Report No. | 51160

ORTECH
a Kontrol Technologies Company

Report:

Clean Harbors Environmental Services Inc.
Lambton Facility Ambient Air Monitoring 2021

Date: January 24, 2022



Report:

Clean Harbors Environmental Services Inc.
Lambton Facility Ambient Air Monitoring 2021

Submitted to: Mackenzie Costello
Senior Environmental Compliance Manager
Clean Harbors Canada
4090 Telfer Road, RR #1, Corunna, Ontario N0N 1G0
Tel: (519) 864-3890
E-mail: costello.mackenzie@cleanharbors.com

Prepared by: Terry Lam, Senior Project Manager
ORTECH Consulting Inc.
1133-C Vanier Road, Sarnia, Ontario N7S 3Y6
Tel: (519) 336-3327
E-mail: ortech@ortechsarnia.ca

Reviewed by: Hank Van Bakel, President
ORTECH Consulting Inc.
804 Southdown Road, Mississauga, Ontario L5J 2Y4
Tel: (905) 822-4120, Ext. 628
Email: hvanbakel@ortech.ca

Reprt No.: 51160
41 pages, 4 Appendices

Revision History

Version	Date	Summary Changes/Purpose of Revision
1	January-13-2022	Draft to client for review
2	January-24-2022	Minor formatting changes

Table of Contents

Figures and Tables

Page

1. INTRODUCTION

Clean Harbors Environmental Services Inc. (Clean Harbors) has been conducting an annual ambient air fenceline monitoring program spanning more than twenty (20) years at its Lambton Facility (the Facility) near Corunna, Ontario. The objective of the program is to ensure that potential contaminant releases from the Facility's ongoing operations are within accepted regulatory and guideline limits. The monitoring program includes a series of measurements for a number of speciated vapor and particulate constituents in accordance with the monitoring plan prepared by ORTECH in 2015 (the 2015 Plan) [1]. A copy of the 2015 monitoring plan is attached to this report in APPENDIX A for reference.

This report provides a brief overview of monitoring activities and presents the results of the 2021 monitoring program and follows the requirements of an annual report for non-continuous monitoring in accordance with the Operations Manual for Air Quality Monitoring in Ontario (the Manual)[2].

2. MAP SHOWING THE LOCATION OF EMITTING SOURCES, PROPERTY BOUNDARIES, MAJOR STRUCTURES AND MONITORING STATIONS

The required map showing the locations of the monitoring stations (sites) is provided in Figure 1.

As the South Site is located some distance away a second figure, Figure 2 is provided to show the location of the monitoring stations in relation to the Facility.

Finally, Figure 3 shows the location of the Moore Line monitoring station, run by the Sarnia Lambton Environmental Association (SLEA) which provides the meteorological data for the monitoring program.

The North Site is situated on the Facility's north berm.

The South Site is situated on a third-party host's property. Due to restrictions on equipment placement required by the host, the monitors are required to be set-up in close proximity to an on-site building and corn field. This means that the setback distances required by the Manual were not able to be achieved for the South Site.

Photos of the monitoring locations during the 2021 monitoring program are provided in Table 1 and Table 2 for the North and South sites respectively.

Figure 1 – Facility Plan

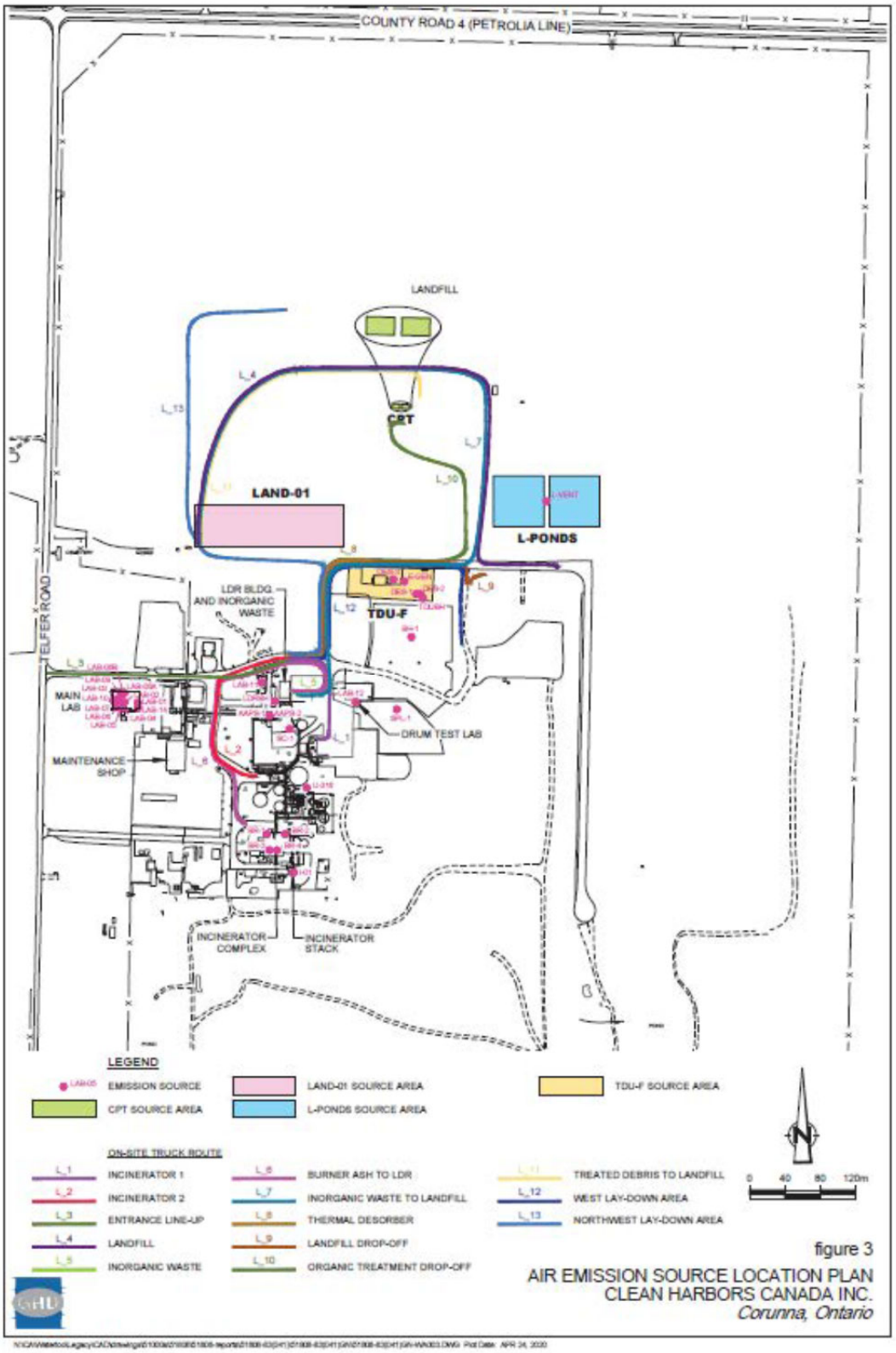
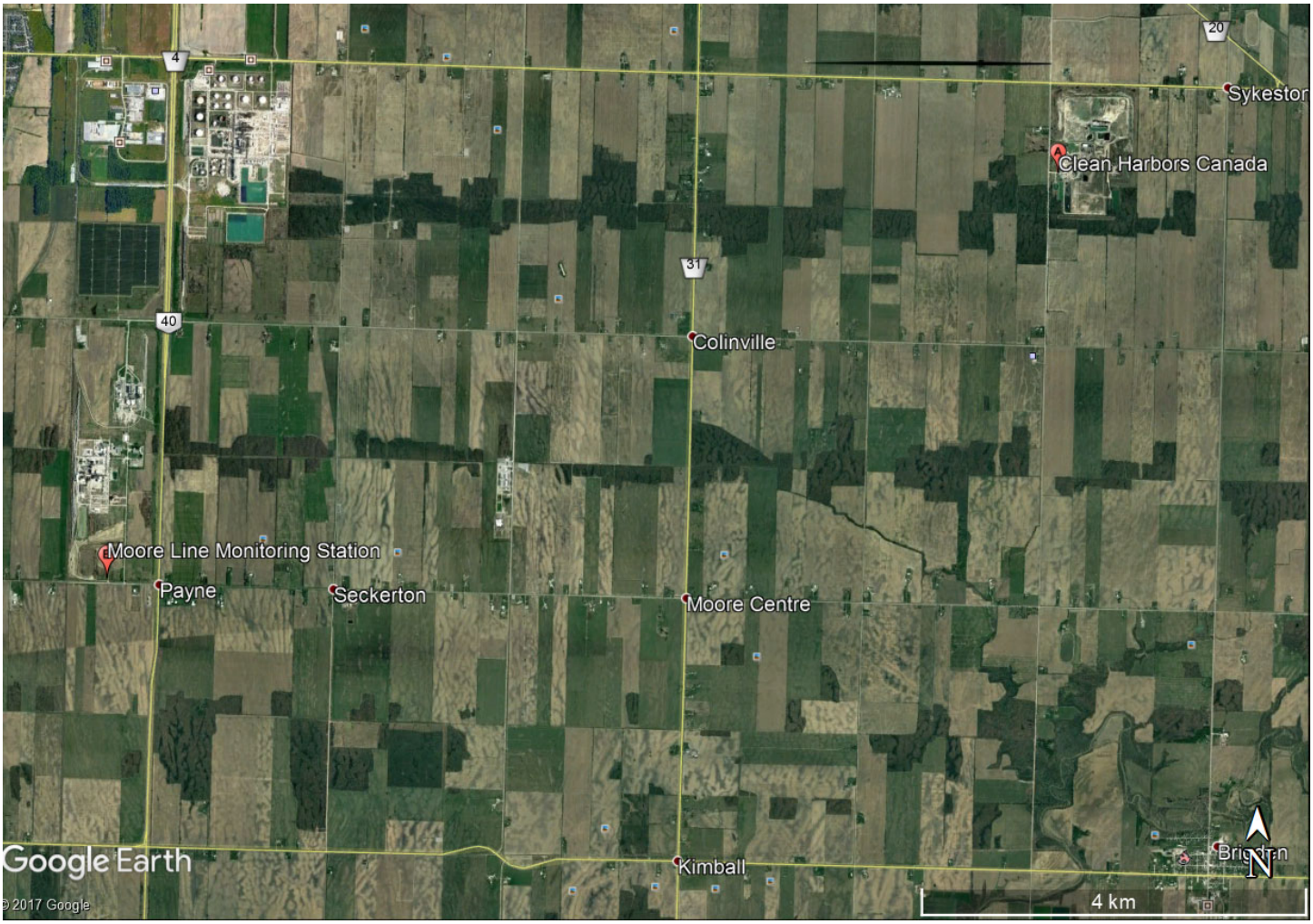


Figure 2 - Monitoring Locations

Figure 3 - Location of Moore Line Monitoring Station



ORTECH a Kontrol Technologies Company

Table 1 – Photos of North Monitoring Site (Taken August 2021)

From East Looking West

From West Looking East

From South Looking North

From North Looking South

Table 2 – Photos of South Monitoring Site (Taken July 2021)

From East Looking West

From West Looking East

Not available due to Corn Field

From South Looking North

From North Looking South

3. SUMMARY OF OVERALL OPERATIONS

This section summarizes overall monitoring operations for the 2021 monitoring program including a summary of parameters monitored, laboratory service providers, equipment and model information, sampling dates, calibrations, and a summary of issues and remedial actions.

Copies of all field records taken during the program are included electronically in APPENDIX D.

3.1 Summary of Parameters Monitored

The parameters monitored were consistent with the 2015 Plan with the exception that contaminants proposed for removal therein were still included in the program.

The list of the compounds, by type (volatile organic compounds (VOCs), particulates and metals, and carbonyls) included in the 2021 monitoring program are listed in
Table 3, Table 4, and Table 5 respectively. A summary of the methods used for the monitoring is provided in Table 6.

Table 3 - 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

Table 4 - Total Suspended Particulate (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	7440-41-7
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

Table 5 - Carbonyls

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

Table 6 – Summary of Analytical Methods Used in Monitoring

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

3.2 Laboratory Service Providers

ALS Environmental – Waterloo Laboratory (ALS) was the selected analytical laboratory for VOC analysis. ALS is accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) for US EPA TO-15 VOC analysis.

Bureau Veritas Laboratories (BV Labs) was the selected analytical laboratory for TSP & metals, mercury, and carbonyl analysis. BV Labs is accredited by the Standards Control Council of Canada (SCC) for gravimetric analysis of particulates, ICP analysis of metals, and analysis of mercury by CVAAS. BV Labs is accredited by the US National Environmental Laboratory Accreditation program (NELAP) through the Louisiana Environmental Lab Accreditation Program (LELAP) for analysis of carbonyls.

3.3 Equipment and Model Information

Information for the sampling equipment for VOCs, TSP & metals, and carbonyls is provided in the following sections.

3.3.1 Equipment for VOC Monitoring

VOCs are monitored using an 6L evacuated canister and pre-calibrated flow controller provided by the accredited laboratory for method TO-15 sampling. The canister and flow controller were cleaned by the lab. The flow controller provided is typically an ENTECH CS1200 mechanical flow controller.

The 24-hour sample is taken using a solenoid valve and timer combination assembled by ORTECH to enable unmanned opening of the can for midnight-to-midnight sampling. The solenoid valve and timer equipment also includes an enclosure for the can, timer, and valve as well as fittings and plumbing to connect the flow controller to the solenoid.

Over the course of the 2021 program in response to equipment issues encountered in the field, Nutech model 2701 automated sampling timers and metal tri-pod stands were used instead of the timed solenoid valves and enclosures for some sampling events.

3.3.2 Equipment for TSP & Metals Monitoring

TPS & metals (including particulate mercury) are monitored using hi-volume (hi-vol) samplers. The samplers used are manufactured by TISCH Environmental. The manufacturer confirmed that the equipment used is similar to TISCH's current TE-5170 model, with the exception that the mass flow controller, elapsed time indicator, and timer are built into a single module rather than separated as is the case on the contemporary version.

The hi-volume samplers do not have continuous flow recorders. This module was removed in order to allow the carbonyl and mercury sampler to plug into the hi-volume sampler's timed electrical outlet. Exit orifice pressure readings are taken using a digital manometer dedicated to the project for this purpose.

Due to an equipment failure, a rental TISCH TE-5170 was used at the South Site for a portion of the monitoring period. This unit had a continuous flow recorder which was used to verify flows prior and after sampling.

Particulates are sampled on quartz filters provided by the analytical laboratory.

3.3.3 Equipment for Mercy and Carbonyl Monitoring

Mercury and carbonyls are sampled using the same apparatus, consisting of a pump with two inlets, an adjustable rotameter for flow control for each inlet, and associated pluming and weatherproof enclosure.

Sample cartridges are attached directly to the inlet using a piece of rubber tubing as a connector. In this way, ambient air is drawn directly into the sampler without any upstream plumbing. As the sampler is not intended to be run in cold weather and does not have upstream piping that could experience condensation, the apparatus does not include an inlet heater.

The sampling apparatus does not include a timer. A timed sample is taken by leaving the sampler in the 'ON' position and connecting it to a timed power outlet on the hi-volume sampler (i.e. the sampler shares the hi-volume sampler's timer).

Mercury samples are collected on SKC 226-17-1A sorbent tubes provided by the analytical lab.

Carbonyl samples are collected on Sep-Pak DNPH-Silica sorbent cartridges provide by the analytical lab.

3.4 Sampling Frequency and Schedule

A series of concurrent 24-hour (midnight to midnight – eastern standard time) samples were taken at the two (2) monitoring locations (North Site and South Site) based on the twelve-day National Air Pollutant Surveillance (NAPS) cycle. The number of samples collected varied by the type of compound as shown in Table 7. Thirteen (13) VOC, TSP & metals samples were scheduled, as well as four (4) sets of mercury and carbonyl samples. This was slightly more than the number of samples required by the 2015 Plan which is twelve (12) VOC, TSP & metals samples and three (3) sets of mercury and carbonyl samples.

Although sampling typically starts at the beginning of May; in 2021 due to work being done at the Facility, power was not available until later in the month delaying the start of the sampling program. Ultimately a gas generator was needed to power the North Site for some of the sample events.

Although the sampling was intended to occur on NAPS days as noted in Table 7, a number of make-up days were required a result of equipment and other issues encountered. Additionally one sampling day was rescheduled to avoid the Labour Day holiday. A list of the actual sampling days included in the 2021 monitoring program as well as the groups sampled is provided in Table 8.

Table 7 – Planned Measurement Frequencies

Constituent	Frequency and Schedule
VOCs/TSP/Metals	12 sample days on the 12 day NAPS cycle beginning May 22, 2021.
Carbonyls and Mercury	Three sample days distributed over the period of May to September. Taken on a day when VOCs/TSP/Metal samples were collected

Table 8 – Actual Sampling Dates and Groups Sampled during Monitoring Program

Sampling Date	VOC	Particulate and Metals	Carbonyls and Mercury	NOTES
May 22, 2021	✓	discarded	-	Power to North Site provided by gas generator due technical issues with the power outlet. Generator was not on for retrieval so final Hi-Vol flow reading could not be taken. Particulate result discarded due to error found in Hi-Vol sampler calibration.
June 3, 2021	lost	discarded	-	South Site VOC sample lost as sampling solenoid failed to close at end of sample period. VOC sample set discarded. Particulate result discarded due to error found in Hi-Vol sampler calibration.
June 9, 2021	✓	-	-	Not a NAPS day. Make up sampling day for VOC samples lost on June 3rd.
June 15, 2021	lost	✓	-	South Site VOC timer solenoid did not open. VOC sample set was discarded.
June 27, 2021	✓	✓ (North Blank)	✓ (North Blank)	
July 9, 2021	✓	✓	-	Lab also analyzed duplicate can set as a back-up in case of timer failure, resulting in an extra result at the South Site (SVOC-05.1).
July 21, 2021	✓	✓ (South Blank)	✓ (South Blank)	
August 2, 2021	✓	✓	-	
August 14, 2021	✓	discarded	-	HI vol at South Site ran for 60 hours. Sample set was discarded and rerun on August 18th.
August 18, 2021	-	✓	-	Not a NAPS day. Make-up run for samples lost on August 14th. South Site hi-vol motor would not start when samples collected.
August 26, 2021	✓	✓ (North Blank)	✓ (north blank)	First run with rental at Hi-vol at South Site. Elapsed time indicator on North Site Hi-Vol was found to be non-functional.
September 8, 2021	✓	✓	-	Not a NAPS date, moved to September 8th (from 7th) to avoid Labour Day holiday.
September 19, 2021	✓ (south Lost)	✓	-	Despite -10 mmHg reading in the field, lab indicated South Site can was received at full vacuum.
October 1, 2021	✓ (north lost)	✓ (South Blank)	-	North Site VOC timer solenoid did not open.
October 7, 2021	✓	-	-	Make-up for samples lost on October 1.
October 13, 2021	✓	✓	-	Period extension for particulate / VOC samples lost in early June.
October 25, 2021	✓ (north Lost)	✓	-	Period extension for samples lost in early June. North Site VOC timer solenoid did not open.
November 6, 2021	✓	-	-	Make-up for VOC sample lost on October 25.

The 2015 Plan contains detailed information on the sample collection methodology used for the program. During the 2021 monitoring program, the following deviations from the 2015 Plan were made:

- The 2021 monitoring program included the full historical list of VOCs and Carbonyls rather than the plan's proposed list which would have removed several VOCs and Carbonyls from the program.
- The program started later than normal due to power supply issues.
- Multiple make-up days were scheduled, sometimes out of the NAPS schedule, to re-take samples that were lost due to equipment or other issues. Generally when one site failed to run for VOCs, neither sample was analyzed in favor of a make-up day for both samples so that each sample set has a result for the upwind and downwind site to facilitate comparison; however, towards the end of the program it was decided to analyze a result even if one sample was lost in addition to doing a make-up. This resulted in three (3) extra orphan VOC results.
- One sample day was moved off the NAPS schedule in order to accommodate the Labour Day holiday.
- The analytical laboratory was unable to report isopropyl alcohol in several VOC results due to suspected interference from isopropyl alcohol used as a disinfectant to address COVID-19 concerns in the lab. The lab advised that IPA should be removed from other reports as well. Refer to e-mail from the lab included in APPENDIX C. Accordingly, ORTECH has not included isopropyl alcohol in this report.
- Results for TSP, metals and particulate mercury, carbonyl, and mercury vapour are provided as total mass. These results are converted to concentrations using sample volumes calculated from field instrument records.
- Due to multiple reliability issues this year with the VOC timed solenoids and NUTECH 2701 sample timers, ORTECH began setting up some VOC samples in duplicate in the event that one of the timers did not function properly. The lab analyzed one duplicate on July 9 (sample SVOC-05.1) resulting in an extra result at the South Site for that sample day.

3.5 Calibrations

Flow controllers for VOC sampling are provided pre-calibrated by the analytical laboratory.

ORTECH's Hi-vol samplers were calibrated prior to the start of the sampling program using an NIST traceable calibration orifice rented from a third party. Calibration results were determined using a spreadsheet developed by ORTECH based on the equations in US EPA 40 CFR Part 50 Appendix B.

Sample volumes for the ORTECH's Hi-vol samplers were calculated using the calibration results and an exit orifice manometer reading taken in the field.

The Hi-vol rented for part of the period for use at the South Site was calibrated by the equipment owner, Rotek Environmental. In accordance with the instructions from Rotek, a chart recording reading of 42 CFM corresponds to an actual flow rate of 40 CFM. Accordingly, if this reading was observed a flow rate of 40 CFM was assumed in calculations.

Carbonyl and mercury sampler rotameters were calibrated using an NIST traceable Drycal flow meter.

Sample volumes for the mercury and carbonyl samples were calculated using the calibration curve and the rotameter reading taken in the field.

3.6 Summary of Issues and Remedial Actions

After the first two sample days, it was discovered on review that the Hi-vol samplers had not been properly disconnected from the mass flow controller during the calibration making the results invalid. ORTECH re-calibrated the Hi-vol samplers.

Five (5) times over the course of the program one of the VOC samples failed to collect due to problems with the timed solenoids or NUTECH 2701 timers (brought in to replace older timed solenoid assemblies) sticking open or closed. Towards the end of the period ORTECH started setting up some samples in duplicate so a valid sample would still be collected if one failed.

On August 14th the South Site Hi-vol was found to have run for 60 hours. After attempting a re-run on August 18th the sampler did not start up for final flow measurement. The unit was removed for repair and refurbishment and replaced with a Hi-vol sampler rented from a third-party vendor which remained installed for the duration of the program.

The elapsed time indicator on the North Site Hi-vol failed on August 26th. It was decided to continue the sampling using the set timer as a time reference in order to continue the program without removing the equipment for repair.

3.7 Summary of Audits and Audit Outcomes

The 2021 program was not audited by the MECP.

4. INTERPRETATION OF RESULTS

4.1 Meteorological Data

Localized wind speed, direction and rainfall data were obtained from the 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. For periods were information from Moore Line was not available, hourly data from Environment and Climate Change Canada's Sarnia Climate station near Chris Hadfield airport was substituted.

The location of the Moore Line monitoring station with respect to the Facility is shown in Figure 3.

The Moore Line station was out of service on October 13th, wind data for this date is taken from SLEA's LaSalle Line station, while remaining parameters were taken from Environment and Climate Change Canada (ECCC)'s Sarnia Climate Station (ID: 6127519) where available[3].

Moore Line data was also not available for October 25th at that time, although it was subsequently provided to ORTECH. Calculations for that day requiring met data were made using the SLEA LaSalle Line and ECCC data available at the time the calculations were completed.

The 24-hour average meteorological conditions that occurred during the selected monitoring days are summarized in Table 9 and Figure 4. Specific information for each hour of each monitoring day is provided electronically in APPENDIX D.

The desired wind direction is for the wind to be blowing from the southwest to southeast quadrant, which results in the monitoring instruments aligning upwind and downwind of operations. For the 2021 monitoring program, there were four days where this wind direction occurred for a significant (12 or more) number of hours:

- June 27 .....23 hours
- June 3 .....22 hours
- November 6 .....19 hours
- October 1 .....15 hours

Daily mean temperatures ranged from 12 to 27°C and daily average wind speeds ranged from 6 to 22.7 kph. Rainfall was measured on four sampling days. Rain data was not available from Moore Line for October 25th and November 6th. ECCC's Sarnia Climate Station does not measure rainfall so no such data is available for October 13th. Wind roses for the specific monitoring days (i.e., 24-hour frequencies) are shown in Figure 4.

Table 9 - Summary of 24-Hour Meteorological Data for Individual Monitoring Days

Sample Date	Prevailing Wind Direction	Average Wind Speed (km/h)	Relative Humidity (%)	Average Temperature (°C)	Pressure (mbar)	Total Rainfall (mm)	SE-SW Quadrant (Hours)
May 22	WSW	8.8	75	22	1023	0.00	10
June 03	SSW	7.0	86	19	1010	0.00	22
June 09	E	6.5	82	24	1016	2.50	9
June 15	N	18	66	16	1014	0.00	0
June 27	SSW	23	77	27	1013	0.00	23
July 09	N	14	81	17	1014	0.00	0
July 21	NNE	19	66	19	1017	0.00	0
August 02	NNW	6.1	76	19	1017	0.00	2
August 14	NNE	11	72	19	1021	0.00	1
August 18	NNE	8.3	80	23	1017	0.00	0
August 26	N	10	88	25	1018	0.00	6
September 08	W	13	70	20	1005	1.50	0
September 19	SE	7.2	72	18	1021	0.00	7
October 01	S	8.2	79	15	1022	0.25	15
October 07	E	6.9	94	20	1020	0.50	3
October 13	SW	9.2	77	19	994	Not available	7
October 25	NE	22	95	15	1009	Not available	0
November 06	S	12	77	12	1001	Not available	19

Notes: 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.
Highlighted data comes from SLEA LaSalle Line (wind) and Environment Canada and Climate Change's Sarnia Climate Station (other parameters) [4]. Note that SLEA pressure data is reported as MSLP while ECCC pressure data is reported as station pressure. ECCC does not provide rainfall measurements.
Prevailing wind direction is the closest direction to the resultant wind vector for the day as computed by WRPLOT View software. *"The resultant vector is the dominant direction or mean direction of the vectors. This is calculated by computing the vector resultant or vector sum of the unit vectors that represent the various directions in the data. The magnitude of the resultant vector represents the mean resultant vector length." Wind speed is an arithmetic average.*

Figure 4 – Wind Roses for Sampling Periods (24-hrs, midnight to midnight)

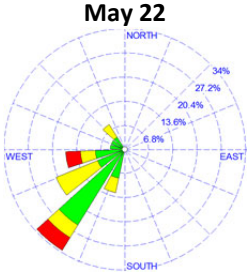
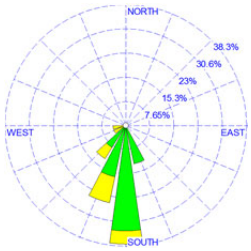
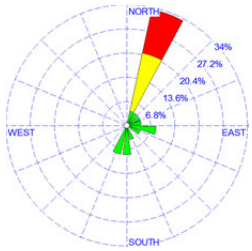
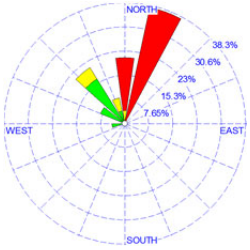
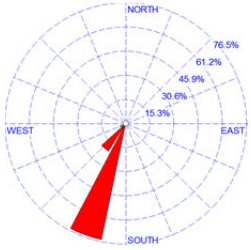
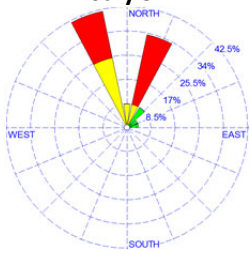
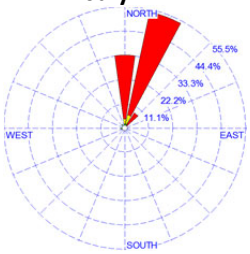
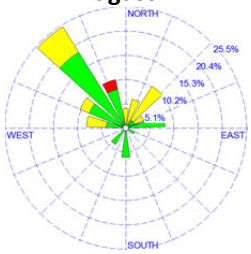
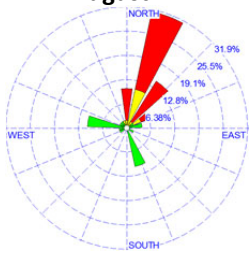
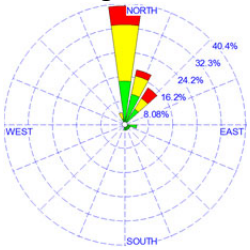
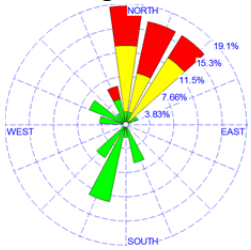
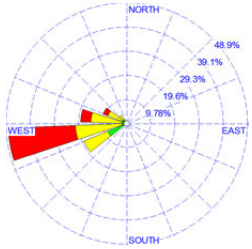
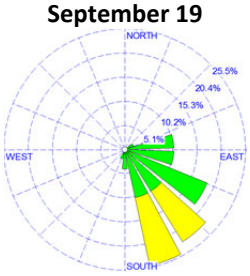
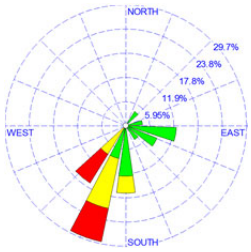
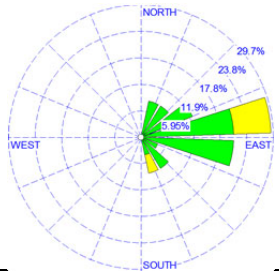
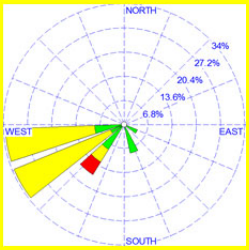
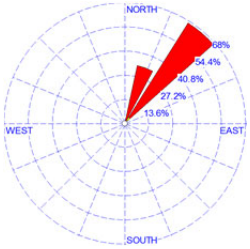
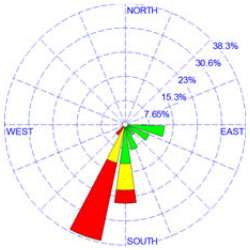
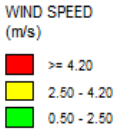
May 22 	**June 3** 	**June 9** 
June 15 	**June 27** 	**July 9** 
July 21 	**August 2** 	**August 14** 
August 18 	**August 26** 	**September 8** 
September 19 	**October 1** 	**October 7** 

Figure 4 (Cont.) - Wind Roses for Sampling Periods (24-hrs, midnight to midnight)

October 13	October 25	November 6
		
	Highlighted windrose based on data from SLEA LaSalle Line station.	

4.2 Data Validation and Editing

This section discusses the validity of the samples taken with respect to the criteria in sections 2.4.2 and Table 7 of the Manual.

The complete annual program in accordance with the 2015 Plan on the 12-day NAPS cycle results in twelve (12) samples per year for VOCs, TSP, and metals, and three (3) mercury and carbonyl samples per year, generally between May and September. This number of samples is not sufficient to provide a valid annual average in accordance with the requirements of the Manual. Averages presented in this report should be interpreted as averages for the monitoring period rather than the whole year. Note that for the 2021 year specifically, due to a late start and a number of make-up days required due to equipment and other issues, the period was altered from late May to early November.

For 2021, aside from isopropyl alcohol (as discussed previously and below), only two particulate samples were invalidated. Additional samples were taken to replace these invalidated results.

Where samples were lost due to equipment failures, make up samples were taken in order to maintain the correct number of valid samples. For VOCs, some additional sampling days were completed to avoid orphaned samples (e.g. sample days with only an upwind or downwind result). As a result, despite equipment reliability issues, 11 sample days with both upwind and downwind results were achieved. Additionally, 1 duplicate sample was inadvertently analyzed and two sample days had only an upwind or downwind result.

A comparison of the total number of samples required by the 2015 Plan and the number of valid samples taken in 2021 is provided as Table 10. As shown, 100% data validity was maintained.

Table 10 - Planned Samples and Valid Samples

Compound Group	Number of Samples Per 2015 Plan Schedule	2021 Program Actual Number of Valid Samples	%Valid
VOCs	12 North 12 South	12 North 14 South	>100
TSP and Metals	12 North 12 South	12 North 12 South	100
Mercury	3 North 3 South	3 North 3 South	100
Carbonyls	3 North 3 South	3 South 3 South	100

Regarding isopropyl alcohol, ALS excluded this compound from several reported results and ultimately informed ORTECH that this compound should not be reported due to false positives from isopropyl alcohol used at the lab for cleaning activities during the COVID-19 pandemic. Refer to e-mail from the lab included in APPENDIX C. Accordingly, ORTECH has invalidated all isopropyl alcohol results and this compound has 0% valid data for the 2021 year.

Specific data validation and editing considerations are provided in Table 11, Table 12, and Table 13.

4.2.1 Assessment of Field Blanks

The field blanks were consistently non-detect for the 2021 year.

Field blank results did not result in any data edits.

ORTECH a Kontrol Technologies Company

Table 11 - Data Editing and Validation for TSP, Metals, and Mercury using Hi-Vol Samplers

Criteria	Requirements	Comments	Edit Actions / Data Invalidated
Station Siting	Continues to meet requirements of the Manual	South Site does not meet setback requirements due to restrictions imposed by property owner. This has been consistent for the past several monitoring years.	None.
24-hour sample duration	Between 21.6 – 26.4 Hours	Sample ID NTSP-08 had its elapsed time indicator (ETI) indicate a sample length of ~44 hours; however it was noted on next event that the North Site Hi-vol ETI had failed and was not advancing at all – so this reading was assumed to not be reliable. A sample time of 24 hrs was used when calculating concentrations for this sample. As the North Site Hi-vol ETI was not functioning, a sample time of approximately 24 hours based on the timer settings was assumed for the duration of the program (ID's NTSP-10, NTSP-11, NTSP-12, NTSP-14, and NTSP-15)	None.
24-hour sample volume	Between 1468 m^3 – 1794 m^3 10% tolerance around design flow of 1631m^3	Sample IDs NTSP-06 on July 21st and STSP-14 on October 13th had sample volumes of approximately 1400 and 1200 respectively. South Site Hi-vol sampler motor would not start on August 18th to get final flow reading, so a final flow equal to initial flow was assumed. The volume for this sample (STSP-08) could be over or underestimated. South Site Hi-vol sampler flow recorder disc did not rotate due to condensation on October 1st. 40 CFM flow rate was assumed for that sample (ID STSP-12).	None. As results did not appear anomalous it was decided not to exclude the samples from the record.
Other	E.g. torn filters, observations on site that may impact data validity, data outliers	Due to an error in the Hi-vol calibration, the sample flow rates and mass flow controller settings may have been incorrect for the first two sample sets. Make-up samples were taken to replace these results. Lab noted sampled ID NTSP-09 filter was received with a tear and loose material in the packaging.	Sample IDs NTSP-01, NTSP-02, STSP-01 and STSP-02 were invalidated and not included in summary statistics. It was decided not to invalidate NTSP-09 as results did not appear anomalous.

ORTECH a Kontrol Technologies Company

Table 12 - Data Validation and Editing for VOCs by Evacuated Canister

Criteria	Requirements	Comments	Edit Actions / Data Invalidated
Vacuum Pressures	Initial pressure -29 in Hg +/- 3 in Hg. Final pressure between -5 and -10 in Hg.	Sample IDs: SVOC-2.1 June 9: -2 in Hg NVOC-04 June 27: -4 in Hg NVOC-06 July 21: -4 in Hg SVOC-08 August 14: -3.5 in Hg SVOC-09 August 26: -3.5 in Hg SVOC-14 October 13: -3 in Hg	None. Flow may have decreased before sampling period ended. Results were not found to be anomalous.
Other	E.g. observations on site that may impact data validity, data outliers, issues with flow controllers or timers	Lab advised isopropyl alcohol should not be reported due to false positives from isopropyl alcohol used for cleaning activities during the COVID-19 pandemic.	All isopropyl alcohol results were invalidated.

Table 13 - Mercury and Carbonyls By Active Sampling

Criteria	Requirements	Comments	Edit Actions / Data Invalidated
24-hour sample volume	Total volume within +/- 10% of design volumes of 1.44 m^3 for carbonyls and 0.1 m^3 for mercury.	Sample IDs: SM-06 July 21: -13% of design flow NC-09 August 26: -44% of design flow SC-09 August 26: -26% of design flow	None; however last two carbonyl sample volumes were significantly lower than design (Final flow dropped off from initial set point) and are used with caution. All results were non-detect which is normal for this site.
Other	E.g. observations on site that may impact data validity, data outliers, issues with equipment	Lab noted that sample IDs NC-04 and SC-04 were received late and ice packs included during shipping had melted. Lab noted that sample IDs NC-04 and SC-04 were analyzed past hold time.	None – the blank associated with this sample set did not show concentrations higher than detection limit, so interfering background contaminants are unlikely to have had an impact.

5. RESULTS AND DISCUSSION

The concurrent north and south twenty-four hour sampling commenced at 0000 hours on May 22, 2021 (Eastern Standard Time) and ended on 2400 hours November 6, 2021. The sampling schedule generally followed the NAPS schedules; however, adjustments were made to accommodate make-up samples needed due to equipment issues and to avoid a holiday. A summary of the sample dates and which compound groups were included on each day is identified in Table 8.

5.1 Summary Statistics

This section provides the summary statistics required by the Manual, with the exception of number of valid results and % valid data which are presented in Section 4.2.

For computing statistics, compounds that were not detected were considered to have a value of half the detection limit. If a detection limit provided by the lab was presented on a mass basis, it was adjusted by the sample volume to provide an equivalent value in µg/m^3.

Tabulated summaries of the measured results are indicated in the report text with all individual measured values and calculated sample volumes provided in the appendices.

The maximum observed concentrations for target compounds were compared with available 24-hour standards and guidelines on the MECP's Air Contaminants Benchmark List (ACB) [4]. If no standard or guideline was available, the 24-hour Ontario Ambient Air Criteria (AAQC) [5] for that contaminant was used to compare, if available. ACB standards, guideline, or MECP AAQC are collectively referred to in this report as Limits. A summary of the applicable 24-hour limits is presented in Table 14.

5.2 VOCs

Summary statistics for VOCs are presented in Table 15.

All VOCs had a maximum measured concentration less than any applicable 24-hour limits.

2-ethyl toluene was not detected in any samples during the monitoring period, but due to its high method detection limit relative to the 24-hour limit, has the highest reported maximum concentration as a % of the applicable limit at 0.49 µg/m^3 (98% of the 0.5 µg/m^3 24-hour limit). Carbon tetrachloride, chloroform, 2-propenenitrile, vinyl chloride, 1,2-dibromomethane, and 1,2-dichloroethane were also not detected but had similarly significant reported maximums with respect to the applicable 24-hour limits due to high relative method detection limits.

Benzene was the detected compound observed at the highest percentage of an applicable limit with a maximum concentration of 0.77 µg/m^3 (33% of the 2.3 µg/m^3 24-hour limit) on May 22nd at the North Site under predominantly WSW winds. Benzene was not detected at the South Site that day. Benzene was detected only twice at the North Site and not at all at the South Site during the 2021 monitoring program. The other benzene detection occurred on October 13th with an observed concentration of 0.70 µg/m^3 under predominantly SW winds.

Aside from benzene, the detected VOC measured at the highest percentage of a 24-hour limit was Naphthalene at a concentration of 3 µg/m^3 (13% of the 24-hour limit of 22.5 µg/m^3).

Thirty (30) of the forty-eight (48) VOC compounds had reported maximum concentrations less than 1% of their applicable 24-hour limits at both monitoring sites.

Three (3) compounds did not have an applicable 24-hour limit.

As discussed previously, isopropyl alcohol was not assessed as the lab was unable to report results for this compound.

5.3 Particulate and Metal Component Concentrations

A summary of the measured Total Suspended Particulate (TSP) and associated elemental concentrations is shown in Table 16. Note that for TSP only, the mean is calculated as a geometric mean rather than an arithmetic mean in accordance with the Manual.

Note that May 22 and June 3 samples were not invalidated. While they are provided in APPENDIX B for completeness, they are not considered in the discussion of results.

TSP concentrations reported at the North Site were usually similar to those of the South Site throughout the 2021 monitoring program, with the exception of October 1; which saw higher concentrations at the North Site under S winds. This was also the day with the highest concentration sampled during the monitoring program at the North Site, 70 µg/m^3 (58% of the 24-hour limit of 120 µg/m^3). The concentration at the South Site on that day was 47 µg/m^3 (40% of the 24-hour limit of 120 µg/m^3).

As shown in Table 16 and APPENDIX B, nine of the elemental constituents of TSP (thallium, tin, antimony, arsenic, beryllium, cadmium, chromium, vanadium, and selenium) were consistently non-detectable at both monitoring sites. Barium, Copper, Iron, Manganese, and Zinc were consistently detected in the samples. Cobalt, Nickel and Lead were sometimes present at detectable concentrations.

Iron was present at the highest percentage of an applicable limit at a maximum of 0.89 µg/m^3 (22% of the 24-hour limit of 4 µg/m^3). Note that the comparison for elemental iron in these data against the standard level of metallic iron is conservative since only a fraction of the measured element could be expected to comprise metallic iron (i.e., particulate iron is likely to exist in other forms such as oxides, salts, silicates, etc.).

Of the remaining detected metals, Manganese, Barium, Cobalt, Copper, Zinc, Nickel, and Lead were present in concentrations less than 5% of any applicable limits.

5.4 Carbonyl Concentrations

The measured speciated carbonyl concentrations are summarized in Table 14. Individual daily levels are shown in APPENDIX B. No carbonyl compounds were detected during the 2021 monitoring program; however, the detection limits for acrolein were higher than the MECP limit for that compound so when reported at ½ MDL for a non-detect exceedances of 1.31 µg/m^3 (328% of the 24-hour limit of 0.4 µg/m^3) at the South Site and 1.27 µg/m^3 (316% of the 24-hour limit of 0.4 µg/m^3) at the North Site. ORTECH recommends opening a discussion with the MECP to determine if there is a need for a more refined approach to handling non-detects of this compound.

5.5 Mercury Concentrations

Both particulate and vapour phase mercury components were measured as shown in Table 18, with individual daily results in Appendix B.

Vapour phase mercury was detected in one (1) sample at the South Site and two (2) samples at the North Site. Particulate mercury was detected in two (2) samples at both sites.

The "total" mercury value was calculated by adding the particulate mercury captured on the particulate filter and the acid extractable (Vapour phase) mercury captured in the carulite tube for each mercury sample day. A detection limit is not applicable for total mercury as it is an aggregated concentration. Total mercury was considered 'detected' if either of the constituent phases was detected.

There is a significant difference in the average detection limits between the particulate mercury (1.26E-05 µg/m^3) and vapour phase mercury (2.49E-02 µg/m^3) tests. This means that reported vapour mercury concentrations at ½ MDL for non-detects dominate the reported total mercury concentrations even when vapour mercury is not detected.

The combined results at the maximum concentration represented only a small percentage (1.7%) of the total mercury 24-hour limit.

ORTECH a Kontrol Technologies Company

Table 14 - Summary of Available 24-hour Limits for Target Compounds

Compound	CAS NO.	Limit (µg/m^3)	Limiting Effect	Reference	Notes
Carbon Tetrachloride	56-23-5	2.4	(health)	Standard	
Isopropyl Alcohol	67-63-0	7,300	(health)	Standard	
Acetone	67-64-1	11,880	(health)	Standard	
Chloroform	67-66-3	1	(health)	Standard	
Benzene	71-43-2	2.3	(health)	AAQC	
1,1,1-Trichloroethane	71-55-6	115,000	(health)	Standard	
Vinyl Chloride	75-01-4	1	(health)	Standard	
Dichloromethane	75-09-2	220	(health)	Standard	
1,1-Dichloroethane	75-34-3	165	(health)	Standard	
1,1-Dichloroethene	75-35-4	10	(health)	Standard	
Chlorodifluoromethane	75-45-6	350,000	(health)	Guideline	
Trichlorofluoromethane	75-69-4	6,000	(health)	Guideline	
Dichlorodifluoromethane	75-71-8	500,000	(health)	Guideline	
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	800,000	(health)	Standard	
2-Methyl Butane	78-78-4	35500	(health)	SL-JSL	
1,2-Dichloropropane	78-87-5	2,400	Odour	Guideline	
MEK	78-93-3	1,000	(health)	Standard	
Trichloroethene	79-01-6	12	(health)	Standard	
Naphthalene	91-20-3	22.5	(health)	Guideline	
o-Xylene	95-47-6	730	(health)	Standard (xylenes)	
1,2-Dichlorobenzene	95-50-1	NA			
1,2,4-Trimethylbenzene	95-63-6	220	(health)	Standard	
3-Methyl Pentane	96-14-0	1750	Health	SL-JSL	
p-Cymene	99-87-6	50	Health	SL-JSL	
Ethyl Benzene	100-41-4	1,000	(health)	AAQC	
Styrene	100-42-5	400	(health)	Standard	
1,4-Dichlorobenzene	106-46-7	95	(health)	Standard	
1,2-Dibromoethane	106-93-4	3	(health)	Guideline	
1,2-Dichloroethane	107-06-2	2	(health)	Standard	
2-Propenenitrile	107-13-1	0.6	(health)	Standard	
2-Methyl Pentane	107-83-5	1750	Health	SL-JSL	
MIBK	108-10-1	1,200	(odour)	Guideline	
m/p-Xylene	108-38-3/106-42-3	730	(health)	Standard (xylenes)	
1,3,5-Trimethylbenzene	108-67-8	220	Health	Standard	
Toluene	108-88-3	2,000	Odour	Guideline	
Chlorobenzene	108-90-7	NA			
Hexane	110-54-3	7,500	(health)	Schd 3	
Cyclohexane	110-82-7	6,100	(health)	Schd 3	

ORTECH a Kontrol Technologies Company

Compound	CAS NO.	Limit (µg/m^3)	Limiting Effect	Reference	Notes
Nonane	111-84-2	5250	Health	SL-JSL	
1,2,4-Trichlorobenzene	120-82-1	400	Health	Guideline	
Tetrachloroethene	127-18-4	360	Health	Standard	
Ethyl Acetate	141-78-6	NA			
Heptane	142-82-5	11,000	Health	Standard	
1,2-Dichloroethene (Cis)	156-59-2	105	Health	Guideline	
1,2-Dichloroethene (Trans)	156-60-5	105	Health	Guideline	
1,2,3-Trimethylbenzene	526-73-8	220	Health	Standard	
3-Methyl Hexane	589-34-4	1535	Health	SL-JSL	
2-Ethyl Toluene	611-14-3	0.5	Health	SL-JSL	
Total Suspended Particulate <44 microns	-	120	Visibility	Standard	
Lead	7439-92-1	0.5	Health	Standard	
Manganese	7439-96-5	0.4	Health	Standard	
Nickel	7440-02-0	0.2	Health	AAQC	As suspended particulate matter
Thallium	7440-28-0	0.5	Health	SL-JSL	
Tin	7440-31-5	10	Health	Standard	
Antimony	7440-36-0	25	Health	Standard	
Arsenic	7440-38-2	0.3	Health	Guideline	
Barium	7440-39-3	10	Health	Guideline	
Beryllium	7440-41-7	0.01	Health	Standard	And beryllium compounds
Cadmium	7440-43-9	0.025	Health	Standard	
Chromium	7440-47-3	0.5	Health	Standard	
Cobalt	7440-48-4	0.1	Health	Guideline	
Copper	7440-50-8	50	Health	Standard	
Vanadium	7440-62-2	2	Health	Standard	
Zinc	7440-66-6	120	Particulate	Standard	
Selenium	7782-49-2	10	Health	Guideline	
Iron	15438-31-0	4	Health	Standard	For metallic Iron
Formaldehyde	50-00-0	65	Health	Standard	
Acetone	67-64-1	11,880	Health	Standard	
Acetaldehyde	75-07-0	500	Health	Standard	
Benzaldehyde	100-52-7	2	Health	SL-JSL	
Acrolein	107-02-8	0.4	Health	Standard	
Glutaraldehyde	111-30-8	14	Health	Guideline	
Propionaldehyde (Propanal)	123-38-6	NA			
n-Butyraldehyde (n-Butanal)	123-72-3	NA			
Particulate Mercury	-	Assessed as total mercury			
Vapour Mercury	7439-97-6				
Total Mercury	-	2	Health	Standard	

Note: Standard, Guideline, and SL-JSL refer to standards, guidelines, and screening limits presented in the ACB.

ORTECH a Kontrol Technologies Company

Table 15 - VOC Summary

Compound	CAS No.	24-hr Limit µg/m³	Average MDL µg/m³	South				North				South Sample Max as % of 24-hr Limit	North Sample Max as % of 24-hr Limit
				%> MDL	Mean	Min	Max	%> MDL	Mean	Min	Max		
Carbon Tetrachloride	56-23-5	2.4	1.30	0%	0.65	0.65	0.65	0%	0.65	0.65	0.65	27%	27%
Isopropyl Alcohol	67-63-0	7,300											
Acetone	67-64-1	11,880	3.19	100%	9.92	4.90	19.70	100%	13.72	7.80	27.30	0.17%	0.23%
Chloroform	67-66-3	1	0.98	0%	0.49	0.49	0.49	0%	0.49	0.49	0.49	49.0%	49.0%
Benzene	71-43-2	2.3	0.64	0%	0.32	0.32	0.32	17%	0.39	0.32	0.77	14%	33%
1,1,1-Trichloroethane	71-55-6	115,000	1.10	0%	0.55	0.55	0.55	0%	0.55	0.55	0.55	0.0%	0.0%
Vinyl Chloride	75-01-4	1	0.51	0%	0.26	0.26	0.26	0%	0.26	0.26	0.26	25.5%	25.5%
Dichloromethane	75-09-2	220	0.69	0%	0.35	0.35	0.35	25%	0.67	0.35	2.34	0.16%	1.1%
1,1-Dichloroethane	75-34-3	165	0.81	0%	0.41	0.41	0.41	0%	0.41	0.41	0.41	0.2%	0.2%
1,1-Dichloroethene	75-35-4	10	0.79	0%	0.40	0.40	0.40	0%	0.40	0.40	0.40	4.0%	4.0%
Chlorodifluoromethane	75-45-6	350,000	0.76	36%	0.60	0.36	1.08	50%	0.67	0.36	1.21	0.0%	0.0%
Trichlorofluoromethane	75-69-4	6,000	1.10	36%	0.80	0.55	1.30	42%	0.84	0.55	1.40	0.0%	0.0%
Dichlorodifluoromethane	75-71-8	500,000	0.99	100%	2.12	1.77	2.77	100%	2.05	1.87	2.27	0.0%	0.0%
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	800,000	1.50	0%	0.75	0.75	0.75	0%	0.75	0.75	0.75	0.0%	0.0%
2-Methyl Butane	78-78-4	35,500	0.75	86%	1.68	0.30	2.97	92%	1.49	0.76	2.25	0.0%	0.0%
1,2-Dichloropropane	78-87-5	2,400	0.92	0%	0.46	0.46	0.46	0%	0.46	0.46	0.46	0.0%	0.0%
MEK	78-93-3	1,000	0.59	93%	1.41	0.30	4.30	100%	2.43	0.65	4.89	0.43%	0.49%
Trichloroethene	79-01-6	12	1.10	0%	0.55	0.55	0.55	0%	0.55	0.55	0.55	4.6%	4.6%
Naphthalene	91-20-3	22.5	2.60	0%	1.30	1.30	1.30	8%	1.44	1.30	3.00	5.8%	13.3%
o-Xylene	95-47-6	730	0.87	0%	0.44	0.44	0.44	25%	0.59	0.44	1.21	0.1%	0.2%
1,2-Dichlorobenzene	95-50-1	NA	1.20	0%	0.60	0.60	0.60	0%	0.60	0.60	0.60	NA	NA
1,2,4-Trimethylbenzene	95-63-6	220	0.98	0%	0.49	0.49	0.49	8%	0.54	0.49	1.03	0.22%	0.5%
3-Methyl Pentane	96-14-0	1,750	0.70	0%	0.35	0.35	0.35	0%	0.35	0.35	0.35	0.02%	0.0%
p-Cymene	99-87-6	50	1.10	0%	0.55	0.55	0.55	0%	0.55	0.55	0.55	1.1%	1.1%
Ethyl Benzene	100-41-4	1,000	0.87	0%	0.44	0.44	0.44	33%	0.66	0.44	1.21	0.0%	0.1%
Styrene	100-42-5	400	0.85	0%	0.43	0.43	0.43	17%	0.63	0.43	2.39	0.1%	0.6%
1,4-Dichlorobenzene	106-46-7	95	1.20	0%	0.60	0.60	0.60	0%	0.60	0.60	0.60	0.6%	0.6%
1,2-Dibromoethane	106-93-4	3	1.50	0%	0.75	0.75	0.75	0%	0.75	0.75	0.75	25.0%	25.0%
1,2-Dichloroethane	107-06-2	2	0.81	0%	0.41	0.41	0.41	0%	0.41	0.41	0.41	20.3%	20.3%
2-Propenenitrile	107-13-1	0.60	0.43	0%	0.22	0.22	0.22	0%	0.22	0.22	0.22	35.8%	35.8%
2-Methyl Pentane	107-83-5	1,750	0.70	0%	0.35	0.35	0.35	8%	0.39	0.35	0.78	0.02%	0.04%
MIBK	108-10-1	1,200	0.82	0%	0.41	0.41	0.41	0%	0.41	0.41	0.41	0.0%	0.03%
m/p-Xylene	108-38-3/106-42-3	730	1.70	0%	0.85	0.85	0.85	33%	1.57	0.85	3.50	0.12%	0.5%
1,3,5-Trimethylbenzene	108-67-8	220	0.98	0%	0.49	0.49	0.49	0%	0.49	0.49	0.49	0.2%	0.2%
Toluene	108-88-3	2,000	0.75	93%	1.64	0.38	2.99	92%	3.58	0.38	7.42	0.15%	0.37%
Chlorobenzene	108-90-7	NA	0.92	0%	0.46	0.46	0.46	0%	0.46	0.46	0.46	NA	NA
Hexane	110-54-3	7,500	0.70	14%	0.42	0.35	0.99	25%	0.56	0.35	1.56	0.0%	0.0%
Cyclohexane	110-82-7	6,100	0.69	0%	0.35	0.35	0.35	0%	0.35	0.35	0.35	0.0%	0.0%
Nonane	111-84-2	5,250	1.00	0%	0.50	0.50	0.50	0%	0.50	0.50	0.50	0.0%	0.0%
1,2,4-Trichlorobenzene	120-82-1	400	1.50	0%	0.75	0.75	0.75	0%	0.75	0.75	0.75	0.2%	0.2%

Compound	CAS No.	24-hr Limit µg/m³	Average MDL µg/m³	South				North				South Sample Max as % of 24-hr Limit	North Sample Max as % of 24-hr Limit
				%> MDL	Mean	Min	Max	%> MDL	Mean	Min	Max		
Tetrachloroethene	127-18-4	360	1.40	0%	0.70	0.70	0.70	8%	0.78	0.70	1.70	0.2%	0.5%
Ethyl Acetate	141-78-6	NA	ere	14%	0.55	0.36	2.36	17%	0.59	0.36	1.93	NA	NA
Heptane	142-82-5	11,000	0.82	0%	0.41	0.41	0.41	0%	0.41	0.41	0.41	0.0%	0.0%
1,2-Dichloroethene (Cis)	156-59-2	105	0.79	0%	0.40	0.40	0.40	0%	0.40	0.40	0.40	0.4%	0.4%
1,2-Dichloroethene (Trans)	156-60-5	105	0.79	0%	0.40	0.40	0.40	0%	0.40	0.40	0.40	0.4%	0.4%
1,2,3-Trimethylbenzene	526-73-8	220	0.98	0%	0.49	0.49	0.49	0%	0.49	0.49	0.49	0.2%	0.2%
3-Methyl Hexane	589-34-4	1,535	0.82	0%	0.41	0.41	0.41	0%	0.41	0.41	0.41	0.03%	0.03%
2-Ethyl Toluene	611-14-3	0.50	0.98	0%	0.49	0.49	0.49	0%	0.49	0.49	0.49	98.0%	98.0%

na = no applicable limit

ORTECH a Kontrol Technologies Company

Table 16 - TSP & Metals Summary

Compound	CAS No.	24-hr Limit µg/m³	Average MDL µg/m³	South				North				South Sample Max as % of 24-hr Limit	North Sample Max as % of 24-hr Limit
				%> MDL	Mean	Min	Max	%> MDL	Mean	Min	Max		
Total Suspended Particulate	NA-TSP	120	3.11	100%	19.3	4.71	47.47	100%	23.8	7.26	69.89	39.6%	58.2%
Lead	7439-92-1	0.50	1.89E-03	25%	1.4E-03	8.9E-04	3.3E-03	50%	2.4E-03	8.4E-04	7.3E-03	0.7%	1.5%
Manganese	7439-96-5	0.40	6.31E-04	92%	4.5E-03	3.2E-04	1.2E-02	100%	6.8E-03	1.0E-03	2.0E-02	2.9%	5.0%
Nickel	7440-02-0	0.2	1.89E-03	8%	1.1E-03	9.0E-04	2.0E-03	17%	1.2E-03	8.4E-04	3.2E-03	1.0%	1.6%
Thallium	7440-28-0	0.50	6.31E-03	0%	3.2E-03	3.0E-03	4.2E-03	0%	3.1E-03	2.8E-03	3.6E-03	0.8%	0.7%
Tin	7440-31-5	10	6.31E-03	0%	3.2E-03	3.0E-03	4.2E-03	0%	3.1E-03	2.8E-03	3.6E-03	0.0%	0.0%
Antimony	7440-36-0	25	6.31E-03	0%	3.2E-03	3.0E-03	4.2E-03	0%	3.1E-03	2.8E-03	3.6E-03	0.0%	0.0%
Arsenic	7440-38-2	0.30	3.79E-03	0%	1.9E-03	1.8E-03	2.5E-03	0%	1.9E-03	1.7E-03	2.1E-03	0.8%	0.7%
Barium	7440-39-3	10	6.31E-04	92%	2.9E-03	3.2E-04	7.2E-03	100%	3.3E-03	9.2E-04	6.7E-03	0.1%	0.1%
Beryllium	7440-41-7	0.01	6.31E-04	0%	3.2E-04	3.0E-04	4.2E-04	0%	3.1E-04	2.8E-04	3.6E-04	4.2%	3.6%
Cadmium	7440-43-9	0.025	1.26E-03	0%	6.4E-04	6.0E-04	8.3E-04	0%	6.2E-04	5.6E-04	7.2E-04	3.3%	2.9%
Chromium	7440-47-3	0.5	3.16E-03	0%	1.6E-03	1.5E-03	2.1E-03	0%	1.6E-03	1.4E-03	1.8E-03	0.4%	0.4%
Cobalt	7440-48-4	0.10	1.26E-03	0%	6.4E-04	6.0E-04	8.3E-04	8%	7.8E-04	5.6E-04	2.5E-03	0.8%	2.5%
Copper	7440-50-8	50	3.16E-03	100%	6.3E-02	1.5E-02	2.1E-01	100%	5.5E-02	5.8E-03	1.2E-01	0.4%	0.2%
Vanadium	7440-62-2	2.0	3.16E-03	0%	1.6E-03	1.5E-03	2.1E-03	0%	1.6E-03	1.4E-03	1.8E-03	0.1%	0.1%
Zinc	7440-66-6	120	3.16E-03	100%	1.1E-02	3.5E-03	2.9E-02	100%	1.5E-02	5.8E-03	3.0E-02	0.0%	0.0%
Selenium	7782-49-2	10	6.31E-03	0%	3.2E-03	3.0E-03	4.2E-03	0%	3.1E-03	2.8E-03	3.6E-03	0.0%	0.0%
Iron	15438-31-0	4.0	3.16E-02	92%	1.4E-01	1.6E-02	3.8E-01	100%	2.5E-01	4.0E-02	8.9E-01	9.6%	22.4%

Means for Total Suspended Particulate are geometric. All other means are arithmetic
nd = below method detection limit
na = no applicable limit

ORTECH a Kontrol Technologies Company

Table 17 - Carbonyls Summary

Compound	CAS No.	24-hr Limit µg/m³	Average MDL µg/m³	South				North				South Sample Max as % of 24-hr Limit	North Sample Max as % of 24-hr Limit
				%> MDL	Mean	Min	Max	%> MDL	Mean	Min	Max		
Formaldehyde	50-00-0	65	7.08E+00	0%	3.6E+00	7.0E-01	6.6E+00	0%	3.5E+00	7.0E-01	6.3E+00	10.1%	9.7%
Acetone	67-64-1	11,880.00	1.79E+00	0%	9.1E-01	7.0E-01	1.3E+00	0%	8.8E-01	6.8E-01	1.3E+00	0.0%	0.0%
Acetaldehyde	75-07-0	500.00	1.79E+00	0%	9.1E-01	7.0E-01	1.3E+00	0%	8.8E-01	6.8E-01	1.3E+00	0.3%	0.3%
Benzaldehyde	100-52-7	2.0	1.79E+00	0%	9.1E-01	7.0E-01	1.3E+00	0%	8.8E-01	6.8E-01	1.3E+00	65.6%	63.3%
Acrolein (see note)	107-02-8	0.4	1.79E+00	0%	9.1E-01	7.0E-01	1.3E+00	0%	8.8E-01	6.8E-01	1.3E+00	328.0%	316.3%
Glutaraldehyde	111-30-8	14	1.79E+00	0%	9.1E-01	7.0E-01	1.3E+00	0%	8.8E-01	6.8E-01	1.3E+00	9.4%	9.0%
Propionaldehyde (Propanal)	123-38-6	NA	1.79E+00	0%	9.1E-01	7.0E-01	1.3E+00	0%	8.8E-01	6.8E-01	1.3E+00	NA	NA
n-Butyraldehyde (n-Butanal)	123-72-3	NA	1.79E+00	0%	9.1E-01	7.0E-01	1.3E+00	0%	8.8E-01	6.8E-01	1.3E+00	NA	NA

Note: Acrolein was not detected in any of the samples; however, the non-detect reporting requirements of half MDL exceed the MECP limit for this substance
na = no applicable limit

Table 18 - Mercury Summary

Compound	CAS No.	24-hr Limit µg/m³	Average MDL µg/m³	South				North				South Sample Max as % of 24-hr Limit	North Sample Max as % of 24-hr Limit
				%> MDL	Mean	Min	Max	%> MDL	Mean	Min	Max		
Particulate Mercury	NA-HG-TSP	NA	1.26E-05	67%	1.8E-05	6.0E-06	3.7E-05	67%	8.6E-05	7.2E-06	2.2E-04	NA	NA
Vapour Mercury	7439-97-6	NA	2.49E-02	33%	1.8E-02	1.2E-02	3.1E-02	67%	2.4E-02	1.2E-02	3.3E-02	NA	NA
Total Mercury	NA-THG	2	NA	NA	1.8E-02	1.2E-02	3.1E-02	NA	2.4E-02	1.2E-02	3.3E-02	1.5%	1.7%

na = no applicable limit

6. SUMMARY AND EVALUATION OF EXCEEDANCES

For the 2021 monitoring program, no exceedances were measured.

7. EVALUATION OF EFFECTS ON MONITORING RESULTS BY ABATEMENT ACTIONS

ORTECH is not aware of any abatement activities that may have had an impact on monitored results during the 2021 monitoring program.

8. COMPARISON TO HISTORICAL VALUES

A comparison of the 2021 monitoring program summary statistics across both sites and the values observed in the previous three (3) years (2018 – 2020) monitoring programs is presented in Table 19.

Historical data from 2018-2020 was resynthesized to include non-detects at ½ MDL and to remove laboratory duplicates in order to be consistent with the 2021 monitoring program statistics. Values may therefore not match those seen in the historical reports issued for those years.

In general measurements for the 2021 monitoring program were within the range seen in previous years.

Graphical trends for benzene and TSP, two contaminants of particular interest included in the monitoring program are shown in Figure 5 and Figure 6, respectively. Note that on the graph for benzene, the flat portions at 0.32 µg/m^3 are a result of non-detects reported at ½ MDL.

Table 19 - Comparison of Current Year Statistics to Historical Values

Compound	CAS	MECP Limit	Historical (2018-2020) % detected	Current Year % detected	Difference in % detected Historical (2018-2020) to Current Year	Historical Mean (µg/m^3)	Current Year Mean (µg/m^3)	% Difference in mean Historical (2018-2020) to Current Year	Historical Maximum (µg/m^3)	Current Year Maximum (µg/m^3)	% Difference in maximum Historical (2018-2020) to Current Year
1,1,1-Trichloroethane	71-55-6	115000	0%	0%	0%	5.50E-01	5.50E-01	8.07E-16	5.50E-01	5.50E-01	0%
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	800000	3%	0%	-3%	7.72E-01	7.50E-01	-2.84E-02	1.60E+00	7.50E-01	-53%
1,1-Dichloroethane	75-34-3	165	0%	0%	0%	4.05E-01	4.05E-01	-1.10E-15	4.05E-01	4.05E-01	0%
1,1-Dichloroethene	75-35-4	10	0%	0%	0%	3.95E-01	3.95E-01	2.81E-16	3.95E-01	3.95E-01	0%
1,2,3-Trimethylbenzene	526-73-8	220	0%	0%	0%	4.90E-01	4.90E-01	1.25E-15	4.90E-01	4.90E-01	0%
1,2,4-Trichlorobenzene	120-82-1	400	1%	0%	-1%	7.74E-01	7.50E-01	-3.10E-02	2.50E+00	7.50E-01	-70%
1,2,4-Trimethylbenzene	95-63-6	220	22%	4%	-18%	6.64E-01	5.11E-01	-23%	1.83E+00	1.03E+00	-44%
1,2-Dibromoethane	106-93-4	3	0%	0%	0%	7.50E-01	7.50E-01	0.00E+00	7.50E-01	7.50E-01	0%
1,2-Dichlorobenzene	95-50-1	NA	0%	0%	0%	6.00E-01	6.00E-01	-1.85E-15	6.00E-01	6.00E-01	0%
1,2-Dichloroethane	107-06-2	2	0%	0%	0%	4.05E-01	4.05E-01	-1.10E-15	4.05E-01	4.05E-01	0%
1,2-Dichloroethene (Cis)	156-59-2	105	0%	0%	0%	3.95E-01	3.95E-01	2.81E-16	3.95E-01	3.95E-01	0%
1,2-Dichloroethene (Trans)	156-60-5	105	0%	0%	0%	3.95E-01	3.95E-01	2.81E-16	3.95E-01	3.95E-01	0%
1,2-Dichloropropane	78-87-5	2400	0%	0%	0%	4.60E-01	4.60E-01	-7.24E-16	4.60E-01	4.60E-01	0%
1,3,5-Trimethylbenzene	108-67-8	220	0%	0%	0%	4.90E-01	4.90E-01	1.25E-15	4.90E-01	4.90E-01	0%
1,4-Dichlorobenzene	106-46-7	95	0%	0%	0%	6.00E-01	6.00E-01	-1.85E-15	6.00E-01	6.00E-01	0%
2-Ethyl Toluene	611-14-3	0.5	0%	0%	0%	4.90E-01	4.90E-01	1.25E-15	4.90E-01	4.90E-01	0%
2-Methyl Butane	78-78-4	35500	100%	88%	-12%	2.15E+00	1.59E+00	-26%	5.67E+00	2.97E+00	-48%
2-Methyl Pentane	107-83-5	1750	25%	4%	-21%	5.24E-01	3.67E-01	-30%	1.46E+00	7.80E-01	-47%
2-Propenenitrile	107-13-1	0.6	1%	0%	-1%	2.23E-01	2.15E-01	-4%	7.90E-01	2.15E-01	-73%
3-Methyl Hexane	589-34-4	1535	5%	0%	-5%	4.41E-01	4.10E-01	-7%	1.21E+00	4.10E-01	-66%
3-Methyl Pentane	96-14-0	1750	12%	0%	-12%	4.21E-01	3.50E-01	-17%	1.39E+00	3.50E-01	-75%
Acetaldehyde	75-07-0	500	0%	0%	0%	7.13E-01	8.94E-01	2.54E-01	7.60E-01	1.31E+00	73%
Acetone	67-64-1	11880	77%	81%	4%	1.03E+01	9.65E+00	-6%	3.22E+01	2.73E+01	-15%
Acrolein	107-02-8	0.4	0%	0%	0%	7.13E-01	8.94E-01	2.54E-01	7.60E-01	1.31E+00	73%
Antimony	7440-36-0	25	0%	0%	0%	3.39E-03	3.16E-03	-6.91E-02	4.84E-03	4.17E-03	-14%
Arsenic	7440-38-2	0.3	0%	0%	0%	2.06E-03	1.89E-03	-7.84E-02	2.98E-03	2.50E-03	-16%
Barium	7440-39-3	10	100%	96%	-4%	5.06E-03	3.09E-03	-39%	1.42E-02	7.24E-03	-49%
Benzaldehyde	100-52-7	2	0%	0%	0%	7.13E-01	8.94E-01	2.54E-01	7.60E-01	1.31E+00	73%
Benzene	71-43-2	2.3	22%	8%	-14%	4.56E-01	3.52E-01	-23%	2.05E+00	7.70E-01	-62%
Beryllium	7440-41-7	0.01	0%	0%	0%	3.39E-04	3.16E-04	-6.91E-02	4.84E-04	4.17E-04	-14%
Cadmium	7440-43-9	0.025	1%	0%	-1%	7.67E-04	6.31E-04	-18%	6.58E-03	8.33E-04	-87%
Carbon Tetrachloride	56-23-5	2.4	3%	0%	-3%	6.76E-01	6.50E-01	-3.85E-02	1.60E+00	6.50E-01	-59%
Chlorobenzene	108-90-7	NA	0%	0%	0%	4.60E-01	4.60E-01	-7.24E-16	4.60E-01	4.60E-01	0%
Chlorodifluoromethane	75-45-6	350000	74%	42%	-32%	8.33E-01	6.28E-01	-25%	1.60E+00	1.21E+00	-24%
Chloroform	67-66-3	1	0%	0%	0%	4.90E-01	4.90E-01	1.25E-15	4.90E-01	4.90E-01	0%
Chromium	7440-47-3	0.5	5%	0%	-5%	1.81E-03	1.58E-03	-13%	4.10E-03	2.08E-03	-49%
Cobalt	7440-48-4	0.1	1%	4%	3%	6.95E-04	7.11E-04	2%	1.01E-03	2.53E-03	149%
Copper	7440-50-8	50	100%	100%	0%	3.19E-02	5.89E-02	84%	9.17E-02	2.14E-01	133%
Cyclohexane	110-82-7	6100	19%	0%	-19%	4.75E-01	3.45E-01	-27%	1.87E+00	3.45E-01	-82%
Dichlorodifluoromethane	75-71-8	500000	100%	100%	0%	2.27E+00	2.09E+00	-8%	3.40E+00	2.77E+00	-19%
Dichloromethane	75-09-2	220	36%	12%	-24%	1.01E+00	4.94E-01	-51%	2.01E+01	2.34E+00	-88%
Ethyl Acetate	141-78-6	NA	12%	15%	3%	4.54E-01	5.67E-01	25%	2.10E+00	2.36E+00	12%
Ethyl Benzene	100-41-4	1000	15%	15%	0%	5.91E-01	5.39E-01	-9%	3.61E+00	1.21E+00	-66%
Formaldehyde	50-00-0	65	27%	0%	-27%	5.71E+00	3.54E+00	-38%	6.42E+01	6.56E+00	-90%
Glutaraldehyde	111-30-8	14	0%	0%	0%	7.13E-01	8.94E-01	2.54E-01	7.60E-01	1.31E+00	73%
Heptane	142-82-5	11000	16%	0%	-16%	5.22E-01	4.10E-01	-21%	1.51E+00	4.10E-01	-73%
Hexane	110-54-3	7500	40%	19%	-20%	7.12E-01	4.87E-01	-32%	3.74E+00	1.56E+00	-58%
Iron	15438-31-0	4	100%	96%	-4%	3.04E-01	1.96E-01	-36%	2.19E+00	8.95E-01	-59%
Isopropyl Alcohol	67-63-0	7300									
Lead	7439-92-1	0.5	50%	38%	-13%	3.08E-03	1.86E-03	-40%	4.91E-02	7.27E-03	-85%

Compound	CAS	MECP Limit	Historical (2018-2020) % detected	Current Year % detected	Difference in % detected Historical (2018-2020) to Current Year	Historical Mean (µg/m^3)	Current Year Mean (µg/m^3)	% Difference in mean Historical (2018-2020) to Current Year	Historical Maximum (µg/m^3)	Current Year Maximum (µg/m^3)	% Difference in maximum Historical (2018-2020) to Current Year
m/p-Xylene	108-38-3/106-42-3	730	26%	15%	-10%	1.67E+00	1.18E+00	-29%	1.24E+01	3.50E+00	-72%
Manganese	7439-96-5	0.4	100%	96%	-4%	8.63E-03	5.65E-03	-35%	4.69E-02	1.99E-02	-58%
MEK	784-93-3	1000	93%	96%	3%	1.58E+00	1.88E+00	19%	6.52E+00	4.89E+00	-25%
MIBK	108-10-1	1200	4%	0%	-4%	4.38E-01	4.10E-01	-6%	1.29E+00	4.10E-01	-68%
Naphthalene	91-20-3	22.5	0%	4%	4%	1.30E+00	1.37E+00	5.03E-02	1.30E+00	3.00E+00	131%
n-Butyraldehyde (n-Butanal)	123-72-3	NA	0%	0%	0%	7.13E-01	8.94E-01	2.54E-01	7.60E-01	1.31E+00	73%
Nickel	7440-02-0	0.2	29%	13%	-16%	1.56E-03	1.14E-03	-27%	4.80E-03	3.20E-03	-33%
Nonane	111-84-2	5250	8%	0%	-8%	6.11E-01	5.00E-01	-18%	2.40E+00	5.00E-01	-79%
o-Xylene	95-47-6	730	16%	12%	-5%	6.27E-01	5.06E-01	-19%	3.66E+00	1.21E+00	-67%
Particulate Mercury	NA-HG-TSP	NA	63%	67%	4%	2.71E-05	5.25E-05	93%	1.47E-04	2.16E-04	47%
p-Cymene	99-87-6	50	0%	0%	0%	5.50E-01	5.50E-01	8.07E-16	5.50E-01	5.50E-01	0%
Propionaldehyde (Propanal)	123-38-6	NA	32%	0%	-32%	1.32E+00	8.94E-01	-32%	2.86E+00	1.31E+00	-54%
Selenium	7782-49-2	10	1%	0%	-1%	3.43E-03	3.16E-03	-8%	5.23E-03	4.17E-03	-20%
Styrene	100-42-5	400	4%	8%	4%	4.56E-01	5.20E-01	14%	1.63E+00	2.39E+00	47%
Tetrachloroethene	127-18-4	360	16%	4%	-13%	1.25E+00	7.38E-01	-41%	1.46E+01	1.70E+00	-88%
Thallium	7440-28-0	0.5	0%	0%	0%	3.39E-03	3.16E-03	-6.91E-02	4.84E-03	4.17E-03	-14%
Tin	7440-31-5	10	0%	0%	0%	3.39E-03	3.16E-03	-6.91E-02	4.84E-03	4.17E-03	-14%
Toluene	108-88-3	2000	97%	92%	-5%	5.09E+00	2.53E+00	-50%	2.66E+01	7.42E+00	-72%
Total Mercury	NA-THG	2	73%	83%	11%	1.21E-02	2.11E-02	75%	2.59E-02	3.33E-02	29%
Total Suspended Particulate	NA-TSP	120	100%	100%	0%	2.34E+01	2.14E+01	-8%	1.51E+02	6.99E+01	-54%
Trichloroethene	79-01-6	12	1%	0%	-1%	5.64E-01	5.50E-01	-3%	1.60E+00	5.50E-01	-66%
Trichlorofluoromethane	75-69-4	6000	70%	38%	-31%	1.14E+00	8.19E-01	-28%	2.20E+00	1.40E+00	-36%
Vanadium	7440-62-2	2	4%	0%	-4%	1.79E-03	1.58E-03	-12%	3.90E-03	2.08E-03	-47%
Vapour Mercury	7439-97-6	NA	5%	50%	45%	1.21E-02	2.11E-02	7.50E-01	2.58E-02	3.33E-02	29%
Vinyl Chloride	75-01-4	1	0%	0%	0%	2.55E-01	2.55E-01	-8.71E-16	2.55E-01	2.55E-01	0%
Zinc	7440-66-6	120	100%	100%	0%	2.05E-02	1.27E-02	-38%	1.30E-01	3.00E-02	-77%

Means for Total Suspended Particulate are geometric. All other means are arithmetic.

Figure 5 - Benzene Trends

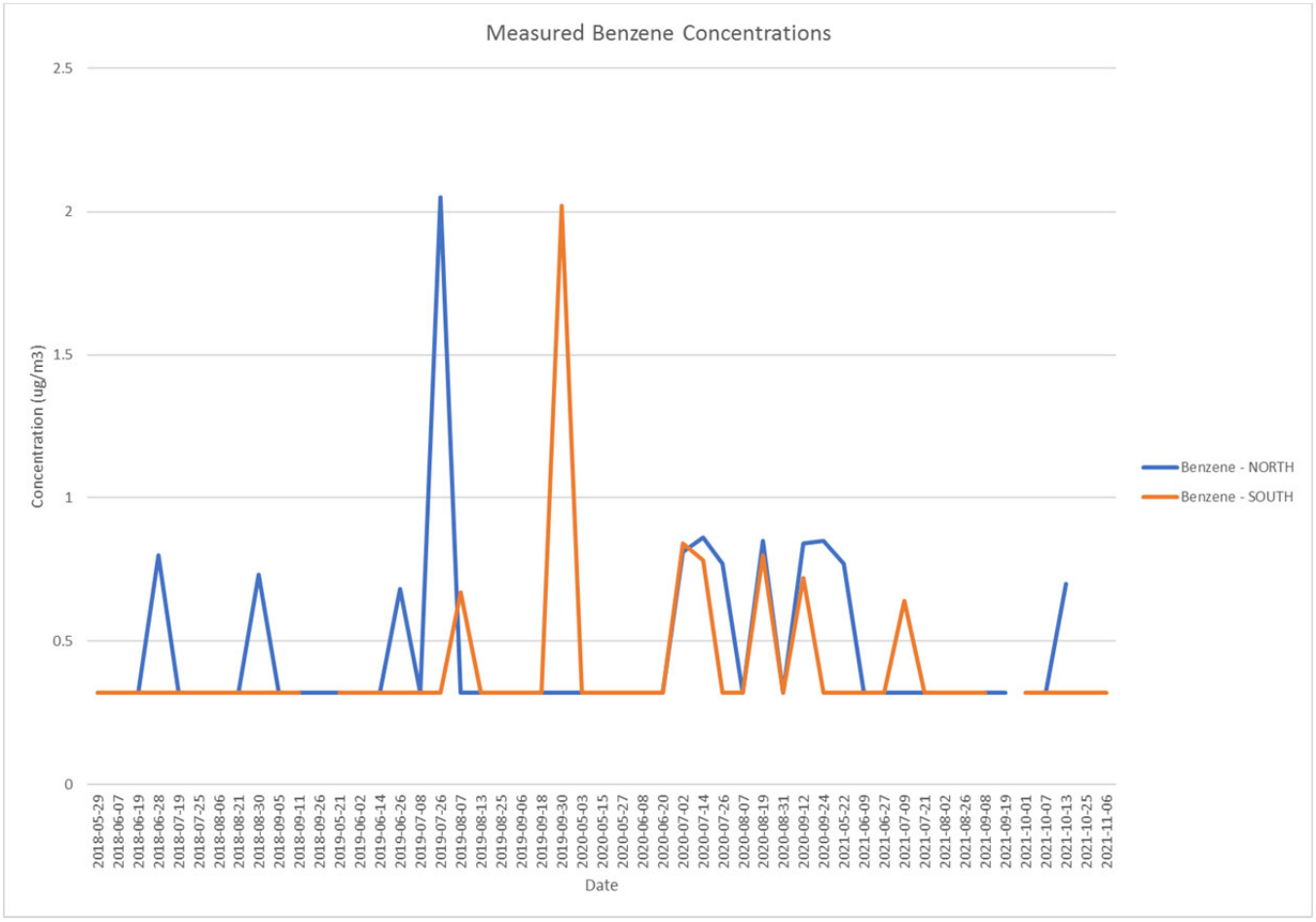
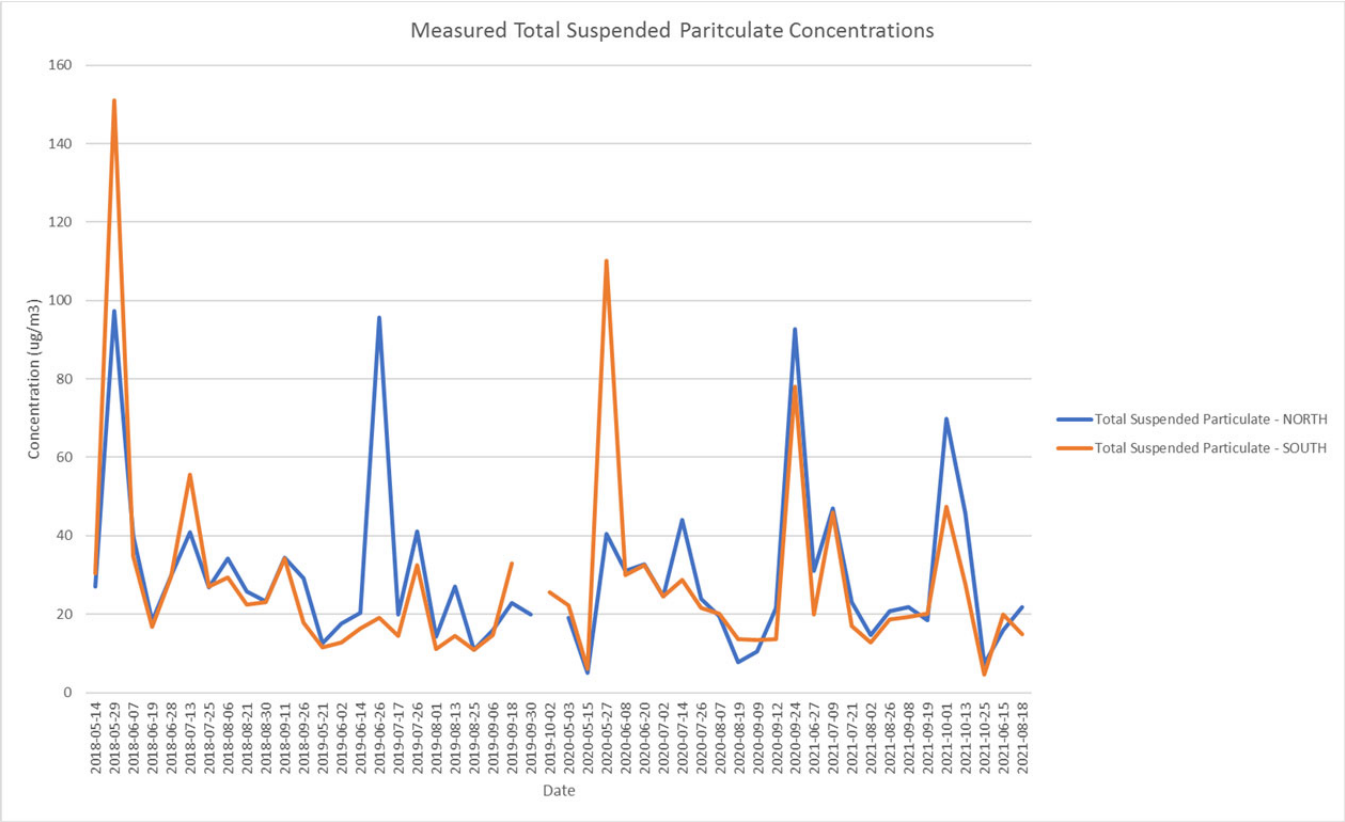


Figure 6 – Total Suspended Particulate Trends



9. REFERENCES

[1] "Report: Clean Harbors Environmental Services Inc., Lambton Facility, Ambient Air Monitoring Plan" (ORTECH # R50881-01), ORTECH Consulting Inc., December 2015.

[2] "Operations Manual for Air Quality Monitoring in Ontario", Ontario Ministry of Environment, Conservation, and Parks, Updated May 14, 2010. [online] https://www.ontario.ca/document/operations-manual-air-quality-monitoring-ontario-0. Accessed July 2021.

[3] "Historical Data", Environment and Climate Change Canada. [online]: https://climate.weather.gc.ca/historical_data/search_historic_data_e.html. Accessed September 2020.

[4] "Air Contaminants Benchmarks List: standards, guidelines and screening levels for assessing point of impingement concentrations of air contaminants," Ontario Ministry of Environment, Conservation, and Parks, Version 2.0, April 2018. [online]: https://www.ontario.ca/page/air-contaminants-benchmarks-list-standards-guidelines-and-screening-levels-assessing-point. Accessed December 2020.

[5] "Ontario's Ambient Air Quality Criteria," Ontario Ministry of Environment, Conservation, and Parks, Updated November 27, 2020. [online]: https://www.ontario.ca/page/ontarios-ambient-air-quality-criteria. Accessed December 2020.

APPENDIX A – Copy of Monitoring Plan

Report No. 50881–1

ORTECH

Report:

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

Date: December 11, 2015



Report:

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

Submitted to: Michael Parker
Director of Environmental Compliance
Clean Harbors Environmental Services Inc.
4090 Telfer Rd., Corunna, Ontario N0N 1G0
Tel: (519) 864-3836
E-mail: michael.parker@cleanharbors.com

Prepared by: Rod Brooks, Sarnia Manager
ORTECH Consulting Inc.
1133C Vanier Rd., Sarnia, Ontario N7S 3Y6
Tel: (519) 336-3327
Email: rbrooks@ortech.ca

Report No.: 50881-1
10 pages

Revision History

Version	Date	Summary Changes/Purpose of Revision
1	December 11, 2015	original

Table of Contents

Page

INTRODUCTION

Clean Harbors has conducted various ambient air monitoring programs at their Telfer Road facility since the 1990's. The current Air Monitoring Plan was approved by the Ontario Ministry of Environment and Climate Change (MOECC) and initiated in June 2011 (ORTECH – P5061-2, June 21, 2011). This Plan was reviewed by the MOECC in August 2015, resulting in a number of suggested changes to the program. As solicited by Clean Harbors, this plan outlines the general methods to conduct the monitoring requirements and recommendations from Clean Harbors and the MOECC.

The monitoring plan includes the following proposed changes:

- Relocation of the north monitoring site;
- Update of the target VOC list; and
- Update of the aldehyde and ketone (Carbonyls) target list.

The primary emphasis of this monitoring program is directed toward potential fugitive emission releases from the landfill and other low-level facility sources. The target substances were selected to characterize the property line concentrations related to these emissions and include:

- An extensive group of speciated volatile organic compounds (VOCs);
- Total suspended particulate matter (TSP) and metals;
- Vapour and particulate mercury (Mercury); and
- Specific aldehyde and ketone constituents (Carbonyls).

1. Proposed Approach

1.1 General Synopsis of Approach

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

Concurrent 24-hour sampling will be conducted at two fixed locations. The north site will be located at the north perimeter on top of the berm with the south site at some distance from the southerly fence line.

The measured data will be provided to Clean Harbors as soon as possible after each sample day and a study report will be prepared annually upon completion of all measurement sets.

1.2 Monitoring Locations

The north and south fixed monitoring locations are shown on the map in Figure 1. The current north site is within the perimeter fencing of the north property line (Petrolia Line) at the base of

the sloped berm which is adjacent to the exposed waste landfill area. It was recommended by the MOECC that this site be moved to the top of the berm approximately 150 metres east of the present location (see Figure 1). This new location will mitigate all possible obstructions between the monitoring site and the facility, with the emphasis directed toward measuring maximum potential constituent levels from the active landfill operations under southerly wind regimes. The south site will remain at its present location and 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 quadrant wind conditions and is sited to minimize possible particulate contributions from the adjacent gravel road (Telfer Road). The monitoring position of both the north and south locations will be fixed throughout the survey period.

Figure 1
North and South Sampling Locations

1.3 Sample Storage & Transportation

Before and after sample collection, the sample media and canisters will be stored at the ORTECH laboratory in an appropriate, clean, temperature controlled environment. Exposed sample media and canisters will be 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 will be maintained for all samples.

1.4 Sample Collection and Analysis

In order to maintain consistency with previous monitoring at the facility, essentially the same measurement methods will be used for concurrent monitoring as shown below 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 **-** Twenty-four hour whole air upwind and downwind samples will be collected into stainless steel electropolished 6 L evacuated canisters at a constant flow rate following EPA method TO-15. The canisters and flow controllers will be provided, cleaned, proofed and analyzed by a CALA accredited laboratory.

Proofing consists of taking one canister and its associated sampling train and flow controller from each batch of cleaned canisters and performing an analysis to ensure that the cleaning process was adequate. The sampling trains and flow controllers will be leak checked and the flow verified before shipping from the laboratory. Each canister will be inspected for damage upon receipt from the laboratory and after a period of acclimatization, the operator will record the “as received” vacuum reading (should be ≥ -29 inches Hg). Prior to sampling, the vacuum will be checked again, and if significantly different (i.e., not within 3 inches Hg) the canister will not be used and will be returned to the laboratory. The precleaned stainless steel sampling train consists 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. Each sampling

train has a unique identification number that will be recorded. The critical orifice and flow controller will 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 will be removed from their respective protective containers and positioned such that the sampling inlet is approximately 1.5 meters above ground. Initial and final canister vacuum readings will be recorded for each sample along with ambient temperature and pressure. Final readings should be between -5 and -8 inches Hg to ensure a valid sample.

The extensive list of target compounds is found in Table 2. As some of the compounds are not found on the typical laboratory T0-15 list offered by commercial laboratories, the lab must procure custom certified calibration gas standards and develop methods for these additional compounds. Clean Harbors conducted a comprehensive review of their latest Emission Summary and Dispersion Modelling (ESDM) report with respect to the compound list and it is recommended that the thirteen highlighted compounds be removed from the target list, with the following rational. For seven of the compounds, the total point of impingement (POI) concentrations (modelled and fugitive) were less than 1% of their respective POI standards: Chlorodifluoromethane, 2-Methyl Butane, 3-Methyl Pentane, p-Cymene, 2-Methyl Pentane, Nonane and 3-Methyl Hexane. The following six compounds were not found on the latest ESDM compound list: 1,1,2-Trichloro-1,2,2-Trifluoroethane, 1,2,Dichlorobenzene, Chlorobenzene, Ethyl Acetate, 1,2,3,-Trimethylbenzene and o-Ethyl Toluene. The remainder of the compounds is covered by the standard EPA TO-15 list with the addition of naphthalene and 2-Propenenitrile.

Table 2
VOC Compound List

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-Dibromoethane	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 will be measured for 24-hour periods by sampling on preweighed glass fibre filters using conventional high-volume sampling units and operated according to standard techniques. These samplers will be calibrated on a quarterly basis utilizing calibration equipment that is certified against a reference or transfer standard traceable to a recognized national primary standard. At each sample interval, performance checks will be conducted to ensure that the flows are within ±10% of the required flow (40 CFM). TSP will be determined gravimetrically and subsequent filter particulate analysis by a CALA accredited laboratory will be 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 will also be 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. The target list of TSP and metals will remain unchanged from the June 21, 2011 Monitoring Plan.

Table 3
TSP and Metals

Parameter	CAS No.
Total Suspended Particulate (TSP)	Not available
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
Iron	15438-31-0
Lead	7439-92-1
Manganese	7439-96-5
Nickel	7440-02-0
Selenium	7782-49-2
Thallium	7440-28-0
Tin	7440-31-5
Vanadium	7440-62-2
Zinc	7440-66-6

Carbonyls – Speciated aldehyde and ketone compounds (Table 4) will be 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 within protective enclosures, will be 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 will be checked before and after each sample interval using NIST-traceable flow standards (i.e. BIOS Dry Cal). Analyses will be conducted by a CALA accredited laboratory and results will be compared with the associated 24-hour Standards and AAQC for the applicable species.

The list of carbonyl compounds was compared by Clean Harbors to their latest ESDM and it is recommended that the seven highlighted parameters be deleted from the target list leaving Formaldehyde as the single compound on the list. Five of these compounds (Acetaldehyde, Acrolein, Glutaraldehyde, Propionaldehyde and n-Butyraldehyde) are not emitted by Clean Harbors according to their ESDM report and Acetone is already included in the VOC target list. Benzaldehyde's total POI concentration (modelled and fugitive) was less than 1% of its respective POI standard.

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 will be 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), will use the same sampling apparatus as the carbonyls and will be similarly checked for proper flows before and after each sample period. The flow rates will be maintained at approximately 70 mL/min to collect total sample volumes of about 0.1 m^3. The samples will be analyzed by a CALA accredited laboratory utilizing cold vapour atomic absorption (CVAA) spectroscopy with ultraviolet (UV) detection. The particulate mercury result, determined by extraction, will be 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 will be obtained from the nearby Sarnia-Lambton Environmental Association (SLEA) monitoring and meteorological station (Moore Line). These data will be 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 will be 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 are shown in Table 5.

Table 5
Measurement Frequencies

Constituent	Frequency and Schedule
VOCs/TSP/Metals	12 sample days on the 12 day NAPS cycle beginning May 12, 2016
Formaldehyde and Mercury	One sample day per month for June, July and August taken on a day when VOCs/TSP/Metal samples are collected

2. Quality Assurance

To maintain an appropriate level of quality assurance with regard to the monitoring, various quality assurance practices will be incorporated into the sampling and analysis methods, as routinely done, in an effort to enhance the measurement validity. These will include all pertinent items from the applicable methods as well as the MOECC's Operations Manual for Air Quality Monitoring in Ontario (March 2008).

2.1 Quality Assurance Program

ORTECH personnel, trained and proficient in these methods, will be responsible for the collection of samples and will follow 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 will start at midnight • 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 MOE to conduct audits
Sample Control	• Precautionary measures will be 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
Sample Analysis	• Use of CALA accredited laboratories • Documented methods and procedures
Record Keeping	• All sampling media/canisters will have unique identification numbers • Use of field Sampling Logs to record: sample canister I.D., sample train I.D., operator's 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 (sample placement, collection times, sample identification numbers)

3. Reporting

Analytical results will be reported as soon as possible to Clean Harbors and will include all applicable QA/QC and meteorological information. These data will be summarized in tables and compared to applicable air quality standards and AAQC.

An annual summary report will be prepared after the final set of monitoring data is received from the contract laboratory. Unless otherwise required, the report will include a description of the measurement procedures along with specific data and summarized tabulations such as:

- A summary of the various measurement results collected each sampling location;
- Summaries of the meteorological data, including wind speed and direction, acquired for each sample interval;
- Comparison of the various constituents to applicable twenty-four hour air quality standards or AAQC; and
- Electronic copy of time stamped (Eastern Standard) constituent measurements and meteorological data.

All data (uncensored, but flagged as appropriate) will be made available in electronic format and will include any recorded local meteorological data.

4. Annual Program Review

The MOECC and Clean Harbors will review the results of the sampling program each year and, based upon this review of the data, the program will be re-evaluated for the following year. This review will include the measurement frequency and scheduling as well as the target compound list and sampling locations. This program may change in the future as the understanding of the monitoring data and the proposed landfill expansion evolves. Any proposed modifications to the air monitoring program will be submitted to the Regional Director of the MOECC for approval prior to implementation.

Rod Brooks
Sarnia Manager

APPENDIX B – Data for 24-hour Samples

ORTECH a Kontrol Technologies Company

Table B-1 - 24-hr VOC Data

	Sample ID	NVOC-01	SVOC-01	NVOC-02.1	SVOC-02.1	NVOC-04	SVOC-04	NVOC-05	SVOC-05	SVOC-05.1	NVOC-06	SVOC-06
	Location	NORTH	SOUTH	NORTH	SOUTH	NORTH	SOUTH	NORTH	SOUTH	SOUTH	NORTH	SOUTH
	Date Sampled	May 22, 2021	May 22, 2021	June 9, 2021	June 9, 2021	June 27, 2021	June 27, 2021	July 9, 2021	July 9, 2021	July 9, 2021	July 21, 2021	July 21, 2021
Substance Name	**CAS#**											
Carbon Tetrachloride	56-23-5	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
Isopropyl Alcohol	67-63-0	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Acetone	67-64-1	14.7	13.0	27.3	8.6	18.5	8.5	9.4	9.5	12.0	8.4	9.2
Chloroform	67-66-3	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49
Benzene	71-43-2	0.77	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32
1,1,1-Trichloroethane	71-55-6	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55
Vinyl Chloride	75-01-4	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26
Dichloromethane	75-09-2	1.68	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35
1,1-Dichloroethane	75-34-3	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41
1,1-Dichloroethene	75-35-4	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
Chlorodifluoromethane	75-45-6	1.21	1.08	0.36	0.36	0.91	0.84	0.36	0.36	0.86	0.43	0.50
Trichlorofluoromethane	75-69-4	1.4	1.3	0.6	0.6	1.2	1.2	0.6	0.6	1.3	1.1	1.2
Dichlorodifluoromethane	75-71-8	2.1	2.1	1.9	2.1	2.1	2.1	2.1	2.0	2.1	2.0	2.3
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
2-Methyl Butane	78-78-4	1.40	1.30	2.25	2.93	1.64	1.76	1.26	1.50	1.43	1.07	1.29
1,2-Dichloropropane	78-87-5	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46
MEK	78-93-3	1.78	1.26	4.66	1.12	3.74	1.29	0.65	0.98	2.68	1.36	0.99
Trichloroethene	79-01-6	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55
Naphthalene	91-20-3	1.30	1.30	1.30	1.30	3.00	1.30	1.30	1.30	1.30	1.30	1.30
o-Xylene	95-47-6	0.44	0.44	0.90	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44
1,2-Dichlorobenzene	95-50-1	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
1,2,4-Trimethylbenzene	95-63-6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
3-Methyl Pentane	96-14-0	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35
p-Cymene	99-87-6	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55
Ethyl Benzene	100-41-4	0.44	0.44	0.99	0.44	1.21	0.44	0.44	0.44	0.44	0.44	0.44
Styrene	100-42-5	0.43	0.43	2.39	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43
1,4-Dichlorobenzene	106-46-7	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
1,2-Dibromoethane	106-93-4	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
1,2-Dichloroethane	107-06-2	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41
2-Propenenitrile	107-13-1	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22
2-Methyl Pentane	107-83-5	0.78	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35
MIBK	108-10-1	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41
m/p-Xylene	108-38-3/106-42-3	0.9	0.9	3.3	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
1,3,5-Trimethylbenzene	108-67-8	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49
Toluene	108-88-3	4.8	1.9	7.4	1.4	3.2	3.0	1.8	1.5	2.8	2.3	1.9
Chlorobenzene	108-90-7	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46
Hexane	110-54-3	1.56	0.35	0.35	0.35	0.91	0.35	0.35	0.35	0.71	0.35	0.35
Cyclohexane	110-82-7	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35
Nonane	111-84-2	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
1,2,4-Trichlorobenzene	120-82-1	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Tetrachloroethene	127-18-4	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Ethyl Acetate	141-78-6	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36
Heptane	142-82-5	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41
1,2-Dichloroethene (Cis)	156-59-2	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
1,2-Dichloroethene (Trans)	156-60-5	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
1,2,3-Trimethylbenzene	526-73-8	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49
3-Methyl Hexane	589-34-4	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41
2-Ethyl Toluene	611-14-3	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49

Non-detects reported as half of the detection limit.

	Sample ID	NVOC-07	SVOC-07	NVOC-09	SVOC-09	NVOC-10	SVOC-10	NVOC-11	SVOC-12	NVOC-13	SVOC-13	NVOC-14	SVOC-14
	Location	NORTH	SOUTH	NORTH	SOUTH	NORTH	SOUTH	NORTH	SOUTH	NORTH	SOUTH	NORTH	SOUTH
	Date Sampled	August 2, 2021	August 2, 2021	August 26, 2021	August 26, 2021	Sept. 8, 2021	Sept. 8, 2021	Sept. 19, 2021	October 1, 2021	October 7, 2021	October 7, 2021	October 13, 2021	October 13, 2021
Substance Name	**CAS#**												
Carbon Tetrachloride	56-23-5	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	1.60	1.60
Isopropyl Alcohol	67-63-0	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Acetone	67-64-1	13.6	16.2	24.9	25.2	9.3	11.1	8.4	5.2	10.0	6.2	11.8	11.3
Chloroform	67-66-3	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49
Benzene	71-43-2	0.86	0.78	0.77	0.32	0.32	0.32	0.85	0.80	0.32	0.32	0.84	0.72
1,1,1-Trichloroethane	71-55-6	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55
Vinyl Chloride	75-01-4	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26
Dichloromethane	75-09-2	20.10	1.26	1.84	0.35	0.35	1.38	1.27	0.35	0.35	0.35	0.97	0.77
1,1-Dichloroethane	75-34-3	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41
1,1-Dichloroethene	75-35-4	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
Chlorodifluoromethane	75-45-6	1.11	1.12	1.17	1.18	0.91	1.02	1.20	1.20	0.83	0.93	1.60	1.53
Trichlorofluoromethane	75-69-4	1.6	1.7	1.6	1.6	1.2	1.2	1.8	1.7	1.4	1.1	2.2	2.0
Dichlorodifluoromethane	75-71-8	2.4	2.7	2.7	2.6	2.1	2.1	2.8	2.6	1.9	1.9	3.4	3.2
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	1.60	1.50
2-Methyl Butane	78-78-4	2.05	3.79	2.49	3.16	0.78	1.29	4.15	3.21	1.74	2.33	3.83	1.46
1,2-Dichloropropane	78-87-5	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46
MEK	78-93-3	3.01	1.60	3.40	1.75	0.85	1.33	2.14	1.07	0.78	0.72	1.46	1.43
Trichloroethene	79-01-6	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55
Naphthalene	91-20-3	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30
o-Xylene	95-47-6	1.86	0.44	1.57	0.44	0.44	0.44	1.16	0.44	0.44	0.44	0.97	0.44
1,2-Dichlorobenzene	95-50-1	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
1,2,4-Trimethylbenzene	95-63-6	1.1	1.7	1.5	1.1	0.5	0.5	1.5	0.5	0.5	0.5	1.1	0.5
3-Methyl Pentane	96-14-0	1.39	0.97	0.35	0.35	0.35	0.35	0.89	0.97	0.35	0.35	1.00	0.35
p-Cymene	99-87-6	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55
Ethyl Benzene	100-41-4	1.81	0.44	1.18	0.44	0.44	0.44	1.02	0.44	0.44	0.44	0.92	0.44
Styrene	100-42-5	0.95	0.43	0.94	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43
1,4-Dichlorobenzene	106-46-7	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
1,2-Dibromoethane	106-93-4	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
1,2-Dichloroethane	107-06-2	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41
2-Propenenitrile	107-13-1	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22
2-Methyl Pentane	107-83-5	1.39	1.34	0.84	0.90	0.35	0.35	1.25	1.09	0.35	0.35	1.35	0.71
MIBK	108-10-1	1.08	0.41	0.88	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41
m/p-Xylene	108-38-3/106-42-3	11.3	2.2	3.8	0.9	0.9	2.4	3.0	0.9	0.9	0.9	2.1	0.9
1,3,5-Trimethylbenzene	108-67-8	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49
Toluene	108-88-3	18.2	5.5	7.4	3.0	1.5	4.1	6.0	3.4	1.5	2.1	2.2	1.4
Chlorobenzene	108-90-7	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46
Hexane	110-54-3	3.74	1.38	1.03	0.91	0.35	0.35	1.42	2.23	0.35	0.35	1.13	0.77
Cyclohexane	110-82-7	1.87	0.35	0.35	0.35	0.35	0.35	1.29	0.94	0.35	0.35	0.35	0.35
Nonane	111-84-2	0.50	1.30	1.40	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
1,2,4-Trichlorobenzene	120-82-1	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Tetrachloroethene	127-18-4	0.70	0.70	0.70	0.70	0.70	4.10	4.60	1.80	0.70	0.70	0.70	0.70
Ethyl Acetate	141-78-6	0.90	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.77	0.76
Heptane	142-82-5	1.41	0.93	1.01	0.41	0.41	0.41	0.86	0.41	0.41	0.41	0.91	0.84
1,2-Dichloroethene (Cis)	156-59-2	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
1,2-Dichloroethene (Trans)	156-60-5	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
1,2,3-Trimethylbenzene	526-73-8	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49
3-Methyl Hexane	589-34-4	1.21	0.89	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.86	0.41
2-Ethyl Toluene	611-14-3	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49

Non-detects reported as half of the detection limit.

	Sample ID	SVOC-15	NVOC-16	SVOC-16
	Location	SOUTH	NORTH	SOUTH
	Date Sampled	October 25, 2021	November 6, 2021	November 6, 2021
Substance Name	**CAS#**			
Carbon Tetrachloride	56-23-5	0.65	0.65	0.65
Isopropyl Alcohol	67-63-0	NR	NR	NR
Acetone	67-64-1	9.7	7.8	4.9
Chloroform	67-66-3	0.49	0.49	0.49
Benzene	71-43-2	0.32	0.32	0.32
1,1,1-Trichloroethane	71-55-6	0.55	0.55	0.55
Vinyl Chloride	75-01-4	0.26	0.26	0.26
Dichloromethane	75-09-2	0.35	0.35	0.35
1,1-Dichloroethane	75-34-3	0.41	0.41	0.41
1,1-Dichloroethene	75-35-4	0.40	0.40	0.40
Chlorodifluoromethane	75-45-6	0.92	0.78	0.36
Trichlorofluoromethane	75-69-4	0.6	0.6	0.6
Dichlorodifluoromethane	75-71-8	1.9	1.9	1.8
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	0.75	0.75	0.75
2-Methyl Butane	78-78-4	0.30	1.06	1.29
1,2-Dichloropropane	78-87-5	0.46	0.46	0.46
MEK	78-93-3	4.30	2.70	0.30
Trichloroethene	79-01-6	0.55	0.55	0.55
Naphthalene	91-20-3	1.30	1.30	1.30
o-Xylene	95-47-6	0.44	1.21	0.44
1,2-Dichlorobenzene	95-50-1	0.60	0.60	0.60
1,2,4-Trimethylbenzene	95-63-6	0.5	0.5	0.5
3-Methyl Pentane	96-14-0	0.35	0.35	0.35
p-Cymene	99-87-6	0.55	0.55	0.55
Ethyl Benzene	100-41-4	0.44	1.04	0.44
Styrene	100-42-5	0.43	0.43	0.43
1,4-Dichlorobenzene	106-46-7	0.60	0.60	0.60
1,2-Dibromoethane	106-93-4	0.75	0.75	0.75
1,2-Dichloroethane	107-06-2	0.41	0.41	0.41
2-Propenenitrile	107-13-1	0.22	0.22	0.22
2-Methyl Pentane	107-83-5	0.35	0.35	0.35
MIBK	108-10-1	0.41	0.41	0.41
m/p-Xylene	108-38-3/106-42-3	0.9	3.5	0.9
1,3,5-Trimethylbenzene	108-67-8	0.49	0.49	0.49
Toluene	108-88-3	2.9	4.0	0.8
Chlorobenzene	108-90-7	0.46	0.46	0.46
Hexane	110-54-3	0.35	0.35	0.35
Cyclohexane	110-82-7	0.35	0.35	0.35
Nonane	111-84-2	0.50	0.50	0.50
1,2,4-Trichlorobenzene	120-82-1	0.75	0.75	0.75
Tetrachloroethene	127-18-4	0.70	0.70	0.70
Ethyl Acetate	141-78-6	1.01	1.51	2.36
Heptane	142-82-5	0.41	0.41	0.41
1,2-Dichloroethene (Cis)	156-59-2	0.40	0.40	0.40
1,2-Dichloroethene (Trans)	156-60-5	0.40	0.40	0.40
1,2,3-Trimethylbenzene	526-73-8	0.49	0.49	0.49
3-Methyl Hexane	589-34-4	0.41	0.41	0.41
2-Ethyl Toluene	611-14-3	0.49	0.49	0.49

Non-detects reported as half of the detection limit.

NR = “not-reported” – see e-mail in APPENDIX C.

ORTECH a Kontrol Technologies Company

Table B-2 – 24-hr Carbonyl Data

	Sample ID	NC-04	SC-04	NC-06	SC-06	NC-09	SC-09
	Location	NORTH	SOUTH	NORTH	SOUTH	NORTH	SOUTH
	Date Sampled	June 27, 2021	June 27, 2021	July 21, 2021	July 21, 2021	August 26, 2021	August 26, 2021
	Duration (min):	23.36	24.13	24.06	23.91	24.00	23.98
	Volume (m^3)	1.47	1.41	1.44	1.43	0.79	0.76
Compound	**CAS No.**						
Formaldehyde	50-00-0	3.4E+00	3.5E+00	7.0E-01	7.0E-01	6.3E+00	6.6E+00
Acetone	67-64-1	6.8E-01	7.1E-01	7.0E-01	7.0E-01	1.3E+00	1.3E+00
Acetaldehyde	75-07-0	6.8E-01	7.1E-01	7.0E-01	7.0E-01	1.3E+00	1.3E+00
Benzaldehyde	100-52-7	6.8E-01	7.1E-01	7.0E-01	7.0E-01	1.3E+00	1.3E+00
Acrolein	107-02-8	6.8E-01	7.1E-01	7.0E-01	7.0E-01	1.3E+00	1.3E+00
Glutaraldehyde	111-30-8	6.8E-01	7.1E-01	7.0E-01	7.0E-01	1.3E+00	1.3E+00
Propionaldehyde (Propanal)	123-38-6	6.8E-01	7.1E-01	7.0E-01	7.0E-01	1.3E+00	1.3E+00
n-Butyraldehyde (n-Butanal)	123-72-3	6.8E-01	7.1E-01	7.0E-01	7.0E-01	1.3E+00	1.3E+00

Non-detects reported as half of the detection limit.

Table B-3 - 24-hr Mercury Data

	Vapour Mercury ID	NM-04	SM-04	NM-06	SM-06	NM-09	SM-09	NM-04	SM-04
	Particulate Mercury ID	NTSP-04	STSP-04	NTSP-06	STSP-06	NTSP-09	STSP-09	NTSP-04	STSP-04
	Location	NORTH	SOUTH	NORTH	SOUTH	NORTH	SOUTH	NORTH	SOUTH
	Date Sampled	June 27, 2021	June 27, 2021	July 21, 2021	July 21, 2021	August 26, 2021	August 26, 2021	June 27, 2021	June 27, 2021
	Duration (min):	23	24	24	24	24	24	23	24
	Vapour Mercury Volume (m^3)	0.10	0.11	0.10	0.09	0.11	0.10	0.10	0.11
	Particulate Mercury Volume (m^3)	1623.04	1664.14	1396.37	1619.66	1636.71	1625.84	1623.04	1664.14
Compound	**CAS No.**								
Particulate Mercury	NA-HG-TSP	2.2E-04	6.0E-06	7.2E-06	3.7E-05	3.7E-05	1.2E-05	2.2E-04	6.0E-06
Vapour Mercury	7439-97-6	1.2E-02	1.2E-02	3.3E-02	3.1E-02	2.6E-02	1.3E-02	1.2E-02	1.2E-02
Total Mercury	NA-THG	1.2E-02	1.2E-02	3.3E-02	3.1E-02	2.6E-02	1.3E-02	1.2E-02	1.2E-02

Non-detects reported as half of the detection limit.

Table B-4 - 24-hr Particulate Data

	Sample ID	NTSP-01	STSP-01	NTSP-02	STSP-02	NTSP-03	STSP-03	NTSP-04	STSP-04	NTSP-05	STSP-05	NTSP-06	STSP-06	NTSP-07	STSP-07	NTSP-08	STSP-08
	Location	NORTH	SOUTH	NORTH	SOUTH	NORTH	SOUTH	NORTH	SOUTH	NORTH	SOUTH	NORTH	SOUTH	NORTH	SOUTH	NORTH	SOUTH
	Date Sampled	May 22, 2021	May 22, 2021	June 3, 2021	June 3, 2021	June 15, 2021	June 15, 2021	June 27, 2021	June 27, 2021	July 9, 2021	July 9, 2021	July 21, 2021	July 21, 2021	Aug 2, 2021	Aug 2, 2021	Aug 18, 2021	Aug. 18, 2021
	Duration (hrs):	24.00	24.00	23.26	23.72	24.30	24.08	23.36	24.13	23.17	23.44	24.06	23.91	23.26	21.26	43.69	23.81
	Volume (m^3)	1554.00	1541.00	1468.00	1488.00	1726.00	1678.00	1623.04	1664.14	1487.22	1590.36	1396.37	1619.66	1730.78	1597.51	1623.00	1673.33
Compound	**CAS No.**																
Total Suspended Particulate (TSP)	NA-TSP	84	49	40	20	16	20	31	20	47	46	23	17	15	13	22	15
Antimony	7440-36-0	3.2E-03	3.2E-03	3.4E-03	3.4E-03	2.9E-03	3.0E-03	3.1E-03	3.0E-03	3.4E-03	3.1E-03	3.6E-03	3.1E-03	2.9E-03	3.1E-03	3.1E-03	3.0E-03
Arsenic	7440-38-2	1.9E-03	1.9E-03	2.0E-03	2.0E-03	1.7E-03	1.8E-03	1.8E-03	1.8E-03	2.0E-03	1.9E-03	2.1E-03	1.9E-03	1.7E-03	1.9E-03	1.8E-03	1.8E-03
Barium	7440-39-3	1.1E-02	8.0E-03	6.7E-03	5.2E-03	1.7E-03	1.7E-03	6.0E-03	3.4E-03	1.6E-03	1.8E-03	2.0E-03	2.0E-03	1.8E-03	1.3E-03	2.8E-03	1.2E-03
Beryllium	7440-41-7	3.2E-04	3.2E-04	3.4E-04	3.4E-04	2.9E-04	3.0E-04	3.1E-04	3.0E-04	3.4E-04	3.1E-04	3.6E-04	3.1E-04	2.9E-04	3.1E-04	3.1E-04	3.0E-04
Cadmium	7440-43-9	6.4E-04	6.5E-04	6.8E-04	6.7E-04	5.8E-04	6.0E-04	6.2E-04	6.0E-04	6.7E-04	6.3E-04	7.2E-04	6.2E-04	5.8E-04	6.3E-04	6.2E-04	6.0E-04
Chromium	7440-47-3	1.6E-03	1.6E-03	1.7E-03	1.7E-03	1.4E-03	1.5E-03	1.5E-03	1.5E-03	1.7E-03	1.6E-03	1.8E-03	1.5E-03	1.4E-03	1.6E-03	1.5E-03	1.5E-03
Cobalt	7440-48-4	2.8E-03	6.5E-04	6.8E-04	6.7E-04	5.8E-04	6.0E-04	2.5E-03	6.0E-04	6.7E-04	6.3E-04	7.2E-04	6.2E-04	5.8E-04	6.3E-04	6.2E-04	6.0E-04
Copper	7440-50-8	3.6E-02	6.5E-02	2.2E-02	1.0E-01	1.4E-02	3.0E-02	5.1E-02	1.9E-02	1.0E-02	3.4E-02	3.7E-02	5.6E-02	1.2E-01	9.8E-02	1.1E-01	2.1E-01
Iron	15438-31-0	1.0E+00	4.9E-01	5.1E-01	1.5E-01	1.2E-01	1.4E-01	3.0E-01	1.4E-01	8.7E-02	1.1E-01	1.4E-01	1.4E-01	9.3E-02	5.2E-02	9.2E-02	4.9E-02
Lead	7439-92-1	5.3E-03	4.1E-03	3.5E-03	1.0E-03	8.7E-04	8.9E-04	7.3E-03	9.0E-04	1.0E-03	9.4E-04	1.1E-03	9.3E-04	8.7E-04	9.4E-04	1.8E-03	2.0E-03
Manganese	7439-96-5	2.5E-02	1.3E-02	1.1E-02	4.2E-03	2.7E-03	4.1E-03	1.3E-02	4.0E-03	1.9E-03	3.1E-03	4.9E-03	4.5E-03	2.5E-03	2.2E-03	3.3E-03	1.7E-03
Nickel	7440-02-0	4.2E-03	2.9E-03	2.1E-03	1.0E-03	8.7E-04	2.0E-03	3.2E-03	9.0E-04	1.0E-03	9.4E-04	1.1E-03	9.3E-04	8.7E-04	9.4E-04	9.2E-04	9.0E-04
Selenium	7782-49-2	3.2E-03	3.2E-03	3.4E-03	3.4E-03	2.9E-03	3.0E-03	3.1E-03	3.0E-03	3.4E-03	3.1E-03	3.6E-03	3.1E-03	2.9E-03	3.1E-03	3.1E-03	3.0E-03
Thallium	7440-28-0	3.2E-03	3.2E-03	3.4E-03	3.4E-03	2.9E-03	3.0E-03	3.1E-03	3.0E-03	3.4E-03	3.1E-03	3.6E-03	3.1E-03	2.9E-03	3.1E-03	3.1E-03	3.0E-03
Tin	7440-31-5	3.2E-03	3.2E-03	3.4E-03	3.4E-03	2.9E-03	3.0E-03	3.1E-03	3.0E-03	3.4E-03	3.1E-03	3.6E-03	3.1E-03	2.9E-03	3.1E-03	3.1E-03	3.0E-03
Vanadium	7440-62-2	5.5E-03	1.6E-03	1.7E-03	1.7E-03	1.4E-03	1.5E-03	1.5E-03	1.5E-03	1.7E-03	1.6E-03	1.8E-03	1.5E-03	1.4E-03	1.6E-03	1.5E-03	1.5E-03
Zinc	7440-66-6	2.7E-02	2.3E-02	1.7E-02	1.3E-02	1.1E-02	8.8E-03	2.6E-02	1.1E-02	5.8E-03	6.2E-03	9.4E-03	6.7E-03	3.0E-02	7.8E-03	1.3E-02	6.8E-03

Non-detects reported as half of the detection limit.

Historical data from 2018-2020 was resynthesized to include non-detects at ½ MDL and to remove laboratory duplicates in order to be consistent with the 2021 monitoring program statistics. Values may therefore not match those seen in the historical reports issued for those years.

	Sample ID	NTSP-09	STSP-09	NTSP-10	STSP-10	NTSP-11	STSP-11	NTSP-12	STSP-12	NTSP-14	STSP-14	NTSP-15	STSP-15
	Location	NORTH	SOUTH	NORTH	SOUTH	NORTH	SOUTH	NORTH	SOUTH	NORTH	SOUTH	NORTH	SOUTH
	Date Sampled	August 26, 2021	August 26, 2021	September 8, 2021	September 8, 2021	September 19, 2021	September 19, 2021	October 1, 2021	October 1, 2021	October 13, 2021	October 13, 2021	October 25, 2021	October 25, 2021
	Duration (min):	24.00	23.98	24.00	23.09	24.00	23.24	24.00	21.60	24.00	23.23	24.00	23.16
	Volume (m^3)	1636.71	1625.84	1687.14	1565.50	1776.00	1576.00	1531.00	1464.00	1579.00	1200.00	1626.00	1570.00
Compound	**CAS No.**												
Total Suspended Particulate (TSP)	NA-TSP	21	19	22	19	19	20	70	47	46	28	7	5
Antimony	7440-36-0	3.1E-03	3.1E-03	3.0E-03	3.2E-03	2.8E-03	3.2E-03	3.3E-03	3.4E-03	3.2E-03	4.2E-03	3.1E-03	3.2E-03
Arsenic	7440-38-2	1.8E-03	1.8E-03	1.8E-03	1.9E-03	1.7E-03	1.9E-03	2.0E-03	2.0E-03	1.9E-03	2.5E-03	1.8E-03	1.9E-03
Barium	7440-39-3	4.0E-03	3.6E-03	3.2E-03	2.4E-03	2.8E-03	3.0E-03	6.7E-03	7.2E-03	5.6E-03	7.0E-03	9.2E-04	3.2E-04
Beryllium	7440-41-7	3.1E-04	3.1E-04	3.0E-04	3.2E-04	2.8E-04	3.2E-04	3.3E-04	3.4E-04	3.2E-04	4.2E-04	3.1E-04	3.2E-04
Cadmium	7440-43-9	6.1E-04	6.2E-04	5.9E-04	6.4E-04	5.6E-04	6.3E-04	6.5E-04	6.8E-04	6.3E-04	8.3E-04	6.2E-04	6.4E-04
Chromium	7440-47-3	1.5E-03	1.5E-03	1.5E-03	1.6E-03	1.4E-03	1.6E-03	1.6E-03	1.7E-03	1.6E-03	2.1E-03	1.5E-03	1.6E-03
Cobalt	7440-48-4	6.1E-04	6.2E-04	5.9E-04	6.4E-04	5.6E-04	6.3E-04	6.5E-04	6.8E-04	6.3E-04	8.3E-04	6.2E-04	6.4E-04
Copper	7440-50-8	1.2E-01	4.0E-02	4.4E-02	2.0E-02	6.0E-02	1.2E-01	1.2E-02	7.7E-02	5.8E-03	4.0E-02	7.6E-02	1.5E-02
Iron	15438-31-0	1.9E-01	1.5E-01	1.6E-01	9.9E-02	1.9E-01	2.0E-01	8.9E-01	3.8E-01	6.9E-01	2.3E-01	4.0E-02	1.6E-02
Lead	7439-92-1	2.7E-03	9.2E-04	2.6E-03	9.6E-04	8.4E-04	9.5E-04	4.4E-03	3.3E-03	3.9E-03	2.5E-03	9.2E-04	9.6E-04
Manganese	7439-96-5	6.4E-03	5.3E-03	5.9E-03	4.0E-03	5.3E-03	5.6E-03	2.0E-02	1.2E-02	1.5E-02	7.5E-03	1.0E-03	3.2E-04
Nickel	7440-02-0	9.2E-04	9.2E-04	8.9E-04	9.6E-04	8.4E-04	9.5E-04	2.2E-03	1.0E-03	9.5E-04	1.3E-03	9.2E-04	9.6E-04
Selenium	7782-49-2	3.1E-03	3.1E-03	3.0E-03	3.2E-03	2.8E-03	3.2E-03	3.3E-03	3.4E-03	3.2E-03	4.2E-03	3.1E-03	3.2E-03
Thallium	7440-28-0	3.1E-03	3.1E-03	3.0E-03	3.2E-03	2.8E-03	3.2E-03	3.3E-03	3.4E-03	3.2E-03	4.2E-03	3.1E-03	3.2E-03
Tin	7440-31-5	3.1E-03	3.1E-03	3.0E-03	3.2E-03	2.8E-03	3.2E-03	3.3E-03	3.4E-03	3.2E-03	4.2E-03	3.1E-03	3.2E-03
Vanadium	7440-62-2	1.5E-03	1.5E-03	1.5E-03	1.6E-03	1.4E-03	1.6E-03	1.6E-03	1.7E-03	1.6E-03	2.1E-03	1.5E-03	1.6E-03
Zinc	7440-66-6	1.3E-02	1.1E-02	1.3E-02	7.3E-03	9.8E-03	1.1E-02	2.6E-02	2.9E-02	1.3E-02	1.8E-02	7.5E-03	3.5E-03

Non-detects reported as half of the detection limit.

APPENDIX C– Copy -of E-mail from ALS regarding Isopropyl Alcohol

ORTECH Consulting Inc.

From: Gayle Braun <Gayle.Braun@ALSGlobal.com>
Sent: December-01-21 11:23 AM
To: ORTECH Consulting Inc.
Subject: RE: [EXTERNAL] - RE: L2660724 COA [Job #] 51060

Hi Terry, we are still using IPA to disinfect the lab work areas due to Covid so we are not reporting IPA at this time. Let me know if you need anything further.
Thanks!
Gayle

Gayle Braun
Senior Project Manager, Environmental

C +1 519 421 6566

-----Original Message-----
From: ORTECH Consulting Inc. [mailto:ortech@ortechsarnia.ca]
Sent: Wednesday, December 1, 2021 9:55 AM
To: Gayle Braun <Gayle.Braun@ALSGlobal.com>
Subject: [EXTERNAL] - RE: L2660724 COA [Job #] 51060

Hi Gayle,

Was isopropyl alcohol not included this year due to interferences with disinfectant again? If so could you please send me an e-mail so I can include in our report.

Thanks,

Terry

-----Original Message-----
From: gayle.braun@alsglobal.com <gayle.braun@alsglobal.com>
Sent: November-22-21 4:17 PM
To: ORTECH Consulting Inc. <ortech@ortechsarnia.ca>
Subject: L2660724 COA [Job #] 51060

Hello,

Please find enclosed your certificate of analysis. For any questions regarding the report, please contact your account manager.

Notes / Abbreviations:
COC = Chain of Custody
SRC = Sample Receipt Confirmation
COA = Certificate of Analysis

If you need Adobe Acrobat Reader, just click the following link:
https://aus01.safelinks.protection.outlook.com/?url=http%3A%2F%2Fwww.adobe.com%2Fproducts%2Facrobat%2Freadstep2.html&data=04%7C01%7Cgayle.braun%40alsglobal.com%7C6e5bc47a5c8b494ae57208d9b4da9caa%7C485ca04e6f7440509764cdb4bfa89c25%7C0%7C0%7C637739676469338116%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C1000&sdata=EeZ%2BsPKsfboDwvWFUwz82FcJNiG7YgleqPzyqfvW8eM%3D&reserved=0

How was your customer experience ? Please send us your feedback by visiting:
https://aus01.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.surveymonkey.com%2Fs%2FCustomer_Feedback&data=04%7C01%7Cgayle.braun%40alsglobal.com%7C6e5bc47a5c8b494ae57208d9b4da9caa%7C485ca04e6f7440509764cdb4bfa89c25%7C0%7C0%7C637739676469338116%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C1000&sdata=NhZKH%2F8Jh5iAOgJ7EKRVcS9ZuRM4ePQA%2Fe8dM3EELEc%3D&reserved=0

This value-added service provides the user with an electronically generated file that can be used for statistical analysis and/or report formatting.

APPENDIX D– Electronic Records

- Copies of field data records
- Copies of lab certificates of analysis and Chain of Custody records
- Hourly meteorological data for sampling days (Excel format)
- Appendix B Tables (Excel format)