APPENDIX I

Air Quality Monitoring Report

Clean Harbors Canada, Inc.

2016 Annual Landfill Report

Report No. 50910-1

ORTECH

Report:

Clean Harbors Environmental Services Inc.
Lambton Facility
Ambient Air Monitoring 2016

Date: November 30, 2016

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Lambton Facility
Ambient Air Monitoring 2016

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Table of Contents

Page

INTRODUCTION

Clean Harbors Environmental Services (Clean Harbors) has been conducting an annual ambient air fenceline monitoring program spanning more than twenty years at its Lambton Facility near Corunna in order to ensure that potential substance releases from ongoing activities are within accepted regulatory limits. The monitoring requirement was part of the facility Environmental Compliance Approval (ECA) and included a series of measurements at the fenceline for a selected group of speciated vapour and particulate constituents, in accordance with a monitoring plan that was approved by the Ontario Ministry of the Environment and Climate Change (MOECC). The target constituents were selected from previous monitoring data at the facility and the measured levels, which are potentially contributed by facility operations, have been compared each year to applicable MOECC air quality standards and criteria.

On August 6, 2010 Clean Harbors received notice from the MOECC that the Reg. 419/05 Schedule 3 24-hour standard was now applicable to their facility as per their ECA. Prior to the initiation of the 2011 program, a review of the previous years' program was conducted by MOECC with Clean Harbors and a new Monitoring Plan was developed and approved. This Plan addressed the following six issues:

- Updated the sampling program from ½-hour VOCs collected on adsorbent tubes (EPA method TO-17) to 24-hour samples collected in evacuated canisters (EPA method TO-15a);
- Updated the target VOC list;
- Relocated the south sampling location;
- Fixed the north sampling location;
- Sampled from midnight to midnight (eastern standard time); and
- Initiated sampling on the twelve day National Air Pollution Surveillance Network (NAPS) cycle.

Early in 2016 the MOECC reviewed the Monitoring Plan and requested that the north monitoring site location be moved from the bottom of the berm, adjacent to the north fenceline, to the top of the berm in an area north of the exposed waste landfill area. This new location is also adjacent to the north perimeter fenceline.

This report contains a synopsis of the measurement methods used to conduct the monitoring requirements during 2016, as specified by MOECC, and both summarized and individual measurement results that were obtained during the period of May to September.

1. METHODOLOGY

1.1 General Synopsis of Approach

The primary objective of the ambient air monitoring program was to continue the measurement of specific airborne target compounds at or near the facility perimeter by established procedures to verify that concentrations are within accepted regulatory limits.

The Lambton facility is located at the intersection of Petrolia Line and Telfer Road near Corunna and receives a wide variety of industrial wastes for destruction and disposal. The operations include primary emission sources such as:

- An active landfill area on the north side of the property containing working cells which generally orient from east to west;
- A liquid industrial waste incinerator near the center of the facility;
- A thermal desorption unit also located near the center of the facility;
- Multiple fugitive sources that extend over a large part of the facility area; and
- An inactive (closed) landfill area located in the southern portion of the property.

The nearest residences exist to the north, east and west of the active landfill locale. The primary emphasis of this monitoring program was directed toward potential fugitive emission releases from the landfill and other low-elevation facility sources.

The list of target substances was selected to characterize the property line concentrations related to these emissions and was based upon previous ambient air fenceline measurements in conjunction with input by Clean Harbors and the MOECC. This target list of substances and the measurement frequency were reviewed by Clean Harbors with the MOECC prior to the start-up of the 2011 monitoring program and were revised to ensure the program continued to be relevant to the current operation of the facility. The same parameters were measured from 2012 to 2016 and included:

- An extensive group of speciated volatile organic compounds (VOC);
- Total suspended particulate matter (TSP);
- Speciated metal elements of particulate matter (Metals);
- Specific aldehyde and ketone constituents (Carbonyls); and
- Vapour and particulate mercury (Mercury).

Concurrent 24-hour sampling was conducted at two fixed locations. The north site was located at the top of the north perimeter berm with the south site at some distance from the southerly fenceline. The siting of these two locations was based on the predicted south to southwesterly winds directions that prevail for the area, with the northerly site positioned to account for the directional dispersion of the combined types of potential facility emissions.

1.2 Monitoring Locations

The north and south monitoring locations are shown on the map in Figure 1. Predicted south to southwesterly wind directions have historically prevailed for this area. The north site is located on top of the berm adjacent to the perimeter fencing of the north property line (Petrolia Line). This location is north of the exposed waste landfill area, with the emphasis directed toward measuring maximum potential constituent levels from the active landfill operations under southerly wind regimes. The monitoring position was fixed throughout the survey period as directed by the MOECC. The south site is south of the facility on a property at the corner of Telfer Road and Rokeby Line. The locale is upwind of all facility operations under southerly wind conditions and was sited to minimize possible particulate contributions from the adjacent gravel road (Telfer Line) with no major contributing sources between the monitoring site and the facility. The south monitoring position was also fixed throughout the survey period.

1.3 Sample Storage & Transportation

Before and after sample collection, the sample media and canisters were stored at the ORTECH laboratory in an appropriate, clean, temperature controlled environment. Exposed sample media and canisters were packed in protective cases (with ice packs if required) and shipped via courier to the analytical laboratory within three days of exposure. Chain of custody records were maintained for all samples.

FIGURE 1

North and South Sampling Locations

1.4 Sample Collection and Analysis

In order to maintain consistency with previous monitoring at the facility, essentially the same measurement methods, with the exception of VOCs (formerly adsorbent tubes – US EPA TO-17), were used for concurrent monitoring as shown in Table 1.

TABLE 1

Measurement Methods

Parameter	Sample Media	Analytical Method	Standard Method
VOC	6L evacuated canisters	GC/MSD	US EPA TO-15a
TSP	Glass-fibre filters	Gravimetric	US EPA IO2-1
Metals and Particulate Mercury	Glass-fibre filters	ICP MS	US EPA 6010B
		CVAA	US EPA 7471A
Carbonyls	Lp DNHP cartridge	HPLC	US EPA TO-11a and IP-6A
Mercury Vapour	Carulite tubes	Acid Extraction CVAA	US EPA 7470 and OSHA ID-140

VOC – The method used in past years was changed following the MOECC pre-2011 program review from one-half hour samples collected on precleaned multi-adsorbent carbon-based adsorption tubes (EPA method TO-17) to twenty-four hour whole air samples collected into stainless steel electropolished 6 L evacuated canisters at a constant flow rate following EPA method TO-15a. The canisters and flow controllers were provided, cleaned, proofed and analyzed by a CALA accredited laboratory (ALS Environmental).

Proofing consisted of taking one canister and its associated sampling train from each batch of cleaned canisters and performing an analysis to ensure that the cleaning process was adequate. The precleaned stainless steel sampling train consisted of a ¼ inch sampling inlet, a 2 micron sintered steel particulate filter, a critical orifice (designed for 24-hour sampling), a flow controller and a vacuum gauge. The sampling trains, each with a unique identification number, were leak checked and the flow verified before shipping from the laboratory. Each canister was inspected for damage upon receipt from the laboratory and after a period of acclimatization, the operator recorded the “as received” vacuum reading (optimally ≥ -29 inches Hg). Prior to sampling the vacuum was checked again, and if significantly different (i.e., not within 3 inches Hg) the canister was not used and returned to the laboratory. The critical orifice and flow controller were designed to accurately maintain a constant flow despite changes in vacuum over a range of -30 to -5 inches Hg in a 24-hour period. Prior to the scheduled sampling period the canisters were removed from their respective protective containers and positioned such that the sampling inlet was approximately 1.5 meters above ground. Initial and final canister vacuum readings were recorded for each sample along with ambient temperature and pressure. Final readings had to be greater than -5 inches Hg to ensure a valid sample. The extensive list of target compounds is found in Table 2 and was updated by the MOECC in their pre-2011 program review. As some of the compounds are not found on the typical laboratory T0-15 list offered by the commercial laboratories, the lab procured custom certified calibration gas standards and developed a method for these additional compounds. This was a substantial QA/QC work effort and was not completed by the laboratory prior to the end of the 2011 monitoring program. However, these additional compounds were included in the 2012 to 2016 programs.

TABLE 2

Volatile Organic Compounds (VOCs)

Compound	CAS No.	Compound	CAS No.
Carbon Tetrachloride	56-23-5	Ethyl Benzene	100-41-4
Isopropyl Alcohol	67-63-0	Styrene	100-42-5
Acetone	67-64-1	1,4-Dichlorobenzene	106-46-7
Chloroform	67-66-3	1,2-DibroMOECCthane	106-93-4
Benzene	71-43-2	1,2-Dichloroethane	107-06-2
1,1,1-Trichloroethane	71-55-6	2-Propenenitrile	107-13-1
Vinyl Chloride	75-01-4	2-Methyl Pentane	107-83-5
Dichloromethane	75-09-2	MIBK	108-10-1
1,1-Dichloroethane	75-34-3	m/p-Xylene	108-38-3/106-42-3
1,1-Dichloroethene	75-35-4	1,3,5-Trimethylbenzene	108-67-8
Chlorodifluoromethane	75-45-6	Toluene	108-88-3
Trichlorofluoromethane	75-69-4	Chlorobenzene	108-90-7
Dichlorodifluoromethane	75-71-8	Hexane	110-54-3
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	Cyclohexane	110-82-7
2-Methyl Butane	78-78-4	Nonane	111-84-2
1,2-Dichloropropane	78-87-5	1,2,4-Trichlorobenzene	120-82-1
MEK	78-93-3	Tetrachloroethene	127-18-4
Trichloroethene	79-01-6	Ethyl Acetate	141-78-6
Naphthalene	91-20-3	Heptane	142-82-5
o-Xylene	95-47-6	1,2-Dichloroethene (Cis)	156-59-2
1,2-Dichlorobenzene	95-50-1	1,2-Dichloroethene (Trans)	156-60-5
1,2,4-Trimethylbenzene	95-63-6	1,2,3-Trimethylbenzene	526-73-8
3-Methyl Pentane	96-14-0	3-Methyl Hexane	589-34-4
p-Cymene	99-87-6	o-Ethyl Toluene	611-14-3

TSP/Metals - Total suspended particulate matter was measured for 24-hour periods by sampling on preweighed glass fibre filters using conventional high-volume sampling units which were operated according to standard techniques. These samplers were calibrated on a quarterly basis utilizing calibration equipment that was certified against a reference or transfer standard traceable to a recognized national primary standard. At each sample interval, performance checks were conducted to ensure that the flows were within ±10% of the required flow (40 CFM). TSP was determined gravimetrically and subsequent filter particulate analysis by a CALA accredited laboratory (Maxxam Analytics) was done using inductively coupled plasma emission spectroscopy with mass spectrometric detection (ICP-MS) for 17 trace elements (Table 3). A portion of the filter after extraction was analyzed by cold vapour atomic absorption spectroscopy (CVAA) for particulate mercury, as understood to be required by MOECC, in general accordance with published standard methods.

TABLE 3

TSP and Metals

Parameter	CAS No.
Total Suspended Particulate (TSP)	Not available
Lead	7439-92-1
Manganese	7439-96-5
Nickel	7440-02-0
Thallium	7440-28-0
Tin	7440-31-5
Antimony	7440-36-0
Arsenic	7440-38-2
Barium	7440-39-3
Beryllium	7440-41-4
Cadmium	7440-43-9
Chromium	7440-47-3
Cobalt	7440-48-4
Copper	7440-50-8
Vanadium	7440-62-2
Zinc	7440-66-6
Selenium	7782-49-2
Iron	15438-31-0

Carbonyls – Speciated aldehyde and ketone compounds (Table 4) were measured, as in past years, by sampling for 24-hours on SepPak (Lp DNHP) cartridges with subsequent analysis by high performance liquid chromatography (HPLC) with ultraviolet (UV) detection following US EPA Compendium Method

T0-11a and US EPA Analytical Method IP-6A. The sampling units, consisting of diaphragm pumps, flow controllers and timers housed within protective enclosures, were operated at an approximately 1 L/min flowrate to achieve approximately 1.5 m^3 total air volume through the DNHP-coated adsorbents (i.e., low pressure drop 2,4-Dinitrophenylhydrazine cartridges). The flows were checked before and after each sample interval using NIST-traceable flow standards (i.e. BIOS Dry Cal). Analyses was conducted by a CALA accredited laboratory (Maxxam Analytics) and results were compared with the associated 24-hour Standards and AAQC for the applicable species.

TABLE 4

Carbonyls

Parameter	CAS No.
Formaldehyde	50-00-0
Acetone	67-64-1
Acetaldehyde	75-07-0
Benzaldehyde	100-52-7
Acrolein	107-02-08
Glutaraldehyde	111-30-8
Propionaldehyde (Propanal)	123-38-6
n-Butyraldehyde (n-Butanal)	123-72-3

Mercury - Mercury vapour was collected, as in past years, for 24-hour periods onto adsorbent sample tubes based generally on OSHA Method ID-140 and analyzed following US EPA Method 7470. The carulite adsorbent tubes (6 mm diameter and 80 mm length), containing Hydrar (i.e., similar to hopcalite material composition), utilized the same sampling apparatus as the carbonyls and was similarly checked for proper flows before and after each sample period. The flow rates were maintained at approximately 70 mL/min to collect total sample volumes of about 1.0 m^3. The samples were analyzed by a CALA accredited laboratory (Maxxam Analytics) utilizing cold vapour atomic absorption (CVAA) spectroscopy with ultraviolet (UV) detection. The particulate mercury result, determined by extraction, was combined with the vapour phase mercury level for comparison with the applicable standards and AAQC.

1.5 Meteorological Measurements

Localized wind speed, direction and rainfall data was obtained from the nearby Sarnia-Lambton Environmental Association (SLEA) monitoring and meteorological station located near the corner of

Moore Line and Highway 40. These data were used to document the weather conditions during each sampling period and confirm the extent of downwind site positioning/source alignment.

1.6 Measurement Frequency and Scheduling

All samples were collected over a twenty-four hour period from midnight to midnight (eastern standard time) initiated on the twelve day NAPS cycle. Measurement frequency and scheduling is shown in Table 5. This measurement frequency and scheduling was recommended by the MOECC in their pre-2011 program review. Prior to 2011, five sample days were distributed over a three-month period (June to August) and were initiated during business hours when southerly regime wind directions were predicted along with warm temperature conditions and no forecasted precipitation. This was done in an attempt to monitor under worst-case conditions that might be expected to result in maximum downwind concentrations levels.

TABLE 5

Measurement Frequencies

Constituent	Frequency and Schedule
VOCs/TSP/Metals	12 sample days on the 12 day NAPS cycle beginning May 12, 2016
Carbonyls and Mercury	Three sample days distributed over the period of May to August. Taken on a day when VOCs/TSP/Metal samples were collected

2. QUALITY ASSURANCE

To maintain an appropriate level of quality assurance with regard to the monitoring, various quality assurance practices were incorporated into the sampling and analysis methods, as routinely done, in effort to enhance the measurement validity. These included all pertinent items from the applicable methods as well as the MOECC's Operations Manual for Air Quality Monitoring in Ontario.

2.1 Quality Assurance Program

ORTECH personnel trained and proficient in these methods were responsible for the collection of samples and followed the applicable Standard Operating Procedures and/or instrument manuals. Table 6 lists the various QA/QC measures.

TABLE 6

QA/QC Measures

Activity	Measure
Sampling Apparatus	• Calibration of equipment at appropriate intervals • Flow checks before and after each sample interval (±10% criterion)
Sample Collection	• All sample periods initiated at midnight (eastern standard time) • Collection at 1.5 to 2.0 meters above ground (2.5 meters for TSP/Metals) • All samples will be collected simultaneously • Field blank collection media (20% of samples) will be utilized that are handled and analyzed in the same manner as regular samples (without air flow) to assess any detectable contamination. Field blanks are not applicable for VOCs collected in canisters • Provision for MOECC to conduct audits
Sample Control	• Precautionary measures were followed during the collection/storage/transfer of samples prior to analysis to maintain sample integrity, along with proper sample identification, and recording procedures • storage in climate controlled, organic solvent free environment • shipment to lab via courier in protective cases within 3 days of exposure with ice paks if applicable
Sample Analysis	• Use of CALA accredited laboratories (Maxxam Analytics and ALS Environmental) • Documented methods and procedures
Record Keeping	• All sampling media/canisters assigned unique identification numbers • Use of field Sampling Logs to record: sample canister I.D., sample train I.D., operator name and signature, sample location, date and time, sample start and stop times, analysis requirement, sample flows, weather observations, and other information or observations (odours, nearby activities with potential impact, etc.) • Chain of Custody forms for sample tracking

3. RESULTS AND DISCUSSION

3.1 General

The concurrent north and south twenty-four hour measurements commenced at 0000 hours on May 12, 2016 (Eastern Standard Time) and followed the NAPS twelve-day schedule. Sampling occurred on the following days: Thursday, May 12th, Tuesday, May 24th, Sunday, June 5th, Friday, June 17th, Wednesday June 29th, Monday, July 11th, Saturday, July 23rd, Thursday, August 4th, Sunday, August 28th, Friday, September 9th, Wednesday, September 21st and Saturday, September 24th. The scheduled August 16th sample day was missed due to a shipping delay of clean sample VOC canisters from the laboratory. A makeup day was scheduled for September 24th. Valid data recovery was 100% during the 2016 sampling program as no samples were lost or invalidated.

Component levels were typically found to be either non-detectable, or very low in the field blank samples of the various applicable collection media. Accordingly, any detectable substances in the media blanks were not subtracted from the sample results; whereby, the sample results could then be considered to be more conservative. In addition, any non-detectable or trace substances in the sample collection media were assigned a zero value, as done previously. In cases of laboratory duplicate sample analyses, the highest (most conservative) results were also used. Tabulated summaries of the measured results are indicated in the report text with all individual measured values provided in the appendices.

3.2 Meteorological Conditions

The meteorological conditions that occurred during the selected monitoring days are summarized in Table 7 and Figure 2, with specific records for the hourly-averaged increments provided in Table 8. Wind directions from the desired southeast to southwest quadrant were persistent on six days (May 12th, May 24th, June 5th, July 11th, August 4th and September 21st) such that the monitoring instruments were typically aligned upwind and downwind of the operations for significant portions of the 24-hour monitoring periods (varying from 14 to 24 hours). Daily mean temperatures ranged from 14.5 to 25.8 °C and daily average wind speeds ranged from 5.7 to 13.9 kph. Rainfall was measured on three days – May 12th, June 5th and August 28th. Sampling locales and wind roses for the specific monitoring days (i.e., 24-hour frequencies) are shown in Figure 2.

Accordingly, the weather conditions in relation to the sample unit positioning, could be expected to result in near maximum upwind/downwind fenceline concentration differences on the six days when winds were predominately from the southeast to southwest quadrant (dates noted above) as an indication of upper limit facility contributions.

3.3 VOC Concentrations

The measured concentrations of speciated VOCs during the monitoring survey are summarized in Table 9, along with a comparison of the maximum 24-hour levels with available schedule 3 standards. Individual concentrations for each sample are tabulated in Appendix 1. The summarized data provide the arithmetic means, as well as ranges, for the twelve measurement sets, along with the schedule 3 24-hour standards. It can be seen from the mean concentrations that 25 of the 48 target compounds reported were non-detectable in all measurements at both monitoring sites. However, mean north and south concentration differences were measurable for some of the remaining speciated VOCs which comprise commonly used solvents, minor petroleum-based constituents and other halogenated impurities. In these instances, somewhat higher downwind concentrations were found in most measurement sets which provided a reasonable indication of actual facility contributions.

As also shown in Table 9, a comparison was made between the maximum measured concentrations at the north and south sites, with the schedule 3 standards. In practically all cases, the maximum measured levels were less than 1% of the standards and most of the compound maximum concentrations were a very small fraction of these regulatory limits. The highest percentages were reported for benzene (AAQC) at the north site, and for benzene and 1,4-dichlorobenzene at the south site. However, none of the standards or guidelines were exceeded for any of the compounds.

It is noteworthy that naphthalene was not detected in any of the sample sets in 2016. Also, it is noteworthy that carbon tetrachloride was not detected in any of the sample sets throughout the 2011 to 2016 monitoring programs. During the 2010 program the ½-hour carbon tetrachloride standard (7.2 $\mu g/m^3$) was exceeded on three days with similar concentrations being reported at both the upwind and downwind sampling locations. It was thought that this information could indicate a possible source upwind of the facility, although it was unlikely since this compound was no longer in common use. Alternatively, there could either have been a problem with the measurement methodology (thermal desorption tube artifacts or positive interferences) or an unknown fugitive source. Both of these scenarios were investigated in 2010 with no conclusive results.

3.4 Particulate and Metal Component Concentrations

A summary of the measured TSP and associated elemental concentrations is shown in Table 10 with individual monitoring results in Appendix 1. TSP concentrations reported at the north site were similar or lower than those of the south location throughout the sampling program. Gravel roadways adjacent to the south site probably contributed to the higher TSP levels measured on a number of days at this site, irrespective of wind direction.

On May 24th, the concentration levels measured at the south site exceeded the Ontario daily standard of 120 $\mu g/m^3$ (166 $\mu g/m^3$). As the prevailing winds on this day were southwesterly the site was upwind of the Clean Harbors facility, and therefore the facility had no contribution to this exceedance level. Agricultural activities and the adjacent gravel roads may have contributed to this elevated concentration level and also to the 90 µg/m³ that was measured at the downwind site (north fenceline site) on this day. TSP levels measured on the remaining eleven days were well below the 24-hour standard at both of the monitoring locations.

As tabulated in Table 10 and Appendix 1, seven of the elemental constituents of TSP (thallium, tin, antimony, arsenic, beryllium, cadmium and selenium) were consistently non-detectable at both monitoring sites. Individual measured concentrations of iron were often higher at the south site under southerly wind conditions (upwind of the Clean Harbors facility). The comparison for elemental iron in these data against the standard level of metallic iron was very conservative since only a fraction of the measured element (if any) could be expected to comprise metallic iron (i.e., particulate iron is likely to exist primarily as iron oxides, salts, silicates, etc.). However, measured levels of all of the elemental metals were below any respective standards.

3.5 Carbonyl Concentrations

The measured speciated carbonyl concentrations are summarized in Table 11 with individual daily levels shown in Appendix 1. Of the eight species, formaldehyde was the only compound detected in all of the samples. Similar, low levels of formaldehyde were detected at both sites irrespective of the prevailing wind directions. The maximum concentration of 1.4 µg/m³ was only 2% of its 24-hour standard.

3.6 Mercury Concentrations

Both particulate and vapour phase mercury components were measured as shown in Table 12, with individual daily results in Appendix 1. Vapour phase mercury was not detected in any of the samples and only small quantities of particle phase mercury were measured in all of the three high-volume sample filters (see also Table 10). The combined results at the maximum concentration represented only a small fraction of the total mercury 24-hour standard. Although total mercury levels have decreased over the past years, it must be recognized that atmospheric mercury typically exists at very low concentrations and primarily in the vapour form. Therefore, the applied measurement technique for mercury vapour, while adequate for comparison of results to the accepted criterion, has insufficient sensitivity for quantification.

4. CONCLUSIONS

Clean Harbors is required to conduct certain fenceline ambient air measurements at its Corunna Facility on an annual basis as a condition of the operational Environmental Compliance Approval for the facility. Prior to the startup of the 2016 monitoring program, the MOECC reviewed the Monitoring Plan and requested the relocation of the north monitoring site from the north fenceline (bottom of the berm) to an area at the top of the berm that was north of the active landfill activities. This new location was also adjacent to the north perimeter fenceline. A total of twelve pairs of simultaneous north/south fixed location speciated VOC measurements were conducted by sampling for 24-hour periods, initiated at midnight (eastern standard time) on the twelve day NAPS cycle, during May through September 2016. Similarly, 24-hour samples were also collected for subsequent analysis of TSP and selected elemental constituents along with the acquisition of local meteorological data for these time-frames. Three sample sets of speciated carbonyls and airborne mercury were collected; one in each of June, July and August concurrent with the VOC and TSP measurements. The levels of all constituents measured were compared with any applicable O.Reg. 419 Schedule 3 standards.

Measured concentrations of TSP, as well as some of the elemental particulate components, were similar at both the north and south monitoring sites during the monitoring period. Confounding sources (e.g., gravel roadways) adjacent to the south site likely contributed to any elevated levels measured at this site. Some of the VOC species were higher during downwind conditions which was indicative of facility contributions to the fenceline concentrations. Of the speciated carbonyl measurements, only formaldehyde was detected on all occasions at both sites and was found to be of similar low concentration. Very low levels of particulate mercury were found in all of the samples whereas mercury vapour was never detected.

All measured levels of the various vapour and particulate constituents were below the accepted regulatory air quality concentration limits (Reg. 419 Schedule 3 standards), which are available for many of the target substances, for all constituents with the exception of TSP. The concentration measured at the south site on May 24th exceeded the Ontario standard of 120 µg/m³. The prevailing winds were southerly on this day and therefore the site was upwind of the Clean Harbors facility. In most instances, the highest measured concentrations of the multiple speciated compounds being determined often represented only a small fraction of the accepted limits. The target elemental constituent levels were found to be significantly less than their specific schedule 3 or guideline values, except for iron (higher fraction of the metallic iron criterion). For iron, this comparison is considered to be conservative since the portion of metallic iron in the analyzed particulate matter, as opposed to other iron compounds, was likely to be minor.

Rod Brooks
Sarnia Manager

TABLE 7

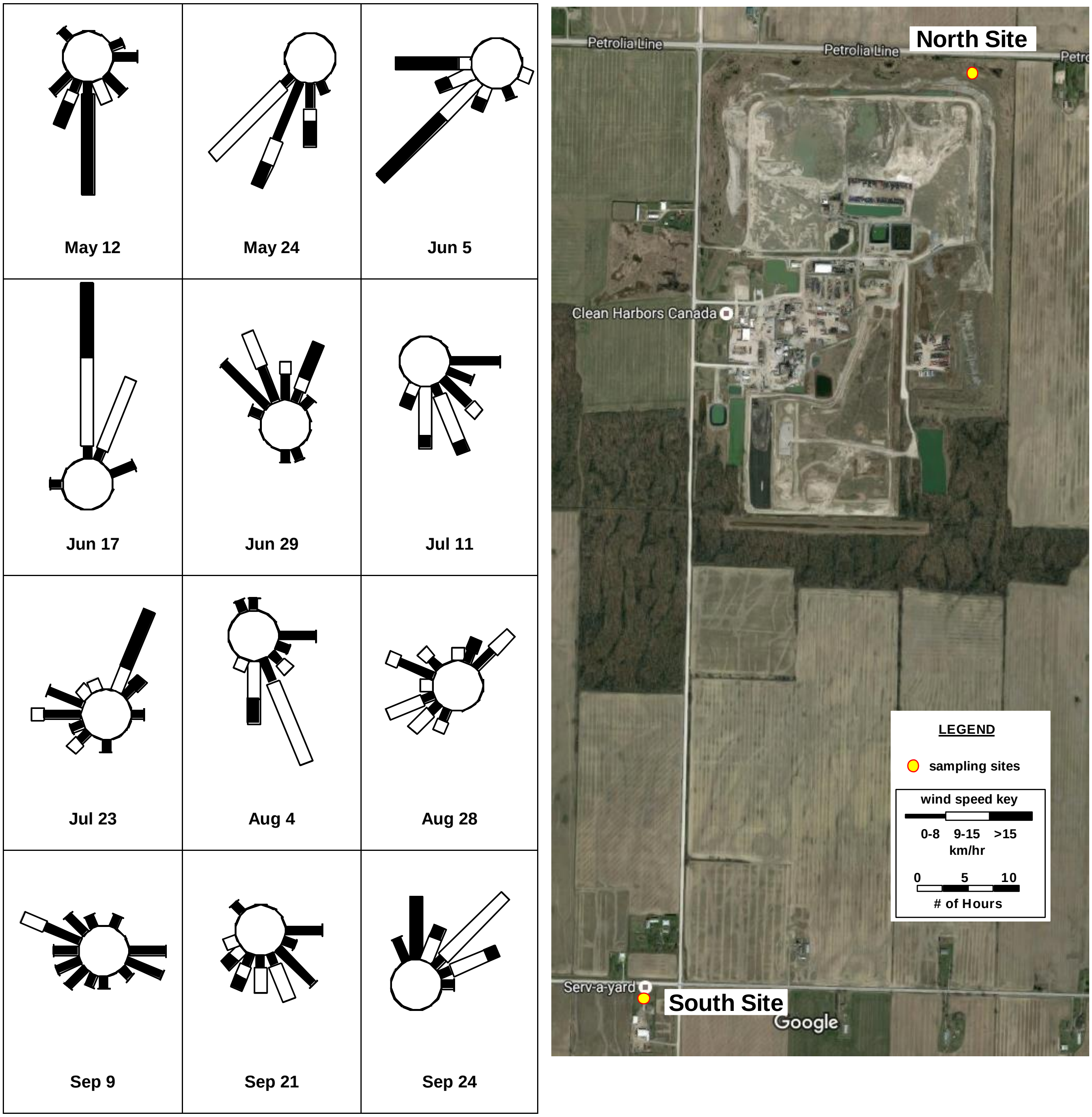
Summary of 24-Hour Meteorological Data for Individual Monitoring Days

Sample Date	Prevailing Wind Direction	Wind Speed (km/h)	Temperature (°C)	Rainfall (mm)	Captured Downwind SE-SW Quadrant (Hours)
May 12	S	12.6	18.1	14.50	20
May 24	SSW to SW	10.5	20.2	0	24
June 5	SW	13.9	18.9	11.25	14
June 17	N	11.8	20.1	0	0
June 29	NW to NNE	8.0	17.5	0	2
July 11	SE to S	9.1	23.2	0	16
July 23	W to WNW and NNE	9.2	25.8	0	3
August 4	SSE	8.5	25.4	0	17
August 28	WSW and NE	8.1	24.1	0.25	6
September 9	WNW	5.7	23.6	0	5
September 21	SE to SSE	7.1	19.3	0	17
September 24	NE	11.2	14.5	0	0

Note: Ranges based on hourly averaged data of the nearby SLEA Moore Line (10 m) meteorological station over the 24-hour intervals which coincided with the individual sample periods (see also Figure 1).

FIGURE 2

Wind Roses



May 12 | May 24 | Jun 5

Jun 17 | Jun 29 | Jul 11

Jul 23 | Aug 4 | Aug 28

Sep 9 | Sep 21 | Sep 24

Table 8

Summary of 24-Hour Meteorological Data for Individual Monitoring Days

dd/mm/yyy hh:mm est	WS kph	WD degrees	RAIN mm	TEMP °C	BAR mbar
2016-05-12 01:00	5.5	235	0	12.4	1015
02:00	0.9	139	0	11.4	1013
03:00	2.3	98	0	10.7	1015
04:00	6.8	77	0	10.5	1013
05:00	4.5	88	0	10.8	1014
06:00	3.5	126	0	11.6	1014
07:00	5.9	146	0	12.9	1012
08:00	11.5	160	0	15.4	1013
09:00	10.9	153	0	18.7	1012
10:00	17.2	174	0	21.3	1010
11:00	16.8	197	0	21.1	1012
12:00	18	192	0	21.2	1010
13:00	25.8	177	0	23.5	1009
14:00	24.8	186	0	24.5	1010
15:00	22.7	179	0	24.5	1008
16:00	23.8	177	0	25	1009
17:00	24.5	178	0	24.7	1007
18:00	22.5	176	0	23.6	1005
19:00	19.1	189	0	22.5	1006
20:00	7.1	230	0	21	1006
21:00	6.6	310	9.25	17	1007
22:00	3.4	201	3.5	16.7	1006
23:00	7	174	1	16.5	1005
00:00	11.2	202	0.75	16.2	998

dd/mm/yyy hh:mm est	WS kph	WD degrees	RAIN mm	TEMP °C	BAR mbar
2016-05-24 01:00	5.6	196	0	11.5	1013
02:00	5	224	0	11.1	1013
03:00	6	171	0	9	1013
04:00	5.3	167	0	7.7	1012
05:00	3.1	194	0	7.7	1013
06:00	3.7	193	0	8.6	1014
07:00	6.5	190	0	14.3	1014
08:00	10.4	216	0	18.1	1014
09:00	10.9	233	0	20.9	1015
10:00	10.5	234	0	22.1	1011
11:00	11.4	222	0	26	1014
12:00	11.3	216	0	27.1	1013
13:00	12.2	214	0	27.9	1013
14:00	11.7	224	0	28.4	1012
15:00	14.7	222	0	29.2	1011
16:00	17.2	206	0	29.8	1013
17:00	18.6	187	0	29.9	1010
18:00	19.2	201	0	28.6	1011
19:00	17.5	190	0	26.8	1011
20:00	13.3	185	0	23.6	1009
21:00	13.6	193	0	20.7	1013
22:00	9.7	202	0	19.7	1012
23:00	6.8	206	0	18.2	1011
00:00	7.7	194	0	16.8	1013

dd/mm/yyy hh:mm	WS kph	WD degrees	RAIN mm	TEMP °C	BAR mbar
2016-06-05 01:00	9.3	119	2	17.7	1001
02:00	6.6	156	0	17.9	999
03:00	10.3	265	0	17.8	1000
04:00	12.5	242	0	17.4	999
05:00	11.2	228	0	17.4	997
06:00	15.8	212	0	17.9	997
07:00	16.7	214	0	18.7	998
08:00	16.4	218	0	19.4	999
09:00	18.7	226	0	21.3	997
10:00	22.2	214	0	22.9	997
11:00	26.1	215	7.25	20.6	999
12:00	11.5	218	0	18	997
13:00	16.8	232	0.25	20.7	998
14:00	20.1	216	1.25	18.8	994
15:00	18.7	246	0	21.3	997
16:00	12.6	234	0.5	21.7	997
17:00	30.7	265	0	22.1	997
18:00	27.9	268	0	20.4	999
19:00	22.5	267	0	19.7	998
20:00	20.2	261	0	19.1	1000
21:00	17.3	261	0	18.4	1000
22:00	14.3	240	0	17	1001
23:00	10.3	227	0	15.3	998
00:00	14.8	213	0	16	1000

dd/mm/yyy hh:mm	WS kph	WD degrees	RAIN mm	TEMP °C	BAR mbar
2016-06-17 01:00	12.3	353	0	16.4	1008
02:00	20.1	359	0	16.3	1008
03:00	17.1	0	0	15.7	1011
04:00	14.6	359	0	15.1	1008
05:00	10.4	353	0	14.5	1010
06:00	10.7	355	0	15.1	1009
07:00	9.7	354	0	17.6	1011
08:00	10.9	23	0	19.4	1013
09:00	13.3	20	0	20.7	1010
10:00	14.8	6	0	22.1	1015
11:00	13.4	21	0	13.2	1014
12:00	9.7	23	0	24.4	1013
13:00	10.7	19	0	25.9	1014
14:00	10.3	13	0	27.1	1015
15:00	14.6	354	0	27.5	1014
16:00	16.9	2	0	27.8	1015
17:00	19.8	6	0	27.3	1014
18:00	17.7	10	0	26.2	1015
19:00	15.4	10	0	24.3	1015
20:00	7.1	33	0	22.1	1015
21:00	6.3	58	0	18.7	1016
22:00	2.5	58	0	17	1017
23:00	1.2	351	0	15	1016
00:00	4.1	269	0	14	1016

Table 8 (continued)

Summary of 24-Hour Meteorological Data for Individual Monitoring Days

dd/mm/yyy hh:mm	WS kph	WD degrees	RAIN mm	TEMP °C	BAR mbar
2016-06-29 01:00	10.3	332	0	11.9	1015
02:00	7.9	323	0	11.5	1014
03:00	7.6	322	0	10.7	1013
04:00	8.4	328	0	10.5	1015
05:00	5.2	325	0	10.2	1012
06:00	6.3	326	0	10.8	1015
07:00	6.1	313	0	13	1016
08:00	12.4	336	0	15.7	1016
09:00	11.1	341	0	18.4	1016
10:00	9.2	349	0	20.4	1015
11:00	7	302	cal	22	1015
12:00	6	357	cal	23	1015
13:00	8.2	353	0	23.8	1013
14:00	5.7	335	0	24.3	1014
15:00	4.1	327	0	25	1012
16:00	13.1	15	0	24.7	1012
17:00	16.2	18	0	24.3	1014
18:00	16.1	30	0	23.4	1014
19:00	15	28	0	21.7	1012
20:00	6.5	31	0	19.7	1014
21:00	3.5	45	0	16.4	1015
22:00	0.9	70	0	13.6	1014
23:00	3.9	183	0	12.3	1014
00:00	1.7	158	0	11.5	1015

dd/mm/yyy hh:mm	WS kph	WD degrees	RAIN mm	TEMP °C	BAR mbar
2016-07-11 01:00	2	99	0	17.2	1015
02:00	0.6	103	0	17.4	1013
03:00	2	104	0	18.1	1015
04:00	4.5	93	0	18.1	1015
05:00	1.9	101	0	17.9	1011
06:00	4.7	97	0	18.3	1016
07:00	2.7	109	0	19.1	1015
08:00	6	137	0	21.2	1013
09:00	15.9	155	0	24.5	1015
10:00	14.3	180	0	27.8	1013
11:00	13.6	189	0	26.7	1013
12:00	13.5	191	0	26.7	1015
13:00	13.9	192	0	28.9	1015
14:00	16.5	196	0	28	1015
15:00	16.3	181	0	28.8	1013
16:00	14.2	178	0	28.4	1011
17:00	14	156	0	27.6	1014
18:00	13.3	153	0	28.2	1013
19:00	12.3	145	0	26.6	1014
20:00	12.8	147	0	24.4	1012
21:00	8.2	144	0	22.3	1013
22:00	9	147	0	21.2	1013
23:00	5	148	0	20	1013
00:00	2	136	0	19.4	1013

dd/mm/yyy hh:mm	WS kph	WD degrees	RAIN mm	TEMP °C	BAR mbar
2016-07-23 01:00	12.2	323	0	25.7	1009
02:00	5.3	287	0	23.8	1011
03:00	4.5	268	0	22.1	1010
04:00	5.6	251	0	20.7	1012
05:00	4.1	296	0	20.5	1011
06:00	3.2	281	0	19.6	1008
07:00	3.6	234	0	21.9	1012
08:00	4.8	293	0	25.5	1012
09:00	5.9	281	0	28	1012
10:00	11	228	0	30.4	1013
11:00	8.9	279	0	30.7	1011
12:00	8.9	331	0	31.4	1012
13:00	15.3	17	0	31	1013
14:00	19.6	32	0	31.2	1013
15:00	19.2	29	0	31.3	1012
16:00	18.8	33	0	31.2	1012
17:00	17.5	35	0	30.2	1011
18:00	16.4	22	0	28.8	1012
19:00	14.1	25	0	27.4	1011
20:00	10.4	23	0	25.3	1010
21:00	0.6	87	0	22.6	1012
22:00	2.6	172	0	20.2	1012
23:00	2.7	55	0	19.6	1013
00:00	4.2	89	0	19.1	1012

dd/mm/yyy hh:mm	WS kph	WD degrees	RAIN mm	TEMP °C	BAR mbar
2016-08-04 01:00	1.7	118	0	17.8	1014
02:00	calm	calm	0	17.2	1014
03:00	1.2	357	0	16.8	1015
04:00	1.1	329	0	16.3	1014
05:00	3.1	81	0	15.5	1013
06:00	2.9	86	0	15.4	1013
07:00	2.5	91	0	19.5	1013
08:00	4.4	132	0	24.4	1015
09:00	8.9	151	0	27.4	1014
10:00	7.5	152	0	29.8	1015
11:00	6.2	158	0	31.1	1015
12:00	9.5	148	0	31.6	1013
13:00	9.3	169	0	32.6	1013
14:00	13.2	193	0	34.2	1013
15:00	13.4	185	0	32.5	1012
16:00	10.4	130	0	29.6	1013
17:00	16.8	178	0	32.5	1012
18:00	16	186	0	32.4	1010
19:00	10.9	169	0	30.7	1012
20:00	11.3	149	0	27.1	1011
21:00	11.4	151	0	24.8	1010
22:00	12.1	153	0	24	1010
23:00	11.5	162	0	23.4	1011
00:00	9.8	166	0	22.9	1009

Table 8 (continued)

Summary of 24-Hour Meteorological Data for Individual Monitoring Days

dd/mm/yyy hh:mm	WS kph	WD degrees	RAIN mm	TEMP °C	BAR mbar
2016-08-28 01:00	3.4	195	0	20.1	1017
02:00	1.5	253	0	19.9	1017
03:00	0.8	210	0	19.9	1018
04:00	7.3	215	0	21	1018
05:00	9.2	232	0	21.8	1018
06:00	9.5	209	0.25	21.9	1016
07:00	10.6	229	0	22.2	1019
08:00	10.7	237	0	23.1	1019
09:00	11.9	245	0	24.3	1016
10:00	9.6	265	0	25.6	1019
11:00	9.4	255	0	26.9	1019
12:00	6.8	299	0	27.1	1018
13:00	9.4	290	0	28	1020
14:00	7	310	0	28.7	1018
15:00	5.5	285	0	29.9	1017
16:00	8.2	303	0	29.6	1019
17:00	9	307	0	29.5	1018
18:00	14.6	2	0	28	1018
19:00	15.8	17	0	25.7	1019
20:00	9.6	46	0	23.3	1019
21:00	9.4	45	0	21.9	1020
22:00	6.5	53	0	20.9	1021
23:00	5.2	43	0	20.2	1019
00:00	3.5	15	0	19.6	1020

dd/mm/yyy hh:mm	WS kph	WD degrees	RAIN mm	TEMP °C	BAR mbar
2016-09-09 01:00	9.8	287	0	22.2	1008
02:00	6.4	293	0	21.4	1011
03:00	5.6	292	0	20.7	1010
04:00	5.8	293	0	20.1	1009
05:00	8.6	297	0	20.2	1011
06:00	7.2	324	0	20.3	1012
07:00	6.3	319	0	20.8	1011
08:00	6.3	331	0	21.6	1011
09:00	7.5	27	0	22.7	1010
10:00	3.5	97	0	23.7	1013
11:00	4.9	196	0	26.8	1012
12:00	5	240	0	26.9	1012
13:00	4.7	272	0	26.9	1012
14:00	6.7	224	0	28.2	1011
15:00	8.2	240	0	27	1012
16:00	6.6	261	0	26.8	1012
17:00	2	223	0	27.7	1013
18:00	3.2	170	0	28.9	1011
19:00	3	107	0	24.2	1011
20:00	6	106	0	22.4	1012
21:00	5.3	106	0	22.1	1011
22:00	5.9	99	0	21.7	1010
23:00	4.8	101	0	21.2	1011
00:00	4.4	141	0	20.9	1010

dd/mm/yyy hh:mm	WS kph	WD degrees	RAIN mm	TEMP °C	BAR mbar
2016-09-21 01:00	1.6	322	0	12.3	1017
02:00	calm	calm	0	11.6	1018
03:00	3.1	113	0	10.9	1019
04:00	2.7	142	0	10.5	1016
05:00	0.8	120	0	10.6	1019
06:00	2.4	83	0	10.6	1020
07:00	3.9	100	0	10.9	1019
08:00	2	101	0	15.4	1020
09:00	4.4	181	0	21.1	1019
10:00	11.8	183	0	23.8	1020
11:00	16.9	214	0	25.5	1021
12:00	16.7	212	0	26	1020
13:00	11.9	245	0	25.6	1021
14:00	2	146	0	26.3	1019
15:00	9.6	161	0	27.8	1017
16:00	14	187	0	28.8	1018
17:00	13	199	0	28.1	1017
18:00	12.2	230	0	25.4	1017
19:00	4	192	0	22.5	1018
20:00	8.5	164	0	19.3	1015
21:00	9.4	161	0	18.9	1018
22:00	6	143	0	18.6	1018
23:00	3.8	143	0	17.2	1015
00:00	3.5	161	0	16.5	1018

dd/mm/yyy hh:mm	WS kph	WD degrees	RAIN mm	TEMP °C	BAR mbar
2016-09-24 01:00	12.3	47	0	15.7	1017
02:00	9.7	41	0	14.9	1019
03:00	9.8	35	0	13.7	1019
04:00	12.5	43	0	12.7	1015
05:00	13.2	44	0	11.7	1020
06:00	11.8	52	0	10.7	1019
07:00	9.8	57	0	10.1	1019
08:00	11.3	71	0	12.4	1020
09:00	15.2	78	0	14.9	1023
10:00	13.2	63	0	16.7	1019
11:00	13.7	51	0	17.5	1021
12:00	12.6	27	0	18.6	1019
13:00	16.5	15	0	18.6	1019
14:00	16.7	2	0	18.7	1020
15:00	15.8	0	0	18.7	1019
16:00	15.3	11	0	18.6	1020
17:00	18.1	11	0	17.9	1019
18:00	17.7	9	0	16.6	1020
19:00	11.1	15	0	14.9	1020
20:00	5.7	330	0	13	1019
21:00	2.3	334	0	11.7	1020
22:00	1.4	68	0	10.1	1021
23:00	2.7	50	0	9.9	1021
00:00	1.4	99	0	8.8	1020

Table 9

Volatile Organic Compounds Summary

Compound:	CAS No.	24-hr Std (sch 3) µg/m³	South			North			South Site Sample Max as % of 24-hr Std (sch 3)	North Site Sample Max as % of 24-hr Std (sch 3)
			Mean	Minimum	Maximum	Mean	Minimum	Maximum		
Carbon Tetrachloride	56-23-5	2.4	nd	nd	nd	nd	nd	nd	nd	nd
Isopropyl Alcohol	67-63-0	7,300	1.90	nd	5.30	2.23	nd	6.00	0.1	0.1
Acetone	67-64-1	11,800	13.63	7.30	21.40	17.36	6.70	36.30	0.2	0.3
Chloroform	67-66-3	1	nd	nd	nd	nd	nd	nd	nd	nd
Benzene	71-43-2	2.3*	0.31	nd	1.26	0.41	nd	1.35	54.8	58.7
1,1,1-Trichloroethane	71-55-6	115,000	nd	nd	nd	nd	nd	nd	nd	nd
Vinyl Chloride	75-01-4	1	nd	nd	nd	nd	nd	nd	nd	nd
Dichloromethane	75-09-2	220	0.10	nd	1.21	0.19	nd	0.86	0.6	0.4
1,1-Dichloroethane	75-34-3	165	nd	nd	nd	nd	nd	nd	nd	nd
1,1-Dichloroethene	75-35-4	10	nd	nd	nd	nd	nd	nd	nd	nd
Chlorodifluoromethane	75-45-6	350,000	0.23	nd	1.00	0.30	nd	0.95	0.0	0.0
Trichlorofluoromethane	75-69-4	6,000	0.98	nd	1.70	1.08	nd	1.80	0.0	0.0
Dichlorodifluoromethane	75-71-8	500,000	2.09	nd	3.31	2.29	1.69	2.97	0.0	0.0
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	800,000	nd	nd	nd	nd	nd	nd	nd	nd
2-Methyl Butane	78-78-4	na	2.60	0.93	3.86	2.36	0.63	4.47	na	na
1,2-Dichloropropane	78-87-5	2,400	nd	nd	nd	nd	nd	nd	nd	nd
MEK	78-93-3	1,000	1.12	nd	2.11	1.73	nd	3.39	0.2	0.3
Trichloroethene	79-01-6	12	nd	nd	nd	nd	nd	nd	nd	nd
Naphthalene	91-20-3	22.5	nd	nd	nd	nd	nd	nd	nd	nd
o-Xylene	95-47-6	730	0.17	nd	1.15	0.21	nd	1.58	0.2	0.2
1,2-Dichlorobenzene	95-50-1	na	nd	nd	nd	nd	nd	nd	na	na
1,2,4-Trimethylbenzene	95-63-6	220	nd	nd	nd	0.18	nd	1.07	nd	0.5
3-Methyl Pentane	96-14-0	na	nd	nd	nd	0.06	nd	0.73	na	na
p-Cymene	99-87-6	na	nd	nd	nd	nd	nd	nd	na	na
Ethyl Benzene	100-41-4	1,000	0.29	nd	1.58	0.40	nd	1.80	0.2	0.2
Styrene	100-42-5	400	nd	nd	nd	nd	nd	nd	ns	nd
1,4-Dichlorobenzene	106-46-7	95	2.21	nd	26.50	nd	nd	nd	27.9	nd
1,2-Dibromoethane	106-93-4	3	nd	nd	nd	nd	nd	nd	nd	nd
1,2-Dichloroethane	107-06-2	2	nd	nd	nd	nd	nd	nd	nd	nd
2-Propenenitrile	107-13-1	0.6	nd	nd	nd	nd	nd	nd	nd	nd
2-Methyl Pentane	107-83-5	na	0.15	nd	1.04	0.15	nd	1.03	na	na
MIBK	108-10-1	1,200	nd	nd	nd	nd	nd	nd	nd	nd
m/p-Xylene	108-38-3/106-42-3	730	0.37	nd	2.60	0.86	nd	3.70	0.4	0.5
1,3,5-Trimethylbenzene	108-67-8	165	nd	nd	nd	nd	nd	nd	nd	nd
Toluene	108-88-3	2,000	2.47	1.14	6.95	2.55	0.90	5.57	0.3	0.3
Chlorobenzene	108-90-7	3,500	0.10	nd	1.22	nd	nd	nd	0.0	nd
Hexane	110-54-3	7,500	0.29	nd	0.89	0.38	nd	1.05	0.0	0.0
Cyclohexane	110-82-7	6,100	0.24	nd	1.21	0.46	nd	2.37	0.0	0.0
Nonane	111-84-2	na	nd	nd	nd	nd	nd	nd	na	na
1,2,4-Trichlorobenzene	120-82-1	400	nd	nd	nd	nd	nd	nd	nd	nd
Tetrachloroethene	127-18-4	360	nd	nd	nd	0.17	nd	2.00	nd	0.6
Ethyl Acetate	141-78-6	19,000	nd	nd	nd	0.14	nd	0.93	nd	0.0
Heptane	142-82-5	11,000	nd	nd	nd	nd	nd	nd	nd	nd
1,2-Dichloroethene (Cis)	156-59-2	105	nd	nd	nd	nd	nd	nd	nd	nd
1,2-Dichloroethene (Trans)	156-60-5	105	nd	nd	nd	nd	nd	nd	nd	nd
1,2,3-Trimethylbenzene	526-73-8	165	nd	nd	nd	nd	nd	nd	nd	nd
3-Methyl Hexane	589-34-4	na	0.14	nd	1.71	0.13	nd	1.57	na	na
o-Ethyl Toluene	611-14-3	na	nd	nd	nd	nd	nd	nd	na	na

nd = below method detection limit   * = Ambient Air Quality Criterion   na = no applicable Sch 3 standard or guideline

Table 10

Total Suspended Particulates and Particulate Metals Summary

Parameter	CAS No.	24-hr Std Sch 3 (μg/m^3)	South Site			North Site			Sample Max as % of 24-hr Std	
			mean	min	max	mean	min	max	South Site	North Site
Total Suspended Particulate	na	120	39	15	166	28	15	90	138	75
Lead	7439-92-1	0.5	0.00	0.00	0.01	0.00	0.00	0.01	1.8	2.1
Manganese	7439-96-5	2.5	0.01	0.00	0.05	0.01	0.00	0.03	2.0	1.3
Nickel	7440-02-0	2	0.00	0.00	0.01	0.00	0.00	0.00	0.3	0.2
Thallium	7440-28-0	na	nd	nd	nd	nd	nd	nd	na	na
Tin	7440-31-5	10	nd	nd	nd	nd	nd	nd	nd	nd
Antimony	7440-36-0	25	nd	nd	nd	nd	nd	nd	nd	nd
Arsenic	7440-38-2	0.3*	nd	nd	nd	nd	nd	nd	nd	nd
Barium	7440-39-3	10*	0.01	0.00	0.02	0.01	0.00	0.02	0.2	0.2
Beryllium	7440-41-4	0.01	nd	nd	nd	nd	nd	nd	nd	nd
Cadmium	7440-43-9	0.03	nd	nd	nd	nd	nd	nd	nd	nd
Chromium	7440-47-3	1.5*	0.00	0.00	0.01	0.00	0.00	0.00	0.4	0.3
Cobalt	7440-48-4	0.1*	nd	nd	nd	0.00	0.00	0.00	nd	2.1
Copper	7440-50-8	50	0.04	0.01	0.09	0.06	0.02	0.10	0.2	0.2
Vanadium	7440-62-2	2	0.00	0.00	0.01	nd	nd	nd	0.3	nd
Zinc	7440-66-6	120	0.02	0.01	0.04	0.02	0.01	0.05	0.0	0.0
Selenium	7782-49-2	10*	nd	nd	nd	nd	nd	nd	nd	nd
Iron	15438-31-0	4	0.49	0.06	3.10	0.31	0.07	1.37	77	34

nd = below method detection limit

* = Guideline

na = no applicable Sch 3 standard or guideline

Table 11

Carbonyl Summary

Compound	CAS No.	24-hr Std Sch 3 (µg/m³)	South Site			North Site			Sample Max as % of 24-hr Std	
			mean	min	max	mean	min	max	South Site	North Site
Formaldehyde	50-00-0	65	1.1	0.7	1.3	1.0	0.7	1.4	2.0	2.2
Acetone	67-64-1	11,880	nd	nd	nd	nd	nd	nd	nd	nd
Acetaldehyde	75-07-0	500	nd	nd	nd	nd	nd	nd	nd	nd
Benzaldehyde	100-52-7	na	nd	nd	nd	nd	nd	nd	na	na
Acrolein	107-02-08	0.08	nd	nd	nd	nd	nd	nd	nd	nd
Glutaraldehyde	111-30-8	14*	nd	nd	nd	nd	nd	nd	na	nd
Propionaldehyde (Propanal)	123-38-6	na	0.5	nd	1.4	0.5	nd	1.4	na	na
n-Butyraldehyde (n-Butanal)	123-72-3	na	nd	nd	nd	nd	nd	nd	na	na

nd = below method detection limit * = Guideline na = no applicable Sch 3 standard or guideline

Table 12

Mercury Summary

Parameter	CAS No.	24-hr Std Sch 3 (µg/m³)	South Site			North Site			Sample Max as % of 24-hr Std	
			mean	min	max	mean	min	max	South Site	North Site
Particulate Mercury	--	--	0.00007	0.00000	0.00019	0.00004	0.00002	0.00007	--	--
Vapour Mercury	7439-97-6	--	nd	nd	nd	nd	nd	nd	--	--
Total Mercury	--	2	0.00007	0.00000	0.00019	0.00004	0.00002	0.00007	0.010	0.004

nd = below method detection limit

APPENDIX 1

Data for Twenty-Four Hour Samples

(4 pages)

VOCs – May 12, 2016 to July 11, 2016 (µg/m³)

Compound	CAS NO.	12-May-16 NVOC-1 North	12-May-16 SVOC-1 South	24-May-16 NVOC-2 North	24-May-16 SVOC-2 South	05-Jun-16 NVOC-3 North	05-Jun-16 SVOC-3 South	17-Jun-16 NVOC-4 North	17-Jun-16 SVOC-4 South	29-Jun-16 NVOC-5 North	29-Jun-16 SVOC-5 South	11-Jul-16 NVOC-6 North	11-Jul-16 SVOC-6 South
Carbon Tetrachloride	56-23-5	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3
Isopropyl Alcohol	67-63-0	5.50	4.00	<2.5	5.30	<2.5	<2.5	3.20	<2.5	3.00	2.60	6.00	<2.5
Acetone	67-64-1	16.60	9.00	19.80	9.50	15.20	7.30	12.80	16.40	10.50	9.20	17.20	20.70
Chloroform	67-66-3	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98
Benzene	71-43-2	<0.64	0.82	0.65	<0.64	<0.64	<0.64	<0.64	<0.64	0.97	1.26	<0.64	<0.64
1,1,1-Trichloroethane	71-55-6	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1
Vinyl Chloride	75-01-4	<0.51	<0.51	<0.51	<0.51	<0.51	<0.51	<0.51	<0.51	<0.51	<0.51	<0.51	<0.51
Dichloromethane	75-09-2	<0.69	<0.69	0.72	<0.69	<0.69	<0.69	<0.69	<0.69	<0.69	<0.69	<0.69	<0.69
1,1-Dichloroethane	75-34-3	<0.81	<0.81	<0.81	<0.81	<0.81	<0.81	<0.81	<0.81	<0.81	<0.81	<0.81	<0.81
1,1-Dichloroethene	75-35-4	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79
Chlorodifluoromethane	75-45-6	<1.05	<0.90	0.95	0.91	0.80	<0.71	0.94	1.00	<0.85	<0.85	0.93	0.85
Trichlorofluoromethane	75-69-4	1.30	1.30	1.30	1.30	<1.1	<1.1	1.20	1.30	1.30	1.20	1.20	1.30
Dichlorodifluoromethane	75-71-8	2.31	1.71	2.46	2.45	1.69	<0.99	2.97	3.31	2.46	2.29	2.22	2.16
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5
2-Methyl Butane	78-78-4	2.09	3.07	2.70	3.86	1.58	1.29	1.05	1.74	2.98	3.31	1.73	3.22
1,2-Dichloropropane	78-87-5	<0.92	<0.92	<0.92	<0.92	<0.92	<0.92	<0.92	<0.92	<0.92	<0.92	<0.92	<0.92
MEK	78-93-3	3.39	1.44	1.53	0.74	0.94	<0.59	0.89	0.97	0.82	1.00	1.77	1.35
Trichloroethene	79-01-6	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1
Naphthalene	91-20-3	<2.6	<2.6	<2.6	<2.6	<2.6	<2.6	<2.6	<2.6	<2.6	<2.6	<2.6	<2.6
o-Xylene	95-47-6	<0.87	<0.87	1.58	<0.87	<0.87	<0.87	<0.87	<0.87	<0.87	<0.87	<0.87	1.15
1,2-Dichlorobenzene	95-50-1	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2
1,2,4-Trimethylbenzene	95-63-6	<0.98	<0.98	1.07	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98
3-Methyl Pentane	96-14-0	<0.70	<0.70	<0.70	<0.70	<0.70	<0.70	<0.70	<0.70	<0.70	<0.70	<0.70	<0.70
p-Cymene	99-87-6	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1
Ethyl Benzene	100-41-4	<0.87	<0.87	0.95	<0.87	<0.87	<0.87	<0.87	<0.87	<0.87	<0.87	<0.87	<0.87
Styrene	100-42-5	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85
1,4-Dichlorobenzene	106-46-7	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	26.50
1,2-Dibromoethane	106-93-4	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5
1,2-Dichloroethane	107-06-2	<0.81	<0.81	<0.81	<0.81	<0.81	<0.81	<0.81	<0.81	<0.81	<0.81	<0.81	<0.81
2-Propenenitrile	107-13-1	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43
2-Methyl Pentane	107-83-5	<0.70	<0.70	<0.70	1.04	<0.70	<0.70	<0.70	<0.70	<0.70	<0.70	<0.70	<0.70
MIBK	108-10-1	<0.82	<0.82	<0.82	<0.82	<0.82	<0.82	<0.82	<0.82	<0.82	<0.82	<0.82	<0.82
m/p-Xylene	108-38-3/ 106-42-3	<1.7	<1.7	3.70	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7
1,3,5-Trimethylbenzene	108-67-8	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98
Toluene	108-88-3	3.11	3.16	3.39	2.26	1.74	1.24	1.92	1.87	2.12	2.09	1.85	3.12
Chlorobenzene	108-90-7	<0.92	<0.92	<0.92	<0.92	<0.92	<0.92	<0.92	<0.92	<0.92	<0.92	<0.92	1.22
Hexane	110-54-3	<0.70	<0.70	0.82	0.89	<0.70	<0.70	<0.70	<0.70	0.85	0.80	<0.70	<0.70
Cyclohexane	110-82-7	<0.69	<0.69	<0.69	<0.69	<0.69	<0.69	<0.69	<0.69	<0.69	<0.69	<0.69	<0.69
Nonane	111-84-2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,4-Trichlorobenzene	120-82-1	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5
Tetrachloroethene	127-18-4	<1.4	<1.4	2.00	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4
Ethyl Acetate	141-78-6	<0.72	<0.72	<0.72	<0.72	<0.72	<0.72	<0.72	<0.72	<0.72	<0.72	<0.72	<0.72
Heptane	142-82-5	<0.82	<0.82	<0.82	<0.82	<0.82	<0.82	<0.82	<0.82	<0.82	<0.82	<0.82	<0.82
1,2-Dichloroethene (Cis)	156-59-2	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79
1,2-Dichloroethene (Trans)	156-60-5	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79
1,2,3-Trimethylbenzene	526-73-8	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98
3-Methyl Hexane	589-34-4	<0.82	<0.82	<0.82	<0.82	<0.82	<0.82	<0.82	<0.82	<0.82	<0.82	<0.82	<0.82
o-Ethyl Toluene	611-14-3	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98

VOCs (con't) – July 23, 2016 to September 24, 2016 (µg/m^3)

Compound	CAS NO.	23-Jul-16 NVOC-7 North	23-Jul-16 SVOC-7 South	04-Aug-16 NVOC-8 North	04-Aug-16 SVOC-8 South	28-Aug-16 NVOC-09 North	28-Aug-16 SVOC-09 South	09-Sep-16 NVOC-10 North	09-Sep-16 SVOC-10 South	21-Sep-16 NVOC-11 North	21-Sep-16 SVOC-11 South	24-Sep-16 NVOC-12 North	24-Sep-16 SVOC-12 South
Carbon Tetrachloride	56-23-5	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3
Isopropyl Alcohol	67-63-0	3.90	3.30	<2.5	<2.5	2.60	5.10	<2.5	<2.5	2.50	2.50	<2.5	<2.5
Acetone	67-64-1	24.90	20.10	12.30	14.90	36.30	21.40	19.20	14.00	16.80	12.90	6.70	8.10
Chloroform	67-66-3	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98
Benzene	71-43-2	1.35	0.76	<0.64	<0.64	1.20	0.89	0.78	<0.64	<0.64	<0.64	<0.64	<0.64
1,1,1-Trichloroethane	71-55-6	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1
Vinyl Chloride	75-01-4	<0.51	<0.51	<0.51	<0.51	<0.51	<0.51	<0.51	<0.51	<0.51	<0.51	<0.51	<0.51
Dichloromethane	75-09-2	0.86	<0.69	<0.69	<0.69	0.74	<0.69	<0.69	<0.69	<0.69	1.21	<0.69	<0.69
1,1-Dichloroethane	75-34-3	<0.81	<0.81	<0.81	<0.81	<0.81	<0.81	<0.81	<0.81	<0.81	<0.81	<0.81	<0.81
1,1-Dichloroethene	75-35-4	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79
Chlorodifluoromethane	75-45-6	<0.71	<0.71	<0.85	<0.85	<0.71	<0.71	<0.71	<0.71	<0.71	<0.71	<0.71	<0.71
Trichlorofluoromethane	75-69-4	<1.1	<1.1	1.20	<1.1	1.80	1.70	1.20	1.20	1.30	1.20	1.10	1.20
Dichlorodifluoromethane	75-71-8	1.78	1.79	2.22	2.11	2.65	2.21	2.28	2.41	2.31	2.33	2.18	2.25
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5
2-Methyl Butane	78-78-4	4.47	2.60	2.15	2.90	2.72	2.51	3.51	2.76	2.73	3.00	0.63	0.93
1,2-Dichloropropane	78-87-5	<0.92	<0.92	<0.92	<0.92	<0.92	<0.92	<0.92	<0.92	<0.92	<0.92	<0.92	<0.92
MEK	78-93-3	2.42	1.35	1.78	1.33	2.21	2.11	1.96	1.41	3.04	1.70	<0.59	<0.59
Trichloroethene	79-01-6	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1
Naphthalene	91-20-3	<2.6	<2.6	<2.6	<2.6	<2.6	<2.6	<2.6	<2.6	<2.6	<2.6	<2.6	<2.6
o-Xylene	95-47-6	0.92	<0.87	<0.87	<0.87	<0.87	<0.87	<0.87	<0.87	<0.87	0.90	<0.87	<0.87
1,2-Dichlorobenzene	95-50-1	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2
1,2,4-Trimethylbenzene	95-63-6	<0.98	<0.98	<0.98	<0.98	1.04	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98
3-Methyl Pentane	96-14-0	<0.70	<0.70	<0.70	<0.70	0.73	<0.70	<0.70	<0.70	<0.70	<0.70	<0.70	<0.70
p-Cymene	99-87-6	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1
Ethyl Benzene	100-41-4	0.96	<0.87	1.80	1.58	1.14	0.94	<0.87	<0.87	<0.87	0.94	<0.87	<0.87
Styrene	100-42-5	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85
1,4-Dichlorobenzene	106-46-7	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2
1,2-Dibromoethane	106-93-4	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5
1,2-Dichloroethane	107-06-2	<0.81	<0.81	<0.81	<0.81	<0.81	<0.81	<0.81	<0.81	<0.81	<0.81	<0.81	<0.81
2-Propenenitrile	107-13-1	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43
2-Methyl Pentane	107-83-5	1.03	<0.70	<0.70	<0.70	0.75	<0.70	<0.70	<0.70	<0.70	0.78	<0.70	<0.70
MIBK	108-10-1	<0.82	<0.82	<0.82	<0.82	<0.82	<0.82	<0.82	<0.82	<0.82	<0.82	<0.82	<0.82
m/p-Xylene	108-38-3/ 106-42-3	2.90	<1.7	<1.7	<1.7	1.80	1.80	<1.7	<1.7	1.90	2.60	<1.7	<1.7
1,3,5-Trimethylbenzene	108-67-8	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98
Toluene	108-88-3	3.94	1.94	1.73	1.70	2.50	2.65	1.77	1.54	5.57	6.95	0.90	1.14
Chlorobenzene	108-90-7	<0.92	<0.92	<0.92	<0.92	<0.92	<0.92	<0.92	<0.92	<0.92	<0.92	<0.92	<0.92
Hexane	110-54-3	1.05	<0.70	<0.70	<0.70	1.03	0.86	<0.70	<0.70	0.83	0.87	<0.70	<0.70
Cyclohexane	110-82-7	1.58	1.21	<0.69	<0.69	1.52	0.78	<0.69	<0.69	2.37	0.88	<0.69	<0.69
Nonane	111-84-2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,4-Trichlorobenzene	120-82-1	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5
Tetrachloroethene	127-18-4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4
Ethyl Acetate	141-78-6	0.93	<0.72	<0.72	<0.72	0.75	<0.72	<0.72	<0.72	<0.72	<0.72	<0.72	<0.72
Heptane	142-82-5	<0.82	<0.82	<0.82	<0.82	<0.82	<0.82	<0.82	<0.82	<0.82	<0.82	<0.82	<0.82
1,2-Dichloroethene (Cis)	156-59-2	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79
1,2-Dichloroethene (Trans)	156-60-5	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79
1,2,3-Trimethylbenzene	526-73-8	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98
3-Methyl Hexane	589-34-4	<0.82	<0.82	<0.82	<0.82	<0.82	<0.82	<0.82	<0.82	<0.82	<0.82	1.57	1.71
o-Ethyl Toluene	611-14-3	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98

TSP and Metals – May 12, 2016 to September 24, 2016

Sample Date:			**12-May-16**		**24-May-16**		**5-Jun-16**		**17-Jun-16**		**29-Jun-16**		**11-Jul-16**	
Location:			**North**	**South**	**North**	**South**	**North**	**South**	**North**	**South**	**North**	**South**	**North**	**South**
Media ID:			NTSP-1	STSP-1	NTSP-2	STSP-2	NTSP-3	STSP-3	NTSP-4	STSP-4	NTSP-5	STSP-5	NTSP-6	STSP-6
Duration (min):			1389	1399	1461	1393	1422	1447	1437	1425	1405	1414	1399	1400
Sample Volume (m^3):			1827	1824	1724	1616	1781	1703	1858	1667	1824	1695	1797	1649
Parameter	CAS No.	24-hr std sch 3 (µg/m^3)												
TSP	na	120	35	52	90	**166**	22	23	27	24	17	21	20	30
Lead	7439-92-1	0.5	0.01	0.00	0.01	0.01	nd	nd	nd	nd	nd	nd	0.00	nd
Manganese	7439-96-5	2.5	0.01	0.02	0.03	0.05	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.01
Nickel	7440-02-0	2	nd	0.00	0.00	0.01	nd	nd	nd	nd	nd	nd	nd	nd
Thallium	7440-28-0	na	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Tin	7440-31-5	10	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Antimony	7440-36-0	25	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Arsenic	7440-38-2	0.3*	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Barium	7440-39-3	10*	0.01	0.01	0.02	0.02	nd	0.00	0.00	0.00	0.01	0.00	0.00	0.01
Beryllium	7440-41-4	0.01	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Cadmium	7440-43-9	0.025	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Chromium	7440-47-3	1.5*	nd	nd	0.00	0.01	nd	nd	nd	nd	nd	nd	nd	nd
Cobalt	7440-48-4	0.1*	nd	nd	0.00	nd	nd	nd	nd	nd	nd	nd	nd	nd
Copper	7440-50-8	50	0.05	0.06	0.04	0.04	0.03	0.01	0.02	0.02	0.09	0.02	0.07	0.09
Vanadium	7440-62-2	2	nd	nd	nd	0.01	nd	nd	nd	nd	nd	nd	nd	nd
Zinc	7440-66-6	120	0.03	0.04	0.05	0.04	0.01	0.01	0.01	0.01	0.04	0.01	0.02	0.04
Selenium	7782-49-2	10*	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Iron	15438-31-0	4	0.58	0.85	1.37	3.10	0.13	0.15	0.15	0.12	0.34	0.12	0.18	0.34

Sample Date:			**23-Jul-16**		**4-Aug-16**		**28-Aug-16**		**9-Sep-16**		**21-Sep-16**		**24-Sep-16**	
Location:			**North**	**South**	**North**	**South**	**North**	**South**	**North**	**South**	**North**	**South**	**North**	**South**
Media ID:			NTSP-7	STSP-7	NTSP-8	STSP-8	NTSP-9	STSP-9	NTSP-10	STSP-10	NTSP-11	STSP-11	NTSP-12	STSP-12
Duration (min):			1417	1442	1410	1431	1411	1448	1404	1435	1391	1420	1451	1427
Sample Volume (m^3):			1828	1667	1806	1660	1833	1687	1827	1694	1834	1675	1958	1713
Parameter	CAS No.	24-hr std sch 3 (µg/m^3)												
TSP	na	120	23	20	24	39	15	15	26	26	26	37	15	18
Lead	7439-92-1	0.5	0.00	nd	0.00	0.00	0.00	0.00	0.00	nd	0.00	0.00	0.00	0.00
Manganese	7439-96-5	2.5	0.01	0.01	0.01	0.02	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00
Nickel	7440-02-0	2	nd	nd	nd	nd	nd	nd	0.00	nd	nd	nd	nd	nd
Thallium	7440-28-0	na	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Tin	7440-31-5	10	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Antimony	7440-36-0	25	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Arsenic	7440-38-2	0.3*	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Barium	7440-39-3	10*	0.01	0.00	0.00	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00
Beryllium	7440-41-4	0.01	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Cadmium	7440-43-9	0.025	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Chromium	7440-47-3	1.5*	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Cobalt	7440-48-4	0.1*	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Copper	7440-50-8	50	0.10	0.03	0.06	0.04	0.09	0.03	0.07	0.05	0.06	0.03	0.06	0.03
Vanadium	7440-62-2	2	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Zinc	7440-66-6	120	0.03	0.03	0.02	0.02	0.02	0.01	0.02	0.02	0.02	0.02	0.02	0.02
Selenium	7782-49-2	10*	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Iron	15438-31-0	4	0.24	0.17	0.24	0.45	0.07	0.06	0.17	0.21	0.14	0.14	0.13	0.14

nd = below method detection limit * = Guideline nr = no record na = no applicable Sch 3 standard or guideline

Carbonyls – June 29, 2016 to August 28, 2016

		Sample Date:	29-Jun-16		23-Jul-16		28-Aug-16	
		Location:	**North**	**South**	**North**	**South**	**North**	**South**
		Duration (min):	1405	1414	1417	1442	1411	1448
		Volume (m^3)	1.40	1.41	1.42	1.46	1.43	1.46
Compound	**CAS No.**	24-hr std sch 3 (µg/m3)						
Formaldehyde	50-00-0	65	0.7	0.7	1.4	1.3	0.8	1.2
Acetone	67-64-1	11880	nd	nd	nd	nd	nd	nd
Acetaldehyde	75-07-0	500	nd	nd	nd	nd	nd	nd
Benzaldehyde	100-52-7	na	nd	nd	nd	nd	nd	nd
Acrolein	107-02-08	0.08	nd	nd	nd	nd	nd	nd
Glutaraldehyde	111-30-8	14*	nd	nd	nd	nd	nd	nd
Propionaldehyde (Propanal)	123-38-6	na	nd	nd	1.4	1.4	nd	nd
n-Butyraldehyde (n-Butanal)	123-72-3	na	nd	nd	nd	nd	nd	nd

nd = below method detection limit

* = Guideline

na = no applicable Sch 3 standard or guideline

Mercury – June 29, 2016 to August 28, 2016

		Sample Date:	29-Jun-16		23-Jul-16		28-Aug-16	
		Location:	**North**	**South**	**North**	**South**	**North**	**South**
		Duration (min):	1405	1414	1417	1442	1411	1448
		Particulate Volume (m^3)	1824	1695	1828	1667	1833	1687
		Vapour Volume (m^3)	1.039	0.962	0.935	0.988	1.016	1.014
Compound	CAS No.	24-hr Std Sch 3 (µg/m^3)						
Particulate Mercury	-	-	0.00002	0.00019	0.00002	0.00001	0.00007	nd
Vapour Mercury	7439-97-6	-	nd	nd	nd	nd	nd	nd
Total Mercury	-	2	0.00002	0.00019	0.00002	0.00001	0.00007	nd

nd = below method detection limit