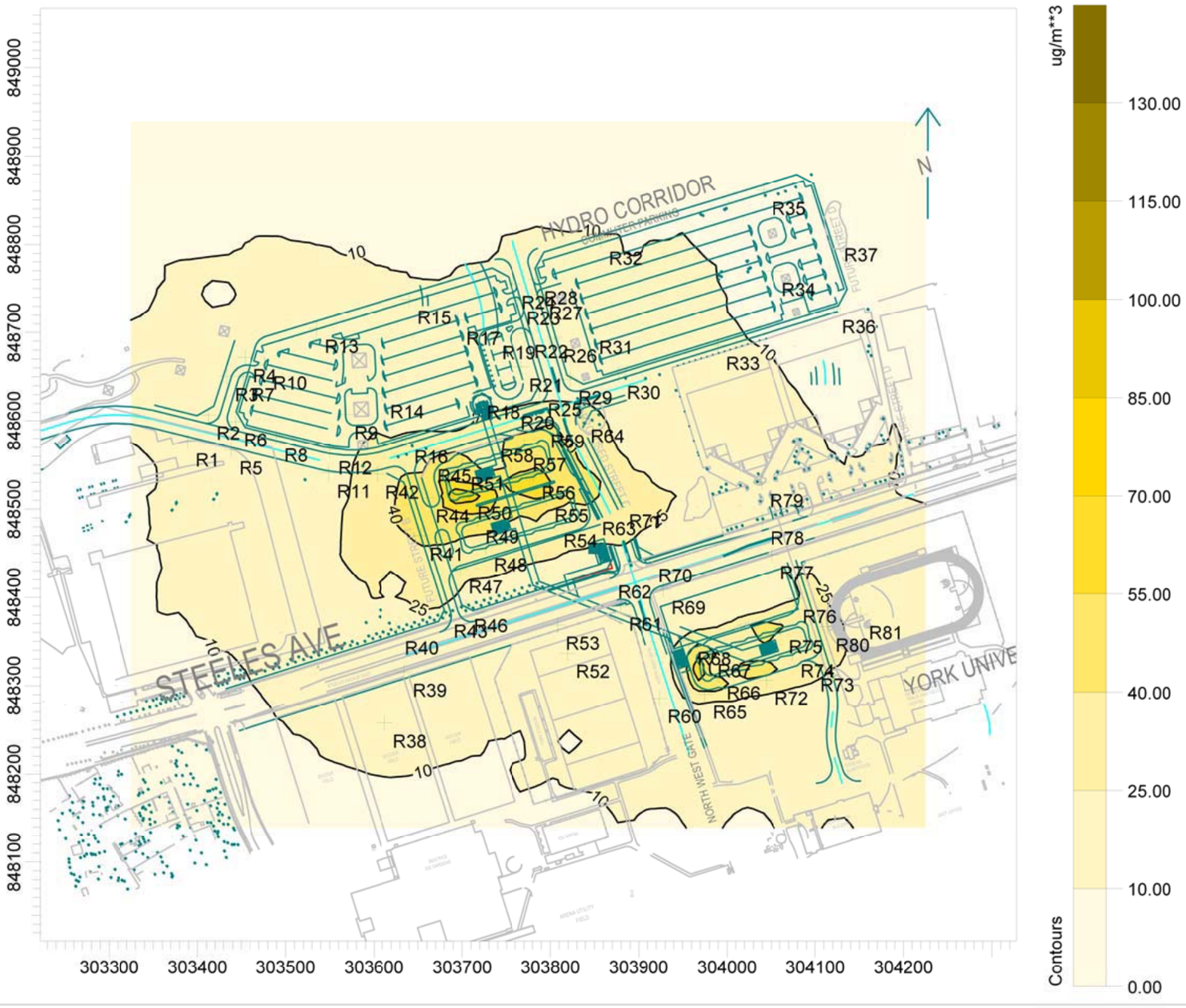
0 200 m

PROJECT / PLOT NO.:

33015347

PROJECT TITLE:

Figure B-8 Run B-4, Steeles Station, Bus Terminals, NOx
PM Peak Hour Traffic Data



COMMENTS:

Run B-4

Background NOx Concentration, Not Used

MODEL:	POLLUTANT:
CAL3QHC	**Particulate**
MAX:	UNITS:
129.00	**ug/m**3**
LINKS:	RECEPTORS:
64	**772**

COMPANY NAME:

URS Canada

MODELER:

MSM

DATE:

1/19/2006

SCALE: 1:6,971,122

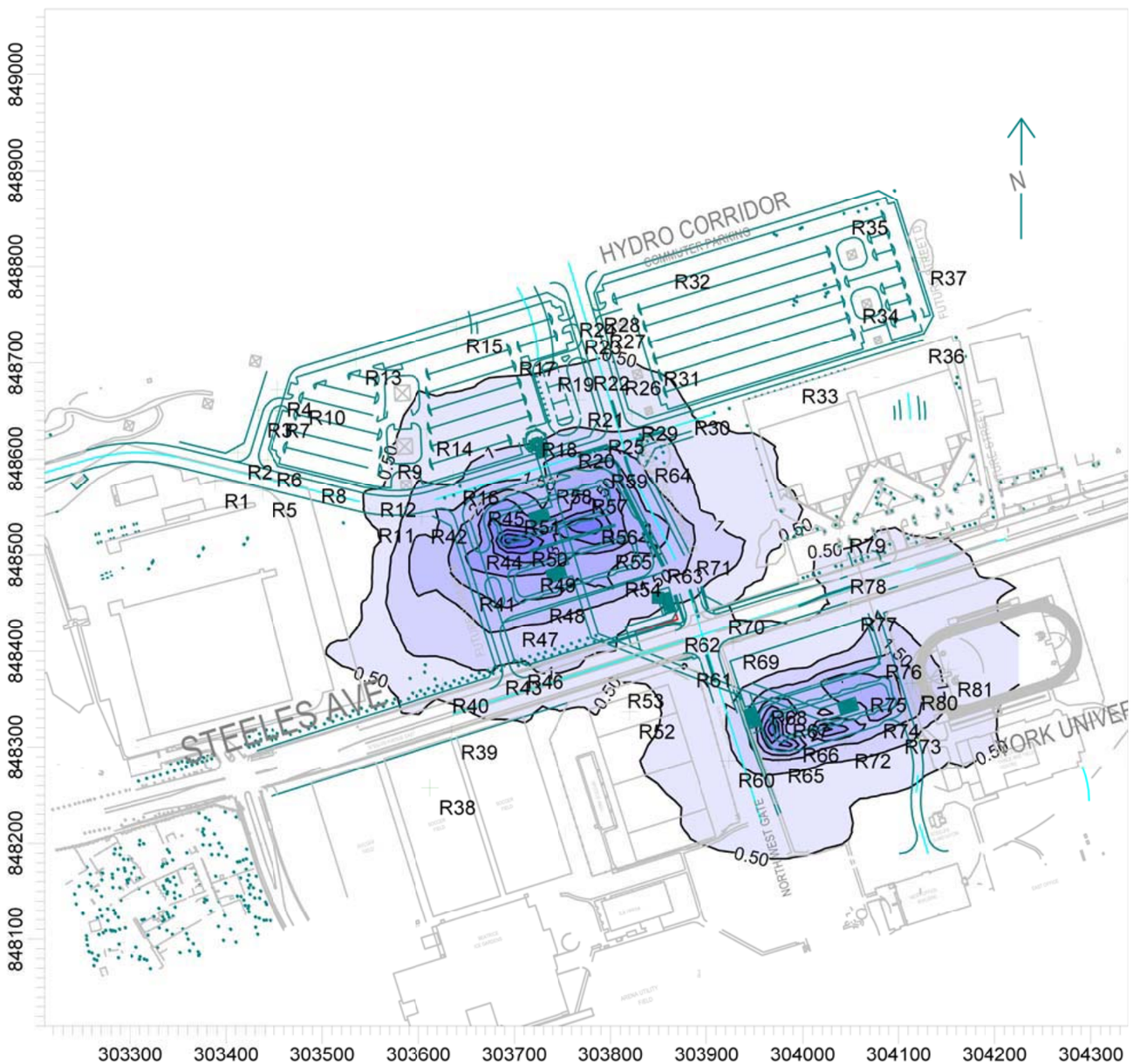
0 200 m

PROJECT / PLOT NO.:

33015347

PROJECT TITLE:

Figure B-9 Run B-5, Steeles, Bus Terminals, CO
PM Peak Hour Traffic Data



COMMENTS:

Run B-5

Background CO Concentration, Not Used
Emission Factors * 100 Used
Actual Max = 7.3/100+0.75 = 0.823 ppm

MODEL:	POLLUTANT:
CAL3QHC	**CO**
MAX:	UNITS:
7.30	**ppm**
LINKS:	RECEPTORS:
64	**772**

COMPANY NAME:

URS Canada

MODELER:

MSM

DATE:

1/19/2006

SCALE: 1:6,980,131

0 200 m

PROJECT / PLOT NO.:

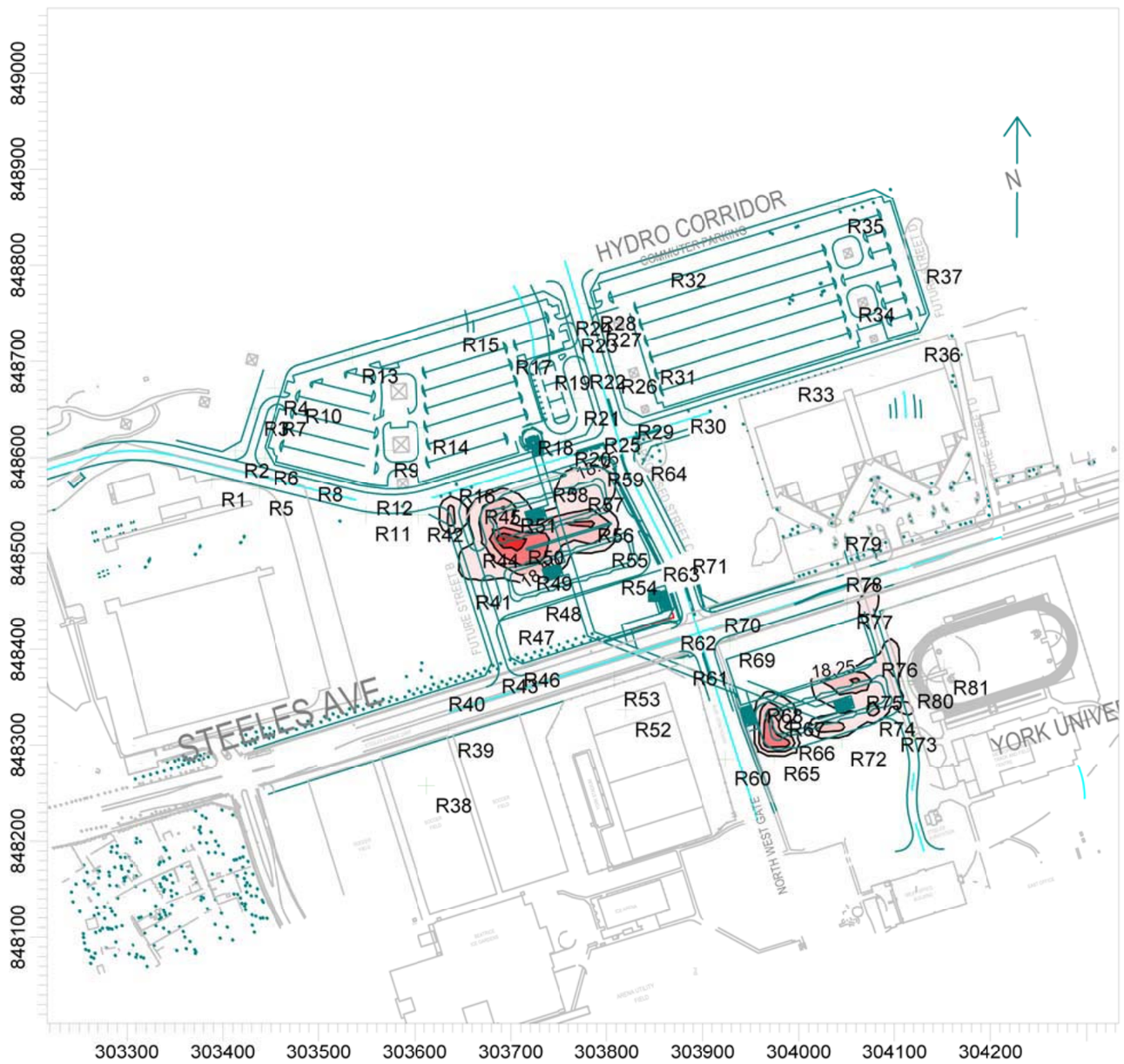
33015347

CALRoads View - Lakes Environmental Software

C:\33015347-TTC\Models\Appendix B - Parking and Bus - Steeles Station\2 - Bus Terminals\Run B-5, Steeles, All Terminals, CO\Run B-5, Steeles, Terminals, CO, Jan 12,06.clv

PROJECT TITLE:

Figure B-10 Run B-6, Steeles Terminals, PM2.5
PM Peak Hour Traffic Data



COMMENTS:

Run B-6

Background PM2.5
Concentration = 18 ug/m**3

MODEL:	POLLUTANT:
CAL3QHC	**Particulate**
MAX:	UNITS:
20.00	**ug/m**3**
LINKS:	RECEPTORS:
64	**772**

COMPANY NAME:

URS Canada

MODELER:

MSM

DATE:

1/19/2006

SCALE: 1:6,975,669

0 200 m

PROJECT / PLOT NO.:

33015347

TABLE B-1
Steele West Station, Parking Link Information
Spadina Subway Extension - EA, Air Quality Assessment
Toronto Transit Commission
URS Canada Inc. Project: 33015347

Regular Through Links

Link ID	X1 UTM (m)	Y1 UTM (m)	X2 UTM (m)	Y2 UTM (m)	queue length	Link width (m)	Link Volume	Link Velocity km/hr (mph)	Emission Factor CO (g/veh-mile) Parking Lot	Emission Factor NOx (g/veh-mile) Parking Lot	Emission Factor PM2.5 (g/veh-mile) Parking Lot
eA1	303,596.521	848,712.763	303,562.053	848,702.013	36.1	6	20	8 (5)	26.580	0.390	0.0112
eA2	303,562.053	848,702.013	303,541.987	848,695.805	21.0	6	26	8 (5)	26.580	0.390	0.0112
eA3	303,601.728	848,695.237	303,569.291	848,686.955	33.5	6	5	8 (5)	26.580	0.390	0.0112
A4	303,569.291	848,686.955	303,541.987	848,695.805	28.7	6	15	8 (5)	26.580	0.390	0.0112
A5	303,541.987	848,695.805	303,505.910	848,684.641	37.8	6	46	8 (5)	26.580	0.390	0.0112
A6	303,557.127	848,672.288	303,527.433	848,679.450	30.5	6	16	8 (5)	26.580	0.390	0.0112
A7	303,527.433	848,679.450	303,505.910	848,684.641	22.1	6	23	8 (5)	26.580	0.390	0.0112
A8	303,505.910	848,684.641	303,476.538	848,675.553	30.7	6	78	8 (5)	26.580	0.390	0.0112
A9	303,561.356	848,652.905	303,476.538	848,675.553	87.8	6	42	8 (5)	26.580	0.390	0.0112
A10	303,592.921	848,641.648	303,556.092	848,635.680	37.3	6	13	8 (5)	26.580	0.390	0.0112
A11	303,556.092	848,635.680	303,470.542	848,656.148	88.0	6	60	8 (5)	26.580	0.390	0.0112
A12	303,476.538	848,675.553	303,470.542	848,656.148	20.3	6	123	8 (5)	26.580	0.390	0.0112
A13	303,560.185	848,616.109	303,465.306	848,639.204	97.6	6	51	8 (5)	26.580	0.390	0.0112
A14	303,559.111	848,597.843	303,460.014	848,622.074	102.0	6	55	8 (5)	26.580	0.390	0.0112
A15	303,565.118	848,578.190	303,454.632	848,604.657	113.6	6	60	8 (5)	26.580	0.390	0.0112
A16	303,454.632	848,604.657	303,460.014	848,622.074	18.2	6	65	8 (5)	26.580	0.390	0.0112
A17	303,460.014	848,622.074	303,465.306	848,639.204	17.9	6	124	8 (5)	26.580	0.390	0.0112
A18	303,465.306	848,639.204	303,470.542	848,656.148	17.7	6	178	8 (5)	26.580	0.390	0.0112
A19	303,470.542	848,656.148	303,447.942	848,656.950	22.6	9.6	361	30 (18.6)	20.230	0.265	0.0112
A20	303,447.942	848,656.950	303,420.782	848,584.434	77.4	9.6	361	30 (18.6)	20.230	0.265	0.0112
B1	303,596.467	848,712.662	303,739.559	848,755.957	149.5	6	34	8 (5)	26.580	0.390	0.0112
B2	303,739.559	848,755.957	303,744.762	848,738.824	17.9	6	36	8 (5)	26.580	0.390	0.0112
B3	303,601.728	848,695.237	303,696.510	848,724.120	99.1	6	22	8 (5)	26.580	0.390	0.0112
B4	303,607.526	848,678.059	303,701.845	848,706.613	98.5	6	21	8 (5)	26.580	0.390	0.0112
B5	303,610.024	848,659.295	303,707.243	848,688.781	101.6	6	22	8 (5)	26.580	0.390	0.0112
B6	303,609.273	848,640.781	303,712.302	848,672.073	107.7	6	23	8 (5)	26.580	0.390	0.0112
B7	303,611.732	848,622.533	303,717.547	848,654.746	110.6	6	24	8 (5)	26.580	0.390	0.0112
B8	303,611.226	848,603.771	303,697.294	848,629.943	90.0	6	20	8 (5)	26.580	0.390	0.0112
B9	303,604.341	848,582.994	303,702.481	848,612.889	102.6	6	23	8 (5)	26.580	0.390	0.0112
B10	303,702.481	848,612.889	303,697.294	848,629.943	17.8	6	23	8 (5)	26.580	0.390	0.0112
B11	303,697.294	848,629.943	303,722.716	848,637.674	26.6	6	45	8 (5)	26.580	0.390	0.0112
B12	303,722.716	848,637.674	303,717.547	848,654.746	17.8	6	47	8 (5)	26.580	0.390	0.0112
B13	303,717.547	848,654.746	303,712.302	848,672.073	18.1	6	74	8 (5)	26.580	0.390	0.0112
B14	303,712.302	848,672.073	303,707.243	848,688.781	17.5	6	99	8 (5)	26.580	0.390	0.0112
B15	303,707.243	848,688.781	303,701.845	848,706.613	18.6	6	122	8 (5)	26.580	0.390	0.0112
B16	303,701.845	848,706.613	303,750.078	848,721.215	50.4	6	91	8 (5)	26.580	0.390	0.0112
B17	303,701.845	848,706.613	303,696.510	848,724.120	18.3	6	61	8 (5)	26.580	0.390	0.0112
B18	303,750.078	848,721.215	303,744.762	848,738.824	18.4	6	93	8 (5)	26.580	0.390	0.0112
B19	303,696.510	848,724.120	303,744.762	848,738.824	50.4	6	93	8 (5)	26.580	0.390	0.0112
B20	303,744.762	848,738.824	303,767.909	848,745.706	24.1	6	221	8 (5)	26.580	0.390	0.0112
eC1	304,091.924	848,732.825	304,124.261	848,743.801	34.1	6	3	8 (5)	26.580	0.390	0.0112
eC2	304,124.261	848,743.801	304,119.253	848,759.621	16.6	6	4	8 (5)	26.580	0.390	0.0112
eC3	304,092.382	848,751.464	304,119.253	848,759.621	28.1	6	2	8 (5)	26.580	0.390	0.0112
eC4	304,119.253	848,759.621	304,113.863	848,776.652	17.9	6	7	8 (5)	26.580	0.390	0.0112
eC5	304,086.986	848,768.493	304,113.863	848,776.652	28.1	6	2	8 (5)	26.580	0.390	0.0112
eC6	304,113.863	848,776.652	304,108.374	848,793.992	18.2	6	10	8 (5)	26.580	0.390	0.0112
eC7	304,081.930	848,785.931	304,108.374	848,793.992	27.6	6	2	8 (5)	26.580	0.390	0.0112
eC8	304,108.374	848,793.992	304,102.952	848,811.123	18.0	6	14	8 (5)	26.580	0.390	0.0112
eC9	304,079.069	848,803.872	304,102.952	848,811.123	25.0	6	2	8 (5)	26.580	0.390	0.0112
eC10	304,102.952	848,811.123	304,097.564	848,828.146	17.9	6	17	8 (5)	26.580	0.390	0.0112
eC11	304,073.666	848,820.877	304,097.564	848,828.146	25.0	6	2	8 (5)	26.580	0.390	0.0112
eC12	304,097.564	848,828.146	304,092.113	848,845.364	18.1	6	19	8 (5)	26.580	0.390	0.0112
C13	304,092.113	848,845.364	304,068.314	848,838.145	24.9	6	22	8 (5)	26.580	0.390	0.0112
eC14	304,088.936	848,855.404	304,092.113	848,845.364	10.5	6	1	8 (5)	26.580	0.390	0.0112
C15	304,068.314	848,838.145	304,028.940	848,826.011	41.2	6	24	8 (5)	26.580	0.390	0.0112
eC16	304,079.069	848,803.872	304,039.597	848,791.389	41.4	6	2	8 (5)	26.580	0.390	0.0112
eC17	304,081.930	848,785.931	304,044.883	848,774.215	38.9	6	2	8 (5)	26.580	0.390	0.0112
eC18	304,083.272	848,748.650	304,055.361	848,740.173	29.2	6	1	8 (5)	26.580	0.390	0.0112
eC19	304,055.361	848,740.173	304,044.883	848,774.215	35.6	6	1	8 (5)	26.580	0.390	0.0112
eC20	304,044.883	848,774.215	304,039.597	848,791.389	18.0	6	3	8 (5)	26.580	0.390	0.0112
eC21	304,039.597	848,791.389	304,028.940	848,826.011	36.2	6	5	8 (5)	26.580	0.390	0.0112
C22	304,086.150	848,861.784	303,795.274	848,773.383	304.0	6	33	8 (5)	26.580	0.390	0.0112
C23	304,028.940	848,826.011	303,823.655	848,762.745	214.8	6	52	8 (5)	26.580	0.390	0.0112
C24	304,028.514	848,807.000	303,828.867	848,745.586	208.9	6	22	8 (5)	26.580	0.390	0.0112
C25	304,033.807	848,789.796	303,834.098	848,728.362	208.9	6	22	8 (5)	26.580	0.390	0.0112
C26	304,039.100	848,772.591	303,839.330	848,711.139	209.0	6	22	8 (5)	26.580	0.390	0.0112
C27	304,044.392	848,755.387	303,844.561	848,693.916	209.1	6	22	8 (5)	26.580	0.390	0.0112
C28	304,049.685	848,738.183	303,849.792	848,676.693	209.1	6	22	8 (5)	26.580	0.390	0.0112
C29	304,054.977	848,720.978	303,855.024	848,659.470	209.2	6	23	8 (5)	26.580	0.390	0.0112
C30	303,855.024	848,659.470	303,849.792	848,676.693	18.0	6	23	8 (5)	26.580	0.390	0.0112
C31	303,849.792	848,676.693	303,844.561	848,693.916	18.0	6	45	8 (5)	26.580	0.390	0.0112
C32	303,844.561	848,693.916	303,839.330	848,711.139	18.0	6	67	8 (5)	26.580	0.390	0.0112
C33	303,839.330	848,711.139	303,834.098	848,728.362	18.0	6	90	8 (5)	26.580	0.390	0.0112
C34	303,834.098	848,728.362	303,828.867	848,745.586	18.0	6	112	8 (5)	26.580	0.390	0.0112
C35	303,828.867	848,745.586	303,823.655	848,762.745	17.9	6	134	8 (5)	26.580	0.390	0.0112
C36	303,823.655	848,762.745	303,800.629	848,755.649	24.1	6	187	8 (5)	26.580	0.390	0.0112
C37	303,795.274	848,773.383	303,800.629	848,755.649	18.5	6	34	8 (5)	26.580	0.390	0.0112
C38	303,800.629	848,755.649	303,767.909	848,745.706	34.2	6	221	8 (5)	26.580	0.390	0.0112
B-C1	303,767.909	848,745.706	303,777.909	848,712.120	35.0	13.2	442	30 (18.6)	20.230	0.265	0.0112
BCD1	303,777.909	848,712.120	303,806.645	848,615.446	100.9	13.2	901	30 (18.6)	20.230	0.265	0.0112
BCDq	303,802.371	848,629.825	303,754.836	848,789.856	166.9	7.2	901	Idle	89.75 (g/hr) Idle EF for Que Link	1.130 (g/hr)Idle EF for Que Link	0.028 (g/hr)Idle EF for Que Link
eAq	303,424.224	848,593.626	303,443.751	848,654.391	63.8	3.6	361	Idle	89.75 (g/hr)Idle EF for Que Link	1.130 (g/hr)Idle EF for Que Link	0.028 (g/hr)Idle EF for Que Link
D1a	303,818.420	848,619.068	303,789.852	848,715.460	100.5	13.2	459	30 (18.6)	12.520	0.247	0.0112
D2	303,789.852	848,715.460	303,777.909	848,712.120	12.4	6	459	8 (5)	18.860	0.372	0.0112
D3	303,777.909	848,712.120	303,760.216	848,710.113	17.8	6	459	8 (5)	18.860	0.372	0.0112
D4	303,760.216	848,710.113	303,723.780	848,697.419	38.6	6	459	8 (5)	18.860	0.372	0.0112
D5	303,723.780	848,697.419	303,728.367	848,682.051	16.0	6	459	8 (5)	18.860	0.372	0.0112
D6	303,728.367	848,682.051	303,733.637	848,664.393	18.4	6	344	8 (5)	18.860	0.372	0.0112
D7	303,733.637	848,664.393	303,738.820	848,647.026	18.1	6	229	8 (5)	18.860	0.372	0.0112
D8	303,738.820	848,647.026	303,743.890	848,630.036	17.7	6	114	8 (5)	18.860	0.372	0.0112
D9	303,743.890	848,630.036	303,766.763	848,636.983	23.9	6	114	8 (5)	18.860	0.372	0.0112
D10	303,766.763	848,636.983	303,761.660	848,654.021	17.8	6	114	8 (5)	18.860	0.372	0.0112
D11	303,761.660	848,654.021	303,756.475	848,671.334	18.1	6	229	8 (5)	18.860	0.372	0.0112
D12	303,738.820	848,647.026	303,761.660	848,654.021	23.9	6	115	8 (5)	18.860	0.372	0.0112
D13	303,733.637	848,664.393	303,756.475	848,671.334	23.9	6	115	8 (5)	18.860	0.372	0.0112
D14	303,728.367	848,682.051	303,751.194	848,688.965	23.9	6	115	8 (5)	18.860	0.372	0.0112
D15	303,756.475	848,671.334	303,751.194	848,688.965	18.4	6	344	8 (5)	18.860	0.372	0.0112
D16	303,751.194	848,688.965	303,756.376	848,701.487	13.6	6	459	8 (5)	18.860	0.372	0.0112
D17	303,756.376	848,701.487	303,777.909	848,712.120	24.0	6	459	8 (5)	18.860	0.372	0.0112
D1b	303,789.852	848,715.460	303,779.618	848,749.265	35.3	13.2	73	30 (18.6)	12.520	0.247	0.0112
C7+17	304,108.374	848,793.992	304,044.883	848,774.215	66.5	6	4	8 (5)	26.580	0.390	0.0112
C9+16	304,102.952	848,811.123	304,039.597	848,791.389	66.4	6	4	8 (5)	26.580	0.390	0.0112
C19 to 21	304,055.361	848,740.173	304,028.940	848,826.011	89.8	6	9	8 (5)	26.580	0.390	0.0112
C2 to 12	304,124.261	848,743.801	304,092.113	848,845.364	106.5	6	16	8 (5)	26.580	0.390	0.0112
Aq	303,424.224	848,593.626	303,443.751	848,654.391	63.8	3.6	361	4 (2.5)	35.900	0.452	0.0112
A1+2	303,596.467	848,712.662	303,541.987	848,695.805	57.0	6	26	8 (5)	26.580	0.390	0.0112

C19 to 21	Links generated to combine links to allow all vehicle volumes to be used within the model constraint of 120 Links
eAq	Unused links (Volumes added to other links)

TABLE B-1 (Cont'd)

Steele West Station, Parking Link Information
Spadina Subway Extension - EA, Air Quality Assessment
Toronto Transit Commission
URS Canada Inc. Project: 33015347

Parking Pseudo Links								Parking Psuedo Link Modified EF and Pseudo Veh/hr					
Link ID	X1 UTM (m)	Y1 UTM (m)	X2 UTM (m)	Y2 UTM (m)	queue length	Link width (m)	Link Volume	CO Pseudo-(veh/hr)	CO EF	NOx Pseudo-(veh/hr)	NOx EF	PM2.5 Pseudo-(veh/hr)	PM2.5 EF
Pq1	303,738.287	848,761.873	303,474.187	848,681.704	276.0	6	56	1.221	100	1.537	1.000	3.8096	0.010
ePq2	303,470.851	848,678.274	303,467.219	848,666.836	12.0	6	3	1.504	100	1.894	1.000	4.6936	0.010
Pq3	303,461.914	848,649.635	303,449.851	848,609.405	42.0	6	12	1.720	100	2.165	1.000	5.3645	0.010
Pq4	303,555.750	848,681.681	303,533.824	848,687.091	22.6	12	13	3.464	100	4.362	1.000	1.0808	0.100
Pq5	303,555.493	848,663.204	303,498.603	848,677.242	58.6	12	33	3.389	100	4.267	1.000	1.0574	0.100
Pq6	303,561.073	848,643.732	303,479.416	848,663.437	84.0	12	54	3.869	100	4.871	1.000	1.2070	0.100
Pq7	303,558.519	848,625.378	303,474.053	848,646.220	87.0	12	53	3.666	100	4.616	1.000	1.1438	0.100
Pq8	303,560.128	848,606.852	303,466.828	848,629.463	96.0	12	54	3.385	100	4.262	1.000	1.0561	0.100
Pq9	303,558.778	848,588.859	303,462.515	848,611.987	99.0	12	56	3.404	100	4.286	1.000	1.0620	0.100
Pq10	303,571.608	848,570.722	303,456.009	848,598.143	118.8	6	33	1.672	100	2.105	1.000	5.2152	0.010
Pq11	303,736.901	848,745.781	303,573.239	848,696.225	171.0	12	49	1.725	100	2.171	1.000	5.3802	0.010
ePq12	303,593.226	848,648.048	303,567.261	848,646.219	26.0	6	7	1.618	100	2.038	1.000	5.0493	0.010
ePq13	303,592.630	848,634.186	303,574.647	848,633.390	18.0	6	5	1.672	100	2.105	1.000	5.2153	0.010
Pq14	303,693.764	848,713.390	303,610.609	848,687.818	87.0	12	20	1.384	100	1.742	1.000	4.3163	0.010
Pq15	303,699.056	848,696.194	303,610.167	848,668.849	93.0	12	22	1.424	100	1.792	1.000	4.4416	0.010
Pq16	303,704.349	848,678.990	303,612.592	848,650.763	96.0	12	22	1.379	100	1.736	1.000	4.3027	0.010
Pq17	303,709.641	848,661.785	303,612.150	848,631.794	102.0	12	24	1.416	100	1.783	1.000	4.4178	0.010
Pq18	303,714.934	848,644.581	303,614.575	848,613.708	105.0	12	24	1.376	100	1.732	1.000	4.2916	0.010
Pq19	303,694.420	848,619.438	303,614.133	848,594.739	84.0	12	20	1.433	100	1.804	1.000	4.4704	0.010
Pq20	303,707.445	848,607.763	303,603.854	848,576.693	108.2	6	13	0.723	100	0.911	1.000	2.2569	0.010
Pq21	303,742.340	848,728.047	303,705.024	848,716.714	39.0	12	10	1.543	100	1.943	1.000	4.8144	0.010
Pq22	303,755.311	848,716.310	303,715.124	848,704.105	42.0	6	5	0.716	100	0.902	1.000	2.2352	0.010
Pq23	303,711.803	848,697.026	303,728.276	848,642.458	57.0	6	7	0.739	100	0.931	1.000	2.3058	0.010
Pq24	303,745.756	848,757.866	303,748.354	848,749.234	9.0	6	1	0.668	100	0.841	1.000	2.0828	0.010
Pq25	303,754.680	848,731.795	303,758.170	848,720.314	12.0	6	1	0.502	100	0.631	1.000	1.5647	0.010
Pq26	303,745.732	848,693.155	303,730.206	848,688.531	16.2	6	41	334.89	100	5.168	100.00	1.3305	10.000
Pq27	303,750.050	848,678.790	303,734.532	848,674.138	16.2	12	81	661.60	100	10.209	100.00	2.6285	10.000
Pq28	303,755.219	848,661.549	303,739.701	848,656.896	16.2	12	82	669.75	100	10.335	100.00	2.6610	10.000
Pq29	303,759.516	848,647.177	303,744.007	848,642.497	16.2	6	41	334.89	100	5.168	100.00	1.3305	10.000
Pq30	303,722.021	848,685.292	303,735.991	848,639.370	48.0	3	41	113.02	100	1.744	100.00	4.4905	1.000
ePq31	303,788.695	848,774.004	303,792.146	848,762.511	12.0	6	1	0.502	100	0.631	1.000	1.5646	0.010
Pq32	304,087.978	848,868.771	303,792.489	848,778.396	309.0	6	17	3.311	10	4.169	0.100	1.0330	0.010
Pq33	304,083.658	848,852.212	303,805.521	848,766.650	291.0	12	32	0.662	100	0.833	1.000	2.0647	0.010
Pq34	304,025.868	848,815.602	303,830.886	848,755.620	204.0	12	24	0.708	100	0.891	1.000	2.2089	0.010
Pq35	304,031.161	848,798.398	303,836.178	848,738.416	204.0	12	24	0.708	100	0.891	1.000	2.2089	0.010
Pq36	303,841.471	848,721.211	304,099.133	848,800.476	269.6	12	28	0.826	100	1.040	1.000	2.5771	0.010
Pq37	304,041.746	848,763.989	303,846.763	848,704.007	204.0	12	24	0.708	100	0.891	1.000	2.2089	0.010
Pq38	304,047.038	848,746.785	303,852.056	848,686.803	204.0	12	24	0.708	100	0.891	1.000	2.2089	0.010
Pq39	304,052.331	848,729.581	303,857.348	848,669.598	204.0	12	26	0.767	100	0.966	1.000	2.3930	0.010
Pq40	304,062.479	848,717.009	303,858.894	848,654.380	213.0	6	24	0.678	100	0.854	1.000	2.1156	0.010
ePq41	304,088.280	848,834.802	304,071.076	848,829.509	18.0	12	2	0.669	100	0.842	1.000	2.0862	0.010
ePq42	304,093.707	848,817.639	304,076.502	848,812.346	18.0	12	2	0.669	100	0.842	1.000	2.0861	0.010
ePq43	304,099.133	848,800.476	304,047.520	848,784.598	54.0	12	6	0.669	100	0.842	1.000	2.0862	0.010
ePq44	304,104.560	848,783.313	304,084.488	848,777.138	21.0	12	2	0.573	100	0.722	1.000	1.7881	0.010
ePq45	304,109.987	848,766.150	304,089.915	848,759.975	21.0	12	2	0.573	100	0.722	1.000	1.7881	0.010
ePq46	304,085.094	848,742.803	304,062.155	848,735.745	24.0	6	2	5.015	10	0.631	1.000	1.5646	0.010
ePq47	304,115.410	848,748.998	304,095.339	848,742.819	21.0	12	2	0.573	100	0.722	1.000	1.7881	0.010
ePq48	304,123.754	848,735.859	304,092.213	848,726.156	33.0	6	2	3.647	10	4.592	0.100	1.1379	0.010
Pq49	304,092.687	848,866.030	304,129.491	848,748.665	123.0	6	7	3.425	10	4.312	0.100	1.0685	0.010

ePq48 Unused links (Volumes added to other links)

Note:

Typ	Link Type, AG - at grade, FL - fill, BR - Bridge, DP - Depression
HL	Source Height (in meters)
Width	Width of link (number of lanes * width of lane) Regular link Lane Width includes 3m on either side of link
Speed	Speed from calculation of emission factor (km/hr)
EFL	Emission Factor (g/veh-mile)
WL	Mixing zone width (m)
VPHL	Traffic Volume on Link(Veh/hr)
I-EF	Idle Emission Factor (g/hr)
CAVG	Average total cycle length (s)
ST	Signal Type, 1-pretimed, 2-actuated, 3-semi-actuated (default=1)
AT	Arrival type, 1-Worst, 2-below average, 3-average, 4-above average, 5-best progression (default is 3)
RAVG	Average red total signal cycle length (s)
YFAC	Clearance Lost Time (s) (Time lost getting queue in motion)
SFR	Saturation Flow Rate (veh/hr/lane) (vehicles per hour of effective green time, vphg)

AM data is considered worst case due to delay times and traffic volumes. Modelling will be done using AM data and then 8 hour peak average and 24 hour daily average will be calculated from AM Peak hour output.

For PM2.5 Modelling - Deposition Velocity =0.5 cm/sec, Settling Velecity = 10 cm/sec

See Bus, Commuter Parking, Passenger Pickup/Drop Off Calculation Methodology in Report Section 4.4.4

TABLE B-2

Steeles West Station, Bus Terminal Link Information
Spadina Subway Extension - EA, Air Quality Assessment
Toronto Transit Commission
URS Canada Inc. Project: 33015347

Link ID	X1 (m) UTM	Y1 (m) UTM	X2 (m) UTM	Y2 (m) UTM	Width of Lanes(s) (m)	Wt. Link Width (m)	Speed (km/hr)	VPHL (# veh /hr/link)	EFL PM2.5 (g/veh-mile)	EFL CO (g/veh-mile)	EFL NOx (g/veh-mile)	Rationale / Comments
GY1	303,699.957	848,362.831	303,677.069	848,435.433	4	10	30	65	0.0906	1.072	2.761	Regular Road Link, 18mph (30 km/hr)
GY2	303,677.069	848,435.433	303,663.162	848,479.546	4	10	30	94	0.0906	1.072	2.761	Regular Road Link, 18mph (30 km/hr)
GY3	303,659.083	848,478.308	303,685.204	848,486.238	4	4	8	70	0.0906	2.664	4.278	Slow Travel Link, 5 mph (8 km/hr)
GY4	303,685.204	848,486.238	303,827.310	848,529.380	4	4	8	77	0.0906	2.664	4.278	Slow Travel Link, 5 mph (8 km/hr)
GY4a	303,700.086	848,487.013	303,712.150	848,488.834	4	4	4	7	1.992	71.761	104.854	Pseudo Que Link, 2.5 mph (4 km/hr)
GY4b	303,735.108	848,497.646	303,747.171	848,499.466	4	4	4	7	1.992	71.761	104.854	Pseudo Que Link, 2.5 mph (4 km/hr)
GY4c	303,752.619	848,502.962	303,764.682	848,504.783	4	4	4	7	1.992	71.761	104.854	Pseudo Que Link, 2.5 mph (4 km/hr)
GY4d	303,776.556	848,509.642	303,788.520	848,512.030	4	4	4	7	1.992	71.761	104.854	Pseudo Que Link, 2.5 mph (4 km/hr)
GY4e	303,800.478	848,516.905	303,812.442	848,519.293	4	4	4	6	1.992	71.761	104.854	Pseudo Que Link, 2.5 mph (4 km/hr)
GY5	303,827.310	848,529.380	303,848.381	848,522.429	4	4	8	65	0.0906	2.664	4.278	Slow Travel Link, 5 mph (8 km/hr)
GY6	303,848.381	848,522.429	303,889.558	848,421.139	4	10	30	65	0.0906	1.072	2.761	Regular Road Link, 18mph (30 km/hr)
GY7	303,677.069	848,435.433	303,696.404	848,449.171	4	4	8	7	0.0906	2.664	4.278	Slow Travel Link, 5 mph (8 km/hr)
GY8	303,696.404	848,449.171	303,685.204	848,486.238	4	4	8	7	0.0906	2.664	4.278	Slow Travel Link, 5 mph (8 km/hr)
GY8a	303,697.431	848,458.160	303,695.500	848,470.206	4	4	4	7	1.992	71.761	104.854	Pseudo Que Link, 2.5 mph (4 km/hr)
GY9	303,827.310	848,529.380	303,840.719	848,485.120	4	4	8	36	0.0906	2.664	4.278	Slow Travel Link, 5 mph (8 km/hr)
GY9a	303,828.482	848,513.159	303,830.304	848,501.096	4	4	4	6	1.992	71.761	104.854	Pseudo Que Link, 2.5 mph (4 km/hr)
GY10	303,840.719	848,485.120	303,677.069	848,435.433	4	4	8	36	0.0906	2.664	4.278	Slow Travel Link, 5 mph (8 km/hr)
GY10a	303,819.288	848,482.941	303,807.324	848,480.553	4	4	4	5	1.992	71.761	104.854	Pseudo Que Link, 2.5 mph (4 km/hr)
GY10b	303,795.366	848,475.678	303,783.402	848,473.290	4	4	4	5	1.992	71.761	104.854	Pseudo Que Link, 2.5 mph (4 km/hr)
GY10c	303,777.871	848,469.780	303,765.808	848,467.959	4	4	4	5	1.992	71.761	104.854	Pseudo Que Link, 2.5 mph (4 km/hr)
GY10d	303,760.360	848,464.460	303,748.297	848,462.643	4	4	4	5	1.992	71.761	104.854	Pseudo Que Link, 2.5 mph (4 km/hr)
GY10e	303,742.850	848,459.148	303,730.786	848,457.327	4	4	4	5	1.992	71.761	104.854	Pseudo Que Link, 2.5 mph (4 km/hr)
GY10f	303,725.339	848,453.831	303,713.275	848,452.011	4	4	4	5	1.992	71.761	104.854	Pseudo Que Link, 2.5 mph (4 km/hr)
GY11	303,663.162	848,479.546	303,658.645	848,493.874	4	10	30	60	0.0906	1.072	2.761	Regular Road Link, 18mph (30 km/hr)
GY12	303,658.645	848,493.874	303,638.308	848,558.385	4	10	30	111	0.0906	1.072	2.761	Regular Road Link, 18mph (30 km/hr)
GY13	303,633.639	848,556.948	303,659.083	848,478.308	4	10	30	46	0.0906	1.072	2.761	Regular Road Link, 18mph (30 km/hr)
GY14	303,654.829	848,491.458	303,680.174	848,507.501	4	4	8	34	0.0906	2.664	4.278	Slow Travel Link, 5 mph (8 km/hr)
GY15	303,680.174	848,507.501	303,672.928	848,547.854	4	4	8	34	0.0906	2.664	4.278	Slow Travel Link, 5 mph (8 km/hr)
GY15a	303,682.018	848,517.516	303,680.086	848,529.563	4	4	4	8	1.992	71.761	104.854	Pseudo Que Link, 2.5 mph (4 km/hr)
GY16	303,672.928	848,547.854	303,775.486	848,579.003	4	4	8	34	0.0906	2.664	4.278	Slow Travel Link, 5 mph (8 km/hr)
GY16a	303,684.308	848,547.567	303,696.371	848,549.388	4	4	4	10	1.992	71.761	104.854	Pseudo Que Link, 2.5 mph (4 km/hr)
GY16b	303,701.818	848,552.886	303,713.881	848,554.706	4	4	4	8	1.992	71.761	104.854	Pseudo Que Link, 2.5 mph (4 km/hr)
GY16c	303,754.349	848,568.840	303,766.412	848,570.661	4	4	4	8	1.992	71.761	104.854	Pseudo Que Link, 2.5 mph (4 km/hr)
GY17	303,775.486	848,579.003	303,798.697	848,586.052	4	4	8	99	0.0906	2.664	4.278	Slow Travel Link, 5 mph (8 km/hr)
GY18	303,798.697	848,586.052	303,812.501	848,540.602	4	4	8	99	0.0906	2.664	4.278	Slow Travel Link, 5 mph (8 km/hr)
GY18a	303,800.244	848,568.636	303,802.066	848,556.573	4	4	4	10	1.992	71.761	104.854	Pseudo Que Link, 2.5 mph (4 km/hr)
GY19	303,812.501	848,540.602	303,658.645	848,493.874	4	4	8	75	0.0906	2.664	4.278	Slow Travel Link, 5 mph (8 km/hr)
GY19a	303,779.968	848,534.462	303,767.905	848,532.641	4	4	4	10	1.992	71.761	104.854	Pseudo Que Link, 2.5 mph (4 km/hr)
GY19b	303,762.458	848,529.144	303,750.394	848,527.323	4	4	4	10	1.992	71.761	104.854	Pseudo Que Link, 2.5 mph (4 km/hr)
GY19c	303,744.948	848,523.826	303,732.884	848,522.005	4	4	4	12	1.992	71.761	104.854	Pseudo Que Link, 2.5 mph (4 km/hr)
GY19d	303,727.437	848,518.508	303,715.374	848,516.687	4	4	4	12	1.992	71.761	104.854	Pseudo Que Link, 2.5 mph (4 km/hr)
GY19e	303,709.927	848,513.189	303,697.864	848,511.369	4	4	4	11	1.992	71.761	104.854	Pseudo Que Link, 2.5 mph (4 km/hr)
GY20	303,736.951	848,588.432	303,775.486	848,579.003	4	4	8	65	0.0906	2.664	4.278	Slow Travel Link, 5 mph (8 km/hr)
GY21	303,812.501	848,540.602	303,827.310	848,529.380	4	4	8	24	0.0906	2.664	4.278	Slow Travel Link, 5 mph (8 km/hr)
T1	304,064.723	848,460.422	304,092.542	848,380.689	4	10	30	74	0.0906	1.072	2.761	Regular Road Link, 18mph (30 km/hr)
T2	304,092.542	848,380.689	304,105.033	848,338.679	4	4	8	78	0.0906	2.664	4.278	Slow Travel Link, 5 mph (8 km/hr)
T2a	304,093.749	848,365.765	304,095.643	848,353.713	4	4	4	10	1.992	71.761	104.854	Pseudo Que Link, 2.5 mph (4 km/hr)
T3	304,105.033	848,338.679	303,970.496	848,297.768	4	4	8	78	0.0906	2.664	4.278	Slow Travel Link, 5 mph (8 km/hr)
T3a	304,090.787	848,338.089	304,078.735	848,336.194	4	4	4	4	1.992	71.761	104.854	Pseudo Que Link, 2.5 mph (4 km/hr)
T3b	304,073.309	848,332.665	304,061.257	848,330.770	4	4	4	6	1.992	71.761	104.854	Pseudo Que Link, 2.5 mph (4 km/hr)
T3c	304,055.831	848,327.241	304,043.779	848,325.347	4	4	4	6	1.992	71.761	104.854	Pseudo Que Link, 2.5 mph (4 km/hr)
T3d	304,038.354	848,321.818	304,026.302	848,319.923	4	4	4	6	1.992	71.761	104.854	Pseudo Que Link, 2.5 mph (4 km/hr)
T3e	304,020.876	848,316.394	304,008.824	848,314.499	4	4	4	6	1.992	71.761	104.854	Pseudo Que Link, 2.5 mph (4 km/hr)
T3f	303,996.980	848,309.567	303,985.031	848,307.105	4	4	4	8	1.992	71.761	104.854	Pseudo Que Link, 2.5 mph (4 km/hr)
T4	303,970.496	848,297.768	303,957.189	848,338.686	4	4	8	78	0.0906	2.664	4.278	Slow Travel Link, 5 mph (8 km/hr)
T4a	303,969.279	848,311.933	303,967.385	848,323.985	4	4	4	8	1.992	71.761	104.854	Pseudo Que Link, 2.5 mph (4 km/hr)
T5	303,957.189	848,338.686	304,092.542	848,380.689	4	4	8	78	0.0906	2.664	4.278	Slow Travel Link, 5 mph (8 km/hr)
T5a	303,972.241	848,339.610	303,984.293	848,341.504	4	4	4	6	1.992	71.761	104.854	Pseudo Que Link, 2.5 mph (4 km/hr)
T5b	304,007.197	848,350.457	304,019.249	848,352.352	4	4	4	6	1.992	71.761	104.854	Pseudo Que Link, 2.5 mph (4 km/hr)
T5c	304,024.674	848,355.881	304,036.726	848,357.775	4	4	4	6	1.992	71.761	104.854	Pseudo Que Link, 2.5 mph (4 km/hr)
T5d	304,042.152	848,361.304	304,054.204	848,363.199	4	4	4	6	1.992	71.761	104.854	Pseudo Que Link, 2.5 mph (4 km/hr)
T6	304,092.542	848,380.689	304,069.638	848,461.730	4	10	30	74	0.0906	1.072	2.761	Regular Road Link, 18mph (30 km/hr)
T7	304,134.910	848,186.573	304,105.033	848,338.679	4	10	30	4	0.0906	1.072	2.761	Regular Road Link, 18mph (30 km/hr)
T8	304,105.033	848,338.679	304,124.949	848,186.820	4	10	30	4	0.0906	1.072	2.761	Regular Road Link, 18mph (30 km/hr)

Note:
For Model Run B-5, Bus Terminals, Carbon Monoxide, the Emission Factors input into the model were 100 times the values indicated in this table. This was done to better resolution in the model output. To obtain the final predicted concentration of CO, the model output was divided by 100 and then the background concentration was added.

TABLE B-3

Steeles West Station, Discrete Receptor Information
Spadina Subway Extension - EA, Air Quality Assessment
Toronto Transit Commission
URS Canada Inc. Project: 33015347

Receptor ID	X UTM (m)	Y UTM (m)	Description
R1	303,388.658	848,576.194	Commuter Parking, West (A Link Area)
R2	303,412.403	848,606.769	Commuter Parking, West (A Link Area)
R3	303,433.127	848,650.233	Commuter Parking, West (A Link Area)
R4	303,453.943	848,671.681	Commuter Parking, West (A Link Area)
R5	303,437.995	848,567.155	Commuter Parking, West (A Link Area)
R6	303,443.416	848,598.763	Commuter Parking, West (A Link Area)
R7	303,451.882	848,650.104	Commuter Parking, West (A Link Area)
R8	303,489.389	848,581.654	Commuter Parking, West (A Link Area)
R9	303,568.441	848,607.111	Commuter Parking, West (A Link Area)
R10	303,476.731	848,663.505	Commuter Parking, West (A Link Area)
R11	303,548.819	848,540.648	Commuter Parking, West (A Link Area)
R12	303,550.316	848,567.319	Commuter Parking, West (A Link Area)
R13	303,535.045	848,704.854	Commuter Parking, West (A Link Area)
R14	303,609.390	848,631.147	Commuter Parking, Central (B Link Area)
R15	303,640.153	848,737.673	Commuter Parking, Central (B Link Area)
R16	303,636.572	848,579.763	Commuter Parking, Central (B Link Area)
R17	303,695.164	848,713.948	Commuter Parking, Central (B Link Area)
R18	303,718.384	848,630.286	PPUDO (D Link Area)
R19	303,735.714	848,697.772	PPUDO (D Link Area)
R20	303,757.250	848,618.431	PPUDO (D Link Area)
R21	303,766.809	848,661.042	PPUDO (D Link Area)
R22	303,772.756	848,698.945	PPUDO (D Link Area)
R23	303,763.678	848,736.672	Commuter Parking, Central (B Link Area)
R24	303,758.136	848,754.888	Commuter Parking, Central (B Link Area)
R25	303,787.927	848,633.214	Commuter Parking, Central (B Link Area)
R26	303,805.271	848,694.028	Commuter Parking, East (C Link Area)
R27	303,789.139	848,742.654	Commuter Parking, East (C Link Area)
R28	303,783.478	848,760.195	Commuter Parking, East (C Link Area)
R29	303,822.351	848,647.092	Commuter Parking, East (C Link Area)
R30	303,877.300	848,652.786	Commuter Parking, East (C Link Area)
R31	303,845.725	848,703.656	Commuter Parking, East (C Link Area)
R32	303,856.878	848,804.877	Commuter Parking, East (C Link Area)
R33	303,989.520	848,685.593	Commuter Parking, East (C Link Area)
R34	304,052.923	848,769.422	Commuter Parking, East (C Link Area)
R35	304,041.689	848,861.089	Commuter Parking, East (C Link Area)
R36	304,120.967	848,727.073	Commuter Parking, East (C Link Area)
R37	304,123.234	848,808.667	Commuter Parking, East (C Link Area)
R38	303,612.330	848,257.490	Commercial SW of Study Area
R39	303,635.030	848,315.339	Commercial SW of Study Area
R40	303,625.913	848,363.382	Commercial SW of Study Area
R41	303,653.871	848,469.502	Bus Terminal Area
R42	303,603.708	848,539.665	Bus Terminal Area
R43	303,681.029	848,382.169	Bus Terminal Area
R44	303,660.854	848,512.542	Bus Terminal Area
R45	303,662.834	848,558.048	Bus Terminal Area
R46	303,703.828	848,388.454	Bus Terminal Area
R47	303,698.114	848,432.296	Bus Terminal Area
R48	303,726.464	848,457.481	Bus Terminal Area
R49	303,716.827	848,489.226	Bus Terminal Area
R50	303,708.086	848,515.933	Bus Terminal Area
R51	303,700.193	848,549.141	Bus Terminal Area
R52	303,819.855	848,336.822	South of Bus Terminal Area
R53	303,808.109	848,368.528	South of Bus Terminal Area
R54	303,805.496	848,484.645	Bus Terminal Area
R55	303,795.530	848,513.133	Bus Terminal Area
R56	303,781.095	848,539.048	Bus Terminal Area
R57	303,770.792	848,570.899	Bus Terminal Area
R58	303,733.808	848,581.010	Bus Terminal Area
R59	303,791.009	848,597.327	Bus Terminal Area
R60	303,923.726	848,285.674	Bus Terminal Area
R61	303,879.586	848,390.033	Bus Terminal Area
R62	303,867.118	848,426.666	Bus Terminal Area
R63	303,849.080	848,498.407	Bus Terminal Area
R64	303,836.068	848,603.330	Bus Terminal Area
R65	303,974.776	848,290.595	Bus Terminal Area
R66	303,990.271	848,312.372	Bus Terminal Area
R67	303,979.953	848,337.452	Bus Terminal Area
R68	303,957.296	848,351.188	Bus Terminal Area
R69	303,928.214	848,408.900	Bus Terminal Area
R70	303,913.240	848,445.210	Bus Terminal Area
R71	303,879.343	848,507.063	Bus Terminal Area
R72	304,044.696	848,306.264	Bus Terminal Area
R73	304,096.600	848,321.330	Bus Terminal Area
R74	304,074.268	848,337.390	Bus Terminal Area
R75	304,060.881	848,364.488	Bus Terminal Area
R76	304,076.641	848,398.743	Bus Terminal Area
R77	304,050.903	848,448.408	East side of Bus Terminal Area
R78	304,040.151	848,487.799	East side of Bus Terminal Area
R79	304,039.168	848,530.148	East side of Bus Terminal Area
R80	304,113.917	848,366.361	East side of Bus Terminal Area
R81	304,151.400	848,380.392	East side of Bus Terminal Area

APPENDIX C

KEELE AND STEELES INTERSECTION ANALYSIS

Scale (m)

0 50 100

KEELE STREET

STEELES AVE. W

B1

B2

Ddep

AqL

AqT

AqR

CqL

CqR+T

D3

D2

D1

Bdep1

Bdep2

Bdep3

New Plaza

THE MARIANO ELIA FOUNDATION

STONG HOUSE

STONG BARN

86 PARKING SPACES

4 HANDICAP SPACES

COMPUTER METHODS BUILDING

SERVICE GARAGE

A1

Through Link and ID

Queue Link and ID

AqL

Model Links
Steeles Queue, Keele Through

Spadina Subway Extension - EA, Air Quality Assessment
Downsview Station to Steeles Avenue

Toronto Transit Commission

Toronto, Ontario

URS Canada Inc.

Figure C-1

33015347, January 2006

App C - Figures, Keele-Steeles, Jan11'06.dwg

N

Scale (m)

0 50 100

KEELE STREET

STEELES AVE. W

BqT

BqR

BqL

Cdep

C2

C1

A2

A1

DqR

Adep

DqL

DqT

New Plaza

THE MARIANO ELIA FOUNDATION

STONG HOUSE

86 PARKING SPACES

4 HANDICAP SPACES

STONG BARN

3m HIGH BERM

COMPUTER METHODS BUILDING

SERVICE GARAGE

ACCESS ROAD

A1 — Through Link and ID

Queue Link and ID — AqL

Model Links
Steeles Through, Keele Queue

Spadina Subway Extension - EA, Air Quality Assessment
Downsview Station to Steeles Avenue

Toronto Transit Commission

Toronto, Ontario

URS CANADA INC.

Figure C-2

33015347, January 2006

App C - Figures, Keele-Steeles, Jan1106.dwg

Scale (m)

0 50 100

KEELE STREET

STEELES AVE. W

New Plaza

THE MARIANO ELIA FOUNDATION

STONG HOUSE

86 PARKING SPACES
4 HANDICAP SPACES

SILLING BARN

Jm HIGH BSM

COMPUTER METHODS BUILDING

SERVICE GARAGE

R1 Receptor Location and ID

Discrete Receptor Locations

Spadina Subway Extension - EA, Air Quality Assessment
Downsview Station to Steeles Avenue

Toronto Transit Commission

Toronto, Ontario

URS CANADA INC.

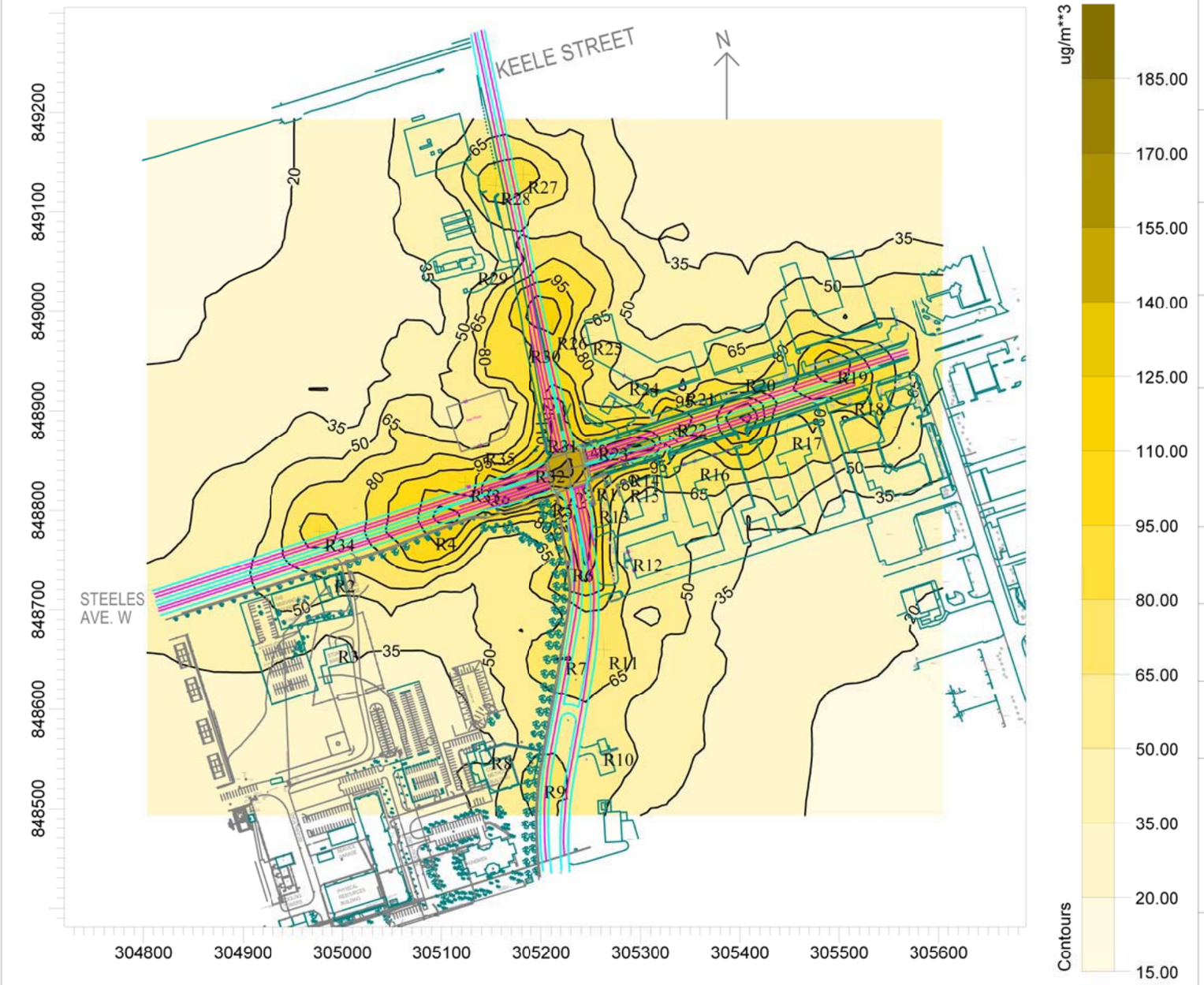
Figure C-3

33015347, January 2006

App C - Figures, Keele-Steeles, Jan1106.dwg

PROJECT TITLE:

Figure C-4 Run C-1, Keele and Steeles, No Build, NOx
PM Peak Hour Traffic Data



COMMENTS:

Run C-1

NOx Background Concentration, Not Used

MODEL:	POLLUTANT:
CAL3QHC	**Particulate**
MAX:	UNITS:
188.00	**ug/m**3**
LINKS:	RECEPTORS:
26	**217**

COMPANY NAME:

URS Canada

MODELER:

MSM

DATE:

1/18/2006

SCALE: 1:6,099,667

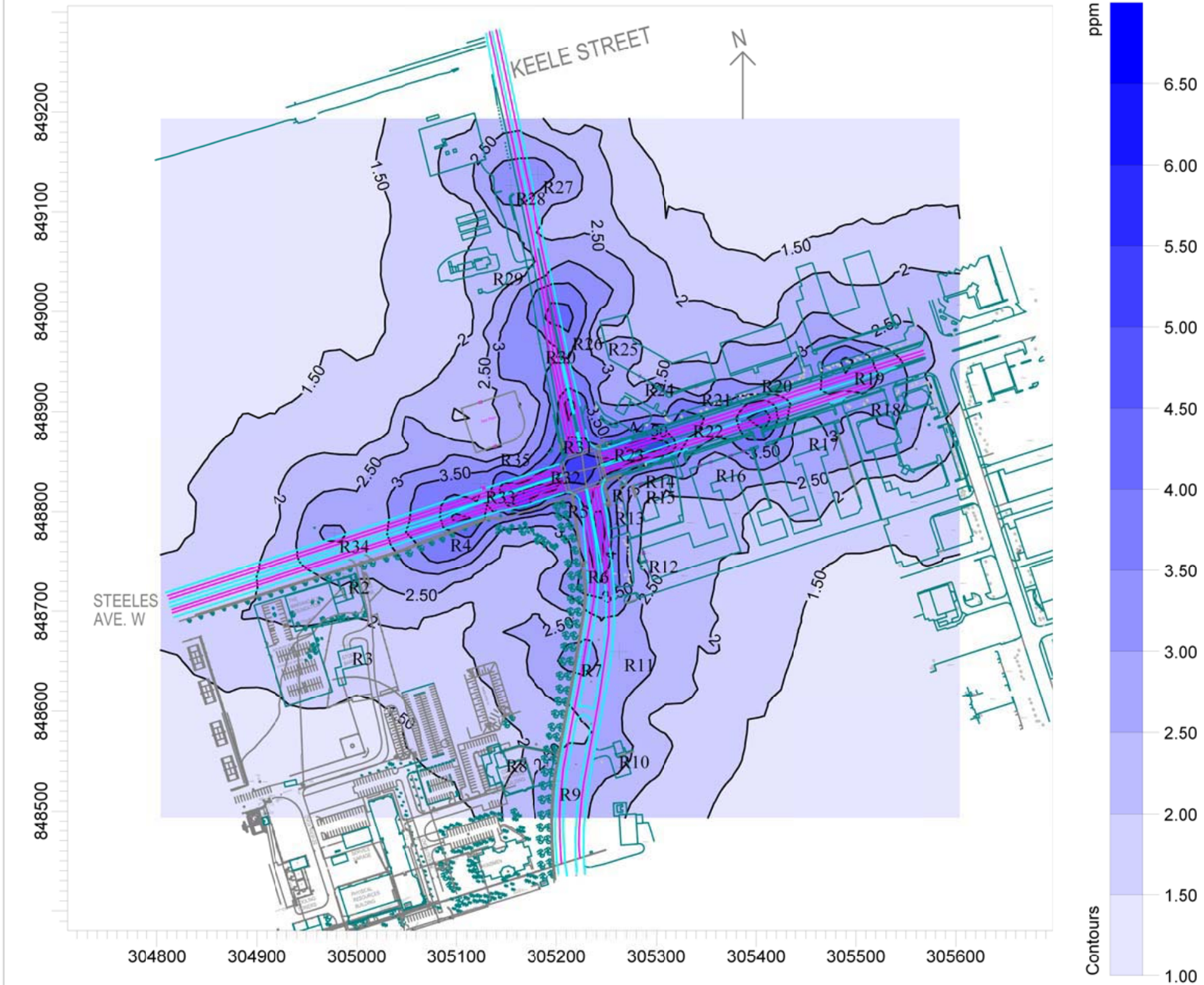
0 100 m

PROJECT / PLOT NO.:

33015347

PROJECT TITLE:

Figure C-5 Run C-2, Keele & Steeles, No Build, CO
PM Peak Hour Traffic Data



COMMENTS:

Run C-2

Background CO Concentration - 0.75 ppm

MODEL:	POLLUTANT:
CAL3QHC	**CO**
MAX:	UNITS:
6.60	**ppm**
LINKS:	RECEPTORS:
26	**217**

COMPANY NAME:

URS Canada

MODELER:

MSM

DATE:

1/18/2006

SCALE: 1:6,107,549

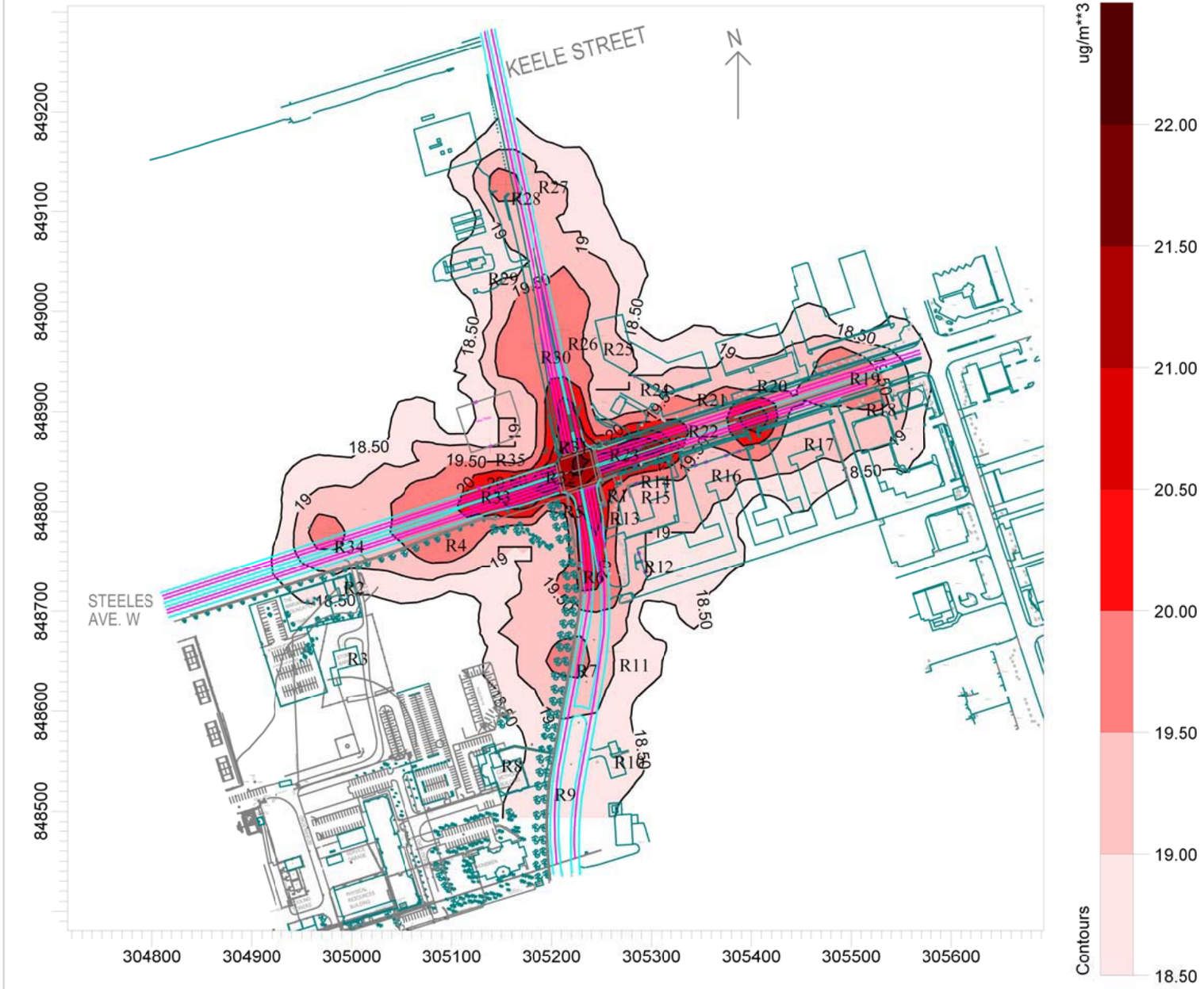
0 100 m

PROJECT / PLOT NO.:

33015347

PROJECT TITLE:

Figure C-6 Run C-3, Keele and Steeles, No Build, PM2.5
PM Peak Hour Traffic Data



COMMENTS:

Run C-3

Background PM2.5 Concentration - 18 ug/m**3

MODEL:	POLLUTANT:
CAL3QHC	**Particulate**
MAX:	UNITS:
22.00	**ug/m**3**
LINKS:	RECEPTORS:
26	**217**

COMPANY NAME:

URS Canada

MODELER:

MSM

DATE:

1/18/2006

SCALE: 1:6,103,646

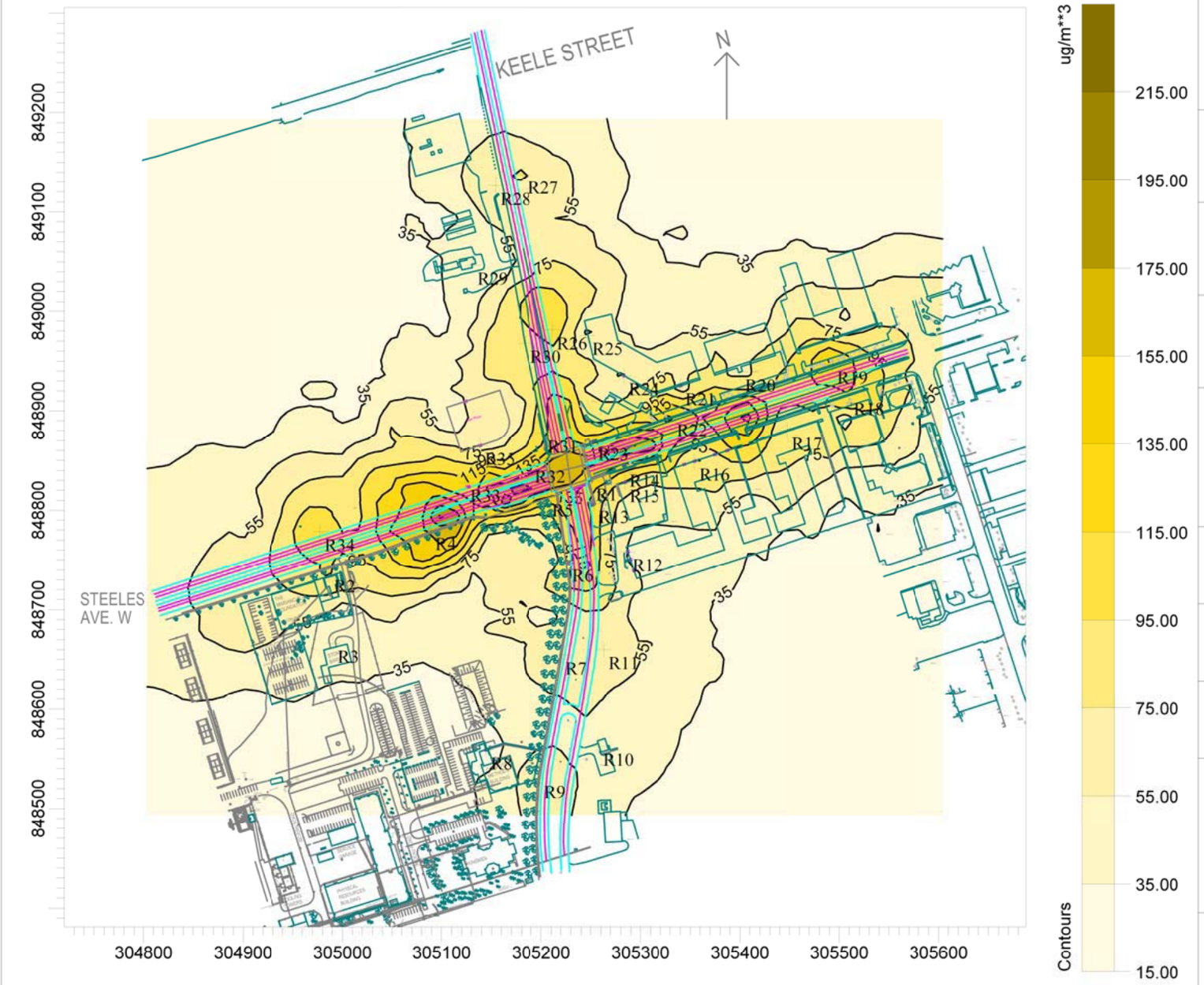
0 100 m

PROJECT / PLOT NO.:

33015347

PROJECT TITLE:

Figue C-7 Run C-4, Keele and Steeles, Build, NOx
PM Peak Hour Traffic Data



COMMENTS:

Run C-4

Background NOx Concentration, Not Used

MODEL:	POLLUTANT:
CAL3QHC	**Particulate**
MAX:	UNITS:
210.00	**ug/m**3**
LINKS:	RECEPTORS:
26	**217**

COMPANY NAME:

URS Canada

MODELER:

MSM

DATE:

1/18/2006

SCALE: 1:6,099,667

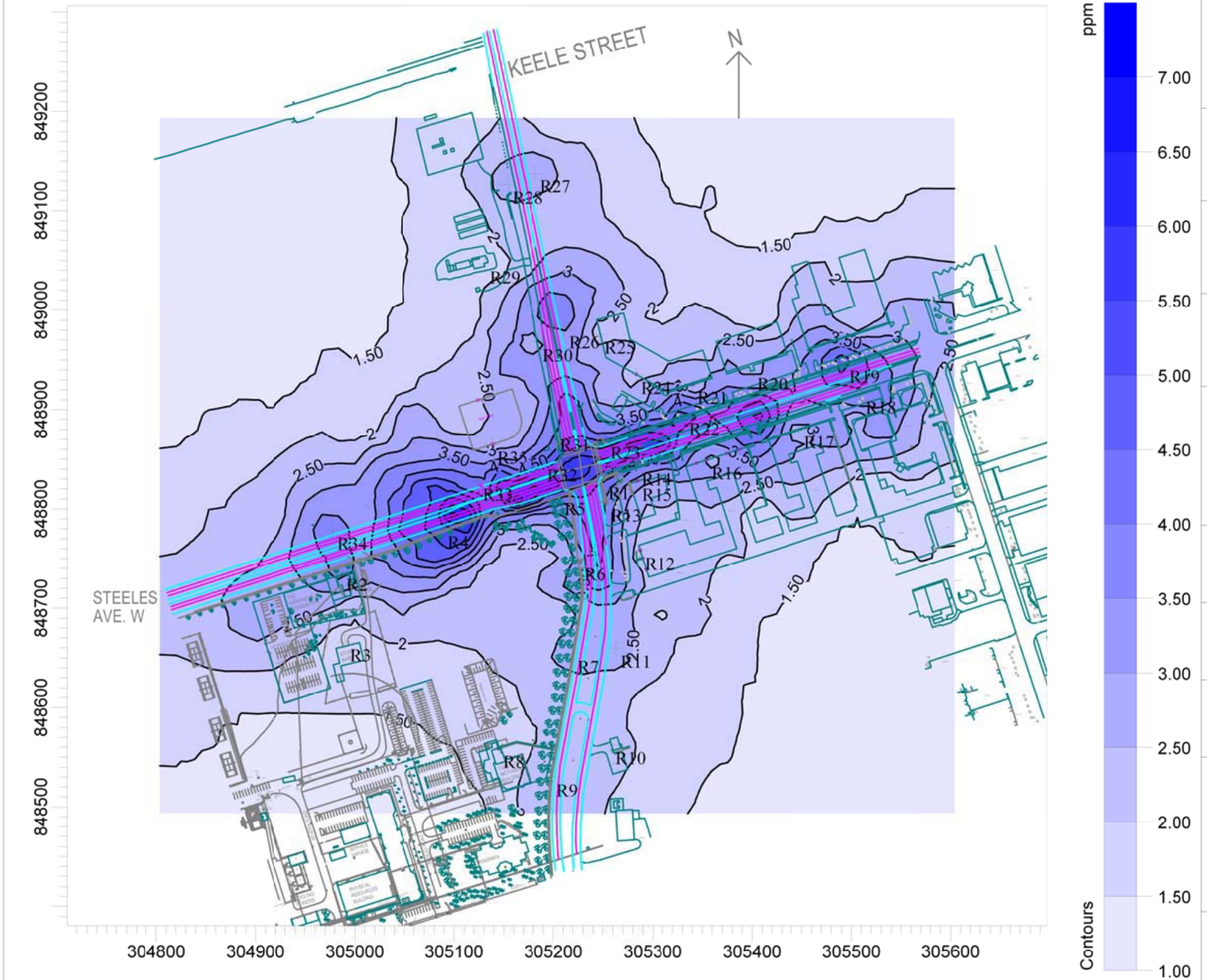
0 100 m

PROJECT / PLOT NO.:

33015347

PROJECT TITLE:

Figure C-8 Run C-5, Keele and Steeles, Build, CO
PM Peak Hour Traffic Data



COMMENTS:

Run C-5

Background CO Concentration = 0.75 ppm

MODEL:	POLLUTANT:
CAL3QHC	**CO**
MAX:	UNITS:
7.10	**ppm**
LINKS:	RECEPTORS:
26	**217**

COMPANY NAME:

URS Canada

MODELER:

MSM

DATE:

1/19/2006

SCALE: 1:6,107,549

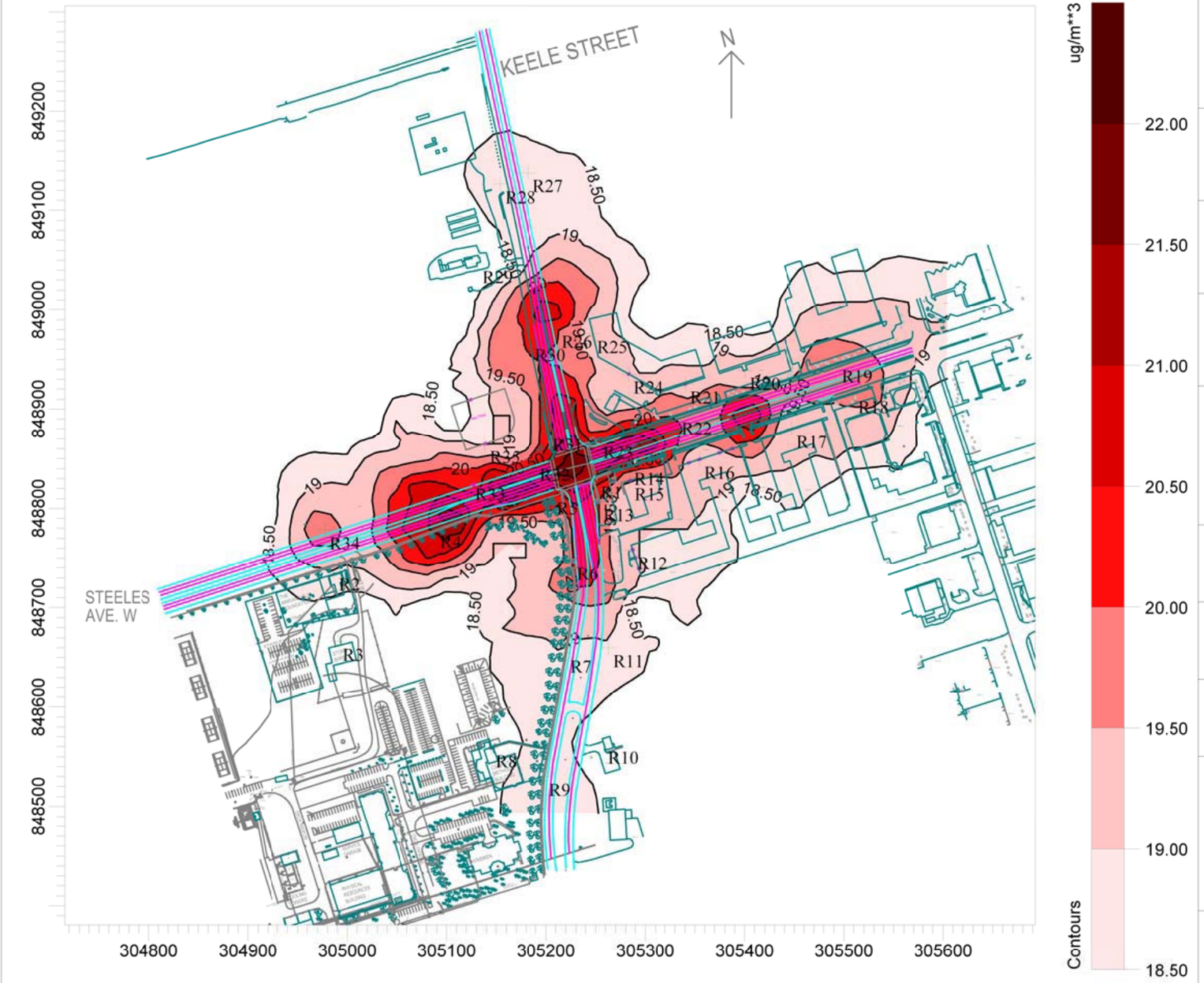
0 100 m

PROJECT / PLOT NO.:

33015347

PROJECT TITLE:

Figure C-9 Run C-6, Keele and Steeles, Build, PM2.5
PM Peak Hour Traffic Data



COMMENTS:

Run C-6

Background PM2.5
Concentration = 18 ug/m**3

MODEL:	POLLUTANT:
CAL3QHC	**Particulate**
MAX:	UNITS:
22.00	**ug/m**3**
LINKS:	RECEPTORS:
26	**217**

COMPANY NAME:

URS Canada

MODELER:

MSM

DATE:

1/19/2006

SCALE: 1:6,103,646

0 100 m

PROJECT / PLOT NO.:

33015347

TABLE C-1

Keele and Steeles, Intersection, Link Information
Spadina Subway Extension - EA, Air Quality Assessment
Toronto Transit Commission
URS Canada Inc. Project: 33015347

Direction of Link Through Links	Link ID	TYP	X1 (m) UTM	Y1 (m) UTM	X2 (m) UTM	Y2 (m) UTM	Link Height (HL) (m)	No. Lanes in Link	Width of Lanes(s) (m)	WL Link Width (m)	Speed (km/hr)	EFL PM2.5 (g/veh-mile)	EFL CO (g/veh-mile)	EFL NOx (g/veh-mile)	Run C - 1,2,3 Future Background (No Build) PM Traffic Data VPHL (# veh /hr/link)	Run C - 4,5,6 Future Total (Build - Option 1A) PM Traffic Data VPHL (# veh /hr/link)
East Bound	**A1**	AG	304,944.701	848,741.983	305,143.707	848,806.699	0	3	10.8	16.8	30	0.0164	10.070	0.326	2184	2701
East Bound	**A2**	AG	305,143.707	848,806.699	305,228.730	848,834.493	0	5	18	24	30	0.0164	10.070	0.326	2184	2701
East Bound	**Adep**	AG	305,228.730	848,834.493	305,515.315	848,927.380	0	3	10.8	16.8	30	0.0164	10.070	0.326	2398	2661
South Bound	**B1**	AG	305,163.140	849,135.822	305,199.735	848,944.729	0	2	7.2	13.2	30	0.0164	10.070	0.326	1695	1807
South Bound	**B2**	AG	305,199.735	848,944.729	305,221.138	848,839.776	0	4	14.4	20.4	30	0.0164	10.070	0.326	1695	1807
South Bound	**Bdep1**	AG	305,221.138	848,839.776	305,238.678	848,736.347	0	2	7.2	13.2	30	0.0164	10.070	0.326	1686	1762
South Bound	**Bdep2**	AG	305,238.678	848,736.347	305,237.528	848,710.803	0	2	7.2	13.2	30	0.0164	10.070	0.326	1686	1762
South Bound	**Bdep3**	AG	305,237.528	848,710.803	305,204.733	848,518.385	0	2	7.2	13.2	30	0.0164	10.070	0.326	1686	1762
West Bound	**C1**	AG	305,510.846	848,941.114	305,282.023	848,867.310	0	3	10.8	16.8	30	0.0164	10.070	0.326	2858	2990
West Bound	**C2**	AG	305,282.439	848,865.557	305,227.003	848,847.500	0	4	14.4	20.4	30	0.0164	10.070	0.326	2858	2990
West Bound	**Cdep**	AG	305,226.823	848,848.853	304,940.227	848,755.688	0	3	10.8	16.8	30	0.0164	10.070	0.326	2274	2560
North Bound	**D1**	AG	305,227.324	848,525.737	305,252.358	848,678.486	0	2	7.2	13.2	30	0.0164	10.070	0.326	1788	1830
North Bound	**D2**	AG	305,252.358	848,678.486	305,247.785	848,768.890	0	2	7.2	13.2	30	0.0164	10.070	0.326	1788	1830
North Bound	**D3**	AG	305,247.785	848,768.890	305,233.301	848,842.703	0	4	14.4	20.4	30	0.0164	10.070	0.326	1788	1830
North Bound	**Ddep**	AG	305,233.301	848,842.703	305,169.977	849,138.047	0	2	7.2	13.2	30	0.0164	10.070	0.326	2167	2345

Direction of Link Queue Links	Link ID	TYP	X1 (m) UTM	Y1 (m) UTM	X2 (m) UTM	Y2 (m) UTM	Link Height (HL) (m)	No. Lanes in Link	WL Width of Link (m)	PM2.5 I-EF (g/hr)	CO I-EF (g/hr)	Nox I-EF (g/hr)	SFR	ST	AT	VPHL*	CAVG (s)	RAVG (s)	YFAC (s)	VPHL*	CAVG (s)	RAVG (s)	YFAC (s)
East Bound	**AqT**	AG	305,208.855	848,827.866	304,944.694	848,741.931	0	3	10.8	0.0410	56.148	1.350	1900	1	3	1834	120	70	2	2097	120	75	2
East Bound	**AqL**	AG	305,207.455	848,834.308	305,108.154	848,802.089	0	1	3.6	0.0410	56.148	1.350	1900	1	3	193	120	57	2	371	120	57	2
East Bound	**AqR**	AG	305,210.335	848,821.050	305,158.013	848,804.031	0	1	3.6	0.0410	56.148	1.350	1900	1	3	157	120	70	2	233	120	75	2
South Bound	**BqT**	AG	305,217.534	848,857.553	305,163.140	849,135.822	0	2	7.2	0.0410	56.148	1.350	1900	1	3	1245	120	82	2	1245	120	54	2
South Bound	**BqL**	AG	305,223.025	848,859.303	305,197.368	848,984.081	0	1	3.6	0.0410	56.148	1.350	1900	1	3	275	120	69	2	275	120	69	2
South Bound	**BqR**	AG	305,212.212	848,855.856	305,196.370	848,939.404	0	1	3.6	0.0410	56.148	1.350	1900	1	3	175	120	82	2	287	120	54	2
West Bound	**CqR+T**	AG	305,244.824	848,855.182	305,510.796	848,941.268	0	3	10.8	0.0410	56.148	1.350	1900	1	3	2574	120	70	2	2706	120	75	2
West Bound	**CqL**	AG	305,246.373	848,848.655	305,284.367	848,861.011	0	1	3.6	0.0410	56.148	1.350	1900	1	3	284	120	57	2	284	120	57	2
North Bound	**DqT**	AG	305,237.380	848,822.535	305,227.324	848,525.737	0	2	7.2	0.0410	56.148	1.350	1900	1	3	1284	120	82	2	1284	120	59	2
North Bound	**DqL**	AG	305,232.861	848,821.016	305,245.831	848,750.361	0	1	3.6	0.0410	56.148	1.350	1900	1	3	215	120	69	2	257	120	69	2
North Bound	**DqR**	AG	305,243.253	848,824.510	305,250.784	848,783.987	0	1	3.6	0.0410	56.148	1.350	1900	1	3	289	120	82	2	289	120	59	2

Note:

Typ	Link Type, AG - at grade, FL - fill, BR - Bridge, DP - Depression
HL	Source (Link) Height (in meters)
Width	Width of link (number of lanes * width of lane) Through link Lane Width includes 3m on either side of link
Speed	Speed from calculation of emission factor (km/hr)
EFL	Emission Factor (g/veh-mile)
WL	Mixing zone width (m)
VPHL	Traffic Volume on Link (Veh/hr)
I-EF	Idle Emission Factor (g/hr)
CAVG	Average total cycle length (s)
ST	Signal Type, 1-pretimed, 2-actuated, 3-semi-actuated (default=1)
AT	Arrival type, 1-Worst, 2-below average, 3-average, 4-above average, 5-best progression (default is 3)
RAVG	Average red total signal cycle length (s)
YFAC	Clearance Lost Time (s) (Time lost getting queue in motion)
SFR	Saturation Flow Rate (veh/hr/lane) (vehicles per hour of effective green time, vphg)

PM data is considered worst case traffic volumes. Modelling will be done using PM data and then 8 hour peak average and 24 hour daily average will be calculated from PM output.
For PM2.5 Modelling - Deposition Velocity =0.5 cm/sec, Settling Velecity = 10 cm/sec

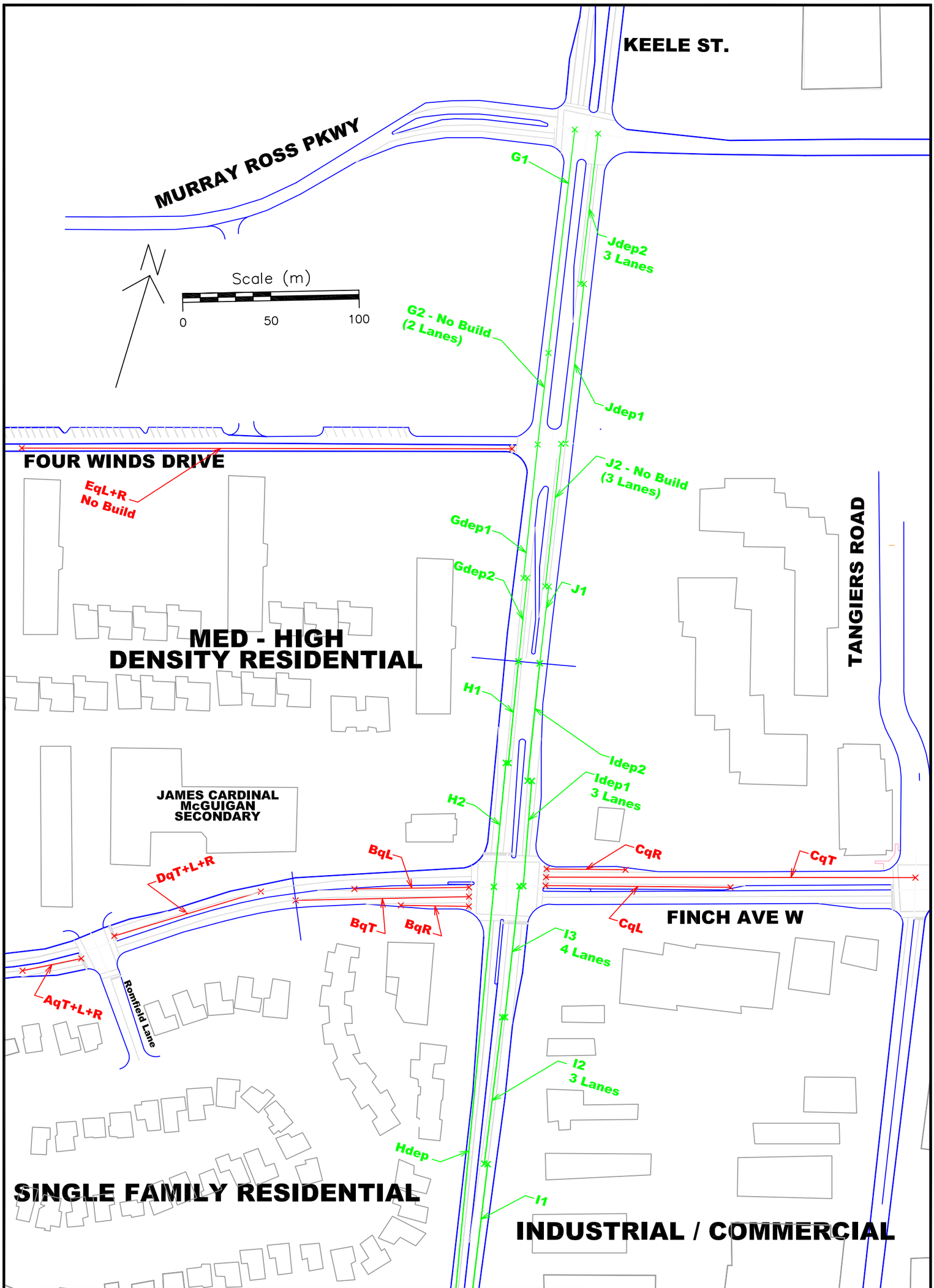
TABLE C-2

Keele and Steeles, Intersection, Discrete Receptor Information
Spadina Subway Extension - EA, Air Quality Assessment
Toronto Transit Commission
URS Canada Inc. Project: 33015347

Receptor ID	X-Coordinate UTM (m)	Y-Coordinate UTM (m)	Description
R1	305,250.516	848,829.276	South East Corner of Steeles and Keele
R2	304,986.841	848,736.930	Strong House
R3	304,990.482	848,666.107	Strong Barn
R4	305,088.862	848,779.671	South side of Steeles
R5	305,206.330	848,813.352	South side of Steeles
R6	305,226.517	848,747.718	Bus stop, West side of Keele
R7	305,219.884	848,654.391	West side of Keele
R8	305,144.554	848,558.814	Computer Methods Building
R9	305,198.399	848,530.155	West side of Keele
R10	305,257.652	848,562.523	East side of Keele
R11	305,262.977	848,659.730	East side of Keele
R12	305,287.205	848,758.227	Bldg Entrance, East side of Keele
R13	305,253.142	848,806.687	Bus Stop, East side of Keele
R14	305,283.979	848,843.184	Bus Stop, South side of Steeles
R15	305,284.254	848,827.687	Building Entrance, South side of Steeles
R16	305,354.693	848,849.119	Building Entrance, South side of Steeles
R17	305,447.690	848,880.348	Building Entrance, South side of Steeles
R18	305,509.645	848,915.452	South side of Steeles
R19	305,493.162	848,946.541	North side of Steeles
R20	305,400.416	848,938.892	Building Entrance, North side of Steeles
R21	305,340.557	848,925.152	Building Entrance, North side of Steeles
R22	305,332.045	848,893.910	North side of Steeles
R23	305,252.667	848,869.704	Bus Stop, North side of Steeles
R24	305,283.283	848,935.232	Building Entrance, North side of Steeles
R25	305,246.792	848,975.763	Building Entrance, East side of Keele
R26	305,211.149	848,981.084	East side of Keele
R27	305,181.961	849,137.853	East side of Keele
R28	305,154.226	849,126.330	West side of Keele
R29	305,131.247	849,046.442	Building Entrance, West side of Steeles
R30	305,184.316	848,967.765	West side of Keele
R31	305,201.947	848,877.401	West side of Keele
R32	305,189.157	848,847.179	North side of Steeles
R33	305,123.934	848,827.666	Bus Stop, North side of Steeles
R34	304,977.423	848,778.448	North side of Steeles
R35	305,138.645	848,864.789	Plaza Entrance, North side of Steeles

APPENDIX D-1

FINCH WEST STATION ANALYSIS



Model Links - No Build
N/S Through, E/W Queue

Spadina Subway Extension - EA, Air Quality Assessment
Downsview Station to Steeles Avenue

Toronto Transit Commission

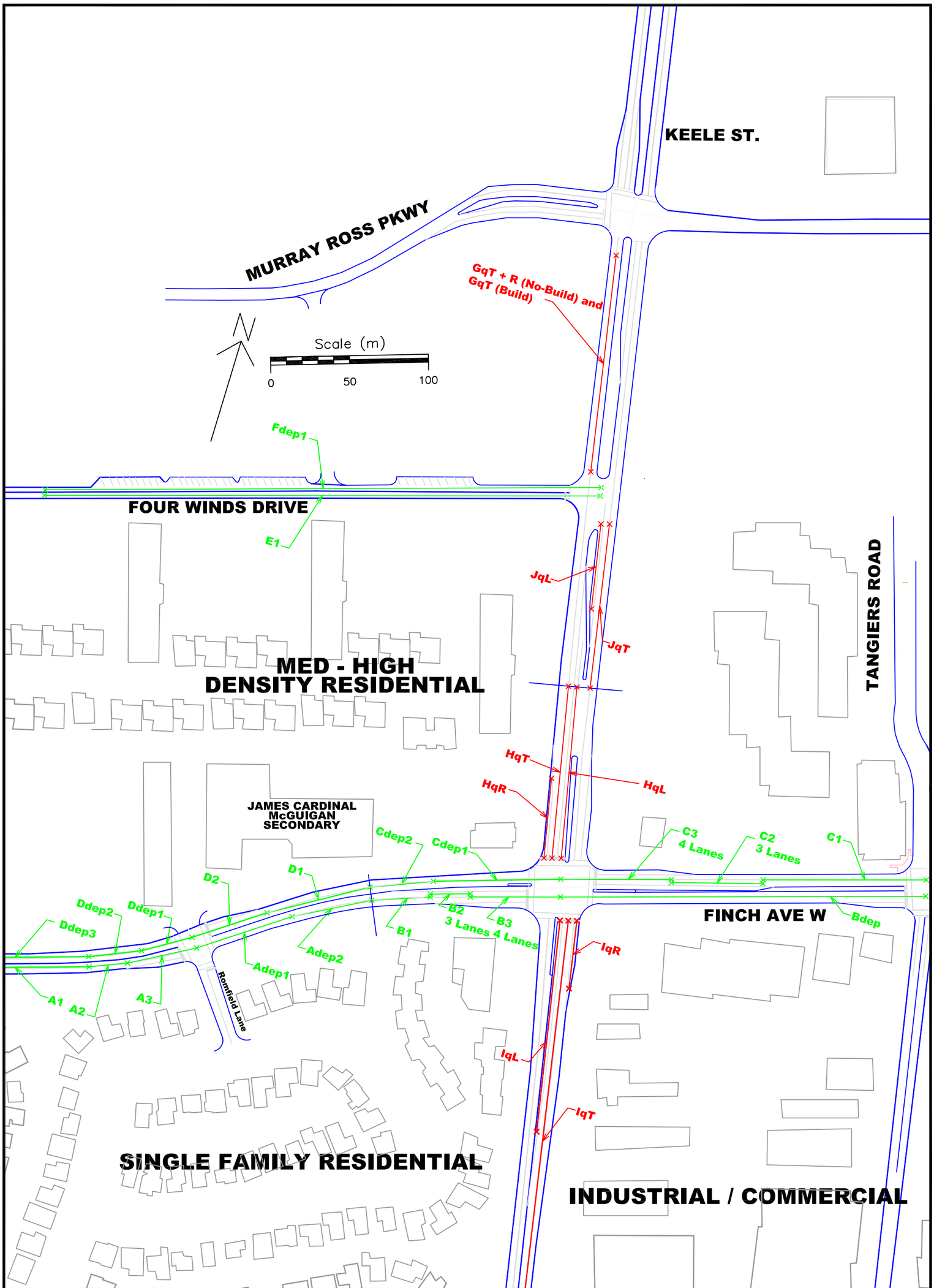
Toronto, Ontario

URS Canada Inc.

Figure D-1

33015347, January 2006

App D FINCH Station Figures, Jan 13,06.dwg



A1
Through Link and ID
Queue Link and ID
AqL

Model Links - No Build
N/S Queue, E/W Through

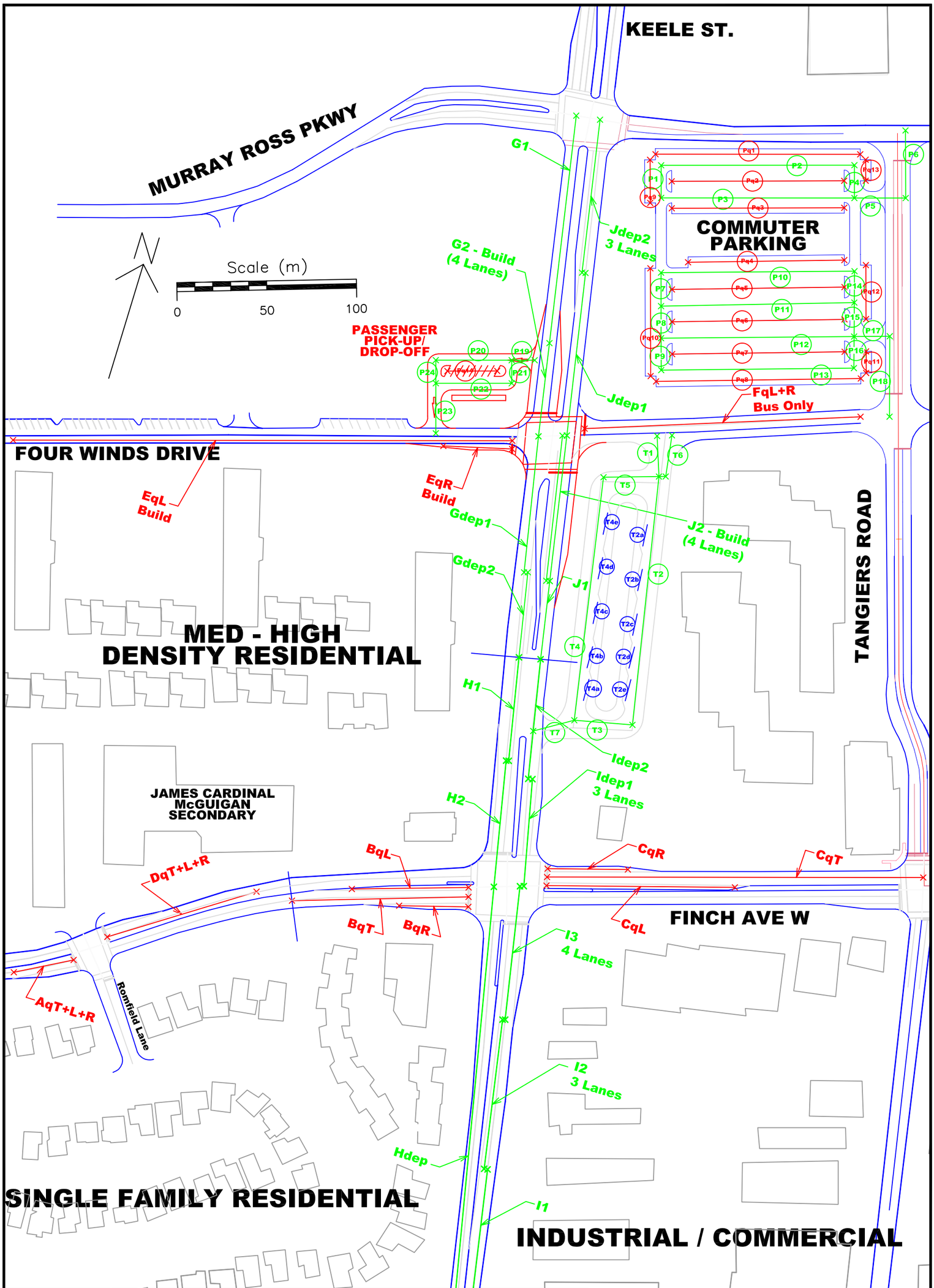
Spadina Subway Extension - EA, Air Quality Assessment
Downsview Station to Steeles Avenue

Toronto Transit Commission
Toronto, Ontario

URS Canada Inc.

Figure D-2
33015347, January 2006

App D FINCH Station Figures, Jan 13,06.dwg



Model Links - Build
N/S Through, E/W Queue, Parking, Bus

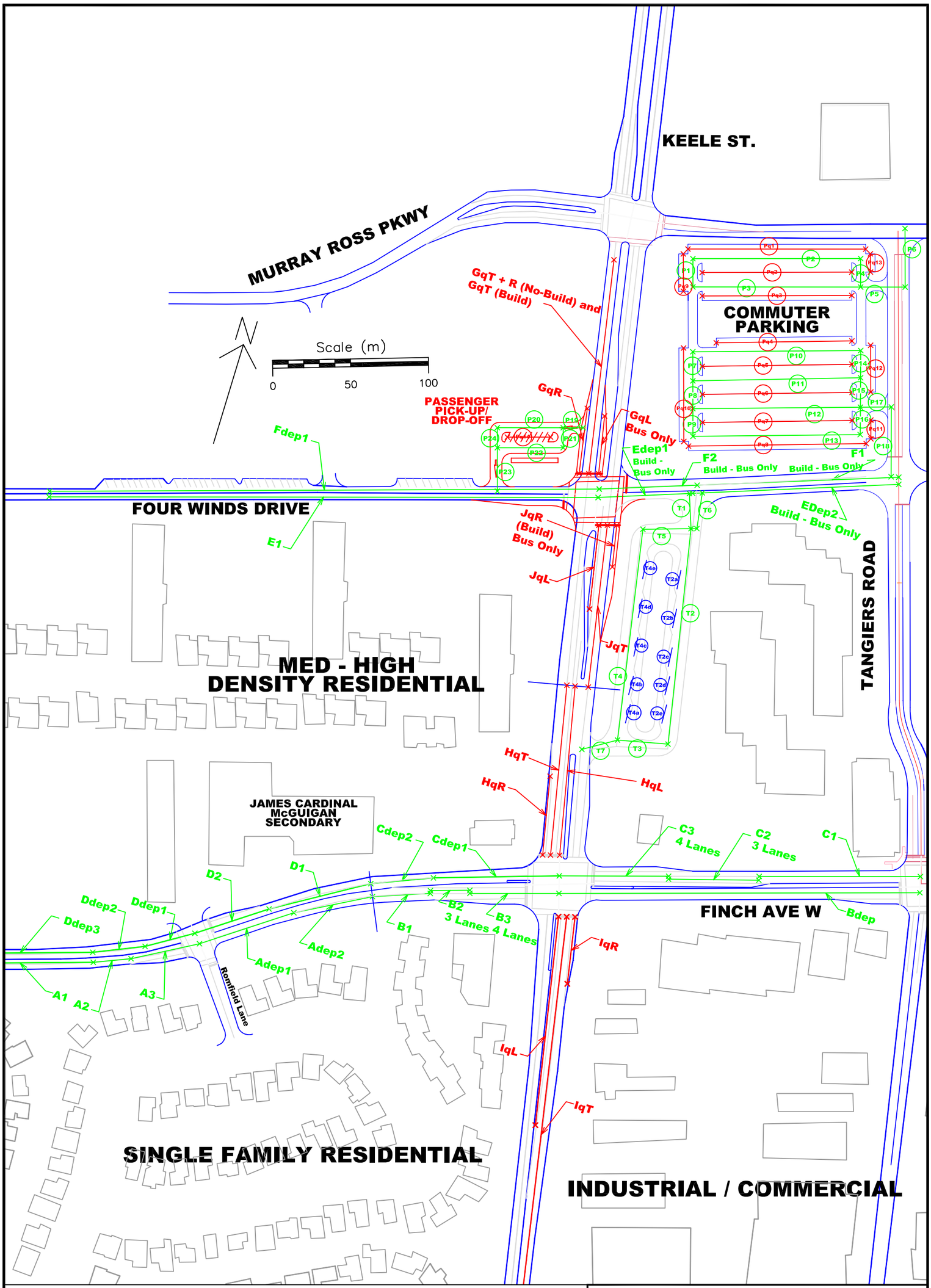
Spadina Subway Extension - EA, Air Quality Assessment
Downsview Station to Steeles Avenue

Toronto Transit Commission
Toronto, Ontario

URS Canada Inc.

Figure D-3
33015347, January 2006

App D FINCH Station Figures, Jan 13,06.dwg



A1
Through Link and ID
Queue Link and ID
AqL

Model Links - Build
N/S Queue, E/W Through, Parking, Bus

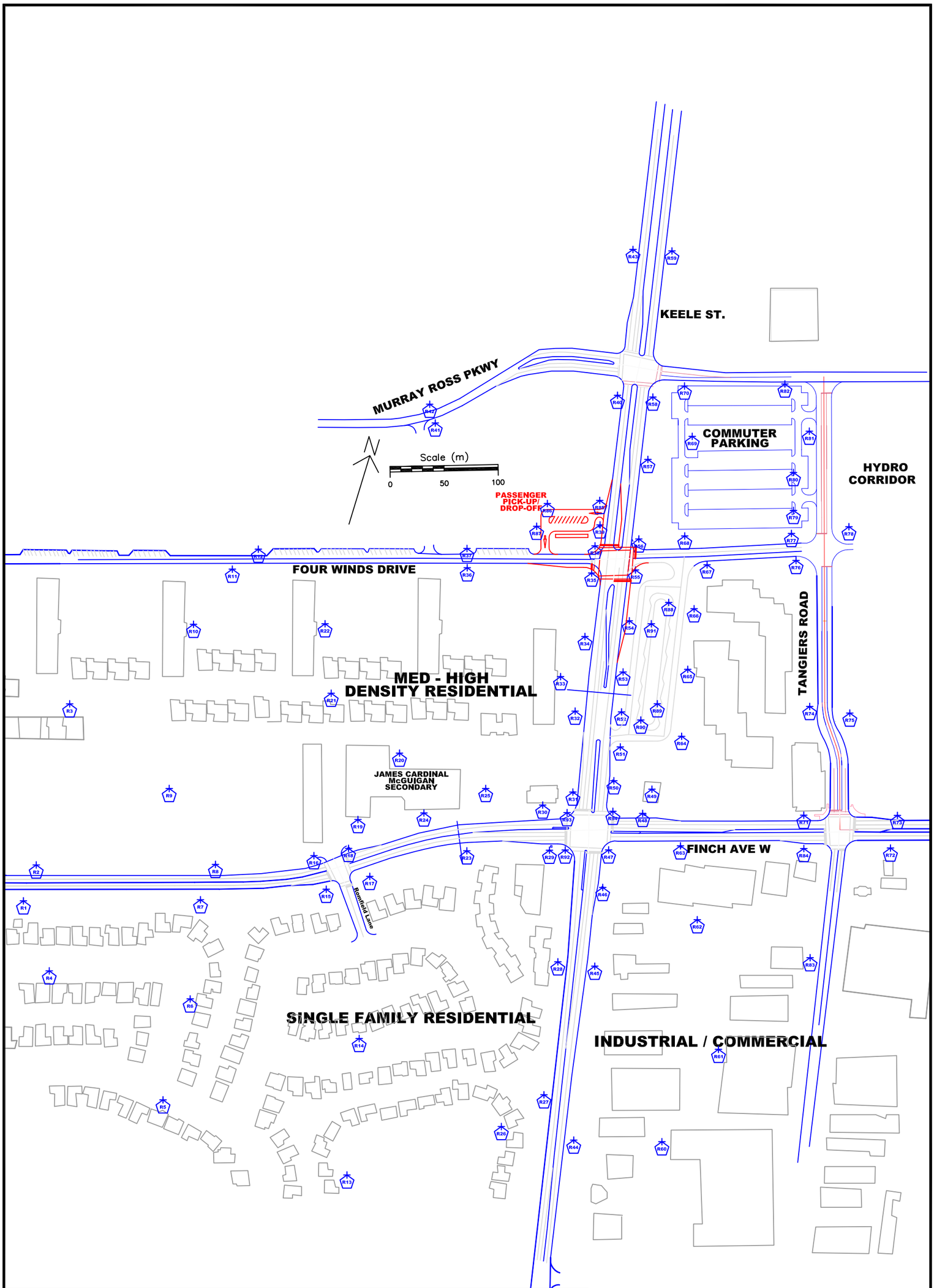
Spadina Subway Extension - EA, Air Quality Assessment
Downsview Station to Steeles Avenue

Toronto Transit Commission
Toronto, Ontario

URS Canada Inc.

Figure D-4
33015347, January 2006

App D FINCH Station Figures, Jan 13,06.dwg



R1 Receptor Location and ID

Discrete Receptor Locations

Spadina Subway Extension - EA, Air Quality Assessment
Downsview Station to Steeles Avenue

Toronto Transit Commission

Toronto, Ontario

URS Canada Inc.

Figure D-5

33015347, January 2006

App D FINCH Station Figures, Jan 13,06.dwg

TABLE D-1
Finch West Station, Intersection, Parking, Terminal, Link Information
Spadina Subway Extension - EA, Air Quality Assessment
Toronto Transit Commission
URS Canada Inc. Project: 33015347

Regular Links

Direction of Link	Model Area	Link ID	Link Type	X1 (m) UTM	Y1 (m) UTM	X2 (m) UTM	Y2 (m) UTM	HL (m)	No. Lanes in Link	Width of Lanes(s) (m)	WL Link Width (m)	Speed (km/hr)	VPHL (# veh /hr/link) No Build	VPHL (# veh /hr/link) Build	EFL PM2.5 (g/veh-mile)	EFL CO (g/veh-mile)	EFL NOx (g/veh-mile)
East Bound	Romfield	**A1**	AG	305014.309	846633.168	305235.933	846702.142	0	2	7.2	13.2	30	2090	2136	0.0164	10.070	0.326
East Bound	Romfield	**A2**	AG	305235.933	846702.142	305258.421	846711.426	0	2	7.2	13.2	30	2090	2136	0.0164	10.070	0.326
East Bound	Romfield	**A3**	AG	305258.421	846711.426	305297.647	846733.371	0	2	7.2	13.2	30	2090	2136	0.0164	10.070	0.326
East Bound	Romfield	**Adep1**	AG	305297.647	846733.371	305349.779	846769.963	0	2	7.2	13.2	30	2080	2126	0.0164	10.070	0.326
East Bound	Romfield	**Adep2**	AG	305349.779	846769.963	305395.039	846794.514	0	2	7.2	13.2	30	2080	2126	0.0164	10.070	0.326
West Bound	Romfield	**D1**	AG	305391.562	846802.169	305333.857	846767.651	0	2	7.2	13.2	30	2263	2367	0.0164	10.070	0.326
West Bound	Romfield	**D2**	AG	305333.857	846767.651	305292.855	846738.913	0	2	7.2	13.2	30	2263	2367	0.0164	10.070	0.326
West Bound	Romfield	**Ddep1**	AG	305292.855	846738.913	305264.746	846721.580	0	2	7.2	13.2	30	2243	2347	0.0164	10.070	0.326
West Bound	Romfield	**Ddep2**	AG	305264.746	846721.580	305233.732	846708.223	0	2	7.2	13.2	30	2243	2347	0.0164	10.070	0.326
West Bound	Romfield	**Ddep3**	AG	305233.732	846708.223	305012.311	846638.851	0	2	7.2	13.2	30	2243	2347	0.0164	10.070	0.326
East Bound	Keele and Finch	**B1**	AG	305395.039	846794.514	305429.923	846807.250	0	2	7.2	13.2	30	1423	1469	0.0164	10.070	0.326
East Bound	Keele and Finch	**B2**	AG	305429.473	846809.033	305453.618	846816.572	0	3	10.8	16.8	30	1423	1469	0.0164	10.070	0.326
East Bound	Keele and Finch	**B3**	AG	305454.201	846814.652	305508.878	846831.243	0	4	14.4	20.4	30	1423	1469	0.0164	10.070	0.326
East Bound	Keele and Finch	**Bdep**	AG	305508.878	846831.243	305730.241	846898.936	0	2	7.2	13.2	30	1620	1645	0.0164	10.070	0.326
West Bound	Keele and Finch	**C1**	AG	305727.580	846908.977	305628.619	846878.978	0	2	7.2	13.2	30	1594	1655	0.0164	10.070	0.326
West Bound	Keele and Finch	**C2**	AG	305629.097	846876.614	305573.462	846860.425	0	3	10.8	16.8	30	1594	1655	0.0164	10.070	0.326
West Bound	Keele and Finch	**C3**	AG	305573.011	846862.237	305505.797	846842.075	0	4	14.4	20.4	30	1594	1655	0.0164	10.070	0.326
West Bound	Keele and Finch	**Cdep1**	AG	305505.797	846842.075	305428.934	846817.394	0	2	7.2	13.2	30	1479	1583	0.0164	10.070	0.326
West Bound	Keele and Finch	**Cdep2**	AG	305428.934	846817.394	305391.562	846802.169	0	2	7.2	13.2	30	1479	1583	0.0164	10.070	0.326
South Bound	Keele and Finch	**H1**	AG	305476.591	846960.866	305487.838	846904.074	0	3	10.8	16.8	30	1675	1808	0.0164	10.070	0.326
South Bound	Keele and Finch	**H2**	AG	305486.441	846903.777	305500.340	846834.576	0	4	14.4	20.4	30	1675	1808	0.0164	10.070	0.326
South Bound	Keele and Finch	**Hdep**	AG	305500.340	846834.576	305560.234	846539.896	0	2	7.2	13.2	30	1692	1740	0.0164	10.070	0.326
North Bound	Keele and Finch	**I1**	AG	305567.870	846541.353	305542.686	846683.104	0	2	7.2	13.2	30	1400	1430	0.0164	10.070	0.326
North Bound	Keele and Finch	**I2**	AG	305540.751	846682.851	305526.436	846765.269	0	3	10.8	16.8	30	1400	1430	0.0164	10.070	0.326
North Bound	Keele and Finch	**I3**	AG	305527.830	846765.690	305514.157	846839.129	0	4	14.4	20.4	30	1400	1430	0.0164	10.070	0.326
North Bound	Keele and Finch	**Idep1**	AG	305516.170	846839.793	305503.469	846898.197	0	3	10.8	16.8	30	1301	1394	0.0164	10.070	0.326
North Bound	Keele and Finch	**Idep2**	AG	305501.182	846897.664	305488.410	846963.352	0	2	7.2	13.2	30	1301	1394	0.0164	10.070	0.326
East Bound	Four Winds	**E1**	AG	305121.980	846979.682	305459.082	847081.624	0	1	3.6	9.6	30	107	201	0.0164	10.070	0.326
West Bound	Four Winds	**Fdep1**	AG	305458.194	847086.970	305121.343	846983.170	0	1	3.6	9.6	30	227	321	0.0164	10.070	0.326
South Bound	Four Winds	**G1**	AG	305419.483	847258.605	305442.014	847133.133	0	2	7.2	13.2	30	1621	1721	0.0164	10.070	0.326
South Bound	Four Winds	**G2-No Build**	AG	305442.014	847133.133	305451.260	847081.713	0	2	7.2	13.2	30	1621	NA, No Build Link	0.0164	10.070	0.326
South Bound	Four Winds	**Gdep1**	AG	305451.234	847081.705	305465.551	847006.920	0	2	7.2	13.2	30	1644	1777	0.0164	10.070	0.326
South Bound	Four Winds	**Gdep2**	AG	305467.557	847007.636	305476.591	846960.866	0	3	10.8	16.8	30	1644	1777	0.0164	10.070	0.326
North Bound	Four Winds	**J1**	AG	305488.410	846963.352	305480.647	847006.470	0	2	7.2	13.2	30	1268	1324	0.0164	10.070	0.326
North Bound	Four Winds	**J2-No Build**	AG	305478.754	847006.051	305463.926	847085.988	0	3	10.8	16.8	30	1268	NA, No Build Link	0.0164	10.070	0.326
North Bound	Four Winds	**Jdep1**	AG	305466.216	847086.761	305449.879	847176.314	0	2	7.2	13.2	30	1125	1189	0.0164	10.070	0.326
North Bound	Four Winds	**Jdep2**	AG	305447.954	847175.941	305432.805	847260.279	0	3	10.8	16.8	30	1125	1189	0.0164	10.070	0.326
East Bound	Four Winds - Build Only	**Edep1-Build**	AG-Buses Only	305459.082	847081.624	305516.327	847101.776	0	1	3.6	9.6	30	NA, Build Link	18 buses	0.0906	1.0720	2.761
East Bound	Four Winds - Build Only	**Edep2-Build**	AG-Buses Only	305516.327	847101.776	305641.150	847145.717	0	1	3.6	9.6	30	NA, Build Link	22 buses	0.0906	1.0720	2.761
West Bound	Four Winds - Build Only	**F1-Build**	AG-Buses Only	305639.811	847150.084	305517.596	847107.613	0	2	7.2	13.2	30	NA, Build Link	26 buses	0.0906	1.0720	2.761
West Bound	Four Winds - Build Only	**F2-Build**	AG-Buses Only	305517.596	847107.613	305458.194	847086.970	0	2	7.2	13.2	30	NA, Build Link	59 buses	0.0906	1.0720	2.761
South Bound	Four Winds - Build Only	**G2-Build**	AG	305442.014	847133.133	305451.260	847081.713	0	4	14.4	20.4	30	NA, Build Link	1721	0.0164	10.070	0.326
North Bound	Four Winds - Build Only	**J2-Build**	AG	305480.647	847006.470	305466.216	847086.761	0	4	14.4	20.4	30	NA, Build Link	1324	0.0164	10.070	0.326

Build links only

Queue Links

Direction	Model Area	Link ID	TYP	X1 (m) UTM	Y1 (m) UTM	X2 (m) UTM	Y2 (m) UTM	HL (m)	No. Lanes in Link	WL Width of Link (m)	I-EF PM2.5 (g/hr)	I-EF NOx (g/hr)	I-EF CO (g/hr)	SFR	ST	AT	YFAC (s)	VPHL* No Build	CAVG (s) No Build	RAVG (s) No Build	VPHL* Build	CAVG (s) Build	RAVG (s) Build
East Bound	Romfield	**AqT+L+R**	AG	305288.282	846727.663	305258.421	846711.426	0	2	7.2	0.041	1.35	56.148	1900	1	3	2	2090	100	29	2136	100	29
West Bound	Romfield	**DqT+L+R**	AG	305302.507	846745.366	305374.701	846793.590	0	2	7.2	0.041	1.35	56.148	1900	1	3	2	2263	100	29	2367	100	29
East Bound	Keele and Finch	**BqL**	AG	305486.990	846830.176	305425.017	846810.459	0	1	3.6	0.041	1.35	56.148	1900	1	3	2	88	100	58	130	100	55
East Bound	Keele and Finch	**BqR**	AG	305489.997	846819.813	305452.920	846809.213	0	1	3.6	0.041	1.35	56.148	1900	1	3	2	220	100	58	220	100	63
East Bound	Keele and Finch	**BqT**	AG	305488.456	846825.124	305395.018	846794.561	0	2	7.2	0.041	1.35	56.148	1900	1	3	2	1115	100	58	1119	100	63
West Bound	Keele and Finch	**CqL**	AG	305528.158	846843.744	305628.809	846873.297	0	1	3.6	0.041	1.35	56.148	1900	1	3	2	184	100	65	184	100	55
West Bound	Keele and Finch	**CqR**	AG	305526.006	846852.943	305568.913	846865.503	0	1	3.6	0.041	1.35	56.148	1900	1	3	2	226	100	65	247	100	63
West Bound	Keele and Finch	**CqT**	AG	305527.068	846848.405	305727.569	846909.017	0	2	7.2	0.041	1.35	56.148	1900	1	3	2	1184	100	65	1224	100	63
South Bound	Keele and Finch	**HqL**	AG	305502.180	846854.793	305480.131	846961.611	0	1	3.6	0.041	1.35	56.148	1900	1	3	2	344	100	46	365	100	51
South Bound	Keele and Finch	**HqR**	AG	305491.692	846851.831	305481.592	846901.528	0	1	3.6	0.041	1.35	56.148	1900	1	3	2	43	100	60	107	100	65
South Bound	Keele and Finch	**HqT**	AG	305496.568	846853.208	305474.921	846960.515	0	2	7.2	0.041	1.35	56.148	1900	1	3	2	1288	100	60	1336	100	65
North Bound	Keele and Finch	**IqL**	AG	305512.948	846816.932	305537.631	846684.598	0	1	3.6	0.041	1.35	56.148	1900	1	3	2	252	100	55	252	100	60
North Bound	Keele and Finch	**IqR**	AG	305523.160	846819.825	305530.876	846777.344	0	1	3.6	0.041	1.35	56.148	1900	1	3	2	161	100	63	161	100	72
North Bound	Keele and Finch	**IqT**	AG	305517.995	846818.362	305567.833	846541.345	0	2	7.2	0.041	1.35	56.148	1900	1	3	2	987	100	63	1017	100	72
East Bound	Four Winds	**EqL+R No Build**	AG	305438.026	847075.119	305171.956	846994.723	0	1	3.6	0.041	1.35	56.148	1900	1	3	2	107	120	92	NA, No Build Link	120	92
South Bound	Four Winds	**GqT+R (No Build) GqT (Build)**	AG	305448.929	847094.530	305424.502	847230.474	0	2	7.2	0.041	1.35	56.148	1900	1	3	2	1621	120	43	1601	120	43
North Bound	Four Winds	**JqL**	AG	305464.721	847064.762	305474.626	847011.499	0	1	3.6	0.041	1.35	56.148	1900	1	3	2	167	120	34	219	120	34
North Bound	Four Winds	**JqT**	AG	305469.940	847066.321	305488.398	846963.349	0	2	7.2	0.041	1.35	56.148	1900	1	3	2	1101	120	34	1105	120	34
East Bound	Four Winds - Build Only	**EqR Build**	AG	305439.211	847070.712	305402.092	847061.178	0	1	3.6	0.041	1.35	56.148	1900	1	3	2	NA, Build Link	120	92	135	120	92
East Bound	Four Winds - Build Only	**EqL Build**	AG	305438.026	847075.119	305171.956	846994.723	0	1	3.6	0.041	1.35	56.148	1900	1	3	2	NA, Build Link	120	92	66	120	92
West Bound	Four Winds - Build Only	**FqL+R**	AG-Buses Only	305474.587	847093.283	305619.636	847144.242	0	2	7.2	0.2265	11.9230	8.1600	1900	1	3	2	NA, Build Link	120	92	59	120	92
South Bound	Four Winds - Build Only	**GqL**	AG-Buses Only	305454.963	847096.333	305447.853	847132.820	0	1	3.6	0.2265	11.9230	8.1600	1900	1	3	2	NA, Build Link	120	34	18	120	34
South Bound	Four Winds - Build Only	**GqR**	AG	305442.987	847092.753	305435.857	847134.271	0	1	3.6	0.041	1.35	56.148	1900	1	3	2	NA, Build Link	120	43	102	120	43
North Bound	Four Winds - Build Only	**JqR**	AG-Buses Only	305475.725	847068.048	305480.785	847041.631	0	1	3.6	0.2265	11.9230	8.1600	1900	1	3	2	NA, Build Link	120	34	0	120	34

Build links only

TABLE D-1 (Cont'd)

Finch West Station, Intersection, Parking, Terminal, Link Information
Spadina Subway Extension - EA, Air Quality Assessment
Toronto Transit Commission
URS Canada Inc. Project: 33015347

Parking and Bus Terminal Links

Direction of Link	Model Area	Link ID	Link Type	X1 (m) UTM	Y1 (m) UTM	X2 (m) UTM	Y2 (m) UTM	HL (m)	No. Lanes in Link	Width of Lanes(s) (m)	WL Link Width (m)	Speed (km/hr)	VPHL (# veh /hr/link) No Build	VPHL (# veh /hr/link) Build, Dec 12'05	EFL PM2.5 (g/veh-mile)	EFL CO (g/veh-mile)	EFL NOx (g/veh-mile)	Rationale / Comments
NA	Commuter Parking	P1	AG Parking	305472.748	847245.902	305478.020	847228.541	0	1	6	6	4	NA	7	0.0112	35.9	0.452	Regular Parking Link, Speed 4km/hr. Wide Parking Lot Lane, Cold Start
NA	Commuter Parking	P2	AG Parking	305472.748	847245.902	305575.670	847277.223	0	1	6	6	4	NA	57	0.0112	35.9	0.452	Regular Parking Link, Speed 4km/hr. Wide Parking Lot Lane, Cold Start
NA	Commuter Parking	P3	AG Parking	305478.020	847228.541	305580.971	847259.723	0	1	6	6	4	NA	59	0.0112	35.9	0.452	Regular Parking Link, Speed 4km/hr. Wide Parking Lot Lane, Cold Start
NA	Commuter Parking	P4	AG Parking	305575.670	847277.223	305580.971	847259.723	0	1	6	6	4	NA	61	0.0112	35.9	0.452	Regular Parking Link, Speed 4km/hr. Wide Parking Lot Lane, Cold Start
NA	Commuter Parking	P5	AG Parking	305580.971	847259.723	305608.309	847268.003	0	1	6	6	4	NA	120	0.0112	35.9	0.452	Regular Parking Link, Speed 4km/hr. Wide Parking Lot Lane, Cold Start
NA	Commuter Parking	P6	**AG Moving**	305608.309	847268.003	305597.270	847303.984	0	1	6	12	30	NA	**120**	**0.0112**	**20.23**	**0.265**	Moving Link, Speed 30km/hr, single Lane, Cold Start
NA	Commuter Parking	P7	AG Parking	305490.038	847188.723	305495.467	847170.867	0	1	6	6	4	NA	2	0.0112	35.9	0.452	Regular Parking Link, Speed 4km/hr. Wide Parking Lot Lane, Cold Start
NA	Commuter Parking	P8	AG Parking	305495.467	847170.867	305500.650	847153.821	0	1	6	6	4	NA	4	0.0112	35.9	0.452	Regular Parking Link, Speed 4km/hr. Wide Parking Lot Lane, Cold Start
NA	Commuter Parking	P9	AG Parking	305505.898	847136.820	305500.650	847153.821	0	1	6	6	4	NA	2	0.0112	35.9	0.452	Regular Parking Link, Speed 4km/hr. Wide Parking Lot Lane, Cold Start
NA	Commuter Parking	P10	AG Parking	305490.038	847188.723	305592.879	847220.785	0	1	6	6	4	NA	17	0.0112	35.9	0.452	Regular Parking Link, Speed 4km/hr. Wide Parking Lot Lane, Cold Start
NA	Commuter Parking	P11	AG Parking	305495.467	847170.867	305597.846	847204.040	0	1	6	6	4	NA	18	0.0112	35.9	0.452	Regular Parking Link, Speed 4km/hr. Wide Parking Lot Lane, Cold Start
NA	Commuter Parking	P12	AG Parking	305500.650	847153.821	305603.222	847185.920	0	1	6	6	4	NA	22	0.0112	35.9	0.452	Regular Parking Link, Speed 4km/hr. Wide Parking Lot Lane, Cold Start
NA	Commuter Parking	P13	AG Parking	305505.898	847136.820	305608.222	847169.062	0	1	6	6	4	NA	19	0.0112	35.9	0.452	Regular Parking Link, Speed 4km/hr. Wide Parking Lot Lane, Cold Start
NA	Commuter Parking	P14	AG Parking	305592.879	847220.785	305597.846	847204.040	0	1	6	6	4	NA	19	0.0112	35.9	0.452	Regular Parking Link, Speed 4km/hr. Wide Parking Lot Lane, Cold Start
NA	Commuter Parking	P15	AG Parking	305597.846	847204.040	305603.222	847185.920	0	1	6	6	4	NA	38	0.0112	35.9	0.452	Regular Parking Link, Speed 4km/hr. Wide Parking Lot Lane, Cold Start
NA	Commuter Parking	P16	AG Parking	305608.222	847169.062	305603.222	847185.920	0	1	6	6	4	NA	20	0.0112	35.9	0.452	Regular Parking Link, Speed 4km/hr. Wide Parking Lot Lane, Cold Start
NA	Commuter Parking	P17	AG Parking	305603.222	847185.920	305622.169	847191.848	0	1	6	6	4	NA	80	0.0112	35.9	0.452	Regular Parking Link, Speed 4km/hr. Wide Parking Lot Lane, Cold Start
NA	Commuter Parking	P18	**AG Moving**	305622.169	847191.848	305635.056	847148.957	0	1	6	12	30	NA	**80**	**0.0112**	**20.23**	**0.265**	Moving Link, Speed 30km/hr, single Lane, Cold Start
NA	Passenger Pickup	P19	AG Parking	305436.908	847121.630	305424.648	847117.917	0	1	6	6	4	NA	104	0.0112	28.19	0.435	PPUDO, NOT cold start, Regular Parking Link, Speed 4km/hr. Wide Parking Lot Lane
NA	Passenger Pickup	P20	AG Parking	305424.648	847117.917	305384.215	847105.672	0	1	6	6	4	NA	82	0.0112	28.19	0.435	PPUDO, NOT cold start, Regular Parking Link, Speed 4km/hr. Wide Parking Lot Lane
NA	Passenger Pickup	P21	AG Parking	305424.648	847117.917	305428.377	847105.641	0	1	6	6	4	NA	22	0.0112	28.19	0.435	PPUDO, NOT cold start, Regular Parking Link, Speed 4km/hr. Wide Parking Lot Lane
NA	Passenger Pickup	P22	AG Parking	305428.377	847105.641	305387.954	847093.364	0	1	6	6	4	NA	94	0.0112	28.19	0.435	PPUDO, NOT cold start, Regular Parking Link, Speed 4km/hr. Wide Parking Lot Lane
NA	Passenger Pickup	P23	AG Parking	305387.954	847093.364	305396.058	847066.721	0	1	6	6	4	NA	104	0.0112	28.19	0.435	PPUDO, NOT cold start, Regular Parking Link, Speed 4km/hr. Wide Parking Lot Lane
NA	Passenger Pickup	P24	AG Parking	305384.215	847105.672	305387.954	847093.364	0	1	6	6	4	NA	10	0.0112	28.19	0.435	PPUDO, NOT cold start, Regular Parking Link, Speed 4km/hr. Wide Parking Lot Lane
NA	Bus Terminal	T1	AG, Bus By-Pass	305514.360	847101.084	305521.905	847079.780	0	1	4	4	8	NA	44	0.0906	2.664	4.278	Bus By-pass Link, 8km/hr, No Extra link width due to mixing
NA	Bus Terminal	T2	AG, Bus By-Pass	305521.905	847079.780	305547.969	846943.245	0	1	4	4	8	NA	44	0.0906	2.664	4.278	Bus By-pass Link, 8km/hr, No Extra link width due to mixing
NA	Bus Terminal	T2a	AG, Bus Pseudo	305523.506	847052.295	305524.538	847040.139	0	1	4	4	4	NA	8	1.992	71.761	104.854	Bus Pseudo Link for passenger Drop off/ Pickup, 4km/hr
NA	Bus Terminal	T2b	AG, Bus Pseudo	305528.041	847027.710	305529.073	847015.553	0	1	4	4	4	NA	9	1.992	71.761	104.854	Bus Pseudo Link for passenger Drop off/ Pickup, 4km/hr
NA	Bus Terminal	T2c	AG, Bus Pseudo	305532.576	847003.124	305533.608	846990.968	0	1	4	4	4	NA	9	1.992	71.761	104.854	Bus Pseudo Link for passenger Drop off/ Pickup, 4km/hr
NA	Bus Terminal	T2d	AG, Bus Pseudo	305536.476	846985.078	305536.932	846972.887	0	1	4	4	4	NA	9	1.992	71.761	104.854	Bus Pseudo Link for passenger Drop off/ Pickup, 4km/hr
NA	Bus Terminal	T2e	AG, Bus Pseudo	305539.795	846967.082	305540.252	846954.890	0	1	4	4	4	NA	9	1.992	71.761	104.854	Bus Pseudo Link for passenger Drop off/ Pickup, 4km/hr
NA	Bus Terminal	T3	AG, Bus By-Pass	305547.969	846943.245	305516.239	846936.308	0	1	4	4	8	NA	44	0.0906	2.664	4.278	Bus By-pass Link, 8km/hr, No Extra link width due to mixing
NA	Bus Terminal	T4	AG, Bus By-Pass	305516.239	846936.308	305492.500	847070.448	0	1	4	4	8	NA	81	0.0906	2.664	4.278	Bus By-pass Link, 8km/hr, No Extra link width due to mixing
NA	Bus Terminal	T4a	AG, Bus Pseudo	305517.878	846948.270	305517.421	846960.462	0	1	4	4	4	NA	8	1.992	71.761	104.854	Bus Pseudo Link for passenger Drop off/ Pickup, 4km/hr
NA	Bus Terminal	T4b	AG, Bus Pseudo	305514.558	846966.266	305514.101	846978.458	0	1	4	4	4	NA	8	1.992	71.761	104.854	Bus Pseudo Link for passenger Drop off/ Pickup, 4km/hr
NA	Bus Terminal	T4c	AG, Bus Pseudo	305510.604	846990.802	305509.572	847002.958	0	1	4	4	4	NA	7	1.992	71.761	104.854	Bus Pseudo Link for passenger Drop off/ Pickup, 4km/hr
NA	Bus Terminal	T4d	AG, Bus Pseudo	305506.069	847015.387	305505.037	847027.544	0	1	4	4	4	NA	7	1.992	71.761	104.854	Bus Pseudo Link for passenger Drop off/ Pickup, 4km/hr
NA	Bus Terminal	T4e	AG, Bus Pseudo	305501.534	847039.973	305500.502	847052.129	0	1	4	4	4	NA	7	1.992	71.761	104.854	Bus Pseudo Link for passenger Drop off/ Pickup, 4km/hr
NA	Bus Terminal	T5	AG, Bus By-Pass	305492.500	847070.448	305525.496	847080.920	0	1	4	4	8	NA	81	0.0906	2.664	4.278	Bus By-pass Link, 8km/hr, No Extra link width due to mixing
NA	Bus Terminal	T6	AG, Bus By-Pass	305525.496	847080.920	305522.193	847103.841	0	1	4	4	8	NA	81	0.0906	2.664	4.278	Bus By-pass Link, 8km/hr, No Extra link width due to mixing
NA	Bus Terminal	T7	AG, Bus By-Pass	305496.072	846923.944	305516.239	846936.308	0	1	4	4	8	NA	37	0.0906	2.664	4.278	Bus By-pass Link, 8km/hr, No Extra link width due to mixing

													These vehicle volumes were used for calculation of Pseudo Link Total Emissions only		Pseudo vehicle volumes (VPHL in Veh/hr-Link) and Emission Factors (EF in g/veh-Mile) for Parking Queue Links						Rationale / Comments
															PM2.5		CO		NOx		
															EF	VPHL	EF	VPHL	EF	VPHL	
NA	Commuter Parking	Pq1	AG Parking Pseudo	305577.014	847283.955	305467.915	847250.885	0	1	6	6	4	NA	32	0.1	0.5270	100	1.689	1	2.127	Car Parking Pseudo Links, Cold Start
NA	Commuter Parking	Pq2	AG Parking Pseudo	305572.730	847267.233	305480.952	847239.077	0	2	12	12	4	NA	52	0.1	1.0170	100	3.260	1	4.104	Car Parking Pseudo Links, Cold Start
NA	Commuter Parking	Pq3	AG Parking Pseudo	305577.129	847252.893	305485.351	847224.736	0	1	6	6	4	NA	26	0.1	0.5085	100	1.630	1	2.052	Car Parking Pseudo Links, Cold Start
NA	Commuter Parking	Pq4	AG Parking Pseudo	305585.659	847225.033	305502.763	847198.609	0	1	6	6	4	NA	7	0.01	1.5106	10	4.842	1	0.610	Car Parking Pseudo Links, Cold Start
NA	Commuter Parking	Pq5	AG Parking Pseudo	305590.058	847210.692	305498.587	847181.534	0	2	12	12	4	NA	18	0.01	3.5202	100	1.128	1	1.421	Car Parking Pseudo Links, Cold Start
NA	Commuter Parking	Pq6	AG Parking Pseudo	305595.338	847193.482	305503.867	847164.325	0	2	12	12	4	NA	18	0.01	3.5202	100	1.128	1	1.421	Car Parking Pseudo Links, Cold Start
NA	Commuter Parking	Pq7	AG Parking Pseudo	305600.618	847176.273	305509.147	847147.115	0	2	12	12	4	NA	17	0.01	3.3247	100	1.066	1	1.342	Car Parking Pseudo Links, Cold Start
NA	Commuter Parking	Pq8	AG Parking Pseudo	305613.591	847164.670	305504.988	847129.986	0	1	6	6	4	NA	10	0.01	1.6469	100	0.528	1	0.665	Car Parking Pseudo Links, Cold Start
NA	Commuter Parking	Pq9	AG Parking Pseudo	305465.960	847247.029	305472.999	847224.085	0	1	6	6	4	NA	7	0.1	0.5476	100	1.755	1	2.210	Car Parking Pseudo Links, Cold Start
NA	Commuter Parking	Pq10	AG Parking Pseudo	305483.652	847189.302	305501.250	847131.941	0	1	6	6	4	NA	6	0.01	1.8776	100	0.602	1	0.758	Car Parking Pseudo Links, Cold Start
NA	Commuter Parking	Pq11	AG Parking Pseudo	305612.042	847179.949	305615.562	847168.476	0	1	6	6	4	NA	1	0.01	1.5645	10	5.015	1	0.631	Car Parking Pseudo Links, Cold Start
NA	Commuter Parking	Pq12	AG Parking Pseudo	305597.954	847225.869	305606.762	847197.158	0	1	6	6	4	NA	3	0.01	1.8756	100	0.601	1	0.757	Car Parking Pseudo Links, Cold Start
NA	Commuter Parking	Pq13	AG Parking Pseudo	305580.765	847281.954	305584.202	847270.752	0	1	6	6	4	NA	3	0.01	4.8071	100	1.541	1	1.940	Car Parking Pseudo Links, Cold Start
NA	PPUDO Parking	Pq14	AG Parking Pseudo	305418.674	847109.842	305392.150	847101.754	0	1	6	6	4	NA	72	10	1.3665	100	343.941	100	5.307	Car Parking Pseudo Links, Not Cold Start

Pseudo Links

Note:

Typ	Link Type, AG - at grade, FL - fill, BR - Bridge, DP - Depression
HL	Source Height (in meters)
Width	Width of link (number of lanes * width of lane) Regular link Lane Width includes 3m on either side of link
Speed	Speed from calculation of emission factor (km/hr)
EFL	Emission Factor (g/veh-mile)
WL	Mixing zone width (m)
VPHL	Traffic Volume on Link(Veh/hr)
I-EF	Idle Emission Factor (g/hr)
CAVG	Average total cycle length (s)
ST	Signal Type, 1-pretimed, 2-actuated, 3-semi-actuated (default=1)
AT	Arrival type, 1-Worst, 2-below average, 3-average, 4-above average, 5-best progression (default is 3)
RAVG	Average red total signal cycle length (s)
YFAC	Clearance Lost Time (s) (Time lost getting queue in motion)
SFR	Saturation Flow Rate (veh/hr/lane) (vehicles per hour of effective green time, vphg)

AM data is considered worst case due to delay times and traffic volumes. Modelling will be done using AM data and then 8 hour peak average and 24 hour daily average will be calculated from AM Peak hour output.
For PM2.5 Modelling - Deposition Velocity =0.5 cm/sec, Settling Velecity = 10 cm/sec
See Bus, Commuter Parking, Passenger Pickup/Drop Off Calculation Methodology in Report Section 4.4.4.4
Parking Link Volumes based on Traffic Needs Analysis

TABLE D-2

Finch West Station, Intersection, Parking, Terminal, Discrete Receptor Information
Spadina Subway Extension - EA, Air Quality Assessment
Toronto Transit Commission
URS Canada Inc. Project: 33015347

Receptor ID	X UTM (m)	Y UTM (m)	Description
R1	305026.000	846622.404	South side, Finch Ave. West
R2	305027.698	846657.558	North side, Finch Ave. West
R3	305013.993	846809.110	High Density Residential Area
R4	305067.688	846567.359	Single Family Residential Area
R5	305203.006	846483.830	Single Family Residential Area
R6	305199.900	846580.436	Single Family Residential Area
R7	305182.418	846670.917	South side, Finch Ave. West
R8	305186.128	846706.241	North side, Finch Ave. West
R9	305124.833	846760.966	Park, North side Finch Ave West
R10	305102.229	846912.765	High Density Residential Area
R11	305121.742	846971.966	South side, Four Winds Drive
R12	305139.424	846996.621	North side, Four Winds Drive
R13	305385.978	846466.839	Single Family Residential Area
R14	305360.105	846590.843	Single Family Residential Area
R15	305290.833	846714.001	South side, Finch Ave. West
R16	305270.939	846740.434	North side, Finch Ave. West
R17	305325.914	846737.120	South side, Finch Ave. West
R18	305299.658	846756.164	Bus Stop North side, Finch Ave. West
R19	305300.224	846784.223	James Cardinal McGuigan Secondary Scool
R20	305319.141	846854.140	James Cardinal McGuigan Secondary Scool
R21	305242.589	846888.757	High Density Residential Area
R22	305218.468	846948.594	High Density Residential Area
R23	305404.992	846785.825	South side, Finch Ave. West
R24	305356.770	846807.807	James Cardinal McGuigan Secondary Scool
R25	305404.914	846846.033	James Cardinal McGuigan Secondary Scool
R26	305509.548	846551.156	Single Family Residential Area
R27	305538.763	846590.718	West side Keele Street
R28	305515.358	846712.079	West side Keele Street
R29	305477.925	846808.566	Bus Stop South side, Finch Ave. West
R30	305459.779	846846.705	Entrance Commercial Bldg.
R31	305483.044	846866.290	Bus Stop, West side Steeles
R32	305463.257	846938.486	West side Keele Street
R33	305441.084	846965.135	High Density Residential Area
R34	305451.944	847007.114	West side Keele Street
R35	305440.815	847065.124	West side Keele Street
R36	305329.234	847036.311	South side, Four Winds Drive
R37	305323.873	847053.348	North side, Four Winds Drive
R38	305436.432	847090.094	West side Keele Street
R39	305435.232	847109.944	Bus Stop, West side Keele Street
R40	305415.877	847229.336	West side Keele Street
R41	305262.068	847155.852	South side, Murray Ross Road
R42	305252.085	847170.929	North side, Murray Ross Road
R43	305390.437	847362.481	West side Keele Street
R44	305577.267	846558.623	East side, Keele Street
R45	305549.164	846718.141	East side, Keele Street
R46	305535.053	846789.924	Bus Stop, East side, Keele Street
R47	305530.191	846824.699	East side, Keele Street
R48	305550.472	846866.188	Bus Stop, North side Finch
R49	305552.233	846890.096	Commercial Bldg, East side Keele
R50	305516.262	846887.312	Bus Stop, East side, Keele Street
R51	305512.880	846918.943	East side, Keele Street
R52	305504.550	846950.282	East side, Keele Street, Near Bus Terminal
R53	305495.199	846986.041	East side, Keele Street, Near Bus Terminal
R54	305486.939	847032.975	East side, Keele Street, Near Bus Terminal
R55	305478.690	847079.598	East side, Keele Street, Near Bus Terminal
R56	305473.372	847107.916	East side, Keele Street, Near Commuter Parking
R57	305460.038	847180.756	East side, Keele Street, Near Commuter Parking
R58	305447.697	847237.247	East side, Keele Street, Near Commuter Parking
R59	305425.289	847371.647	East side, Keele Street
R60	305655.740	846580.870	Ind/commercial area
R61	305680.979	846677.825	Ind/commercial area
R62	305627.408	846786.796	Ind/commercial area
R63	305592.656	846847.641	South side Finch
R64	305564.287	846944.858	Ind/commercial area, Near Bus Terminal
R65	305551.687	847005.719	Ind/commercial area, Near Bus Terminal
R66	305541.019	847061.072	Ind/commercial area, Near Bus Terminal
R67	305540.711	847103.409	Ind/commercial area, Near Bus Terminal
R68	305513.208	847122.945	Near Commuter Parking
R69	305493.062	847213.055	Near Commuter Parking
R70	305472.679	847255.557	Near Commuter Parking
R71	305693.533	846907.856	North side of Finch
R72	305779.091	846902.138	South side Finch
R73	305776.473	846932.872	North side Finch
R74	305669.626	847005.661	West side, Tangiers Road
R75	305706.865	847010.601	East side, Tangiers Road
R76	305618.281	847131.185	West side, Tangiers Road
R77	305606.943	847153.820	Near Commuter Parking
R78	305656.019	847175.244	Near Commuter Parking
R79	305602.588	847174.744	Near Commuter Parking
R80	305592.399	847208.291	Near Commuter Parking
R81	305595.301	847249.088	Near Commuter Parking
R82	305561.004	847284.308	Near Commuter Parking
R83	305737.460	846783.498	West side, Tangiers Road
R84	305702.549	846878.434	South side Finch
R85	305428.440	847131.519	Near Passenger Pickup
R86	305382.914	847114.693	Near Passenger Pickup
R87	305379.572	847091.682	Near Passenger Pickup
R88	305516.882	847059.787	Inside Bus Terminal
R89	305534.006	846967.119	Inside Bus Terminal
R90	305523.752	846948.251	Inside Bus Terminal
R91	305507.202	847036.273	Inside Bus Terminal
R92	305491.801	846812.979	South West Corner, Finch and Keele
R93	305483.393	846846.542	North West Corner, Finch and Keele
R94	305523.597	846860.024	North East Corner, Finch and Keele

APPENDIX D-2

FINCH WEST STATION ANALYSIS
CAL3QHC INPUT OUTPUT FILES

Appendix D\Finch, Intersection Qty
Run D4, Build, NQ- Input He

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'G1_75              ' 305705.34 846869.46    1.80
'G1_76              ' 305705.34 846969.46    1.80
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'G1_77                ' 305705.34 847069.46    1.80
'G1_78                ' 305705.34 847169.46    1.80
'G1_79                ' 305705.34 847269.46    1.80
'G1_80                ' 305705.34 847369.46    1.80
'G1_81                ' 305805.34 846469.46    1.80
'G1_82                ' 305805.34 846569.46    1.80
'G1_83                ' 305805.34 846669.46    1.80
'G1_84                ' 305805.34 846769.46    1.80
'G1_85                ' 305805.34 846869.46    1.80
'G1_86                ' 305805.34 846969.46    1.80
'G1_87                ' 305805.34 847069.46    1.80
'G1_88                ' 305805.34 847169.46    1.80
'G1_89                ' 305805.34 847269.46    1.80
'G1_90                ' 305805.34 847369.46    1.80
'Run D-4, Build, NOx' 118 1 1 'P'
    1
'A1                   ' 'AG' 305014.31 846633.17 305235.93 846702.14 2136.00 0.326  0.00 13.20
    1
'A2                   ' 'AG' 305235.93 846702.14 305258.42 846711.43 2136.00 0.326  0.00 13.20
    1
'A3                   ' 'AG' 305258.42 846711.43 305297.65 846733.37 2136.00 0.326  0.00 13.20
    1
'Adep1                ' 'AG' 305297.65 846733.37 305349.78 846769.96 2126.00 0.326  0.00 13.20
    1
'Adep2                ' 'AG' 305349.78 846769.96 305395.04 846794.51 2126.00 0.326  0.00 13.20
    1
'D1                   ' 'AG' 305391.56 846802.17 305333.86 846767.65 2367.00 0.326  0.00 13.20
    1
'D2                   ' 'AG' 305333.86 846767.65 305292.85 846738.91 2367.00 0.326  0.00 13.20
    1
'Ddep1                ' 'AG' 305292.85 846738.91 305264.75 846721.58 2347.00 0.326  0.00 13.20
    1
'Ddep2                ' 'AG' 305264.75 846721.58 305233.73 846708.22 2347.00 0.326  0.00 13.20
    1
'Ddep3                ' 'AG' 305233.73 846708.22 305012.31 846638.85 2347.00 0.326  0.00 13.20
    1
'B1                   ' 'AG' 305395.04 846794.51 305429.92 846807.28 1469.00 0.326  0.00 13.20
    1
'B2                   ' 'AG' 305429.47 846809.03 305453.62 846816.57 1469.00 0.326  0.00 16.80
    1
'Bdep                 ' 'AG' 305508.88 846831.24 305730.24 846898.94 1645.00 0.326  0.00 13.20
    1
'C1                   ' 'AG' 305727.58 846908.98 305628.64 846878.92 1655.00 0.326  0.00 13.20
    1
'C2                   ' 'AG' 305629.10 846876.61 305573.46 846860.45 1655.00 0.326  0.00 16.80
    1
'Cdep1                ' 'AG' 305505.80 846842.07 305428.93 846817.39 1583.00 0.326  0.00 13.20
    1
'Cdep2                ' 'AG' 305428.93 846817.39 305391.56 846802.17 1583.00 0.326  0.00 13.20
    1
'H1                   ' 'AG' 305476.59 846960.87 305487.84 846904.07 1808.00 0.326  0.00 16.80
    1
'H2                   ' 'AG' 305486.44 846903.78 305500.34 846834.58 1808.00 0.326  0.00 20.40
    1
'Hdep                 ' 'AG' 305500.34 846834.58 305560.23 846539.90 1740.00 0.326  0.00 13.20
    1
'I1                   ' 'AG' 305567.87 846541.35 305542.62 846683.09 1430.00 0.326  0.00 13.20
```



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    1
'I2                   ' 'AG' 305540.75 846682.85 305526.44 846765.27 1430.00 0.326  0.00 16.80
    1
'I3                   ' 'AG' 305527.83 846765.69 305514.16 846839.13 1430.00 0.326  0.00 20.40
    1
'Idep1                ' 'AG' 305516.17 846839.79 305503.44 846898.19 1394.00 0.326  0.00 16.80
    1
'Idep2                ' 'AG' 305501.18 846897.66 305488.41 846963.35 1394.00 0.326  0.00 13.20
    1
'E1                   ' 'AG' 305121.98 846979.68 305459.08 847081.62 201.00 0.326  0.00  9.60
    1
'Edep1-Build          ' 'AG' 305459.08 847081.62 305516.33 847101.78 18.00 2.761  0.00  9.60
    1
'F1-Build             ' 'AG' 305639.81 847150.08 305517.60 847107.61 26.00 2.761  0.00 13.20
    1
'Fdep1                ' 'AG' 305458.19 847086.97 305121.34 846983.17 321.00 0.326  0.00  9.60
    1
'G1                   ' 'AG' 305419.48 847258.60 305442.06 847133.14 1721.00 0.326  0.00 13.20
    1
'G2-Build             ' 'AG' 305442.01 847133.13 305451.26 847081.72 1721.00 0.326  0.00 20.40
    1
'Gdep1                ' 'AG' 305451.23 847081.70 305465.50 847006.91 1777.00 0.326  0.00 13.20
    1
'J1                   ' 'AG' 305488.41 846963.35 305480.65 847006.47 1324.00 0.326  0.00 13.20
    1
'J2-Build             ' 'AG' 305480.65 847006.47 305466.22 847086.76 1324.00 0.326  0.00 20.40
    1
'Jdep1                ' 'AG' 305466.22 847086.76 305449.94 847176.32 1189.00 0.326  0.00 13.20
    2
'AqT+L+R              ' 'AG' 305288.28 846727.66 305258.42 846711.43  0.00  7.20    2
      100   29    2.00 2136 1.35 1900    1    3
    2
'DqT+L+R              ' 'AG' 305302.51 846745.37 305374.70 846793.59  0.00  7.20    2
      100   29    2.00 2367 1.35 1900    1    3
    2
'BqT                  ' 'AG' 305488.46 846825.12 305395.02 846794.56  0.00  7.20    2
      100   63    2.00 1119 1.35 1900    1    3
    2
'BqL                  ' 'AG' 305486.99 846830.18 305425.02 846810.46  0.00  3.60    1
      100   55    2.00  130 1.35 1900    1    3
    2
'BqR                  ' 'AG' 305490.00 846819.81 305452.92 846809.21  0.00  3.60    1
      100   63    2.00  220 1.35 1900    1    3
    2
'CqT                  ' 'AG' 305527.07 846848.41 305727.59 846908.95  0.00  7.20    2
      100   63    2.00 1224 1.35 1900    1    3
    2
'CqL                  ' 'AG' 305528.16 846843.74 305628.81 846873.30  0.00  3.60    1
      100   55    2.00  184 1.35 1900    1    3
    2
'CqR                  ' 'AG' 305526.01 846852.94 305568.91 846865.50  0.00  3.60    1
      100   63    2.00  247 1.35 1900    1    3
    2
'HqT                  ' 'AG' 305496.57 846853.21 305474.92 846960.52  0.00  7.20    2
      100   65    2.00 1336 1.35 1900    1    3
    2
'HqL                  ' 'AG' 305502.18 846854.79 305480.13 846961.61  0.00  3.60    1
```

```
      100   51    2.00  365 1.35 1900    1    3
    2
'HqR                ' 'AG' 305491.69 846851.83 305481.59 846901.53  0.00  3.60    1
      100   65    2.00  107 1.35 1900    1    3
    2
'IqT                ' 'AG' 305517.99 846818.36 305567.83 846541.34  0.00  7.20    2
      100   72    2.00 1017 1.35 1900    1    3
    2
'IqL                ' 'AG' 305512.95 846816.93 305537.71 846684.61  0.00  3.60    1
      100   60    2.00  252 1.35 1900    1    3
    2
'IqR                ' 'AG' 305523.16 846819.82 305530.88 846777.34  0.00  3.60    1
      100   72    2.00  161 1.35 1900    1    3
    2
'EqL Build          ' 'AG' 305438.03 847075.12 305171.96 846994.72  0.00  3.60    1
      120   92    2.00   66 1.35 1900    1    3
    2
'EqR Build          ' 'AG' 305439.21 847070.71 305402.09 847061.18  0.00  3.60    1
      120   92    2.00  135 1.35 1900    1    3
    2
'FqL+R              ' 'AG' 305474.59 847093.28 305619.64 847144.24  0.00  7.20    2
      120   92    2.00   59 11.923 1900    1    3
    2
'GqT                ' 'AG' 305448.93 847094.53 305424.50 847230.47  0.00  7.20    2
      120   43    2.00 1601 1.35 1900    1    3
    2
'GqL                ' 'AG' 305454.96 847096.33 305447.85 847132.82  0.00  3.60    1
      120   34    2.00   12 11.923 1900    1    3
    2
'GqR                ' 'AG' 305442.99 847092.75 305435.86 847134.27  0.00  3.60    1
      120   43    2.00  102 1.35 1900    1    3
    2
'JqT                ' 'AG' 305469.94 847066.32 305488.40 846963.35  0.00  7.20    2
      120   34    2.00 1105 1.35 1900    1    3
    2
'JqL                ' 'AG' 305464.72 847064.76 305474.63 847011.50  0.00  3.60    1
      120   34    2.00  219 1.35 1900    1    3
    1
'Edep2-Build        ' 'AG' 305516.33 847101.78 305641.15 847145.72 22.00 2.761  0.00  9.60
    1
'P1                 ' 'AG' 305472.75 847245.90 305478.02 847228.54  7.00 0.452  0.00  6.00
    1
'P2                 ' 'AG' 305472.75 847245.90 305575.67 847277.22 57.00 0.452  0.00  6.00
    1
'P3                 ' 'AG' 305478.02 847228.54 305580.97 847259.72 59.00 0.452  0.00  6.00
    1
'P4                 ' 'AG' 305575.67 847277.22 305580.97 847259.72 61.00 0.452  0.00  6.00
    1
'P5                 ' 'AG' 305580.97 847259.72 305608.31 847268.00 120.00 0.452  0.00  6.00
    1
'P6                 ' 'AG' 305608.31 847268.00 305597.27 847303.98 120.00 0.265  0.00 12.00
    1
'P7                 ' 'AG' 305490.04 847188.72 305495.47 847170.87  2.00 0.452  0.00  6.00
    1
'P8                 ' 'AG' 305495.47 847170.87 305500.65 847153.82  4.00 0.452  0.00  6.00
    1
'P9                 ' 'AG' 305505.90 847136.82 305500.65 847153.82  2.00 0.452  0.00  6.00
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    1
'P10                ' 'AG' 305490.04 847188.72 305592.88 847220.79 17.00 0.452  0.00  6.00
    1
'P11                ' 'AG' 305495.47 847170.87 305597.85 847204.04 18.00 0.452  0.00  6.00
    1
'P12                ' 'AG' 305500.65 847153.82 305603.22 847185.92 22.00 0.452  0.00  6.00
    1
'P13                ' 'AG' 305505.90 847136.82 305608.22 847169.06 19.00 0.452  0.00  6.00
    1
'P14                ' 'AG' 305592.88 847220.79 305597.85 847204.04 19.00 0.452  0.00  6.00
    1
'P15                ' 'AG' 305597.85 847204.04 305603.22 847185.92 38.00 0.452  0.00  6.00
    1
'P16                ' 'AG' 305608.22 847169.06 305603.22 847185.92 20.00 0.452  0.00  6.00
    1
'P17                ' 'AG' 305603.22 847185.92 305622.17 847191.85 80.00 0.452  0.00  6.00
    1
'P18                ' 'AG' 305622.17 847191.85 305635.06 847148.96 80.00 0.265  0.00 12.00
    1
'B3                 ' 'AG' 305454.20 846814.65 305508.88 846831.24 1469.00 0.326  0.00 20.40
    1
'C3                 ' 'AG' 305573.01 846862.24 305505.80 846842.07 1655.00 0.326  0.00 20.40
    1
'Gdep2              ' 'AG' 305467.56 847007.64 305476.59 846960.87 1777.00 0.326  0.00 16.80
    1
'Jdep2              ' 'AG' 305447.95 847175.94 305432.78 847260.28 1189.00 0.326  0.00 16.80
    1
'P19                ' 'AG' 305436.91 847121.63 305424.65 847117.92 104.00 0.435  0.00  6.00
    1
'P20                ' 'AG' 305424.65 847117.92 305384.22 847105.67 82.00 0.435  0.00  6.00
    1
'P21                ' 'AG' 305424.65 847117.92 305428.38 847105.64 22.00 0.435  0.00  6.00
    1
'P22                ' 'AG' 305428.38 847105.64 305387.95 847093.36 104.00 0.435  0.00  6.00
    1
'P23                ' 'AG' 305387.95 847093.36 305396.06 847066.72 104.00 0.435  0.00  6.00
    1
'P24                ' 'AG' 305384.22 847105.67 305387.95 847093.36 10.00 0.435  0.00  6.00
    1
'T1                 ' 'AG' 305514.36 847101.08 305521.91 847079.78 44.00 4.278  0.00  4.00
    1
'T2                 ' 'AG' 305521.91 847079.78 305547.97 846943.24 44.00 4.278  0.00  4.00
    1
'T2a                ' 'AG' 305523.51 847052.30 305524.54 847040.14  8.00 104.854  0.00  4.00
    1
'T2b                ' 'AG' 305528.04 847027.71 305529.07 847015.55  9.00 104.854  0.00  4.00
    1
'T2c                ' 'AG' 305532.58 847003.12 305533.61 846990.97  9.00 104.854  0.00  4.00
    1
'T2d                ' 'AG' 305536.48 846985.08 305536.93 846972.89  9.00 104.854  0.00  4.00
    1
'T2e                ' 'AG' 305539.79 846967.08 305540.25 846954.89  9.00 104.854  0.00  4.00
    1
'T3                 ' 'AG' 305547.97 846943.24 305516.24 846936.31 44.00 4.278  0.00  4.00
    1
'T4                 ' 'AG' 305516.24 846936.31 305492.50 847070.45 81.00 4.278  0.00  4.00
    1
```

```
'T4a                   ' 'AG' 305517.88 846948.27 305517.42 846960.46  8.00 104.854  0.00  4.00
    1
'T4b                   ' 'AG' 305514.56 846966.27 305514.10 846978.46  8.00 104.854  0.00  4.00
    1
'T4c                   ' 'AG' 305510.60 846990.80 305509.57 847002.96  7.00 104.854  0.00  4.00
    1
'T4d                   ' 'AG' 305506.07 847015.39 305505.04 847027.54  7.00 104.854  0.00  4.00
    1
'T4e                   ' 'AG' 305501.53 847039.97 305500.50 847052.13  7.00 104.854  0.00  4.00
    1
'T5                    ' 'AG' 305492.50 847070.45 305525.50 847080.92 81.00 4.278  0.00  4.00
    1
'T6                    ' 'AG' 305525.50 847080.92 305522.19 847103.84 81.00 4.278  0.00  4.00
    1
'T7                    ' 'AG' 305496.07 846923.94 305516.24 846936.31 37.00 4.278  0.00  4.00
    1
'Pq1                   ' 'AG' 305577.01 847283.95 305467.91 847250.89  2.13 1  0.00  6.00
    1
'Pq2                   ' 'AG' 305572.73 847267.23 305480.95 847239.08  4.10 1  0.00 12.00
    1
'Pq3                   ' 'AG' 305577.13 847252.89 305485.35 847224.74  2.05 1  0.00  6.00
    1
'Pq4                   ' 'AG' 305585.66 847225.03 305502.76 847198.61  0.61 1  0.00  6.00
    1
'Pq5                   ' 'AG' 305590.06 847210.69 305498.59 847181.53  1.42 1  0.00 12.00
    1
'Pq6                   ' 'AG' 305595.34 847193.48 305503.87 847164.32  1.42 1  0.00 12.00
    1
'Pq7                   ' 'AG' 305600.62 847176.27 305509.15 847147.11  1.34 1  0.00 12.00
    1
'Pq8                   ' 'AG' 305613.59 847164.67 305504.99 847129.99  0.67 1  0.00  6.00
    1
'Pq9                   ' 'AG' 305465.96 847247.03 305473.00 847224.08  2.21 1  0.00  6.00
    1
'Pq10                  ' 'AG' 305483.65 847189.30 305501.25 847131.94  0.76 1  0.00  6.00
    1
'Pq11                  ' 'AG' 305612.04 847179.95 305615.56 847168.48  0.63 1  0.00  6.00
    1
'Pq12                  ' 'AG' 305597.95 847225.87 305606.76 847197.16  0.76 1  0.00  6.00
    1
'Pq13                  ' 'AG' 305580.77 847281.95 305584.20 847270.75  1.94 1  0.00  6.00
    1
'Pq14                  ' 'AG' 305418.67 847109.84 305392.15 847101.75  5.31 100  0.00  6.00
    1
'F2-Build              ' 'AG' 305517.60 847107.61 305458.19 847086.97 59.00 2.761  0.00 13.20
 1.00   0.00 5 300.00  0.00 'Y'  10   0  36
```



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*********************************************
 **
 ** CAL3QHC Combined Output File Produced by:
 ** CALRoads View Ver. 3.5.4
 ** Lakes Environmental Software Inc.
 ** Date: 1/18/2006 8:56:47 AM
 ** File: C:\33015347-TTC\Models\Appendix D - Finch Station\Run D-4, Finch, Build, NOx\Run D-4, Finch, Build, NOx, Jan 18,06.ou2
 **
 *********************************************

                CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 95221                    PAGE  1

      JOB: Run D-4, Finch, Build, NOx                          RUN: Run D-4, Build, NOx

      DATE :  1/18/ 6
      TIME :  8:56:46

         The MODE flag has been set to P for calculating PM averages.

       SITE & METEOROLOGICAL VARIABLES
       -------------------------------
       VS =   0.0 CM/S       VD =   0.0 CM/S       Z0 = 321. CM
        U =  1.0 M/S         CLAS =   5  (E)     ATIM =  60. MINUTES     MIXH =   300. M   AMB =  0.0 ug/m**3

       LINK VARIABLES
       --------------
         LINK DESCRIPTION     *          LINK COORDINATES (M)           *    LENGTH  BRG TYPE   VPH    EF      H   W    V/C QUEUE
                              *   X1        Y1        X2        Y2      *     (M)   (DEG)            (G/MI)   (M)  (M)        (VEH)
      ------------------------*-----------------------------------------*------------------------------------------------------------
       1. A1                  * 305014.3  846633.2  305235.9  846702.1 *     232.     73. AG   2136.   0.3    0.0 13.2
       2. A2                  * 305235.9  846702.1  305258.4  846711.4 *      24.     67. AG   2136.   0.3    0.0 13.2
       3. A3                  * 305258.4  846711.4  305297.7  846733.4 *      45.     61. AG   2136.   0.3    0.0 13.2
       4. Adep1               * 305297.7  846733.4  305349.8  846769.9 *      64.     55. AG   2126.   0.3    0.0 13.2
       5. Adep2               * 305349.8  846769.9  305395.0  846794.5 *      51.     62. AG   2126.   0.3    0.0 13.2
       6. D1                  * 305391.6  846802.2  305333.9  846767.6 *      67.    239. AG   2367.   0.3    0.0 13.2
       7. D2                  * 305333.9  846767.6  305292.9  846738.9 *      50.    235. AG   2367.   0.3    0.0 13.2
       8. Ddep1               * 305292.9  846738.9  305264.8  846721.6 *      33.    238. AG   2347.   0.3    0.0 13.2
       9. Ddep2               * 305264.8  846721.6  305233.7  846708.2 *      34.    247. AG   2347.   0.3    0.0 13.2
      10. Ddep3               * 305233.7  846708.2  305012.3  846638.9 *     232.    253. AG   2347.   0.3    0.0 13.2
      11. B1                  * 305395.0  846794.5  305429.9  846807.2 *      37.     70. AG   1469.   0.3    0.0 13.2
      12. B2                  * 305429.5  846809.0  305453.6  846816.6 *      25.     73. AG   1469.   0.3    0.0 16.8
      13. Bdep                * 305508.9  846831.2  305730.2  846898.9 *     231.     73. AG   1645.   0.3    0.0 13.2
      14. C1                  * 305727.6  846909.0  305628.6  846878.9 *     103.    253. AG   1655.   0.3    0.0 13.2
      15. C2                  * 305629.1  846876.6  305573.5  846860.4 *      58.    254. AG   1655.   0.3    0.0 16.8
      16. Cdep1               * 305505.8  846842.1  305428.9  846817.4 *      81.    252. AG   1583.   0.3    0.0 13.2
      17. Cdep2               * 305428.9  846817.4  305391.6  846802.2 *      40.    248. AG   1583.   0.3    0.0 13.2
      18. H1                  * 305476.6  846960.9  305487.8  846904.1 *      58.    169. AG   1808.   0.3    0.0 16.8
      19. H2                  * 305486.4  846903.8  305500.3  846834.6 *      71.    169. AG   1808.   0.3    0.0 20.4
      20. Hdep                * 305500.3  846834.6  305560.2  846539.9 *     301.    169. AG   1740.   0.3    0.0 13.2
      21. I1                  * 305567.9  846541.4  305542.6  846683.1 *     144.    350. AG   1430.   0.3    0.0 13.2
      22. I2                  * 305540.8  846682.9  305526.4  846765.2 *      84.    350. AG   1430.   0.3    0.0 16.8
      23. I3                  * 305527.8  846765.7  305514.2  846839.1 *      75.    349. AG   1430.   0.3    0.0 20.4
      24. Idep1               * 305516.2  846839.8  305503.4  846898.2 *      60.    348. AG   1394.   0.3    0.0 16.8
      25. Idep2               * 305501.2  846897.7  305488.4  846963.4 *      67.    349. AG   1394.   0.3    0.0 13.2
      26. E1                  * 305122.0  846979.7  305459.1  847081.6 *     352.     73. AG    201.   0.3    0.0  9.6
      27. Edep1-Build         * 305459.1  847081.6  305516.3  847101.8 *      61.     71. AG     18.   2.8    0.0  9.6
      28. F1-Build            * 305639.8  847150.1  305517.6  847107.6 *     129.    251. AG     26.   2.8    0.0 13.2
      29. Fdep1               * 305458.2  847087.0  305121.3  846983.2 *     352.    253. AG    321.   0.3    0.0  9.6
      30. G1                  * 305419.5  847258.6  305442.1  847133.1 *     128.    170. AG   1721.   0.3    0.0 13.2
      31. G2-Build            * 305442.0  847133.1  305451.2  847081.8 *      52.    170. AG   1721.   0.3    0.0 20.4
      32. Gdep1               * 305451.2  847081.7  305465.5  847006.9 *      76.    169. AG   1777.   0.3    0.0 13.2
      33. J1                  * 305488.4  846963.4  305480.7  847006.5 *      44.    350. AG   1324.   0.3    0.0 13.2
      34. J2-Build            * 305480.7  847006.5  305466.2  847086.8 *      82.    350. AG   1324.   0.3    0.0 20.4
      35. Jdep1               * 305466.2  847086.8  305449.9  847176.3 *      91.    350. AG   1189.   0.3    0.0 13.2
      36. AqT+L+R             * 305288.3  846727.7  305242.1  846702.6 *      53.    241. AG      2. 100.0    0.0  7.2 0.84    8.8
      37. DqT+L+R             * 305302.5  846745.4  305364.9  846787.1 *      75.     56. AG      2. 100.0    0.0  7.2 0.93   12.5
```

38. BqT	*	305488.5	846825.1	305422.4	846803.5	*	69.	252.	AG	5.	100.0	0.0	7.2	0.89	11.6
39. BqL	*	305487.0	846830.2	305475.7	846826.6	*	12.	252.	AG	2.	100.0	0.0	3.6	0.17	2.0
40. BqR	*	305490.0	846819.8	305467.8	846813.4	*	23.	254.	AG	2.	100.0	0.0	3.6	0.35	3.8
41. CqT	*	305527.1	846848.4	305616.2	846875.3	*	93.	73.	AG	5.	100.0	0.0	7.2	0.98	15.5
42. CqL	*	305528.2	846843.8	305544.3	846848.5	*	17.	74.	AG	2.	100.0	0.0	3.6	0.24	2.8
43. CqR	*	305526.0	846852.9	305550.9	846860.2	*	26.	74.	AG	2.	100.0	0.0	3.6	0.39	4.3
44. HqT	*	305496.6	846853.2	305427.3	847196.4	*	350.	349.	AG	5.	100.0	0.0	7.2	1.13	58.4

Spadina Subway Extension - Downsview Station to Steeles Avenue
Environmental Assessment, Air Quality Assessment

Appendix D: Finch, Intersection Only
Run D4, Build, NOx - Output File

JOB: Run D-4, Finch, Build, NOx RUN: Run D-4, Build, NOx

DATE : 1/18/ 6
TIME : 8:56:46

LINK VARIABLES

LINK DESCRIPTION	*	X1	Y1	X2	Y2	*	LENGTH (M)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (M)	W (M)	V/C	QUEUE (VEH)
45. HqL	*	305502.2	846854.8	305495.9	846885.2	*	31.	348.	AG	2.	100.0	0.0	3.6	0.43	5.2
46. HqR	*	305491.7	846851.8	305489.4	846863.2	*	12.	348.	AG	2.	100.0	0.0	3.6	0.18	1.9
47. IqT	*	305518.0	846818.4	305562.7	846570.1	*	252.	170.	AG	5.	100.0	0.0	7.2	1.11	42.0
48. IqL	*	305512.9	846816.9	305517.6	846792.2	*	25.	169.	AG	2.	100.0	0.0	3.6	0.37	4.2
49. IqR	*	305523.2	846819.8	305526.6	846800.8	*	19.	170.	AG	3.	100.0	0.0	3.6	0.35	3.2
50. EqL Build	*	305438.0	847075.1	305428.3	847072.2	*	10.	253.	AG	3.	100.0	0.0	3.6	0.17	1.7
51. EqR Build	*	305439.2	847070.7	305419.2	847065.6	*	21.	256.	AG	3.	100.0	0.0	3.6	0.36	3.5
52. FqL+R	*	305474.6	847093.2	305478.8	847094.8	*	4.	70.	AG	49.	100.0	0.0	7.2	0.08	0.7
53. GqT	*	305448.9	847094.5	305438.8	847150.9	*	57.	350.	AG	3.	100.0	0.0	7.2	0.69	9.6
54. GqL	*	305455.0	847096.3	305454.8	847097.0	*	1.	349.	AG	9.	100.0	0.0	3.6	0.01	0.1
55. GqR	*	305443.0	847092.8	305441.8	847099.9	*	7.	350.	AG	1.	100.0	0.0	3.6	0.09	1.2
56. JqT	*	305469.9	847066.3	305475.5	847035.5	*	31.	170.	AG	2.	100.0	0.0	7.2	0.43	5.2
57. JqL	*	305464.7	847064.8	305467.0	847052.6	*	12.	169.	AG	1.	100.0	0.0	3.6	0.17	2.1
58. Edep2-Build	*	305516.3	847101.8	305641.2	847145.8	*	132.	71.	AG	22.	2.8	0.0	9.6		
59. P1	*	305472.8	847245.9	305478.0	847228.6	*	18.	163.	AG	7.	0.5	0.0	6.0		
60. P2	*	305472.8	847245.9	305575.7	847277.2	*	108.	73.	AG	57.	0.5	0.0	6.0		
61. P3	*	305478.0	847228.6	305581.0	847259.8	*	108.	73.	AG	59.	0.5	0.0	6.0		
62. P4	*	305575.7	847277.2	305581.0	847259.8	*	18.	163.	AG	61.	0.5	0.0	6.0		
63. P5	*	305581.0	847259.8	305608.3	847268.0	*	29.	73.	AG	120.	0.5	0.0	6.0		
64. P6	*	305608.3	847268.0	305597.3	847304.0	*	38.	343.	AG	120.	0.3	0.0	12.0		
65. P7	*	305490.0	847188.8	305495.5	847170.9	*	19.	163.	AG	2.	0.5	0.0	6.0		
66. P8	*	305495.5	847170.9	305500.7	847153.8	*	18.	163.	AG	4.	0.5	0.0	6.0		
67. P9	*	305505.9	847136.8	305500.7	847153.8	*	18.	343.	AG	2.	0.5	0.0	6.0		
68. P10	*	305490.0	847188.8	305592.9	847220.8	*	108.	73.	AG	17.	0.5	0.0	6.0		
69. P11	*	305495.5	847170.9	305597.8	847204.1	*	108.	72.	AG	18.	0.5	0.0	6.0		
70. P12	*	305500.7	847153.8	305603.2	847185.9	*	107.	73.	AG	22.	0.5	0.0	6.0		
71. P13	*	305505.9	847136.8	305608.2	847169.1	*	107.	73.	AG	19.	0.5	0.0	6.0		
72. P14	*	305592.9	847220.8	305597.8	847204.1	*	17.	163.	AG	19.	0.5	0.0	6.0		
73. P15	*	305597.8	847204.1	305603.2	847185.9	*	19.	163.	AG	38.	0.5	0.0	6.0		
74. P16	*	305608.2	847169.1	305603.2	847185.9	*	18.	343.	AG	20.	0.5	0.0	6.0		
75. P17	*	305603.2	847185.9	305622.2	847191.9	*	20.	73.	AG	80.	0.5	0.0	6.0		
76. P18	*	305622.2	847191.9	305635.1	847148.9	*	45.	163.	AG	80.	0.3	0.0	12.0		
77. B3	*	305454.2	846814.6	305508.3	846831.2	*	57.	73.	AG	1469.	0.3	0.0	20.4		
78. C3	*	305573.0	846862.2	305505.8	846842.1	*	70.	253.	AG	1655.	0.3	0.0	20.4		
79. Gdep2	*	305467.6	847007.6	305476.6	846960.9	*	48.	169.	AG	1777.	0.3	0.0	16.8		
80. Jdep2	*	305447.9	847175.9	305432.8	847260.2	*	86.	350.	AG	1189.	0.3	0.0	16.8		
81. P19	*	305436.9	847121.6	305424.7	847117.9	*	13.	253.	AG	104.	0.4	0.0	6.0		
82. P20	*	305424.7	847117.9	305384.2	847105.7	*	42.	253.	AG	82.	0.4	0.0	6.0		
83. P21	*	305424.7	847117.9	305428.4	847105.6	*	13.	163.	AG	22.	0.4	0.0	6.0		
84. P22	*	305428.4	847105.6	305387.9	847093.4	*	42.	253.	AG	104.	0.4	0.0	6.0		
85. P23	*	305387.9	847093.4	305396.1	847066.8	*	28.	163.	AG	104.	0.4	0.0	6.0		
86. P24	*	305384.2	847105.7	305387.9	847093.4	*	13.	163.	AG	10.	0.4	0.0	6.0		
87. T1	*	305514.4	847101.1	305521.9	847079.8	*	23.	161.	AG	44.	4.3	0.0	4.0		
88. T2	*	305521.9	847079.8	305548.0	846943.2	*	139.	169.	AG	44.	4.3	0.0	4.0		
89. T2a	*	305523.5	847052.3	305524.5	847040.1	*	12.	175.	AG	8.	104.9	0.0	4.0		
90. T2b	*	305528.0	847027.7	305529.1	847015.6	*	12.	175.	AG	9.	104.9	0.0	4.0		
91. T2c	*	305532.6	847003.1	305533.6	846991.0	*	12.	175.	AG	9.	104.9	0.0	4.0		
92. T2d	*	305536.5	846985.1	305536.9	846972.9	*	12.	178.	AG	9.	104.9	0.0	4.0		
93. T2e	*	305539.8	846967.1	305540.2	846954.9	*	12.	178.	AG	9.	104.9	0.0	4.0		
94. T3	*	305548.0	846943.2	305516.2	846936.3	*	32.	258.	AG	44.	4.3	0.0	4.0		
95. T4	*	305516.2	846936.3	305492.5	847070.4	*	136.	350.	AG	81.	4.3	0.0	4.0		

PAGE 3

JOB: Run D-4, Finch, Build, NOx RUN: Run D-4, Build, NOx

DATE : 1/18/ 6
TIME : 8:56:46

LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	LENGTH (M)	BRG TYPE (DEG)	VPH	EF (G/MI)	H (M)	W (M)	V/C QUEUE (VEH)
96. T4a	305517.9	846948.2	305517.4	846960.4	12.	358. AG	8.	104.9	0.0	4.0	
97. T4b	305514.6	846966.2	305514.1	846978.4	12.	358. AG	8.	104.9	0.0	4.0	
98. T4c	305510.6	846990.8	305509.6	847002.9	12.	355. AG	7.	104.9	0.0	4.0	
99. T4d	305506.1	847015.4	305505.0	847027.6	12.	355. AG	7.	104.9	0.0	4.0	
100. T4e	305501.5	847040.0	305500.5	847052.1	12.	355. AG	7.	104.9	0.0	4.0	
101. T5	305492.5	847070.4	305525.5	847080.9	35.	72. AG	81.	4.3	0.0	4.0	
102. T6	305525.5	847080.9	305522.2	847103.8	23.	352. AG	81.	4.3	0.0	4.0	
103. T7	305496.1	846923.9	305516.2	846936.3	24.	58. AG	37.	4.3	0.0	4.0	
104. Pq1	305577.0	847283.9	305467.9	847250.9	114.	253. AG	2.	1.0	0.0	6.0	
105. Pq2	305572.7	847267.2	305480.9	847239.1	96.	253. AG	4.	1.0	0.0	12.0	
106. Pq3	305577.1	847252.9	305485.3	847224.8	96.	253. AG	2.	1.0	0.0	6.0	
107. Pq4	305585.7	847225.0	305502.8	847198.6	87.	252. AG	1.	1.0	0.0	6.0	
108. Pq5	305590.1	847210.7	305498.6	847181.5	96.	252. AG	1.	1.0	0.0	12.0	
109. Pq6	305595.3	847193.5	305503.9	847164.3	96.	252. AG	1.	1.0	0.0	12.0	
110. Pq7	305600.6	847176.2	305509.2	847147.1	96.	252. AG	1.	1.0	0.0	12.0	
111. Pq8	305613.6	847164.7	305505.0	847130.0	114.	252. AG	1.	1.0	0.0	6.0	
112. Pq9	305466.0	847247.0	305473.0	847224.1	24.	163. AG	2.	1.0	0.0	6.0	
113. Pq10	305483.7	847189.3	305501.2	847131.9	60.	163. AG	1.	1.0	0.0	6.0	
114. Pq11	305612.0	847179.9	305615.6	847168.5	12.	163. AG	1.	1.0	0.0	6.0	
115. Pq12	305597.9	847225.9	305606.8	847197.2	30.	163. AG	1.	1.0	0.0	6.0	
116. Pq13	305580.8	847281.9	305584.2	847270.8	12.	163. AG	2.	1.0	0.0	6.0	
117. Pq14	305418.7	847109.8	305392.2	847101.8	28.	253. AG	5.	100.0	0.0	6.0	
118. F2-Build	305517.6	847107.6	305458.2	847087.0	63.	251. AG	59.	2.8	0.0	13.2	

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JOB: Run D-4, Finch, Build, NOx RUN: Run D-4, Build, NOx

DATE : 1/18/ 6
TIME : 8:56:46

36. AqT+L+R	100	29	2.0	2136	1900	1.35	1	3
37. DqT+L+R	100	29	2.0	2367	1900	1.35	1	3
38. BqT	100	63	2.0	1119	1900	1.35	1	3
39. BqL	100	55	2.0	130	1900	1.35	1	3
40. BqR	100	63	2.0	220	1900	1.35	1	3
41. CqT	100	63	2.0	1224	1900	1.35	1	3
42. CqL	100	55	2.0	184	1900	1.35	1	3
43. CqR	100	63	2.0	247	1900	1.35	1	3
44. HqT	100	65	2.0	1336	1900	1.35	1	3
45. HqL	100	51	2.0	365	1900	1.35	1	3
46. HqR	100	65	2.0	107	1900	1.35	1	3
47. IqT	100	72	2.0	1017	1900	1.35	1	3
48. IqL	100	60	2.0	252	1900	1.35	1	3
49. IqR	100	72	2.0	161	1900	1.35	1	3
50. EqL Build	120	92	2.0	66	1900	1.35	1	3
51. EqR Build	120	92	2.0	135	1900	1.35	1	3
52. FqL+R	120	92	2.0	59	1900	11.92	1	3
53. GqT	120	43	2.0	1601	1900	1.35	1	3
54. GqL	120	34	2.0	12	1900	11.92	1	3
55. GqR	120	43	2.0	102	1900	1.35	1	3
56. JqT	120	34	2.0	1105	1900	1.35	1	3
57. JqL	120	34	2.0	219	1900	1.35	1	3

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. R1	305026.0	846622.4	1.8
2. R2	305027.7	846657.6	1.8
3. R3	305014.0	846809.1	1.8

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JOB: Run D-4, Finch, Build, NOx RUN: Run D-4, Build, NOx

RECEPTOR	X	Y	Z
4. R4	305067.7	846567.4	1.8
5. R5	305203.0	846483.8	1.8
6. R6	305199.9	846580.4	1.8
7. R7	305182.4	846670.9	1.8
8. R8	305186.1	846706.2	1.8
9. R9	305124.8	846761.0	1.8
10. R10	305102.2	846912.8	1.8
11. R11	305121.8	846972.0	1.8
12. R12	305139.4	846996.6	1.8
13. R13	305386.0	846466.8	1.8
14. R14	305360.1	846590.8	1.8
15. R15	305290.8	846714.0	1.8
16. R16	305270.9	846740.4	1.8
17. R17	305325.9	846737.1	1.8
18. R18	305299.7	846756.2	1.8
19. R19	305300.2	846784.2	1.8
20. R20	305319.1	846854.1	1.8
21. R21	305242.6	846888.8	1.8
22. R22	305218.5	846948.6	1.8
23. R23	305405.0	846785.8	1.8
24. R24	305356.8	846807.8	1.8
25. R25	305404.9	846846.0	1.8
26. R26	305509.6	846551.2	1.8
27. R27	305538.8	846590.8	1.8
28. R28	305515.4	846712.1	1.8
29. R29	305477.9	846808.6	1.8
30. R30	305459.8	846846.7	1.8
31. R31	305483.0	846866.3	1.8
32. R32	305463.2	846938.5	1.8
33. R33	305441.1	846965.1	1.8
34. R34	305451.9	847007.1	1.8
35. R35	305440.8	847065.1	1.8
36. R36	305329.2	847036.3	1.8
37. R37	305323.9	847053.4	1.8
38. R38	305436.4	847090.1	1.8
39. R39	305435.2	847109.9	1.8
40. R40	305415.9	847229.3	1.8
41. R41	305262.1	847155.9	1.8
42. R42	305252.1	847170.9	1.8
43. R43	305390.4	847362.5	1.8
44. R44	305577.3	846558.6	1.8
45. R45	305549.2	846718.1	1.8
46. R46	305535.1	846789.9	1.8
47. R47	305530.2	846824.7	1.8
48. R48	305550.5	846866.2	1.8
49. R49	305552.2	846890.1	1.8
50. R50	305516.2	846887.3	1.8
51. R51	305512.9	846918.9	1.8
52. R52	305504.6	846950.2	1.8
53. R53	305495.2	846986.1	1.8
54. R54	305486.9	847033.0	1.8
55. R55	305478.7	847079.6	1.8
56. R56	305473.4	847107.9	1.8
57. R57	305460.0	847180.8	1.8
58. R58	305447.7	847237.2	1.8
59. R59	305425.3	847371.6	1.8
60. R60	305655.8	846580.9	1.8

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JOB: Run D-4, Finch, Build, NOx RUN: Run D-4, Build, NOx

RECEPTOR	X	Y	Z
61. R61	305681.0	846677.8	1.8
62. R62	305627.4	846786.8	1.8
63. R63	305592.7	846847.6	1.8
64. R64	305564.3	846944.9	1.8
65. R65	305551.7	847005.8	1.8
66. R66	305541.0	847061.1	1.8
67. R67	305540.7	847103.4	1.8
68. R68	305513.2	847122.9	1.8
69. R69	305493.1	847213.1	1.8
70. R70	305472.7	847255.6	1.8
71. R71	305693.5	846907.9	1.8
72. R72	305779.1	846902.1	1.8
73. R73	305776.5	846932.9	1.8
74. R74	305669.6	847005.7	1.8
75. R75	305706.9	847010.6	1.8
76. R76	305618.3	847131.2	1.8
77. R77	305606.9	847153.8	1.8
78. R78	305656.0	847175.2	1.8
79. R79	305602.6	847174.8	1.8
80. R80	305592.4	847208.3	1.8
81. R81	305595.3	847249.1	1.8
82. R82	305561.0	847284.3	1.8
83. R83	305737.5	846783.5	1.8
84. R84	305702.6	846878.4	1.8
85. R85	305428.4	847131.5	1.8
86. R86	305382.9	847114.7	1.8
87. R87	305379.6	847091.7	1.8
88. R88	305516.9	847059.8	1.8
89. R89	305534.0	846967.1	1.8
90. R90	305523.8	846948.2	1.8
91. R91	305507.2	847036.2	1.8
92. R92	305491.8	846813.0	1.8
93. R93	305843.4	846846.6	1.8
94. R94	305523.6	846860.0	1.8
95. G1_1	305005.3	846469.4	1.8
96. G1_2	305005.3	846569.4	1.8
97. G1_3	305005.3	846669.4	1.8
98. G1_4	305005.3	846769.4	1.8
99. G1_5	305005.3	846869.4	1.8
**. G1_6	305005.3	846969.4	1.8
**. G1_7	305005.3	847069.4	1.8
**. G1_8	305005.3	847169.4	1.8
**. G1_9	305005.3	847269.4	1.8
**. G1_10	305005.3	847369.4	1.8
**. G1_11	305105.3	846469.4	1.8
**. G1_12	305105.3	846569.4	1.8
**. G1_13	305105.3	846669.4	1.8
**. G1_14	305105.3	846769.4	1.8
**. G1_15	305105.3	846869.4	1.8
**. G1_16	305105.3	846969.4	1.8
**. G1_17	305105.3	847069.4	1.8
**. G1_18	305105.3	847169.4	1.8
**. G1_19	305105.3	847269.4	1.8
**. G1_20	305105.3	847369.4	1.8
**. G1_21	305205.3	846469.4	1.8
**. G1_22	305205.3	846569.4	1.8
**. G1_23	305205.3	846669.4	1.8

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JOB: Run D-4, Finch, Build, NOx RUN: Run D-4, Build, NOx

RECEPTOR	COORDINATES (M) X	Y	Z
**. G1_24	305205.3	846769.4	1.8
**. G1_25	305205.3	846869.4	1.8
**. G1_26	305205.3	846969.4	1.8
**. G1_27	305205.3	847069.4	1.8
**. G1_28	305205.3	847169.4	1.8
**. G1_29	305205.3	847269.4	1.8
**. G1_30	305205.3	847369.4	1.8
**. G1_31	305305.3	846469.4	1.8
**. G1_32	305305.3	846569.4	1.8
**. G1_33	305305.3	846669.4	1.8
**. G1_34	305305.3	846769.4	1.8
**. G1_35	305305.3	846869.4	1.8
**. G1_36	305305.3	846969.4	1.8
**. G1_37	305305.3	847069.4	1.8
**. G1_38	305305.3	847169.4	1.8
**. G1_39	305305.3	847269.4	1.8
**. G1_40	305305.3	847369.4	1.8
**. G1_41	305405.3	846469.4	1.8
**. G1_42	305405.3	846569.4	1.8
**. G1_43	305405.3	846669.4	1.8
**. G1_44	305405.3	846769.4	1.8
**. G1_45	305405.3	846869.4	1.8
**. G1_46	305405.3	846969.4	1.8
**. G1_47	305405.3	847069.4	1.8
**. G1_48	305405.3	847169.4	1.8
**. G1_49	305405.3	847269.4	1.8
**. G1_50	305405.3	847369.4	1.8
**. G1_51	305505.3	846469.4	1.8
**. G1_52	305505.3	846569.4	1.8
**. G1_53	305505.3	846669.4	1.8
**. G1_54	305505.3	846769.4	1.8
**. G1_55	305505.3	846869.4	1.8
**. G1_56	305505.3	846969.4	1.8
**. G1_57	305505.3	847069.4	1.8
**. G1_58	305505.3	847169.4	1.8
**. G1_59	305505.3	847269.4	1.8
**. G1_60	305505.3	847369.4	1.8
**. G1_61	305605.3	846469.4	1.8
**. G1_62	305605.3	846569.4	1.8
**. G1_63	305605.3	846669.4	1.8
**. G1_64	305605.3	846769.4	1.8
**. G1_65	305605.3	846869.4	1.8
**. G1_66	305605.3	846969.4	1.8
**. G1_67	305605.3	847069.4	1.8
**. G1_68	305605.3	847169.4	1.8
**. G1_69	305605.3	847269.4	1.8
**. G1_70	305605.3	847369.4	1.8
**. G1_71	305705.3	846469.4	1.8
**. G1_72	305705.3	846569.4	1.8
**. G1_73	305705.3	846669.4	1.8
**. G1_74	305705.3	846769.4	1.8
**. G1_75	305705.3	846869.4	1.8
**. G1_76	305705.3	846969.4	1.8
**. G1_77	305705.3	847069.4	1.8
**. G1_78	305705.3	847169.4	1.8
**. G1_79	305705.3	847269.4	1.8
**. G1_80	305705.3	847369.4	1.8

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JOB: Run D-4, Finch, Build, NOx RUN: Run D-4, Build, NOx

RECEPTOR	COORDINATES (M) X	Y	Z
**. G1_81	305805.3	846469.4	1.8
**. G1_82	305805.3	846569.4	1.8
**. G1_83	305805.3	846669.4	1.8
**. G1_84	305805.3	846769.4	1.8
**. G1_85	305805.3	846869.4	1.8
**. G1_86	305805.3	846969.4	1.8
**. G1_87	305805.3	847069.4	1.8
**. G1_88	305805.3	847169.4	1.8
**. G1_89	305805.3	847269.4	1.8
**. G1_90	305805.3	847369.4	1.8

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: .-360.

WIND ANGLE (DEGR)	CONCENTRATION (ug/m**3) REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
.	37.0	0.0	0.0	14.0	9.0	13.0	38.0	1.0	0.0	0.0	3.0	0.0	12.0	14.0	43.0	1.0	47.0	1.0	1.0	2.0
10.	39.0	0.0	0.0	15.0	12.0	15.0	39.0	1.0	1.0	1.0	4.0	0.0	19.0	20.0	49.0	3.0	54.0	4.0	4.0	4.0
20.	40.0	1.0	0.0	17.0	17.0	21.0	42.0	3.0	1.0	1.0	5.0	0.0	19.0	23.0	59.0	7.0	62.0	9.0	9.0	10.0
30.	46.0	2.0	1.0	20.0	19.0	27.0	51.0	7.0	4.0	2.0	6.0	0.0	16.0	21.0	68.0	12.0	66.0	13.0	13.0	14.0
40.	53.0	5.0	3.0	27.0	16.0	26.0	61.0	10.0	7.0	4.0	8.0	1.0	12.0	18.0	71.0	15.0	64.0	17.0	14.0	15.0
50.	63.0	9.0	6.0	31.0	11.0	20.0	76.0	15.0	9.0	7.0	12.0	4.0	9.0	14.0	60.0	27.0	55.0	32.0	13.0	15.0
60.	73.0	20.0	8.0	23.0	7.0	12.0	78.0	33.0	10.0	10.0	16.0	8.0	6.0	10.0	43.0	58.0	43.0	67.0	18.0	14.0
70.	58.0	47.0	8.0	10.0	5.0	7.0	47.0	56.0	15.0	10.0	17.0	15.0	3.0	8.0	22.0	80.0	26.0	97.0	36.0	14.0
80.	23.0	65.0	12.0	4.0	3.0	6.0	16.0	62.0	23.0	10.0	14.0	20.0	1.0	8.0	10.0	71.0	13.0	89.0	49.0	19.0
90.	6.0	64.0	16.0	3.0	1.0	4.0	7.0	61.0	23.0	12.0	11.0	20.0	0.0	7.0	8.0	58.0	9.0	72.0	46.0	26.0
100.	2.0	55.0	15.0	1.0	0.0	2.0	5.0	59.0	21.0	15.0	13.0	21.0	0.0	5.0	8.0	54.0	9.0	64.0	40.0	27.0
110.	0.0	48.0	14.0	0.0	0.0	0.0	2.0	52.0	20.0	14.0	14.0	21.0	0.0	2.0	7.0	51.0	8.0	59.0	37.0	25.0
120.	0.0	43.0	12.0	0.0	0.0	0.0	0.0	46.0	17.0	13.0	13.0	20.0	0.0	0.0	4.0	47.0	8.0	55.0	36.0	24.0
130.	0.0	40.0	10.0	0.0	0.0	0.0	0.0	42.0	15.0	10.0	11.0	18.0	0.0	0.0	1.0	42.0	4.0	50.0	32.0	23.0
140.	0.0	39.0	9.0	0.0	0.0	0.0	0.0	40.0	14.0	8.0	9.0	15.0	0.0	0.0	0.0	41.0	1.0	48.0	28.0	20.0
150.	0.0	38.0	9.0	0.0	0.0	0.0	0.0	38.0	14.0	8.0	7.0	13.0	0.0	0.0	0.0	42.0	0.0	46.0	26.0	17.0
160.	0.0	38.0	9.0	0.0	0.0	0.0	0.0	39.0	14.0	7.0	7.0	12.0	0.0	0.0	0.0	41.0	0.0	44.0	26.0	16.0
170.	0.0	37.0	8.0	0.0	0.0	0.0	0.0	38.0	14.0	7.0	6.0	12.0	0.0	0.0	0.0	42.0	0.0	45.0	26.0	16.0
180.	0.0	37.0	5.0	0.0	0.0	0.0	0.0	39.0	14.0	7.0	6.0	11.0	0.0	0.0	0.0	45.0	0.0	47.0	27.0	16.0
190.	0.0	38.0	2.0	0.0	0.0	0.0	0.0	41.0	14.0	6.0	6.0	11.0	0.0	0.0	0.0	47.0	0.0	49.0	27.0	17.0
200.	0.0	36.0	0.0	0.0	0.0	0.0	0.0	42.0	15.0	3.0	3.0	9.0	0.0	0.0	0.0	49.0	0.0	54.0	28.0	16.0
210.	0.0	30.0	0.0	0.0	0.0	0.0	0.0	46.0	14.0	1.0	0.0	7.0	0.0	0.0	0.0	50.0	0.0	59.0	29.0	15.0
220.	0.0	20.0	0.0	0.0	0.0	0.0	0.0	51.0	10.0	0.0	0.0	6.0	0.0	0.0	0.0	50.0	1.0	62.0	26.0	14.0
230.	0.0	11.0	0.0	0.0	0.0	0.0	0.0	57.0	4.0	0.0	0.0	5.0	0.0	0.0	3.0	50.0	9.0	57.0	24.0	11.0
240.	0.0	4.0	0.0	0.0	0.0	0.0	4.0	57.0	1.0	0.0	0.0	3.0	0.0	0.0	17.0	47.0	36.0	46.0	18.0	5.0
250.	0.0	1.0	0.0	0.0	0.0	0.0	19.0	39.0	0.0	0.0	0.0	1.0	0.0	0.0	50.0	30.0	69.0	25.0	7.0	1.0
260.	0.0	0.0	0.0	0.0	0.0	0.0	42.0	14.0	0.0	0.0	0.0	0.0	0.0	0.0	72.0	9.0	72.0	6.0	1.0	0.0
MAX	73.0	65.0	16.0	31.0	19.0	27.0	78.0	62.0	23.0	15.0	17.0	21.0	19.0	23.0	72.0	80.0	72.0	97.0	49.0	27.0
DEGR.	60	80	90	50	30	30	60	80	80	100	70	100	10	20	260	70	260	70	80	100

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MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: .-360.

WIND * CONCENTRATION
ANGLE * (ug/m**3)

(DEGR)	REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
270.	0.0	0.0	0.0	0.0	0.0	1.0	53.0	2.0	0.0	0.0	0.0	0.0	3.0	67.0	1.0	56.0	0.0	0.0	0.0	
280.	1.0	0.0	0.0	0.0	0.0	4.0	50.0	0.0	0.0	0.0	0.0	0.0	8.0	56.0	0.0	47.0	0.0	0.0	0.0	
290.	3.0	0.0	0.0	0.0	0.0	9.0	45.0	0.0	0.0	0.0	0.0	0.0	2.0	11.0	50.0	0.0	44.0	0.0	0.0	0.0
300.	7.0	0.0	0.0	0.0	2.0	12.0	42.0	0.0	0.0	0.0	0.0	0.0	6.0	11.0	45.0	0.0	42.0	0.0	0.0	0.0
310.	14.0	0.0	0.0	2.0	5.0	12.0	39.0	0.0	0.0	0.0	0.0	0.0	7.0	10.0	42.0	0.0	40.0	0.0	0.0	1.0
320.	22.0	0.0	0.0	6.0	7.0	12.0	37.0	0.0	0.0	0.0	0.0	0.0	7.0	11.0	41.0	0.0	41.0	0.0	0.0	1.0
330.	30.0	0.0	0.0	11.0	8.0	12.0	36.0	0.0	0.0	0.0	0.0	0.0	7.0	11.0	42.0	0.0	41.0	1.0	1.0	1.0
340.	35.0	0.0	0.0	14.0	8.0	12.0	36.0	0.0	0.0	0.0	1.0	0.0	8.0	11.0	41.0	1.0	41.0	1.0	1.0	1.0
350.	36.0	0.0	0.0	14.0	8.0	12.0	36.0	0.0	0.0	0.0	2.0	0.0	8.0	11.0	41.0	1.0	43.0	1.0	1.0	1.0
360.	37.0	0.0	0.0	14.0	9.0	13.0	38.0	1.0	0.0	0.0	3.0	0.0	12.0	14.0	43.0	1.0	47.0	1.0	1.0	2.0
MAX	73.0	65.0	16.0	31.0	19.0	27.0	78.0	62.0	23.0	15.0	17.0	21.0	19.0	23.0	72.0	80.0	72.0	97.0	49.0	27.0
DEGR.	60	80	90	50	30	30	60	80	80	100	70	100	10	20	260	70	260	70	80	100

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: .-360.

WIND * CONCENTRATION
ANGLE * (ug/m**3)

(DEGR)	REC21	REC22	REC23	REC24	REC25	REC26	REC27	REC28	REC29	REC30	REC31	REC32	REC33	REC34	REC35	REC36	REC37	REC38	REC39	REC40
.	1.0	2.0	36.0	3.0	10.0	38.0	78.0	85.0	91.0	33.0	85.0	55.0	31.0	59.0	60.0	6.0	0.0	55.0	63.0	16.0
10.	1.0	2.0	46.0	10.0	18.0	36.0	68.0	77.0	95.0	40.0	82.0	58.0	38.0	62.0	62.0	6.0	0.0	62.0	68.0	22.0
20.	3.0	2.0	52.0	15.0	22.0	30.0	57.0	67.0	87.0	41.0	73.0	55.0	37.0	59.0	55.0	10.0	2.0	59.0	63.0	27.0
30.	7.0	4.0	57.0	17.0	23.0	26.0	50.0	60.0	75.0	37.0	62.0	53.0	36.0	55.0	53.0	15.0	6.0	54.0	57.0	29.0
40.	11.0	8.0	60.0	18.0	23.0	21.0	43.0	53.0	70.0	30.0	52.0	50.0	36.0	52.0	56.0	20.0	10.0	50.0	51.0	30.0
50.	12.0	11.0	65.0	16.0	20.0	20.0	40.0	46.0	72.0	27.0	46.0	48.0	35.0	50.0	57.0	24.0	14.0	47.0	48.0	29.0
60.	13.0	13.0	68.0	18.0	17.0	18.0	38.0	40.0	75.0	28.0	44.0	47.0	33.0	48.0	54.0	26.0	17.0	48.0	46.0	27.0
70.	12.0	12.0	54.0	35.0	21.0	16.0	38.0	39.0	62.0	40.0	50.0	47.0	33.0	47.0	49.0	26.0	22.0	54.0	47.0	28.0
80.	12.0	12.0	29.0	52.0	34.0	14.0	38.0	40.0	40.0	57.0	64.0	44.0	34.0	49.0	46.0	22.0	26.0	62.0	51.0	29.0
90.	17.0	13.0	15.0	53.0	40.0	11.0	38.0	38.0	30.0	60.0	76.0	43.0	35.0	49.0	47.0	18.0	27.0	63.0	54.0	28.0
100.	20.0	15.0	13.0	45.0	39.0	7.0	38.0	39.0	29.0	52.0	79.0	45.0	36.0	50.0	50.0	19.0	26.0	58.0	61.0	28.0
110.	19.0	17.0	13.0	41.0	39.0	3.0	40.0	42.0	28.0	50.0	77.0	48.0	37.0	54.0	55.0	21.0	28.0	56.0	69.0	30.0
120.	18.0	16.0	14.0	41.0	39.0	1.0	41.0	45.0	29.0	52.0	74.0	52.0	38.0	58.0	60.0	22.0	28.0	62.0	75.0	33.0
130.	17.0	15.0	14.0	40.0	38.0	0.0	40.0	49.0	30.0	57.0	75.0	56.0	40.0	60.0	66.0	21.0	27.0	72.0	80.0	38.0
MAX	20.0	17.0	68.0	53.0	40.0	38.0	78.0	85.0	95.0	60.0	85.0	58.0	40.0	62.0	66.0	26.0	28.0	72.0	80.0	38.0
DEGR.	100	110	60	90	90	0	0	0	10	90	0	10	130	10	130	60	110	130	130	130

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MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: .-360.

WIND * CONCENTRATION
ANGLE * (ug/m**3)

(DEGR)	REC21	REC22	REC23	REC24	REC25	REC26	REC27	REC28	REC29	REC30	REC31	REC32	REC33	REC34	REC35	REC36	REC37	REC38	REC39	REC40
140.	14.0	12.0	12.0	36.0	36.0	0.0	38.0	55.0	32.0	60.0	78.0	60.0	43.0	63.0	69.0	20.0	26.0	80.0	87.0	50.0
150.	11.0	9.0	6.0	32.0	30.0	0.0	31.0	61.0	34.0	60.0	86.0	65.0	45.0	68.0	74.0	18.0	23.0	85.0	97.0	72.0
160.	10.0	8.0	1.0	31.0	21.0	0.0	19.0	52.0	26.0	51.0	86.0	62.0	39.0	68.0	72.0	11.0	16.0	83.0	98.0	90.0
170.	10.0	8.0	0.0	32.0	17.0	0.0	8.0	29.0	10.0	36.0	64.0	40.0	22.0	44.0	47.0	8.0	13.0	58.0	72.0	73.0
180.	10.0	8.0	0.0	34.0	17.0	0.0	2.0	8.0	2.0	30.0	38.0	18.0	12.0	18.0	18.0	8.0	13.0	29.0	33.0	32.0
190.	10.0	8.0	0.0	37.0	20.0	0.0	0.0	2.0	0.0	30.0	29.0	12.0	10.0	10.0	9.0	8.0	13.0	22.0	18.0	14.0
200.	9.0	8.0	0.0	40.0	25.0	0.0	0.0	0.0	0.0	30.0	28.0	13.0	12.0	11.0	10.0	7.0	13.0	21.0	16.0	8.0
210.	9.0	6.0	0.0	45.0	32.0	0.0	0.0	0.0	0.0	33.0	28.0	16.0	14.0	12.0	9.0	6.0	12.0	19.0	13.0	6.0
220.	7.0	2.0	2.0	45.0	37.0	0.0	0.0	0.0	0.0	40.0	33.0	18.0	12.0	10.0	6.0	4.0	10.0	14.0	10.0	3.0
230.	2.0	0.0	12.0	36.0	32.0	0.0	0.0	0.0	4.0	52.0	41.0	13.0	8.0	5.0	2.0	1.0	9.0	10.0	8.0	1.0
240.	0.0	0.0	42.0	23.0	18.0	0.0	0.0	0.0	21.0	48.0	35.0	5.0	2.0	1.0	1.0	2.0	9.0	9.0	10.0	0.0
250.	0.0	0.0	66.0	8.0	5.0	0.0	0.0	2.0	44.0	22.0	14.0	1.0	0.0	0.0	5.0	6.0	8.0	7.0	14.0	0.0
260.	0.0	0.0	62.0	1.0	0.0	0.0	0.0	10.0	53.0	4.0	2.0	0.0	0.0	1.0	10.0	10.0	4.0	4.0	16.0	0.0
270.	0.0	0.0	52.0	0.0	0.0	1.0	3.0	15.0	53.0	0.0	0.0	0.0	1.0	2.0	14.0	10.0	1.0	3.0	13.0	0.0
280.	0.0	0.0	45.0	0.0	0.0	5.0	8.0	14.0	51.0	0.0	1.0	1.0	1.0	2.0	16.0	8.0	0.0	5.0	8.0	0.0
290.	0.0	1.0	40.0	0.0	0.0	8.0	9.0	12.0	49.0	0.0	2.0	1.0	2.0	2.0	18.0	7.0	0.0	8.0	5.0	0.0
300.	0.0	2.0	38.0	0.0	1.0	8.0	8.0	11.0	47.0	1.0	2.0	1.0	2.0	2.0	20.0	6.0	0.0	10.0	3.0	0.0
310.	1.0	2.0	35.0	0.0	1.0	8.0	8.0	10.0	44.0	1.0	3.0	1.0	1.0	2.0	22.0	6.0	0.0	8.0	3.0	0.0
320.	1.0	2.0	32.0	1.0	1.0	7.0	8.0	11.0	43.0	1.0	3.0	1.0	1.0	3.0	23.0	6.0	0.0	6.0	3.0	0.0
330.	1.0	2.0	29.0	1.0	1.0	7.0	9.0	15.0	43.0	1.0	7.0	3.0	2.0	6.0	21.0	6.0	0.0	4.0	5.0	1.0
340.	1.0	2.0	27.0	1.0	1.0	9.0	27.0	33.0	50.0	4.0	27.0	13.0	5.0	17.0	26.0	6.0	0.0	11.0	15.0	3.0
350.	1.0	2.0	28.0	1.0	3.0	24.0	62.0	68.0	70.0	16.0	63.0	36.0	16.0	39.0	43.0	6.0	0.0	32.0	40.0	8.0
360.	1.0	2.0	36.0	3.0	10.0	38.0	78.0	85.0	91.0	33.0	85.0	55.0	31.0	59.0	60.0	6.0	0.0	55.0	63.0	16.0
MAX	20.0	17.0	68.0	53.0	40.0	38.0	78.0	85.0	95.0	60.0	86.0	65.0	45.0	68.0	74.0	26.0	28.0	85.0	98.0	90.0
DEGR.	100	110	60	90	90	0	0	0	10	90	150	150	150	150	150	60	110	150	160	160

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: .-360.

WIND * CONCENTRATION
ANGLE * (ug/m**3)

(DEGR)	REC41	REC42	REC43	REC44	REC45	REC46	REC47	REC48	REC49	REC50	REC51	REC52	REC53	REC54	REC55	REC56	REC57	REC58	REC59	REC60
.	0.0	0.0	0.0	24.0	29.0	43.0	59.0	11.0	11.0	31.0	42.0	33.0	28.0	22.0	56.0	5.0	2.0	1.0	0.0	5.0
MAX	0.0	0.0	0.0	24.0	29.0	43.0	59.0	11.0	11.0	31.0	42.0	33.0	28.0	22.0	56.0	5.0	2.0	1.0	0.0	5.0
DEGR.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: .-360.

WIND ANGLE (DEGR)	*	CONCENTRATION (ug/m**3) REC41	REC42	REC43	REC44	REC45	REC46	REC47	REC48	REC49	REC50	REC51	REC52	REC53	REC54	REC55	REC56	REC57	REC58	REC59	REC60
10.	*	0.0	0.0	0.0	7.0	14.0	28.0	50.0	4.0	3.0	20.0	34.0	33.0	25.0	17.0	35.0	1.0	1.0	1.0	0.0	3.0
20.	*	0.0	0.0	0.0	4.0	11.0	23.0	46.0	2.0	1.0	12.0	25.0	34.0	25.0	20.0	19.0	0.0	0.0	0.0	0.0	1.0
30.	*	0.0	0.0	0.0	1.0	10.0	22.0	46.0	2.0	0.0	5.0	17.0	32.0	24.0	24.0	11.0	1.0	1.0	0.0	0.0	0.0
40.	*	0.0	0.0	0.0	0.0	7.0	22.0	47.0	2.0	0.0	2.0	11.0	29.0	25.0	26.0	9.0	1.0	1.0	0.0	0.0	0.0
50.	*	1.0	0.0	0.0	0.0	3.0	19.0	50.0	3.0	0.0	0.0	6.0	29.0	25.0	25.0	10.0	0.0	1.0	0.0	0.0	0.0
60.	*	4.0	2.0	0.0	0.0	0.0	11.0	47.0	9.0	0.0	0.0	3.0	30.0	24.0	22.0	10.0	1.0	1.0	1.0	0.0	0.0
70.	*	6.0	5.0	0.0	0.0	0.0	3.0	31.0	28.0	2.0	2.0	1.0	32.0	22.0	19.0	9.0	2.0	0.0	1.0	0.0	0.0
80.	*	8.0	7.0	0.0	0.0	0.0	0.0	11.0	54.0	9.0	8.0	1.0	30.0	20.0	16.0	9.0	5.0	0.0	1.0	0.0	0.0
90.	*	10.0	9.0	0.0	0.0	0.0	0.0	2.0	66.0	18.0	18.0	5.0	27.0	18.0	15.0	10.0	8.0	1.0	1.0	0.0	0.0
100.	*	14.0	12.0	0.0	0.0	0.0	0.0	0.0	62.0	24.0	24.0	11.0	25.0	21.0	19.0	11.0	10.0	1.0	1.0	0.0	0.0
110.	*	19.0	17.0	0.0	0.0	0.0	0.0	0.0	55.0	26.0	26.0	14.0	25.0	27.0	25.0	13.0	12.0	2.0	1.0	0.0	0.0
120.	*	21.0	20.0	0.0	0.0	0.0	1.0	0.0	49.0	26.0	26.0	16.0	24.0	33.0	31.0	17.0	14.0	2.0	1.0	0.0	0.0
130.	*	20.0	20.0	1.0	0.0	0.0	1.0	0.0	45.0	25.0	26.0	16.0	23.0	34.0	35.0	24.0	20.0	3.0	2.0	0.0	0.0
140.	*	19.0	18.0	3.0	0.0	0.0	1.0	0.0	42.0	24.0	26.0	17.0	21.0	32.0	36.0	31.0	36.0	8.0	4.0	1.0	0.0
150.	*	15.0	15.0	14.0	0.0	1.0	3.0	2.0	42.0	24.0	27.0	18.0	20.0	30.0	36.0	38.0	62.0	17.0	12.0	5.0	0.0
160.	*	9.0	9.0	34.0	0.0	8.0	14.0	12.0	45.0	25.0	40.0	28.0	29.0	35.0	43.0	47.0	93.0	36.0	32.0	18.0	0.0
170.	*	7.0	7.0	36.0	0.0	28.0	42.0	39.0	54.0	32.0	65.0	50.0	51.0	56.0	63.0	66.0	115.0	61.0	61.0	37.0	0.0
180.	*	7.0	7.0	17.0	1.0	49.0	63.0	63.0	68.0	46.0	77.0	61.0	64.0	67.0	72.0	73.0	108.0	68.0	70.0	31.0	0.0
190.	*	6.0	6.0	7.0	4.0	53.0	63.0	65.0	78.0	55.0	67.0	56.0	61.0	64.0	64.0	65.0	82.0	61.0	60.0	14.0	0.0
200.	*	5.0	5.0	5.0	8.0	49.0	55.0	60.0	82.0	53.0	61.0	54.0	57.0	58.0	56.0	59.0	64.0	56.0	50.0	6.0	0.0
210.	*	3.0	2.0	2.0	13.0	45.0	49.0	55.0	85.0	48.0	63.0	54.0	55.0	56.0	52.0	54.0	56.0	51.0	40.0	3.0	0.0
220.	*	1.0	0.0	0.0	19.0	41.0	44.0	50.0	85.0	46.0	69.0	55.0	54.0	53.0	46.0	46.0	51.0	42.0	31.0	1.0	0.0
230.	*	0.0	0.0	0.0	23.0	39.0	41.0	45.0	92.0	53.0	74.0	56.0	50.0	46.0	40.0	38.0	46.0	35.0	26.0	0.0	1.0
240.	*	0.0	0.0	0.0	25.0	38.0	43.0	53.0	101.0	56.0	67.0	46.0	40.0	37.0	34.0	36.0	43.0	31.0	24.0	0.0	2.0
250.	*	0.0	0.0	0.0	26.0	40.0	55.0	73.0	83.0	38.0	48.0	34.0	33.0	34.0	33.0	40.0	42.0	30.0	24.0	0.0	6.0
260.	*	0.0	0.0	0.0	26.0	47.0	63.0	80.0	46.0	23.0	39.0	31.0	33.0	35.0	36.0	45.0	42.0	30.0	24.0	0.0	10.0
270.	*	0.0	0.0	0.0	28.0	52.0	62.0	74.0	28.0	20.0	36.0	31.0	33.0	35.0	37.0	45.0	40.0	29.0	24.0	0.0	14.0
280.	*	0.0	0.0	0.0	33.0	50.0	63.0	66.0	25.0	20.0	37.0	34.0	34.0	36.0	38.0	46.0	39.0	29.0	24.0	0.0	20.0
290.	*	0.0	0.0	0.0	37.0	50.0	67.0	63.0	25.0	20.0	39.0	36.0	36.0	39.0	42.0	48.0	39.0	29.0	24.0	0.0	21.0
300.	*	0.0	0.0	0.0	42.0	52.0	71.0	64.0	26.0	22.0	42.0	38.0	38.0	42.0	48.0	50.0	40.0	28.0	23.0	0.0	22.0
310.	*	0.0	0.0	0.0	48.0	57.0	72.0	68.0	27.0	25.0	46.0	42.0	41.0	46.0	54.0	53.0	42.0	28.0	20.0	0.0	22.0
320.	*	0.0	0.0	0.0	57.0	63.0	76.0	75.0	30.0	32.0	51.0	47.0	46.0	52.0	59.0	61.0	43.0	29.0	16.0	0.0	24.0
330.	*	0.0	0.0	0.0	69.0	73.0	85.0	86.0	36.0	40.0	61.0	54.0	53.0	58.0	64.0	76.0	42.0	26.0	12.0	0.0	28.0
340.	*	0.0	0.0	0.0	78.0	77.0	89.0	92.0	36.0	38.0	62.0	56.0	52.0	55.0	59.0	84.0	32.0	18.0	8.0	0.0	24.0
350.	*	0.0	0.0	0.0	60.0	59.0	71.0	78.0	24.0	25.0	48.0	49.0	41.0	40.0	41.0	76.0	16.0	8.0	4.0	0.0	12.0
360.	*	0.0	0.0	0.0	24.0	29.0	43.0	59.0	11.0	11.0	31.0	42.0	33.0	28.0	22.0	56.0	5.0	2.0	1.0	0.0	5.0
MAX	*	21.0	20.0	36.0	78.0	77.0	89.0	92.0	101.0	56.0	77.0	61.0	64.0	67.0	72.0	84.0	115.0	68.0	70.0	37.0	28.0
DEGR.	*	120	120	170	340	340	340	340	240	240	180	180	180	180	180	340	170	180	180	170	330

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MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: .-360.

WIND ANGLE (DEGR)	*	CONCENTRATION (ug/m**3) REC61	REC62	REC63	REC64	REC65	REC66	REC67	REC68	REC69	REC70	REC71	REC72	REC73	REC74	REC75	REC76	REC77	REC78	REC79	REC80
.	*	6.0	12.0	41.0	2.0	2.0	2.0	5.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	5.0	1.0	0.0	2.0	1.0	
10.	*	4.0	11.0	42.0	1.0	1.0	2.0	5.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	5.0	1.0	0.0	2.0	1.0	
20.	*	1.0	11.0	45.0	0.0	1.0	2.0	5.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	6.0	1.0	0.0	1.0	1.0	
30.	*	0.0	10.0	47.0	0.0	1.0	2.0	6.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	6.0	0.0	0.0	1.0	1.0	
40.	*	0.0	7.0	49.0	0.0	0.0	2.0	6.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	6.0	0.0	0.0	1.0	1.0	
50.	*	0.0	2.0	52.0	0.0	0.0	1.0	7.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	5.0	0.0	0.0	1.0	0.0	
60.	*	0.0	0.0	51.0	0.0	0.0	0.0	7.0	1.0	1.0	0.0	2.0	0.0	0.0	0.0	4.0	0.0	0.0	1.0	0.0	
70.	*	0.0	0.0	35.0	0.0	0.0	0.0	4.0	2.0	0.0	1.0	6.0	0.0	0.0	0.0	2.0	0.0	0.0	1.0	0.0	
80.	*	0.0	0.0	14.0	0.0	0.0	0.0	2.0	3.0	0.0	2.0	15.0	0.0	0.0	0.0	1.0	1.0	0.0	1.0	0.0	
90.	*	0.0	0.0	3.0	1.0	0.0	0.0	0.0	4.0	0.0	2.0	24.0	0.0	0.0	0.0	0.0	2.0	0.0	1.0	0.0	
100.	*	0.0	0.0	1.0	5.0	0.0	0.0	0.0	4.0	1.0	2.0	30.0	0.0	0.0	0.0	0.0	2.0	0.0	1.0	0.0	
110.	*	0.0	0.0	0.0	9.0	1.0	0.0	0.0	4.0	1.0	2.0	33.0	0.0	0.0	0.0	0.0	3.0	0.0	1.0	1.0	
120.	*	0.0	0.0	0.0	11.0	4.0	1.0	0.0	4.0	1.0	2.0	34.0	0.0	0.0	0.0	0.0	3.0	0.0	2.0	1.0	
130.	*	0.0	0.0	0.0	11.0	7.0	3.0	1.0	5.0	2.0	2.0	33.0	0.0	0.0	0.0	0.0	3.0	0.0	2.0	2.0	
140.	*	0.0	0.0	0.0	12.0	7.0	5.0	4.0	9.0	3.0	4.0	31.0	0.0	0.0	0.0	2.0	0.0	0.0	4.0	0.0	3.0	3.0
150.	*	0.0	0.0	0.0	13.0	8.0	6.0	5.0	16.0	6.0	7.0	30.0	0.0	0.0	0.0	4.0	0.0	2.0	5.0	0.0	4.0	4.0
160.	*	0.0	0.0	0.0	14.0	10.0	9.0	7.0	28.0	14.0	16.0	31.0	0.0	0.0	0.0	7.0	2.0	4.0	7.0	1.0	6.0	6.0
170.	*	0.0	0.0	1.0	18.0	17.0	20.0	17.0	46.0	30.0	33.0	31.0	0.0	0.0	0.0	8.0	5.0	6.0	9.0	3.0	8.0	8.0
180.	*	0.0	1.0	6.0	28.0	31.0	39.0	34.0	57.0	42.0	43.0	30.0	0.0	0.0	0.0	9.0	8.0	10.0	14.0	7.0	14.0	15.0
190.	*	0.0	5.0	14.0	35.0	42.0	50.0	44.0	52.0	39.0	39.0	33.0	0.0	0.0	0.0	14.0	11.0	18.0	23.0	13.0	23.0	25.0
200.	*	0.0	11.0	18.0	34.0	48.0	50.0	45.0	44.0	34.0	34.0	39.0	1.0	1.0	19.0	16.0	23.0	29.0	19.0	29.0	29.0
210.	*	1.0	14.0	17.0	32.0	52.0	49.0	43.0	41.0	31.0	28.0	46.0	4.0	5.0	23.0	20.0	27.0	32.0	24.0	31.0	29.0
220.	*	5.0	13.0	17.0	35.0	53.0	48.0	42.0	39.0	25.0	20.0	51.0	6.0	10.0	25.0	23.0	28.0	32.0	27.0	28.0	25.0
230.	*	8.0	13.0	19.0	38.0	49.0	42.0	37.0	38.0	20.0	16.0	60.0	8.0	19.0	28.0	27.0	23.0	27.0	24.0	23.0	19.0
240.	*	10.0	13.0	33.0	32.0	42.0	35.0	32.0	34.0	17.0	14.0	76.0	16.0	39.0	24.0	24.0	20.0	22.0	19.0	19.0	15.0
250.	*	10.0	20.0	60.0	23.0	37.0	32.0	36.0	28.0	15.0	13.0	71.0	39.0	48.0	17.0	16.0	23.0	19.0	16.0	15.0	12.0
260.	*	13.0	28.0	76.0	24.0	34.0	30.0	40.0	24.0	13.0	12.0	36.0	47.0	28.0	16.0	14.0	24.0	14.0	11.0	11.0	9.0
270.	*	19.0	29.0	77.0	28.0	31.0	30.0	36.0	20.0	12.0	9.0	15.0	34.0	13.0	17.0	15.0	20.0	10.0	8.0	9.0	7.0
280.	*	20.0	29.0	73.0	31.0	31.0	32.0	28.0	19.0	12.0	5.0	14.0	21.0	13.0	18.0	15.0	16.0	9.0	6.0	8.0	6.0
290.	*	20.0	28.0	69.0	35.0	36.0	35.0	23.0	17.0	11.0	2.0	17.0	16.0	14.0	17.0	14.0	13.0	7.0	4.0	6.0	3.0
300.	*	20.0	29.0	66.0	40.0	42.0	36.0	20.0	17.0	8.0	0.0	18.0	14.0	11.0	14.0	10.0	10.0	4.0	2.0	3.0	1.0
310.	*	22.0	32.0	65.0	45.0	43.0	32.0	17.0	16.0	5.0	0.0	16.0	8.0	6.0	8.0	5.0	7.0	2.0	1.0	1.0	1.0
320.	*	24.0	36.0	68.0	47.0	40.0	27.0	12.0	12.0	2.0	0.0	9.0	3.0	2.0	4.0	2.0	5.0	1.0	1.0	1.0	1.0
330.	*	25.0	37.0	70.0	41.0	28.0	18.0	8.0	6.0	1.0	0.0	3.0	0.0	0.0	2.0	1.0	5.0	1.0	0.0	1.0	1.0
340.	*	16.0	28.0	62.0	23.0	14.0	9.0	6.0	2.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0	5.0	1.0	0.0	1.0	1.0
350.	*	8.0	16.0	47.0	8.0	6.0	4.0	5.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	2.0	0.0	2.0	1.0
360.	*	6.0	12.0	41.0	2.0	2.0	2.0	5.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	5.0	1.0	0.0	2.0	1.0	
MAX	*	25.0	37.0	77.0	47.0	53.0	50.0	45.0	57.0	42.0	43.0	76.0	47.0	48.0	28.0	27.0	28.0	32.0	27.0	31.0	29.0
DEGR.	*	330	330	270	320	220	190	200	180	180	180	240	260	250	230	230	220	210	220	210	200

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MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: .-360.

WIND * CONCENTRATION
ANGLE * (ug/m**3)

(DEGR)	*	REC81	REC82	REC83	REC84	REC85	REC86	REC87	REC88	REC89	REC90	REC91	REC92	REC93	REC94	REC95	REC96	REC97	REC98	REC99	REC100
.	*	2.0	0.0	3.0	27.0	37.0	1.0	1.0	16.0	44.0	25.0	12.0	98.0	0.0	25.0	4.0	5.0	0.0	0.0	0.0	0.0
10.	*	2.0	0.0	1.0	29.0	47.0	4.0	5.0	18.0	44.0	19.0	10.0	87.0	0.0	13.0	8.0	11.0	0.0	0.0	0.0	0.0
20.	*	2.0	0.0	0.0	30.0	48.0	10.0	12.0	16.0	37.0	17.0	10.0	74.0	0.0	5.0	11.0	16.0	0.0	0.0	0.0	0.0
30.	*	1.0	0.0	0.0	29.0	46.0	14.0	18.0	12.0	27.0	16.0	10.0	69.0	0.0	2.0	15.0	22.0	2.0	1.0	0.0	0.0
40.	*	1.0	0.0	0.0	26.0	44.0	16.0	23.0	9.0	17.0	16.0	11.0	72.0	0.0	1.0	21.0	28.0	5.0	3.0	1.0	0.0
50.	*	0.0	0.0	0.0	20.0	44.0	17.0	28.0	7.0	10.0	16.0	14.0	80.0	0.0	2.0	20.0	34.0	7.0	6.0	4.0	1.0
60.	*	0.0	0.0	0.0	11.0	42.0	17.0	33.0	5.0	7.0	14.0	14.0	83.0	0.0	7.0	12.0	33.0	11.0	8.0	8.0	3.0
70.	*	0.0	0.0	0.0	4.0	42.0	19.0	33.0	5.0	8.0	10.0	12.0	68.0	0.0	26.0	5.0	16.0	26.0	9.0	8.0	8.0
80.	*	0.0	0.0	0.0	1.0	42.0	22.0	31.0	5.0	12.0	6.0	9.0	48.0	0.0	54.0	3.0	5.0	38.0	15.0	9.0	11.0
90.	*	0.0	1.0	0.0	0.0	44.0	30.0	31.0	5.0	18.0	6.0	6.0	40.0	0.0	67.0	1.0	3.0	39.0	17.0	13.0	11.0
100.	*	0.0	1.0	0.0	0.0	45.0	39.0	31.0	5.0	27.0	9.0	6.0	41.0	0.0	64.0	0.0	1.0	35.0	17.0	14.0	12.0
110.	*	0.0	1.0	0.0	0.0	50.0	44.0	33.0	6.0	36.0	14.0	10.0	42.0	0.0	58.0	0.0	0.0	30.0	15.0	13.0	12.0
120.	*	0.0	2.0	0.0	0.0	61.0	47.0	37.0	10.0	41.0	15.0	16.0	43.0	0.0	54.0	0.0	0.0	27.0	12.0	11.0	11.0
130.	*	0.0	2.0	0.0	0.0	72.0	49.0	37.0	19.0	44.0	16.0	20.0	44.0	0.0	51.0	0.0	0.0	25.0	11.0	8.0	8.0
140.	*	0.0	2.0	0.0	0.0	81.0	47.0	35.0	28.0	44.0	17.0	22.0	48.0	0.0	48.0	0.0	0.0	24.0	11.0	8.0	6.0
150.	*	1.0	3.0	0.0	0.0	89.0	41.0	33.0	37.0	39.0	17.0	24.0	53.0	0.0	46.0	0.0	0.0	22.0	11.0	8.0	6.0
160.	*	4.0	5.0	0.0	0.0	87.0	32.0	26.0	44.0	31.0	21.0	33.0	48.0	0.0	54.0	0.0	0.0	17.0	10.0	7.0	6.0
170.	*	6.0	9.0	0.0	0.0	59.0	16.0	14.0	50.0	32.0	35.0	56.0	27.0	0.0	76.0	0.0	0.0	10.0	8.0	6.0	5.0
180.	*	14.0	21.0	0.0	0.0	25.0	10.0	10.0	54.0	39.0	47.0	76.0	7.0	0.0	89.0	0.0	0.0	4.0	4.0	3.0	3.0
190.	*	24.0	28.0	0.0	1.0	16.0	10.0	11.0	51.0	40.0	48.0	74.0	1.0	0.0	81.0	0.0	0.0	1.0	1.0	1.0	1.0
200.	*	27.0	28.0	0.0	4.0	16.0	9.0	10.0	47.0	40.0	47.0	63.0	0.0	0.0	71.0	0.0	0.0	0.0	0.0	0.0	0.0
210.	*	25.0	23.0	2.0	8.0	18.0	8.0	10.0	46.0	45.0	51.0	55.0	1.0	0.0	68.0	0.0	0.0	0.0	0.0	0.0	0.0
220.	*	20.0	18.0	6.0	9.0	17.0	5.0	7.0	44.0	52.0	55.0	47.0	1.0	2.0	73.0	0.0	0.0	0.0	0.0	0.0	0.0
230.	*	15.0	13.0	8.0	10.0	12.0	3.0	4.0	40.0	52.0	53.0	38.0	4.0	5.0	86.0	0.0	0.0	0.0	0.0	0.0	0.0
240.	*	11.0	10.0	8.0	19.0	6.0	2.0	4.0	34.0	41.0	42.0	32.0	20.0	6.0	98.0	0.0	0.0	0.0	0.0	0.0	0.0
250.	*	8.0	7.0	11.0	46.0	2.0	1.0	2.0	31.0	32.0	35.0	31.0	45.0	12.0	79.0	0.0	0.0	0.0	0.0	0.0	0.0
260.	*	7.0	4.0	19.0	63.0	0.0	0.0	1.0	30.0	31.0	37.0	32.0	57.0	20.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0
270.	*	5.0	1.0	22.0	60.0	0.0	0.0	0.0	31.0	32.0	44.0	35.0	60.0	23.0	38.0	0.0	0.0	0.0	0.0	0.0	0.0
280.	*	3.0	0.0	22.0	52.0	0.0	0.0	0.0	32.0	35.0	50.0	39.0	58.0	22.0	39.0	0.0	0.0	0.0	0.0	0.0	0.0
290.	*	2.0	0.0	23.0	49.0	0.0	0.0	0.0	34.0	36.0	55.0	45.0	54.0	20.0	41.0	0.0	0.0	0.0	0.0	0.0	0.0
300.	*	2.0	0.0	24.0	49.0	0.0	0.0	0.0	38.0	36.0	60.0	52.0	51.0	16.0	43.0	0.0	0.0	0.0	0.0	0.0	0.0
310.	*	2.0	0.0	25.0	47.0	0.0	0.0	0.0	41.0	38.0	66.0	60.0	47.0	8.0	45.0	0.0	0.0	0.0	0.0	0.0	0.0
320.	*	2.0	0.0	22.0	39.0	0.0	0.0	0.0	37.0	42.0	73.0	68.0	45.0	2.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0
330.	*	2.0	0.0	14.0	31.0	1.0	0.0	0.0	27.0	44.0	77.0	67.0	46.0	0.0	58.0	0.0	0.0	0.0	0.0	0.0	0.0
340.	*	1.0	0.0	9.0	28.0	5.0	0.0	0.0	17.0	39.0	66.0	48.0	58.0	0.0	60.0	0.0	0.0	0.0	0.0	0.0	0.0
350.	*	1.0	0.0	6.0	28.0	19.0	0.0	0.0	14.0	38.0	42.0	24.0	85.0	0.0	44.0	1.0	1.0	0.0	0.0	0.0	0.0
360.	*	2.0	0.0	3.0	27.0	37.0	1.0	1.0	16.0	44.0	25.0	12.0	98.0	0.0	25.0	4.0	5.0	0.0	0.0	0.0	0.0
MAX	*	27.0	28.0	25.0	63.0	89.0	49.0	37.0	54.0	52.0	77.0	76.0	98.0	23.0	98.0	21.0	34.0	39.0	17.0	14.0	12.0
DEGR.	*	200	190	310	260	150	130	120	180	220	330	180	0	270	240	40	50	90	90	100	100

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MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: .-360.

WIND * CONCENTRATION
ANGLE * (ug/m**3)

(DEGR)	*	REC101	REC102	REC103	REC104	REC105	REC106	REC107	REC108	REC109	REC110	REC111	REC112	REC113	REC114	REC115	REC116	REC117	REC118	REC119	REC120
.	*	0.0	0.0	0.0	0.0	9.0	13.0	14.0	0.0	0.0	0.0	0.0	0.0	0.0	9.0	12.0	30.0	1.0	1.0	2.0	
10.	*	0.0	0.0	0.0	0.0	9.0	14.0	15.0	1.0	1.0	0.0	0.0	0.0	0.0	11.0	15.0	31.0	1.0	1.0	3.0	
20.	*	0.0	0.0	0.0	0.0	12.0	16.0	18.0	1.0	1.0	0.0	0.0	0.0	0.0	17.0	20.0	35.0	3.0	2.0	3.0	
30.	*	0.0	0.0	0.0	0.0	19.0	22.0	24.0	3.0	2.0	1.0	0.0	0.0	0.0	0.0	19.0	26.0	46.0	7.0	5.0	4.0
40.	*	0.0	0.0	0.0	0.0	19.0	28.0	31.0	6.0	4.0	2.0	0.0	0.0	0.0	15.0	24.0	58.0	10.0	9.0	7.0	
50.	*	0.0	0.0	0.0	0.0	14.0	29.0	49.0	9.0	8.0	7.0	0.0	0.0	0.0	0.0	10.0	17.0	67.0	11.0	11.0	11.0
60.	*	1.0	0.0	0.0	0.0	7.0	19.0	87.0	9.0	10.0	13.0	2.0	0.0	0.0	0.0	6.0	11.0	54.0	12.0	11.0	13.0
70.	*	3.0	0.0	0.0	0.0	4.0	8.0	129.0	13.0	9.0	17.0	5.0	1.0	0.0	0.0	4.0	7.0	25.0	21.0	11.0	13.0
80.	*	6.0	2.0	0.0	0.0	2.0	5.0	132.0	20.0	10.0	14.0	8.0	4.0	0.0	0.0	2.0	6.0	9.0	31.0	13.0	12.0
90.	*	10.0	6.0	2.0	0.0	1.0	3.0	108.0	21.0	15.0	11.0	11.0	6.0	2.0	0.0	0.0	4.0	6.0	29.0	18.0	12.0
100.	*	11.0	10.0	5.0	1.0	0.0	1.0	83.0	19.0	16.0	13.0	13.0	10.0	5.0	1.0	0.0	1.0	5.0	25.0	19.0	14.0
110.	*	12.0	12.0	10.0	4.0	0.0	0.0	67.0	18.0	15.0	13.0	14.0	13.0	9.0	3.0	0.0	0.0	3.0	23.0	18.0	16.0
120.	*	12.0	12.0	12.0	10.0	0.0	0.0	55.0	16.0	13.0	13.0	14.0	14.0	14.0	8.0	0.0	0.0	1.0	21.0	17.0	16.0
130.	*	10.0	10.0	11.0	12.0	0.0	0.0	49.0	14.0	10.0	11.0	13.0	13.0	14.0	14.0	0.0	0.0	0.0	18.0	15.0	14.0
140.	*	7.0	8.0	9.0	10.0	0.0	0.0	46.0	13.0	9.0	8.0	10.0	11.0	12.0	14.0	0.0	0.0	0.0	17.0	12.0	12.0
150.	*	5.0	6.0	6.0	6.0	0.0	0.0	45.0	12.0	8.0	7.0	8.0	8.0	8.0	10.0	0.0	0.0	0.0	16.0	10.0	9.0
160.	*	5.0	5.0	4.0	4.0	0.0	0.0	47.0	12.0	8.0	7.0	7.0	6.0	6.0	6.0	0.0	0.0	0.0	16.0	10.0	8.0
170.	*	4.0	4.0	4.0	3.0	0.0	0.0	46.0	12.0	8.0	6.0	6.0	5.0	5.0	5.0	0.0	0.0	0.0	16.0	10.0	7.0
180.	*	2.0	2.0	2.0	2.0	0.0	0.0	45.0	13.0	8.0	6.0	5.0	4.0	4.0	3.0	0.0	0.0	0.0	15.0	9.0	7.0
190.	*	0.0	0.0	0.0	0.0	0.0	0.0	47.0	13.0	8.0	5.0	3.0	2.0	2.0	1.0	0.0	0.0	0.0	16.0	9.0	7.0
200.	*	0.0	0.0	0.0	0.0	0.0	0.0	52.0	13.0	5.0	2.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	17.0	10.0	7.0
210.	*	0.0	0.0	0.0	0.0	0.0	0.0	58.0	10.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.0	9.0	4.0
220.	*	0.0	0.0	0.0	0.0	0.0	0.0	72.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.0	5.0	1.0
230.	*	0.0	0.0	0.0	0.0	0.0	0.0	86.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.0	1.0	0.0
240.	*	0.0	0.0	0.0	0.0	0.0	0.0	104.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	7.0	0.0	0.0
250.	*	0.0	0.0	0.0	0.0	0.0	0.0	102.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0	2.0	0.0	0.0
260.	*	0.0	0.0	0.0	0.0	0.0	0.0	78.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	27.0	0.0	0.0	0.0
270.	*	0.0	0.0	0.0	0.0	0.0	0.0	48.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	39.0	0.0	0.0	1.0
280.	*	0.0	0.0	0.0	0.0	0.0	0.0	29.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	38.0	0.0	0.0	2.0	
290.	*	0.0	0.0	0.0	0.0	0.0	1.0	21.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.0	35.0	0.0	0.0	3.0	
300.	*	0.0	0.0	0.0	0.0	0.0	4.0	19.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	11.0	32.0	0.0	0.0	3.0	
310.	*	0.0	0.0	0.0	0.0	0.0	9.0	16.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	12.0	30.0	0.0	0.0	3.0	
320.	*	0.0	0.0	0.0	0.0	1.0	12.0	14.0	0.0	0.0	0.0	0.0	0.0	0.0	7.0	11.0	30.0	0.0	0.0	2.0	
330.	*	0.0	0.0	0.0	0.0	4.0	13.0	14.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0	11.0	29.0	0.0	1.0	2.0	
340.	*	0.0	0.0	0.0	0.0	7.0	13.0	14.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0	11.0	29.0	0.0	1.0	2.0	
350.	*	0.0	0.0	0.0	0.0	8.0	13.0	14.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0	11.0	30.0	1.0	1.0	2.0	
360.	*	0.0	0.0	0.0	0.0	9.0	13.0	14.0	0.0	0.0	0.0	0.0	0.0	0.0	9.0	12.0	30.0	1.0	1.0	2.0	
MAX	*	12.0	12.0	12.0	12.0	19.0	29.0	132.0	21.0	16.0	17.0	14.0	14.0	14.0	14.0	19.0	26.0	67.0	31.0	19.0	16.0
DEGR.	*	110	110	120	130	30	50	80	90	100	70	110	120	120	130	30	30	50	80	100	110

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MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: .-360.

WIND ANGLE (DEGR)	*	CONCENTRATION (ug/m**3) REC121	REC122	REC123	REC124	REC125	REC126	REC127	REC128	REC129	REC130	REC131	REC132	REC133	REC134	REC135	REC136	REC137	REC138	REC139	REC140
.	*	0.0	0.0	0.0	0.0	10.0	13.0	20.0	1.0	1.0	2.0	0.0	0.0	0.0	0.0	14.0	16.0	18.0	27.0	10.0	12.0
10.	*	0.0	0.0	0.0	0.0	15.0	18.0	26.0	5.0	3.0	3.0	0.0	0.0	0.0	0.0	21.0	23.0	28.0	37.0	18.0	21.0
20.	*	0.0	0.0	0.0	0.0	18.0	22.0	32.0	10.0	9.0	6.0	1.0	0.0	0.0	0.0	19.0	24.0	30.0	44.0	23.0	24.0
30.	*	0.0	0.0	0.0	0.0	16.0	21.0	33.0	13.0	12.0	11.0	3.0	0.0	0.0	0.0	15.0	20.0	27.0	46.0	23.0	25.0
40.	*	1.0	0.0	0.0	0.0	13.0	18.0	28.0	14.0	14.0	14.0	7.0	1.0	0.0	0.0	12.0	16.0	24.0	46.0	23.0	24.0
50.	*	3.0	0.0	0.0	0.0	9.0	13.0	24.0	18.0	14.0	16.0	10.0	3.0	0.0	0.0	9.0	12.0	20.0	46.0	22.0	25.0
60.	*	5.0	1.0	0.0	0.0	6.0	9.0	18.0	35.0	14.0	16.0	12.0	6.0	0.0	0.0	6.0	10.0	14.0	44.0	19.0	23.0
70.	*	8.0	3.0	0.0	0.0	4.0	7.0	11.0	64.0	13.0	15.0	16.0	7.0	0.0	0.0	2.0	10.0	11.0	31.0	17.0	23.0
80.	*	12.0	5.0	0.0	0.0	2.0	7.0	8.0	70.0	16.0	15.0	19.0	9.0	1.0	0.0	0.0	9.0	11.0	17.0	24.0	24.0
90.	*	15.0	8.0	2.0	0.0	0.0	5.0	8.0	59.0	22.0	15.0	21.0	11.0	3.0	0.0	0.0	7.0	11.0	12.0	33.0	25.0
100.	*	16.0	12.0	5.0	0.0	0.0	2.0	7.0	52.0	24.0	17.0	21.0	14.0	6.0	0.0	0.0	4.0	11.0	12.0	34.0	26.0
110.	*	17.0	16.0	8.0	2.0	0.0	0.0	6.0	49.0	23.0	20.0	23.0	19.0	8.0	0.0	0.0	1.0	11.0	12.0	32.0	27.0
120.	*	17.0	17.0	14.0	5.0	0.0	0.0	2.0	46.0	22.0	19.0	23.0	25.0	12.0	1.0	0.0	0.0	9.0	13.0	32.0	28.0
130.	*	17.0	17.0	19.0	13.0	0.0	0.0	0.0	41.0	21.0	19.0	23.0	27.0	20.0	6.0	0.0	0.0	5.0	13.0	34.0	30.0
140.	*	15.0	15.0	18.0	19.0	0.0	0.0	0.0	38.0	18.0	18.0	22.0	24.0	27.0	16.0	0.0	0.0	1.0	10.0	33.0	30.0
150.	*	11.0	11.0	14.0	17.0	0.0	0.0	0.0	36.0	15.0	13.0	19.0	21.0	27.0	26.0	0.0	0.0	0.0	4.0	29.0	30.0
160.	*	9.0	8.0	8.0	9.0	0.0	0.0	0.0	36.0	14.0	9.0	13.0	13.0	18.0	24.0	0.0	0.0	0.0	1.0	20.0	22.0
170.	*	8.0	6.0	5.0	5.0	0.0	0.0	0.0	38.0	14.0	10.0	10.0	8.0	9.0	10.0	0.0	0.0	0.0	0.0	14.0	12.0
180.	*	8.0	6.0	5.0	5.0	0.0	0.0	0.0	38.0	14.0	10.0	10.0	7.0	6.0	6.0	0.0	0.0	0.0	0.0	14.0	9.0
190.	*	7.0	5.0	4.0	3.0	0.0	0.0	0.0	39.0	14.0	9.0	10.0	7.0	6.0	5.0	0.0	0.0	0.0	0.0	16.0	11.0
200.	*	6.0	3.0	2.0	1.0	0.0	0.0	0.0	40.0	13.0	8.0	9.0	6.0	4.0	3.0	0.0	0.0	0.0	0.0	20.0	13.0
210.	*	3.0	1.0	0.0	0.0	0.0	0.0	0.0	42.0	12.0	8.0	8.0	4.0	2.0	1.0	0.0	0.0	0.0	0.0	25.0	12.0
220.	*	2.0	0.0	0.0	0.0	0.0	0.0	0.0	42.0	12.0	5.0	5.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	26.0	10.0
230.	*	1.0	0.0	0.0	0.0	0.0	0.0	0.0	38.0	8.0	1.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	20.0	6.0
240.	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.0	2.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	19.0	10.0	1.0
250.	*	0.0	0.0	0.0	0.0	0.0	0.0	2.0	14.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	1.0	40.0	2.0	0.0
260.	*	0.0	0.0	0.0	0.0	0.0	0.0	11.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.0	42.0	0.0	0.0
270.	*	0.0	0.0	0.0	0.0	0.0	1.0	21.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	2.0	15.0	36.0	0.0	1.0
280.	*	0.0	0.0	0.0	0.0	0.0	5.0	23.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	6.0	17.0	33.0	0.0	2.0
290.	*	0.0	0.0	0.0	0.0	1.0	9.0	22.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	3.0	9.0	15.0	30.0	0.0	2.0
300.	*	0.0	0.0	0.0	0.0	4.0	10.0	20.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	6.0	9.0	13.0	27.0	1.0	2.0
310.	*	0.0	0.0	0.0	0.0	7.0	10.0	20.0	0.0	1.0	2.0	0.0	0.0	0.0	0.0	7.0	9.0	13.0	26.0	1.0	2.0
320.	*	0.0	0.0	0.0	0.0	7.0	10.0	19.0	0.0	1.0	2.0	0.0	0.0	0.0	0.0	7.0	9.0	13.0	26.0	1.0	2.0
330.	*	0.0	0.0	0.0	0.0	7.0	10.0	19.0	1.0	1.0	2.0	0.0	0.0	0.0	0.0	7.0	9.0	13.0	24.0	1.0	2.0
340.	*	0.0	0.0	0.0	0.0	8.0	11.0	19.0	1.0	1.0	2.0	0.0	0.0	0.0	0.0	7.0	9.0	12.0	22.0	1.0	2.0
350.	*	0.0	0.0	0.0	0.0	8.0	11.0	19.0	1.0	1.0	2.0	0.0	0.0	0.0	0.0	8.0	10.0	13.0	21.0	3.0	4.0
360.	*	0.0	0.0	0.0	0.0	10.0	13.0	20.0	1.0	1.0	2.0	0.0	0.0	0.0	0.0	14.0	16.0	18.0	27.0	10.0	12.0
MAX	*	17.0	17.0	19.0	19.0	18.0	22.0	33.0	70.0	24.0	20.0	23.0	27.0	27.0	26.0	21.0	24.0	30.0	46.0	34.0	30.0
DEGR.	*	110	120	130	140	20	20	30	80	100	110	110	130	140	150	10	20	20	30	100	130

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MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: .-360.

WIND ANGLE (DEGR)	*	CONCENTRATION (ug/m**3) REC141	REC142	REC143	REC144	REC145	REC146	REC147	REC148	REC149	REC150	REC151	REC152	REC153	REC154	REC155	REC156	REC157	REC158	REC159	REC160
.	*	18.0	4.0	0.0	0.0	30.0	39.0	52.0	93.0	68.0	39.0	16.0	1.0	0.0	0.0	13.0	10.0	10.0	14.0	31.0	1.0
10.	*	26.0	10.0	0.0	0.0	30.0	37.0	50.0	85.0	50.0	38.0	18.0	1.0	0.0	0.0	4.0	5.0	7.0	12.0	32.0	1.0
20.	*	31.0	16.0	0.0	0.0	23.0	31.0	43.0	77.0	36.0	34.0	21.0	1.0	0.0	0.0	1.0	3.0	6.0	11.0	34.0	0.0
30.	*	30.0	20.0	0.0	0.0	15.0	26.0	38.0	73.0	24.0	31.0	24.0	1.0	0.0	0.0	0.0	1.0	3.0	10.0	38.0	0.0
40.	*	30.0	22.0	0.0	0.0	7.0	22.0	33.0	67.0	18.0	32.0	25.0	1.0	0.0	0.0	0.0	0.0	1.0	7.0	46.0	0.0
50.	*	32.0	23.0	0.0	0.0	2.0	20.0	28.0	60.0	16.0	36.0	24.0	1.0	0.0	0.0	0.0	0.0	0.0	3.0	55.0	0.0
60.	*	38.0	24.0	0.0	0.0	0.0	18.0	25.0	50.0	15.0	39.0	18.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	69.0	0.0
70.	*	46.0	24.0	0.0	0.0	0.0	18.0	25.0	43.0	20.0	41.0	11.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	86.0	0.0
80.	*	48.0	24.0	0.0	0.0	0.0	18.0	24.0	41.0	34.0	40.0	6.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	89.0	0.0
90.	*	46.0	24.0	2.0	0.0	0.0	16.0	24.0	40.0	48.0	39.0	4.0	1.0	2.0	0.0	0.0	0.0	0.0	0.0	75.0	0.0
100.	*	42.0	25.0	4.0	0.0	0.0	13.0	25.0	40.0	53.0	38.0	3.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0	57.0	0.0
110.	*	42.0	27.0	8.0	0.0	0.0	10.0	25.0	42.0	53.0	38.0	4.0	2.0	1.0	0.0	0.0	0.0	0.0	0.0	46.0	2.0
120.	*	42.0	34.0	13.0	0.0	0.0	6.0	27.0	45.0	51.0	38.0	8.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0	40.0	6.0
130.	*	43.0	44.0	20.0	0.0	0.0	2.0	29.0	50.0	51.0	39.0	14.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0	36.0	9.0
140.	*	42.0	54.0	32.0	2.0	0.0	0.0	29.0	57.0	53.0	41.0	20.0	4.0	3.0	1.0	0.0	0.0	0.0	0.0	32.0	9.0
150.	*	41.0	59.0	52.0	8.0	0.0	0.0	24.0	68.0	60.0	40.0	25.0	7.0	5.0	2.0	0.0	0.0	0.0	0.0	31.0	9.0
160.	*	34.0	54.0	69.0	27.0	0.0	0.0	12.0	66.0	84.0	40.0	31.0	16.0	8.0	4.0	0.0	0.0	0.0	0.0	32.0	10.0
170.	*	20.0	33.0	55.0	39.0	0.0	0.0	3.0	41.0	106.0	51.0	46.0	32.0	21.0	14.0	0.0	0.0	0.0	0.0	32.0	11.0
180.	*	12.0	16.0	23.0	23.0	0.0	0.0	0.0	14.0	95.0	57.0	62.0	45.0	34.0	26.0	0.0	0.0	1.0	3.0	35.0	17.0
190.	*	13.0	12.0	9.0	9.0	0.0	0.0	0.0	3.0	74.0	54.0	61.0	43.0	33.0	26.0	0.0	0.0	4.0	10.0	45.0	25.0
200.	*	14.0	10.0	6.0	5.0	0.0	0.0	0.0	1.0	68.0	50.0	54.0	38.0	29.0	21.0	0.0	0.0	11.0	15.0	52.0	28.0
210.	*	13.0	7.0	4.0	2.0	0.0	0.0	0.0	1.0	73.0	48.0	47.0	34.0	26.0	13.0	0.0	0.0	16.0	16.0	58.0	28.0
220.	*	12.0	4.0	2.0	0.0	0.0	0.0	0.0	1.0	78.0	47.0	41.0	29.0	19.0	5.0	0.0	2.0	18.0	16.0	65.0	29.0
230.	*	11.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	85.0	42.0	36.0	25.0	13.0	1.0	0.0	5.0	17.0	15.0	84.0	32.0
240.	*	14.0	1.0	0.0	0.0	0.0	0.0	0.0	3.0	82.0	34.0	31.0	22.0	10.0	0.0	0.0	10.0	17.0	15.0	121.0	28.0
250.	*	18.0	0.0	0.0	0.0	0.0	0.0	0.0	13.0	60.0	29.0	33.0	19.0	8.0	0.0	0.0	13.0	17.0	20.0	146.0	21.0
260.	*	16.0	0.0	0.0	0.0	0.0	0.0	4.0	22.0	45.0	29.0	37.0	16.0	6.0	0.0	0.0	15.0	20.0	29.0	128.0	22.0
270.	*	12.0	0.0	0.0	0.0	0.0	2.0	11.0	20.0	39.0	29.0	40.0	15.0	2.0	0.0	0.0	19.0	26.0	30.0	95.0	24.0
280.	*	8.0	0.0	0.0	0.0	1.0	6.0	13.0	17.0	39.0	30.0	42.0	15.0	1.0	0.0	2.0	26.0	28.0	30.0	72.0	24.0
290.	*	7.0	0.0	0.0	0.0	4.0	9.0	11.0	17.0	42.0	31.0	46.0	14.0	0.0	0.0	5.0	29.0	27.0	31.0	61.0	25.0
300.	*	6.0	0.0	0.0	0.0	6.0	9.0	10.0	18.0	47.0	33.0	53.0	13.0	0.0	0.0	6.0	30.0	27.0	30.0	54.0	27.0
310.	*	5.0	0.0	0.0	0.0	6.0	8.0	10.0	19.0	51.0	37.0	56.0	11.0	0.0	0.0	7.0	32.0	29.0	31.0	56.0	26.0
320.	*	5.0	0.0	0.0	0.0	7.0	8.0	9.0	20.0	60.0	42.0	51.0	7.0	0.0	0.0	12.0	34.0	32.0	35.0	60.0	19.0
330.	*	6.0	0.0	0.0	0.0	6.0	7.0	9.0	24.0	77.0	48.0	39.0	3.0	0.0	0.0	26.0	38.0	35.0	39.0	56.0	9.0
340.	*	8.0	0.0	0.0	0.0	7.0	10.0	16.0	45.0	97.0	48.0	26.0	1.0	0.0	0.0	42.0	40.0	34.0	34.0	42.0	3.0
350.	*	11.0	1.0	0.0	0.0	17.0	24.0	36.0	79.0	93.0	43.0	18.0	1.0	0.0	0.0	35.0	25.0	20.0	21.0	33.0	1.0
360.	*	18.0	4.0	0.0	0.0	30.0	39.0	52.0	93.0	68.0	39.0	16.0	1.0	0.0	0.0	13.0	10.0	10.0	14.0	31.0	1.0
MAX	*	48.0	59.0	69.0	39.0	30.0	39.0	52.0	93.0	106.0	57.0	62.0	45.0	34.0	26.0	42.0	40.0	35.0	39.0	146.0	32.0
DEGR.	*	80	150	160	170	0	0	0	0	170	180	180	180	180	180	340	340	330	330	250	230

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MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: .-360.

WIND ANGLE (DEGR)	* CONCENTRATION (ug/m**3) REC161	REC162	REC163	REC164	REC165	REC166	REC167	REC168	REC169	REC170	REC171	REC172	REC173	REC174	REC175	REC176	REC177	REC178	REC179	REC180
.	* 2.0	2.0	2.0	0.0	3.0	3.0	4.0	7.0	21.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10.	* 2.0	2.0	2.0	0.0	1.0	1.0	2.0	4.0	21.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20.	* 1.0	1.0	1.0	0.0	0.0	0.0	0.0	1.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30.	* 1.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	16.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
40.	* 0.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50.	* 0.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
60.	* 0.0	1.0	2.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
70.	* 0.0	1.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80.	* 0.0	1.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90.	* 0.0	1.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
100.	* 0.0	1.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
110.	* 0.0	1.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
120.	* 0.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
130.	* 0.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
140.	* 2.0	3.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
150.	* 5.0	4.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
160.	* 6.0	6.0	4.0	1.0	0.0	0.0	0.0	0.0	0.0	6.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
170.	* 7.0	8.0	7.0	4.0	0.0	0.0	0.0	0.0	0.0	9.0	3.0	2.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
180.	* 12.0	14.0	14.0	11.0	0.0	0.0	0.0	0.0	0.0	11.0	6.0	4.0	4.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0
190.	* 20.0	23.0	23.0	20.0	0.0	0.0	0.0	0.0	0.0	13.0	10.0	9.0	9.0	9.0	0.0	0.0	0.0	0.0	0.0	0.0
200.	* 24.0	28.0	28.0	22.0	0.0	0.0	0.0	1.0	4.0	18.0	15.0	14.0	15.0	16.0	0.0	0.0	0.0	0.0	0.0	1.0
210.	* 29.0	31.0	27.0	18.0	0.0	0.0	0.0	4.0	7.0	22.0	18.0	18.0	20.0	18.0	0.0	0.0	0.0	0.0	2.0	4.0
220.	* 33.0	29.0	22.0	13.0	0.0	0.0	2.0	8.0	9.0	25.0	21.0	22.0	20.0	16.0	0.0	0.0	0.0	2.0	4.0	10.0
230.	* 30.0	24.0	17.0	7.0	0.0	0.0	5.0	9.0	9.0	31.0	24.0	20.0	16.0	9.0	0.0	0.0	0.0	4.0	6.0	20.0
240.	* 22.0	20.0	14.0	3.0	0.0	0.0	8.0	9.0	15.0	32.0	20.0	16.0	11.0	5.0	0.0	0.0	2.0	6.0	8.0	33.0
250.	* 19.0	16.0	13.0	1.0	0.0	1.0	10.0	12.0	33.0	20.0	14.0	15.0	7.0	2.0	0.0	0.0	5.0	8.0	18.0	29.0
260.	* 20.0	12.0	10.0	0.0	0.0	5.0	12.0	19.0	48.0	13.0	14.0	12.0	5.0	0.0	0.0	2.0	9.0	14.0	28.0	14.0
270.	* 22.0	10.0	5.0	0.0	0.0	10.0	17.0	22.0	47.0	14.0	15.0	8.0	3.0	0.0	1.0	7.0	13.0	18.0	30.0	11.0
280.	* 22.0	8.0	2.0	0.0	3.0	16.0	18.0	22.0	42.0	16.0	13.0	5.0	1.0	0.0	4.0	13.0	15.0	19.0	26.0	12.0
290.	* 18.0	6.0	1.0	0.0	7.0	18.0	18.0	22.0	39.0	16.0	9.0	2.0	0.0	0.0	10.0	14.0	15.0	19.0	23.0	11.0
300.	* 13.0	3.0	1.0	0.0	12.0	18.0	19.0	24.0	41.0	14.0	6.0	1.0	0.0	0.0	13.0	15.0	16.0	21.0	17.0	7.0
310.	* 9.0	2.0	1.0	0.0	17.0	18.0	20.0	26.0	39.0	9.0	3.0	0.0	0.0	0.0	14.0	15.0	18.0	20.0	9.0	3.0
320.	* 5.0	1.0	1.0	0.0	19.0	20.0	23.0	27.0	33.0	4.0	1.0	0.0	0.0	0.0	16.0	17.0	17.0	14.0	3.0	0.0
330.	* 2.0	1.0	2.0	0.0	22.0	22.0	22.0	19.0	25.0	1.0	0.0	0.0	0.0	0.0	15.0	14.0	10.0	6.0	0.0	0.0
340.	* 2.0	2.0	2.0	0.0	18.0	16.0	13.0	11.0	22.0	0.0	0.0	0.0	0.0	0.0	8.0	6.0	4.0	1.0	0.0	0.0
350.	* 2.0	2.0	2.0	0.0	8.0	7.0	6.0	8.0	21.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0	1.0	0.0	0.0	0.0
360.	* 2.0	2.0	2.0	0.0	3.0	3.0	4.0	7.0	21.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MAX	* 33.0	31.0	28.0	22.0	22.0	22.0	23.0	27.0	48.0	32.0	24.0	22.0	20.0	18.0	16.0	17.0	18.0	21.0	30.0	33.0
DEGR.	* 220	210	200	200	330	330	320	320	260	240	230	220	210	210	320	320	310	300	270	240

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MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: .-360.

WIND ANGLE (DEGR)	* CONCENTRATION (ug/m**3) REC181	REC182	REC183	REC184
.	* 0.0	0.0	0.0	0.0
10.	* 0.0	0.0	0.0	0.0
20.	* 0.0	0.0	0.0	0.0
30.	* 0.0	0.0	0.0	0.0
40.	* 0.0	0.0	0.0	0.0
50.	* 0.0	0.0	0.0	0.0
60.	* 0.0	0.0	0.0	0.0
70.	* 0.0	0.0	0.0	0.0
80.	* 0.0	0.0	0.0	0.0
90.	* 0.0	0.0	0.0	0.0
100.	* 0.0	0.0	0.0	0.0
110.	* 0.0	0.0	0.0	0.0
120.	* 0.0	0.0	0.0	0.0
130.	* 0.0	0.0	0.0	0.0
140.	* 0.0	0.0	0.0	0.0
150.	* 0.0	0.0	0.0	0.0
160.	* 0.0	0.0	0.0	0.0
170.	* 0.0	0.0	0.0	0.0
180.	* 0.0	0.0	0.0	0.0
190.	* 1.0	2.0	3.0	3.0
200.	* 5.0	7.0	8.0	9.0
210.	* 11.0	13.0	13.0	14.0
220.	* 17.0	16.0	17.0	16.0
230.	* 21.0	19.0	16.0	11.0
240.	* 20.0	14.0	11.0	7.0
250.	* 13.0	11.0	8.0	4.0
260.	* 11.0	10.0	4.0	1.0
270.	* 12.0	6.0	2.0	0.0
280.	* 9.0	3.0	0.0	0.0
290.	* 5.0	1.0	0.0	0.0
300.	* 2.0	0.0	0.0	0.0
310.	* 0.0	0.0	0.0	0.0
320.	* 0.0	0.0	0.0	0.0
330.	* 0.0	0.0	0.0	0.0
340.	* 0.0	0.0	0.0	0.0
350.	* 0.0	0.0	0.0	0.0
360.	* 0.0	0.0	0.0	0.0
MAX	* 21.0	19.0	17.0	16.0
DEGR.	* 230	230	220	220

THE HIGHEST CONCENTRATION OF 146.00 ug/m**3 OCCURRED AT RECEPTOR REC159.

APPENDIX E

MOBILE 6.2 INPUT AND OUTPUT FILE


```
********** Header section **********
* File based on 2002_2011_ON_P1a.in from the MOE, October 2005
* Reference number for this input file -  ONP1a-2 by Brett Taylor
* This file is designed for MOBILE6.2C and will provide output for Phase1 of
Ontario's Drive Clean program.
* 'Phase1' of the Drive Clean program covers Toronto; Durham; York; Peel; Halton
and Hamilton.
* Estimates to be used in CO, PM2.5, and NOX Modeling Analysis
* Sources to inputs are documented throughout.
* January and July Temperatures and Fuel RVP values are used, repectively.
* Meteorological data from: Toronto Lester B. Pearson International Airport
station readings.

MOBILE6 INPUT FILE
PARTICULATES       :
* AIR TOXICS       : CO2 and air toxics emissions are not quantified.
POLLUTANTS         : CO NOX
SPREADSHEET        :
*DATABASE OUTPUT    :
*DATABASE VEHICLES  : 21111 11111111 1 111 11111111 121

Run Data
********** Ontario Phase1 2021 **********
* Ontario Phase1 2021
* PRESS HC AS VOC  :
* EXPAND EVAP      :
NO REFUELING       :

* Specify  mileage accumulation rates
* Source: Table M1 of Vehicle Fleet Profiles for Ontario and British Columbia
* Annual Kilometer Accumulation Rates Vehicle-Kilometers Traveled and IM Program
Effectiveness  SBA  Sept 2004.
* Source: the MOE, October 2005
MILE ACCUM RATE    : Miledat_ON_.d

* Specify  age distribution
* Source: the MOE, October 2005
REG DIST           :  age_ph1.txt

* Expand vehicle class descriptive output
EXPAND BUS EFS     :
* EXPAND HDDV EFS    :
* EXPAND HDGV EFS    :
EXPAND LDT EFS     :

* Expand exhaust emissions descriptive output
EXPAND EXHAUST     :

* Expand evaporative emissions descriptive output
* EXPAND EVAPORATIVE :

* Because it is now post-1999 calendar year sulphur levels in gasoline must be
specified.
* using the FUEL PROGRAM command (see Advanced Training Guide manual Day 1
* page 46)
* Sulphur source: Environment Canada's Sulphur in Liquid Fuels annual report
```

```
* Max Sulphur content from CEPA Sulphur in Gasoline Regulation Registration June
* 4  1999
* The regulation implies the use of 25ppm for years after 2004.
* The 4 rows and 8 columns below represent;
* row 1 - average sulphur levels (ppm) from 2000 to 2007
* row 2 - average sulphur levels (ppm) from 2008 to 2015
* row 3 - maximum sulphur levels (ppm) from 2000 to 2007
* row 4 - maximum sulphur levels (ppm) from 2008 to 2015
FUEL PROGRAM       : 4
450.0 390.0 330.0 171.0 52.0 25.0 25.0 25.0
25.0 25.0 25.0 25.0 25.0 25.0 25.0 25.0
500.0 500.0 500.0 500.0 500.0 25.0 25.0 25.0
25.0 25.0 25.0 25.0 25.0 25.0 25.0 25.0

* Below is how MOBILE would handle Drive Clean, but is included here as comments
only.

* Phase-in for Phase 1 starts in 1999
* Specify Acceleration Simulation Mode FINAL I/M for years 2001 to 2030
* Specify ASM2525 PHASE-IN I/M for years 1999 to 2001
* I/M PROGRAM        : 1 1999 2001 1 T/O ASM 2525 PHASE-IN
* I/M MODEL YEARS    : 1 1941 2030
* I/M VEHICLES       : 1 22222 21111111 1
* I/M STRINGENCY     : 1 27.0
* I/M COMPLIANCE     : 1 87.0
* I/M WAIVER RATES   : 1 0.3 1.2

* Stringency  Compliance and Waiver Rates
* I/M PROGRAM        : 2 2002 2005 1 T/O ASM 2525 FINAL
* I/M MODEL YEARS    : 2 1941 2030
* I/M VEHICLES       : 2 22222 21111111 1
* I/M STRINGENCY     : 2 27.0
* I/M COMPLIANCE     : 2 87.1
* I/M WAIVER RATES   : 2 0.3 1.2

* Specify Visual Gap Test
* I/M PROGRAM        : 3 1999 2005 1 T/O GC
* I/M MODEL YEARS    : 3 1941 2030
* I/M VEHICLES       : 3 22222 21111111 1

* Specify Anti-tampering program
* ANTI-TAMP PROG     : 99 80 30 22222 21111111 1 11 097. 22212222

* Specify  diesel fractions
* Source: report by Stewart-Brown Associates; <Ontario vehicle profile 1985-
2004> / SBA / 2005
* If actual data is not available for this year use most recent available year.
Data used in this case was estimated for calendar year:    2002
DIESEL FRACTIONS   :
0.0100 0.0135 0.0167 0.0110 0.0058 0.0077 0.0054 0.0045 0.0048 0.0055
0.0060 0.0059 0.0042 0.0043 0.0036 0.0128 0.0198 0.0352 0.0421 0.0645
0.0798 0.0485 0.0206 0.0120 0.0049
0.0190 0.0202 0.0278 0.0391 0.0516 0.0260 0.0902 0.1302 0.0333 0.0083
0.0070 0.0060 0.0091 0.0097 0.0044 0.0193 0.0305 0.0218 0.0576 0.0412
0.0821 0.1277 0.0127 0.0219 0.0000
0.0000 0.0001 0.0000 0.0003 0.0004 0.0045 0.0014 0.0010 0.0010 0.0007
0.0002 0.0002 0.0010 0.0004 0.0011 0.0128 0.0160 0.0294 0.0288 0.0515
0.0857 0.0301 0.0081 0.0000 0.0021
0.0001 0.0000 0.0000 0.0005 0.0097 0.0070 0.0100 0.0191 0.0211 0.0196
0.0119 0.0169 0.0145 0.0155 0.0110 0.0220 0.0323 0.0411 0.0410 0.0660
0.0422 0.0100 0.0000 0.0000 0.0028
0.0744 0.1248 0.1107 0.1297 0.1564 0.1628 0.2255 0.2924 0.2677 0.3104
0.2182 0.2014 0.1533 0.1291 0.1211 0.1481 0.1961 0.1949 0.1298 0.0909
0.0593 0.0101 0.0000 0.0108 0.0099
0.3697 0.3297 0.3641 0.3990 0.4404 0.5023 0.5007 0.4829 0.3842 0.5483
0.5087 0.2300 0.2449 0.3281 0.1852 0.1966 0.2727 0.1879 0.1264 0.3768
0.4651 0.3925 0.3146 0.1250 0.0208
0.7082 0.7034 0.7301 0.7278 0.7082 0.7334 0.7388 0.6879 0.7550 0.6671
0.5722 0.5323 0.3735 0.3046 0.3073 0.3546 0.2730 0.1260 0.0521 0.0746
0.0625 0.0000 0.0000 0.0000 0.1250
0.8794 0.8469 0.9185 0.9060 0.8441 0.8808 0.8939 0.8564 0.7690 0.7500
0.6941 0.6583 0.7500 0.8029 0.8255 0.8968 0.9330 0.8487 0.5909 0.2222
0.0000 0.4000 1.0000 1.0000 0.2800
0.9581 0.9354 0.9595 0.9452 0.9453 0.4964 0.6800 0.6992 0.6488 0.5854
0.7528 0.8167 0.6579 0.7429 0.5593 0.3824 0.2941 0.2000 0.1563 0.0000
0.1538 0.6000 0.0000 0.0000 0.1250
0.9533 0.9162 0.9346 0.8930 0.9391 0.9574 0.9746 0.9692 0.9725 0.9609
0.9310 0.8936 0.9180 0.8618 0.8054 0.8321 0.7143 0.8182 0.8077 0.8182
0.6190 0.4762 0.9091 0.7813 0.3454
0.9573 0.9260 0.9731 0.9511 0.9438 0.9359 0.9414 0.9453 0.9071 0.9279
0.9250 0.7788 0.8908 0.8790 0.9437 0.9351 0.8542 0.8548 0.7568 0.6000
0.6250 0.8125 0.8077 0.7692 0.2929
0.9593 0.9573 0.9607 0.9370 0.9660 0.9720 0.9815 0.9884 0.9731 0.9643
0.9753 0.9765 0.9678 0.9727 0.9814 0.9664 0.9564 0.9618 0.9746 0.8684
0.9487 0.8667 0.6000 0.7692 0.2775
0.9481 0.9490 0.9398 0.9361 0.9689 0.9698 0.9798 0.9598 0.9721 0.9444
0.9742 0.9820 0.9791 0.9932 0.9835 0.9781 0.9867 0.9692 1.0000 1.0000
1.0000 0.9286 0.8704 0.8421 0.0934
0.7775 0.7870 0.8996 0.8457 0.8410 0.8633 0.8133 0.8856 0.8863 0.8535
0.8363 0.8719 0.8316 0.7122 0.7855 0.8107 0.9149 0.9040 0.7222 0.9870
0.8947 0.9631 0.9020 0.8537 0.9400

********** Scenario 1 2021, 2.5 mph, Default Start, PM2.5, Jan. ***
SCENARIO RECORD    :  2021, 2.5 mph, Default Start, PM2.5, Jan. Temp.&RVP
CALENDAR YEAR      :  2021

* Evaluation month is set to 7 for 'summer'; 1 for 'winter'. October 1 through
April 31 get 'winter' fuel properties; May 1 through September 31 get 'summer'
fuel properties (or special RVPs where applicable).
EVALUATION MONTH   :  1

* Specify PM size
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV
PMDDR2.CSV

* On-road diesel sulphur content in parts per million (ppm)from Sulphur in
Liquid Fuels reports (OGEB)
DIESEL SULFUR      :  350.0

* The SULFUR CONTENT command  below  becomes irrelevant for years after 1999
* the FUEL COMMAND in the RUN section above is used to specify sulphur levels
* SULFUR CONTENT     :
```

```
* Min/max temperatures from MSC's Monthly Data Report for 2002, January
MIN/MAX TEMP       :  25.3 36.9

AVERAGE SPEED      : 2.5 Arterial

* SOAK DISTRIBUTION  : allcoldstartsoak.d, default data are used.

* RVP Source: MOE, October 2005.

FUEL RVP           :  14.7

* All the fuel parameters below come from Appendix B of the report <Emissions of
Air Toxics from on-Highway sources in Canada>  March 2002

* GAS AROMATIC%      :  28.4      air toxics are not calculated.
* GAS OLEFIN%        :  10.3
* GAS BENZENE%       :  0.8
* E200               :  53.7
* E300               : 83.3
* OXYGENATE          :  MTBE 0.0 0.00
*                    :  ETOH 1.4 1.00
*                    :  ETBE 0.0 0.00
*                    :  TAME 0.0 0.00
*                    :  ETOH 1.4 1.00 1 1 NA NA
* ADDITIONAL HAPS    :  HAP_BASE.CSV

********** Scenario 2 2021, 5.0 mph, Default Start, PM2.5, Jan. ***
SCENARIO RECORD    :  2021, 5.0 mph, Default Start, PM2.5, Jan. Temp.&RVP

CALENDAR YEAR      :  2021

* Evaluation month is set to 7 for 'summer'; 1 for 'winter'. October 1 through
April 31 get 'winter' fuel properties; May 1 through September 31 get 'summer'
fuel properties (or special RVPs where applicable).
EVALUATION MONTH   :  1

* Specify PM size
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV
PMDDR2.CSV

* On-road diesel sulphur content in parts per million (ppm)from Sulphur in
Liquid Fuels reports (OGEB)
DIESEL SULFUR      :  350.0

* The SULFUR CONTENT command  below  becomes irrelevant for years after 1999
* the FUEL COMMAND in the RUN section above is used to specify sulphur levels
* SULFUR CONTENT     :

* Min/max temperatures from MSC's Monthly Data Report for 2002, January
MIN/MAX TEMP       :  25.3 36.9

AVERAGE SPEED      : 5.0 Arterial

* SOAK DISTRIBUTION  : allcoldstartsoak.d, default data are used.

* RVP Source: MOE, October 2005.

FUEL RVP           :  14.7

********** Scenario 3 2021, 10.0 mph, Default Start, PM2.5, Jan. ***
SCENARIO RECORD    :  2021, 10.0 mph, Default Start, PM2.5, Jan. Temp.&RVP

CALENDAR YEAR      :  2021

* Evaluation month is set to 7 for 'summer'; 1 for 'winter'. October 1 through
April 31 get 'winter' fuel properties; May 1 through September 31 get 'summer'
fuel properties (or special RVPs where applicable).
EVALUATION MONTH   :  1

* Specify PM size
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV
PMDDR2.CSV

* On-road diesel sulphur content in parts per million (ppm)from Sulphur in
Liquid Fuels reports (OGEB)
DIESEL SULFUR      :  350.0

* The SULFUR CONTENT command  below  becomes irrelevant for years after 1999
* the FUEL COMMAND in the RUN section above is used to specify sulphur levels
* SULFUR CONTENT     :

* Min/max temperatures from MSC's Monthly Data Report for 2002, January
MIN/MAX TEMP       :  25.3 36.9

AVERAGE SPEED      : 10.0 Arterial

* SOAK DISTRIBUTION  : allcoldstartsoak.d, default data are used.


* RVP Source: MOE, October 2005.

FUEL RVP           :  14.7

********** Scenario 4 2021, 18.65 mph, Default Start, PM2.5, Jan. ***
SCENARIO RECORD    :  2021, 18.65 mph, Default Start, PM2.5, Jan. Temp.&RVP

CALENDAR YEAR      :  2021

* Evaluation month is set to 7 for 'summer'; 1 for 'winter'. October 1 through
April 31 get 'winter' fuel properties; May 1 through September 31 get 'summer'
fuel properties (or special RVPs where applicable).
EVALUATION MONTH   :  1

* Specify PM size
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV
PMDDR2.CSV

* On-road diesel sulphur content in parts per million (ppm)from Sulphur in
Liquid Fuels reports (OGEB)
DIESEL SULFUR      :  350.0
```

```
* The SULFUR CONTENT command  below  becomes irrelevant for years after 1999
* the FUEL COMMAND in the RUN section above is used to specify sulphur levels
* SULFUR CONTENT     :

* Min/max temperatures from MSC's Monthly Data Report for 2002, January
MIN/MAX TEMP       :  25.3 36.9

AVERAGE SPEED      : 18.65 Arterial

* SOAK DISTRIBUTION  : allcoldstartsoak.d, default data are used.


* RVP Source: MOE, October 2005.

FUEL RVP           :  14.7

********** Scenario 5 2021, 2021, 2.5 mph, Default Start, PM2.5, July ***
SCENARIO RECORD    :  2021, 2.5 mph, Default Start, PM2.5, July Temp.&RVP

CALENDAR YEAR      :  2021

* Evaluation month is set to 7 for 'summer'; 1 for 'winter'. October 1 through
April 31 get 'winter' fuel properties; May 1 through September 31 get 'summer'
fuel properties (or special RVPs where applicable).
EVALUATION MONTH   :  7

* Specify PM size
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV
PMDDR2.CSV

* On-road diesel sulphur content in parts per million (ppm)from Sulphur in
Liquid Fuels reports (OGEB)
DIESEL SULFUR      :  350.0

* The SULFUR CONTENT command  below  becomes irrelevant for years after 1999
* the FUEL COMMAND in the RUN section above is used to specify sulphur levels
* SULFUR CONTENT     :

* Min/max temperatures from MSC's Monthly Data Report for 2002, for July
MIN/MAX TEMP       :  64.9 86.2

AVERAGE SPEED      : 2.5 Arterial

* SOAK DISTRIBUTION  : allcoldstartsoak.d, default data are used.


* RVP Source: MOE, October 2005. The RVP for July is used as below

FUEL RVP           :  8.9


********** Scenario 6 2021, 2021, 5.0 mph, Default Start, PM2.5, July ***
SCENARIO RECORD    :  2021, 5.0 mph, Default Start, PM2.5, July Temp.&RVP
CALENDAR YEAR      :  2021
```

```
* Evaluation month is set to 7 for 'summer'; 1 for 'winter'. October 1 through
April 31 get 'winter' fuel properties; May 1 through September 31 get 'summer'
fuel properties (or special RVPs where applicable).
EVALUATION MONTH   :  7

* Specify PM size
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV
PMDDR2.CSV

* On-road diesel sulphur content in parts per million (ppm)from Sulphur in
Liquid Fuels reports (OGEB)
DIESEL SULFUR      :  350.0

* The SULFUR CONTENT command  below  becomes irrelevant for years after 1999
* the FUEL COMMAND in the RUN section above is used to specify sulphur levels
* SULFUR CONTENT     :

* Min/max temperatures from MSC's Monthly Data Report for 2002, for July
MIN/MAX TEMP       :  64.9 86.2

AVERAGE SPEED      : 5.0 Arterial

* SOAK DISTRIBUTION  : allcoldstartsoak.d, default data are used.

* RVP for July is used as below

FUEL RVP           :  8.9


********** Scenario 7 2021, 10.0 mph, Default Start, PM2.5, July ***
SCENARIO RECORD    :  2021, 10.0 mph, Default Start, PM2.5, July Temp.&RVP

CALENDAR YEAR      :  2021

* Evaluation month is set to 7 for 'summer'; 1 for 'winter'. October 1 through
April 31 get 'winter' fuel properties; May 1 through September 31 get 'summer'
fuel properties (or special RVPs where applicable).
EVALUATION MONTH   :  7

* Specify PM size
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV
PMDDR2.CSV

* On-road diesel sulphur content in parts per million (ppm)from Sulphur in
Liquid Fuels reports (OGEB)
DIESEL SULFUR      :  350.0

* The SULFUR CONTENT command  below  becomes irrelevant for years after 1999
* the FUEL COMMAND in the RUN section above is used to specify sulphur levels
* SULFUR CONTENT     :

* Min/max temperatures from MSC's Monthly Data Report for 2002, for July
MIN/MAX TEMP       :  64.9 86.2
```

```
AVERAGE SPEED      : 10.0 Arterial

* SOAK DISTRIBUTION  : allcoldstartsoak.d, default data are used.

* RVP for July is used as below

FUEL RVP           :  8.9


********** Scenario 8 2021, 2021, 18.65 mph, Default Start, PM2.5, July ***
SCENARIO RECORD    :  2021, 18.65 mph, Default Start, PM2.5, July Temp.&RVP

CALENDAR YEAR      :  2021

* Evaluation month is set to 7 for 'summer'; 1 for 'winter'. October 1 through
April 31 get 'winter' fuel properties; May 1 through September 31 get 'summer'
fuel properties (or special RVPs where applicable).
EVALUATION MONTH   :  7

* Specify PM size
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV
PMDDR2.CSV

* On-road diesel sulphur content in parts per million (ppm)from Sulphur in
Liquid Fuels reports (OGEB)
DIESEL SULFUR      :  350.0

* The SULFUR CONTENT command  below  becomes irrelevant for years after 1999
* the FUEL COMMAND in the RUN section above is used to specify sulphur levels
* SULFUR CONTENT     :

* Min/max temperatures from MSC's Monthly Data Report for 2002, January
MIN/MAX TEMP       :  64.9 86.2

* All the fuel parameters below come from Appendix B of the report <Emissions of
Air Toxics from on-Highway sources in Canada>  March 2002

AVERAGE SPEED      : 18.65 Arterial

* SOAK DISTRIBUTION  : allcoldstartsoak.d, default data are used.

* RVP for July is used as below

FUEL RVP           :  8.9

END OF RUN         :
```

```
***************************************************************************
* MOBILE6C 6.2 (14-Oct-2004)                                              *
* Input file: TTC21DEFAULTSTART.IN (file 1, run 1).                       *
***************************************************************************
  M603 Comment:
             User has disabled the calculation of REFUELING emissions.


* Reading non-default MILEAGE ACCUMULATION RATES from the following external
* data file: MILEDAT_ON_.D

* Reading Registration Distributions from the following external
* data file: AGE_PH1.TXT
  M 49 Warning:
               1.00     MYR sum not = 1. (will normalize)
  M 49 Warning:
               1.00     MYR sum not = 1. (will normalize)
  M 49 Warning:
               1.00     MYR sum not = 1. (will normalize)
  M 49 Warning:
               1.00     MYR sum not = 1. (will normalize)
  M 49 Warning:
               1.00     MYR sum not = 1. (will normalize)
  M 49 Warning:
               1.00     MYR sum not = 1. (will normalize)
  M 49 Warning:
               1.00     MYR sum not = 1. (will normalize)
  M 49 Warning:
               1.00     MYR sum not = 1. (will normalize)
  M 49 Warning:
               1.00     MYR sum not = 1. (will normalize)
  M 49 Warning:
               1.00     MYR sum not = 1. (will normalize)
  M 49 Warning:
               1.00     MYR sum not = 1. (will normalize)
  M 49 Warning:
               1.00     MYR sum not = 1. (will normalize)
  M 49 Warning:
               1.00     MYR sum not = 1. (will normalize)
  M616 Comment:
             User has supplied post-1999 sulfur levels.
  M614 Comment:
             User supplied diesel sale fractions.

* # # # # # # # # # # # # # # # # # # # # # # # # #
*  2021, 2.5 mph, Default Start, PM2.5, Jan. Temp.&RVP
* File 1, Run 1, Scenario 1.
* # # # # # # # # # # # # # # # # # # # # # # # # #

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M583 Warning:
          The user supplied arterial average speed of  2.5
          will be used for all hours of the day.  100% of VMT
          has been assigned to the arterial/collector roadway
          type for all hours of the day and all vehicle types.

* Reading Ammonia (NH3) Basic Emissiion Rates
* from the external data file PMNH3BER.D

* Reading Ammonia (NH3) Sulfur Deterioration Rates
* from the external data file PMNH3SDR.D
  M111 Warning:
             The input dIesel sulfur level of 350.0 ppm exceeds
             the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                 Calendar Year:  2021
                         Month:  Jan.
                      Altitude:  Low
           Minimum Temperature:  25.3 (F)
           Maximum Temperature:  36.9 (F)
             Absolute Humidity:   75. grains/lb
              Nominal Fuel RVP:  14.7 psi
                 Weathered RVP:  14.7 psi
           Fuel Sulfur Content:   25. ppm

           Exhaust I/M Program:  No
              Evap I/M Program:  No
                   ATP Program:  No
              Reformulated Gas:  No

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
               GVWR:               <6000     >6000     (All)
```

VMT Distribution:	0.2670	0.4210	0.1394		0.0391	0.0027	0.0126	0.1146	0.0036	1.0000

Composite Emission Factors (g/mi):

Composite CO :	28.19	21.67	24.76	22.43	45.19	2.340	1.082	1.057	125.05	22.459
Composite NOX :	0.421	0.424	0.684	0.489	0.371	0.179	0.213	1.133	1.63	0.540

Exhaust emissions (g/mi):

CO Start:	7.15	6.36	7.10	6.54		0.335	0.133		8.053	
CO Running:	21.04	15.31	17.66	15.89		2.005	0.950		116.999	
CO Total Exhaust:	28.19	21.67	24.76	22.43	45.19	2.340	1.082	1.057	125.05	22.459
NOx Start:	0.044	0.040	0.070	0.048		0.005	0.005		0.715	
NOx Running:	0.378	0.384	0.614	0.441		0.174	0.208		0.916	
NOx Total Exhaust:	0.421	0.424	0.684	0.489	0.371	0.179	0.213	1.133	1.63	0.540

Veh. Type:	LDGT1	LDGT2	LDGT3	LDGT4	LDDT12	LDDT34
VMT Mix:	0.0873	0.3336	0.1001	0.0393	0.0036	0.0090

Composite Emission Factors (g/mi):

Composite CO :	30.47	19.36	25.28	23.43	1.044	1.098
Composite NOX :	0.584	0.382	0.640	0.795	0.167	0.231

Exhaust emissions (g/mi):

CO Start:	6.68	6.27	7.09	7.12	0.137	0.131
CO Running:	23.79	13.09	18.19	16.31	0.907	0.967
CO Total Exhaust:	30.47	19.36	25.28	23.43	1.044	1.098
NOx Start:	0.064	0.034	0.065	0.083	0.004	0.005
NOx Running:	0.520	0.349	0.575	0.712	0.163	0.226
NOx Total Exhaust:	0.584	0.382	0.640	0.795	0.167	0.231

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0003	0.0008	0.0025

Composite Emission Factors (g/mi):

Composite CO :	68.20	3.264	1.466
Composite NOX :	0.483	4.769	1.920

Exhaust emissions (g/mi):

CO Total Exhaust:	68.20	3.264	1.466
NOx Total Exhaust:	0.483	4.769	1.920

```
* # # # # # # # # # # # # # # # # # # # # # # # # # # # # #
*  2021, 5.0 mph, Default Start, PM2.5, Jan. Temp.&RVP
* File 1, Run 1, Scenario 2.
* # # # # # # # # # # # # # # # # # # # # # # # # # # # # #

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M583 Warning:
            The user supplied arterial average speed of  5.0
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.
  M111 Warning:
               The input dIesel sulfur level of 350.0 ppm exceeds
               the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2021
                            Month:  Jan.
                         Altitude:  Low
                Minimum Temperature:  25.3 (F)
                Maximum Temperature:  36.9 (F)
                  Absolute Humidity:   75. grains/lb
                   Nominal Fuel RVP:  14.7 psi
                       Weathered RVP:  14.7 psi
                  Fuel Sulfur Content:   25. ppm

                  Exhaust I/M Program:  No
                     Evap I/M Program:  No
                          ATP Program:  No
                   Reformulated Gas:  No
```

Vehicle Type: / GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.2670	0.4210	0.1394		0.0391	0.0027	0.0126	0.1146	0.0036	1.0000

Composite Emission Factors (g/mi):

Composite CO :	18.86	15.10	17.16	15.61	36.11	1.971	0.908	0.863	75.45	15.583
Composite NOX :	0.372	0.375	0.603	0.431	0.380	0.161	0.192	1.019	1.54	0.481

Exhaust emissions (g/mi):

CO Start:	7.15	6.36	7.10	6.54		0.335	0.133		8.053	
CO Running:	11.71	8.74	10.06	9.07		1.637	0.775		67.400	
CO Total Exhaust:	18.86	15.10	17.16	15.61	36.11	1.971	0.908	0.863	75.45	15.583
NOx Start:	0.044	0.040	0.070	0.048		0.005	0.005		0.715	
NOx Running:	0.328	0.335	0.532	0.384		0.156	0.187		0.822	
NOx Total Exhaust:	0.372	0.375	0.603	0.431	0.380	0.161	0.192	1.019	1.54	0.481

Veh. Type:	LDGT1	LDGT2	LDGT3	LDGT4	LDDT12	LDDT34
VMT Mix:	0.0873	0.3336	0.1001	0.0393	0.0036	0.0090

Composite Emission Factors (g/mi):

Composite CO :	20.31	13.73	17.45	16.40	0.877	0.920
Composite NOX :	0.516	0.338	0.565	0.699	0.151	0.208

Exhaust emissions (g/mi):

CO Start:	6.68	6.27	7.09	7.12	0.137	0.131
CO Running:	13.63	7.46	10.36	9.29	0.740	0.789
CO Total Exhaust:	20.31	13.73	17.45	16.40	0.877	0.920
NOx Start:	0.064	0.034	0.065	0.083	0.004	0.005
NOx Running:	0.451	0.304	0.499	0.616	0.147	0.203
NOx Total Exhaust:	0.516	0.338	0.565	0.699	0.151	0.208

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0003	0.0008	0.0025

Composite Emission Factors (g/mi):

Composite CO :	54.50	2.664	1.197
Composite NOX :	0.495	4.278	1.724

Exhaust emissions (g/mi):

CO Total Exhaust:	54.50	2.664	1.197
NOx Total Exhaust:	0.495	4.278	1.724

```
* # # # # # # # # # # # # # # # # # # # # # # # # # # # #
*  2021, 10.0 mph, Default Start, PM2.5, Jan. Temp.&RVP
* File 1, Run 1, Scenario 3.
* # # # # # # # # # # # # # # # # # # # # # # # # # # # #

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M583 Warning:
            The user supplied arterial average speed of 10.0
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.
  M111 Warning:
              The input dIesel sulfur level of 350.0 ppm exceeds
              the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                   Calendar Year:  2021
                           Month:  Jan.
                        Altitude:  Low
                Minimum Temperature:  25.3 (F)
                Maximum Temperature:  36.9 (F)
                  Absolute Humidity:   75. grains/lb
                   Nominal Fuel RVP:  14.7 psi
                       Weathered RVP:  14.7 psi
                Fuel Sulfur Content:   25. ppm

                Exhaust I/M Program:  No
                   Evap I/M Program:  No
                        ATP Program:  No
                   Reformulated Gas:  No

        Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
                GVWR:                <6000     >6000     (All)
                          ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
     VMT Distribution:    0.2670    0.4210    0.1394              0.0391    0.0027    0.0126    0.1146    0.0036    1.0000
   -------------------------------------------------------------------------------------------------------------------------
   Composite Emission Factors (g/mi):
       Composite CO  :     14.42     11.90     13.47     12.29     24.02     1.463     0.667     0.595     40.43    11.905
       Composite NOX :      0.306     0.307     0.497     0.354     0.400     0.135     0.160     0.846      1.46     0.400
   -------------------------------------------------------------------------------------------------------------------------
  Exhaust emissions (g/mi):

            CO Start:      7.15      6.36      7.10      6.54                0.335     0.133                8.053
          CO Running:      7.27      5.54      6.38      5.75                1.129     0.535               32.380
     CO Total Exhaust:     14.42     11.90     13.47     12.29     24.02     1.463     0.667     0.595     40.43    11.905

            NOx Start:     0.044     0.040     0.070     0.048                0.005     0.005                0.715
          NOx Running:     0.262     0.267     0.426     0.306                0.129     0.155                0.743
     NOx Total Exhaust:     0.306     0.307     0.497     0.354     0.400     0.135     0.160     0.846      1.46     0.400
   -------------------------------------------------------------------------------------------------------------------------
            Veh. Type:      LDGT1     LDGT2     LDGT3     LDGT4    LDDT12    LDDT34
                           ------    ------    ------    ------    ------    ------
             VMT Mix:     0.0873    0.3336    0.1001    0.0393    0.0036    0.0090
   -------------------------------------------------------------------------------------------------------------------------
    Composite Emission Factors (g/mi):
       Composite CO  :     15.32     11.01     13.66     13.01     0.647     0.675
       Composite NOX :      0.425     0.276     0.465     0.578     0.126     0.174
   -------------------------------------------------------------------------------------------------------------------------
  Exhaust emissions (g/mi):

            CO Start:      6.68      6.27      7.09      7.12     0.137     0.131
          CO Running:      8.64      4.73      6.57      5.89     0.510     0.544
     CO Total Exhaust:     15.32     11.01     13.66     13.01     0.647     0.675

            NOx Start:     0.064     0.034     0.065     0.083     0.004     0.005
          NOx Running:     0.361     0.242     0.399     0.495     0.122     0.169
     NOx Total Exhaust:     0.425     0.276     0.465     0.578     0.126     0.174
   -------------------------------------------------------------------------------------------------------------------------
            Veh. Type:    GasBUS     URBAN    SCHOOL
                           ------    ------    ------
             VMT Mix:     0.0003    0.0008    0.0025
   -------------------------------------------------------------------------------------------------------------------------
    Composite Emission Factors (g/mi):
       Composite CO  :     36.26     1.837     0.825
       Composite NOX :      0.520     3.535     1.429
   -------------------------------------------------------------------------------------------------------------------------
  Exhaust emissions (g/mi):
     CO Total Exhaust:     36.26     1.837     0.825
     NOx Total Exhaust:     0.520     3.535     1.429
   -------------------------------------------------------------------------------------------------------------------------
```

```
* # # # # # # # # # # # # # # # # # # # # # # # # # # # #
*  2021, 18.65 mph, Default Start, PM2.5, Jan. Temp.&RVP
* File 1, Run 1, Scenario 4.
* # # # # # # # # # # # # # # # # # # # # # # # # # # # #

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M583 Warning:
            The user supplied arterial average speed of 18.6
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.
  M111 Warning:
              The input dIesel sulfur level of 350.0 ppm exceeds
              the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                   Calendar Year:  2021
                           Month:  Jan.
                        Altitude:  Low
                Minimum Temperature:  25.3 (F)
                Maximum Temperature:  36.9 (F)
                  Absolute Humidity:   75. grains/lb
                   Nominal Fuel RVP:  14.7 psi
                       Weathered RVP:  14.7 psi
                Fuel Sulfur Content:   25. ppm

                Exhaust I/M Program:  No
                   Evap I/M Program:  No
                        ATP Program:  No
                   Reformulated Gas:  No

        Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
                GVWR:                <6000     >6000     (All)
                          ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
     VMT Distribution:    0.2670    0.4210    0.1394              0.0391    0.0027    0.0126    0.1146    0.0036    1.0000
   -------------------------------------------------------------------------------------------------------------------------
   Composite Emission Factors (g/mi):
       Composite CO  :     12.52     10.48     11.85     10.82     13.48     0.993     0.444     0.347     24.99    10.070
       Composite NOX :      0.247     0.246     0.404     0.285     0.434     0.107     0.127     0.665      1.53     0.326
   -------------------------------------------------------------------------------------------------------------------------
  Exhaust emissions (g/mi):

            CO Start:      7.15      6.36      7.10      6.54                0.335     0.133                8.053
          CO Running:      5.37      4.12      4.75      4.28                0.658     0.312               16.941
     CO Total Exhaust:     12.52     10.48     11.85     10.82     13.48     0.993     0.444     0.347     24.99    10.070

            NOx Start:     0.044     0.040     0.070     0.048                0.005     0.005                0.715
          NOx Running:     0.203     0.206     0.333     0.238                0.102     0.122                0.815
     NOx Total Exhaust:     0.247     0.246     0.404     0.285     0.434     0.107     0.127     0.665      1.53     0.326
   -------------------------------------------------------------------------------------------------------------------------
            Veh. Type:      LDGT1     LDGT2     LDGT3     LDGT4    LDDT12    LDDT34
                           ------    ------    ------    ------    ------    ------
             VMT Mix:     0.0873    0.3336    0.1001    0.0393    0.0036    0.0090
   -------------------------------------------------------------------------------------------------------------------------
    Composite Emission Factors (g/mi):
       Composite CO  :     13.06      9.80     11.98     11.51     0.435     0.448
       Composite NOX :      0.345     0.220     0.377     0.472     0.100     0.137
   -------------------------------------------------------------------------------------------------------------------------
  Exhaust emissions (g/mi):

            CO Start:      6.68      6.27      7.09      7.12     0.137     0.131
          CO Running:      6.38      3.53      4.89      4.39     0.298     0.318
     CO Total Exhaust:     13.06      9.80     11.98     11.51     0.435     0.448

            NOx Start:     0.064     0.034     0.065     0.083     0.004     0.005
          NOx Running:     0.281     0.186     0.311     0.389     0.096     0.133
     NOx Total Exhaust:     0.345     0.220     0.377     0.472     0.100     0.137
   -------------------------------------------------------------------------------------------------------------------------
            Veh. Type:    GasBUS     URBAN    SCHOOL
                           ------    ------    ------
             VMT Mix:     0.0003    0.0008    0.0025
   -------------------------------------------------------------------------------------------------------------------------
    Composite Emission Factors (g/mi):
       Composite CO  :     20.35     1.072     0.481
       Composite NOX :      0.565     2.761     1.121
   -------------------------------------------------------------------------------------------------------------------------
  Exhaust emissions (g/mi):
     CO Total Exhaust:     20.35     1.072     0.481
     NOx Total Exhaust:     0.565     2.761     1.121
   -------------------------------------------------------------------------------------------------------------------------
```

```
* # # # # # # # # # # # # # # # # # # # # # # # # # # # #
*  2021, 2.5 mph, Default Start, PM2.5, July Temp.&RVP
* File 1, Run 1, Scenario 5.
* # # # # # # # # # # # # # # # # # # # # # # # # # # # #

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M583 Warning:
            The user supplied arterial average speed of  2.5
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.
  M111 Warning:
              The input dIesel sulfur level of 350.0 ppm exceeds
              the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                   Calendar Year:  2021
                           Month:  July
                        Altitude:  Low
                Minimum Temperature:  64.9 (F)
                Maximum Temperature:  86.2 (F)
                  Absolute Humidity:   75. grains/lb
                    Nominal Fuel RVP:   8.9 psi
                        Weathered RVP:   8.7 psi
                Fuel Sulfur Content:   25. ppm

                Exhaust I/M Program:  No
                   Evap I/M Program:  No
                        ATP Program:  No
                   Reformulated Gas:  No

        Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
                GVWR:                <6000     >6000     (All)
                          ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
     VMT Distribution:    0.2668    0.4208    0.1398              0.0393    0.0027    0.0121    0.1148    0.0037    1.0000
   ---------------------------------------------------------------------------------------------------------------------
   Composite Emission Factors (g/mi):
       Composite CO  :     15.99     12.70     14.52     13.15     39.79     2.321     1.090     1.032    125.43    13.805
       Composite NOX :      0.435     0.391     0.603     0.444     0.303     0.169     0.212     1.082      1.23     0.509
   ---------------------------------------------------------------------------------------------------------------------
  Exhaust emissions (g/mi):

           CO Start:      1.51      1.74      2.18      1.85                0.334     0.134                5.446
         CO Running:     14.48     10.96     12.34     11.30                1.987     0.955               119.981
     CO Total Exhaust:   15.99     12.70     14.52     13.15     39.79      2.321     1.090     1.032    125.43    13.805

           NOx Start:     0.035     0.034     0.057     0.039                0.005     0.005                0.548
         NOx Running:     0.400     0.357     0.547     0.404                0.164     0.208                0.683
     NOx Total Exhaust:   0.435     0.391     0.603     0.444     0.303      0.169     0.212     1.082      1.23     0.509
   ---------------------------------------------------------------------------------------------------------------------
            Veh. Type:     LDGT1     LDGT2     LDGT3     LDGT4    LDDT12    LDDT34
                          ------    ------    ------    ------    ------    ------
             VMT Mix:    0.0869    0.3338    0.1002    0.0396    0.0035    0.0086
   ---------------------------------------------------------------------------------------------------------------------
    Composite Emission Factors (g/mi):
       Composite CO  :     18.40     11.21     14.89     13.58     1.051     1.106
       Composite NOX :      0.537     0.353     0.569     0.691     0.168     0.231
   ---------------------------------------------------------------------------------------------------------------------
  Exhaust emissions (g/mi):

           CO Start:      1.58      1.78      2.16      2.22      0.138     0.133
         CO Running:     16.82      9.43     12.73     11.35      0.912     0.973
     CO Total Exhaust:   18.40     11.21     14.89     13.58      1.051     1.106

           NOx Start:     0.054     0.028     0.053     0.066     0.004     0.005
         NOx Running:     0.483     0.324     0.516     0.625     0.164     0.226
     NOx Total Exhaust:   0.537     0.353     0.569     0.691     0.168     0.231
   ---------------------------------------------------------------------------------------------------------------------
            Veh. Type:    GasBUS     URBAN    SCHOOL
                          ------    ------    ------
             VMT Mix:    0.0003    0.0008    0.0025
   ---------------------------------------------------------------------------------------------------------------------
    Composite Emission Factors (g/mi):
       Composite CO  :     60.43      3.139     1.401
       Composite NOX :      0.401     4.579     1.812
   ---------------------------------------------------------------------------------------------------------------------
  Exhaust emissions (g/mi):
     CO Total Exhaust:   60.43      3.139     1.401
     NOx Total Exhaust:   0.401     4.579     1.812
   ---------------------------------------------------------------------------------------------------------------------
```

```
* # # # # # # # # # # # # # # # # # # # # # # # # # # # #
*  2021, 5.0 mph, Default Start, PM2.5, July Temp.&RVP
* File 1, Run 1, Scenario 6.
* # # # # # # # # # # # # # # # # # # # # # # # # # # # #

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M583 Warning:
            The user supplied arterial average speed of  5.0
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.
  M111 Warning:
              The input dIesel sulfur level of 350.0 ppm exceeds
              the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                   Calendar Year:  2021
                           Month:  July
                        Altitude:  Low
                Minimum Temperature:  64.9 (F)
                Maximum Temperature:  86.2 (F)
                  Absolute Humidity:   75. grains/lb
                    Nominal Fuel RVP:   8.9 psi
                        Weathered RVP:   8.7 psi
                Fuel Sulfur Content:   25. ppm

                Exhaust I/M Program:  No
                   Evap I/M Program:  No
                        ATP Program:  No
                   Reformulated Gas:  No

        Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
                GVWR:                <6000     >6000     (All)
                          ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
     VMT Distribution:    0.2668    0.4208    0.1398              0.0393    0.0027    0.0121    0.1148    0.0037    1.0000
   ---------------------------------------------------------------------------------------------------------------------
   Composite Emission Factors (g/mi):
       Composite CO  :      9.55      8.08      9.30      8.38     31.80     1.956     0.914     0.842     74.56     8.888
       Composite NOX :      0.371     0.341     0.527     0.388     0.311     0.152     0.191     0.973      1.16     0.447
   ---------------------------------------------------------------------------------------------------------------------
  Exhaust emissions (g/mi):

           CO Start:      1.51      1.74      2.18      1.85                0.334     0.134                5.446
         CO Running:      8.04      6.34      7.12      6.54                1.622     0.780               69.118
     CO Total Exhaust:    9.55      8.08      9.30      8.38     31.80      1.956     0.914     0.842     74.56     8.888

           NOx Start:     0.035     0.034     0.057     0.039                0.005     0.005                0.548
         NOx Running:     0.336     0.308     0.470     0.348                0.147     0.187                0.613
     NOx Total Exhaust:   0.371     0.341     0.527     0.388     0.311      0.152     0.191     0.973      1.16     0.447
   ---------------------------------------------------------------------------------------------------------------------
            Veh. Type:     LDGT1     LDGT2     LDGT3     LDGT4    LDDT12    LDDT34
                          ------    ------    ------    ------    ------    ------
             VMT Mix:    0.0869    0.3338    0.1002    0.0396    0.0035    0.0086
   ---------------------------------------------------------------------------------------------------------------------
    Composite Emission Factors (g/mi):
       Composite CO  :     11.32      7.24      9.50      8.78     0.883     0.927
       Composite NOX :      0.468     0.308     0.496     0.603     0.152     0.208
   ---------------------------------------------------------------------------------------------------------------------
  Exhaust emissions (g/mi):

           CO Start:      1.58      1.78      2.16      2.22      0.138     0.133
         CO Running:      9.74      5.46      7.34      6.55      0.745     0.794
     CO Total Exhaust:   11.32      7.24      9.50      8.78      0.883     0.927

           NOx Start:     0.054     0.028     0.053     0.066     0.004     0.005
         NOx Running:     0.414     0.280     0.443     0.537     0.147     0.203
     NOx Total Exhaust:   0.468     0.308     0.496     0.603     0.152     0.208
   ---------------------------------------------------------------------------------------------------------------------
            Veh. Type:    GasBUS     URBAN    SCHOOL
                          ------    ------    ------
             VMT Mix:    0.0003    0.0008    0.0025
   ---------------------------------------------------------------------------------------------------------------------
    Composite Emission Factors (g/mi):
       Composite CO  :     48.28      2.562     1.144
       Composite NOX :      0.411     4.108     1.627
   ---------------------------------------------------------------------------------------------------------------------
  Exhaust emissions (g/mi):
     CO Total Exhaust:   48.28      2.562     1.144
     NOx Total Exhaust:   0.411     4.108     1.627
   ---------------------------------------------------------------------------------------------------------------------
```

```
* # # # # # # # # # # # # # # # # # # # # # # # # # # # #
*  2021, 10.0 mph, Default Start, PM2.5, July Temp.&RVP
* File 1, Run 1, Scenario 7.
* # # # # # # # # # # # # # # # # # # # # # # # # # # # #

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M583 Warning:
            The user supplied arterial average speed of 10.0
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.
  M111 Warning:
              The input dIesel sulfur level of 350.0 ppm exceeds
              the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                   Calendar Year:  2021
                           Month:  July
                        Altitude:  Low
                Minimum Temperature:  64.9 (F)
                Maximum Temperature:  86.2 (F)
                  Absolute Humidity:   75. grains/lb
                    Nominal Fuel RVP:   8.9 psi
                        Weathered RVP:   8.7 psi
                Fuel Sulfur Content:   25. ppm

                Exhaust I/M Program:  No
                   Evap I/M Program:  No
                        ATP Program:  No
                  Reformulated Gas:  No

        Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
                GVWR:             <6000     >6000     (All)
                          ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
     VMT Distribution:    0.2668    0.4208    0.1398              0.0393    0.0027    0.0121    0.1148    0.0037    1.0000
 -------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
      Composite CO  :       6.50      5.80      6.73      6.03     21.15     1.452     0.672     0.581     38.65     6.168
      Composite NOX :      0.292     0.277     0.430     0.315     0.327     0.127     0.160     0.808      1.10     0.366
 -------------------------------------------------------------------------------------------------------------------------
Exhaust emissions (g/mi):

           CO Start:       1.51      1.74      2.18      1.85                0.334     0.134                5.446
         CO Running:       4.98      4.06      4.55      4.18                1.119     0.538               33.205
   CO Total Exhaust:       6.50      5.80      6.73      6.03     21.15      1.452     0.672     0.581     38.65     6.168

           NOx Start:      0.035     0.034     0.057     0.039                0.005     0.005                0.548
         NOx Running:      0.257     0.243     0.373     0.275                0.122     0.155                0.554
   NOx Total Exhaust:      0.292     0.277     0.430     0.315     0.327      0.127     0.160     0.808      1.10     0.366
 -------------------------------------------------------------------------------------------------------------------------
            Veh. Type:      LDGT1     LDGT2     LDGT3     LDGT4    LDDT12    LDDT34
                           ------    ------    ------    ------    ------    ------
             VMT Mix:     0.0869    0.3338    0.1002    0.0396    0.0035    0.0086
 -------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
      Composite CO  :       7.82      5.27      6.86      6.41     0.652     0.680
      Composite NOX :      0.381     0.249     0.404     0.493     0.126     0.173
 -------------------------------------------------------------------------------------------------------------------------
Exhaust emissions (g/mi):

           CO Start:       1.58      1.78      2.16      2.22     0.138     0.133
         CO Running:       6.24      3.49      4.70      4.19     0.514     0.548
   CO Total Exhaust:       7.82      5.27      6.86      6.41     0.652     0.680

           NOx Start:      0.054     0.028     0.053     0.066     0.004     0.005
         NOx Running:      0.327     0.221     0.351     0.427     0.122     0.168
   NOx Total Exhaust:      0.381     0.249     0.404     0.493     0.126     0.173
 -------------------------------------------------------------------------------------------------------------------------
            Veh. Type:     GasBUS     URBAN    SCHOOL
                           ------    ------    ------
             VMT Mix:     0.0003    0.0008    0.0025
 -------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
      Composite CO  :      32.12      1.767     0.789
      Composite NOX :      0.432      3.395     1.348
 -------------------------------------------------------------------------------------------------------------------------
Exhaust emissions (g/mi):
   CO Total Exhaust:      32.12      1.767     0.789
   NOx Total Exhaust:     0.432      3.395     1.348
 -------------------------------------------------------------------------------------------------------------------------
```

```
* # # # # # # # # # # # # # # # # # # # # # # # # # # # #
*  2021, 18.65 mph, Default Start, PM2.5, July Temp.&RVP
* File 1, Run 1, Scenario 8.
* # # # # # # # # # # # # # # # # # # # # # # # # # # # #

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M583 Warning:
            The user supplied arterial average speed of 18.6
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.
  M111 Warning:
              The input dIesel sulfur level of 350.0 ppm exceeds
              the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                   Calendar Year:  2021
                           Month:  July
                        Altitude:  Low
                Minimum Temperature:  64.9 (F)
                Maximum Temperature:  86.2 (F)
                  Absolute Humidity:   75. grains/lb
                    Nominal Fuel RVP:   8.9 psi
                        Weathered RVP:   8.7 psi
                Fuel Sulfur Content:   25. ppm

                Exhaust I/M Program:  No
                   Evap I/M Program:  No
                        ATP Program:  No
                  Reformulated Gas:  No

        Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
                GVWR:             <6000     >6000     (All)
                          ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
     VMT Distribution:    0.2668    0.4208    0.1398              0.0393    0.0027    0.0121    0.1148    0.0037    1.0000
 -------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
      Composite CO  :       5.07      4.66      5.48      4.86     11.87     0.986     0.448     0.339     22.82     4.677
      Composite NOX :      0.226     0.220     0.345     0.251     0.355     0.101     0.126     0.636      1.16     0.294
 -------------------------------------------------------------------------------------------------------------------------
Exhaust emissions (g/mi):

           CO Start:       1.51      1.74      2.18      1.85                0.334     0.134                5.446
         CO Running:       3.56      2.92      3.30      3.02                0.653     0.314               17.373
   CO Total Exhaust:       5.07      4.66      5.48      4.86     11.87      0.986     0.448     0.339     22.82     4.677

           NOx Start:      0.035     0.034     0.057     0.039                0.005     0.005                0.548
         NOx Running:      0.191     0.186     0.289     0.212                0.096     0.122                0.608
   NOx Total Exhaust:      0.226     0.220     0.345     0.251     0.355      0.101     0.126     0.636      1.16     0.294
 -------------------------------------------------------------------------------------------------------------------------
            Veh. Type:      LDGT1     LDGT2     LDGT3     LDGT4    LDDT12    LDDT34
                           ------    ------    ------    ------    ------    ------
             VMT Mix:     0.0869    0.3338    0.1002    0.0396    0.0035    0.0086
 -------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
      Composite CO  :       6.04      4.30      5.56      5.26     0.438     0.452
      Composite NOX :      0.306     0.197     0.324     0.399     0.100     0.137
 -------------------------------------------------------------------------------------------------------------------------
Exhaust emissions (g/mi):

           CO Start:       1.58      1.78      2.16      2.22     0.138     0.133
         CO Running:       4.46      2.52      3.40      3.04     0.300     0.319
   CO Total Exhaust:       6.04      4.30      5.56      5.26     0.438     0.452

           NOx Start:      0.054     0.028     0.053     0.066     0.004     0.005
         NOx Running:      0.252     0.169     0.271     0.333     0.096     0.132
   NOx Total Exhaust:      0.306     0.197     0.324     0.399     0.100     0.137
 -------------------------------------------------------------------------------------------------------------------------
            Veh. Type:     GasBUS     URBAN    SCHOOL
                           ------    ------    ------
             VMT Mix:     0.0003    0.0008    0.0025
 -------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
      Composite CO  :      18.03      1.031     0.460
      Composite NOX :      0.470      2.653     1.058
 -------------------------------------------------------------------------------------------------------------------------
Exhaust emissions (g/mi):
   CO Total Exhaust:      18.03      1.031     0.460
   NOx Total Exhaust:     0.470      2.653     1.058
 -------------------------------------------------------------------------------------------------------------------------
```

```
************************************************************************
* MOBILE6C 6.2 (14-Oct-2004)                                           *
* Input file: TTC21DEFAULTSTART.IN (file 1, run 1).                    *
************************************************************************

* # # # # # # # # # # # # # # # # # # # # # # # # # # # #
*  2021, 2.5 mph, Default Start, PM2.5, Jan. Temp.&RVP
* File 1, Run 1, Scenario 1.
* # # # # # # # # # # # # # # # # # # # # # # # # # # # #

                          Calendar Year:  2021
                                 Month:  Jan.
                Gasoline Fuel Sulfur Content:  25. ppm
                  Diesel Fuel Sulfur Content:  350. ppm
                        Particle Size Cutoff:  2.50 Microns
                           Reformulated Gas:  No

      Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
            GVWR:                 <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
VMT Distribution:      0.2670    0.4210    0.1394                0.0391    0.0027    0.0126    0.1146    0.0036    1.0000
-------------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
            Lead:      0.0000    0.0000    0.0000    0.0000    0.0000    ------    ------    ------    0.0000    0.0000
           GASPM:      0.0034    0.0033    0.0033    0.0033    0.0106    ------    ------    ------    0.0142    0.0032
         ECARBON:      ------    ------    ------    ------    ------    0.0176    0.0046    0.0137    ------    0.0017
         OCARBON:      ------    ------    ------    ------    ------    0.0050    0.0066    0.0081    ------    0.0010
             SO4:      0.0004    0.0005    0.0005    0.0005    0.0011    0.0036    0.0064    0.0197    0.0001    0.0028
Total Exhaust PM:      0.0038    0.0038    0.0038    0.0038    0.0117    0.0262    0.0176    0.0414    0.0143    0.0087
           Brake:      0.0053    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053
            Tire:      0.0020    0.0020    0.0020    0.0020    0.0025    0.0020    0.0020    0.0052    0.0010    0.0024
        Total PM:      0.0112    0.0112    0.0112    0.0112    0.0195    0.0335    0.0249    0.0519    0.0207    0.0164
             SO2:      0.0056    0.0073    0.0096    0.0079    0.0141    0.0686    0.1221    0.2809    0.0027    0.0404
             NH3:      0.1017    0.1017    0.1017    0.1017    0.0451    0.0068    0.0068    0.0270    0.0113    0.0892
-------------------------------------------------------------------------------------------------------------------------
       Veh. Type:      LDGT1     LDGT2     LDGT3     LDGT4    LDDT12    LDDT34
                       ------    ------    ------    ------    ------    ------
VMT Mix:               0.0873    0.3336    0.1001    0.0393    0.0036    0.0090
-------------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
            Lead:      0.0000    0.0000    0.0000    0.0000    ------    ------
           GASPM:      0.0033    0.0033    0.0033    0.0033    ------    ------
         ECARBON:      ------    ------    ------    ------    0.0060    0.0040
         OCARBON:      ------    ------    ------    ------    0.0086    0.0058
             SO4:      0.0005    0.0005    0.0005    0.0005    0.0053    0.0068
Total Exhaust PM:      0.0038    0.0038    0.0038    0.0038    0.0198    0.0167
           Brake:      0.0053    0.0053    0.0053    0.0053    0.0053    0.0053
            Tire:      0.0020    0.0020    0.0020    0.0020    0.0020    0.0020
        Total PM:      0.0112    0.0112    0.0112    0.0112    0.0271    0.0240
             SO2:      0.0073    0.0073    0.0096    0.0096    0.1006    0.1308
             NH3:      0.1017    0.1017    0.1017    0.1017    0.0068    0.0068
-------------------------------------------------------------------------------------------------------------------------
       Veh. Type:     GasBUS     URBAN    SCHOOL
                      ------    ------    ------
VMT Mix:              0.0003    0.0008    0.0025
-------------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
            Lead:      0.0000    ------    ------
           GASPM:      0.0160    ------    ------
         ECARBON:      ------    0.0262    0.0173
         OCARBON:      ------    0.0206    0.0136
             SO4:      0.0011    0.0355    0.0251
Total Exhaust PM:      0.0171    0.0823    0.0559
           Brake:      0.0053    0.0053    0.0053
            Tire:      0.0030    0.0030    0.0030
        Total PM:      0.0254    0.0906    0.0643
             SO2:      0.0211    0.5075    0.3580
             NH3:      0.0451    0.0270    0.0270
-------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # # # # #
*  2021, 5.0 mph, Default Start, PM2.5, Jan. Temp.&RVP
* File 1, Run 1, Scenario 2.
* # # # # # # # # # # # # # # # # # # # # # # # # # # # #

                          Calendar Year:  2021
                                 Month:  Jan.
                Gasoline Fuel Sulfur Content:  25. ppm
                  Diesel Fuel Sulfur Content:  350. ppm
                        Particle Size Cutoff:  2.50 Microns
                           Reformulated Gas:  No

      Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
            GVWR:                 <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
VMT Distribution:      0.2670    0.4210    0.1394                0.0391    0.0027    0.0126    0.1146    0.0036    1.0000
-------------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
            Lead:      0.0000    0.0000    0.0000    0.0000    0.0000    ------    ------    ------    0.0000    0.0000
           GASPM:      0.0034    0.0033    0.0033    0.0033    0.0106    ------    ------    ------    0.0142    0.0032
         ECARBON:      ------    ------    ------    ------    ------    0.0176    0.0046    0.0137    ------    0.0017
         OCARBON:      ------    ------    ------    ------    ------    0.0050    0.0066    0.0081    ------    0.0010
             SO4:      0.0004    0.0005    0.0005    0.0005    0.0011    0.0036    0.0064    0.0197    0.0001    0.0028
Total Exhaust PM:      0.0038    0.0038    0.0038    0.0038    0.0117    0.0262    0.0176    0.0414    0.0143    0.0087
           Brake:      0.0053    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053
            Tire:      0.0020    0.0020    0.0020    0.0020    0.0025    0.0020    0.0020    0.0052    0.0010    0.0024
        Total PM:      0.0112    0.0112    0.0112    0.0112    0.0195    0.0335    0.0249    0.0519    0.0207    0.0164
             SO2:      0.0056    0.0073    0.0096    0.0079    0.0141    0.0686    0.1221    0.2809    0.0027    0.0404
             NH3:      0.1017    0.1017    0.1017    0.1017    0.0451    0.0068    0.0068    0.0270    0.0113    0.0892
-------------------------------------------------------------------------------------------------------------------------
       Veh. Type:      LDGT1     LDGT2     LDGT3     LDGT4    LDDT12    LDDT34
                       ------    ------    ------    ------    ------    ------
VMT Mix:               0.0873    0.3336    0.1001    0.0393    0.0036    0.0090
-------------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
            Lead:      0.0000    0.0000    0.0000    0.0000    ------    ------
           GASPM:      0.0033    0.0033    0.0033    0.0033    ------    ------
         ECARBON:      ------    ------    ------    ------    0.0060    0.0040
         OCARBON:      ------    ------    ------    ------    0.0086    0.0058
             SO4:      0.0005    0.0005    0.0005    0.0005    0.0053    0.0068
Total Exhaust PM:      0.0038    0.0038    0.0038    0.0038    0.0198    0.0167
           Brake:      0.0053    0.0053    0.0053    0.0053    0.0053    0.0053
            Tire:      0.0020    0.0020    0.0020    0.0020    0.0020    0.0020
        Total PM:      0.0112    0.0112    0.0112    0.0112    0.0271    0.0240
             SO2:      0.0073    0.0073    0.0096    0.0096    0.1006    0.1308
             NH3:      0.1017    0.1017    0.1017    0.1017    0.0068    0.0068
-------------------------------------------------------------------------------------------------------------------------
       Veh. Type:     GasBUS     URBAN    SCHOOL
                      ------    ------    ------
VMT Mix:              0.0003    0.0008    0.0025
-------------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
            Lead:      0.0000    ------    ------
           GASPM:      0.0160    ------    ------
         ECARBON:      ------    0.0262    0.0173
         OCARBON:      ------    0.0206    0.0136
             SO4:      0.0011    0.0355    0.0251
Total Exhaust PM:      0.0171    0.0823    0.0559
           Brake:      0.0053    0.0053    0.0053
            Tire:      0.0030    0.0030    0.0030
        Total PM:      0.0254    0.0906    0.0643
             SO2:      0.0211    0.5075    0.3580
             NH3:      0.0451    0.0270    0.0270
-------------------------------------------------------------------------------------------------------------------------
```

* #
* 2021, 10.0 mph, Default Start, PM2.5, Jan. Temp.&RVP
* File 1, Run 1, Scenario 3.
* #

Calendar Year: 2021
Month: Jan.
Gasoline Fuel Sulfur Content: 25. ppm
Diesel Fuel Sulfur Content: 350. ppm
Particle Size Cutoff: 2.50 Microns
Reformulated Gas: No

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.2670	0.4210	0.1394		0.0391	0.0027	0.0126	0.1146	0.0036	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0034	0.0033	0.0033	0.0033	0.0106	------	------	------	0.0142	0.0032
ECARBON:	------	------	------	------	------	0.0176	0.0046	0.0137	------	0.0017
OCARBON:	------	------	------	------	------	0.0050	0.0066	0.0081	------	0.0010
SO4:	0.0004	0.0005	0.0005	0.0005	0.0011	0.0036	0.0064	0.0197	0.0001	0.0028
Total Exhaust PM:	0.0038	0.0038	0.0038	0.0038	0.0117	0.0262	0.0176	0.0414	0.0143	0.0087
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0025	0.0020	0.0020	0.0052	0.0010	0.0024
Total PM:	0.0112	0.0112	0.0112	0.0112	0.0195	0.0335	0.0249	0.0519	0.0207	0.0164
SO2:	0.0056	0.0073	0.0096	0.0079	0.0141	0.0686	0.1221	0.2809	0.0027	0.0404
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0892

Veh. Type:	LDGT1	LDGT2	LDGT3	LDGT4	LDDT12	LDDT34
VMT Mix:	0.0873	0.3336	0.1001	0.0393	0.0036	0.0090
Composite Emission Factors (g/mi):						
Lead:	0.0000	0.0000	0.0000	0.0000	------	------
GASPM:	0.0033	0.0033	0.0033	0.0033	------	------
ECARBON:	------	------	------	------	0.0060	0.0040
OCARBON:	------	------	------	------	0.0086	0.0058
SO4:	0.0005	0.0005	0.0005	0.0005	0.0053	0.0068
Total Exhaust PM:	0.0038	0.0038	0.0038	0.0038	0.0198	0.0167
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020
Total PM:	0.0112	0.0112	0.0112	0.0112	0.0271	0.0240
SO2:	0.0073	0.0073	0.0096	0.0096	0.1006	0.1308
NH3:	0.1017	0.1017	0.1017	0.1017	0.0068	0.0068

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0003	0.0008	0.0025
Composite Emission Factors (g/mi):			
Lead:	0.0000	------	------
GASPM:	0.0160	------	------
ECARBON:	------	0.0262	0.0173
OCARBON:	------	0.0206	0.0136
SO4:	0.0011	0.0355	0.0251
Total Exhaust PM:	0.0171	0.0823	0.0559
Brake:	0.0053	0.0053	0.0053
Tire:	0.0030	0.0030	0.0030
Total PM:	0.0254	0.0906	0.0643
SO2:	0.0211	0.5075	0.3580
NH3:	0.0451	0.0270	0.0270

* #
* 2021, 18.65 mph, Default Start, PM2.5, Jan. Temp.&RVP
* File 1, Run 1, Scenario 4.
* #

Calendar Year: 2021
Month: Jan.
Gasoline Fuel Sulfur Content: 25. ppm
Diesel Fuel Sulfur Content: 350. ppm
Particle Size Cutoff: 2.50 Microns
Reformulated Gas: No

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.2670	0.4210	0.1394		0.0391	0.0027	0.0126	0.1146	0.0036	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0034	0.0033	0.0033	0.0033	0.0106	------	------	------	0.0142	0.0032
ECARBON:	------	------	------	------	------	0.0176	0.0046	0.0137	------	0.0017
OCARBON:	------	------	------	------	------	0.0050	0.0066	0.0081	------	0.0010
SO4:	0.0004	0.0005	0.0005	0.0005	0.0011	0.0036	0.0064	0.0197	0.0001	0.0028
Total Exhaust PM:	0.0038	0.0038	0.0038	0.0038	0.0117	0.0262	0.0176	0.0414	0.0143	0.0087
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0025	0.0020	0.0020	0.0052	0.0010	0.0024
Total PM:	0.0112	0.0112	0.0112	0.0112	0.0195	0.0335	0.0249	0.0519	0.0207	0.0164
SO2:	0.0056	0.0073	0.0096	0.0079	0.0141	0.0686	0.1221	0.2809	0.0027	0.0404
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0892

Veh. Type:	LDGT1	LDGT2	LDGT3	LDGT4	LDDT12	LDDT34
VMT Mix:	0.0873	0.3336	0.1001	0.0393	0.0036	0.0090
Composite Emission Factors (g/mi):						
Lead:	0.0000	0.0000	0.0000	0.0000	------	------
GASPM:	0.0033	0.0033	0.0033	0.0033	------	------
ECARBON:	------	------	------	------	0.0060	0.0040
OCARBON:	------	------	------	------	0.0086	0.0058
SO4:	0.0005	0.0005	0.0005	0.0005	0.0053	0.0068
Total Exhaust PM:	0.0038	0.0038	0.0038	0.0038	0.0198	0.0167
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020
Total PM:	0.0112	0.0112	0.0112	0.0112	0.0271	0.0240
SO2:	0.0073	0.0073	0.0096	0.0096	0.1006	0.1308
NH3:	0.1017	0.1017	0.1017	0.1017	0.0068	0.0068

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0003	0.0008	0.0025
Composite Emission Factors (g/mi):			
Lead:	0.0000	------	------
GASPM:	0.0160	------	------
ECARBON:	------	0.0262	0.0173
OCARBON:	------	0.0206	0.0136
SO4:	0.0011	0.0355	0.0251
Total Exhaust PM:	0.0171	0.0823	0.0559
Brake:	0.0053	0.0053	0.0053
Tire:	0.0030	0.0030	0.0030
Total PM:	0.0254	0.0906	0.0643
SO2:	0.0211	0.5075	0.3580
NH3:	0.0451	0.0270	0.0270

```
* # # # # # # # # # # # # # # # # # # # # # # # # #
*  2021, 2.5 mph, Default Start, PM2.5, July Temp.&RVP
* File 1, Run 1, Scenario 5.
* # # # # # # # # # # # # # # # # # # # # # # # # #

                       Calendar Year:  2021
                               Month:  July
           Gasoline Fuel Sulfur Content:   25. ppm
             Diesel Fuel Sulfur Content:  350. ppm
                 Particle Size Cutoff:  2.50 Microns
                     Reformulated Gas:  No

      Vehicle Type:    LDGV   LDGT12   LDGT34     LDGT     HDGV     LDDV     LDDT     HDDV       MC  All Veh
              GVWR:            <6000    >6000    (All)
                     ------   ------   ------   ------   ------   ------   ------   ------   ------   ------
 VMT Distribution:   0.2668   0.4208   0.1398            0.0393   0.0027   0.0121   0.1148   0.0037   1.0000
--------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
              Lead:  0.0000   0.0000   0.0000   0.0000   0.0000   ------   ------   ------   0.0000   0.0000
             GASPM:  0.0034   0.0033   0.0033   0.0033   0.0103   ------   ------   ------   0.0142   0.0032
           ECARBON:  ------   ------   ------   ------   ------   0.0169   0.0046   0.0135   ------   0.0016
           OCARBON:  ------   ------   ------   ------   ------   0.0048   0.0066   0.0079   ------   0.0010
               SO4:  0.0004   0.0005   0.0005   0.0005   0.0011   0.0036   0.0064   0.0197   0.0001   0.0028
 Total Exhaust PM:   0.0038   0.0038   0.0038   0.0038   0.0114   0.0253   0.0175   0.0411   0.0143   0.0087
             Brake:  0.0053   0.0053   0.0053   0.0053   0.0053   0.0053   0.0053   0.0053   0.0053   0.0053
              Tire:  0.0020   0.0020   0.0020   0.0020   0.0025   0.0020   0.0020   0.0052   0.0010   0.0024
          Total PM:  0.0112   0.0112   0.0112   0.0112   0.0193   0.0326   0.0248   0.0515   0.0207   0.0164
               SO2:  0.0056   0.0073   0.0096   0.0079   0.0141   0.0686   0.1220   0.2811   0.0027   0.0404
               NH3:  0.1017   0.1017   0.1017   0.1017   0.0451   0.0068   0.0068   0.0270   0.0113   0.0892
--------------------------------------------------------------------------------------------------------------
        Veh. Type:    LDGT1    LDGT2    LDGT3    LDGT4   LDDT12   LDDT34
                     ------   ------   ------   ------   ------   ------
          VMT Mix:   0.0869   0.3338   0.1002   0.0396   0.0035   0.0086
--------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
              Lead:  0.0000   0.0000   0.0000   0.0000   ------   ------
             GASPM:  0.0033   0.0033   0.0033   0.0033   ------   ------
           ECARBON:  ------   ------   ------   ------   0.0059   0.0040
           OCARBON:  ------   ------   ------   ------   0.0085   0.0058
               SO4:  0.0005   0.0005   0.0005   0.0005   0.0053   0.0068
 Total Exhaust PM:   0.0038   0.0038   0.0038   0.0038   0.0196   0.0166
             Brake:  0.0053   0.0053   0.0053   0.0053   0.0053   0.0053
              Tire:  0.0020   0.0020   0.0020   0.0020   0.0020   0.0020
          Total PM:  0.0112   0.0112   0.0112   0.0112   0.0270   0.0239
               SO2:  0.0073   0.0073   0.0096   0.0096   0.1006   0.1308
               NH3:  0.1017   0.1017   0.1017   0.1017   0.0068   0.0068
--------------------------------------------------------------------------------------------------------------
        Veh. Type:   GasBUS    URBAN   SCHOOL
                     ------   ------   ------
          VMT Mix:   0.0003   0.0008   0.0025
--------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
              Lead:  0.0000   ------   ------
             GASPM:  0.0157   ------   ------
           ECARBON:  ------   0.0257   0.0168
           OCARBON:  ------   0.0202   0.0132
               SO4:  0.0011   0.0355   0.0251
 Total Exhaust PM:   0.0168   0.0814   0.0551
             Brake:  0.0053   0.0053   0.0053
              Tire:  0.0030   0.0030   0.0030
          Total PM:  0.0252   0.0897   0.0635
               SO2:  0.0211   0.5075   0.3580
               NH3:  0.0451   0.0270   0.0270
--------------------------------------------------------------------------------------------------------------
```

```
* # # # # # # # # # # # # # # # # # # # # # # # # #
*  2021, 5.0 mph, Default Start, PM2.5, July Temp.&RVP
* File 1, Run 1, Scenario 6.
* # # # # # # # # # # # # # # # # # # # # # # # # #

                       Calendar Year:  2021
                               Month:  July
           Gasoline Fuel Sulfur Content:   25. ppm
             Diesel Fuel Sulfur Content:  350. ppm
                 Particle Size Cutoff:  2.50 Microns
                     Reformulated Gas:  No

      Vehicle Type:    LDGV   LDGT12   LDGT34     LDGT     HDGV     LDDV     LDDT     HDDV       MC  All Veh
              GVWR:            <6000    >6000    (All)
                     ------   ------   ------   ------   ------   ------   ------   ------   ------   ------
 VMT Distribution:   0.2668   0.4208   0.1398            0.0393   0.0027   0.0121   0.1148   0.0037   1.0000
--------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
              Lead:  0.0000   0.0000   0.0000   0.0000   0.0000   ------   ------   ------   0.0000   0.0000
             GASPM:  0.0034   0.0033   0.0033   0.0033   0.0103   ------   ------   ------   0.0142   0.0032
           ECARBON:  ------   ------   ------   ------   ------   0.0169   0.0046   0.0135   ------   0.0016
           OCARBON:  ------   ------   ------   ------   ------   0.0048   0.0066   0.0079   ------   0.0010
               SO4:  0.0004   0.0005   0.0005   0.0005   0.0011   0.0036   0.0064   0.0197   0.0001   0.0028
 Total Exhaust PM:   0.0038   0.0038   0.0038   0.0038   0.0114   0.0253   0.0175   0.0411   0.0143   0.0087
             Brake:  0.0053   0.0053   0.0053   0.0053   0.0053   0.0053   0.0053   0.0053   0.0053   0.0053
              Tire:  0.0020   0.0020   0.0020   0.0020   0.0025   0.0020   0.0020   0.0052   0.0010   0.0024
          Total PM:  0.0112   0.0112   0.0112   0.0112   0.0193   0.0326   0.0248   0.0515   0.0207   0.0164
               SO2:  0.0056   0.0073   0.0096   0.0079   0.0141   0.0686   0.1220   0.2811   0.0027   0.0404
               NH3:  0.1017   0.1017   0.1017   0.1017   0.0451   0.0068   0.0068   0.0270   0.0113   0.0892
--------------------------------------------------------------------------------------------------------------
        Veh. Type:    LDGT1    LDGT2    LDGT3    LDGT4   LDDT12   LDDT34
                     ------   ------   ------   ------   ------   ------
          VMT Mix:   0.0869   0.3338   0.1002   0.0396   0.0035   0.0086
--------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
              Lead:  0.0000   0.0000   0.0000   0.0000   ------   ------
             GASPM:  0.0033   0.0033   0.0033   0.0033   ------   ------
           ECARBON:  ------   ------   ------   ------   0.0059   0.0040
           OCARBON:  ------   ------   ------   ------   0.0085   0.0058
               SO4:  0.0005   0.0005   0.0005   0.0005   0.0053   0.0068
 Total Exhaust PM:   0.0038   0.0038   0.0038   0.0038   0.0196   0.0166
             Brake:  0.0053   0.0053   0.0053   0.0053   0.0053   0.0053
              Tire:  0.0020   0.0020   0.0020   0.0020   0.0020   0.0020
          Total PM:  0.0112   0.0112   0.0112   0.0112   0.0270   0.0239
               SO2:  0.0073   0.0073   0.0096   0.0096   0.1006   0.1308
               NH3:  0.1017   0.1017   0.1017   0.1017   0.0068   0.0068
--------------------------------------------------------------------------------------------------------------
        Veh. Type:   GasBUS    URBAN   SCHOOL
                     ------   ------   ------
          VMT Mix:   0.0003   0.0008   0.0025
--------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
              Lead:  0.0000   ------   ------
             GASPM:  0.0157   ------   ------
           ECARBON:  ------   0.0257   0.0168
           OCARBON:  ------   0.0202   0.0132
               SO4:  0.0011   0.0355   0.0251
 Total Exhaust PM:   0.0168   0.0814   0.0551
             Brake:  0.0053   0.0053   0.0053
              Tire:  0.0030   0.0030   0.0030
          Total PM:  0.0252   0.0897   0.0635
               SO2:  0.0211   0.5075   0.3580
               NH3:  0.0451   0.0270   0.0270
--------------------------------------------------------------------------------------------------------------
```

* #
* 2021, 10.0 mph, Default Start, PM2.5, July Temp.&RVP
* File 1, Run 1, Scenario 7.
* #

Calendar Year: 2021
Month: July
Gasoline Fuel Sulfur Content: 25. ppm
Diesel Fuel Sulfur Content: 350. ppm
Particle Size Cutoff: 2.50 Microns
Reformulated Gas: No

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.2668	0.4208	0.1398		0.0393	0.0027	0.0121	0.1148	0.0037	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0034	0.0033	0.0033	0.0033	0.0103	------	------	------	0.0142	0.0032
ECARBON:	------	------	------	------	------	0.0169	0.0046	0.0135	------	0.0016
OCARBON:	------	------	------	------	------	0.0048	0.0066	0.0079	------	0.0010
SO4:	0.0004	0.0005	0.0005	0.0005	0.0011	0.0036	0.0064	0.0197	0.0001	0.0028
Total Exhaust PM:	0.0038	0.0038	0.0038	0.0038	0.0114	0.0253	0.0175	0.0411	0.0143	0.0087
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0025	0.0020	0.0020	0.0052	0.0010	0.0024
Total PM:	0.0112	0.0112	0.0112	0.0112	0.0193	0.0326	0.0248	0.0515	0.0207	0.0164
SO2:	0.0056	0.0073	0.0096	0.0079	0.0141	0.0686	0.1220	0.2811	0.0027	0.0404
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0892

Veh. Type:	LDGT1	LDGT2	LDGT3	LDGT4	LDDT12	LDDT34
VMT Mix:	0.0869	0.3338	0.1002	0.0396	0.0035	0.0086
Composite Emission Factors (g/mi):						
Lead:	0.0000	0.0000	0.0000	0.0000	------	------
GASPM:	0.0033	0.0033	0.0033	0.0033	------	------
ECARBON:	------	------	------	------	0.0059	0.0040
OCARBON:	------	------	------	------	0.0085	0.0058
SO4:	0.0005	0.0005	0.0005	0.0005	0.0053	0.0068
Total Exhaust PM:	0.0038	0.0038	0.0038	0.0038	0.0196	0.0166
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020
Total PM:	0.0112	0.0112	0.0112	0.0112	0.0270	0.0239
SO2:	0.0073	0.0073	0.0096	0.0096	0.1006	0.1308
NH3:	0.1017	0.1017	0.1017	0.1017	0.0068	0.0068

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0003	0.0008	0.0025
Composite Emission Factors (g/mi):			
Lead:	0.0000	------	------
GASPM:	0.0157	------	------
ECARBON:	------	0.0257	0.0168
OCARBON:	------	0.0202	0.0132
SO4:	0.0011	0.0355	0.0251
Total Exhaust PM:	0.0168	0.0814	0.0551
Brake:	0.0053	0.0053	0.0053
Tire:	0.0030	0.0030	0.0030
Total PM:	0.0252	0.0897	0.0635
SO2:	0.0211	0.5075	0.3580
NH3:	0.0451	0.0270	0.0270

* #
* 2021, 18.65 mph, Default Start, PM2.5, July Temp.&RVP
* File 1, Run 1, Scenario 8.
* #

Calendar Year: 2021
Month: July
Gasoline Fuel Sulfur Content: 25. ppm
Diesel Fuel Sulfur Content: 350. ppm
Particle Size Cutoff: 2.50 Microns
Reformulated Gas: No

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.2668	0.4208	0.1398		0.0393	0.0027	0.0121	0.1148	0.0037	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0034	0.0033	0.0033	0.0033	0.0103	------	------	------	0.0142	0.0032
ECARBON:	------	------	------	------	------	0.0169	0.0046	0.0135	------	0.0016
OCARBON:	------	------	------	------	------	0.0048	0.0066	0.0079	------	0.0010
SO4:	0.0004	0.0005	0.0005	0.0005	0.0011	0.0036	0.0064	0.0197	0.0001	0.0028
Total Exhaust PM:	0.0038	0.0038	0.0038	0.0038	0.0114	0.0253	0.0175	0.0411	0.0143	0.0087
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0025	0.0020	0.0020	0.0052	0.0010	0.0024
Total PM:	0.0112	0.0112	0.0112	0.0112	0.0193	0.0326	0.0248	0.0515	0.0207	0.0164
SO2:	0.0056	0.0073	0.0096	0.0079	0.0141	0.0686	0.1220	0.2811	0.0027	0.0404
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0892

Veh. Type:	LDGT1	LDGT2	LDGT3	LDGT4	LDDT12	LDDT34
VMT Mix:	0.0869	0.3338	0.1002	0.0396	0.0035	0.0086
Composite Emission Factors (g/mi):						
Lead:	0.0000	0.0000	0.0000	0.0000	------	------
GASPM:	0.0033	0.0033	0.0033	0.0033	------	------
ECARBON:	------	------	------	------	0.0059	0.0040
OCARBON:	------	------	------	------	0.0085	0.0058
SO4:	0.0005	0.0005	0.0005	0.0005	0.0053	0.0068
Total Exhaust PM:	0.0038	0.0038	0.0038	0.0038	0.0196	0.0166
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020
Total PM:	0.0112	0.0112	0.0112	0.0112	0.0270	0.0239
SO2:	0.0073	0.0073	0.0096	0.0096	0.1006	0.1308
NH3:	0.1017	0.1017	0.1017	0.1017	0.0068	0.0068

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0003	0.0008	0.0025
Composite Emission Factors (g/mi):			
Lead:	0.0000	------	------
GASPM:	0.0157	------	------
ECARBON:	------	0.0257	0.0168
OCARBON:	------	0.0202	0.0132
SO4:	0.0011	0.0355	0.0251
Total Exhaust PM:	0.0168	0.0814	0.0551
Brake:	0.0053	0.0053	0.0053
Tire:	0.0030	0.0030	0.0030
Total PM:	0.0252	0.0897	0.0635
SO2:	0.0211	0.5075	0.3580
NH3:	0.0451	0.0270	0.0270

```
********** Header section **********
* File based on 2002_2011_ON_P1a.in from the MOE, October 2005
* Reference number for this input file -  ONP1a-2 by Brett Taylor
* This file is designed for MOBILE6.2C and will provide output for Phase1 of
Ontario's Drive Clean program.
* 'Phase1' of the Drive Clean program covers Toronto; Durham; York; Peel; Halton
and Hamilton.
* Estimates to be used in CO, PM2.5, and NOX Modeling Analysis
* Sources to inputs are documented throughout.
* January and July Temperatures and Fuel RVP values are used, repectively.
* Meteorological data from: Toronto Lester B. Pearson International Airport
station readings.

MOBILE6 INPUT FILE
PARTICULATES       :
* AIR TOXICS       : CO2 and air toxics emissions are not quantified.
POLLUTANTS         : CO NOX
SPREADSHEET        :
*DATABASE OUTPUT    :
*DATABASE VEHICLES  : 21111 11111111 1 111 11111111 121

Run Data
********** Ontario Phase1 2021 **********
* Ontario Phase1 2021
* PRESS HC AS VOC  :
* EXPAND EVAP      :
NO REFUELING       :

* Specify  mileage accumulation rates
* Source: Table M1 of Vehicle Fleet Profiles for Ontario and British Columbia
* Annual Kilometer Accumulation Rates Vehicle-Kilometers Traveled and IM Program
Effectiveness  SBA  Sept 2004.
* Source: the MOE, October 2005
MILE ACCUM RATE    : Miledat_ON_.d

* Specify  age distribution
* Source: the MOE, October 2005
REG DIST           :  age_ph1.txt

* Expand vehicle class descriptive output
EXPAND BUS EFS     :
* EXPAND HDDV EFS    :
* EXPAND HDGV EFS    :
EXPAND LDT EFS     :

* Expand exhaust emissions descriptive output
EXPAND EXHAUST     :

* Expand evaporative emissions descriptive output
* EXPAND EVAPORATIVE :

* Because it is now post-1999 calendar year sulphur levels in gasoline must be
specified.
* using the FUEL PROGRAM command (see Advanced Training Guide manual Day 1
* page 46)
* Sulphur source: Environment Canada's Sulphur in Liquid Fuels annual report
* Max Sulphur content from CEPA Sulphur in Gasoline Regulation Registration June
* 4  1999
* The regulation implies the use of 25ppm for years after 2004.
* The 4 rows and 8 columns below represent;
* row 1 - average sulphur levels (ppm) from 2000 to 2007
* row 2 - average sulphur levels (ppm) from 2008 to 2015
* row 3 - maximum sulphur levels (ppm) from 2000 to 2007
* row 4 - maximum sulphur levels (ppm) from 2008 to 2015
FUEL PROGRAM       : 4
450.0 390.0 330.0 171.0 52.0 25.0 25.0 25.0
25.0 25.0 25.0 25.0 25.0 25.0 25.0 25.0
500.0 500.0 500.0 500.0 500.0 25.0 25.0 25.0
25.0 25.0 25.0 25.0 25.0 25.0 25.0 25.0

* Below is how MOBILE would handle Drive Clean, but is included here as comments
only.

* Phase-in for Phase 1 starts in 1999
* Specify Acceleration Simulation Mode FINAL I/M for years 2001 to 2030
* Specify ASM2525 PHASE-IN I/M for years 1999 to 2001
* I/M PROGRAM        : 1 1999 2001 1 T/O ASM 2525 PHASE-IN
* I/M MODEL YEARS    : 1 1941 2030
* I/M VEHICLES       : 1 22222 21111111 1
* I/M STRINGENCY     : 1 27.0
* I/M COMPLIANCE     : 1 87.0
* I/M WAIVER RATES   : 1 0.3 1.2

* Stringency  Compliance and Waiver Rates
* I/M PROGRAM        : 2 2002 2005 1 T/O ASM 2525 FINAL
* I/M MODEL YEARS    : 2 1941 2030
* I/M VEHICLES       : 2 22222 21111111 1
* I/M STRINGENCY     : 2 27.0
* I/M COMPLIANCE     : 2 87.1
* I/M WAIVER RATES   : 2 0.3 1.2

* Specify Visual Gap Test
* I/M PROGRAM        : 3 1999 2005 1 T/O GC
* I/M MODEL YEARS    : 3 1941 2030
* I/M VEHICLES       : 3 22222 21111111 1

* Specify Anti-tampering program
* ANTI-TAMP PROG     : 99 80 30 22222 21111111 1 11 097. 22212222

* Specify  diesel fractions
* Source: report by Stewart-Brown Associates; <Ontario vehicle profile 1985-
2004> / SBA / 2005
* If actual data is not available for this year use most recent available year.
Data used in this case was estimated for calendar year:    2002
DIESEL FRACTIONS   :
0.0100 0.0135 0.0167 0.0110 0.0058 0.0077 0.0054 0.0045 0.0048 0.0055
0.0060 0.0059 0.0042 0.0043 0.0036 0.0128 0.0198 0.0352 0.0421 0.0645
0.0798 0.0485 0.0206 0.0120 0.0049
0.0190 0.0202 0.0278 0.0391 0.0516 0.0260 0.0902 0.1302 0.0333 0.0083
0.0070 0.0060 0.0091 0.0097 0.0044 0.0193 0.0305 0.0218 0.0576 0.0412
0.0821 0.1277 0.0127 0.0219 0.0000
0.0000 0.0001 0.0000 0.0003 0.0004 0.0045 0.0014 0.0010 0.0010 0.0007
0.0002 0.0002 0.0010 0.0004 0.0011 0.0128 0.0160 0.0294 0.0288 0.0515
```

```
0.0857 0.0301 0.0081 0.0000 0.0021
0.0001 0.0000 0.0000 0.0005 0.0097 0.0070 0.0100 0.0191 0.0211 0.0196
0.0119 0.0169 0.0145 0.0155 0.0110 0.0220 0.0323 0.0411 0.0410 0.0660
0.0422 0.0100 0.0000 0.0000 0.0028
0.0744 0.1248 0.1107 0.1297 0.1564 0.1628 0.2255 0.2924 0.2677 0.3104
0.2182 0.2014 0.1533 0.1291 0.1211 0.1481 0.1961 0.1949 0.1298 0.0909
0.0593 0.0101 0.0000 0.0108 0.0099
0.3697 0.3297 0.3641 0.3990 0.4404 0.5023 0.5007 0.4829 0.3842 0.5483
0.5087 0.2300 0.2449 0.3281 0.1852 0.1966 0.2727 0.1879 0.1264 0.3768
0.4651 0.3925 0.3146 0.1250 0.0208
0.7082 0.7034 0.7301 0.7278 0.7082 0.7334 0.7388 0.6879 0.7550 0.6671
0.5722 0.5323 0.3735 0.3046 0.3073 0.3546 0.2730 0.1260 0.0521 0.0746
0.0625 0.0000 0.0000 0.0000 0.1250
0.8794 0.8469 0.9185 0.9060 0.8441 0.8808 0.8939 0.8564 0.7690 0.7500
0.6941 0.6583 0.7500 0.8029 0.8255 0.8968 0.9330 0.8487 0.5909 0.2222
0.0000 0.4000 1.0000 1.0000 0.2800
0.9581 0.9354 0.9595 0.9452 0.9453 0.4964 0.6800 0.6992 0.6488 0.5854
0.7528 0.8167 0.6579 0.7429 0.5593 0.3824 0.2941 0.2000 0.1563 0.0000
0.1538 0.6000 0.0000 0.0000 0.1250
0.9533 0.9162 0.9346 0.8930 0.9391 0.9574 0.9746 0.9692 0.9725 0.9609
0.9310 0.8936 0.9180 0.8618 0.8054 0.8321 0.7143 0.8182 0.8077 0.8182
0.6190 0.4762 0.9091 0.7813 0.3454
0.9573 0.9260 0.9731 0.9511 0.9438 0.9359 0.9414 0.9453 0.9071 0.9279
0.9250 0.7788 0.8908 0.8790 0.9437 0.9351 0.8542 0.8548 0.7568 0.6000
0.6250 0.8125 0.8077 0.7692 0.2929
0.9593 0.9573 0.9607 0.9370 0.9660 0.9720 0.9815 0.9884 0.9731 0.9643
0.9753 0.9765 0.9678 0.9727 0.9814 0.9664 0.9564 0.9618 0.9746 0.8684
0.9487 0.8667 0.6000 0.7692 0.2775
0.9481 0.9490 0.9398 0.9361 0.9689 0.9698 0.9798 0.9598 0.9721 0.9444
0.9742 0.9820 0.9791 0.9932 0.9835 0.9781 0.9867 0.9692 1.0000 1.0000
1.0000 0.9286 0.8704 0.8421 0.0934
0.7775 0.7870 0.8996 0.8457 0.8410 0.8633 0.8133 0.8856 0.8863 0.8535
0.8363 0.8719 0.8316 0.7122 0.7855 0.8107 0.9149 0.9040 0.7222 0.9870
0.8947 0.9631 0.9020 0.8537 0.9400

********** Scenario 1 2021, 2.5 mph, 100%Cold Start, PM2.5, Jan. ***
SCENARIO RECORD    :  2021, 2.5 mph, 100%Cold, PM2.5, Jan. Temp.&RVP
CALENDAR YEAR      :  2021

* Evaluation month is set to 7 for 'summer'; 1 for 'winter'. October 1 through
April 31 get 'winter' fuel properties; May 1 through September 31 get 'summer'
fuel properties (or special RVPs where applicable).
EVALUATION MONTH   :  1

* Specify PM size
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV
PMDDR2.CSV

* On-road diesel sulphur content in parts per million (ppm)from Sulphur in
Liquid Fuels reports (OGEB)
DIESEL SULFUR      :  350.0

* The SULFUR CONTENT command  below  becomes irrelevant for years after 1999
* the FUEL COMMAND in the RUN section above is used to specify sulphur levels
* SULFUR CONTENT     :

* Min/max temperatures from MSC's Monthly Data Report for 2002, January
MIN/MAX TEMP       :  25.3 36.9


AVERAGE SPEED      : 2.5 Arterial

SOAK DISTRIBUTION  : allcoldstartsoak.d

* RVP Source: MOE, October 2005.

FUEL RVP           :  14.7

* All the fuel parameters below come from Appendix B of the report <Emissions of
Air Toxics from on-Highway sources in Canada>  March 2002

* GAS AROMATIC%      :  28.4      air toxics are not calculated.
* GAS OLEFIN%        :  10.3
* GAS BENZENE%       :  0.8
* E200               :  53.7
* E300               : 83.3
* OXYGENATE          :  MTBE 0.0 0.00
*                    :  ETOH 1.4 1.00
*                    :  ETBE 0.0 0.00
*                    :  TAME 0.0 0.00
*                    :  ETOH 1.4 1.00 1 1 NA NA
* ADDITIONAL HAPS    :  HAP_BASE.CSV



********** Scenario 2 2021, 5.0 mph, 100%Cold Start, PM2.5, Jan. ***
SCENARIO RECORD    :  2021, 5.0 mph, 100%Cold, PM2.5, Jan. Temp.&RVP

CALENDAR YEAR      :  2021

* Evaluation month is set to 7 for 'summer'; 1 for 'winter'. October 1 through
April 31 get 'winter' fuel properties; May 1 through September 31 get 'summer'
fuel properties (or special RVPs where applicable).
EVALUATION MONTH   :  1

* Specify PM size
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV
PMDDR2.CSV

* On-road diesel sulphur content in parts per million (ppm)from Sulphur in
Liquid Fuels reports (OGEB)
DIESEL SULFUR      :  350.0

* The SULFUR CONTENT command  below  becomes irrelevant for years after 1999
* the FUEL COMMAND in the RUN section above is used to specify sulphur levels
* SULFUR CONTENT     :

* Min/max temperatures from MSC's Monthly Data Report for 2002, January
MIN/MAX TEMP       :  25.3 36.9

AVERAGE SPEED      : 5.0 Arterial
```

```
SOAK DISTRIBUTION  : allcoldstartsoak.d

* RVP Source: MOE, October 2005.

FUEL RVP           :  14.7



********** Scenario 3 2021, 10.0 mph, 100%Cold Start, PM2.5, Jan. ***
SCENARIO RECORD    :  2021, 10.0 mph, 100%Cold, PM2.5, Jan. Temp.&RVP

CALENDAR YEAR      :  2021

* Evaluation month is set to 7 for 'summer'; 1 for 'winter'. October 1 through
April 31 get 'winter' fuel properties; May 1 through September 31 get 'summer'
fuel properties (or special RVPs where applicable).
EVALUATION MONTH   :  1

* Specify PM size
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV
PMDDR2.CSV

* On-road diesel sulphur content in parts per million (ppm)from Sulphur in
Liquid Fuels reports (OGEB)
DIESEL SULFUR      :  350.0

* The SULFUR CONTENT command  below  becomes irrelevant for years after 1999
* the FUEL COMMAND in the RUN section above is used to specify sulphur levels
* SULFUR CONTENT     :

* Min/max temperatures from MSC's Monthly Data Report for 2002, January
MIN/MAX TEMP       :  25.3 36.9


AVERAGE SPEED      : 10.0 Arterial

SOAK DISTRIBUTION  : allcoldstartsoak.d


* RVP Source: MOE, October 2005.

FUEL RVP           :  14.7



********** Scenario 4 2021, 18.65 mph, 100%Cold Start, PM2.5, Jan. ***
SCENARIO RECORD    :  2021, 18.65 mph, 100%Cold, PM2.5, Jan. Temp.&RVP

CALENDAR YEAR      :  2021

* Evaluation month is set to 7 for 'summer'; 1 for 'winter'. October 1 through
April 31 get 'winter' fuel properties; May 1 through September 31 get 'summer'
fuel properties (or special RVPs where applicable).
EVALUATION MONTH   :  1

* Specify PM size
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV
PMDDR2.CSV

* On-road diesel sulphur content in parts per million (ppm)from Sulphur in
Liquid Fuels reports (OGEB)
DIESEL SULFUR      :  350.0

* The SULFUR CONTENT command  below  becomes irrelevant for years after 1999
* the FUEL COMMAND in the RUN section above is used to specify sulphur levels
* SULFUR CONTENT     :

* Min/max temperatures from MSC's Monthly Data Report for 2002, January
MIN/MAX TEMP       :  25.3 36.9


AVERAGE SPEED      : 18.65 Arterial

SOAK DISTRIBUTION  : allcoldstartsoak.d


* RVP Source: MOE, October 2005.

FUEL RVP           :  14.7

********** Scenario 5 2021, 2021, 2.5 mph, 100%Cold Start, PM2.5, July ***
SCENARIO RECORD    :  2021, 2.5 mph, 100%Cold, PM2.5, July Temp.&RVP

CALENDAR YEAR      :  2021

* Evaluation month is set to 7 for 'summer'; 1 for 'winter'. October 1 through
April 31 get 'winter' fuel properties; May 1 through September 31 get 'summer'
fuel properties (or special RVPs where applicable).
EVALUATION MONTH   :  7

* Specify PM size
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV
PMDDR2.CSV

* On-road diesel sulphur content in parts per million (ppm)from Sulphur in
Liquid Fuels reports (OGEB)
DIESEL SULFUR      :  350.0

* The SULFUR CONTENT command  below  becomes irrelevant for years after 1999
* the FUEL COMMAND in the RUN section above is used to specify sulphur levels
* SULFUR CONTENT     :

* Min/max temperatures from MSC's Monthly Data Report for 2002, for July
MIN/MAX TEMP       :  64.9 86.2


AVERAGE SPEED      : 2.5 Arterial

SOAK DISTRIBUTION  : allcoldstartsoak.d
```

```
* RVP Source: MOE, October 2005. The RVP for July is used as below

FUEL RVP           :  8.9



********** Scenario 6 2021, 2021, 5.0 mph, 100%Cold Start, PM2.5, July ***
SCENARIO RECORD    :  2021, 5.0 mph, 100%Cold, PM2.5, July Temp.&RVP

CALENDAR YEAR      :  2021

* Evaluation month is set to 7 for 'summer'; 1 for 'winter'. October 1 through
April 31 get 'winter' fuel properties; May 1 through September 31 get 'summer'
fuel properties (or special RVPs where applicable).
EVALUATION MONTH   :  7

* Specify PM size
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV
PMDDR2.CSV

* On-road diesel sulphur content in parts per million (ppm)from Sulphur in
Liquid Fuels reports (OGEB)
DIESEL SULFUR      :  350.0

* The SULFUR CONTENT command  below  becomes irrelevant for years after 1999
* the FUEL COMMAND in the RUN section above is used to specify sulphur levels
* SULFUR CONTENT     :

* Min/max temperatures from MSC's Monthly Data Report for 2002, for July
MIN/MAX TEMP       :  64.9 86.2

AVERAGE SPEED      : 5.0 Arterial

SOAK DISTRIBUTION  : allcoldstartsoak.d

* RVP for July is used as below

FUEL RVP           :  8.9



********** Scenario 7 2021, 10.0 mph, 100%Cold Start, PM2.5, July ***
SCENARIO RECORD    :  2021, 10.0 mph, 100%Cold, PM2.5, July Temp.&RVP

CALENDAR YEAR      :  2021

* Evaluation month is set to 7 for 'summer'; 1 for 'winter'. October 1 through
April 31 get 'winter' fuel properties; May 1 through September 31 get 'summer'
fuel properties (or special RVPs where applicable).
EVALUATION MONTH   :  7

* Specify PM size
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV
PMDDR2.CSV
```

```
* On-road diesel sulphur content in parts per million (ppm)from Sulphur in
Liquid Fuels reports (OGEB)
DIESEL SULFUR      :  350.0

* The SULFUR CONTENT command  below  becomes irrelevant for years after 1999
* the FUEL COMMAND in the RUN section above is used to specify sulphur levels
* SULFUR CONTENT     :

* Min/max temperatures from MSC's Monthly Data Report for 2002, for July
MIN/MAX TEMP       :  64.9 86.2


AVERAGE SPEED      : 10.0 Arterial

SOAK DISTRIBUTION  : allcoldstartsoak.d


* RVP for July is used as below

FUEL RVP           :  8.9



********** Scenario 8 2021, 2021, 18.65 mph, 100%Cold Start, PM2.5, July ***
SCENARIO RECORD    :  2021, 18.65 mph, 100%Cold, PM2.5, July Temp.&RVP

CALENDAR YEAR      :  2021

* Evaluation month is set to 7 for 'summer'; 1 for 'winter'. October 1 through
April 31 get 'winter' fuel properties; May 1 through September 31 get 'summer'
fuel properties (or special RVPs where applicable).
EVALUATION MONTH   :  7

* Specify PM size
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV
PMDDR2.CSV

* On-road diesel sulphur content in parts per million (ppm)from Sulphur in
Liquid Fuels reports (OGEB)
DIESEL SULFUR      :  350.0

* The SULFUR CONTENT command  below  becomes irrelevant for years after 1999
* the FUEL COMMAND in the RUN section above is used to specify sulphur levels
* SULFUR CONTENT     :

* Min/max temperatures from MSC's Monthly Data Report for 2002, January
MIN/MAX TEMP       :  64.9 86.2

* All the fuel parameters below come from Appendix B of the report <Emissions of
Air Toxics from on-Highway sources in Canada>  March 2002


AVERAGE SPEED      : 18.65 Arterial

SOAK DISTRIBUTION  : allcoldstartsoak.d
```

```
* RVP for July is used as below

FUEL RVP           :  8.9

END OF RUN         :
```

```
**************************************************************************
* MOBILE6C 6.2 (14-Oct-2004)                                             *
* Input file: TTC21COLDSTART.IN (file 1, run 1).                         *
**************************************************************************
  M603 Comment:
             User has disabled the calculation of REFUELING emissions.


* Reading non-default MILEAGE ACCUMULATION RATES from the following external
* data file: MILEDAT_ON_.D

* Reading Registration Distributions from the following external
* data file: AGE_PH1.TXT
  M 49 Warning:
               1.00     MYR sum not = 1. (will normalize)
  M 49 Warning:
               1.00     MYR sum not = 1. (will normalize)
  M 49 Warning:
               1.00     MYR sum not = 1. (will normalize)
  M 49 Warning:
               1.00     MYR sum not = 1. (will normalize)
  M 49 Warning:
               1.00     MYR sum not = 1. (will normalize)
  M 49 Warning:
               1.00     MYR sum not = 1. (will normalize)
  M 49 Warning:
               1.00     MYR sum not = 1. (will normalize)
  M 49 Warning:
               1.00     MYR sum not = 1. (will normalize)
  M 49 Warning:
               1.00     MYR sum not = 1. (will normalize)
  M 49 Warning:
               1.00     MYR sum not = 1. (will normalize)
  M 49 Warning:
               1.00     MYR sum not = 1. (will normalize)
  M 49 Warning:
               1.00     MYR sum not = 1. (will normalize)
  M 49 Warning:
               1.00     MYR sum not = 1. (will normalize)
  M616 Comment:
             User has supplied post-1999 sulfur levels.
  M614 Comment:
             User supplied diesel sale fractions.

* # # # # # # # # # # # # # # # # # # # # # # # # #
*  2021, 2.5 mph, 100%Cold, PM2.5, Jan. Temp.&RVP
* File 1, Run 1, Scenario 1.
* # # # # # # # # # # # # # # # # # # # # # # # # #

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M583 Warning:
            The user supplied arterial average speed of  2.5
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading start SOAK distribution from the following external
* data file: ALLCOLDSTARTSOAK.D

* Reading Ammonia (NH3) Basic Emissiion Rates
* from the external data file PMNH3BER.D

* Reading Ammonia (NH3) Sulfur Deterioration Rates
* from the external data file PMNH3SDR.D
  M111 Warning:
             The input dIesel sulfur level of 350.0 ppm exceeds
             the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                  Calendar Year:  2021
                          Month:  Jan.
                       Altitude:  Low
            Minimum Temperature:  25.3 (F)
            Maximum Temperature:  36.9 (F)
              Absolute Humidity:   75. grains/lb
               Nominal Fuel RVP:  14.7 psi
                  Weathered RVP:  14.7 psi
            Fuel Sulfur Content:   25. ppm

            Exhaust I/M Program:  No
               Evap I/M Program:  No
                    ATP Program:  No
               Reformulated Gas:  No
```

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.2670	0.4210	0.1394		0.0391	0.0027	0.0126	0.1146	0.0036	1.0000
Composite Emission Factors (g/mi):										
Composite CO :	35.90	28.35	32.09	29.28	45.19	2.751	1.245	1.057	143.43	28.424
Composite NOX :	0.440	0.441	0.713	0.509	0.371	0.177	0.211	1.133	1.33	0.555
Exhaust emissions (g/mi):										
CO Start:	14.87	13.04	14.43	13.39		0.746	0.296		26.433	
CO Running:	21.04	15.31	17.66	15.89		2.005	0.950		116.999	
CO Total Exhaust:	35.90	28.35	32.09	29.28	45.19	2.751	1.245	1.057	143.43	28.424
NOx Start:	0.062	0.057	0.099	0.067		0.004	0.003		0.411	
NOx Running:	0.378	0.384	0.614	0.441		0.174	0.208		0.916	
NOx Total Exhaust:	0.440	0.441	0.713	0.509	0.371	0.177	0.211	1.133	1.33	0.555

Veh. Type:	LDGT1	LDGT2	LDGT3	LDGT4	LDDT12	LDDT34
VMT Mix:	0.0873	0.3336	0.1001	0.0393	0.0036	0.0090
Composite Emission Factors (g/mi):						
Composite CO :	37.61	25.92	32.62	30.76	1.212	1.258
Composite NOX :	0.611	0.397	0.667	0.829	0.166	0.230
Exhaust emissions (g/mi):						
CO Start:	13.81	12.84	14.43	14.45	0.306	0.291
CO Running:	23.79	13.09	18.19	16.31	0.907	0.967
CO Total Exhaust:	37.61	25.92	32.62	30.76	1.212	1.258
NOx Start:	0.091	0.048	0.092	0.117	0.003	0.003
NOx Running:	0.520	0.349	0.575	0.712	0.163	0.226
NOx Total Exhaust:	0.611	0.397	0.667	0.829	0.166	0.230

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0003	0.0008	0.0025
Composite Emission Factors (g/mi):			
Composite CO :	68.20	3.264	1.466
Composite NOX :	0.483	4.769	1.920
Exhaust emissions (g/mi):			
CO Total Exhaust:	68.20	3.264	1.466
NOx Total Exhaust:	0.483	4.769	1.920

```
* # # # # # # # # # # # # # # # # # # # # # # # # # # # # #
*  2021, 5.0 mph, 100%Cold, PM2.5, Jan. Temp.&RVP
* File 1, Run 1, Scenario 2.
* # # # # # # # # # # # # # # # # # # # # # # # # # # # # #

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M583 Warning:
            The user supplied arterial average speed of  5.0
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading start SOAK distribution from the following external
* data file: ALLCOLDSTARTSOAK.D
  M111 Warning:
             The input dIesel sulfur level of 350.0 ppm exceeds
             the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                  Calendar Year:  2021
                          Month:  Jan.
                       Altitude:  Low
            Minimum Temperature:  25.3 (F)
            Maximum Temperature:  36.9 (F)
              Absolute Humidity:   75. grains/lb
               Nominal Fuel RVP:  14.7 psi
                   Weathered RVP:  14.7 psi
            Fuel Sulfur Content:   25. ppm

            Exhaust I/M Program:  No
               Evap I/M Program:  No
                    ATP Program:  No
             Reformulated Gas:  No
```

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.2670	0.4210	0.1394		0.0391	0.0027	0.0126	0.1146	0.0036	1.0000
Composite Emission Factors (g/mi):										
Composite CO :	26.58	21.78	24.49	22.45	36.11	2.383	1.071	0.863	93.83	21.549
Composite NOX :	0.390	0.391	0.632	0.451	0.380	0.160	0.190	1.019	1.23	0.496
Exhaust emissions (g/mi):										
CO Start:	14.87	13.04	14.43	13.39		0.746	0.296		26.433	
CO Running:	11.71	8.74	10.06	9.07		1.637	0.775		67.400	
CO Total Exhaust:	26.58	21.78	24.49	22.45	36.11	2.383	1.071	0.863	93.83	21.549
NOx Start:	0.062	0.057	0.099	0.067		0.004	0.003		0.411	
NOx Running:	0.328	0.335	0.532	0.384		0.156	0.187		0.822	
NOx Total Exhaust:	0.390	0.391	0.632	0.451	0.380	0.160	0.190	1.019	1.23	0.496

Veh. Type:	LDGT1	LDGT2	LDGT3	LDGT4	LDDT12	LDDT34
VMT Mix:	0.0873	0.3336	0.1001	0.0393	0.0036	0.0090
Composite Emission Factors (g/mi):						
Composite CO :	27.45	20.30	24.79	23.73	1.046	1.081
Composite NOX :	0.542	0.352	0.592	0.734	0.150	0.207
Exhaust emissions (g/mi):						
CO Start:	13.81	12.84	14.43	14.45	0.306	0.291
CO Running:	13.63	7.46	10.36	9.29	0.740	0.789
CO Total Exhaust:	27.45	20.30	24.79	23.73	1.046	1.081
NOx Start:	0.091	0.048	0.092	0.117	0.003	0.003
NOx Running:	0.451	0.304	0.499	0.616	0.147	0.203
NOx Total Exhaust:	0.542	0.352	0.592	0.734	0.150	0.207

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0003	0.0008	0.0025
Composite Emission Factors (g/mi):			
Composite CO :	54.50	2.664	1.197
Composite NOX :	0.495	4.278	1.724
Exhaust emissions (g/mi):			
CO Total Exhaust:	54.50	2.664	1.197
NOx Total Exhaust:	0.495	4.278	1.724

```
* # # # # # # # # # # # # # # # # # # # # # # # # # # # #
*  2021, 10.0 mph, 100%Cold, PM2.5, Jan. Temp.&RVP
* File 1, Run 1, Scenario 3.
* # # # # # # # # # # # # # # # # # # # # # # # # # # # #

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M583 Warning:
            The user supplied arterial average speed of 10.0
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading start SOAK distribution from the following external
* data file: ALLCOLDSTARTSOAK.D
  M111 Warning:
              The input dIesel sulfur level of 350.0 ppm exceeds
              the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2021
                            Month:  Jan.
                         Altitude:  Low
                Minimum Temperature:  25.3 (F)
                Maximum Temperature:  36.9 (F)
                  Absolute Humidity:   75. grains/lb
                   Nominal Fuel RVP:  14.7 psi
                      Weathered RVP:  14.7 psi
                Fuel Sulfur Content:   25. ppm

                Exhaust I/M Program:  No
                   Evap I/M Program:  No
                         ATP Program:  No
                  Reformulated Gas:  No

      Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
             GVWR:                <6000     >6000     (All)
                      ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2670    0.4210    0.1394              0.0391    0.0027    0.0126    0.1146    0.0036    1.0000
 -------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
      Composite CO  :    22.14     18.58     20.81     19.14     24.02     1.875     0.830     0.595     58.81    17.871
      Composite NOX :     0.324     0.323     0.526     0.374     0.400     0.133     0.158     0.846      1.15     0.415
 -------------------------------------------------------------------------------------------------------------------
Exhaust emissions (g/mi):

           CO Start:    14.87     13.04     14.43     13.39               0.746     0.296               26.433
         CO Running:     7.27      5.54      6.38      5.75               1.129     0.535               32.380
   CO Total Exhaust:    22.14     18.58     20.81     19.14     24.02     1.875     0.830     0.595     58.81    17.871

           NOx Start:    0.062     0.057     0.099     0.067               0.004     0.003               0.411
         NOx Running:    0.262     0.267     0.426     0.306               0.129     0.155               0.743
   NOx Total Exhaust:    0.324     0.323     0.526     0.374     0.400     0.133     0.158     0.846      1.15     0.415
 -------------------------------------------------------------------------------------------------------------------
            Veh. Type:     LDGT1     LDGT2     LDGT3     LDGT4    LDDT12    LDDT34
                      ------    ------    ------    ------    ------    ------
             VMT Mix:    0.0873    0.3336    0.1001    0.0393    0.0036    0.0090
 -------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
      Composite CO  :    22.45     17.57     21.00     20.34     0.816     0.836
      Composite NOX :     0.452     0.290     0.492     0.612     0.125     0.172
 -------------------------------------------------------------------------------------------------------------------
Exhaust emissions (g/mi):

           CO Start:    13.81     12.84     14.43     14.45     0.306     0.291
         CO Running:     8.64      4.73      6.57      5.89     0.510     0.544
   CO Total Exhaust:    22.45     17.57     21.00     20.34     0.816     0.836

           NOx Start:    0.091     0.048     0.092     0.117     0.003     0.003
         NOx Running:    0.361     0.242     0.399     0.495     0.122     0.169
   NOx Total Exhaust:    0.452     0.290     0.492     0.612     0.125     0.172
 -------------------------------------------------------------------------------------------------------------------
            Veh. Type:   GasBUS     URBAN    SCHOOL
                      ------    ------    ------
             VMT Mix:    0.0003    0.0008    0.0025
 -------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
      Composite CO  :    36.26     1.837     0.825
      Composite NOX :     0.520     3.535     1.429
 -------------------------------------------------------------------------------------------------------------------
Exhaust emissions (g/mi):
   CO Total Exhaust:    36.26     1.837     0.825
   NOx Total Exhaust:    0.520     3.535     1.429
 -------------------------------------------------------------------------------------------------------------------
```

```
* # # # # # # # # # # # # # # # # # # # # # # # # # # # #
*  2021, 18.65 mph, 100%Cold, PM2.5, Jan. Temp.&RVP
* File 1, Run 1, Scenario 4.
* # # # # # # # # # # # # # # # # # # # # # # # # # # # #

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M583 Warning:
            The user supplied arterial average speed of 18.6
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading start SOAK distribution from the following external
* data file: ALLCOLDSTARTSOAK.D
  M111 Warning:
              The input dIesel sulfur level of 350.0 ppm exceeds
              the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2021
                            Month:  Jan.
                         Altitude:  Low
                Minimum Temperature:  25.3 (F)
                Maximum Temperature:  36.9 (F)
                  Absolute Humidity:   75. grains/lb
                   Nominal Fuel RVP:  14.7 psi
                      Weathered RVP:  14.7 psi
                Fuel Sulfur Content:   25. ppm

                Exhaust I/M Program:  No
                   Evap I/M Program:  No
                         ATP Program:  No
                  Reformulated Gas:  No

      Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
             GVWR:                <6000     >6000     (All)
                      ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2670    0.4210    0.1394              0.0391    0.0027    0.0126    0.1146    0.0036    1.0000
 -------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
      Composite CO  :    20.23     17.16     19.19     17.66     13.48     1.404     0.607     0.347     43.37    16.036
      Composite NOX :     0.265     0.263     0.433     0.305     0.434     0.105     0.125     0.665      1.23     0.341
 -------------------------------------------------------------------------------------------------------------------
Exhaust emissions (g/mi):

           CO Start:    14.87     13.04     14.43     13.39               0.746     0.296               26.433
         CO Running:     5.37      4.12      4.75      4.28               0.658     0.312               16.941
   CO Total Exhaust:    20.23     17.16     19.19     17.66     13.48     1.404     0.607     0.347     43.37    16.036

           NOx Start:    0.062     0.057     0.099     0.067               0.004     0.003               0.411
         NOx Running:    0.203     0.206     0.333     0.238               0.102     0.122               0.815
   NOx Total Exhaust:    0.265     0.263     0.433     0.305     0.434     0.105     0.125     0.665      1.23     0.341
 -------------------------------------------------------------------------------------------------------------------
            Veh. Type:     LDGT1     LDGT2     LDGT3     LDGT4    LDDT12    LDDT34
                      ------    ------    ------    ------    ------    ------
             VMT Mix:    0.0873    0.3336    0.1001    0.0393    0.0036    0.0090
 -------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
      Composite CO  :    20.20     16.36     19.32     18.84     0.603     0.609
      Composite NOX :     0.372     0.234     0.404     0.506     0.099     0.136
 -------------------------------------------------------------------------------------------------------------------
Exhaust emissions (g/mi):

           CO Start:    13.81     12.84     14.43     14.45     0.306     0.291
         CO Running:     6.38      3.53      4.89      4.39     0.298     0.318
   CO Total Exhaust:    20.20     16.36     19.32     18.84     0.603     0.609

           NOx Start:    0.091     0.048     0.092     0.117     0.003     0.003
         NOx Running:    0.281     0.186     0.311     0.389     0.096     0.133
   NOx Total Exhaust:    0.372     0.234     0.404     0.506     0.099     0.136
 -------------------------------------------------------------------------------------------------------------------
            Veh. Type:   GasBUS     URBAN    SCHOOL
                      ------    ------    ------
             VMT Mix:    0.0003    0.0008    0.0025
 -------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
      Composite CO  :    20.35     1.072     0.481
      Composite NOX :     0.565     2.761     1.121
 -------------------------------------------------------------------------------------------------------------------
Exhaust emissions (g/mi):
   CO Total Exhaust:    20.35     1.072     0.481
   NOx Total Exhaust:    0.565     2.761     1.121
 -------------------------------------------------------------------------------------------------------------------
```

```
* # # # # # # # # # # # # # # # # # # # # # # # # # # # #
*  2021, 2.5 mph, 100%Cold, PM2.5, July Temp.&RVP
* File 1, Run 1, Scenario 5.
* # # # # # # # # # # # # # # # # # # # # # # # # # # # #

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M583 Warning:
            The user supplied arterial average speed of  2.5
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading start SOAK distribution from the following external
* data file: ALLCOLDSTARTSOAK.D
  M111 Warning:
              The input dIesel sulfur level of 350.0 ppm exceeds
              the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2021
                            Month:  July
                         Altitude:  Low
                Minimum Temperature:  64.9 (F)
                Maximum Temperature:  86.2 (F)
                  Absolute Humidity:   75. grains/lb
                   Nominal Fuel RVP:   8.9 psi
                      Weathered RVP:   8.7 psi
                Fuel Sulfur Content:   25. ppm

                Exhaust I/M Program:  No
                   Evap I/M Program:  No
                         ATP Program:  No
                  Reformulated Gas:  No

      Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
             GVWR:                <6000     >6000     (All)
            ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
VMT Distribution:    0.2668    0.4208    0.1398              0.0393    0.0027    0.0121    0.1148    0.0037    1.0000
-------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :    17.51     14.51     16.83     15.09     39.79     2.731     1.255     1.032    129.98    15.318
     Composite NOX :     0.452     0.407     0.631     0.463     0.303     0.167     0.211     1.082      1.08     0.523
-------------------------------------------------------------------------------------------------------------------
Exhaust emissions (g/mi):

          CO Start:     3.04      3.55      4.48      3.78                0.744     0.300                9.995
        CO Running:    14.48     10.96     12.34     11.30                1.987     0.955              119.981
   CO Total Exhaust:    17.51     14.51     16.83     15.09     39.79     2.731     1.255     1.032    129.98    15.318

          NOx Start:    0.052     0.050     0.084     0.059                0.004     0.003                0.398
        NOx Running:    0.400     0.357     0.547     0.404                0.164     0.208                0.683
  NOx Total Exhaust:    0.452     0.407     0.631     0.463     0.303     0.167     0.211     1.082      1.08     0.523
-------------------------------------------------------------------------------------------------------------------
         Veh. Type:     LDGT1     LDGT2     LDGT3     LDGT4    LDDT12    LDDT34
                       ------    ------    ------    ------    ------    ------
            VMT Mix:    0.0869    0.3338    0.1002    0.0396    0.0035    0.0086
-------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :     20.02     13.08     17.18     15.93     1.221     1.269
     Composite NOX :     0.563     0.367     0.595     0.724     0.167     0.229
-------------------------------------------------------------------------------------------------------------------
Exhaust emissions (g/mi):

          CO Start:     3.20      3.64      4.44      4.58      0.309     0.296
        CO Running:    16.82      9.43     12.73     11.35      0.912     0.973
   CO Total Exhaust:    20.02     13.08     17.18     15.93      1.221     1.269

          NOx Start:    0.080     0.042     0.079     0.098     0.003     0.003
        NOx Running:    0.483     0.324     0.516     0.625     0.164     0.226
  NOx Total Exhaust:    0.563     0.367     0.595     0.724     0.167     0.229
-------------------------------------------------------------------------------------------------------------------
         Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
            VMT Mix:    0.0003    0.0008    0.0025
-------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :     60.43     3.139     1.401
     Composite NOX :     0.401     4.579     1.812
-------------------------------------------------------------------------------------------------------------------
Exhaust emissions (g/mi):
   CO Total Exhaust:    60.43     3.139     1.401
  NOx Total Exhaust:    0.401     4.579     1.812
-------------------------------------------------------------------------------------------------------------------
```

```
* # # # # # # # # # # # # # # # # # # # # # # # # # # # #
*  2021, 5.0 mph, 100%Cold, PM2.5, July Temp.&RVP
* File 1, Run 1, Scenario 6.
* # # # # # # # # # # # # # # # # # # # # # # # # # # # #

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M583 Warning:
            The user supplied arterial average speed of  5.0
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading start SOAK distribution from the following external
* data file: ALLCOLDSTARTSOAK.D
  M111 Warning:
              The input dIesel sulfur level of 350.0 ppm exceeds
              the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2021
                            Month:  July
                         Altitude:  Low
                Minimum Temperature:  64.9 (F)
                Maximum Temperature:  86.2 (F)
                  Absolute Humidity:   75. grains/lb
                   Nominal Fuel RVP:   8.9 psi
                      Weathered RVP:   8.7 psi
                Fuel Sulfur Content:   25. ppm

                Exhaust I/M Program:  No
                   Evap I/M Program:  No
                         ATP Program:  No
                  Reformulated Gas:  No

      Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
             GVWR:                <6000     >6000     (All)
            ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
VMT Distribution:    0.2668    0.4208    0.1398              0.0393    0.0027    0.0121    0.1148    0.0037    1.0000
-------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :    11.08      9.89     11.60     10.32     31.80     2.366     1.079     0.842     79.11    10.401
     Composite NOX :     0.388     0.358     0.554     0.407     0.311     0.151     0.190     0.973      1.01     0.462
-------------------------------------------------------------------------------------------------------------------
Exhaust emissions (g/mi):

          CO Start:     3.04      3.55      4.48      3.78                0.744     0.300                9.995
        CO Running:     8.04      6.34      7.12      6.54                1.622     0.780               69.118
   CO Total Exhaust:    11.08      9.89     11.60     10.32     31.80     2.366     1.079     0.842     79.11    10.401

          NOx Start:    0.052     0.050     0.084     0.059                0.004     0.003                0.398
        NOx Running:    0.336     0.308     0.470     0.348                0.147     0.187                0.613
  NOx Total Exhaust:    0.388     0.358     0.554     0.407     0.311     0.151     0.190     0.973      1.01     0.462
-------------------------------------------------------------------------------------------------------------------
         Veh. Type:     LDGT1     LDGT2     LDGT3     LDGT4    LDDT12    LDDT34
                       ------    ------    ------    ------    ------    ------
            VMT Mix:    0.0869    0.3338    0.1002    0.0396    0.0035    0.0086
-------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :     12.94      9.10     11.79     11.13     1.054     1.090
     Composite NOX :     0.494     0.322     0.522     0.635     0.150     0.206
-------------------------------------------------------------------------------------------------------------------
Exhaust emissions (g/mi):

          CO Start:     3.20      3.64      4.44      4.58      0.309     0.296
        CO Running:     9.74      5.46      7.34      6.55      0.745     0.794
   CO Total Exhaust:    12.94      9.10     11.79     11.13      1.054     1.090

          NOx Start:    0.080     0.042     0.079     0.098     0.003     0.003
        NOx Running:    0.414     0.280     0.443     0.537     0.147     0.203
  NOx Total Exhaust:    0.494     0.322     0.522     0.635     0.150     0.206
-------------------------------------------------------------------------------------------------------------------
         Veh. Type:    GasBUS     URBAN    SCHOOL
                       ------    ------    ------
            VMT Mix:    0.0003    0.0008    0.0025
-------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :     48.28     2.562     1.144
     Composite NOX :     0.411     4.108     1.627
-------------------------------------------------------------------------------------------------------------------
Exhaust emissions (g/mi):
   CO Total Exhaust:    48.28     2.562     1.144
  NOx Total Exhaust:    0.411     4.108     1.627
-------------------------------------------------------------------------------------------------------------------
```

```
* # # # # # # # # # # # # # # # # # # # # # # # # # # # #
*  2021, 10.0 mph, 100%Cold, PM2.5, July Temp.&RVP
* File 1, Run 1, Scenario 7.
* # # # # # # # # # # # # # # # # # # # # # # # # # # # #

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M583 Warning:
            The user supplied arterial average speed of 10.0
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading start SOAK distribution from the following external
* data file: ALLCOLDSTARTSOAK.D
  M111 Warning:
              The input dIesel sulfur level of 350.0 ppm exceeds
              the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2021
                            Month:  July
                         Altitude:  Low
                Minimum Temperature:  64.9 (F)
                Maximum Temperature:  86.2 (F)
                  Absolute Humidity:   75. grains/lb
                   Nominal Fuel RVP:   8.9 psi
                      Weathered RVP:   8.7 psi
                Fuel Sulfur Content:   25. ppm

                Exhaust I/M Program:  No
                   Evap I/M Program:  No
                         ATP Program:  No
                  Reformulated Gas:  No

      Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
             GVWR:                <6000     >6000     (All)
                      ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2668    0.4208    0.1398                0.0393    0.0027    0.0121    0.1148    0.0037    1.0000
 -------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
      Composite CO  :      8.02      7.61      9.04      7.97     21.15     1.863     0.837     0.581     43.20     7.680
      Composite NOX :     0.309     0.293     0.457     0.334     0.327     0.126     0.158     0.808      0.95     0.381
 -------------------------------------------------------------------------------------------------------------------------
Exhaust emissions (g/mi):

           CO Start:      3.04      3.55      4.48      3.78                0.744     0.300                9.995
         CO Running:      4.98      4.06      4.55      4.18                1.119     0.538               33.205
   CO Total Exhaust:      8.02      7.61      9.04      7.97     21.15     1.863     0.837     0.581     43.20     7.680

           NOx Start:     0.052     0.050     0.084     0.059                0.004     0.003                0.398
         NOx Running:     0.257     0.243     0.373     0.275                0.122     0.155                0.554
  NOx Total Exhaust:     0.309     0.293     0.457     0.334     0.327     0.126     0.158     0.808      0.95     0.381
 -------------------------------------------------------------------------------------------------------------------------
           Veh. Type:     LDGT1     LDGT2     LDGT3     LDGT4    LDDT12    LDDT34
                      ------    ------    ------    ------    ------    ------
             VMT Mix:    0.0869    0.3338    0.1002    0.0396    0.0035    0.0086
 -------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
      Composite CO  :      9.44      7.14      9.14      8.77     0.822     0.843
      Composite NOX :     0.408     0.263     0.430     0.526     0.125     0.172
 -------------------------------------------------------------------------------------------------------------------------
Exhaust emissions (g/mi):

           CO Start:      3.20      3.64      4.44      4.58     0.309     0.296
         CO Running:      6.24      3.49      4.70      4.19     0.514     0.548
   CO Total Exhaust:      9.44      7.14      9.14      8.77     0.822     0.843

           NOx Start:     0.080     0.042     0.079     0.098     0.003     0.003
         NOx Running:     0.327     0.221     0.351     0.427     0.122     0.168
  NOx Total Exhaust:     0.408     0.263     0.430     0.526     0.125     0.172
 -------------------------------------------------------------------------------------------------------------------------
           Veh. Type:    GasBUS     URBAN    SCHOOL
                      ------    ------    ------
             VMT Mix:    0.0003    0.0008    0.0025
 -------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
      Composite CO  :     32.12     1.767     0.789
      Composite NOX :     0.432     3.395     1.348
 -------------------------------------------------------------------------------------------------------------------------
Exhaust emissions (g/mi):
   CO Total Exhaust:     32.12     1.767     0.789
  NOx Total Exhaust:     0.432     3.395     1.348
 -------------------------------------------------------------------------------------------------------------------------
```

```
* # # # # # # # # # # # # # # # # # # # # # # # # # # # #
*  2021, 18.65 mph, 100%Cold, PM2.5, July Temp.&RVP
* File 1, Run 1, Scenario 8.
* # # # # # # # # # # # # # # # # # # # # # # # # # # # #

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M583 Warning:
            The user supplied arterial average speed of 18.6
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.

* Reading start SOAK distribution from the following external
* data file: ALLCOLDSTARTSOAK.D
  M111 Warning:
              The input dIesel sulfur level of 350.0 ppm exceeds
              the 2007 HDD Rule diesel sulfur limit of 15 ppm.

                    Calendar Year:  2021
                            Month:  July
                         Altitude:  Low
                Minimum Temperature:  64.9 (F)
                Maximum Temperature:  86.2 (F)
                  Absolute Humidity:   75. grains/lb
                   Nominal Fuel RVP:   8.9 psi
                      Weathered RVP:   8.7 psi
                Fuel Sulfur Content:   25. ppm

                Exhaust I/M Program:  No
                   Evap I/M Program:  No
                         ATP Program:  No
                  Reformulated Gas:  No

      Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
             GVWR:                <6000     >6000     (All)
                      ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2668    0.4208    0.1398                0.0393    0.0027    0.0121    0.1148    0.0037    1.0000
 -------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
      Composite CO  :      6.59      6.47      7.78      6.80     11.87     1.397     0.613     0.339     27.37     6.189
      Composite NOX :     0.243     0.236     0.373     0.270     0.355     0.100     0.125     0.636      1.01     0.309
 -------------------------------------------------------------------------------------------------------------------------
Exhaust emissions (g/mi):

           CO Start:      3.04      3.55      4.48      3.78                0.744     0.300                9.995
         CO Running:      3.56      2.92      3.30      3.02                0.653     0.314               17.373
   CO Total Exhaust:      6.59      6.47      7.78      6.80     11.87     1.397     0.613     0.339     27.37     6.189

           NOx Start:     0.052     0.050     0.084     0.059                0.004     0.003                0.398
         NOx Running:     0.191     0.186     0.289     0.212                0.096     0.122                0.608
  NOx Total Exhaust:     0.243     0.236     0.373     0.270     0.355     0.100     0.125     0.636      1.01     0.309
 -------------------------------------------------------------------------------------------------------------------------
           Veh. Type:     LDGT1     LDGT2     LDGT3     LDGT4    LDDT12    LDDT34
                      ------    ------    ------    ------    ------    ------
             VMT Mix:    0.0869    0.3338    0.1002    0.0396    0.0035    0.0086
 -------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
      Composite CO  :      7.66      6.16      7.84      7.62     0.608     0.615
      Composite NOX :     0.332     0.211     0.350     0.431     0.099     0.136
 -------------------------------------------------------------------------------------------------------------------------
Exhaust emissions (g/mi):

           CO Start:      3.20      3.64      4.44      4.58     0.309     0.296
         CO Running:      4.46      2.52      3.40      3.04     0.300     0.319
   CO Total Exhaust:      7.66      6.16      7.84      7.62     0.608     0.615

           NOx Start:     0.080     0.042     0.079     0.098     0.003     0.003
         NOx Running:     0.252     0.169     0.271     0.333     0.096     0.132
  NOx Total Exhaust:     0.332     0.211     0.350     0.431     0.099     0.136
 -------------------------------------------------------------------------------------------------------------------------
           Veh. Type:    GasBUS     URBAN    SCHOOL
                      ------    ------    ------
             VMT Mix:    0.0003    0.0008    0.0025
 -------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
      Composite CO  :     18.03     1.031     0.460
      Composite NOX :     0.470     2.653     1.058
 -------------------------------------------------------------------------------------------------------------------------
Exhaust emissions (g/mi):
   CO Total Exhaust:     18.03     1.031     0.460
  NOx Total Exhaust:     0.470     2.653     1.058
 -------------------------------------------------------------------------------------------------------------------------
```

```
************************************************************************
* MOBILE6C 6.2 (14-Oct-2004)                                           *
* Input file: TTC21COLDSTART.IN (file 1, run 1).                       *
************************************************************************

* # # # # # # # # # # # # # # # # # # # # # # # # # # # #
*  2021, 2.5 mph, 100%Cold, PM2.5, Jan. Temp.&RVP
* File 1, Run 1, Scenario 1.
* # # # # # # # # # # # # # # # # # # # # # # # # # # # #

                              Calendar Year:  2021
                                       Month:  Jan.
                  Gasoline Fuel Sulfur Content:  25. ppm
                    Diesel Fuel Sulfur Content:  350. ppm
                         Particle Size Cutoff:  2.50 Microns
                            Reformulated Gas:  No

      Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
            GVWR:                 <6000     >6000     (All)
                        ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
VMT Distribution:       0.2670    0.4210    0.1394                0.0391    0.0027    0.0126    0.1146    0.0036    1.0000
-------------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
            Lead:       0.0000    0.0000    0.0000    0.0000    0.0000    ------    ------    ------    0.0000    0.0000
           GASPM:       0.0034    0.0033    0.0033    0.0033    0.0106    ------    ------    ------    0.0142    0.0032
         ECARBON:       ------    ------    ------    ------    ------    0.0176    0.0046    0.0137    ------    0.0017
         OCARBON:       ------    ------    ------    ------    ------    0.0050    0.0066    0.0081    ------    0.0010
             SO4:       0.0004    0.0005    0.0005    0.0005    0.0011    0.0036    0.0064    0.0197    0.0001    0.0028
Total Exhaust PM:       0.0038    0.0038    0.0038    0.0038    0.0117    0.0262    0.0176    0.0414    0.0143    0.0087
           Brake:       0.0053    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053
            Tire:       0.0020    0.0020    0.0020    0.0020    0.0025    0.0020    0.0020    0.0052    0.0010    0.0024
        Total PM:       0.0112    0.0112    0.0112    0.0112    0.0195    0.0335    0.0249    0.0519    0.0207    0.0164
             SO2:       0.0056    0.0073    0.0096    0.0079    0.0141    0.0686    0.1221    0.2809    0.0027    0.0404
             NH3:       0.1017    0.1017    0.1017    0.1017    0.0451    0.0068    0.0068    0.0270    0.0113    0.0892
-------------------------------------------------------------------------------------------------------------------------
       Veh. Type:       LDGT1     LDGT2     LDGT3     LDGT4    LDDT12    LDDT34
                        ------    ------    ------    ------    ------    ------
         VMT Mix:       0.0873    0.3336    0.1001    0.0393    0.0036    0.0090
-------------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
            Lead:       0.0000    0.0000    0.0000    ------    ------
           GASPM:       0.0033    0.0033    0.0033    0.0033    ------
         ECARBON:       ------    ------    ------    ------    0.0060    0.0040
         OCARBON:       ------    ------    ------    ------    0.0086    0.0058
             SO4:       0.0005    0.0005    0.0005    0.0005    0.0053    0.0068
Total Exhaust PM:       0.0038    0.0038    0.0038    0.0038    0.0198    0.0167
           Brake:       0.0053    0.0053    0.0053    0.0053    0.0053    0.0053
            Tire:       0.0020    0.0020    0.0020    0.0020    0.0020    0.0020
        Total PM:       0.0112    0.0112    0.0112    0.0112    0.0271    0.0240
             SO2:       0.0073    0.0073    0.0096    0.0096    0.1006    0.1308
             NH3:       0.1017    0.1017    0.1017    0.1017    0.0068    0.0068
-------------------------------------------------------------------------------------------------------------------------
       Veh. Type:      GasBUS     URBAN    SCHOOL
                        ------    ------    ------
         VMT Mix:       0.0003    0.0008    0.0025
-------------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
            Lead:       0.0000    ------    ------
           GASPM:       0.0160    ------    ------
         ECARBON:       ------    0.0262    0.0173
         OCARBON:       ------    0.0206    0.0136
             SO4:       0.0011    0.0355    0.0251
Total Exhaust PM:       0.0171    0.0823    0.0559
           Brake:       0.0053    0.0053    0.0053
            Tire:       0.0030    0.0030    0.0030
        Total PM:       0.0254    0.0906    0.0643
             SO2:       0.0211    0.5075    0.3580
             NH3:       0.0451    0.0270    0.0270
-------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # # # # #
*  2021, 5.0 mph, 100%Cold, PM2.5, Jan. Temp.&RVP
* File 1, Run 1, Scenario 2.
* # # # # # # # # # # # # # # # # # # # # # # # # # # # #

                              Calendar Year:  2021
                                       Month:  Jan.
                  Gasoline Fuel Sulfur Content:  25. ppm
                    Diesel Fuel Sulfur Content:  350. ppm
                         Particle Size Cutoff:  2.50 Microns
                            Reformulated Gas:  No

      Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
            GVWR:                 <6000     >6000     (All)
                        ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
VMT Distribution:       0.2670    0.4210    0.1394                0.0391    0.0027    0.0126    0.1146    0.0036    1.0000
-------------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
            Lead:       0.0000    0.0000    0.0000    0.0000    0.0000    ------    ------    ------    0.0000    0.0000
           GASPM:       0.0034    0.0033    0.0033    0.0033    0.0106    ------    ------    ------    0.0142    0.0032
         ECARBON:       ------    ------    ------    ------    ------    0.0176    0.0046    0.0137    ------    0.0017
         OCARBON:       ------    ------    ------    ------    ------    0.0050    0.0066    0.0081    ------    0.0010
             SO4:       0.0004    0.0005    0.0005    0.0005    0.0011    0.0036    0.0064    0.0197    0.0001    0.0028
Total Exhaust PM:       0.0038    0.0038    0.0038    0.0038    0.0117    0.0262    0.0176    0.0414    0.0143    0.0087
           Brake:       0.0053    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053
            Tire:       0.0020    0.0020    0.0020    0.0020    0.0025    0.0020    0.0020    0.0052    0.0010    0.0024
        Total PM:       0.0112    0.0112    0.0112    0.0112    0.0195    0.0335    0.0249    0.0519    0.0207    0.0164
             SO2:       0.0056    0.0073    0.0096    0.0079    0.0141    0.0686    0.1221    0.2809    0.0027    0.0404
             NH3:       0.1017    0.1017    0.1017    0.1017    0.0451    0.0068    0.0068    0.0270    0.0113    0.0892
-------------------------------------------------------------------------------------------------------------------------
       Veh. Type:       LDGT1     LDGT2     LDGT3     LDGT4    LDDT12    LDDT34
                        ------    ------    ------    ------    ------    ------
         VMT Mix:       0.0873    0.3336    0.1001    0.0393    0.0036    0.0090
-------------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
            Lead:       0.0000    0.0000    0.0000    0.0000    ------    ------
           GASPM:       0.0033    0.0033    0.0033    0.0033    ------    ------
         ECARBON:       ------    ------    ------    ------    0.0060    0.0040
         OCARBON:       ------    ------    ------    ------    0.0086    0.0058
             SO4:       0.0005    0.0005    0.0005    0.0005    0.0053    0.0068
Total Exhaust PM:       0.0038    0.0038    0.0038    0.0038    0.0198    0.0167
           Brake:       0.0053    0.0053    0.0053    0.0053    0.0053    0.0053
            Tire:       0.0020    0.0020    0.0020    0.0020    0.0020    0.0020
        Total PM:       0.0112    0.0112    0.0112    0.0112    0.0271    0.0240
             SO2:       0.0073    0.0073    0.0096    0.0096    0.1006    0.1308
             NH3:       0.1017    0.1017    0.1017    0.1017    0.0068    0.0068
-------------------------------------------------------------------------------------------------------------------------
       Veh. Type:      GasBUS     URBAN    SCHOOL
                        ------    ------    ------
         VMT Mix:       0.0003    0.0008    0.0025
-------------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
            Lead:       0.0000    ------    ------
           GASPM:       0.0160    ------    ------
         ECARBON:       ------    0.0262    0.0173
         OCARBON:       ------    0.0206    0.0136
             SO4:       0.0011    0.0355    0.0251
Total Exhaust PM:       0.0171    0.0823    0.0559
           Brake:       0.0053    0.0053    0.0053
            Tire:       0.0030    0.0030    0.0030
        Total PM:       0.0254    0.0906    0.0643
             SO2:       0.0211    0.5075    0.3580
             NH3:       0.0451    0.0270    0.0270
-------------------------------------------------------------------------------------------------------------------------
```

```
* # # # # # # # # # # # # # # # # # # # # # # # # #
*  2021, 10.0 mph, 100%Cold, PM2.5, Jan. Temp.&RVP
* File 1, Run 1, Scenario 3.
* # # # # # # # # # # # # # # # # # # # # # # # # #
```

Calendar Year:	2021
Month:	Jan.
Gasoline Fuel Sulfur Content:	25. ppm
Diesel Fuel Sulfur Content:	350. ppm
Particle Size Cutoff:	2.50 Microns
Reformulated Gas:	No

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.2670	0.4210	0.1394		0.0391	0.0027	0.0126	0.1146	0.0036	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0034	0.0033	0.0033	0.0033	0.0106	------	------	------	0.0142	0.0032
ECARBON:	------	------	------	------	------	0.0176	0.0046	0.0137	------	0.0017
OCARBON:	------	------	------	------	------	0.0050	0.0066	0.0081	------	0.0010
SO4:	0.0004	0.0005	0.0005	0.0005	0.0011	0.0036	0.0064	0.0197	0.0001	0.0028
Total Exhaust PM:	0.0038	0.0038	0.0038	0.0038	0.0117	0.0262	0.0176	0.0414	0.0143	0.0087
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0025	0.0020	0.0020	0.0052	0.0010	0.0024
Total PM:	0.0112	0.0112	0.0112	0.0112	0.0195	0.0335	0.0249	0.0519	0.0207	0.0164
SO2:	0.0056	0.0073	0.0096	0.0079	0.0141	0.0686	0.1221	0.2809	0.0027	0.0404
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0892

Veh. Type:	LDGT1	LDGT2	LDGT3	LDGT4	LDDT12	LDDT34
VMT Mix:	0.0873	0.3336	0.1001	0.0393	0.0036	0.0090
Composite Emission Factors (g/mi):						
Lead:	0.0000	0.0000	0.0000	0.0000	------	------
GASPM:	0.0033	0.0033	0.0033	0.0033	------	------
ECARBON:	------	------	------	------	0.0060	0.0040
OCARBON:	------	------	------	------	0.0086	0.0058
SO4:	0.0005	0.0005	0.0005	0.0005	0.0053	0.0068
Total Exhaust PM:	0.0038	0.0038	0.0038	0.0038	0.0198	0.0167
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020
Total PM:	0.0112	0.0112	0.0112	0.0112	0.0271	0.0240
SO2:	0.0073	0.0073	0.0096	0.0096	0.1006	0.1308
NH3:	0.1017	0.1017	0.1017	0.1017	0.0068	0.0068

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0003	0.0008	0.0025
Composite Emission Factors (g/mi):			
Lead:	0.0000	------	------
GASPM:	0.0160	------	------
ECARBON:	------	0.0262	0.0173
OCARBON:	------	0.0206	0.0136
SO4:	0.0011	0.0355	0.0251
Total Exhaust PM:	0.0171	0.0823	0.0559
Brake:	0.0053	0.0053	0.0053
Tire:	0.0030	0.0030	0.0030
Total PM:	0.0254	0.0906	0.0643
SO2:	0.0211	0.5075	0.3580
NH3:	0.0451	0.0270	0.0270

```
* # # # # # # # # # # # # # # # # # # # # # # # # #
*  2021, 18.65 mph, 100%Cold, PM2.5, Jan. Temp.&RVP
* File 1, Run 1, Scenario 4.
* # # # # # # # # # # # # # # # # # # # # # # # # #
```

Calendar Year:	2021
Month:	Jan.
Gasoline Fuel Sulfur Content:	25. ppm
Diesel Fuel Sulfur Content:	350. ppm
Particle Size Cutoff:	2.50 Microns
Reformulated Gas:	No

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.2670	0.4210	0.1394		0.0391	0.0027	0.0126	0.1146	0.0036	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0034	0.0033	0.0033	0.0033	0.0106	------	------	------	0.0142	0.0032
ECARBON:	------	------	------	------	------	0.0176	0.0046	0.0137	------	0.0017
OCARBON:	------	------	------	------	------	0.0050	0.0066	0.0081	------	0.0010
SO4:	0.0004	0.0005	0.0005	0.0005	0.0011	0.0036	0.0064	0.0197	0.0001	0.0028
Total Exhaust PM:	0.0038	0.0038	0.0038	0.0038	0.0117	0.0262	0.0176	0.0414	0.0143	0.0087
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0025	0.0020	0.0020	0.0052	0.0010	0.0024
Total PM:	0.0112	0.0112	0.0112	0.0112	0.0195	0.0335	0.0249	0.0519	0.0207	0.0164
SO2:	0.0056	0.0073	0.0096	0.0079	0.0141	0.0686	0.1221	0.2809	0.0027	0.0404
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0892

Veh. Type:	LDGT1	LDGT2	LDGT3	LDGT4	LDDT12	LDDT34
VMT Mix:	0.0873	0.3336	0.1001	0.0393	0.0036	0.0090
Composite Emission Factors (g/mi):						
Lead:	0.0000	0.0000	0.0000	0.0000	------	------
GASPM:	0.0033	0.0033	0.0033	0.0033	------	------
ECARBON:	------	------	------	------	0.0060	0.0040
OCARBON:	------	------	------	------	0.0086	0.0058
SO4:	0.0005	0.0005	0.0005	0.0005	0.0053	0.0068
Total Exhaust PM:	0.0038	0.0038	0.0038	0.0038	0.0198	0.0167
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020
Total PM:	0.0112	0.0112	0.0112	0.0112	0.0271	0.0240
SO2:	0.0073	0.0073	0.0096	0.0096	0.1006	0.1308
NH3:	0.1017	0.1017	0.1017	0.1017	0.0068	0.0068

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0003	0.0008	0.0025
Composite Emission Factors (g/mi):			
Lead:	0.0000	------	------
GASPM:	0.0160	------	------
ECARBON:	------	0.0262	0.0173
OCARBON:	------	0.0206	0.0136
SO4:	0.0011	0.0355	0.0251
Total Exhaust PM:	0.0171	0.0823	0.0559
Brake:	0.0053	0.0053	0.0053
Tire:	0.0030	0.0030	0.0030
Total PM:	0.0254	0.0906	0.0643
SO2:	0.0211	0.5075	0.3580
NH3:	0.0451	0.0270	0.0270

* #
* 2021, 2.5 mph, 100%Cold, PM2.5, July Temp.&RVP
* File 1, Run 1, Scenario 5.
* #

Calendar Year: 2021
Month: July
Gasoline Fuel Sulfur Content: 25. ppm
Diesel Fuel Sulfur Content: 350. ppm
Particle Size Cutoff: 2.50 Microns
Reformulated Gas: No

Vehicle Type: / GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.2668	0.4208	0.1398		0.0393	0.0027	0.0121	0.1148	0.0037	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0034	0.0033	0.0033	0.0033	0.0103	------	------	------	0.0142	0.0032
ECARBON:	------	------	------	------	------	0.0169	0.0046	0.0135	------	0.0016
OCARBON:	------	------	------	------	------	0.0048	0.0066	0.0079	------	0.0010
SO4:	0.0004	0.0005	0.0005	0.0005	0.0011	0.0036	0.0064	0.0197	0.0001	0.0028
Total Exhaust PM:	0.0038	0.0038	0.0038	0.0038	0.0114	0.0253	0.0175	0.0411	0.0143	0.0087
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0025	0.0020	0.0020	0.0052	0.0010	0.0024
Total PM:	0.0112	0.0112	0.0112	0.0112	0.0193	0.0326	0.0248	0.0515	0.0207	0.0164
SO2:	0.0056	0.0073	0.0096	0.0079	0.0141	0.0686	0.1220	0.2811	0.0027	0.0404
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0892

Veh. Type:	LDGT1	LDGT2	LDGT3	LDGT4	LDDT12	LDDT34
VMT Mix:	0.0869	0.3338	0.1002	0.0396	0.0035	0.0086
Composite Emission Factors (g/mi):						
Lead:	0.0000	0.0000	0.0000	0.0000	------	------
GASPM:	0.0033	0.0033	0.0033	0.0033	------	------
ECARBON:	------	------	------	------	0.0059	0.0040
OCARBON:	------	------	------	------	0.0085	0.0058
SO4:	0.0005	0.0005	0.0005	0.0005	0.0053	0.0068
Total Exhaust PM:	0.0038	0.0038	0.0038	0.0038	0.0196	0.0166
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020
Total PM:	0.0112	0.0112	0.0112	0.0112	0.0270	0.0239
SO2:	0.0073	0.0073	0.0096	0.0096	0.1006	0.1308
NH3:	0.1017	0.1017	0.1017	0.1017	0.0068	0.0068

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0003	0.0008	0.0025
Composite Emission Factors (g/mi):			
Lead:	0.0000	------	------
GASPM:	0.0157	------	------
ECARBON:	------	0.0257	0.0168
OCARBON:	------	0.0202	0.0132
SO4:	0.0011	0.0355	0.0251
Total Exhaust PM:	0.0168	0.0814	0.0551
Brake:	0.0053	0.0053	0.0053
Tire:	0.0030	0.0030	0.0030
Total PM:	0.0252	0.0897	0.0635
SO2:	0.0211	0.5075	0.3580
NH3:	0.0451	0.0270	0.0270

* #
* 2021, 5.0 mph, 100%Cold, PM2.5, July Temp.&RVP
* File 1, Run 1, Scenario 6.
* #

Calendar Year: 2021
Month: July
Gasoline Fuel Sulfur Content: 25. ppm
Diesel Fuel Sulfur Content: 350. ppm
Particle Size Cutoff: 2.50 Microns
Reformulated Gas: No

Vehicle Type: / GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.2668	0.4208	0.1398		0.0393	0.0027	0.0121	0.1148	0.0037	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0034	0.0033	0.0033	0.0033	0.0103	------	------	------	0.0142	0.0032
ECARBON:	------	------	------	------	------	0.0169	0.0046	0.0135	------	0.0016
OCARBON:	------	------	------	------	------	0.0048	0.0066	0.0079	------	0.0010
SO4:	0.0004	0.0005	0.0005	0.0005	0.0011	0.0036	0.0064	0.0197	0.0001	0.0028
Total Exhaust PM:	0.0038	0.0038	0.0038	0.0038	0.0114	0.0253	0.0175	0.0411	0.0143	0.0087
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0025	0.0020	0.0020	0.0052	0.0010	0.0024
Total PM:	0.0112	0.0112	0.0112	0.0112	0.0193	0.0326	0.0248	0.0515	0.0207	0.0164
SO2:	0.0056	0.0073	0.0096	0.0079	0.0141	0.0686	0.1220	0.2811	0.0027	0.0404
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0892

Veh. Type:	LDGT1	LDGT2	LDGT3	LDGT4	LDDT12	LDDT34
VMT Mix:	0.0869	0.3338	0.1002	0.0396	0.0035	0.0086
Composite Emission Factors (g/mi):						
Lead:	0.0000	0.0000	0.0000	0.0000	------	------
GASPM:	0.0033	0.0033	0.0033	0.0033	------	------
ECARBON:	------	------	------	------	0.0059	0.0040
OCARBON:	------	------	------	------	0.0085	0.0058
SO4:	0.0005	0.0005	0.0005	0.0005	0.0053	0.0068
Total Exhaust PM:	0.0038	0.0038	0.0038	0.0038	0.0196	0.0166
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020
Total PM:	0.0112	0.0112	0.0112	0.0112	0.0270	0.0239
SO2:	0.0073	0.0073	0.0096	0.0096	0.1006	0.1308
NH3:	0.1017	0.1017	0.1017	0.1017	0.0068	0.0068

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0003	0.0008	0.0025
Composite Emission Factors (g/mi):			
Lead:	0.0000	------	------
GASPM:	0.0157	------	------
ECARBON:	------	0.0257	0.0168
OCARBON:	------	0.0202	0.0132
SO4:	0.0011	0.0355	0.0251
Total Exhaust PM:	0.0168	0.0814	0.0551
Brake:	0.0053	0.0053	0.0053
Tire:	0.0030	0.0030	0.0030
Total PM:	0.0252	0.0897	0.0635
SO2:	0.0211	0.5075	0.3580
NH3:	0.0451	0.0270	0.0270

```
* # # # # # # # # # # # # # # # # # # # # # # # # #
*  2021, 10.0 mph, 100%Cold, PM2.5, July Temp.&RVP
* File 1, Run 1, Scenario 7.
* # # # # # # # # # # # # # # # # # # # # # # # # #

                     Calendar Year:  2021
                             Month:  July
     Gasoline Fuel Sulfur Content:   25. ppm
       Diesel Fuel Sulfur Content:  350. ppm
            Particle Size Cutoff:  2.50 Microns
                 Reformulated Gas:  No

     Vehicle Type:    LDGV    LDGT12   LDGT34     LDGT     HDGV     LDDV     LDDT     HDDV       MC   All Veh
             GVWR:             <6000    >6000    (All)
                    ------    ------   ------   ------   ------   ------   ------   ------   ------   ------
 VMT Distribution:  0.2668    0.4208   0.1398            0.0393   0.0027   0.0121   0.1148   0.0037   1.0000
---------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
             Lead:  0.0000    0.0000   0.0000   0.0000   0.0000   ------   ------   ------   0.0000   0.0000
            GASPM:  0.0034    0.0033   0.0033   0.0033   0.0103   ------   ------   ------   0.0142   0.0032
          ECARBON:  ------    ------   ------   ------   ------   0.0169   0.0046   0.0135   ------   0.0016
          OCARBON:  ------    ------   ------   ------   ------   0.0048   0.0066   0.0079   ------   0.0010
              SO4:  0.0004    0.0005   0.0005   0.0005   0.0011   0.0036   0.0064   0.0197   0.0001   0.0028
 Total Exhaust PM:  0.0038    0.0038   0.0038   0.0038   0.0114   0.0253   0.0175   0.0411   0.0143   0.0087
            Brake:  0.0053    0.0053   0.0053   0.0053   0.0053   0.0053   0.0053   0.0053   0.0053   0.0053
             Tire:  0.0020    0.0020   0.0020   0.0020   0.0025   0.0020   0.0020   0.0052   0.0010   0.0024
         Total PM:  0.0112    0.0112   0.0112   0.0112   0.0193   0.0326   0.0248   0.0515   0.0207   0.0164
              SO2:  0.0056    0.0073   0.0096   0.0079   0.0141   0.0686   0.1220   0.2811   0.0027   0.0404
              NH3:  0.1017    0.1017   0.1017   0.1017   0.0451   0.0068   0.0068   0.0270   0.0113   0.0892
---------------------------------------------------------------------------------------------------------------
        Veh. Type:   LDGT1     LDGT2    LDGT3    LDGT4   LDDT12   LDDT34
                    ------    ------   ------   ------   ------   ------
          VMT Mix:  0.0869    0.3338   0.1002   0.0396   0.0035   0.0086
---------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
             Lead:  0.0000    0.0000   0.0000   0.0000   ------   ------
            GASPM:  0.0033    0.0033   0.0033   0.0033   ------   ------
          ECARBON:  ------    ------   ------   ------   0.0059   0.0040
          OCARBON:  ------    ------   ------   ------   0.0085   0.0058
              SO4:  0.0005    0.0005   0.0005   0.0005   0.0053   0.0068
 Total Exhaust PM:  0.0038    0.0038   0.0038   0.0038   0.0196   0.0166
            Brake:  0.0053    0.0053   0.0053   0.0053   0.0053   0.0053
             Tire:  0.0020    0.0020   0.0020   0.0020   0.0020   0.0020
         Total PM:  0.0112    0.0112   0.0112   0.0112   0.0270   0.0239
              SO2:  0.0073    0.0073   0.0096   0.0096   0.1006   0.1308
              NH3:  0.1017    0.1017   0.1017   0.1017   0.0068   0.0068
---------------------------------------------------------------------------------------------------------------
        Veh. Type:  GasBUS     URBAN   SCHOOL
                    ------    ------   ------
          VMT Mix:  0.0003    0.0008   0.0025
---------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
             Lead:  0.0000    ------   ------
            GASPM:  0.0157    ------   ------
          ECARBON:  ------    0.0257   0.0168
          OCARBON:  ------    0.0202   0.0132
              SO4:  0.0011    0.0355   0.0251
 Total Exhaust PM:  0.0168    0.0814   0.0551
            Brake:  0.0053    0.0053   0.0053
             Tire:  0.0030    0.0030   0.0030
         Total PM:  0.0252    0.0897   0.0635
              SO2:  0.0211    0.5075   0.3580
              NH3:  0.0451    0.0270   0.0270
---------------------------------------------------------------------------------------------------------------
```

```
* # # # # # # # # # # # # # # # # # # # # # # # # #
*  2021, 18.65 mph, 100%Cold, PM2.5, July Temp.&RVP
* File 1, Run 1, Scenario 8.
* # # # # # # # # # # # # # # # # # # # # # # # # #

                     Calendar Year:  2021
                             Month:  July
     Gasoline Fuel Sulfur Content:   25. ppm
       Diesel Fuel Sulfur Content:  350. ppm
            Particle Size Cutoff:  2.50 Microns
                 Reformulated Gas:  No

     Vehicle Type:    LDGV    LDGT12   LDGT34     LDGT     HDGV     LDDV     LDDT     HDDV       MC   All Veh
             GVWR:             <6000    >6000    (All)
                    ------    ------   ------   ------   ------   ------   ------   ------   ------   ------
 VMT Distribution:  0.2668    0.4208   0.1398            0.0393   0.0027   0.0121   0.1148   0.0037   1.0000
---------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
             Lead:  0.0000    0.0000   0.0000   0.0000   0.0000   ------   ------   ------   0.0000   0.0000
            GASPM:  0.0034    0.0033   0.0033   0.0033   0.0103   ------   ------   ------   0.0142   0.0032
          ECARBON:  ------    ------   ------   ------   ------   0.0169   0.0046   0.0135   ------   0.0016
          OCARBON:  ------    ------   ------   ------   ------   0.0048   0.0066   0.0079   ------   0.0010
              SO4:  0.0004    0.0005   0.0005   0.0005   0.0011   0.0036   0.0064   0.0197   0.0001   0.0028
 Total Exhaust PM:  0.0038    0.0038   0.0038   0.0038   0.0114   0.0253   0.0175   0.0411   0.0143   0.0087
            Brake:  0.0053    0.0053   0.0053   0.0053   0.0053   0.0053   0.0053   0.0053   0.0053   0.0053
             Tire:  0.0020    0.0020   0.0020   0.0020   0.0025   0.0020   0.0020   0.0052   0.0010   0.0024
         Total PM:  0.0112    0.0112   0.0112   0.0112   0.0193   0.0326   0.0248   0.0515   0.0207   0.0164
              SO2:  0.0056    0.0073   0.0096   0.0079   0.0141   0.0686   0.1220   0.2811   0.0027   0.0404
              NH3:  0.1017    0.1017   0.1017   0.1017   0.0451   0.0068   0.0068   0.0270   0.0113   0.0892
---------------------------------------------------------------------------------------------------------------
        Veh. Type:   LDGT1     LDGT2    LDGT3    LDGT4   LDDT12   LDDT34
                    ------    ------   ------   ------   ------   ------
          VMT Mix:  0.0869    0.3338   0.1002   0.0396   0.0035   0.0086
---------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
             Lead:  0.0000    0.0000   0.0000   0.0000   ------   ------
            GASPM:  0.0033    0.0033   0.0033   0.0033   ------   ------
          ECARBON:  ------    ------   ------   ------   0.0059   0.0040
          OCARBON:  ------    ------   ------   ------   0.0085   0.0058
              SO4:  0.0005    0.0005   0.0005   0.0005   0.0053   0.0068
 Total Exhaust PM:  0.0038    0.0038   0.0038   0.0038   0.0196   0.0166
            Brake:  0.0053    0.0053   0.0053   0.0053   0.0053   0.0053
             Tire:  0.0020    0.0020   0.0020   0.0020   0.0020   0.0020
         Total PM:  0.0112    0.0112   0.0112   0.0112   0.0270   0.0239
              SO2:  0.0073    0.0073   0.0096   0.0096   0.1006   0.1308
              NH3:  0.1017    0.1017   0.1017   0.1017   0.0068   0.0068
---------------------------------------------------------------------------------------------------------------
        Veh. Type:  GasBUS     URBAN   SCHOOL
                    ------    ------   ------
          VMT Mix:  0.0003    0.0008   0.0025
---------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
             Lead:  0.0000    ------   ------
            GASPM:  0.0157    ------   ------
          ECARBON:  ------    0.0257   0.0168
          OCARBON:  ------    0.0202   0.0132
              SO4:  0.0011    0.0355   0.0251
 Total Exhaust PM:  0.0168    0.0814   0.0551
            Brake:  0.0053    0.0053   0.0053
             Tire:  0.0030    0.0030   0.0030
         Total PM:  0.0252    0.0897   0.0635
              SO2:  0.0211    0.5075   0.3580
              NH3:  0.0451    0.0270   0.0270
---------------------------------------------------------------------------------------------------------------
```

APPENDIX F

INTERSECTION SIGNAL TIMES

Project: 33015347
Toronto Transit Commission
Spadina Subway Extension – Environmental Assessment
Air Quality Assessment

Intersection signal times were computed by the URS Traffic & Network Planning Group and is summarized in Appendix F.

Keele Street at Steeles Avenue

Movement	Future Background Total Movement Red Time (sec)		Future Total Total Movement Red Time (sec)	
	AM	PM	AM	PM
EBL	60	57	54	57
EBT	70	70	70	75
WBL	60	57	54	57
WBT	70	70	70	75
NBL	64	69	63	69
NBT	72	82	71	59
SBL	55	69	63	69
SBT	65	82	71	54
Cycle Length	*110*	*120*	*110*	*120*

Jane Street at Steeles Avenue

Movement	Future Background Total Movement Red Time (sec)		Future Total Total Movement Red Time (sec)	
	AM	PM	AM	PM
EBL	62	58	60	57
EBT	70	71	68	69
WBL	62	58	60	57
WBT	70	71	68	69
NBL	68	79	78	82
NBT	85	89	85	92
SBL	68	70	68	71
SBT	85	82	78	83
Cycle Length	*120*	*120*	*120*	*120*

Keele Street at Finch Avenue

Movement	Future Background Total Movement Red Time (sec)		Future Total Total Movement Red Time (sec)	
	AM	PM	AM	PM
EBL	49	58	49	55
EBT	49	58	49	63
WBL	49	65	56	55
WBT	49	65	56	63
NBL	47	55	45	60
NBT	59	63	55	72
SBL	47	46	45	51
SBT	59	60	55	65
Cycle Length	*90*	*100*	*90*	*100*

Finch Avenue at Romfield Lane

Movement	Future Background Total Movement Red Time (sec)		Future Total Total Movement Red Time (sec)	
	AM	PM	AM	PM
EBL	29	29	29	29
EBT	29	29	29	29
WBL	29	29	29	29
WBT	29	29	29	29
NBL	65	75	65	75
NBT	65	75	65	75
SBL	65	75	65	75
SBT	65	75	65	75
Cycle Length	*90*	*100*	*90*	*100*

Keele Street at Four Winds Drive

Movement	Future Background Total Movement Red Time (sec)		Future Total Total Movement Red Time (sec)	
	AM	PM	AM	PM
EBL		92		92
EBT		92		92
WBL		92		92
WBT		92		92
NBL		34		34
NBT		34		34
SBL		34		34
SBT		43		43
Cycle Length		*120*		*120*