APPENDIX D

Air Quality Assessment

Class Environmental Assessment

Waterdown Road Corridor (North Service Road to Dundas Street) *Air Quality Assessment* Draft Report

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Submitted by

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Executive Summary

This air quality impact study was undertaken for the proposed redevelopment of the Waterdown Road Corridor. The project entails the development of Waterdown Road from Craven Avenue to Mountain Brow Road East, and Mountain Brow Road East from Waterdown Road to past Flanders Drive. An additional road Mid-Block Road linking Mountain Brow Road to Dundas Street East at Burke Street is proposed in this project. Other roads affected by the project were Mill Street South from Mountain Brow Road East to Dundas Street East. The study was conducted using the following predictive mobile source emission and transportation dispersion models for the existing and future scenarios:

- U.S. EPA model MOBILE 6.2 - Vehicle emission modelling software used for predicting emission factors for various types of vehicles and for different vehicle-related emissions; and,

- U.S. EPA model CAL3QHCR (Lakes Environmental CALRoads View) - designed for modelling dispersion of roadway emissions, including those from idling vehicles queued at intersections.

Maximum concentrations of nitrogen oxides (NOx), carbon monoxide (CO) and fine particulate matter with aerodynamic diameter 2.5 microns and less ($PM_{2.5}$) related to road traffic were estimated at selected existing and potential future receptors that were expected to be most impacted (i.e. closest to the roadway). In order to determine the impact of the proposed road redevelopment, the following three scenarios were modelled:

- *Scenario 1* – Existing 2008 configuration, based on current traffic data;

- *Scenario 2* – Future 2021 "no road-build" option, based on forecasted traffic volumes under the existing roadway configuration. This scenario assumes that anticipated future land development in Waterdown would be in place; and

- *Scenario 3* – Future 2021 Mature State of Development based on forecasted traffic volumes with the proposed new land development and proposed road improvements in place.

Modelling was undertaken to predict changes in NOx, CO, and $PM_{2.5}$ concentrations for the various receptor locations under the three scenarios. The air quality modelling work was based on traffic data forecasts that were generated through the Phase 2 traffic modelling results. It is noted that the same traffic volumes would be generated under the future no-build and future build scenarios (it is assumed that the same amount of future development would be in place by 2021). How these scenarios differ though is with respect to how the traffic volumes are distributed to existing and future roadways.

For the modelling, both free flow traffic on the affected roads and idling traffic at the intersections were considered. In order to estimate the worst-case air quality impacts due to the traffic generated air pollutants, it was assumed that the truck percentages of the peak PM hourly traffic volumes consisted of all heavy trucks (i.e., truck percentages were not broken down into medium and heavy truck volumes). As part of this assessment, the existing (background) ambient air quality data from MOE Station No. 29000 (Hamilton Downtown) were also reviewed and summarized. This data was added to the predicted contaminant concentrations associated with vehicular traffic along the affected roadways in order to derive cumulative contaminant concentrations.

For the receptors selected for the purposes of this assessment, the future build scenario resulted in changes in the predicted air quality that was not considered to be significant when compared to the air quality impacts predicted for the future no-build scenario. It was predicted that NOx concentration levels would change by up to 15 ppb for the future build scenario in comparison to the future no-build scenario. The predicted CO and $PM_{2.5}$ concentrations at the selected receptors would have a negligible change under the future build scenario when compared to the future no-build scenario as concentration changes were less than 1 ppm and 1 $\mu g/m^3$, respectively.

For the future build scenario at the mature state of development, the predicted NOx and CO levels within the study area were below the Ontario Ministry of the Environment's (MOE's) air quality standards for these contaminants. For $PM_{2.5}$ the predicted concentrations were below the Canada Wide Standard (CWS) for this air contaminant. The predicted cumulative NOx concentrations (vehicular + background) within the study area were below the MOE's 1-hour standard of 200 ppb. The maximum predicted cumulative NOx concentration was approximately 50% of the standard. The contribution by vehicular emissions was approximately 24% of the MOE's 1-hour NOx standard. For CO, the predicted maximum cumulative concentration within the study area was significantly lower, at approximately 6%, than the Ministry's 1-hour standard

of 30 ppm. For $PM_{2.5}$, the predicted maximum 24-hour cumulative concentration was approximately 70% of the CWS. It should be noted that the contribution from the vehicular traffic to $PM_{2.5}$ was approximately 4% of the CWS.

TABLE OF CONTENTS

Page

EXECUTIVE SUMMARY i

1. INTRODUCTION 1
1.1 Air Quality Assessment Objectives 1
1.2 Traffic Related Pollutants 1
1.3 Study Area 2
2. AMBIENT AIR QUALITY 3
2.1 Air Quality Guidelines 3
2.2 Air Quality Monitoring 3
3. CAL3QHCR INPUT PARAMETERS 5
3.1 Scenario 1 – Existing Condition 5
3.2 Scenario 2 – Future 2021 No-Build 8
3.3 Scenario 3 – Future 2021 Mature State of Development 11
4. DISPERSION MODELLING 17
4.1 Dispersion Modelling Selection 17
4.2 Receptor Selection 17
5. MODELLING RESULTS AND DISCUSSION 19
5.1 Modelling Results for Scenario 1 19
5.2 Modelling Results for Scenario 2 20
5.3 Modelling Results for Scenario 3 22
6. AIR QUALITY IMPACT DURING CONSTRUCTION PHASE 27
7. CONCLUSION 28

List of Appendices

Appendix A: Waterdown Road and Receptor Locations
Appendix B: MOBILE 6.2 Output Files
Appendix C: CAL3QHCR Isopleth Graphs

List of Tables

Table 2.1: MOE Standards for Relevant Air Contaminants (1-hour & 24-hour) 3
Table 2.2: Summary of Ambient Air Measured Contaminant Concentrations MOE Station No. 29000 (Hamilton Downtown) 4
Table 3.1: Scenario 1 – Current Traffic Volumes (2008) 5
Table 3.2: Traffic Light Input Parameters – Scenario 1 and 2 6
Table 3.3: Intersection with Stop Signs Input Parameters – Scenario 1 and 2 6
Table 3.4: Emission Factors for the Road Segments – Scenario 1 7
Table 3.5: Emission Factors for Vehicles Idling at the Intersections – Scenario 1 8
Table 3.6: Scenario 2 – Future Traffic Volumes (2021) 9
Table 3.7: Emission Factors for the Road Segments – Scenario 2 10
Table 3.8: Emission Factors for Vehicles Idling at the Intersections – Scenario 2 10
Table 3.9: Scenario 3 – Future Traffic Volumes (2021) 12
Table 3.10: Traffic Light Input Parameters – Scenario 3 13
Table 3.11: Emission Factors for the Road Segments – Scenario 3 14
Table 3.12: Emission Factors for Vehicles Idling at the Intersections – Scenario 3 15
Table 4.1: Sensitive Discrete Receptors 18
Table 5.1: CAL3QHCR Model Results – Scenario 1 19
Table 5.2: Total Concentration versus Existing Standards – Scenario 20
Table 5.3: CAL3QHCR Model Results for Scenario 2 21
Table 5.4: Total Concentration versus Existing Standards – Scenario 2 22
Table 5.5: CAL3QHCR Model Results – Scenario 3 23
Table 5.6: Total Concentration versus Existing Standards – Scenario 3 24
Table 5.7: Comparison Between Scenario 2 and Scenario 3 25

1. INTRODUCTION

Dillon Consulting Limited has been retained by The City of Hamilton, in coordination with the City of Burlington and Halton Region, to conduct an air quality impact assessment of the proposed Waterdown Road Corridor development. This project has the following components:

1) Redevelopment of Waterdown Road, from Craven Avenue to Mountain Brow Road East which will entail widening the road to four lanes;
2) Redevelopment of Mountain Brow Road East from Waterdown Road to a new road Mid-Block Road located approximately half the distance to King Road which will result in the widening of Mountain Brow Road to four lanes;
3) Construction of a new road Mid-Block Road, located at the end of the Mountain Brow Road redevelopment, linking Mountain Brow Road East to Dundas Street East at Burke Street that will service a future sub-division.

The following are other roads/segments that will experience changes in traffic volume:

- Mill Street South from Mountain Brow Road East to Dundas Street East; and
- Dundas Street East between Hamilton Street South and Pamela Street.

1.1 Air Quality Assessment Objectives

The objective of this air quality assessment was to consider the impacts of vehicular emissions on the current and future ambient air quality in the vicinity of the sections of existing roads to be improved and the proposed new road.

1.2 Traffic Related Pollutants

The following pollutants are the key conventional air contaminants associated with vehicular traffic and were assessed for this study.

- Carbon monoxide (CO);
- Oxides of nitrogen (NO_x); and
- Respirable particulate matter ($PM_{2.5}$).

The gaseous emissions (i.e. CO and NO_x) are associated with tailpipe emissions only whereas particulate matter ($PM_{2.5}$) emissions are associated with re-suspension of road dust, vehicular braking and tailpipe emissions.

1.3 Study Area

The study considered the impact on existing and future land uses adjacent to the sections of existing roads that are to be improved and the proposed new road. The 2021 Mature State of Development concept plan which illustrates the scope of the project is presented in *Figure A-1 in Appendix A.*

The project entails the development of Waterdown Road from Craven Avenue to Mountain Brow Road East, and Mountain Brow Road East from Waterdown Road to past Flanders Drive. An additional road Mid-Block Road linking Mountain Brow Road to Dundas Street East at Burke Street is proposed in this project. Other roads included in the assessment were Mill Street South from Mountain Brow Road East to Dundas Street East, and a segment of Dundas Street East from Hamilton Street South to Pamela Street.

Along Waterdown Road, Mill Street South and Mountain Brow Road there are detached residential dwellings. The segment of Dundas Street East that falls within the study area has a mix of detached dwellings and businesses. For the lands surrounding the proposed new Mid-Block Road, the current land use is primarily agricultural and there are no existing sensitive receptors.

2. AMBIENT AIR QUALITY

2.1 Air Quality Guidelines

The Ontario Ministry of the Environment (MOE) and the Canadian Council of Ministers of the Environment (CCME) have developed standards for various contaminants, including those that are being considered in this air quality assessment. A summary of the standards is presented in *Table 2.1*.

Table 2.1: MOE Standards for Relevant Air Contaminants (1-hour & 24-hour)

Contaminant	Ministry of the Environment O.Reg. 419/05 Schedule 3 1-hour Standards	Ministry of the Environment O.Reg. 419/05 Schedule 3 24-hour Standards
CO ($\mu g/m^3$)	36,200	15,700 (1)
CO (ppm)	30	13 (1)
NO_x ($\mu g/m^3$)	400	200
NO_x (ppb)	200	100
$PM_{2.5}$ ($\mu g/m^3$)	NA	30 (2)

Notes: (1) 8-hour carbon monoxide standard
(2) CCME Canada Wide Standard for the fine fraction of Particulate Matter $PM_{2.5}$
NA – Not applicable; guideline not established

2.2 Air Quality Monitoring

Air quality monitoring is often used to determine ambient pollutant levels, establish trends, and assess the effectiveness of mitigation strategies. The MOE and Environment Canada (EC) own and operate many ambient air quality monitoring stations across Ontario. There are four MOE ambient air quality monitoring stations located within the jurisdictions of the City of Burlington and the City of Hamilton which are: Burlington (Station 44008), Hamilton Downtown (Station 29000), Hamilton Mountain (Station 29114), and Hamilton West (Station 29118). These are the closest air quality monitoring stations to the study area and are all within 12.7 km of the project. Of these, Hamilton Downtown had the most comprehensive data record and a summary of ambient measurements for the year 2007 from this station is presented in *Table 2.2*. The 90th percentile ambient concentrations were used in the assessment. This is to ensure a conservative assessment of the existing ambient air quality conditions without the inclusion of unusually high levels that may be associated with rare events such as fires upwind of the monitoring stations.

Table 2.2: Summary of Ambient Air Measured Contaminant Concentrations MOE Station No. 29000 (Hamilton Downtown)		
Contaminant	**Statistic**	**2007**
CO (ppm)	1-hr Max	5.97
	24-hr Max	0.89
	Annual Mean	0.22
	1-hr 90th Percentile	0.45
NOx (ppb)	1-hr Max	258
	24-hr Max	109
	Annual Mean	25
	1-hr 90th Percentile	49
$PM_{2.5}$ ($\mu g/m^3$)	1-hr Max	71
	24-hr Max	45
	Annual Mean	8.9
	24-hr 90th Percentile	20

3. CAL3QHCR INPUT PARAMETERS

This section describes the parameters that were used in the Lakes Environmental Software CALRoads View user interface version of the US EPA CAL3QHCR model. CAL3QHCR is a modelling methodology for predicting criteria air contaminant concentrations along roadways and intersections.

3.1 Scenario 1 – Existing Condition

Scenario 1 consists of the current road configuration (Waterdown Road, Mill Street South, Mountain Brow Road East, and Dundas Street East) and current traffic conditions and volumes. Vehicle emission factors were those determined for the year 2008 using the US EPA vehicular contaminant emission model MOBILE v.6.2.

Road Traffic

Existing traffic volumes for the primary intersections in the study area were obtained from the City of Hamilton, City of Burlington, Region of Halton, and Ministry of Transportation of Ontario. These traffic volumes were used to determine AM and PM peak hour volumes along the subject roadway segments. Truck percentages were determined from intersection or 24-hour counts, as appropriate. For all road segments, the peak PM hourly traffic volume was conservatively used in the model with volume assumed to be equal in either direction. The truck volumes were also conservatively assumed to be consisting of all heavy trucks for the purposes of the air quality impact assessment. *Table 3.1* summarizes the model input traffic data for these road segments.

Table 3.1: Scenario 1 – Current Traffic Volumes (2008)

Road Segment	Posted Speed (km/h)	Road Lanes	AADT (24 hours) (veh./day)	Peak PM hourly traffic (veh./hr)	Heavy vehicle (%)
Waterdown Rd	60	2	7,500	850	5
Mill St. South	50	2	6,500	700	4
Mountain Brow Rd. East	50	2	1,500	250	4
Dundas St. East	50	2	19,500	1,550	8

There was only one traffic light involved in the study area. That traffic light is located at the intersection of Mill Street South and Dundas Street East. The parameters that were used in the model for that traffic light are summarized in *Table 3.2*.

Table 3.2: Traffic Light Input Parameters – Scenario 1 and 2

Intersection	Direction	Average signal cycle length (s)	Average red time length (s)	Clearance lost time (s)	Saturation flow rate (veh./hr/lane)
Dundas St. E and Mill St. S	East/West	90	26	2	1,600
	North/South	90	64	2	1,600

The parameters that were used in the model for the intersections with stop signs are summarized in *Table 3.3*.

Table 3.3: Intersection with Stop Signs Input Parameters – Scenario 1 and 2

Intersection	Direction	Average cycle length (s)	Average stop time length (s)	Clearance lost time (s)	Saturation flow rate (veh./hr/lane)
Waterdown/Mill St and Mountain Brow Rd	North/South	Through traffic	Through traffic	Through traffic	1,600
	West	70	60	2	1,600

Vehicular Emissions

Vehicular emissions factors for relevant contaminants for the year 2008 were generated for free flow and idling traffic using the US EPA vehicular emission prediction model, MOBILE6.2. This model produces emission factors in gram per vehicle-mile travelled (g/VMT) for Carbon Monoxide (CO), Nitrogen Oxides (NO_x), and Particulate Matter ($PM_{2.5}$) under various conditions such as travel speed and vehicle class (EPA, 2003). Emission factors were determined for free flow speeds of 50 km/h, 60 km/h and 80 km/h. Since the model does not predict emission factors for vehicles at a stand-still, the emission factors

for idling vehicles were estimated for a speed of 4 km/h, the lowest speed for which MOBILE6.2 will produce emission factors. The emission factors so obtained were then converted from g/VMT to gram per vehicle per hour by assuming that 4 kilometres are travelled in an hour. The MOBILE6.2 model output files are provided in *Appendix B*.

The emission factors that were predicted by MOBILE6.2 for the various road segments involved are presented in *Table 3.4*.

Table 3.4: Emission Factors for the Road Segments – Scenario 1

Road Segment	Contaminant	Vehicle speed (km/h)	Emission Factor (g/VMT)		Vehicle breakdown (%)		Average Emission Factor (g/VMT)
			Light Duty Vehicle (LDV)	Heavy Duty Vehicle (HDV)	Light Duty Vehicle (LDV)	Heavy Duty Vehicle (HDV)	
Waterdown Road	CO	60	14.6	10.2	95	5	14.4
	NO_x		0.72	3.19			0.84
	$PM_{2.5}$		0.011	0.053			0.013
Mill Street South	CO	50	14.3	11.8	96	4	14.2
	NO_x		0.72	3.04			0.81
	$PM_{2.5}$		0.011	0.053			0.013
Mountain Brow Road East	CO	50	14.3	11.8	96	4	14.2
	NO_x		0.72	3.04			0.81
	$PM_{2.5}$		0.011	0.053			0.013
Dundas St East: Hamilton St. to First St.	CO	50	14.3	11.8	92	8	14.1
	NO_x		0.72	3.04			0.91
	$PM_{2.5}$		0.011	0.053			0.015

The emission factors that were predicted by MOBILE6.2 for idling vehicles at the various intersections involved are presented in *Table 3.5*.

Table 3.5: Emission Factors for Vehicles Idling at the Intersections – Scenario 1

Intersection	Vehicles Idling On	Contaminant	Emission Factor (g/VMT)		Vehicle breakdown (%)		Average Emission Factor (g/veh-hr)
			Light Duty Vehicle (LDV)	Heavy Duty Vehicle (HDV)	Light Duty Vehicle (LDV)	Heavy Duty Vehicle (HDV)	
Mill Street South and Dundas Street East	Mill Street South	CO	41.3	67.2	96	4	105
		NO_x	1.46	2.34			3.72
		$PM_{2.5}$	0.012	0.053			0.033
Dundas Street East and Mill Street South	Dundas Street East	CO	41.3	67.2	92	8	108
		NO_x	1.46	2.34			3.80
		$PM_{2.5}$	0.012	0.053			0.037
Mountain Brow Road East and Waterdown Road	Mountain Brow Road East	CO	41.3	67.2	96	4	105
		NO_x	1.46	2.34			3.74
		$PM_{2.5}$	0.012	0.053			0.033

3.2 Scenario 2 – Future 2021 No-Build

Scenario 2 consists of the current road configuration but with the projected traffic volume that would prevail in 2021. Vehicle emission factors were those determined for the year 2021 using the US EPA vehicular contaminant emission model MOBILE6.2. Under Scenario 2 it was assumed that future land development would be in place by 2021 in the Waterdown area and a corresponding increase in traffic volumes (on the existing road network) would result.

Road Traffic

Estimates of future traffic volumes under the "no-build" road network scenario (Scenario 2) and the "future build" road network scenario (Scenario 3) were obtained from traffic modelling undertaken as part of the WATMP Phase 1 and 2 study. The traffic model provided projections for AM peak hour traffic volumes at the 2021 horizon based on anticipated future development levels. PM peak hour

volumes and AADT volumes were then estimated assuming a similar hourly distribution as under existing conditions.

It was assumed that all road laneway configurations, traffic controls, truck volume fractions, and speed limits for the above study roads would remain the same in 2021 but with the changed hourly peak PM and AADT volumes. It should be noted that truck volumes were conservatively assumed to be all consisting of heavy trucks for the purposes of the air quality assessment. *Table 3.6* summarizes the model input traffic data for these road segments.

Table 3.6: Scenario 2 – Future Traffic Volumes (2021)

Road Segment	Posted Speed (km/h)	Road Lanes	AADT (24 hours) (veh./day)	Peak PM hourly traffic (veh./hr)	Heavy vehicle (%)
Waterdown Rd	60	2	10,500	1,200	5
Mill St. South	50	2	10,500	900	5
Mountain Brow Rd. East	50	2	5,500	650	4
Dundas St. East	50	2	22,500	1,800	8

The parameters that were used in the model for the traffic lights and intersections with stop signs are summarized in *Table 3.2* and *Table 3.3* above.

Vehicular Emissions

Vehicular emissions factors for relevant contaminants for the year 2021 were generated for free flow and idling traffic using the US EPA vehicular emission prediction model, MOBILE6.2. These emission factors on a g/VMT basis were used in both Scenario 2 and Scenario 3. It should be noted that due to improvements in vehicular emissions by year 2021, the emission factors of the various tail-pipe pollutants for future years are typically lower than the current emission rates. The same approach as described in *Section 3.1* above was used in the prediction of emission factors. The MOBILE6.2 model output files for year 2021 are provided in *Appendix B.* The emission factors that were predicted by MOBILE6.2 for the various road segments involved are presented in *Table 3.7.*

Table 3.7: Emission Factors for the Road Segments – Scenario 2							
Road Segment	**Contaminant**	**Vehicle speed (km/h)**	**Emission Factor (g/VMT)**		**Vehicle breakdown (%)**		**Average Emission Factor (g/VMT)**
			Light Duty Vehicle (LDV)	**Heavy Duty Vehicle (HDV)**	**Light Duty Vehicle (LDV)**	**Heavy Duty Vehicle (HDV)**	
Waterdown Road	CO	60	10.4	6.2	95	5	10.2
	NO_x		0.26	0.56			0.28
	$PM_{2.5}$		0.011	0.021			0.012
Mill Street South	CO	50	10.3	7.1	95	5	10.1
	NO_x		0.26	0.54			0.28
	$PM_{2.5}$		0.011	0.021			0.012
Mountain Brow Road East	CO	50	10.3	7.1	96	4	10.1
	NO_x		0.26	0.54			0.27
	$PM_{2.5}$		0.011	0.021			0.012
Dundas St East: Hamilton St. to First St.	CO	50	10.3	7.1	92	8	10.0
	NO_x		0.26	0.54			0.29
	$PM_{2.5}$		0.011	0.021			0.012

The emission factors that were predicted by MOBILE6.2 for idling vehicles at the various intersections involved are presented in *Table 3.8.*

Table 3.8: Emission Factors for Vehicles Idling at the Intersections – Scenario 2							
Intersection	**Vehicles Idling On**	**Contaminant**	**Emission Factor (g/VMT)**		**Vehicle breakdown (%)**		**Average Emission Factor (g/veh-hr)**
			Light Duty Vehicle (LDV)	**Heavy Duty Vehicle (HDV)**	**Light Duty Vehicle (LDV)**	**Heavy Duty Vehicle (HDV)**	
Mill Street South and Dundas Street East	Mill Street South	CO	27.6	40.7	95	5	70.2
		NO_x	0.54	0.41			1.34
		$PM_{2.5}$	0.011	0.021			0.029

Table 3.8: Emission Factors for Vehicles Idling at the Intersections – Scenario 2

Intersection	Vehicles Idling On	Contaminant	Emission Factor (g/VMT)		Vehicle breakdown (%)		Average Emission Factor (g/veh-hr)
			Light Duty Vehicle (LDV)	Heavy Duty Vehicle (HDV)	Light Duty Vehicle (LDV)	Heavy Duty Vehicle (HDV)	
Dundas Street East and Mill Street South	Dundas Street East	CO	27.6	40.7	92	8	71.2
		NO_x	0.54	0.41			1.33
		$PM_{2.5}$	0.011	0.021			0.030
Mountain Brow Road East and Waterdown Road	Mountain Brow Road East	CO	27.6	40.7	96	4	69.9
		NO_x	0.54	0.41			1.34
		$PM_{2.5}$	0.011	0.021			0.029

3.3 Scenario 3 – Future 2021 Mature State of Development

Scenario 3 consists of the proposed redeveloped road configuration and a new north-south road linking Mountain Brow Road East to Dundas Street at Burke Street. The scenario includes the projected traffic conditions that would prevail in 2021 and distributed under the mature state of the new redeveloped configuration. Vehicle emission factors were those determined for the year 2021 using MOBILE6.2.

Road Traffic

As noted in *Section 3.2* the estimated future traffic volumes under the "no-build" road network scenario (Scenario 2) and the "future build" road network scenario (Scenario 3) were obtained from traffic modelling undertaken as part of the WATMP Phase 1 and 2. *Table 3.9* summarises the traffic data for the future mature state of development scenario (Scenario 3).

Table 3.9: Scenario 3 – Future Traffic Volumes (2021)					
Road Segment	**Posted Speed (km/h)**	**Road Lanes**	**AADT (24 hours) (veh./day)**	**Peak PM hourly traffic (veh./hr)**	**Heavy vehicle (%)**
Waterdown Rd	60	4	19,000	2,150	5
Mill St. South	50	2	8,500	750	5
Mountain Brow Rd. East	50	4	11,000	1,200	5
Dundas St. East (at Mill St.S.)	50	2	20,000	1,500	8
Dundas St. East (at Mid-Block)	50	2	28,000	2,700	8
Mid-Block Rd.	50	4	11,000	1,200	5

In addition to the traffic light at the intersection of Dundas Street East and Mill Street South, there will be an additional traffic light at the intersection of Dundas Street East / Burke Street / Mid-Block Road. There is an intersection at Waterdown Road / Mountain Brow Road East / Mill Street South and two roundabouts on Mid-Block Road. For the purpose of modelling, the intersection and roundabouts were conservatively assumed to have traffic lights. The parameters that were used in the model for these intersections with traffic lights are summarized in *Table 3.10*.

Table 3.10: Traffic Light Input Parameters – Scenario 3					
Intersection	**Segment**	**Average signal cycle length (s)**	**Average red time length (s)**	**Clearance lost time (s)**	**Saturation flow rate (veh./hr/lane)**
Dundas St.E and Mill St.	East/West	90	26	2	1,600
	North/South	90	64	2	1,600
Dundas St.E and Mid-Block Rd.	East/West	90	26	2	1,600
	North/South	90	64	2	1,600
Waterdown Rd and Mountain Brow Rd.	North/South	80	26	2	1,600
	West	80	54	2	1,600
Mid-Block Rd. Roundabout 1	East/West	80	26	2	1,600
	South	80	54	2	1,600
Mid Block Rd. Roundabout 2	East/West	80	26	2	1,600
	North/South	80	54	2	1,600

Vehicular Emissions

The emission factors that were predicted by MOBILE6.2 for the various road segments involved are presented in *Table 3.11* for free flowing traffic and *Table 3.12* for idling traffic. The MOBILE6.2 model output files are provided in *Appendix B*.

Table 3.11: Emission Factors for the Road Segments – Scenario 3

Road Segment	Contaminant	Vehicle speed (km/h)	Emission Factor (g/VMT)		Vehicle breakdown (%)		Average Emission Factor (g/VMT)
			Light Duty Vehicle (LDV)	Heavy Duty Vehicle (HDV)	Light Duty Vehicle (LDV)	Heavy Duty Vehicle (HDV)	
Waterdown Road	CO	60	10.4	6.2	95	5	10.2
	NO_x		0.26	0.56			0.28
	$PM_{2.5}$		0.011	0.021			0.012
Mill Street South	CO	50	10.3	7.1	95	5	10.1
	NO_x		0.26	0.54			0.28
	$PM_{2.5}$		0.011	0.021			0.012
Mountain Brow Road East	CO	50	10.3	7.1	95	5	10.1
	NO_x		0.26	0.54			0.28
	$PM_{2.5}$		0.011	0.021			0.012
Dundas Street East: Hamilton to First St.	CO	50	10.3	7.1	92	8	10.0
	NO_x		0.26	0.54			0.29
	$PM_{2.5}$		0.011	0.021			0.012
Dundas Street East: First St to Pamela	CO	50	10.3	7.1	92	8	10.0
	NO_x		0.26	0.54			0.29
	$PM_{2.5}$		0.011	0.021			0.012
Mid-Block Road	CO	50	10.3	7.1	95	5	10.1
	NO_x		0.26	0.54			0.28
	$PM_{2.5}$		0.011	0.021			0.012

Table 3.12: Emission Factors for Vehicles Idling at the Intersections – Scenario 3

Intersection	Vehicles Idling On	Contaminant	Emission Factor (g/VMT)		Vehicle breakdown (%)		Average Emission Factor (g/veh-hr)
			Light Duty Vehicle (LDV)	Heavy Duty Vehicle (HDV)	Light Duty Vehicle (LDV)	Heavy Duty Vehicle (HDV)	
Waterdown Road and Mountain Brow Road East	Waterdown Road	CO	27.6	40.7	95	5	70.2
		NO_x	0.54	0.41			1.34
		$PM_{2.5}$	0.011	0.021			0.029
Mill Street South and Mountain Brow Road East	Mill Street South	CO	27.6	40.7	95	5	70.2
		NO_x	0.54	0.41			1.34
		$PM_{2.5}$	0.011	0.021			0.029
Mill Street South and Dundas Street East	Mill Street South	CO	27.6	40.7	95	5	70.2
		NO_x	0.54	0.41			1.34
		$PM_{2.5}$	0.011	0.021			0.029
Mountain Brow Road East and Waterdown Road	Mountain Brow Road East	CO	27.6	40.7	95	5	70.2
		NO_x	0.54	0.41			1.34
		$PM_{2.5}$	0.011	0.021			0.029
Mountain Brow Road East and Mid-Block Road	Mountain Brow Road East	CO	27.6	40.7	95	5	70.2
		NO_x	0.54	0.41			1.34
		$PM_{2.5}$	0.011	0.021			0.029
Dundas Street East and Mill Street South	Dundas Street East	CO	27.6	40.7	92	8	71.2
		NO_x	0.54	0.41			1.33
		$PM_{2.5}$	0.011	0.021			0.030

Table 3.12: Emission Factors for Vehicles Idling at the Intersections – Scenario 3

Intersection	Vehicles Idling On	Contaminant	Emission Factor (g/VMT)		Vehicle breakdown (%)		Average Emission Factor (g/veh-hr)
			Light Duty Vehicle (LDV)	Heavy Duty Vehicle (HDV)	Light Duty Vehicle (LDV)	Heavy Duty Vehicle (HDV)	
Dundas Street East and North-South Road	Dundas Street East	CO	27.6	40.7	92	8	71.2
		NO_x	0.54	0.41			1.33
		$PM_{2.5}$	0.011	0.021			0.030
Mid-Block Road and Mountain Brow Road East	Mid-Block Rd. North-South	CO	27.6	40.7	95	5	70.2
		NO_x	0.54	0.41			1.34
		$PM_{2.5}$	0.011	0.021			0.029
Mid-Block Road and Dundas Street East	Mid-Block Rd. North-South	CO	27.6	40.7	95	5	70.2
		NO_x	0.54	0.41			1.34
		$PM_{2.5}$	0.011	0.021			0.029

4. DISPERSION MODELLING

4.1 Dispersion Modelling Selection

The US EPA's CAL3QHCR dispersion model included in the Lakes Environmental Software CALRoads View (Version 3.9) was used to predict contaminant concentrations attributable to vehicular emissions from current and future traffic volumes in the study area. The CAL3QHCR model is based on the Gaussian plume equation used to predict air pollutant concentrations near highways and arterial streets due to emissions from motor vehicles. The CAL3QCHR model calculates maximum 1-hour and 24-hour averaged contaminant concentrations. For the purposes of this assessment maximum 1-hour concentrations were evaluated for CO and NOx, and maximum 24-hour concentrations were evaluated for $PM_{2.5}$.

The MOE prepared hourly meteorological data for the West Central Region was used in the dispersion modelling. Data for the West Central Region was selected as the study area is located in this region of Ontario.

4.2 Receptor Selection

The US EPA's CAL3QHCR dispersion model calculates contaminant concentrations at defined grid-points and at specified receptors. A grid spacing of 50 m by 50 m was used. Twenty-one discrete residential receptors along the study roadways were selected for this assessment and are identified in *Table 4.1* below and illustrated in *Figure A-1 in Appendix A.* The discrete receptors were chosen for their potential to be impacted by road traffic emissions based on their relative location (proximity) to the new or improved roads, and the configuration of the roadways.

Thirteen residential receptors were selected along Waterdown Road from Highway 403 to Mill Street South/Mountain Brow Road and identified as W01 to W13. Except for W05, these were all detached two storey dwellings which were located approximately 13 m to 207 m from Waterdown Road. Receptor W05 currently does not exist but was selected to estimate the future impact of the Waterdown Road redevelopment on the planned subdivision north of Flatt Road on Waterdown Road.

Two receptors W15 and W16 were selected to be representative of air quality impacts along Mill Street South. Both were detached two storey dwellings. Two existing residences along Mountain Brow Road were selected as receptors W14 and W17. The impact of the future Mid-Block Road and subdivision

was modelled by future receptors W19, W20 and W21 along Mountain Brow Road. The impact of traffic generated air contaminants on receptors along Dundas Street East was estimated by the impact on receptor W18. These residences were all detached two storey dwellings.

Table 4.1: Sensitive Discrete Receptors

Receptors	UTM Coordinates (m)		Status	Associated Roadway
	Easting	Northing		
W01	592040	4796457	Existing Residence	Waterdown Rd.
W02	591934	4796505	Existing Residence	Waterdown Rd.
W03	591654	4796511	Existing Residence	Waterdown Rd.
W04	591546	4796995	Existing Residence	Waterdown Rd.
W05	591500	4796940	Future Residence	Waterdown Rd.
W06	591244	4797186	Existing Residence	Waterdown Rd.
W07	591121	4797307	Existing Residence	Waterdown Rd.
W08	591216	4797368	Existing Residence	Waterdown Rd.
W09	591056	4797204	Existing Residence	Waterdown Rd.
W10	591003	4797442	Existing Residence	Waterdown Rd.
W11	590894	4797490	Existing Residence	Waterdown Rd.
W12	590680	4797826	Existing Residence	Waterdown Rd.
W13	590449	4797946	Existing Residence	Waterdown Rd.
W14	590503	4798009	Existing Residence	Mountain Brow Rd.
W15	590203	4798272	Existing Residence	Mill St. South
W16	589962	4798455	Existing Residence	Mill St. South
W17	590736	4798299	Existing Residence	Mountain Brow Rd.
W18	590088	4798804	Existing Residence	Dundas St. East
W19	590930	4798687	Future Residence	Mid-Block Rd.
W20	590792	4798837	Future Residence	Mid-Block Rd.
W21	590482	4799118	Future Residence	Mid-Block Rd.

5. MODELLING RESULTS AND DISCUSSION

5.1 Modelling Results for Scenario 1

For the purpose of this assessment maximum 1-hour concentrations were evaluated for CO and NOx, and maximum 24-hour concentrations were evaluated for $PM_{2.5}$. The maximum concentrations predicted for the study area were 1.7 ppm for CO, 91 ppb for NOx, and 0.53 µg/m^3 for $PM_{2.5}$. The maxima for all the contaminants occurred near the intersection of Mill Street South and Dundas Street East. Concentrations of the air contaminants predicted at the discrete receptors are presented in *Table 5.1* and the isopleths graphs can be found in *Appendix C*.

Table 5.1: CAL3QHCR Model Results – Scenario 1

Receptor ID	Carbon Monoxide (CO) [ppm]	Nitrogen Oxides (NOx) [ppb]	Particulate Matter ($PM_{2.5}$) [µg/m^3]
W01	0.3	16	0.12
W02	0.4	30	0.18
W03	0.0	6	0.00
W04	0.2	16	0.08
W05	n/a	n/a	n/a
W06	0.4	21	0.11
W07	0.0	8	0.00
W08	0.0	6	0.00
W09	0.4	17	0.12
W10	0.2	11	0.00
W11	0.3	21	0.17
W12	0.2	16	0.07
W13	0.3	19	0.12
W14	0.2	13	0.02
W15	0.0	11	0.00
W16	0.4	18	0.10
W17	0.2	14	0.05
W18	0.7	42	0.28
W19	n/a	n/a	n/a
W20	n/a	n/a	n/a
W21	n/a	n/a	n/a
Maximum Predicted Concentration	1.7	91	0.53

Notes: For CO and NOx, the concentrations indicated are for 1-hour averaging time
For $PM_{2.5}$, the concentrations indicated are for 24-hour averaging time

For each contaminant, the background ambient air concentrations (from MOE monitoring station, see *Table 2.2*) were added to the predicted maximum concentrations for the corresponding averaging period. The cumulative concentrations of relevant contaminants (i.e. background plus maximum predicted concentrations) were compared with the regulatory standards (*Table 2.1*). This is summarized in *Table 5.2*. The predicted cumulative concentration maxima for the modelled contaminants of CO, NOx, and $PM_{2.5}$ were all below their respective MOE and CCME CWS standards.

Table 5.2: Total Concentration versus Existing Standards – Scenario 1

Contaminant	Highest Predicted Concentration	Ambient (Background) Concentration	Total (Cumulative) Concentration	Existing Standard	Percent of Standard
CO (ppm)	1.7	0.5	2.2	30	7
NOx (ppb)	91	49	140	200	70
$PM_{2.5}$ ($\mu g/m^3$)	0.53	20	20.5	30	68

Notes: For CO and NOx, the concentrations indicated are for 1-hour averaging time
For $PM_{2.5}$, the concentrations indicated are for 24-hour averaging time

5.2 Modelling Results for Scenario 2

The maximum concentrations predicted for the study area were approximately 2 ppm for CO, 33 ppb for NOx, and 1 $\mu g/m^3$ for $PM_{2.5}$. The maxima for all the contaminants occurred near the intersection of Mill Street South and Dundas Street East. The concentrations of NOx were predicted to be lower in the future Scenario 2 than in the current Scenario 1 at all receptors and for the maximum which had a reduction of up to 58 ppb. This is due to MOBILE6.2 accounting for the future improvements in vehicular NOx emissions which resulted in the NOx emission rates for free flowing and idling traffic to be on average approximately a third of the emission rate predicted for current vehicles. The increases in the future 2021 no-build predicted peak PM traffic volumes over the current peak PM traffic volumes did not offset the influence of the reduced NOx emission factor predicted for the future condition.

There was essentially no change in the CO concentrations predicted for the future no-build scenario when compared to the concentrations predicted under the current scenario. For the selected sensitive receptors along the study route, there was an insignificant change (both an increase and decrease of less than 0.4 ppm) in the predicted CO concentrations of the future no-build scenario when compared to the concentration predicted under the current condition. The CO emission rates for the free flowing and

idling traffic along the study route resulted in the CO emission rates in the future no-build scenario to be approximately 30% lower on average than the emission rates estimated under the existing condition. This decrease in the emission rate combined with the predicted increase in the peak PM traffic volumes in Scenario 2 resulted in a negligible change in the predicted CO concentrations when compared to the current condition of Scenario 1.

Similar to CO, there was little change in the $PM_{2.5}$ concentration predicted in the future no-build scenario when compared to the concentrations predicted under the current conditions (i.e., difference of less than 1µg/m^3). The $PM_{2.5}$ emission rates in the future no-build scenario was approximately 12% lower on average than the emission rates estimated for the existing condition. However, this decrease in the emission rate combined with the predicted increase in the peak PM traffic volumes in Scenario 2 resulted in the negligible change in the predicted $PM_{2.5}$ concentrations when compared to the current condition of Scenario 1.

The CAL3QHCR isopleths graphs can be found in *Appendix C*.

Table 5.3: CAL3QHCR Model Results for Scenario 2

Receptor ID	Carbon Monoxide (CO) [ppm]	Nitrogen Oxides (NOx) [ppb]	Particulate Matter ($PM_{2.5}$) [µg/m^3]
W01	0.3	7	0.17
W02	0.4	13	0.23
W03	0.0	2	0.00
W04	0.2	7	0.13
W05	n/a	n/a	n/a
W06	0.4	9	0.15
W07	0.0	4	0.00
W08	0.0	3	0.00
W09	0.4	7	0.16
W10	0.2	5	0.09
W11	0.3	10	0.19
W12	0.2	6	0.11
W13	0.6	14	0.25
W14	0.5	10	0.21
W15	0.1	6	0.00
W16	0.4	11	0.19
W17	0.6	12	0.20
W18	0.5	16	0.34
W19	n/a	n/a	n/a

Table 5.3: CAL3QHCR Model Results for Scenario 2			
Receptor ID	**Carbon Monoxide (CO) [ppm]**	**Nitrogen Oxides (NOx) [ppb]**	**Particulate Matter ($PM_{2.5}$) [µg/m^3]**
W20	n/a	n/a	n/a
W21	n/a	n/a	n/a
Maximum Predicted Concentration	1.5	33	0.61

Notes: For CO and NOx, the concentrations indicated are for 1-hour averaging time
For $PM_{2.5}$, the concentrations indicated are for 24-hour averaging time

For each contaminant, the background ambient air concentrations (from MOE monitoring station, see *Table 2.2*) were added to the predicted maximum concentrations for the corresponding averaging period. The cumulative maximum concentrations for all contaminants modelled for this assessment were below the respective air quality standards (*Table 5.4*).

Table 5.4: Total Concentration versus Existing Standards – Scenario 2					
Contaminant	**Highest Predicted Concentration**	**Ambient (Background) Concentration**	**Total (Cumulative) Concentration**	**Existing Standard**	**Percent of Standard**
CO (ppm)	1.5	0.5	2	30	7
NOx (ppb)	33	49	82	200	41
$PM_{2.5}$ (µg/m^3)	0.61	20	21	30	70

Notes: For CO and NOx, the concentrations indicated are for 1-hour averaging time
For $PM_{2.5}$, the concentrations indicated are for 24-hour averaging time

5.3 Modelling Results for Scenario 3

The maximum concentrations predicted for the study area were approximately 2 ppm for CO, 48 ppb for NOx, and 1 µg/m^3 for $PM_{2.5}$. The maxima for all the contaminants occurred near the intersection of Mill Street South and Dundas Street East. The CAL3QHCR isopleths graphs can be found in *Appendix C*.

Table 5.5: CAL3QHCR Model Results – Scenario 3			
Receptor ID	**Carbon Monoxide (CO) [ppm]**	**Nitrogen Oxides (NOx) [ppb]**	**Particulate Matter ($PM_{2.5}$) [µg/m^3]**
W01	0.4	12	0.31
W02	0.7	22	0.50
W03	0.2	6	0.07
W04	0.5	15	0.23
W05	0.4	12	0.32
W06	0.6	18	0.30
W07	0.4	8	0.14
W08	0.2	6	0.03
W09	0.5	12	0.22
W10	0.4	12	0.18
W11	0.5	15	0.31
W12	0.5	13	0.22
W13	0.5	15	0.28
W14	0.3	9	0.21
W15	0.2	5	0.05
W16	0.4	10	0.22
W17	0.6	18	0.40
W18	0.7	19	0.73
W19	0.3	11	0.20
W20	0.4	15	0.28
W21	0.5	14	0.36
Maximum Predicted Concentration	1.9	48	1.23

Notes: For CO and NOx, the concentrations indicated are for 1-hour averaging time
For $PM_{2.5}$, the concentrations indicated are for 24-hour averaging time

The cumulative maximum concentrations for all contaminants modelled for this assessment were below their respective air quality standards (*Table 5.6*). Therefore, the predicted cumulative concentrations of the air contaminants at the receptors selected for the purposes of this assessment were all below the respective MOE and CCME CWS standards.

Table 5.6: Total Concentration versus Existing Standards – Scenario 3

Contaminant	Highest Predicted Concentration	Ambient (Background) Concentration	Total (Cumulative) Concentration	Existing Standard	Percent of Standard
CO (ppm)	1.9	0.5	2	30	7
NOx (ppb)	48	49	97	200	49
$PM_{2.5}$ ($\mu g/m^3$)	1.2	20	21	30	70

Notes: For CO and NOx, the concentrations indicated are for 1-hour averaging time
For $PM_{2.5}$, the concentrations indicated are for 24-hour averaging time

A comparison of the results for Scenario 2 future no-build condition and Scenario 3 future build condition is presented in *Table 5.7.*

Table 5.7: Comparison Between Scenario 2 and Scenario 3

Receptor ID	Carbon Monoxide (CO) [ppm]			Nitrogen Oxides (NOx) [ppb]			Particulate Matter ($PM_{2.5}$) [$\mu g/m^3$]		
	Scenario 2	Scenario 3	Change	Scenario 2	Scenario 3	Change	Scenario 2	Scenario 3	Change
W01	0.3	0.4	0.1	7	12	5	0.17	0.31	0.14
W02	0.4	0.7	0.3	13	22	9	0.23	0.50	0.27
W03	0.0	0.2	0.2	2	6	4	0.00	0.07	0.07
W04	0.2	0.5	0.3	7	15	8	0.13	0.23	0.10
W05*	n/a	0.4	0.4	n/a	12	12	n/a	0.32	0.32
W06	0.4	0.6	0.2	9	18	9	0.15	0.30	0.15
W07	0.0	0.4	0.4	4	8	4	0.00	0.14	0.14
W08	0.0	0.2	0.2	3	6	3	0.00	0.03	0.03
W09	0.4	0.5	0.1	7	12	5	0.16	0.22	0.06
W10	0.2	0.4	0.2	5	12	7	0.09	0.18	0.09
W11	0.3	0.5	0.2	10	15	5	0.19	0.31	0.12
W12	0.2	0.5	0.3	6	13	7	0.11	0.22	0.11
W13	0.6	0.5	-0.1	14	15	1	0.25	0.28	0.03
W14	0.5	0.3	-0.2	10	9	-1	0.21	0.21	0.00
W15	0.1	0.2	0.1	6	5	-1	0.00	0.05	0.05
W16	0.4	0.4	0.0	11	10	-1	0.19	0.22	0.03
W17	0.6	0.6	0.0	12	18	6	0.20	0.40	0.20
W18	0.5	0.7	0.2	16	19	3	0.34	0.73	0.39
W19*	n/a	0.3	0.3	n/a	11	11	n/a	0.20	0.20
W20*	n/a	0.4	0.4	n/a	15	15	n/a	0.28	0.28
W21*	n/a	0.5	0.5	n/a	14	14	n/a	0.36	0.36
Overall Maximum Predicted Concentration	1.5	1.9	0.4	33	48	15	0.61	1.23	0.62

Note: Receptors with an "*" are potential future residential receptors and do not exist under Scenario 1 or 2.

For all three contaminants of NOx, CO, and $PM_{2.5}$ the maximum predicted concentration was higher for the future build Scenario 3 than for the future no-build Scenario 2. However, the increases were negligible for CO and $PM_{2.5}$ as they were less than 1 ppm and 1 $\mu g/m^3$, respectively. For NOx the maximum increase was only 15 ppb.

Concentrations of NOx for receptors W01 to W13 along Waterdown Road were predicted to increase by up to 9 ppb (receptors W02 and W06) under the future build Scenario 3 when compared to the future no-

build Scenario 2. For receptors W15 and W16 on Mill Street South, the NOx concentrations for Scenario 3 were predicted to decrease by approximately 1 ppb when compared to Scenario 2. This change is not significant. Along Mountain Brow Road, receptor W14 near the intersection with Waterdown Road and Mill Street South, was predicted to have an insignificant decrease in NOx concentration of approximately 1 ppb under Scenario 3 in comparison to the predicted NOx concentration under Scenario 2. Receptor W17 which is further east on Mountain Brow Road was predicted to have an increase in NOx concentration by approximately 6 ppb under Scenario 3 compared to Scenario 2. The NOx concentration for receptor W18 on Dundas Street East under Scenario 3 was predicted to have an increase of approximately 3 ppb compared to Scenario 2. Therefore the overall impact of the redevelopment project on the ambient NOx concentrations is considered to be low.

For CO and $PM_{2.5}$, the predicted concentrations at all receptors under the future build Scenario 3 were not significantly different from the concentrations predicted under the future no-build Scenario 2 as differences (both increases and decreases) were less than 1 ppm for CO and less than 1 $\mu g/m^3$ for $PM_{2.5}$. Therefore the overall impact of the redevelopment project on the ambient CO and $PM_{2.5}$ concentrations is considered to be negligible.

6. AIR QUALITY IMPACT DURING CONSTRUCTION PHASE

The construction phase of the proposed redevelopment of the Waterdown Road Corridor has the potential to affect the air quality in the vicinity of the site. Emissions which are associated with construction activities are primarily dust and typical combustion emissions from construction equipment such as CO, NOx, SO_2 and Volatile Organic Compounds (VOCs). As with any construction site, these emissions will be of relatively short duration and unlikely to have any effect on the surrounding areas.

During the construction phase, in order to reduce/control dust emissions, effective dust suppression methods, such as on-site watering of active areas, sweeping of paved areas, (e.g. street and parking lot), as well as limiting the travel speed of the nearby roads to reduce re-suspension of road dust are recommended. During the construction phase, it is recommended that the "*Best Practices for the Reduction of Air Emissions from Construction and Demolition activities* (March 2005)" prepared by ChemInfo Services Inc. in conjunction with Construction & Demolition Multi-Stakeholders Working Group for Environment Canada be implemented.

In addition to the construction activities that would impact the local air quality, traffic congestion and re-routing of the traffic during the construction phase has the potential to further impact the local air quality. This may be more noticeable during the widening of Waterdown Road and Mountain Brow Road. During the redevelopment of these roads, there is a potential for increased traffic and congestion and therefore air quality impacts along Mill Street South, Kings Road and Kerns Road as traffic may be re-directed along these routes. During the construction of the Mid-Block Road, there is a potential for increased traffic and air quality impacts along Dundas Street East, Mountain Brow Road and Waterdown Road/Mill Street South.

7. CONCLUSION

The air quality impact of the Waterdown Road Corridor redevelopment project defined as Scenario 3 was assessed by comparing the predicted nitrogen oxides (NOx), carbon monoxide (CO) and fine particulate matter ($PM_{2.5}$) levels of the mature state of development in 2021 to that under the future no-build condition (Scenario 2).

For all three contaminants of NOx, CO, and $PM_{2.5}$ the maximum predicted concentration was higher for the future build Scenario 3 than for the future no-build Scenario 2. However, the increases were negligible for CO and $PM_{2.5}$ as they were less than 1 ppm and 1 $\mu g/m^3$, respectively. For NOx the maximum increase was only 15 ppb. For the Waterdown Road segment, the predicted increase in NOx concentrations was 12 ppb or less under the future build Scenario 3 when compared to the future no-build Scenario 2. Changes in NOx concentrations on Mill Street South as modelled by the selected sensitive residential receptors along this road between the future "build" and "no-build" scenarios was not significant. Along Mountain Brow Road, NOx concentrations were predicted to be greater under Scenario 3 than under Scenario 2. Concentrations were predicted to increase from the intersection of Mountain Brow Road with Waterdown Road/Mill Street South going east to the proposed new Mid-Block Road. The overall impact of the redevelopment project on the ambient NOx concentrations is considered to be low; and negligible for CO and $PM_{2.5}$.

For both NOx and CO, the cumulative concentrations (ambient plus vehicular) were significantly lower (less than 50%) than the Ontario Ministry of the Environment's 1-hour standard. In the case of $PM_{2.5}$, the concentration resulting from vehicular traffic was significantly lower than the existing ambient background concentrations (approximately 6% of the background) and the calculated cumulative concentration was approximately at 70% of the CWS.

8. REFERENCES

1. Ontario Ministry of the Environment. Summary of O.Reg. 419/05 Standards, and Point of Impingement Guidelines, and Ambient Air Quality Criteria (AAQCs), December 2005.

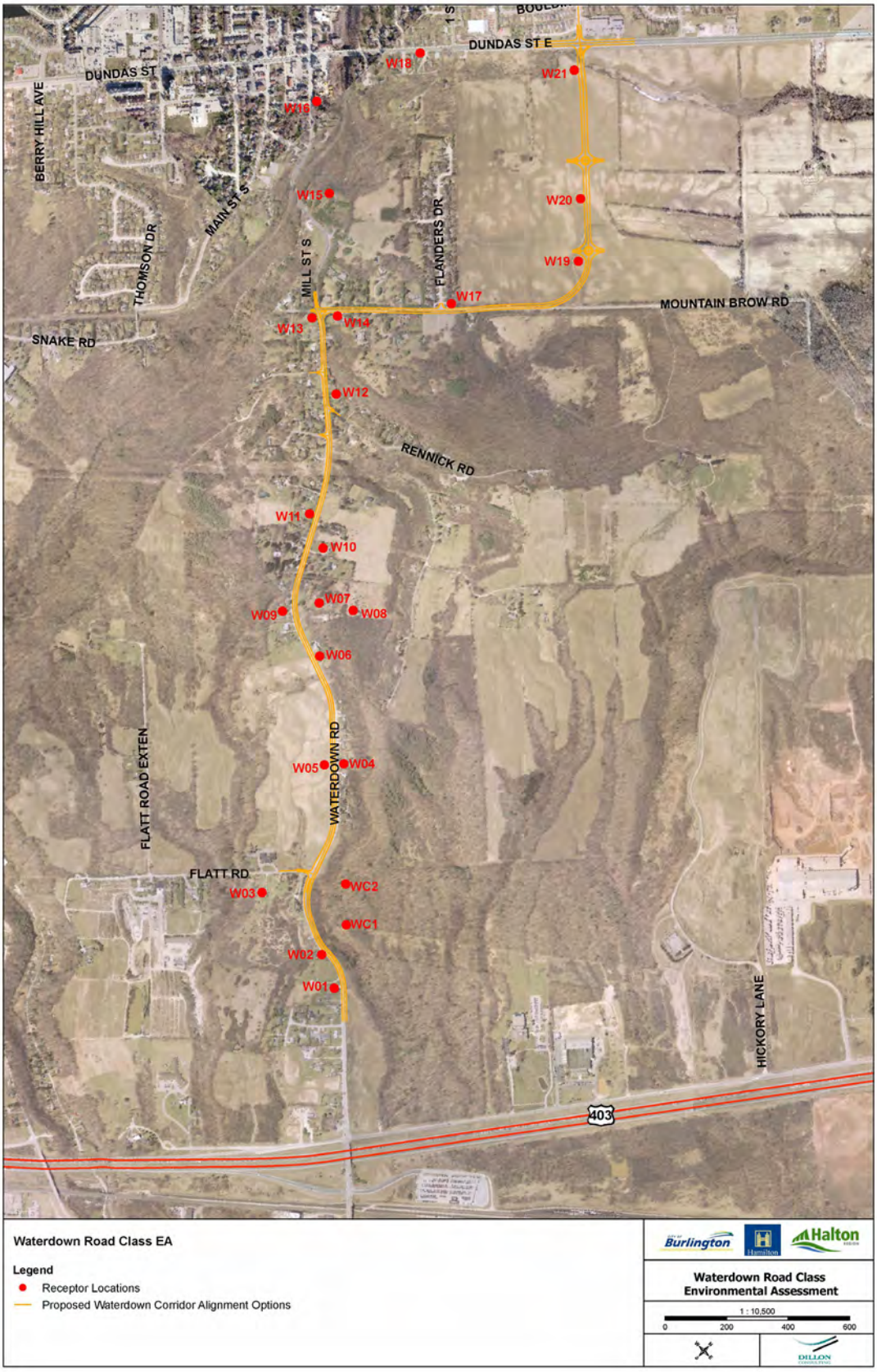
2. United States Environmental Protection Agency. User's Guide to CAL3QHC Version 2.0: A Modelling Methodology for Predicting Pollutant Concentrations Near Roadway Intersections. EPA-454/R-92-006. September 1995.

3. United States Environmental Protection Agency. User's Guide to MOBILE6.1 and MOBILE6.2. EPA420-R-03-010. August 2003

4. Lakes Environmental. User's Guide to CALRoads View. 2001-2007 Lakes Environmental Software.

Appendix A – Figures

Figure A-1. Waterdown Road Corridor 2021 Mature State of Development with Residential Receptors



Appendix B – MOBILE 6.2 Output Files

Scenario 1 – 2008 Mobile 6.2 Files

```
***** HEADER SECTION *****

MOBILE6 INPUT FILE

REPORT FILE        : WTRDWN.OUT
POLLUTANTS         : NOX CO
PARTICULATES       :
DATABASE VEHICLES  : 22222 22222221 2 222 22222222 222

RUN DATA

***** RUN SECTION *****
FUEL RVP           : 9.0

***** SCENARIO SECTION *****

***** 50KM/H *****

SCENARIO REC       : 50km/h (31.1 mph) WINTER 2.5
MIN/MAX TEMP       : 0.00 51.62
CALENDAR YEAR      : 2008
ALTITUDE           : 1
EVALUATION MONTH   : 1
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 15
AVERAGE SPEED      : 31.1 ARTERIAL

SCENARIO REC       : 50km/h (31.1 mph) WINTER 10
MIN/MAX TEMP       : 0.00 51.62
CALENDAR YEAR      : 2008
ALTITUDE           : 1
EVALUATION MONTH   : 1
PARTICLE SIZE      : 10
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 15
AVERAGE SPEED      : 31.1 ARTERIAL

SCENARIO REC       : 50km/h (31.1 mph) SUMMER 2.5
MIN/MAX TEMP       : 44.96 91.94
CALENDAR YEAR      : 2008
ALTITUDE           : 1
EVALUATION MONTH   : 7
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 15
AVERAGE SPEED      : 31.1 ARTERIAL

SCENARIO REC       : 50km/h (31.1 mph) SUMMER 10
MIN/MAX TEMP       : 44.96 91.94
CALENDAR YEAR      : 2008
ALTITUDE           : 1
EVALUATION MONTH   : 7
PARTICLE SIZE      : 10
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 15
AVERAGE SPEED      : 31.1 ARTERIAL

***** 80 KM/H *****

SCENARIO REC       : 80km/h (49.7 mph) WINTER 2.5
MIN/MAX TEMP       : 0.00 51.62
CALENDAR YEAR      : 2008
ALTITUDE           : 1
EVALUATION MONTH   : 1
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 15
AVERAGE SPEED      : 49.7 ARTERIAL
```

```
SCENARIO REC       : 80km/h (49.7 mph) WINTER 10
MIN/MAX TEMP       : 0.00 51.62
CALENDAR YEAR      : 2008
ALTITUDE           : 1
EVALUATION MONTH   : 1
PARTICLE SIZE      : 10
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 15
AVERAGE SPEED      : 49.7 ARTERIAL

SCENARIO REC       : 80km/h (49.7 mph) SUMMER 2.5
MIN/MAX TEMP       : 44.96 91.94
CALENDAR YEAR      : 2008
ALTITUDE           : 1
EVALUATION MONTH   : 7
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 15
AVERAGE SPEED      : 49.7 ARTERIAL

SCENARIO REC       : 80km/h (49.7 mph) SUMMER 10
MIN/MAX TEMP       : 44.96 91.94
CALENDAR YEAR      : 2008
ALTITUDE           : 1
EVALUATION MONTH   : 7
PARTICLE SIZE      : 10
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 15
AVERAGE SPEED      : 49.7 ARTERIAL

***** END OF THIS RUN *****

END OF RUN


************************************************************************
* MOBILE6.2.03 (24-Sep-2003)                                           *
* Input file: WTRDWN.IN (file 1, run 1).                               *
************************************************************************

* # # # # # # # # # # # # # # # # # # # # # # # # # # #
* 60km/h (37.3 mph) WINTER 2.5
* 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 37.3
            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.
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
```

```
* 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

                    Calendar Year:  2008
                           Month:  Jan.
                        Altitude:  Low
               Minimum Temperature:   0.0 (F)
               Maximum Temperature:  51.6 (F)
                 Absolute Humidity:   75. grains/lb
                  Nominal Fuel RVP:   9.0 psi
                     Weathered RVP:   9.0 psi
               Fuel Sulfur Content:   30. 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:    0.3803    0.3662    0.1249              0.0357    0.0004    0.0019    0.0852    0.0055    1.0000
 ---------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
    Composite CO  :     18.83     22.31     30.49     24.39     11.05     0.929     0.806     1.815     12.93     19.759
    Composite NOX :     0.766     1.025     1.545     1.157     3.424     0.596     0.832     7.410      1.58     1.624
 ---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* 60km/h (37.3 mph) WINTER 10
* 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 37.3
            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.
  M 48 Warning:
              there are no sales for vehicle class HDGV8b

                    Calendar Year:  2008
                           Month:  Jan.
                        Altitude:  Low
               Minimum Temperature:   0.0 (F)
               Maximum Temperature:  51.6 (F)
                 Absolute Humidity:   75. grains/lb
                  Nominal Fuel RVP:   9.0 psi
                     Weathered RVP:   9.0 psi
               Fuel Sulfur Content:   30. 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:    0.3803    0.3662    0.1249              0.0357    0.0004    0.0019    0.0852    0.0055    1.0000
  ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :     18.83     22.31     30.49     24.39     11.05     0.929     0.806     1.815     12.93     19.759
     Composite NOX :      0.766     1.025     1.545     1.157     3.424     0.596     0.832     7.410      1.58      1.624
  ---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* 60km/h (37.3 mph) SUMMER 2.5
* 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 37.3
            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.
  M 48 Warning:
              there are no sales for vehicle class HDGV8b

                    Calendar Year:  2008
                            Month:  July
                         Altitude:  Low
              Minimum Temperature:  45.0 (F)
              Maximum Temperature:  91.9 (F)
                Absolute Humidity:   75. grains/lb
                  Nominal Fuel RVP:   9.0 psi
                     Weathered RVP:   8.6 psi
              Fuel Sulfur Content:   30. 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:    0.3728    0.3705    0.1273              0.0359    0.0004    0.0019    0.0857    0.0055    1.0000
  ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :     10.43     12.25     16.67     13.38      9.43     0.923     0.784     1.697     11.57     11.098
     Composite NOX :      0.664     0.846     1.227     0.943     2.964     0.575     0.788     7.032      1.21      1.434
  ---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
```

```
* 60km/h (37.3 mph) SUMMER 10
* 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 37.3
            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.
  M 48 Warning:
              there are no sales for vehicle class HDGV8b

                    Calendar Year:  2008
                            Month:  July
                         Altitude:  Low
              Minimum Temperature:  45.0 (F)
              Maximum Temperature:  91.9 (F)
                Absolute Humidity:   75. grains/lb
                 Nominal Fuel RVP:   9.0 psi
                    Weathered RVP:   8.6 psi
              Fuel Sulfur Content:   30. 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:    0.3728    0.3705    0.1273              0.0359    0.0004    0.0019    0.0857    0.0055    1.0000
  ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :     10.43     12.25     16.67     13.38      9.43     0.923     0.784     1.697     11.57    11.098
     Composite NOX :      0.664     0.846     1.227     0.943     2.964     0.575     0.788     7.032      1.21     1.434
  ---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # # # #
* km/h (2.5 mph) WINTER 2.5
* 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.
  M 48 Warning:
              there are no sales for vehicle class HDGV8b

                    Calendar Year:  2008
                           Month:  Jan.
                        Altitude:  Low
              Minimum Temperature:   0.0 (F)
              Maximum Temperature:  51.6 (F)
                Absolute Humidity:   75. grains/lb
                 Nominal Fuel RVP:   9.0 psi
                    Weathered RVP:   9.0 psi
              Fuel Sulfur Content:   30. 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:    0.3803    0.3662    0.1249              0.0357    0.0004    0.0019    0.0852    0.0055    1.0000
  ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :     49.34     54.11     79.96     60.69     72.53     3.303     2.834    10.963    111.56    52.707
     Composite NOX :     1.467     1.939     2.864     2.174     2.511     1.148     1.606    14.216      1.42     2.938
  ---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* 4km/h (2.5 mph) WINTER 10
* 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  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.
  M 48 Warning:
              there are no sales for vehicle class HDGV8b

                    Calendar Year:  2008
                           Month:  Jan.
                        Altitude:  Low
```

```
              Minimum Temperature:   0.0 (F)
              Maximum Temperature:  51.6 (F)
                Absolute Humidity:   75. grains/lb
                 Nominal Fuel RVP:   9.0 psi
                    Weathered RVP:   9.0 psi
              Fuel Sulfur Content:   30. 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:	0.3803	0.3662	0.1249		0.0357	0.0004	0.0019	0.0852	0.0055	1.0000
Composite Emission Factors (g/mi):										
Composite CO :	49.34	54.11	79.96	60.69	72.53	3.303	2.834	10.963	111.56	52.707
Composite NOX :	1.467	1.939	2.864	2.174	2.511	1.148	1.606	14.216	1.42	2.938

```
* # # # # # # # # # # # # # # # # # # # # # # # #
* 4km/h (2.5 mph) SUMMER 2.5
* 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  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.
  M 48 Warning:
              there are no sales for vehicle class HDGV8b

                   Calendar Year:  2008
                           Month:  July
                        Altitude:  Low
              Minimum Temperature:  45.0 (F)
              Maximum Temperature:  91.9 (F)
                Absolute Humidity:   75. grains/lb
                 Nominal Fuel RVP:   9.0 psi
                    Weathered RVP:   8.6 psi
              Fuel Sulfur Content:   30. 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:	0.3728	0.3705	0.1273		0.0359	0.0004	0.0019	0.0857	0.0055	1.0000

```
  ------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :     33.25     33.97     48.32     37.64     61.88     3.266     2.738    10.251    118.23    34.898
     Composite NOX :      1.452     1.651     2.343     1.828     2.173     1.107     1.520    13.505      1.09     2.695
  ------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* 4km/h (2.5 mph) SUMMER 10
* 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  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.
  M 48 Warning:
               there are no sales for vehicle class HDGV8b

                     Calendar Year:  2008
                             Month:  July
                          Altitude:  Low
               Minimum Temperature:  45.0 (F)
               Maximum Temperature:  91.9 (F)
                 Absolute Humidity:   75. grains/lb
                  Nominal Fuel RVP:   9.0 psi
                     Weathered RVP:   8.6 psi
               Fuel Sulfur Content:   30. 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:    0.3728    0.3705    0.1273              0.0359    0.0004    0.0019    0.0857    0.0055    1.0000
  ------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :     33.25     33.97     48.32     37.64     61.88     3.266     2.738    10.251    118.23    34.898
     Composite NOX :      1.452     1.651     2.343     1.828     2.173     1.107     1.520    13.505      1.09     2.695
  ------------------------------------------------------------------------------------------------------------------------


**************************************************************************
* MOBILE6.2.03 (24-Sep-2003)                                             *
* Input file: WTRDWN.IN (file 1, run 1).                                 *
**************************************************************************

* # # # # # # # # # # # # # # # # # # # # # # # #
* 60km/h (37.3 mph) WINTER 2.5
* File 1, Run 1, Scenario 1.
* # # # # # # # # # # # # # # # # # # # # # # # #
```

```
                          Calendar Year:  2008
                                  Month:  Jan.
              Gasoline Fuel Sulfur Content:   30. ppm
                Diesel Fuel Sulfur Content:   15. 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:    0.3803    0.3662    0.1249              0.0357    0.0004    0.0019    0.0852    0.0055    1.0000
 -------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
               Lead:    0.0000    0.0000    0.0000    0.0000    0.0000    ------    ------    ------    0.0000    0.0000
             GASPM:    0.0038    0.0039    0.0044    0.0040    0.0456    ------    ------    ------    0.0142    0.0051
           ECARBON:    ------    ------    ------    ------    ------    0.0599    0.0331    0.1442    ------    0.0124
           OCARBON:    ------    ------    ------    ------    ------    0.0169    0.0477    0.0728    ------    0.0063
               SO4:    0.0002    0.0004    0.0005    0.0005    0.0015    0.0002    0.0003    0.0009    0.0001    0.0004
  Total Exhaust PM:    0.0040    0.0044    0.0049    0.0045    0.0472    0.0770    0.0811    0.2179    0.0143    0.0243
             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    0.0022    0.0020    0.0020    0.0065    0.0010    0.0024
          Total PM:    0.0114    0.0117    0.0123    0.0118    0.0547    0.0843    0.0885    0.2297    0.0206    0.0320
               SO2:    0.0068    0.0088    0.0114    0.0095    0.0168    0.0030    0.0056    0.0132    0.0033    0.0090
               NH3:    0.1017    0.1010    0.0995    0.1006    0.0451    0.0068    0.0068    0.0270    0.0113    0.0921
 -------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* 60km/h (37.3 mph) WINTER 10
* File 1, Run 1, Scenario 2.
* # # # # # # # # # # # # # # # # # # # # # # # #

                          Calendar Year:  2008
                                  Month:  Jan.
              Gasoline Fuel Sulfur Content:   30. ppm
                Diesel Fuel Sulfur Content:   15. ppm
                      Particle Size Cutoff: 10.00 Microns
                          Reformulated Gas:  No

      Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                <6000     >6000     (All)
                      ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.3803    0.3662    0.1249              0.0357    0.0004    0.0019    0.0852    0.0055    1.0000
 -------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
               Lead:    0.0000    0.0000    0.0000    0.0000    0.0000    ------    ------    ------    0.0000    0.0000
             GASPM:    0.0041    0.0043    0.0049    0.0044    0.0527    ------    ------    ------    0.0205    0.0057
           ECARBON:    ------    ------    ------    ------    ------    0.0651    0.0360    0.1568    ------    0.0134
           OCARBON:    ------    ------    ------    ------    ------    0.0184    0.0519    0.0791    ------    0.0068
               SO4:    0.0002    0.0004    0.0005    0.0005    0.0015    0.0002    0.0003    0.0009    0.0001    0.0004
  Total Exhaust PM:    0.0044    0.0047    0.0054    0.0049    0.0542    0.0836    0.0882    0.2368    0.0206    0.0265
             Brake:    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125
              Tire:    0.0080    0.0080    0.0080    0.0080    0.0087    0.0080    0.0080    0.0259    0.0040    0.0095
          Total PM:    0.0249    0.0253    0.0260    0.0254    0.0754    0.1042    0.1087    0.2752    0.0371    0.0486
               SO2:    0.0068    0.0088    0.0114    0.0095    0.0168    0.0030    0.0056    0.0132    0.0033    0.0090
               NH3:    0.1017    0.1010    0.0995    0.1006    0.0451    0.0068    0.0068    0.0270    0.0113    0.0921
 -------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* 60km/h (37.3 mph) SUMMER 2.5
* File 1, Run 1, Scenario 3.
* # # # # # # # # # # # # # # # # # # # # # # # #

                          Calendar Year:  2008
                                  Month:  July
              Gasoline Fuel Sulfur Content:   30. ppm
                Diesel Fuel Sulfur Content:   15. 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:	0.3728	0.3705	0.1273		0.0359	0.0004	0.0019	0.0857	0.0055	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0038	0.0039	0.0044	0.0040	0.0427	------	------	------	0.0142	0.0050
ECARBON:	------	------	------	------	------	0.0574	0.0310	0.1336	------	0.0115
OCARBON:	------	------	------	------	------	0.0162	0.0446	0.0675	------	0.0059
SO4:	0.0002	0.0004	0.0005	0.0005	0.0015	0.0002	0.0003	0.0009	0.0001	0.0005
Total Exhaust PM:	0.0040	0.0043	0.0049	0.0045	0.0443	0.0737	0.0758	0.2020	0.0143	0.0229
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	0.0022	0.0020	0.0020	0.0065	0.0010	0.0024
Total PM:	0.0114	0.0117	0.0122	0.0118	0.0518	0.0810	0.0832	0.2138	0.0206	0.0306
SO2:	0.0068	0.0088	0.0114	0.0095	0.0167	0.0030	0.0056	0.0132	0.0033	0.0090
NH3:	0.1017	0.1011	0.0996	0.1007	0.0451	0.0068	0.0068	0.0270	0.0113	0.0921

```
* # # # # # # # # # # # # # # # # # # # # # # # #
* 60km/h (37.3 mph) SUMMER 10
* File 1, Run 1, Scenario 4.
* # # # # # # # # # # # # # # # # # # # # # # # #

                          Calendar Year:  2008
                                 Month:  July
                Gasoline Fuel Sulfur Content:   30. ppm
                  Diesel Fuel Sulfur Content:   15. ppm
                        Particle Size Cutoff: 10.00 Microns
                            Reformulated Gas:  No
```

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.3728	0.3705	0.1273		0.0359	0.0004	0.0019	0.0857	0.0055	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0041	0.0042	0.0048	0.0044	0.0493	------	------	------	0.0205	0.0056
ECARBON:	------	------	------	------	------	0.0624	0.0337	0.1452	------	0.0125
OCARBON:	------	------	------	------	------	0.0176	0.0484	0.0733	------	0.0064
SO4:	0.0002	0.0004	0.0005	0.0005	0.0015	0.0002	0.0003	0.0009	0.0001	0.0005
Total Exhaust PM:	0.0044	0.0047	0.0053	0.0049	0.0509	0.0801	0.0824	0.2195	0.0206	0.0250
Brake:	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125
Tire:	0.0080	0.0080	0.0080	0.0080	0.0087	0.0080	0.0080	0.0259	0.0040	0.0095
Total PM:	0.0249	0.0252	0.0259	0.0254	0.0721	0.1006	0.1029	0.2579	0.0371	0.0470
SO2:	0.0068	0.0088	0.0114	0.0095	0.0167	0.0030	0.0056	0.0132	0.0033	0.0090
NH3:	0.1017	0.1011	0.0996	0.1007	0.0451	0.0068	0.0068	0.0270	0.0113	0.0921

```
* # # # # # # # # # # # # # # # # # # # # # # # #
* km/h (2.5 mph) WINTER 2.5
* File 1, Run 1, Scenario 5.
* # # # # # # # # # # # # # # # # # # # # # # # #

                          Calendar Year:  2008
                                 Month:  Jan.
                Gasoline Fuel Sulfur Content:   30. ppm
                  Diesel Fuel Sulfur Content:   15. 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:	0.3803	0.3662	0.1249		0.0357	0.0004	0.0019	0.0852	0.0055	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0037	0.0038	0.0044	0.0040	0.0457	------	------	------	0.0142	0.0051
ECARBON:	------	------	------	------	------	0.0599	0.0331	0.1442	------	0.0124
OCARBON:	------	------	------	------	------	0.0169	0.0477	0.0728	------	0.0063

```
                SO4:    0.0005    0.0006    0.0006    0.0006    0.0011    0.0002    0.0003    0.0009    0.0002    0.0006
   Total Exhaust PM:    0.0042    0.0045    0.0050    0.0046    0.0468    0.0770    0.0811    0.2179    0.0144    0.0244
              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    0.0022    0.0020    0.0020    0.0065    0.0010    0.0024
          Total PM:     0.0115    0.0118    0.0123    0.0119    0.0543    0.0843    0.0885    0.2297    0.0207    0.0321
                SO2:    0.0067    0.0087    0.0114    0.0094    0.0169    0.0030    0.0056    0.0132    0.0033    0.0089
                NH3:    0.1017    0.1010    0.0995    0.1006    0.0451    0.0068    0.0068    0.0270    0.0113    0.0921
 ---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* 4km/h (2.5 mph) WINTER 10
* File 1, Run 1, Scenario 6.
* # # # # # # # # # # # # # # # # # # # # # # # #

                            Calendar Year:  2008
                                    Month:  Jan.
                Gasoline Fuel Sulfur Content:   30. ppm
                  Diesel Fuel Sulfur Content:   15. ppm
                        Particle Size Cutoff: 10.00 Microns
                            Reformulated Gas:  No

      Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
                GVWR:               <6000     >6000     (All)
                         ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.3803    0.3662    0.1249              0.0357    0.0004    0.0019    0.0852    0.0055    1.0000
 ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
                Lead:    0.0000    0.0000    0.0000    0.0000    0.0000    ------    ------    ------    0.0000    0.0000
               GASPM:    0.0040    0.0042    0.0048    0.0044    0.0528    ------    ------    ------    0.0205    0.0057
             ECARBON:    ------    ------    ------    ------    ------    0.0651    0.0360    0.1568    ------    0.0134
             OCARBON:    ------    ------    ------    ------    ------    0.0184    0.0519    0.0791    ------    0.0068
                SO4:    0.0005    0.0006    0.0006    0.0006    0.0011    0.0002    0.0003    0.0009    0.0002    0.0006
   Total Exhaust PM:    0.0045    0.0048    0.0055    0.0050    0.0539    0.0836    0.0882    0.2368    0.0207    0.0266
              Brake:    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125
               Tire:    0.0080    0.0080    0.0080    0.0080    0.0087    0.0080    0.0080    0.0259    0.0040    0.0095
          Total PM:     0.0251    0.0254    0.0260    0.0255    0.0751    0.1042    0.1087    0.2752    0.0372    0.0486
                SO2:    0.0067    0.0087    0.0114    0.0094    0.0169    0.0030    0.0056    0.0132    0.0033    0.0089
                NH3:    0.1017    0.1010    0.0995    0.1006    0.0451    0.0068    0.0068    0.0270    0.0113    0.0921
 ---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* 4km/h (2.5 mph) SUMMER 2.5
* File 1, Run 1, Scenario 7.
* # # # # # # # # # # # # # # # # # # # # # # # #

                            Calendar Year:  2008
                                    Month:  July
                Gasoline Fuel Sulfur Content:   30. ppm
                  Diesel Fuel Sulfur Content:   15. 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:    0.3728    0.3705    0.1273              0.0359    0.0004    0.0019    0.0857    0.0055    1.0000
 ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
                Lead:    0.0000    0.0000    0.0000    0.0000    0.0000    ------    ------    ------    0.0000    0.0000
               GASPM:    0.0037    0.0038    0.0043    0.0039    0.0429    ------    ------    ------    0.0142    0.0049
             ECARBON:    ------    ------    ------    ------    ------    0.0574    0.0310    0.1336    ------    0.0115
             OCARBON:    ------    ------    ------    ------    ------    0.0162    0.0446    0.0675    ------    0.0059
                SO4:    0.0005    0.0006    0.0006    0.0006    0.0011    0.0002    0.0003    0.0009    0.0002    0.0006
   Total Exhaust PM:    0.0042    0.0044    0.0049    0.0045    0.0440    0.0737    0.0758    0.2020    0.0144    0.0230
              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    0.0022    0.0020    0.0020    0.0065    0.0010    0.0024
          Total PM:     0.0115    0.0118    0.0123    0.0119    0.0515    0.0810    0.0832    0.2138    0.0207    0.0307
                SO2:    0.0067    0.0087    0.0114    0.0094    0.0169    0.0030    0.0056    0.0132    0.0033    0.0090
                NH3:    0.1017    0.1011    0.0996    0.1007    0.0451    0.0068    0.0068    0.0270    0.0113    0.0921
 ---------------------------------------------------------------------------------------------------------------------
```

```
* # # # # # # # # # # # # # # # # # # # # # # # # #
* 4km/h (2.5 mph) SUMMER 10
* File 1, Run 1, Scenario 8.
* # # # # # # # # # # # # # # # # # # # # # # # # #

                            Calendar Year:  2008
                                    Month:  July
                 Gasoline Fuel Sulfur Content:   30. ppm
                   Diesel Fuel Sulfur Content:   15. ppm
                         Particle Size Cutoff: 10.00 Microns
                             Reformulated Gas:  No
```

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.3728	0.3705	0.1273		0.0359	0.0004	0.0019	0.0857	0.0055	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0040	0.0042	0.0047	0.0043	0.0495	------	------	------	0.0205	0.0055
ECARBON:	------	------	------	------	------	0.0624	0.0337	0.1452	------	0.0125
OCARBON:	------	------	------	------	------	0.0176	0.0484	0.0733	------	0.0064
SO4:	0.0005	0.0006	0.0006	0.0006	0.0011	0.0002	0.0003	0.0009	0.0002	0.0006
Total Exhaust PM:	0.0045	0.0048	0.0054	0.0049	0.0506	0.0801	0.0824	0.2195	0.0207	0.0250
Brake:	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125
Tire:	0.0080	0.0080	0.0080	0.0080	0.0087	0.0080	0.0080	0.0259	0.0040	0.0095
Total PM:	0.0251	0.0253	0.0259	0.0255	0.0718	0.1006	0.1029	0.2579	0.0372	0.0471
SO2:	0.0067	0.0087	0.0114	0.0094	0.0169	0.0030	0.0056	0.0132	0.0033	0.0090
NH3:	0.1017	0.1011	0.0996	0.1007	0.0451	0.0068	0.0068	0.0270	0.0113	0.0921

```
***** HEADER SECTION *****

MOBILE6 INPUT FILE

REPORT FILE        : WTRDWN.OUT
POLLUTANTS         : NOX CO
PARTICULATES       :
DATABASE VEHICLES  : 22222 22222221 2 222 22222222 222

RUN DATA

***** RUN SECTION *****
FUEL RVP           : 9.0

***** SCENARIO SECTION *****

***** 50KM/H *****

SCENARIO REC       : 50km/h (31.1 mph) WINTER 2.5
MIN/MAX TEMP       : 0.00 51.62
CALENDAR YEAR      : 2008
ALTITUDE           : 1
EVALUATION MONTH   : 1
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 15
AVERAGE SPEED      : 31.1 ARTERIAL

SCENARIO REC       : 50km/h (31.1 mph) WINTER 10
MIN/MAX TEMP       : 0.00 51.62
CALENDAR YEAR      : 2008
ALTITUDE           : 1
EVALUATION MONTH   : 1
PARTICLE SIZE      : 10
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
```

```
DIESEL SULFUR      : 15
AVERAGE SPEED      : 31.1 ARTERIAL

SCENARIO REC       : 50km/h (31.1 mph) SUMMER 2.5
MIN/MAX TEMP       : 44.96 91.94
CALENDAR YEAR      : 2008
ALTITUDE           : 1
EVALUATION MONTH   : 7
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 15
AVERAGE SPEED      : 31.1 ARTERIAL

SCENARIO REC       : 50km/h (31.1 mph) SUMMER 10
MIN/MAX TEMP       : 44.96 91.94
CALENDAR YEAR      : 2008
ALTITUDE           : 1
EVALUATION MONTH   : 7
PARTICLE SIZE      : 10
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 15
AVERAGE SPEED      : 31.1 ARTERIAL

***** 80 KM/H *****

SCENARIO REC       : 80km/h (49.7 mph) WINTER 2.5
MIN/MAX TEMP       : 0.00 51.62
CALENDAR YEAR      : 2008
ALTITUDE           : 1
EVALUATION MONTH   : 1
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 15
AVERAGE SPEED      : 49.7 ARTERIAL

SCENARIO REC       : 80km/h (49.7 mph) WINTER 10
MIN/MAX TEMP       : 0.00 51.62
CALENDAR YEAR      : 2008
ALTITUDE           : 1
EVALUATION MONTH   : 1
PARTICLE SIZE      : 10
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 15
AVERAGE SPEED      : 49.7 ARTERIAL

SCENARIO REC       : 80km/h (49.7 mph) SUMMER 2.5
MIN/MAX TEMP       : 44.96 91.94
CALENDAR YEAR      : 2008
ALTITUDE           : 1
EVALUATION MONTH   : 7
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 15
AVERAGE SPEED      : 49.7 ARTERIAL

SCENARIO REC       : 80km/h (49.7 mph) SUMMER 10
MIN/MAX TEMP       : 44.96 91.94
CALENDAR YEAR      : 2008
ALTITUDE           : 1
EVALUATION MONTH   : 7
PARTICLE SIZE      : 10
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 15
AVERAGE SPEED      : 49.7 ARTERIAL

***** END OF THIS RUN *****

END OF RUN


********************************************************************************
```

```
* MOBILE6.2.03 (24-Sep-2003)                                                  *
* Input file: WTRDWN.IN (file 1, run 1).                                      *
*******************************************************************************

* # # # # # # # # # # # # # # # # # # # # # # # # #
* 50km/h (31.1 mph) WINTER 2.5
* 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 31.1
            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.
  M 48 Warning:
              there are no sales for vehicle class HDGV8b

* 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

                    Calendar Year:  2008
                            Month:  Jan.
                         Altitude:  Low
               Minimum Temperature:   0.0 (F)
               Maximum Temperature:  51.6 (F)
                 Absolute Humidity:   75. grains/lb
                  Nominal Fuel RVP:   9.0 psi
                     Weathered RVP:   9.0 psi
               Fuel Sulfur Content:   30. 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:    0.3803    0.3662    0.1249              0.0357    0.0004    0.0019    0.0852    0.0055    1.0000
  ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     18.49     21.92     30.00     23.98     12.69     1.010     0.875     2.125     14.63     19.523
    Composite NOX :     0.769     1.028     1.551     1.161     3.261     0.593     0.827     7.367      1.52     1.617
  ---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* 50km/h (31.1 mph) WINTER 10
* 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 31.1
            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.
  M 48 Warning:
              there are no sales for vehicle class HDGV8b

                    Calendar Year:  2008
                            Month:  Jan.
                         Altitude:  Low
               Minimum Temperature:   0.0 (F)
               Maximum Temperature:  51.6 (F)
                 Absolute Humidity:   75. grains/lb
                  Nominal Fuel RVP:   9.0 psi
                     Weathered RVP:   9.0 psi
               Fuel Sulfur Content:   30. 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:    0.3803    0.3662    0.1249              0.0357    0.0004    0.0019    0.0852    0.0055    1.0000
  ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :     18.49     21.92     30.00     23.98     12.69     1.010     0.875     2.125     14.63    19.523
     Composite NOX :     0.769     1.028     1.551     1.161     3.261     0.593     0.827     7.367      1.52     1.617
  ---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* 50km/h (31.1 mph) SUMMER 2.5
* 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 31.1
            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.
  M 48 Warning:
              there are no sales for vehicle class HDGV8b

                    Calendar Year:  2008
                           Month:  July
                        Altitude:  Low
              Minimum Temperature:  45.0 (F)
              Maximum Temperature:  91.9 (F)
                Absolute Humidity:   75. grains/lb
                 Nominal Fuel RVP:   9.0 psi
                    Weathered RVP:   8.6 psi
              Fuel Sulfur Content:   30. 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:    0.3728    0.3705    0.1273              0.0359    0.0004    0.0019    0.0857    0.0055    1.0000
  -------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :     10.13     11.93     16.29     13.05     10.83     1.003     0.851     1.987     13.41    10.906
     Composite NOX :     0.674     0.851     1.236     0.950     2.823     0.572     0.784     6.992      1.16     1.432
  -------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # # #
* 50km/h (31.1 mph) SUMMER 10
* 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 31.1
            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.
  M 48 Warning:
              there are no sales for vehicle class HDGV8b

                    Calendar Year:  2008
                           Month:  July
                        Altitude:  Low
              Minimum Temperature:  45.0 (F)
              Maximum Temperature:  91.9 (F)
                Absolute Humidity:   75. grains/lb
                 Nominal Fuel RVP:   9.0 psi
                    Weathered RVP:   8.6 psi
```

```
              Fuel Sulfur Content:   30. 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:    0.3728    0.3705    0.1273              0.0359    0.0004    0.0019    0.0857    0.0055    1.0000
  ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :     10.13     11.93     16.29     13.05     10.83     1.003     0.851     1.987     13.41    10.906
     Composite NOX :     0.674     0.851     1.236     0.950     2.823     0.572     0.784     6.992      1.16     1.432
  ---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* 80km/h (49.7 mph) WINTER 2.5
* 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 49.7
            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.
  M 48 Warning:
              there are no sales for vehicle class HDGV8b

                   Calendar Year:  2008
                           Month:  Jan.
                        Altitude:  Low
              Minimum Temperature:   0.0 (F)
              Maximum Temperature:  51.6 (F)
                Absolute Humidity:   75. grains/lb
                 Nominal Fuel RVP:   9.0 psi
                    Weathered RVP:   9.0 psi
              Fuel Sulfur Content:   30. 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:    0.3803    0.3662    0.1249              0.0357    0.0004    0.0019    0.0852    0.0055    1.0000
  ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :     20.24     23.88     32.58     26.09     10.70     0.879     0.763     1.623     11.43    21.098
     Composite NOX :     0.807     1.073     1.600     1.207     3.744     0.699     0.976     8.677      1.73     1.784
  ---------------------------------------------------------------------------------------------------------------------
```

```
* # # # # # # # # # # # # # # # # # # # # # # # # #
* 80km/h (49.7 mph) WINTER 10
* 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 49.7
            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.
  M 48 Warning:
              there are no sales for vehicle class HDGV8b

                    Calendar Year:  2008
                            Month:  Jan.
                         Altitude:  Low
              Minimum Temperature:   0.0 (F)
              Maximum Temperature:  51.6 (F)
                Absolute Humidity:   75. grains/lb
                 Nominal Fuel RVP:   9.0 psi
                    Weathered RVP:   9.0 psi
              Fuel Sulfur Content:   30. 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:    0.3803    0.3662    0.1249              0.0357    0.0004    0.0019    0.0852    0.0055    1.0000
  ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :     20.24     23.88     32.58     26.09     10.70     0.879     0.763     1.623     11.43    21.098
     Composite NOX :      0.807     1.073     1.600     1.207     3.744    0.699     0.976     8.677      1.73     1.784
  ---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* 80km/h (49.7 mph) SUMMER 2.5
* 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 49.7
            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.
  M 48 Warning:
              there are no sales for vehicle class HDGV8b

                    Calendar Year:  2008
                           Month:  July
                        Altitude:  Low
              Minimum Temperature:  45.0 (F)
              Maximum Temperature:  91.9 (F)
                Absolute Humidity:   75. grains/lb
                 Nominal Fuel RVP:   9.0 psi
                    Weathered RVP:   8.6 psi
              Fuel Sulfur Content:   30. 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:    0.3728    0.3705    0.1273              0.0359    0.0004    0.0019    0.0857    0.0055    1.0000
   ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :     11.58     13.43     18.13     14.64      9.13     0.874     0.743     1.518      9.96    12.117
     Composite NOX :      0.686     0.880     1.264     0.978     3.241    0.675     0.925     8.238      1.32     1.574
   ---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* 80km/h (49.7 mph) SUMMER 10
* 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 49.7
            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.
  M 48 Warning:
              there are no sales for vehicle class HDGV8b

                    Calendar Year:  2008
```

```
                          Month:  July
                       Altitude:  Low
              Minimum Temperature:  45.0 (F)
              Maximum Temperature:  91.9 (F)
                Absolute Humidity:   75. grains/lb
                 Nominal Fuel RVP:   9.0 psi
                    Weathered RVP:   8.6 psi
              Fuel Sulfur Content:   30. 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:	0.3728	0.3705	0.1273		0.0359	0.0004	0.0019	0.0857	0.0055	1.0000
Composite Emission Factors (g/mi):										
Composite CO :	11.58	13.43	18.13	14.64	9.13	0.874	0.743	1.518	9.96	12.117
Composite NOX :	0.686	0.880	1.264	0.978	3.241	0.675	0.925	8.238	1.32	1.574

```
************************************************************************
* MOBILE6.2.03 (24-Sep-2003)                                           *
* Input file: WTRDWN.IN (file 1, run 1).                               *
************************************************************************

* # # # # # # # # # # # # # # # # # # # # # # #
* 50km/h (31.1 mph) WINTER 2.5
* File 1, Run 1, Scenario 1.
* # # # # # # # # # # # # # # # # # # # # # # #

                          Calendar Year:  2008
                                 Month:  Jan.
              Gasoline Fuel Sulfur Content:   30. ppm
                Diesel Fuel Sulfur Content:   15. 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:	0.3803	0.3662	0.1249		0.0357	0.0004	0.0019	0.0852	0.0055	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0038	0.0039	0.0044	0.0040	0.0457	------	------	------	0.0142	0.0051
ECARBON:	------	------	------	------	------	0.0599	0.0331	0.1442	------	0.0124
OCARBON:	------	------	------	------	------	0.0169	0.0477	0.0728	------	0.0063
SO4:	0.0003	0.0005	0.0005	0.0005	0.0014	0.0002	0.0003	0.0009	0.0001	0.0005
Total Exhaust PM:	0.0041	0.0044	0.0050	0.0045	0.0471	0.0770	0.0811	0.2179	0.0143	0.0243
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	0.0022	0.0020	0.0020	0.0065	0.0010	0.0024
Total PM:	0.0114	0.0117	0.0123	0.0119	0.0546	0.0843	0.0885	0.2297	0.0206	0.0320
SO2:	0.0068	0.0088	0.0114	0.0094	0.0168	0.0030	0.0056	0.0132	0.0033	0.0090
NH3:	0.1017	0.1010	0.0995	0.1006	0.0451	0.0068	0.0068	0.0270	0.0113	0.0921

```
* # # # # # # # # # # # # # # # # # # # # # # #
* 50km/h (31.1 mph) WINTER 10
* File 1, Run 1, Scenario 2.
* # # # # # # # # # # # # # # # # # # # # # # #

                          Calendar Year:  2008
                                 Month:  Jan.
              Gasoline Fuel Sulfur Content:   30. ppm
                Diesel Fuel Sulfur Content:   15. ppm
                      Particle Size Cutoff: 10.00 Microns
```

```
                      Reformulated Gas:  No

      Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                <6000     >6000     (All)
                     ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.3803    0.3662    0.1249              0.0357    0.0004    0.0019    0.0852    0.0055    1.0000
 -------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
              Lead:    0.0000    0.0000    0.0000    0.0000    0.0000    ------    ------    ------    0.0000    0.0000
            GASPM:    0.0041    0.0043    0.0049    0.0044    0.0527    ------    ------    ------    0.0205    0.0057
          ECARBON:    ------    ------    ------    ------    ------    0.0651    0.0360    0.1568    ------    0.0134
          OCARBON:    ------    ------    ------    ------    ------    0.0184    0.0519    0.0791    ------    0.0068
              SO4:    0.0003    0.0005    0.0005    0.0005    0.0014    0.0002    0.0003    0.0009    0.0001    0.0005
  Total Exhaust PM:    0.0044    0.0047    0.0054    0.0049    0.0541    0.0836    0.0882    0.2368    0.0206    0.0265
            Brake:    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125
             Tire:    0.0080    0.0080    0.0080    0.0080    0.0087    0.0080    0.0080    0.0259    0.0040    0.0095
         Total PM:    0.0249    0.0253    0.0260    0.0255    0.0753    0.1042    0.1087    0.2752    0.0371    0.0486
              SO2:    0.0068    0.0088    0.0114    0.0094    0.0168    0.0030    0.0056    0.0132    0.0033    0.0090
              NH3:    0.1017    0.1010    0.0995    0.1006    0.0451    0.0068    0.0068    0.0270    0.0113    0.0921
 -------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* 50km/h (31.1 mph) SUMMER 2.5
* File 1, Run 1, Scenario 3.
* # # # # # # # # # # # # # # # # # # # # # # # #

                          Calendar Year:  2008
                                 Month:  July
                Gasoline Fuel Sulfur Content:   30. ppm
                  Diesel Fuel Sulfur Content:   15. 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:    0.3728    0.3705    0.1273              0.0359    0.0004    0.0019    0.0857    0.0055    1.0000
 -------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
              Lead:    0.0000    0.0000    0.0000    0.0000    0.0000    ------    ------    ------    0.0000    0.0000
            GASPM:    0.0038    0.0039    0.0044    0.0040    0.0427    ------    ------    ------    0.0142    0.0050
          ECARBON:    ------    ------    ------    ------    ------    0.0574    0.0310    0.1336    ------    0.0115
          OCARBON:    ------    ------    ------    ------    ------    0.0162    0.0446    0.0675    ------    0.0059
              SO4:    0.0003    0.0005    0.0005    0.0005    0.0014    0.0002    0.0003    0.0009    0.0001    0.0005
  Total Exhaust PM:    0.0041    0.0044    0.0049    0.0045    0.0442    0.0737    0.0758    0.2020    0.0143    0.0229
            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    0.0022    0.0020    0.0020    0.0065    0.0010    0.0024
         Total PM:    0.0114    0.0117    0.0122    0.0118    0.0517    0.0810    0.0832    0.2138    0.0206    0.0306
              SO2:    0.0068    0.0088    0.0114    0.0095    0.0168    0.0030    0.0056    0.0132    0.0033    0.0090
              NH3:    0.1017    0.1011    0.0996    0.1007    0.0451    0.0068    0.0068    0.0270    0.0113    0.0921
 -------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* 50km/h (31.1 mph) SUMMER 10
* File 1, Run 1, Scenario 4.
* # # # # # # # # # # # # # # # # # # # # # # # #

                          Calendar Year:  2008
                                 Month:  July
                Gasoline Fuel Sulfur Content:   30. ppm
                  Diesel Fuel Sulfur Content:   15. ppm
                        Particle Size Cutoff: 10.00 Microns
                            Reformulated Gas:  No

      Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                <6000     >6000     (All)
                     ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.3728    0.3705    0.1273              0.0359    0.0004    0.0019    0.0857    0.0055    1.0000
 -------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
              Lead:    0.0000    0.0000    0.0000    0.0000    0.0000    ------    ------    ------    0.0000    0.0000
```

GASPM:	0.0041	0.0042	0.0048	0.0044	0.0493	------	------	------	0.0205	0.0056
ECARBON:	------	------	------	------	------	0.0624	0.0337	0.1452	------	0.0125
OCARBON:	------	------	------	------	------	0.0176	0.0484	0.0733	------	0.0064
SO4:	0.0003	0.0005	0.0005	0.0005	0.0014	0.0002	0.0003	0.0009	0.0001	0.0005
Total Exhaust PM:	0.0044	0.0047	0.0053	0.0049	0.0508	0.0801	0.0824	0.2195	0.0206	0.0250
Brake:	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125
Tire:	0.0080	0.0080	0.0080	0.0080	0.0087	0.0080	0.0080	0.0259	0.0040	0.0095
Total PM:	0.0249	0.0253	0.0259	0.0254	0.0720	0.1006	0.1029	0.2579	0.0371	0.0471
SO2:	0.0068	0.0088	0.0114	0.0095	0.0168	0.0030	0.0056	0.0132	0.0033	0.0090
NH3:	0.1017	0.1011	0.0996	0.1007	0.0451	0.0068	0.0068	0.0270	0.0113	0.0921

```
* # # # # # # # # # # # # # # # # # # # # # # # #
* 80km/h (49.7 mph) WINTER 2.5
* File 1, Run 1, Scenario 5.
* # # # # # # # # # # # # # # # # # # # # # # # #

                          Calendar Year:  2008
                                 Month:  Jan.
                Gasoline Fuel Sulfur Content:   30. ppm
                  Diesel Fuel Sulfur Content:   15. 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:	0.3803	0.3662	0.1249		0.0357	0.0004	0.0019	0.0852	0.0055	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0038	0.0039	0.0044	0.0040	0.0456	------	------	------	0.0142	0.0051
ECARBON:	------	------	------	------	------	0.0599	0.0331	0.1442	------	0.0124
OCARBON:	------	------	------	------	------	0.0169	0.0477	0.0728	------	0.0063
SO4:	0.0002	0.0004	0.0005	0.0005	0.0015	0.0002	0.0003	0.0009	0.0001	0.0004
Total Exhaust PM:	0.0040	0.0044	0.0049	0.0045	0.0472	0.0770	0.0811	0.2179	0.0143	0.0243
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	0.0022	0.0020	0.0020	0.0065	0.0010	0.0024
Total PM:	0.0114	0.0117	0.0123	0.0118	0.0547	0.0843	0.0885	0.2297	0.0206	0.0320
SO2:	0.0068	0.0088	0.0114	0.0095	0.0168	0.0030	0.0056	0.0132	0.0033	0.0090
NH3:	0.1017	0.1010	0.0995	0.1006	0.0451	0.0068	0.0068	0.0270	0.0113	0.0921

```
* # # # # # # # # # # # # # # # # # # # # # # # #
* 80km/h (49.7 mph) WINTER 10
* File 1, Run 1, Scenario 6.
* # # # # # # # # # # # # # # # # # # # # # # # #

                          Calendar Year:  2008
                                 Month:  Jan.
                Gasoline Fuel Sulfur Content:   30. ppm
                  Diesel Fuel Sulfur Content:   15. ppm
                        Particle Size Cutoff: 10.00 Microns
                            Reformulated Gas:  No
```

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.3803	0.3662	0.1249		0.0357	0.0004	0.0019	0.0852	0.0055	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0041	0.0043	0.0049	0.0044	0.0527	------	------	------	0.0205	0.0057
ECARBON:	------	------	------	------	------	0.0651	0.0360	0.1568	------	0.0134
OCARBON:	------	------	------	------	------	0.0184	0.0519	0.0791	------	0.0068
SO4:	0.0002	0.0004	0.0005	0.0005	0.0015	0.0002	0.0003	0.0009	0.0001	0.0004
Total Exhaust PM:	0.0044	0.0047	0.0054	0.0049	0.0542	0.0836	0.0882	0.2368	0.0206	0.0265
Brake:	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125
Tire:	0.0080	0.0080	0.0080	0.0080	0.0087	0.0080	0.0080	0.0259	0.0040	0.0095
Total PM:	0.0249	0.0253	0.0260	0.0254	0.0754	0.1042	0.1087	0.2752	0.0371	0.0486
SO2:	0.0068	0.0088	0.0114	0.0095	0.0168	0.0030	0.0056	0.0132	0.0033	0.0090

```
                NH3:    0.1017    0.1010    0.0995    0.1006    0.0451    0.0068    0.0068    0.0270    0.0113    0.0921
 ---------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* 80km/h (49.7 mph) SUMMER 2.5
* File 1, Run 1, Scenario 7.
* # # # # # # # # # # # # # # # # # # # # # # # #

                             Calendar Year:  2008
                                     Month:  July
                 Gasoline Fuel Sulfur Content:   30. ppm
                   Diesel Fuel Sulfur Content:   15. 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:    0.3728    0.3705    0.1273              0.0359    0.0004    0.0019    0.0857    0.0055    1.0000
 ---------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
                Lead:    0.0000    0.0000    0.0000    0.0000    0.0000    ------    ------    ------    0.0000    0.0000
              GASPM:    0.0038    0.0039    0.0044    0.0040    0.0427    ------    ------    ------    0.0142    0.0050
             ECARBON:    ------    ------    ------    ------    ------    0.0574    0.0310    0.1336    ------    0.0115
             OCARBON:    ------    ------    ------    ------    ------    0.0162    0.0446    0.0675    ------    0.0059
                SO4:    0.0002    0.0004    0.0005    0.0005    0.0015    0.0002    0.0003    0.0009    0.0001    0.0005
   Total Exhaust PM:    0.0040    0.0043    0.0049    0.0045    0.0443    0.0737    0.0758    0.2020    0.0143    0.0229
              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    0.0022    0.0020    0.0020    0.0065    0.0010    0.0024
           Total PM:    0.0114    0.0117    0.0122    0.0118    0.0518    0.0810    0.0832    0.2138    0.0206    0.0306
                SO2:    0.0068    0.0088    0.0114    0.0095    0.0167    0.0030    0.0056    0.0132    0.0033    0.0090
                NH3:    0.1017    0.1011    0.0996    0.1007    0.0451    0.0068    0.0068    0.0270    0.0113    0.0921
 ---------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* 80km/h (49.7 mph) SUMMER 10
* File 1, Run 1, Scenario 8.
* # # # # # # # # # # # # # # # # # # # # # # # #

                             Calendar Year:  2008
                                     Month:  July
                 Gasoline Fuel Sulfur Content:   30. ppm
                   Diesel Fuel Sulfur Content:   15. ppm
                         Particle Size Cutoff: 10.00 Microns
                             Reformulated Gas:  No

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
                GVWR:                <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.3728    0.3705    0.1273              0.0359    0.0004    0.0019    0.0857    0.0055    1.0000
 ---------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
                Lead:    0.0000    0.0000    0.0000    0.0000    0.0000    ------    ------    ------    0.0000    0.0000
              GASPM:    0.0041    0.0042    0.0048    0.0044    0.0493    ------    ------    ------    0.0205    0.0056
             ECARBON:    ------    ------    ------    ------    ------    0.0624    0.0337    0.1452    ------    0.0125
             OCARBON:    ------    ------    ------    ------    ------    0.0176    0.0484    0.0733    ------    0.0064
                SO4:    0.0002    0.0004    0.0005    0.0005    0.0015    0.0002    0.0003    0.0009    0.0001    0.0005
   Total Exhaust PM:    0.0044    0.0047    0.0053    0.0049    0.0509    0.0801    0.0824    0.2195    0.0206    0.0250
              Brake:    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125
               Tire:    0.0080    0.0080    0.0080    0.0080    0.0087    0.0080    0.0080    0.0259    0.0040    0.0095
           Total PM:    0.0249    0.0252    0.0259    0.0254    0.0721    0.1006    0.1029    0.2579    0.0371    0.0470
                SO2:    0.0068    0.0088    0.0114    0.0095    0.0167    0.0030    0.0056    0.0132    0.0033    0.0090
                NH3:    0.1017    0.1011    0.0996    0.1007    0.0451    0.0068    0.0068    0.0270    0.0113    0.0921
 ---------------------------------------------------------------------------------------------------------------------------
```

Scenario 2 & 3 – 2021

```
***** HEADER SECTION *****

MOBILE6 INPUT FILE

REPORT FILE        : WTRDWN.OUT
POLLUTANTS         : NOX CO
PARTICULATES       :
DATABASE VEHICLES  : 22222 22222221 2 222 22222222 222

RUN DATA

***** RUN SECTION *****
FUEL RVP           : 9.0

***** SCENARIO SECTION *****

***** 60KM/H *****

SCENARIO REC       : 60km/h (37.3 mph) WINTER 2.5
MIN/MAX TEMP       : 0.00 51.62
CALENDAR YEAR      : 2021
ALTITUDE           : 1
EVALUATION MONTH   : 1
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 15
AVERAGE SPEED      : 37.3 ARTERIAL

SCENARIO REC       : 60km/h (37.3 mph) WINTER 10
MIN/MAX TEMP       : 0.00 51.62
CALENDAR YEAR      : 2021
ALTITUDE           : 1
EVALUATION MONTH   : 1
PARTICLE SIZE      : 10
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 15
AVERAGE SPEED      : 37.3 ARTERIAL

SCENARIO REC       : 60km/h (37.3 mph) SUMMER 2.5
MIN/MAX TEMP       : 44.96 91.94
CALENDAR YEAR      : 2021
ALTITUDE           : 1
EVALUATION MONTH   : 7
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 15
AVERAGE SPEED      : 37.3 ARTERIAL

SCENARIO REC       : 60km/h (37.3 mph) SUMMER 10
MIN/MAX TEMP       : 44.96 91.94
CALENDAR YEAR      : 2021
ALTITUDE           : 1
EVALUATION MONTH   : 7
PARTICLE SIZE      : 10
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 15
AVERAGE SPEED      : 37.3 ARTERIAL

***** 4 KM/H *****

SCENARIO REC       : km/h (2.5 mph) WINTER 2.5
MIN/MAX TEMP       : 0.00 51.62
CALENDAR YEAR      : 2021
ALTITUDE           : 1
EVALUATION MONTH   : 1
```

```
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 15
AVERAGE SPEED      : 2.5 ARTERIAL

SCENARIO REC       : 4km/h (2.5 mph) WINTER 10
MIN/MAX TEMP       : 0.00 51.62
CALENDAR YEAR      : 2021
ALTITUDE           : 1
EVALUATION MONTH   : 1
PARTICLE SIZE      : 10
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 15
AVERAGE SPEED      : 2.5 ARTERIAL

SCENARIO REC       : 4km/h (2.5 mph) SUMMER 2.5
MIN/MAX TEMP       : 44.96 91.94
CALENDAR YEAR      : 2021
ALTITUDE           : 1
EVALUATION MONTH   : 7
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 15
AVERAGE SPEED      : 2.5 ARTERIAL

SCENARIO REC       : 4km/h (2.5 mph) SUMMER 10
MIN/MAX TEMP       : 44.96 91.94
CALENDAR YEAR      : 2021
ALTITUDE           : 1
EVALUATION MONTH   : 7
PARTICLE SIZE      : 10
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 15
AVERAGE SPEED      : 2.5 ARTERIAL

***** END OF THIS RUN *****

END OF RUN


************************************************************************
* MOBILE6.2.03 (24-Sep-2003)                                           *
* Input file: WTRDWN.IN (file 1, run 1).                               *
************************************************************************

* # # # # # # # # # # # # # # # # # # # # # # # # #
* 60km/h (37.3 mph) WINTER 2.5
* 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 37.3
            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.
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12

* 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

                    Calendar Year:  2021
                            Month:  Jan.
                         Altitude:  Low
              Minimum Temperature:   0.0 (F)
              Maximum Temperature:  51.6 (F)
                Absolute Humidity:   75. grains/lb
                 Nominal Fuel RVP:   9.0 psi
                    Weathered RVP:   9.0 psi
              Fuel Sulfur Content:   30. 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:    0.2790    0.4400    0.1500              0.0363    0.0003    0.0022    0.0872    0.0050    1.0000
  ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :     14.01     13.50     17.36     14.49      6.66     0.518     0.370     0.323     12.93    12.790
     Composite NOX :      0.274     0.397     0.771     0.492     0.595     0.046     0.207     1.277      1.58     0.508
  ---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* 60km/h (37.3 mph) WINTER 10
* 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 37.3
             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.
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12

                    Calendar Year:  2021
                            Month:  Jan.
```

```
                    Altitude:  Low
               Minimum Temperature:   0.0 (F)
               Maximum Temperature:  51.6 (F)
                 Absolute Humidity:   75. grains/lb
                  Nominal Fuel RVP:   9.0 psi
                     Weathered RVP:   9.0 psi
               Fuel Sulfur Content:   30. 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:    0.2790    0.4400    0.1500              0.0363    0.0003    0.0022    0.0872    0.0050    1.0000
  ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :     14.01     13.50     17.36     14.49      6.66     0.518     0.370     0.323     12.93    12.790
     Composite NOX :      0.274     0.397     0.771     0.492     0.595     0.046     0.207     1.277      1.58     0.508
  ---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* 60km/h (37.3 mph) SUMMER 2.5
* 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 37.3
            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.
  M 48 Warning:
               there are no sales for vehicle class HDGV8b
  M 48 Warning:
               there are no sales for vehicle class LDDT12

                    Calendar Year:  2021
                            Month:  July
                         Altitude:  Low
               Minimum Temperature:  45.0 (F)
               Maximum Temperature:  91.9 (F)
                 Absolute Humidity:   75. grains/lb
                  Nominal Fuel RVP:   9.0 psi
                     Weathered RVP:   8.6 psi
               Fuel Sulfur Content:   30. 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:    0.2788    0.4388    0.1507              0.0365    0.0003    0.0022    0.0876    0.0051    1.0000
  ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :      6.87      7.56      9.61      8.09      5.73     0.522     0.367     0.311     11.57     6.978
     Composite NOX :     0.248     0.354     0.632     0.425     0.529     0.045     0.200     1.211      1.21     0.451
  ---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* 60km/h (37.3 mph) SUMMER 10
* 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 37.3
            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.
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12

                    Calendar Year:  2021
                            Month:  July
                         Altitude:  Low
              Minimum Temperature:  45.0 (F)
              Maximum Temperature:  91.9 (F)
                Absolute Humidity:   75. grains/lb
                 Nominal Fuel RVP:   9.0 psi
                    Weathered RVP:   8.6 psi
              Fuel Sulfur Content:   30. 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:    0.2788    0.4388    0.1507              0.0365    0.0003    0.0022    0.0876    0.0051    1.0000
  ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :      6.87      7.56      9.61      8.09      5.73     0.522     0.367     0.311     11.57     6.978
     Composite NOX :     0.248     0.354     0.632     0.425     0.529     0.045     0.200     1.211      1.21     0.451
  ---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* km/h (2.5 mph) WINTER 2.5
* 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.
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12

                    Calendar Year:  2021
                            Month:  Jan.
                         Altitude:  Low
              Minimum Temperature:   0.0 (F)
              Maximum Temperature:  51.6 (F)
                Absolute Humidity:   75. grains/lb
                 Nominal Fuel RVP:   9.0 psi
                    Weathered RVP:   9.0 psi
              Fuel Sulfur Content:   30. 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:    0.2790    0.4400    0.1500              0.0363    0.0003    0.0022    0.0872    0.0050    1.0000
  ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :     33.67     31.98     43.17     34.83     43.71     1.944     1.363     1.952    111.56    32.267
     Composite NOX :      0.524     0.741     1.398     0.908     0.436    0.089     0.398     2.490      1.42     0.923
  ---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* 4km/h (2.5 mph) WINTER 10
* 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  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.
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12

                    Calendar Year:  2021
                           Month:  Jan.
                        Altitude:  Low
              Minimum Temperature:   0.0 (F)
              Maximum Temperature:  51.6 (F)
                Absolute Humidity:   75. grains/lb
                 Nominal Fuel RVP:   9.0 psi
                    Weathered RVP:   9.0 psi
              Fuel Sulfur Content:   30. 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:    0.2790    0.4400    0.1500              0.0363    0.0003    0.0022    0.0872    0.0050    1.0000
  ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :     33.67     31.98     43.17     34.83     43.71     1.944     1.363     1.952    111.56    32.267
     Composite NOX :     0.524     0.741     1.398     0.908     0.436     0.089     0.398     2.490      1.42     0.923
  ---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* 4km/h (2.5 mph) SUMMER 2.5
* 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  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.
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12

                    Calendar Year:  2021
```

```
                          Month:  July
                       Altitude:  Low
              Minimum Temperature:  45.0 (F)
              Maximum Temperature:  91.9 (F)
                Absolute Humidity:   75. grains/lb
                 Nominal Fuel RVP:   9.0 psi
                    Weathered RVP:   8.6 psi
              Fuel Sulfur Content:   30. 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:    0.2788    0.4388    0.1507              0.0365    0.0003    0.0022    0.0876    0.0051    1.0000
 ---------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
    Composite CO  :     21.52     21.66     27.23     23.08     37.60     1.951     1.350     1.877    118.23    21.756
    Composite NOX :      0.564     0.689     1.190     0.817     0.388    0.087     0.385     2.363      1.09     0.866
 ---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* 4km/h (2.5 mph) SUMMER 10
* 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  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.
  M 48 Warning:
               there are no sales for vehicle class HDGV8b
  M 48 Warning:
               there are no sales for vehicle class LDDT12

                     Calendar Year:  2021
                             Month:  July
                          Altitude:  Low
                 Minimum Temperature:  45.0 (F)
                 Maximum Temperature:  91.9 (F)
                   Absolute Humidity:   75. grains/lb
                    Nominal Fuel RVP:   9.0 psi
                       Weathered RVP:   8.6 psi
                 Fuel Sulfur Content:   30. 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:	0.2788	0.4388	0.1507		0.0365	0.0003	0.0022	0.0876	0.0051	1.0000
Composite Emission Factors (g/mi):										
Composite CO :	21.52	21.66	27.23	23.08	37.60	1.951	1.350	1.877	118.23	21.756
Composite NOX :	0.564	0.689	1.190	0.817	0.388	0.087	0.385	2.363	1.09	0.866

```
**********************************************************************
* MOBILE6.2.03 (24-Sep-2003)                                         *
* Input file: WTRDWN.IN (file 1, run 1).                             *
**********************************************************************

* # # # # # # # # # # # # # # # # # # # # # # #
* 60km/h (37.3 mph) WINTER 2.5
* File 1, Run 1, Scenario 1.
* # # # # # # # # # # # # # # # # # # # # # # #

                          Calendar Year:  2021
                                 Month:  Jan.
              Gasoline Fuel Sulfur Content:   30. ppm
                Diesel Fuel Sulfur Content:   15. 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:	0.2790	0.4400	0.1500		0.0363	0.0003	0.0022	0.0872	0.0050	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0037	0.0035	0.0035	0.0035	0.0115	------	------	------	0.0142	0.0036
ECARBON:	------	------	------	------	------	0.0085	0.0058	0.0168	------	0.0015
OCARBON:	------	------	------	------	------	0.0024	0.0084	0.0086	------	0.0008
SO4:	0.0002	0.0004	0.0004	0.0004	0.0020	0.0002	0.0003	0.0009	0.0001	0.0005
Total Exhaust PM:	0.0039	0.0039	0.0039	0.0039	0.0135	0.0110	0.0145	0.0263	0.0143	0.0063
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	0.0022	0.0020	0.0020	0.0065	0.0010	0.0024
Total PM:	0.0112	0.0112	0.0113	0.0112	0.0210	0.0184	0.0218	0.0381	0.0206	0.0140
SO2:	0.0068	0.0088	0.0115	0.0095	0.0164	0.0029	0.0056	0.0131	0.0033	0.0093
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0925

```
* # # # # # # # # # # # # # # # # # # # # # # #
* 60km/h (37.3 mph) WINTER 10
* File 1, Run 1, Scenario 2.
* # # # # # # # # # # # # # # # # # # # # # # #

                          Calendar Year:  2021
                                 Month:  Jan.
              Gasoline Fuel Sulfur Content:   30. ppm
                Diesel Fuel Sulfur Content:   15. ppm
                     Particle Size Cutoff: 10.00 Microns
                         Reformulated Gas:  No
```

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.2790	0.4400	0.1500		0.0363	0.0003	0.0022	0.0872	0.0050	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0040	0.0038	0.0038	0.0038	0.0127	------	------	------	0.0205	0.0039
ECARBON:	------	------	------	------	------	0.0092	0.0063	0.0183	------	0.0016
OCARBON:	------	------	------	------	------	0.0026	0.0091	0.0093	------	0.0008
SO4:	0.0002	0.0004	0.0004	0.0004	0.0020	0.0002	0.0003	0.0009	0.0001	0.0005
Total Exhaust PM:	0.0042	0.0042	0.0042	0.0042	0.0147	0.0120	0.0157	0.0285	0.0206	0.0068

Brake:	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125
Tire:	0.0080	0.0080	0.0080	0.0080	0.0086	0.0080	0.0080	0.0259	0.0040	0.0096
Total PM:	0.0247	0.0247	0.0248	0.0248	0.0359	0.0325	0.0362	0.0669	0.0371	0.0289
SO2:	0.0068	0.0088	0.0115	0.0095	0.0164	0.0029	0.0056	0.0131	0.0033	0.0093
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0925

```
* # # # # # # # # # # # # # # # # # # # # # # #
* 60km/h (37.3 mph) SUMMER 2.5
* File 1, Run 1, Scenario 3.
* # # # # # # # # # # # # # # # # # # # # # # #

                          Calendar Year:  2021
                                 Month:  July
               Gasoline Fuel Sulfur Content:   30. ppm
                 Diesel Fuel Sulfur Content:   15. 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:	0.2788	0.4388	0.1507		0.0365	0.0003	0.0022	0.0876	0.0051	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0037	0.0035	0.0035	0.0035	0.0112	------	------	------	0.0142	0.0036
ECARBON:	------	------	------	------	------	0.0084	0.0056	0.0161	------	0.0014
OCARBON:	------	------	------	------	------	0.0024	0.0081	0.0082	------	0.0007
SO4:	0.0002	0.0004	0.0004	0.0004	0.0020	0.0002	0.0003	0.0009	0.0001	0.0005
Total Exhaust PM:	0.0039	0.0039	0.0039	0.0039	0.0132	0.0109	0.0140	0.0252	0.0143	0.0062
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	0.0022	0.0020	0.0020	0.0065	0.0010	0.0024
Total PM:	0.0112	0.0112	0.0113	0.0112	0.0207	0.0183	0.0214	0.0370	0.0206	0.0139
SO2:	0.0068	0.0088	0.0115	0.0095	0.0164	0.0029	0.0056	0.0131	0.0033	0.0093
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0924

```
* # # # # # # # # # # # # # # # # # # # # # # #
* 60km/h (37.3 mph) SUMMER 10
* File 1, Run 1, Scenario 4.
* # # # # # # # # # # # # # # # # # # # # # # #

                          Calendar Year:  2021
                                 Month:  July
               Gasoline Fuel Sulfur Content:   30. ppm
                 Diesel Fuel Sulfur Content:   15. ppm
                       Particle Size Cutoff: 10.00 Microns
                           Reformulated Gas:  No
```

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.2788	0.4388	0.1507		0.0365	0.0003	0.0022	0.0876	0.0051	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0040	0.0038	0.0038	0.0038	0.0123	------	------	------	0.0205	0.0039
ECARBON:	------	------	------	------	------	0.0091	0.0061	0.0175	------	0.0015
OCARBON:	------	------	------	------	------	0.0026	0.0088	0.0089	------	0.0008
SO4:	0.0002	0.0004	0.0004	0.0004	0.0020	0.0002	0.0003	0.0009	0.0001	0.0005
Total Exhaust PM:	0.0042	0.0042	0.0042	0.0042	0.0143	0.0119	0.0152	0.0274	0.0206	0.0067
Brake:	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125
Tire:	0.0080	0.0080	0.0080	0.0080	0.0086	0.0080	0.0080	0.0258	0.0040	0.0096
Total PM:	0.0247	0.0247	0.0248	0.0248	0.0355	0.0324	0.0358	0.0658	0.0371	0.0288
SO2:	0.0068	0.0088	0.0115	0.0095	0.0164	0.0029	0.0056	0.0131	0.0033	0.0093
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0924

```
* # # # # # # # # # # # # # # # # # # # # # # #
* km/h (2.5 mph) WINTER 2.5
```

```
* File 1, Run 1, Scenario 5.
* # # # # # # # # # # # # # # # # # # # # # # # # # #

                              Calendar Year:  2021
                                      Month:  Jan.
               Gasoline Fuel Sulfur Content:   30. ppm
                 Diesel Fuel Sulfur Content:   15. 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:    0.2790    0.4400    0.1500              0.0363    0.0003    0.0022    0.0872    0.0050    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    0.0034    0.0033    0.0121    ------    ------    ------    0.0142    0.0034
            ECARBON:    ------    ------    ------    ------    ------    0.0085    0.0058    0.0168    ------    0.0015
            OCARBON:    ------    ------    ------    ------    ------    0.0024    0.0084    0.0086    ------    0.0008
                SO4:    0.0005    0.0006    0.0006    0.0006    0.0013    0.0002    0.0003    0.0009    0.0002    0.0006
   Total Exhaust PM:    0.0039    0.0039    0.0040    0.0039    0.0134    0.0110    0.0145    0.0263    0.0144    0.0063
              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    0.0022    0.0020    0.0020    0.0065    0.0010    0.0024
           Total PM:    0.0113    0.0113    0.0113    0.0113    0.0209    0.0184    0.0218    0.0381    0.0207    0.0140
                SO2:    0.0067    0.0088    0.0115    0.0095    0.0166    0.0029    0.0056    0.0131    0.0033    0.0092
                NH3:    0.1017    0.1017    0.1017    0.1017    0.0451    0.0068    0.0068    0.0270    0.0113    0.0925
 ---------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # # #
* 4km/h (2.5 mph) WINTER 10
* File 1, Run 1, Scenario 6.
* # # # # # # # # # # # # # # # # # # # # # # # # # #

                              Calendar Year:  2021
                                      Month:  Jan.
               Gasoline Fuel Sulfur Content:   30. ppm
                 Diesel Fuel Sulfur Content:   15. ppm
                       Particle Size Cutoff: 10.00 Microns
                           Reformulated Gas:  No

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
               GVWR:               <6000     >6000     (All)
                        ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2790    0.4400    0.1500              0.0363    0.0003    0.0022    0.0872    0.0050    1.0000
 ---------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
               Lead:    0.0000    0.0000    0.0000    0.0000    0.0000    ------    ------    ------    0.0000    0.0000
              GASPM:    0.0037    0.0036    0.0036    0.0036    0.0133    ------    ------    ------    0.0205    0.0038
            ECARBON:    ------    ------    ------    ------    ------    0.0092    0.0063    0.0183    ------    0.0016
            OCARBON:    ------    ------    ------    ------    ------    0.0026    0.0091    0.0093    ------    0.0008
                SO4:    0.0005    0.0006    0.0006    0.0006    0.0013    0.0002    0.0003    0.0009    0.0002    0.0006
   Total Exhaust PM:    0.0042    0.0042    0.0042    0.0042    0.0146    0.0120    0.0157    0.0285    0.0207    0.0068
              Brake:    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125
               Tire:    0.0080    0.0080    0.0080    0.0080    0.0086    0.0080    0.0080    0.0259    0.0040    0.0096
           Total PM:    0.0248    0.0248    0.0248    0.0248    0.0358    0.0325    0.0362    0.0669    0.0372    0.0289
                SO2:    0.0067    0.0088    0.0115    0.0095    0.0166    0.0029    0.0056    0.0131    0.0033    0.0092
                NH3:    0.1017    0.1017    0.1017    0.1017    0.0451    0.0068    0.0068    0.0270    0.0113    0.0925
 ---------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # # #
* 4km/h (2.5 mph) SUMMER 2.5
* File 1, Run 1, Scenario 7.
* # # # # # # # # # # # # # # # # # # # # # # # # # #

                              Calendar Year:  2021
                                      Month:  July
               Gasoline Fuel Sulfur Content:   30. ppm
                 Diesel Fuel Sulfur Content:   15. 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:	0.2788	0.4388	0.1507		0.0365	0.0003	0.0022	0.0876	0.0051	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	0.0034	0.0033	0.0117	------	------	------	0.0142	0.0034
ECARBON:	------	------	------	------	------	0.0084	0.0056	0.0161	------	0.0014
OCARBON:	------	------	------	------	------	0.0024	0.0081	0.0082	------	0.0007
SO4:	0.0005	0.0006	0.0006	0.0006	0.0013	0.0002	0.0003	0.0009	0.0002	0.0006
Total Exhaust PM:	0.0039	0.0039	0.0040	0.0039	0.0131	0.0109	0.0140	0.0252	0.0144	0.0062
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	0.0022	0.0020	0.0020	0.0065	0.0010	0.0024
Total PM:	0.0113	0.0113	0.0113	0.0113	0.0206	0.0183	0.0214	0.0370	0.0207	0.0139
SO2:	0.0067	0.0088	0.0115	0.0095	0.0166	0.0029	0.0056	0.0131	0.0033	0.0092
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0924

```
* # # # # # # # # # # # # # # # # # # # # # # # # #
* 4km/h (2.5 mph) SUMMER 10
* File 1, Run 1, Scenario 8.
* # # # # # # # # # # # # # # # # # # # # # # # # #

                          Calendar Year:  2021
                                 Month:  July
                Gasoline Fuel Sulfur Content:   30. ppm
                  Diesel Fuel Sulfur Content:   15. ppm
                        Particle Size Cutoff: 10.00 Microns
                            Reformulated Gas:  No
```

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.2788	0.4388	0.1507		0.0365	0.0003	0.0022	0.0876	0.0051	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0037	0.0036	0.0036	0.0036	0.0130	------	------	------	0.0205	0.0037
ECARBON:	------	------	------	------	------	0.0091	0.0061	0.0175	------	0.0015
OCARBON:	------	------	------	------	------	0.0026	0.0088	0.0089	------	0.0008
SO4:	0.0005	0.0006	0.0006	0.0006	0.0013	0.0002	0.0003	0.0009	0.0002	0.0006
Total Exhaust PM:	0.0042	0.0042	0.0042	0.0042	0.0143	0.0119	0.0152	0.0274	0.0207	0.0067
Brake:	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125
Tire:	0.0080	0.0080	0.0080	0.0080	0.0086	0.0080	0.0080	0.0258	0.0040	0.0096
Total PM:	0.0248	0.0248	0.0248	0.0248	0.0355	0.0324	0.0358	0.0658	0.0372	0.0288
SO2:	0.0067	0.0088	0.0115	0.0095	0.0166	0.0029	0.0056	0.0131	0.0033	0.0092
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0924

```
***** HEADER SECTION *****

MOBILE6 INPUT FILE

REPORT FILE        : WTRDWN.OUT
POLLUTANTS         : NOX CO
PARTICULATES       :
DATABASE VEHICLES  : 22222 22222221 2 222 22222222 222

RUN DATA

***** RUN SECTION *****
FUEL RVP           : 9.0

***** SCENARIO SECTION *****

***** 50KM/H *****

SCENARIO REC       : 50km/h (31.1 mph) WINTER 2.5
```

```
MIN/MAX TEMP       : 0.00 51.62
CALENDAR YEAR      : 2021
ALTITUDE           : 1
EVALUATION MONTH   : 1
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 15
AVERAGE SPEED      : 31.1 ARTERIAL

SCENARIO REC       : 50km/h (31.1 mph) WINTER 10
MIN/MAX TEMP       : 0.00 51.62
CALENDAR YEAR      : 2021
ALTITUDE           : 1
EVALUATION MONTH   : 1
PARTICLE SIZE      : 10
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 15
AVERAGE SPEED      : 31.1 ARTERIAL

SCENARIO REC       : 50km/h (31.1 mph) SUMMER 2.5
MIN/MAX TEMP       : 44.96 91.94
CALENDAR YEAR      : 2021
ALTITUDE           : 1
EVALUATION MONTH   : 7
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 15
AVERAGE SPEED      : 31.1 ARTERIAL

SCENARIO REC       : 50km/h (31.1 mph) SUMMER 10
MIN/MAX TEMP       : 44.96 91.94
CALENDAR YEAR      : 2021
ALTITUDE           : 1
EVALUATION MONTH   : 7
PARTICLE SIZE      : 10
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 15
AVERAGE SPEED      : 31.1 ARTERIAL

***** 80 KM/H *****

SCENARIO REC       : 80km/h (49.7 mph) WINTER 2.5
MIN/MAX TEMP       : 0.00 51.62
CALENDAR YEAR      : 2021
ALTITUDE           : 1
EVALUATION MONTH   : 1
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 15
AVERAGE SPEED      : 49.7 ARTERIAL

SCENARIO REC       : 80km/h (49.7 mph) WINTER 10
MIN/MAX TEMP       : 0.00 51.62
CALENDAR YEAR      : 2021
ALTITUDE           : 1
EVALUATION MONTH   : 1
PARTICLE SIZE      : 10
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 15
AVERAGE SPEED      : 49.7 ARTERIAL

SCENARIO REC       : 80km/h (49.7 mph) SUMMER 2.5
MIN/MAX TEMP       : 44.96 91.94
CALENDAR YEAR      : 2021
ALTITUDE           : 1
EVALUATION MONTH   : 7
PARTICLE SIZE      : 2.5
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 15
AVERAGE SPEED      : 49.7 ARTERIAL
```

```
SCENARIO REC       : 80km/h (49.7 mph) SUMMER 10
MIN/MAX TEMP       : 44.96 91.94
CALENDAR YEAR      : 2021
ALTITUDE           : 1
EVALUATION MONTH   : 7
PARTICLE SIZE      : 10
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
DIESEL SULFUR      : 15
AVERAGE SPEED      : 49.7 ARTERIAL

***** END OF THIS RUN *****

END OF RUN


************************************************************************
* MOBILE6.2.03 (24-Sep-2003)                                           *
* Input file: WTRDWN.IN (file 1, run 1).                               *
************************************************************************

* # # # # # # # # # # # # # # # # # # # # # # # # # # #
* 50km/h (31.1 mph) WINTER 2.5
* 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 31.1
            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.
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12

* 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

                    Calendar Year:  2021
                            Month:  Jan.
                         Altitude:  Low
               Minimum Temperature:   0.0 (F)
               Maximum Temperature:  51.6 (F)
                 Absolute Humidity:   75. grains/lb
                  Nominal Fuel RVP:   9.0 psi
                     Weathered RVP:   9.0 psi
               Fuel Sulfur Content:   30. 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:    0.2790    0.4400    0.1500              0.0363    0.0003    0.0022    0.0872    0.0050    1.0000
 ---------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
    Composite CO  :     13.79     13.26     17.04     14.22      7.65     0.566     0.404     0.378     14.63    12.623
    Composite NOX :      0.275     0.398     0.774     0.493     0.567    0.046     0.206     1.269      1.52     0.507
 ---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* 50km/h (31.1 mph) WINTER 10
* 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 31.1
           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.
 M 48 Warning:
             there are no sales for vehicle class HDGV8b
 M 48 Warning:
             there are no sales for vehicle class LDDT12

                  Calendar Year:  2021
                          Month:  Jan.
                       Altitude:  Low
             Minimum Temperature:   0.0 (F)
             Maximum Temperature:  51.6 (F)
               Absolute Humidity:   75. grains/lb
                Nominal Fuel RVP:   9.0 psi
                   Weathered RVP:   9.0 psi
             Fuel Sulfur Content:   30. 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:    0.2790    0.4400    0.1500              0.0363    0.0003    0.0022    0.0872    0.0050    1.0000
 ---------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
    Composite CO  :     13.79     13.26     17.04     14.22      7.65     0.566     0.404     0.378     14.63    12.623
    Composite NOX :      0.275     0.398     0.774     0.493     0.567    0.046     0.206     1.269      1.52     0.507
 ---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* 50km/h (31.1 mph) SUMMER 2.5
```

```
* 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 31.1
            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.
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12

                    Calendar Year:  2021
                            Month:  July
                         Altitude:  Low
              Minimum Temperature:  45.0 (F)
              Maximum Temperature:  91.9 (F)
                Absolute Humidity:   75. grains/lb
                 Nominal Fuel RVP:   9.0 psi
                    Weathered RVP:   8.6 psi
              Fuel Sulfur Content:   30. 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:    0.2788    0.4388    0.1507              0.0365    0.0003    0.0022    0.0876    0.0051    1.0000
  ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :      6.72      7.39      9.39      7.90      6.58     0.570     0.401     0.364     13.41     6.871
     Composite NOX :     0.252     0.356     0.637     0.428     0.503     0.045     0.199     1.204      1.16     0.453
  ---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # # # # #
* 50km/h (31.1 mph) SUMMER 10
* 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 31.1
            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.
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12

                    Calendar Year:  2021
                           Month:  July
                        Altitude:  Low
              Minimum Temperature:  45.0 (F)
              Maximum Temperature:  91.9 (F)
                Absolute Humidity:   75. grains/lb
                 Nominal Fuel RVP:   9.0 psi
                    Weathered RVP:   8.6 psi
              Fuel Sulfur Content:   30. 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:    0.2788    0.4388    0.1507              0.0365    0.0003    0.0022    0.0876    0.0051    1.0000
  -------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :      6.72      7.39      9.39      7.90      6.58     0.570     0.401     0.364     13.41     6.871
     Composite NOX :     0.252     0.356     0.637     0.428     0.503     0.045     0.199     1.204      1.16     0.453
  -------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* 80km/h (49.7 mph) WINTER 2.5
* 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 49.7
            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.
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
```

```
             there are no sales for vehicle class LDDT12

                   Calendar Year:  2021
                           Month:  Jan.
                        Altitude:  Low
             Minimum Temperature:   0.0 (F)
             Maximum Temperature:  51.6 (F)
               Absolute Humidity:   75. grains/lb
                Nominal Fuel RVP:   9.0 psi
                   Weathered RVP:   9.0 psi
             Fuel Sulfur Content:   30. 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:    0.2790    0.4400    0.1500              0.0363    0.0003    0.0022    0.0872    0.0050    1.0000
 -------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
    Composite CO  :     14.99     14.56     18.74     15.62      6.45     0.488     0.349     0.289     11.43    13.718
    Composite NOX :      0.289     0.416     0.798     0.513     0.651    0.054     0.243     1.503      1.73     0.547
 -------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* 80km/h (49.7 mph) WINTER 10
* 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 49.7
            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.
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12

                   Calendar Year:  2021
                           Month:  Jan.
                        Altitude:  Low
             Minimum Temperature:   0.0 (F)
             Maximum Temperature:  51.6 (F)
               Absolute Humidity:   75. grains/lb
                Nominal Fuel RVP:   9.0 psi
                   Weathered RVP:   9.0 psi
             Fuel Sulfur Content:   30. 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:    0.2790    0.4400    0.1500              0.0363    0.0003    0.0022    0.0872    0.0050    1.0000
  ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :     14.99     14.56     18.74     15.62      6.45     0.488     0.349     0.289     11.43     13.718
    Composite NOX :      0.289     0.416     0.798     0.513     0.651     0.054     0.243     1.503      1.73     0.547
  ---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* 80km/h (49.7 mph) SUMMER 2.5
* 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 49.7
            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.
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12

                   Calendar Year:  2021
                           Month:  July
                        Altitude:  Low
              Minimum Temperature:  45.0 (F)
              Maximum Temperature:  91.9 (F)
                Absolute Humidity:   75. grains/lb
                  Nominal Fuel RVP:   9.0 psi
                     Weathered RVP:   8.6 psi
              Fuel Sulfur Content:   30. 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:    0.2788    0.4388    0.1507              0.0365    0.0003    0.0022    0.0876    0.0051    1.0000
  ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
    Composite CO  :      7.56      8.33     10.56      8.90      5.55     0.492     0.347     0.278      9.96     7.635
    Composite NOX :     0.255     0.368     0.652     0.441     0.578     0.053     0.235     1.425      1.32     0.484
  ---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
```

```
* 80km/h (49.7 mph) SUMMER 10
* 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 49.7
            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.
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
  M 48 Warning:
              there are no sales for vehicle class LDDT12

                    Calendar Year:  2021
                           Month:  July
                        Altitude:  Low
              Minimum Temperature:  45.0 (F)
              Maximum Temperature:  91.9 (F)
                Absolute Humidity:   75. grains/lb
                 Nominal Fuel RVP:   9.0 psi
                    Weathered RVP:   8.6 psi
              Fuel Sulfur Content:   30. 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:    0.2788    0.4388    0.1507              0.0365    0.0003    0.0022    0.0876    0.0051    1.0000
  ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite CO  :      7.56      8.33     10.56      8.90      5.55     0.492     0.347     0.278      9.96     7.635
     Composite NOX :     0.255     0.368     0.652     0.441     0.578     0.053     0.235     1.425      1.32     0.484
  ---------------------------------------------------------------------------------------------------------------------


*************************************************************************
* MOBILE6.2.03 (24-Sep-2003)                                            *
* Input file: WTRDWN.IN (file 1, run 1).                                *
*************************************************************************

* # # # # # # # # # # # # # # # # # # # # # # # # #
* 50km/h (31.1 mph) WINTER 2.5
* File 1, Run 1, Scenario 1.
* # # # # # # # # # # # # # # # # # # # # # # # # #

                             Calendar Year:  2021
                                    Month:  Jan.
                 Gasoline Fuel Sulfur Content:   30. ppm
                   Diesel Fuel Sulfur Content:   15. 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:    0.2790    0.4400    0.1500              0.0363    0.0003    0.0022    0.0872    0.0050    1.0000
 -------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
              Lead:    0.0000    0.0000    0.0000    0.0000    0.0000    ------    ------    ------    0.0000    0.0000
            GASPM:    0.0036    0.0034    0.0035    0.0034    0.0116    ------    ------    ------    0.0142    0.0035
          ECARBON:    ------    ------    ------    ------    ------    0.0085    0.0058    0.0168    ------    0.0015
          OCARBON:    ------    ------    ------    ------    ------    0.0024    0.0084    0.0086    ------    0.0008
               SO4:    0.0003    0.0005    0.0005    0.0005    0.0018    0.0002    0.0003    0.0009    0.0001    0.0005
  Total Exhaust PM:    0.0039    0.0039    0.0039    0.0039    0.0135    0.0110    0.0145    0.0263    0.0143    0.0063
             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    0.0022    0.0020    0.0020    0.0065    0.0010    0.0024
          Total PM:    0.0112    0.0112    0.0113    0.0113    0.0209    0.0184    0.0218    0.0381    0.0206    0.0140
               SO2:    0.0068    0.0088    0.0115    0.0095    0.0164    0.0029    0.0056    0.0131    0.0033    0.0093
               NH3:    0.1017    0.1017    0.1017    0.1017    0.0451    0.0068    0.0068    0.0270    0.0113    0.0925
 -------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # #
* 50km/h (31.1 mph) WINTER 10
* File 1, Run 1, Scenario 2.
* # # # # # # # # # # # # # # # # # # # # # # #

                           Calendar Year:  2021
                                   Month:  Jan.
                Gasoline Fuel Sulfur Content:   30. ppm
                  Diesel Fuel Sulfur Content:   15. ppm
                        Particle Size Cutoff: 10.00 Microns
                            Reformulated Gas:  No

      Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
                GVWR:               <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2790    0.4400    0.1500              0.0363    0.0003    0.0022    0.0872    0.0050    1.0000
 -------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
              Lead:    0.0000    0.0000    0.0000    0.0000    0.0000    ------    ------    ------    0.0000    0.0000
            GASPM:    0.0039    0.0037    0.0038    0.0037    0.0128    ------    ------    ------    0.0205    0.0039
          ECARBON:    ------    ------    ------    ------    ------    0.0092    0.0063    0.0183    ------    0.0016
          OCARBON:    ------    ------    ------    ------    ------    0.0026    0.0091    0.0093    ------    0.0008
               SO4:    0.0003    0.0005    0.0005    0.0005    0.0018    0.0002    0.0003    0.0009    0.0001    0.0005
  Total Exhaust PM:    0.0042    0.0042    0.0042    0.0042    0.0147    0.0120    0.0157    0.0285    0.0206    0.0068
             Brake:    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125
              Tire:    0.0080    0.0080    0.0080    0.0080    0.0086    0.0080    0.0080    0.0259    0.0040    0.0096
          Total PM:    0.0247    0.0247    0.0248    0.0248    0.0358    0.0325    0.0362    0.0669    0.0371    0.0289
               SO2:    0.0068    0.0088    0.0115    0.0095    0.0164    0.0029    0.0056    0.0131    0.0033    0.0093
               NH3:    0.1017    0.1017    0.1017    0.1017    0.0451    0.0068    0.0068    0.0270    0.0113    0.0925
 -------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # #
* 50km/h (31.1 mph) SUMMER 2.5
* File 1, Run 1, Scenario 3.
* # # # # # # # # # # # # # # # # # # # # # # #

                           Calendar Year:  2021
                                   Month:  July
                Gasoline Fuel Sulfur Content:   30. ppm
                  Diesel Fuel Sulfur Content:   15. 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:    0.2788    0.4388    0.1507              0.0365    0.0003    0.0022    0.0876    0.0051    1.0000
 -------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
```

```
              Lead:    0.0000    0.0000    0.0000    0.0000    0.0000    ------    ------    ------    0.0000    0.0000
             GASPM:    0.0036    0.0034    0.0035    0.0034    0.0113    ------    ------    ------    0.0142    0.0035
           ECARBON:    ------    ------    ------    ------    ------    0.0084    0.0056    0.0161    ------    0.0014
           OCARBON:    ------    ------    ------    ------    ------    0.0024    0.0081    0.0082    ------    0.0007
               SO4:    0.0003    0.0005    0.0005    0.0005    0.0018    0.0002    0.0003    0.0009    0.0001    0.0005
  Total Exhaust PM:    0.0039    0.0039    0.0039    0.0039    0.0131    0.0109    0.0140    0.0252    0.0143    0.0062
             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    0.0022    0.0020    0.0020    0.0065    0.0010    0.0024
          Total PM:    0.0112    0.0112    0.0113    0.0113    0.0206    0.0183    0.0214    0.0370    0.0206    0.0139
               SO2:    0.0068    0.0088    0.0115    0.0095    0.0164    0.0029    0.0056    0.0131    0.0033    0.0093
               NH3:    0.1017    0.1017    0.1017    0.1017    0.0451    0.0068    0.0068    0.0270    0.0113    0.0924
 ---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* 50km/h (31.1 mph) SUMMER 10
* File 1, Run 1, Scenario 4.
* # # # # # # # # # # # # # # # # # # # # # # # #

                           Calendar Year:  2021
                                   Month:  July
                Gasoline Fuel Sulfur Content:   30. ppm
                  Diesel Fuel Sulfur Content:   15. ppm
                        Particle Size Cutoff: 10.00 Microns
                            Reformulated Gas:  No

      Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                <6000     >6000     (All)
                     ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2788    0.4388    0.1507              0.0365    0.0003    0.0022    0.0876    0.0051    1.0000
 ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
              Lead:    0.0000    0.0000    0.0000    0.0000    0.0000    ------    ------    ------    0.0000    0.0000
             GASPM:    0.0039    0.0037    0.0038    0.0037    0.0125    ------    ------    ------    0.0205    0.0039
           ECARBON:    ------    ------    ------    ------    ------    0.0091    0.0061    0.0175    ------    0.0015
           OCARBON:    ------    ------    ------    ------    ------    0.0026    0.0088    0.0089    ------    0.0008
               SO4:    0.0003    0.0005    0.0005    0.0005    0.0018    0.0002    0.0003    0.0009    0.0001    0.0005
  Total Exhaust PM:    0.0042    0.0042    0.0042    0.0042    0.0143    0.0119    0.0152    0.0274    0.0206    0.0067
             Brake:    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125
              Tire:    0.0080    0.0080    0.0080    0.0080    0.0086    0.0080    0.0080    0.0258    0.0040    0.0096
          Total PM:    0.0247    0.0247    0.0248    0.0248    0.0355    0.0324    0.0358    0.0658    0.0371    0.0288
               SO2:    0.0068    0.0088    0.0115    0.0095    0.0164    0.0029    0.0056    0.0131    0.0033    0.0093
               NH3:    0.1017    0.1017    0.1017    0.1017    0.0451    0.0068    0.0068    0.0270    0.0113    0.0924
 ---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* 80km/h (49.7 mph) WINTER 2.5
* File 1, Run 1, Scenario 5.
* # # # # # # # # # # # # # # # # # # # # # # # #

                           Calendar Year:  2021
                                   Month:  Jan.
                Gasoline Fuel Sulfur Content:   30. ppm
                  Diesel Fuel Sulfur Content:   15. 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:    0.2790    0.4400    0.1500              0.0363    0.0003    0.0022    0.0872    0.0050    1.0000
 ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
              Lead:    0.0000    0.0000    0.0000    0.0000    0.0000    ------    ------    ------    0.0000    0.0000
             GASPM:    0.0037    0.0035    0.0035    0.0035    0.0115    ------    ------    ------    0.0142    0.0036
           ECARBON:    ------    ------    ------    ------    ------    0.0085    0.0058    0.0168    ------    0.0015
           OCARBON:    ------    ------    ------    ------    ------    0.0024    0.0084    0.0086    ------    0.0008
               SO4:    0.0002    0.0004    0.0004    0.0004    0.0020    0.0002    0.0003    0.0009    0.0001    0.0005
  Total Exhaust PM:    0.0039    0.0039    0.0039    0.0039    0.0135    0.0110    0.0145    0.0263    0.0143    0.0063
             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    0.0022    0.0020    0.0020    0.0065    0.0010    0.0024
          Total PM:    0.0112    0.0112    0.0113    0.0112    0.0210    0.0184    0.0218    0.0381    0.0206    0.0140
```

```
               SO2:    0.0068    0.0088    0.0115    0.0095    0.0164    0.0029    0.0056    0.0131    0.0033    0.0093
               NH3:    0.1017    0.1017    0.1017    0.1017    0.0451    0.0068    0.0068    0.0270    0.0113    0.0925
 ---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* 80km/h (49.7 mph) WINTER 10
* File 1, Run 1, Scenario 6.
* # # # # # # # # # # # # # # # # # # # # # # # #

                           Calendar Year:  2021
                                   Month:  Jan.
                Gasoline Fuel Sulfur Content:   30. ppm
                  Diesel Fuel Sulfur Content:   15. ppm
                        Particle Size Cutoff: 10.00 Microns
                            Reformulated Gas:  No

      Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
               GVWR:                <6000     >6000     (All)
                     ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2790    0.4400    0.1500              0.0363    0.0003    0.0022    0.0872    0.0050    1.0000
 ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
               Lead:    0.0000    0.0000    0.0000    0.0000    0.0000    ------    ------    ------    0.0000    0.0000
             GASPM:    0.0040    0.0038    0.0038    0.0038    0.0127    ------    ------    ------    0.0205    0.0039
           ECARBON:    ------    ------    ------    ------    ------    0.0092    0.0063    0.0183    ------    0.0016
           OCARBON:    ------    ------    ------    ------    ------    0.0026    0.0091    0.0093    ------    0.0008
               SO4:    0.0002    0.0004    0.0004    0.0004    0.0020    0.0002    0.0003    0.0009    0.0001    0.0005
  Total Exhaust PM:    0.0042    0.0042    0.0042    0.0042    0.0147    0.0120    0.0157    0.0285    0.0206    0.0068
             Brake:    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125
              Tire:    0.0080    0.0080    0.0080    0.0080    0.0086    0.0080    0.0080    0.0259    0.0040    0.0096
          Total PM:    0.0247    0.0247    0.0248    0.0248    0.0359    0.0325    0.0362    0.0669    0.0371    0.0289
               SO2:    0.0068    0.0088    0.0115    0.0095    0.0164    0.0029    0.0056    0.0131    0.0033    0.0093
               NH3:    0.1017    0.1017    0.1017    0.1017    0.0451    0.0068    0.0068    0.0270    0.0113    0.0925
 ---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* 80km/h (49.7 mph) SUMMER 2.5
* File 1, Run 1, Scenario 7.
* # # # # # # # # # # # # # # # # # # # # # # # #

                           Calendar Year:  2021
                                   Month:  July
                Gasoline Fuel Sulfur Content:   30. ppm
                  Diesel Fuel Sulfur Content:   15. 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:    0.2788    0.4388    0.1507              0.0365    0.0003    0.0022    0.0876    0.0051    1.0000
 ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
               Lead:    0.0000    0.0000    0.0000    0.0000    0.0000    ------    ------    ------    0.0000    0.0000
             GASPM:    0.0037    0.0035    0.0035    0.0035    0.0112    ------    ------    ------    0.0142    0.0036
           ECARBON:    ------    ------    ------    ------    ------    0.0084    0.0056    0.0161    ------    0.0014
           OCARBON:    ------    ------    ------    ------    ------    0.0024    0.0081    0.0082    ------    0.0007
               SO4:    0.0002    0.0004    0.0004    0.0004    0.0020    0.0002    0.0003    0.0009    0.0001    0.0005
  Total Exhaust PM:    0.0039    0.0039    0.0039    0.0039    0.0132    0.0109    0.0140    0.0252    0.0143    0.0062
             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    0.0022    0.0020    0.0020    0.0065    0.0010    0.0024
          Total PM:    0.0112    0.0112    0.0113    0.0112    0.0207    0.0183    0.0214    0.0370    0.0206    0.0139
               SO2:    0.0068    0.0088    0.0115    0.0095    0.0164    0.0029    0.0056    0.0131    0.0033    0.0093
               NH3:    0.1017    0.1017    0.1017    0.1017    0.0451    0.0068    0.0068    0.0270    0.0113    0.0924
 ---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* 80km/h (49.7 mph) SUMMER 10
* File 1, Run 1, Scenario 8.
* # # # # # # # # # # # # # # # # # # # # # # # #
```

```
                              Calendar Year:  2021
                                     Month:  July
                  Gasoline Fuel Sulfur Content:   30. ppm
                    Diesel Fuel Sulfur Content:   15. ppm
                         Particle Size Cutoff: 10.00 Microns
                             Reformulated Gas:  No
```

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.2788	0.4388	0.1507		0.0365	0.0003	0.0022	0.0876	0.0051	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0040	0.0038	0.0038	0.0038	0.0123	------	------	------	0.0205	0.0039
ECARBON:	------	------	------	------	------	0.0091	0.0061	0.0175	------	0.0015
OCARBON:	------	------	------	------	------	0.0026	0.0088	0.0089	------	0.0008
SO4:	0.0002	0.0004	0.0004	0.0004	0.0020	0.0002	0.0003	0.0009	0.0001	0.0005
Total Exhaust PM:	0.0042	0.0042	0.0042	0.0042	0.0143	0.0119	0.0152	0.0274	0.0206	0.0067
Brake:	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125
Tire:	0.0080	0.0080	0.0080	0.0080	0.0086	0.0080	0.0080	0.0258	0.0040	0.0096
Total PM:	0.0247	0.0247	0.0248	0.0248	0.0355	0.0324	0.0358	0.0658	0.0371	0.0288
SO2:	0.0068	0.0088	0.0115	0.0095	0.0164	0.0029	0.0056	0.0131	0.0033	0.0093
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0924

Appendix C – CAL3QHCR Isopleth Graphs

Dundas Street East

Brow Road East

Mountain

Mill Street South

Waterdown Road

PROJECT TITLE:

Scenario 1 - Existing 2008 Configuration
Nitrogen oxides (NOx)

COMMENTS:

Concentarions shown are for 1-hr averaging periods

Concentrations shown should be multiplied by 10 to obatin ppb. For example, the maximum NOx concentration is 9.10 x 10 = 91.0 ppb

MODEL:	
CAL3QHCR	
MAX:	
9.10	
LINKS:	RECEPTORS:
58	**5646**

COMPANY NAME:

Dillon Consulting Limited

MODELER:

DATE:

8/5/2009

SCALE: 1:10,000

0 0.3 m

DILLON CONSULTING

PROJECT / PLOT NO.:

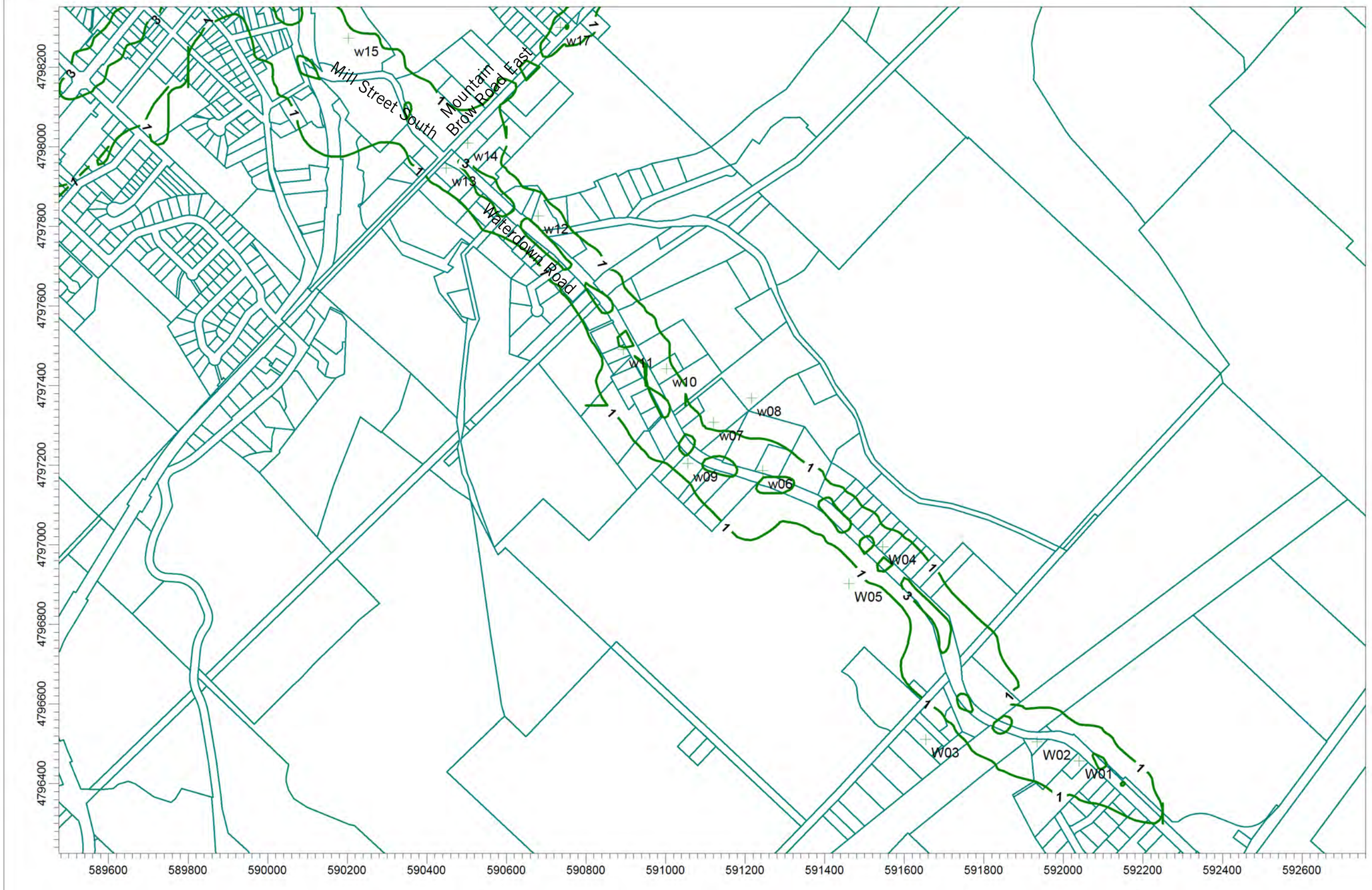
08-9020-1040

CALRoads View - Lakes Environmental Software

C:\Alex files\Alex CV\Alex timesheet\08-9020 Waterdown EA\Waterdown Rd\AQ Assessment\CAL3QHCR Runs\waterdown Existing 2008 NOX\WTDNOx08.clv

PROJECT TITLE:

Scenario 1 - Existing 2008 Configuration
Nitrogen oxides (NOx)



COMMENTS:

Concentarions shown are for 1-hr averaging periods

Concentrations shown should be multiplied by 10 to obatin ppb. For example, the maximum NOx concentration is 9.10 x 10 = 91.0 ppb

MODEL:	
CAL3QHCR	
MAX:	
9.10	
LINKS: **58**	RECEPTORS: **5646**

COMPANY NAME:

Dillon Consulting Limited

MODELER:

DATE:

8/5/2009

SCALE: 1:10,000

0 0.3 m

DILLON CONSULTING

PROJECT / PLOT NO.:

08-9020-1040

CALRoads View - Lakes Environmental Software

C:\Alex files\Alex CV\Alex timesheet\08-9020 Waterdown EA\Waterdown Rd\AQ Assessment\CAL3QHCR Runs\waterdown Existing 2008 NOX\WTDNOx08.clv

PROJECT TITLE:

Scenario 1 - Existing 2008 Configuration
Particulate matter (PM2.5)

COMMENTS:

Concentrations shown are for 24-hr averaging periods

MODEL:	POLLUTANT:
CAL3QHCR	Particulate
MAX:	UNITS:
0.53	ug/m**3
LINKS:	RECEPTORS:
58	5271

COMPANY NAME:

Dillon Consulting Limited

MODELER:

DATE:

8/5/2009

SCALE: 1:10,000

0 0.3 m

DILLON CONSULTING

PROJECT / PLOT NO.:

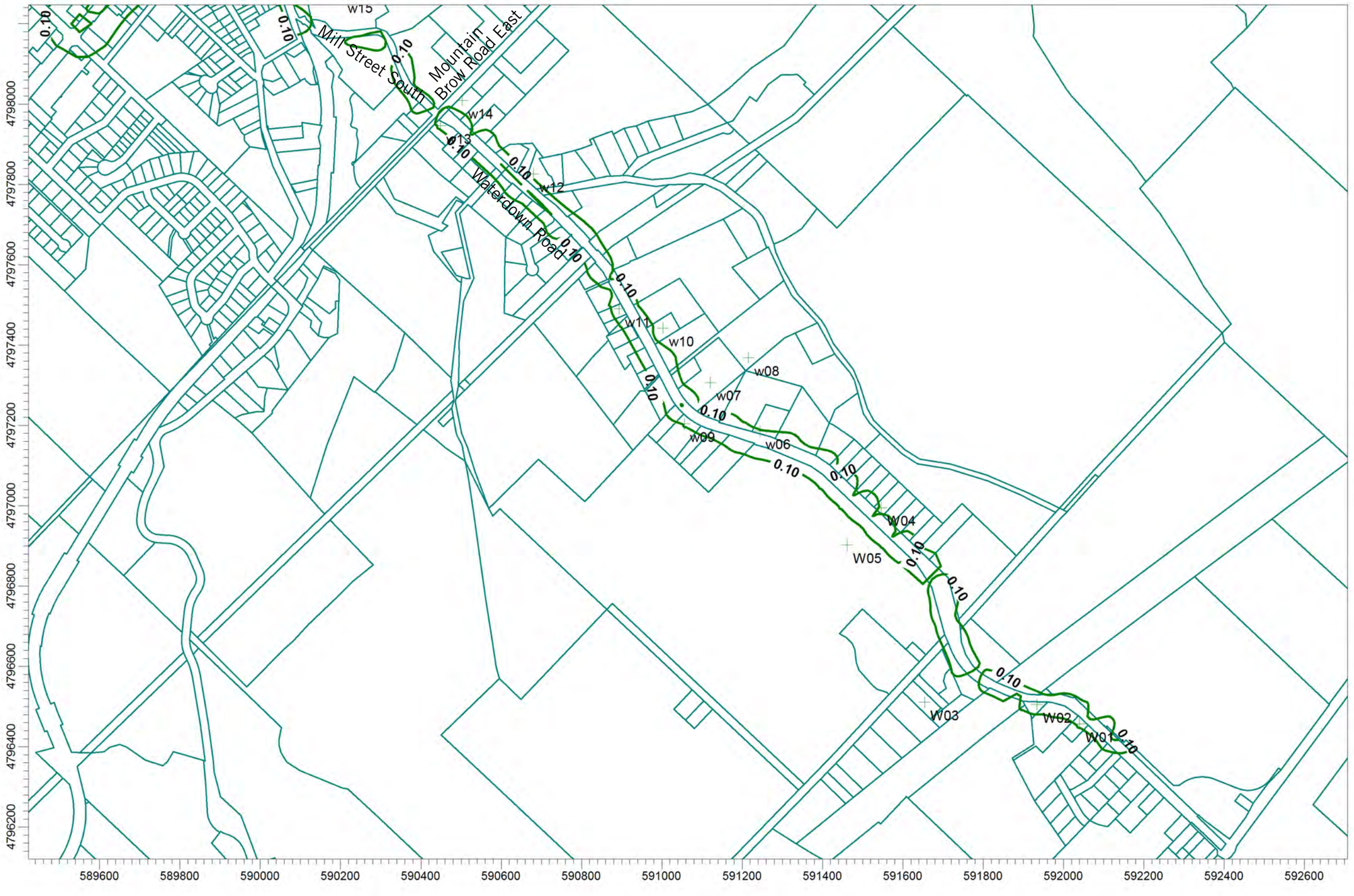
08-9020-1040

CALRoads View - Lakes Environmental Software

C:\Alex files\Alex CV\Alex timesheet\08-9020 Waterdown EA\Waterdown Rd\AQ Assessment\CAL3QHCR Runs\Waterdown Existing 2008 PM2.5\WTDPM08.clv

PROJECT TITLE:

Scenario 1 - Existing 2008 Configuration
Particulate matter (PM2.5)



COMMENTS:

Concentrations shown are for 24-hr averaging periods

MODEL:	POLLUTANT:
CAL3QHCR	**Particulate**
MAX: **0.53**	UNITS: **ug/m**3**
LINKS: **58**	RECEPTORS: **5271**

COMPANY NAME:

Dillon Consulting Limited

MODELER:

DATE:

8/5/2009

SCALE: 1:10,000

0 0.3 m

DILLON CONSULTING

PROJECT / PLOT NO.:

08-9020-1040

CALRoads View - Lakes Environmental Software

C:\Alex files\Alex CV\Alex timesheet\08-9020 Waterdown EA\Waterdown Rd\AQ Assessment\CAL3QHCR Runs\Waterdown Existing 2008 PM2.5\WTDPM08.clv

Dundas Street East

Brow Road East

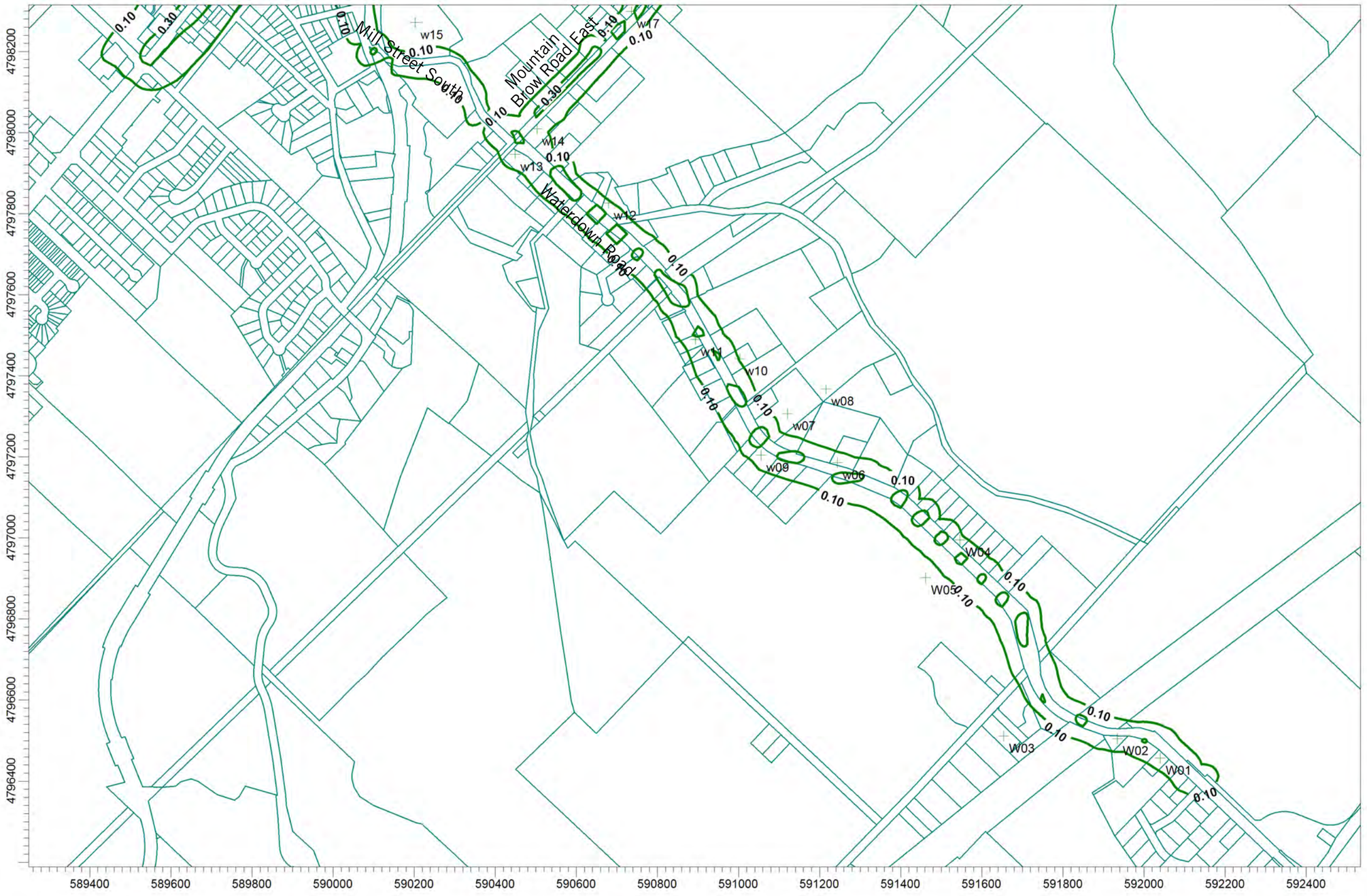
Mountain

Mill Street South

Waterdown Road

PROJECT TITLE:

Scenario 2 - Future 2021 - "no road-build"
Particulate matter (PM2.5)



COMMENTS:

Concentrations shown are for 24-hr averaging periods

MODEL:	POLLUTANT:
CAL3QHCR	**Particulate**
MAX:	UNITS:
0.61	**ug/m**3**
LINKS:	RECEPTORS:
58	**5271**

COMPANY NAME:

Dillon Consulting Limited

MODELER:

DATE:

8/5/2009

SCALE: 1:10,000

0 0.3 m

DILLON CONSULTING

PROJECT / PLOT NO.:

08-9020-1040

CALRoads View - Lakes Environmental Software

C:\Alex files\Alex CV\Alex timesheet\08-9020 Waterdown EA\Waterdown Rd\AQ Assessment\CAL3QHCR Runs\Waterdown 2021 No Change PM2.5\WPMNC21.clv

PROJECT TITLE:
Scenario 3 - Future 2021 - Mature State of Development
Carbon Monoxide (CO)

COMMENTS:
Concentrations shown are for 1-hr averaging periods

MODEL:	
CAL3QHCR	
MAX:	
1.90	
LINKS:	RECEPTORS:
70	**7221**

COMPANY NAME:
Dillon Consulting Limited

MODELER:

DATE:
5/11/2009

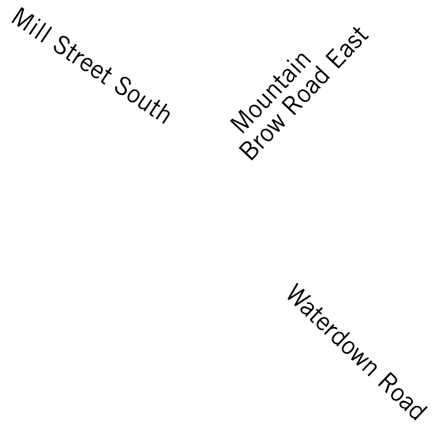
SCALE: 1:10,000
0 0.3 m

DILLON CONSULTING

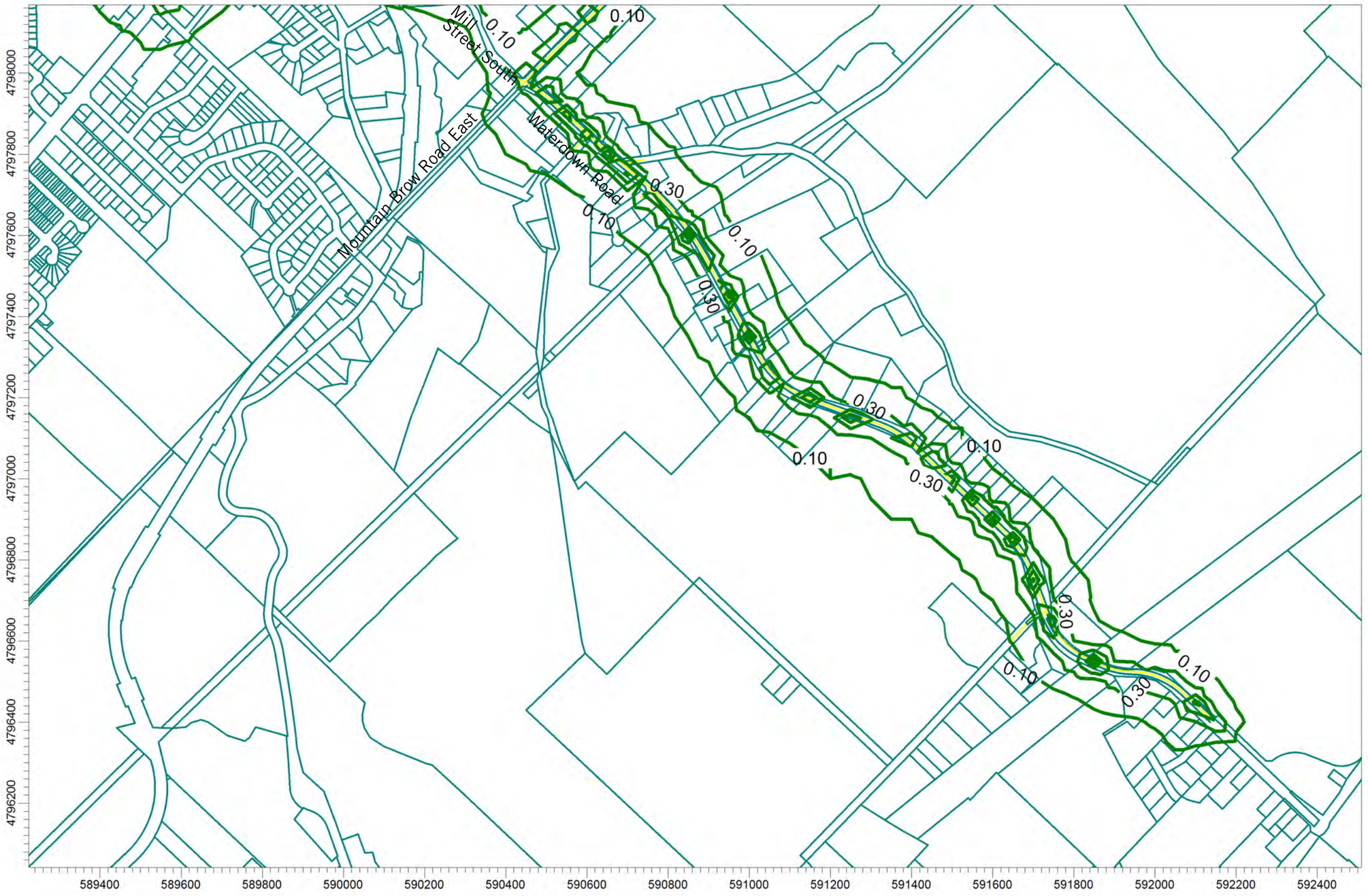
PROJECT / PLOT NO.:
08-9020-1040

CALRoads View - Lakes Environmental Software

C:\Alex files\Alex CV\Alex timesheet\08-9020 Waterdown EA\Waterdown Rd\Revised Scenario 3 - May 8, 2009\CAL3QHC runs\CO\WCOS3.clv


Mill Street South
Mountain
Brow Road East
Waterdown Road

PROJECT TITLE:
Scenario 3 - Future 2021 - Mature State of Development
Parrticulet matter (PM2.5)



COMMENTS:
Concentrations shown are for 24-hr averaging periods

MODEL:	POLLUTANT:
CAL3QHCR	**Particulate**
MAX:	UNITS:
1.23	**ug/m**3**
LINKS:	RECEPTORS:
66	**7221**

COMPANY NAME:
Dillon Consulting Limited

MODELER:

DATE:
5/11/2009

SCALE: 1:10,000
0 0.3 m

DILLON CONSULTING

PROJECT / PLOT NO.:
08-9020-1040

CALRoads View - Lakes Environmental Software

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