ARCADIS Design & Consultancy for natural and built assets

Public Services and Procurement Canada

on behalf of

Department of National Defence

LONG-TERM LANDFILL MONITORING AT THE CAM-1 FORMER DEW LINE SITE

Jenny Lind Island, Nunavut

April 17, 2020

LONG-TERM LANDFILL MONITORING AT THE CAM-1 FORMER DEW LINE SITE



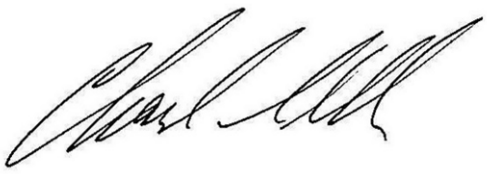
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Separate Package:

CD ROM – Containing All Raw 2019 CAM-1 Electronic files

ACRONYMS AND ABBREVIATIONS

bgs	below ground surface
BOC	natural biogenic organic compound
CIRNAC	Crown-Indigenous Relations and Northern Affairs Canada
DCC	Defence Construction Canada
DEW	Distant Early Warning
DGPS	Differential Global Positioning System
DND	Department of National Defence
GPS	Global Positioning System
HDPE	High Density Polyethylene
LRR	Long Range Radar
masl	metres above sea level
mbgs	metres below ground surface
mtoc	metres below top of casing
MDL	Method Detection Limit
MW	Monitoring Well
NWS	North Warning System
PCB	Polychlorinated Biphenyl
PHC	Petroleum Hydrocarbon
PSPC	Public Services and Procurement Canada
QA/QC	Quality Assurance/Quality Control
RODI	Reverse Osmosis Deionized
RPD	Relative Percent Difference
SRR	Short-Range Radar
TOR	Terms of Reference
USAF	United States Air Force

EXECUTIVE SUMMARY

Public Services and Procurement Canada (PSPC) was engaged by Department of National Defence (DND) to procure environmental and geotechnical services for the monitoring of Distant Early Warning (DEW) Line sites in Canada. PSPC acquired the services of Arcadis Canada Inc. (Arcadis) to perform the work and the management of the monitoring of DND DEW Line Sites (PIN-2, PIN-3, PIN-4, CAM-1, CAM-2, CAM-3, CAM-4, and CAM-M) in the Kitikmeot Region, Nunavut Settlement Area, for the years 2016 to 2020. This report documents the findings of the field program for the 2019 monitoring year conducted at the former DEW Line Site CAM- 1, located at Jenny Lind Island, Nunavut.

The 2019 CAM-1 site monitoring program took place between August 25 and 28, 2019 and included the inspection/monitoring of ten landfills including the Borrow Area North Landfill, Northeast Landfill, Station West Landfill, Non-Hazardous Waste Landfill, Tier II Disposal Facility, Southeast Landfill, Main Landfill, Station East Landfill, USAF Landfill, and the East Landing Area Landfill.

The objective of the landfill monitoring program was to assess the performance of these landfills from an environmental and geotechnical perspective, which included a visual inspection, soil sampling, groundwater sampling, and thermal monitoring (downloading data from thermistors installed in the Tier II Soil Disposal Facility) in accordance with the Logistics and Work Plan prepared for the CAM-1 site, as issued 4 July 2019.

The main observations and required actions for future monitoring events at the CAM-1 site in 2019 are shown below:

Landfill	Main Observations and Conclusions	Required Action for Future Monitoring Events
Borrow Area North Landfill	There were no geotechnical concerns identified. No environmental issues in soil were identified. A trend evaluation for the landfill was not completed as part of the 2019 program as less than seven sampling events worth of soil data has been collected to date. Landfill performance is acceptable.	Continue environmental and geotechnical monitoring as per existing monitoring schedule
Northeast Landfill	There were no geotechnical concerns identified. No environmental issues in soil were identified. A trend evaluation for the landfill was not completed as part of the 2019 program as less than seven sampling events of soil data has been collected to date. Landfill performance is acceptable.	Continue environmental and geotechnical monitoring as per existing monitoring schedule
Station West Landfill	There were no geotechnical concerns identified. No environmental issues in soil were identified. A trend evaluation for the landfill was not completed as part of the 2019 program as less than seven sampling events of soil data has been collected to date. Landfill performance is acceptable	Continue environmental and geotechnical monitoring as per existing monitoring schedule

Landfill	Main Observations and Conclusions	Required Action for Future Monitoring Events
Non-Hazardous Waste Landfill	There were no geotechnical concerns identified. No environmental issues in soil were identified. A trend evaluation for the landfill was not completed as part of the 2019 program as less than seven sampling events of soil data has been collected to date. No environmental issues or significant trends in groundwater were identified. Landfill performance is acceptable.	Continue environmental and geotechnical monitoring as per existing monitoring schedule
Tier II Disposal Facility	There were no geotechnical concerns identified. No environmental issues were identified. Frozen or dry conditions were found at all four groundwater monitoring wells and thus, no groundwater trend analysis could be conducted. No environmental issues in soil were identified. The majority of analytes in soil did not exhibit any apparent trends in either upgradient or downgradient sample locations. Slight downward trends were observed for Cobalt and Copper parameters at both upgradient and down-gradient locations. Tier II Disposal Facility performance is acceptable.	Continue environmental and geotechnical monitoring as per existing monitoring schedule
Southeast Landfill	There were no geotechnical concerns identified. No environmental issues in soil were identified. A trend evaluation for the landfill was not completed as part of the 2019 program as less than seven sampling events of soil data has been collected to date. Landfill performance is acceptable.	Continue environmental and geotechnical monitoring as per existing monitoring schedule
Main Landfill	There were no geotechnical concerns identified. No environmental issues in soil were identified. A trend evaluation for the landfill was not completed as part of the 2019 program as less than seven sampling events of soil data has been collected to date. Landfill performance is acceptable.	Continue environmental and geotechnical monitoring as per existing monitoring schedule
Station East Landfill	There were no geotechnical concerns identified. Two sample locations which exceed the BL+3SD for lead were observed, one upgradient and one downgradient. These concentrations are only marginally above the BL+3SD of 10 mg/kg at a concentration of 11 mg/kg and are not believed to represent landfill contaminant migration and are within what could be expected of natural variability. No other environmental issues in soil were identified. A trend evaluation for the landfill was not completed as part of the 2019 program as less than seven sampling events of soil data has been collected to date. Landfill performance is acceptable	Continue environmental and geotechnical monitoring as per existing monitoring schedule
USAF Landfill	There were no geotechnical concerns identified. No environmental issues in soil were identified. A trend evaluation for the landfill was not completed as part of the 2019	Continue environmental and geotechnical monitoring as

Landfill	Main Observations and Conclusions	Required Action for Future Monitoring Events
	program as less than seven sampling events of soil data has been collected to date. Landfill performance is acceptable	per existing monitoring schedule
East Landing Landfill	There were no geotechnical concerns identified. No environmental issues in soil were identified. A trend evaluation for the landfill was not completed as part of the 2019 program as less than seven sampling events of soil data has been collected to date. Landfill performance is acceptable.	Continue environmental and geotechnical monitoring as per existing monitoring schedule

1 BACKGROUND

1.1 Context and Mandate

Public Services and Procurement Canada (PSPC) was engaged by Department of National Defence (DND) to procure environmental and geotechnical services for the monitoring of Distant Early Warning (DEW) Line sites in Canada. PSPC acquired the services of Arcadis Canada Inc. (Arcadis) to perform the work which included the management of the monitoring of DND DEW Line Sites (PIN-2, PIN-3, PIN-4, CAM-1, CAM-2, CAM-3, CAM-4 and CAM-M) in the Kitikmeot Region, Nunavut Settlement Area, for the years 2016 to 2020. This report documents the findings of the field program for the 2019 monitoring year conducted at the former DEW Line Site CAM-1, located at Jenny Lind Island, Nunavut. Reference should be made to our Statement of Limitations to this report, as outlined in **Appendix A**.

Arcadis' 2019 monitoring field program took place between August 25 through 28, 2019 and entailed the inspection/monitoring of ten landfills, including the following locations: Borrow Area North Landfill, Northeast Landfill, Station West Landfill, Non-Hazardous Waste (NHW) Landfill, Tier II Disposal Facility, Southeast Landfill, Station East Landfill, Main Landfill, USAF Landfill, and East Landing Area Landfill.

The objective of this monitoring program was to assess the performance of these landfills from an environmental and geotechnical perspective. Field activities included visual inspections, soil sampling, groundwater sampling, and thermal monitoring (downloading data from thermistors installed in the Tier II Soil Disposal Facility) in accordance with the Logistics and Work Plan prepared by Arcadis for the CAM-1 site, dated 4 July 2019.

1.1.1 Site Location

CAM-1 site is located on the east central side of Jenny Lind Island within the Queen Maud Gulf in Nunavut at 68° 40' 31" north latitude and 101°43' 42" west longitude, and is approximately 76 meters above sea level (masl). The site is approximately 140 km southeast of the Community of Cambridge Bay (now known as Iqaluktuuttiaq), NU.

CAM-1 is accessible via charter aircraft or helicopter. During the 2019 field program, the runway was observed to be in good to excellent condition. There are no on-site accommodation facilities at CAM-1 and on-site transportation is not available. **Figure CAM-1.1** shows the overall site plan including airstrip, landfill locations and other notable features.

1.1.2 Background

The CAM-1 Jenny Lind Island site was constructed in the 1950s as part of the Distant Early Warning (DEW) Line and operated until the early 1990s. The DEW Line Station was eventually decommissioned and boarded up in the fall of 1992. CAM-1A, a remotely operated Short-Range Radar (SRR) station operated by the North Warning System (NWS) was constructed approximately 12 km northwest of the site.

The environmental cleanup and demolition of the former DEW line facilities included closure and remediation of eight landfills as well as the construction of one landfill for the disposal of non-hazardous waste generated from demolition and collection of site debris and the construction of a Tier II Disposal Facility for the placement of Tier II contaminated soils during site clean-up.

1.1.3 Site Description and Features

The CAM-1 site is located about 1 km inland and exposed to oceanic influences from Queen Maud Gulf and Victoria Strait. The site landscape is characterized by a surficial cover of glacial drift reworked by marine waters. It is marked by extensive raised beach and swale features.

Site features include a runway, a series of interconnected roadways and paths, a construction monument and the following 10 landfills which are being monitored under the current scope of work:

- Borrow Area North Landfill
- Northeast Landfill
- Station West Landfill
- Non-Hazardous Waste Landfill
- Tier II Disposal Facility
- Southeast Landfill
- Main Landfill
- Station East landfill
- USAF Landfill
- East Landing Landfill

Arcadis staff gained access to the CAM-1 site by chartered fixed wing aircraft supplied by Kingaunmiut Services Ltd., flying out of Cambridge Bay (now known as Iqaluktuuttiaq), NU. The field crew set up a temporary camp for the duration of the CAM-1 field sampling/ investigation program, supplied by Kitnuna Co., based out of Cambridge Bay. Emergency on-site accommodations associated with the Long-Range Radar (LRR) station are present in approximately 12 km from the site and were taken into consideration as part of emergency planning/emergency response plan. **Figure CAM-1.1** shows the overall site plan and illustrates the landfill locations and other notable site features.

1.2 Logistics and Work Plan

Prior to mobilization, Arcadis prepared a Logistics and Work Plan, dated 4 July 2019, which was submitted and accepted by DND. The Logistics and Work Plan was used as a reference to guide the 2019 environmental sampling and monitoring work completed at the CAM-1 landfills. A copy of the Work Plan was taken with the Arcadis field staff for on-site reference purposes. The Work Plan also included a copy of the Nunavut Water Board water use license due to Arcadis' use of an on-site camp at CAM-1.

1.3 Objective

The objective of the DEW Line landfill monitoring program was to collect sufficient information to assess the performance, integrity, and stability of the landfills from an environmental and geotechnical perspective for human health and environmental protection. Furthermore, an additional objective of the program was to collect information, in accordance with the monitoring requirements outlined below in Section 1.4, in a thorough and consistent manner during each monitoring event.

PSPC has specified the requirements for the Landfill Monitoring Program in the document entitled, *"Terms of Reference – DEW Line Landfill Monitoring Program – PIN-2 Cape Young, PIN-3 Lady Franklin Point, PIN-4 Byron Bay, CAM-M Cambridge Bay, CAM-1 Jenny Lind Island, CAM-2 Gladman Point, CAM-3*

Shepherd Bay, and CAM-4 Pelly Bay – DEW Line Sites, Kitikmeot Region, Nunavut, DND Project #: KITIK 16", dated November 2015. Specifically, Section 3 of the TOR outlined the study objectives in detail. The monitoring schedule for CAM-1 is detailed in Table 1-1 below:

Table 1-1 Monitoring Schedule – CAM-1 Jenny Lind Island

No. of Years After Construction	Monitoring Event No.	Year of Monitoring Event
1	1	2010
2	2	2011
3	3	2012
4	4	2013
5	5	2014
7	6	2016
10*	**7***	**2019**
15	8	2024
25	9	2034

* monitoring event covered under the current contract.

1.4 Scope of Work

The scope of work for the Long-Term Landfill Monitoring Program at CAM-1 was defined in the logistics and Work Plan, dated 4 July 2019, as accepted by DND. The scope of work includes the activities summarized in the following Table 1-2.

Table 1-2: CAM-1 (Jenny Lind Island)- Scope of Work

Landfill	Type	Visual Inspection (Y/N)	Soil Sampling (# of locations and depths)	Groundwater Sampling (# of MWs)	Thermal Monitoring (# of Thermistors
Borrow Area North Landfill	Regraded	Y	5 x 2 depths	none	none
Northeast Landfill	Regraded	Y	4 x 2 depths	none	none
Station West Landfill	NHWL	Y	4 x 2 depths	none	none
Non-Hazardous Waste Landfill	NHWL	Y	4 x 2 depths	4	none
Tier II Disposal Facility	Tier II	Y	4 x 2 depths	4	4
Southeast Landfill	Regraded	Y	5 x 2 depths	none	none
Main Landfill	Regraded	Y	4 x 2 depths	none	none

Landfill	Type	Visual Inspection (Y/N)	Soil Sampling (# of locations and depths)	Groundwater Sampling (# of MWs)	Thermal Monitoring (# of Thermistors
Station East Landfill	Regraded	Y	4 x 2 depths	none	none
USAF Landfill	Regraded	Y	5 x 2 depths	none	none
East Landing Landfill	Regraded	Y	4 x 2 depths	none	none
Total		**10**	**86**	**8**	**4**

Note: QA/QC duplicate samples were not included in totals listed above.

1.5 Site Geology, Hydrogeology and Hydrology

Jenny Lind Island is located in the Arctic Platform geological province, with bedrock geology characterized by Cambrian-Silurian carbonate and siliciclastic rocks (Canada-Nunavut Geoscience Office, 2006). The site is located in an area of continuous permafrost with medium to high ground ice content (Natural Resources Canada, 1995).

The island is generally low-lying with some parts of the island consisting of flat terrain, whereas other parts of the island consist of undulating terrain that is interspersed with sparsely vegetated rocky ridges. Other parts consist of numerous low-lying wetlands and sedge meadows. Shorelines are mostly sandy and/or consist of oceanic polished cobbles and boulders. The island's beach ridges, and strand lines consist of a large lithologic variety of all sizes of material from clay particles to boulders, with sand and gravels predominating. Observations of the local surficial geologic conditions made during the monitoring program were consistent with the general description provided in the literature.

According to the map entitled, "*Geology of Nunavut (Reference I)*", the bedrock geology is comprised Paleozoic undivided carbonate and siliciclastic rocks. Based on field observations, the surficial geology at the CAM-1 site consisted of weathered bedrock overlain by coarse grained esker material consisting primarily of gravel to cobble deposits with silts and sands.

Groundwater flow is seasonal, occurring mainly in the summer period of maximum active layer thaw. Groundwater is located at shallow depths and is highly affected by local permafrost conditions. Surface water in the vicinity of CAM-1 drains to the southeast towards Queen Maud Gulf. Surficial drainage at the site is localized to intermittent small ponded areas adjacent to the landfill features and varies between the respective landfill locations. Standing surface water (ponding water) was also observed immediately adjacent to the Borrow Area North landfill structure base on its northeast sides, as well as adjacent to the East Landing Landfill on its north side.

The CAM-1 site is known to be a habitat for Lesser Snow Geese, Canada Geese, Ross's Geese, Muskoxen and Arctic Foxes. No wildlife was observed during the 2019 monitoring program other than Snow Geese or Canada Geese.

1.6 Field Program Staff

The 2019 DEW Line monitoring event at CAM-1 was conducted by qualified personnel from Arcadis with extensive experience in completing work programs at remote northern environments including DEW Line monitoring sites with both DND and CIRNAC. The following Arcadis personnel were present on site:

- Ryan Fletcher, C.Tech, EP – Environmental Field Staff Lead
- Troy Austrins, P.Eng – Geotechnical Field Lead/ Senior Geotechnical Professional

Inuit Support Team and Roles (staffing services provided through Kitnuna Corporation (IFR0378)) were as follows at CAM-1 in 2019:

- David Kavanna (wildlife monitor)
- Jimmy Evalik (wildlife monitor)
- Ernest Mala (labourer)
- Joe Jr Evetalegak (labourer)
- Dwayne Allukpik (labourer)
- Joe Koaha (Wildlife Monitor)
- Denis Kavanna (camp staff)

1.7 Weather Conditions

An outline of historical recorded weather conditions encountered is presented on Table 1-3 for the CAM-1 site. The closest location for which climate normal and averages for these periods are available is related to the community of Cambridge Bay, located approximately 140 km west-northwest. The 1971-2000 Climate Normal and Averages (temperature and precipitation totals) prepared by Environment Canada and Climate Change for Cambridge Bay are listed.

Table 1-3: Summary of Historical Temperature and Precipitation Conditions (Cambridge Bay station)

Climate Normals (1971- 2000)	Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Daily Maximum Temp (°C)	-29.3	-29.3	-25.7	-16.7	-5.3	5.6	12.3	9.4	1.9	-8.1	-19.3	-26.1
Daily Average Temp. (°C)	-32.8	-33	-29.7	-21.4	-9.2	2.4	8.4	6.4	-0.3	-11.5	-23	-29.6
Daily Minimum Temp. (°C)	-36.3	-36.6	-33.7	-26	-13	-0.8	4.6	3.4	-2.5	-14.9	-26.5	-33
Precipitation (mm)-rain	0	0	0	0.1	1.6	9.8	21.7	24.5	11.4	0.4	0	0
Precipitation (cm)-snow	5.6	6.4	7.4	7.5	9.3	2.8	0	2.2	8.9	16.2	9.3	6.3

An outline of the weather conditions encountered during the 2019 field work conducted by Arcadis is provided in Section 2.1.2. as well as on the individual Inspection Checklists for each landfill visited.

1.7.1 Additional Work in 2019

No additional work items were conducted as part of the 2019 work program at CAM-1 site, other than datalogger reprogramming.

1.7.2 Deviations from the TOR, Proposal, Work Plan, and/or Kick-off Meeting

Challenges were encountered collecting soil samples at the full depth as specified in the TOR (i.e., 40-50 cm) in some locations (as outlined below in Table 2-3). Attempts were made using a pick-axe to advance the test pits to the required depth; however, bedrock or boulders were encountered, and the test pits met refusal at the depth noted in the field notes and on the soil sampling logs. Depth samples were collected from the bottom of the test pits at the maximum depth achievable.

No other challenges were encountered during the 2019 field program at CAM-1 and no deviations from the TOR, Proposal, Work Plan, and/or Kick-off Meeting were implemented.

1.8 Project References

Project references include:

A DEW Line Landfill Monitoring Program – PIN-2 Cape Young, PIN-3 Lady Franklin Point, PIN-4 Byron Bay, CAM-M Cambridge Bay, CAM-1 Jenny Lind Island, CAM-2 Gladman Point, CAM-3 Shepherd Bay, and CAM-4 Pelly Bay – DEW Line Sites, Kitikmeot Region, Nunavut, DND Project # KITIK 16, November 2015. (Specifically - Annex S and Annex D)

B Arcadis Canada Inc., Proposal for Kitik 16 DEW Line Sites Monitoring, Response to Solicitation No. W6837-151003/B, March 8, 2016

C Arcadis Canada Inc., Long Term Landfill Monitoring at the Former CAM-1 DEW Line Site [occurring in 2016], Jenny Lind Island, March 24, 2017.

D Environmental Sciences Group, CAM-1 Jenny Lind Island, Nunavut, First-Year Monitoring Program 2010, December 2010.

E Biogenie, The collection of Landfill Monitoring Data at the Former CAM-1 DEW Line Site, Jenny Lind Island, Nunavut, Final Report, 2011 Season, January 2012.

F Biogenie, The collection of Landfill Monitoring Data at the Former CAM-1 DEW Line Site, Jenny Lind Island, Nunavut, Draft Report, 2012 Season, Monitoring Event – 2, March 2013.

G Biogenie, The collection of Landfill Monitoring Data at the Former CAM-1 DEW Line Site, Jenny Lind Island, Nunavut, Final Report, 2013 Season, January 2014.

H Biogenie, The collection of Landfill Monitoring Data at the Former CAM-1 DEW Line Site, Jenny Lind Island, Nunavut, Final Report – 2014 Season, June 2015.

I Canada-Nunavut Geoscience Office, Geology of Nunavut Map, 2006.

J Natural Resources Canada, Canada Permafrost Map, 1995.

K Abandoned Military Site Remediation Protocol- Indian & Northern Affairs Canada; Dec. 2008

1.9 Report Structure

This report describes the work completed in August 2019 at the following ten CAM-1 landfill locations;

- Borrow Area North Landfill
- Northeast Landfill
- Station West Landfill
- Non-Hazardous Waste Landfill
- Tier II Disposal Facility
- Southeast Landfill
- Main Landfill
- Station East Landfill
- USAF Landfill
- East Landing Area Landfill

Results from soil and groundwater sampling, and visual inspection of the respective landfills on site are presented in the formats described in the TOR (Reference A).

The report has been organized such that the results for each landfill are presented within a separate section as presented below in Table 1-4.

Table 1-4: Report Structure by Landfill at CAM-1

Landfill Identification	Section Number	Analytical Tables	Associated Figure Numbers
Borrow Area North Landfill	3	Table 1	CAM-1.2A (Visual) CAM-1.2B (Soil)
Northeast Landfill	4	Table 2	CAM-1.3A (Visual) CAM-1.3B (Soil)
Station West Landfill	5	Table 3	CAM-1.4A (Visual) CAM-1.4B (Soil)
Non-Hazardous Waste Landfill	6	Table 4A- Soil Table 4B- GW	CAM-1.5A (Visual) CAM-1.5B (Soil) CAM-1.5C (GW)
Tier II Disposal Facility	7	Table 5A- Soil Table 5B- GW	CAM-1.6A (Visual) CAM-1.6B (Soil) CAM-1.6C (GW)
Southeast Landfill	8	Table 6	CAM-1.7A (Visual)

Landfill Identification	Section Number	Analytical Tables	Associated Figure Numbers
			CAM-1.7B (Soil)
Main Landfill	9	Table 7	CAM-1.8A (Visual) CAM-1.8B (Soil)
Station East Landfill	10	Table 7	CAM-1.9A (Visual) CAM-1.9B (Soil)
USAF Landfill	11	Table 8	CAM-1.10A (Visual) CAM-1.10B (Soil)
East Landing Landfill	12	Table 9	CAM-1.11A (Visual) CAM-1.11B (Soil)

Each section details all the relevant information for the respective landfill areas included as part of the current 2019 Landfill Monitoring Program. Each of the individual landfill sections include:

- A brief description of the landfill;
- Completion of the Visual Inspection Checklist;
- A preliminary stability assessment;
- A discussion of all the visual inspection issues assessed;
- The overall performance rating of the landfill;
- A photo log sheet (as provided in **Appendix H**);
- Annotated drawings of each landfill (in Figures section following main text);
- Soil sample logs analytical data;
- Monitoring well sampling logs and analytical data (if applicable);
- A discussion and comparison of chemical data to background and previous years monitoring events;
- Graphed trends of chemical data (found in **Appendix D** for soil and for groundwater);
- Completed thermistor inspection forms (as applicable);
- Analysis of overall performance of the landfill; and
- Any recommendations for further action and conclusions.

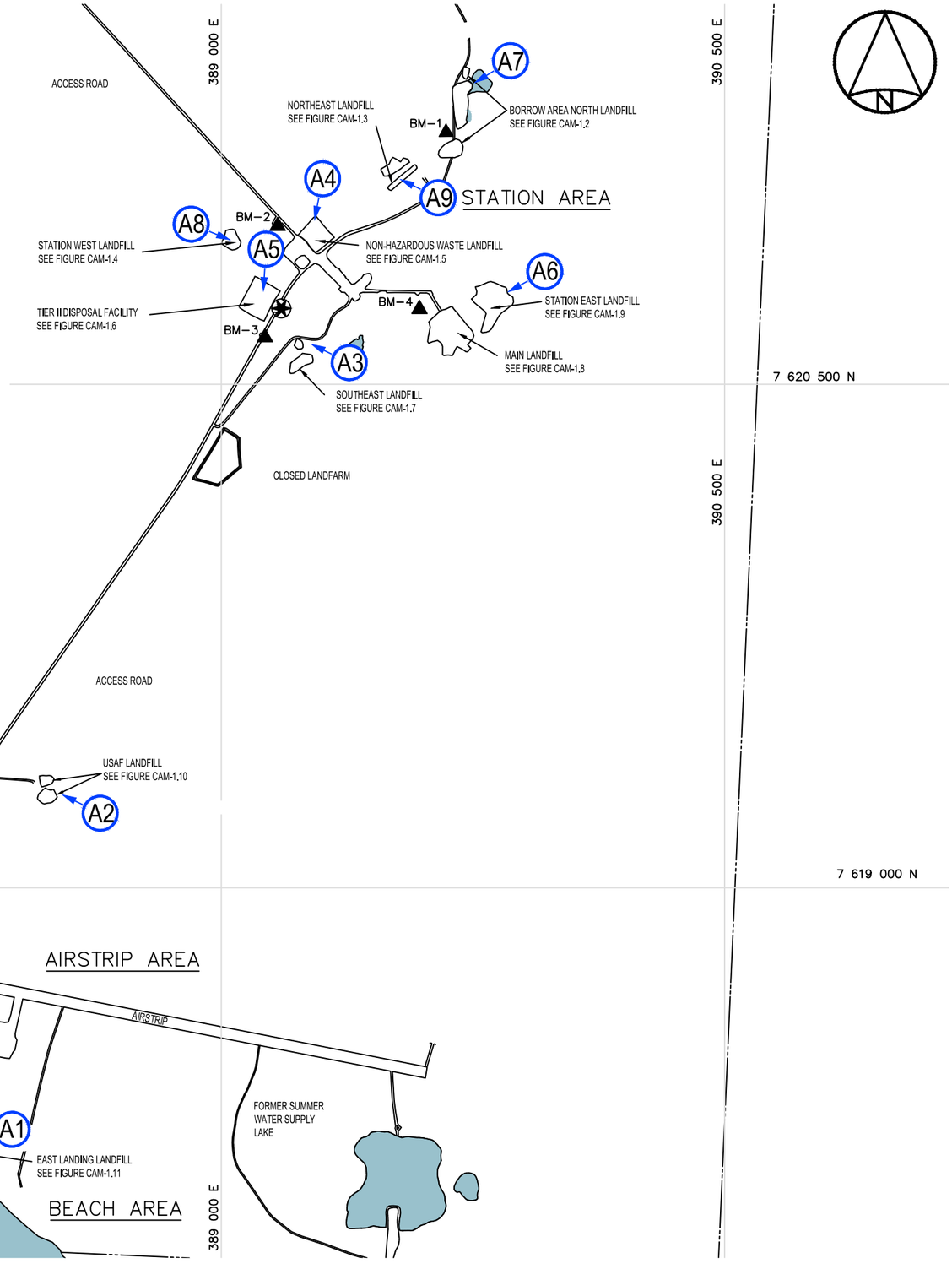
The photographic record for all landfills is presented in **Appendix H**. The original photos are included in electronic format (.jpg) and are attached as a separate addendum DVD-ROM to the report. An electronic version of the report and its component tables, figures and data files is included as a separate CD/DVD-ROM submittal to this report.

A copy of the field notes acquired during the 2019 landfill monitoring program at CAM-1 have been included in **Appendix G**. Laboratory Certificates of Analysis are attached in **Appendix B** while a discussion on QA/QC analytical findings is attached in **Appendix C**.



LOCATION OF JENNY LIND ISLAND WITHIN NUNAVUT TERRITORY

SCALE: NTS



LEGEND

- CM101 — SURVEY CONTROL MONUMENT
- BM–1 — PERMANENT BENCHMARK LOCATION (4)
- COMMEMORATIVE PLAQUE LOCATION
- APPROXIMATE LOCATION OF PROPERTY BOUNDARY
- BODY OF WATER
- X — APPROX. AERIAL PHOTOGRAPHIC VIEWPOINT (2019)

Meters

300 0 300 600

1:15000

NO.	VERSION	DATE	PAR	VERIF.	APPR.
3	FINAL	2020.04.17	RF	TA	CG

Construction de Défense Canada
Defence Construction Canada

COLLECTION OF LANDFILL MONITORING DATA

CAM-1, JENNY LIND ISLAND, NU

SITE OVERVIEW

ARCADIS
1050 Morrison Drive, Suite 201, Ottawa, Ontario, K2H 8K7
Office General +1 613 721 0555

MEASUREMENT UNIT:	SCALE:	DATE (month–year):
Metre	1 : 15000	MARCH 2020
DRAWN BY:	VERIFIED BY:	APPROVED BY:
R. FLETCHER	T. AUSTRINS	C. GRAVELLE, P.ENG
PROJECT NO.:	DRAWING NO.:	PAGE:
30000251	30000251-CAM-1.1	PL

FIGURE CAM-1.1

2 APPROACH AND METHODOLOGY

2.1 Summary of Work

2.1.1 Health and Safety

Prior to mobilization to the site, a site-specific health and safety plan (SSHASP) was submitted and accepted by DND. The plan outlined the general safety rules and procedures that were adhered to while working at the site. It also presented additional precautions and procedures in the event of an emergency. Prior to commencing the field work, all project staff participating in the monitoring and assessment activities were required to familiarize themselves with the contents of the SSHASP and sign the Statement of Compliance document.

Field crews carried appropriate emergency gear and took every precaution to keep the crew safe. This included the following, where appropriate:

- Obtaining maps to assist in identifying/characterizing the dominant physical features near the site (e.g., topographic maps and aerial photographs);
- Carrying and knowing how to use emergency communication devices such as satellite phones, which were tested for functionality and sufficient airtime prior to mobilization;
- Checking the weather prior to travel to the field;
- Compilation of a site-specific Emergency Contact List providing numbers for emergency services, office contacts, and individual emergency contacts;
- Carrying a Global Positioning System (GPS) unit for navigation as well as for relaying accurate location coordinates in case of emergency;
- Possession of a Level 1 First Aid kit appropriate to the scope of work and number of personnel;
- Possession of an Emergency Field kit containing provisions necessary to survive (e.g. food, tarps, flares) should transport, or rescue services, not be possible for a number of days; and
- Knowing how to use all emergency equipment and testing it prior to mobilization to the field.

The remote nature of the CAM-1 Jenny Lind Island site required that a comprehensive Emergency Field kit be mobilized to the site for the duration of the field work.

Arcadis staff received all relevant health and safety training in preparation for undertaking the work activities on-site prior to mobilization to the site. Arcadis ensured that all staff on site received a site safety orientation and field-specific training on contaminated sites, which was issued on Day 1 of the field program. The site safety orientation included specific details of the health and safety plan that were relevant for each job, and relevant training for each position.

2.1.2 Field Program

Arcadis staff mobilized to Cambridge Bay from Yellowknife via commercial airline (Canadian North), then to the CAM-1 site via a chartered Dornier 328 aircraft operated by Kingaunmiut Air (NTI#-IFR-0951). On-site transportation was via an ATV or travel by foot. Accommodations before and after CAM-1 mobilization

(while in Cambridge Bay) were provided by Inns North Arctic Islands Lodge (NTI#-IFR-1743). On-site accommodations were required for this contract in the form of a camp, consisting of personnel tents and a dining tent which was set up next to the airstrip. Camp equipment and staffing was supplied by Kitnuna Corporation (NTI#-IFR-0378. The following Table 2-1 outlines the field schedule for CAM-1.

Table 2-1: 2019 Field Schedule for CAM-1 Jenny Lind Island

August 2019						
Sunday	**Monday**	**Tuesday**	**Wednesday**	**Thursday**	**Friday**	**Saturday**
				22	23	24
				Mobilized to Yellowknife	Mobilized to Cambridge Bay	Logistics
25	26	27	28	29	30	31
Mobilized to CAM-1 & Site Work	**CAM-1 Site Work**	**CAM-1 Site Work**	**CAM-1 Site Work & Demobilize to Cambridge Bay**	Logistics and other work	Logistics and other work	Demobilized to Yellowknife
September 2019						
1	2	3	4	5	6	7
Demobilized to Ottawa						

Weather during the field inspection was generally sunny or partially overcast with medium to high winds (10-25 km/hr.) and daytime temperatures ranging from 9-16 degrees Celsius. Specific weather information on the day of inspections is found on the field notes for each landfill, provided in **Appendix G**.

2.1.3 Visual Inspection

Visual inspection of each landfill was conducted by Mr. Troy Austrins, based on the guidelines presented in Section 5.2 of the TOR. A visual inspection checklist (provided in Annex J1 of the TOR and reproduced herein for each individual landfill section) was completed for each landfill site inspected. Inspection information recorded for each landfill included its designation, type, date, monitoring event number, weather conditions, and the name of the inspector. Observations related to the following potential site conditions were recorded for each landfill (as applicable): settlement; erosion; lateral movement; frost action;

sloughing; cracking; animal burrows; vegetation establishment; staining; vegetation stress; seepage points or ponded water; debris or liner exposure; condition of monitoring points; and other relevant observations.

The presence of the above conditions was recorded on field notes as well as referenced with electronic DGPS coordinates for purposes of evaluating their location, dimensions, and extent.

Photographic records were taken to document the general condition of the landfill. Photographs were taken to substantiate recorded observations including where no concerns were identified. All photographs were referenced to existing monuments where possible and included another reference such as a pick axe (with 10 cm intervals taped) as well as/or small fluorescent cones (20 cm in diameter) were used as an indication of scale in the visual inspection photographs, where required. Photographs were taken using a digital camera with an equivalent focal length of 5 to 24 mm and 16.4-megapixel resolution. A detailed sketch of each landfill (field mark-ups of existing figures) showing the results of the inspection was also. These field sketches were utilized as support and back-up to the digitally collected DGPS GIS data, as described in Section 2.2.2.

Historical features and conditions from previous monitoring events have been noted on the respective landfill figures included herein. Existing features were compared to these features noted in previous monitoring reports and a comparative analysis is included in each landfill section within this report.

All monitoring equipment was visually inspected (wells and thermistors) with any damages noted along with repair requirements. Photographic records of each monitoring station were also collected and are provided in **Appendix H**.

2.1.3.1 Stability Assessment

Arcadis used the following Performance/Severity rating reference guide for purposes of assessing the geotechnical performance of the landfill sites inspected and the extent of any features noted.

Performance / Severity Rating	Description
Acceptable	Noted features are of little consequence. The landfill is performing as designed. Minor deviations in environmental or physical performance may be observed, such as isolated areas of erosion or settlement.
Marginal	Physical/environmental performance appears to be deteriorating with time. Observations may include an increase in size or number of features of note, such as differential settlement, erosion or cracking. No significant impact on landfill stability to date, but potential for failure is assessed as low or moderate.
Significant	Significant or potentially significant changes affecting landfill stability, such as significant changes in slope geometry, significant erosion or differential settlement; scarp development. The potential for failure is assessed as imminent.
Unacceptable	Stability of landfill is compromised to the extent that ability to contain waste materials is compromised. Examples may include: • Debris exposed in erosion channels or areas of differential settlement,

Performance / Severity Rating	Description
	• Liner exposed, and/or • Slope failure.
Extent	**Description**
Isolated	Singular feature
Occasional	Features of note occurring at irregular intervals/locations
Numerous	Many features of note impacting less than 50% of the surface area of the landfill
Extensive	Impacting greater than 50% of the surface area of the landfill

2.1.4 Soil Sampling

Soil sampling at each landfill site was completed concurrently with the other monitoring activities. A Soil Sampling Log (as was provided in Annex J2 of the TOR) was completed at each soil sampling location. Soil sampling logs for each monitoring station are provided in the individual landfill sections of this report.

Two samples were collected from each sampling location: one sample from 0-15 cm depth, and one sample from 40-50 cm depth wherever possible. Test pits were manually excavated with hand tools (pickaxe and stainless-steel shovel). All hand tools used for sample excavation were decontaminated between locations using Alconox and distilled water. Soil samples were placed in the laboratory supplied containers by hand. A clean pair of nitrile gloves was donned prior to the collection of each sample. The laboratory supplied containers used for each sample included one zip-top plastic bag, two 125 mL glass jars, and two 40 mL clear glass vials with methanol for preservation. All sample containers were pre-sterilized as supplied by Bureau Veritas Laboratories (BV Labs, formerly Maxxam Analytics).

All soil sampling locations were backfilled after the collection of soil samples. All locations were photographed during sampling and after backfilling was complete. A list of these photographs is included in **Appendix H** for each landfill.

Soil samples were collected at a number of locations as specified in the TOR. The number of locations at each landfill is shown below in Table 2-2.

Table 2-2: Summary of Soil Sampling Locations at CAM-1

DEW Line Site	Landfill	Proposed # of Soil Sampling Locations	Actual # of Soil Sampling Locations	Total # of Samples Submitted for Analysis
CAM-1 Jenny Lind Island	Borrow Area North Landfill	5 x 2	10	10
	Northeast Landfill	4 x 2	8	8
	Station West Landfill	4 x 2	8	8
	Non-Hazardous Waste Landfill	4 x 2	8	8
	Tier II Disposal Facility	4 x 2	8	8
	Southeast Landfill	5 x 2	10	10
	Station East Landfill	4 x 2	8	8
	Main Landfill	4 x 2	8	8
	USAF Landfill	5 x 2	10	10
	East Landing Area Landfill	4 x 2	8	8
CAM-1 Total		**86**	**86**	**86***

NOTES:

* Total sample submission numbers in the above Table do not include duplicates, field blanks, trip blanks, or equipment blanks.

Limited depth was achieved at several soil sample stations as outlined below in Table 2-3 :

Table 2-3: Summary of Soil Sample Depth Limitations at CAM-1

DEW Line Site	Landfill	Soil Sampling Station ID	Sampling Depth of Lower Sample (cm)	Reasoning for limitation
CAM-1 Jenny Lind Island	Non-Hazardous Waste Landfill	MW-02	20-30	Refusal on bedrock or boulder
		MW-03	30-40	Refusal on bedrock or boulder
	Borrow Area North	C1-2	30-40	Refusal on bedrock
	South East Landfill	C1-17	30-40	Refusal on bedrock
	Main Landfill	C1-23	15-25	Refusal on bedrock
		C1-25	25-37	Refusal on bedrock
		C1-26	25-35	Refusal on bedrock

DEW Line Site	Landfill	Soil Sampling Station ID	Sampling Depth of Lower Sample (cm)	Reasoning for limitation
	Station East Landfill	C1-21	25-35	Refusal on bedrock

Soil samples were analyzed for the following parameters:

- Petroleum Hydrocarbons (PHCs) F1-F4 fractions;
- Inorganic elements: arsenic, cadmium, chromium, cobalt, copper, lead, nickel, zinc (note the removal of the analyte mercury, as requested by DND during the 2018 kick off meeting); and,
- Polychlorinated Biphenyls (PCBs): Total Aroclors.

Soil analyses were carried out by Bureau Veritas Laboratories (BV Labs, formerly Maxxam Analytics), (the Edmonton, Alberta facility for PHCs and Inorganics and at the Calgary, AB, facility for PCBs), all ISO 17025 certified facilities.

Quality assurance and quality control (QA/QC) was carried out in accordance to the procedures outlined in Annex K of the TOR with alterations as specified by DND during the 2018 project kick off meeting (i.e., elimination of the inter-laboratory analysis requirements). Blind duplicate samples and quality control and assurance measures were applied as appropriate. Blind duplicates were obtained for at least 10% of the soil samples collected. As requested by DND, no samples for inter-laboratory analyses were collected as part of this monitoring program. The specific locations where blind duplicates were collected were determined in the field and documented in the field notes.

In addition, two equipment blanks were obtained: a) by running laboratory supplied water over the stainless-steel shovel and then collecting it in laboratory supplied sample containers; and b) by pumping laboratory supplied water through the provided sample tubing.

2.1.4.1 Soil Sample Analysis

During the site assessment stage of the DEW Line Clean-Up project, background concentrations of inorganic elements and PCBs in soil were determined using samples collected from areas not impacted by site activities. As monitoring wells were not installed during the site assessment stage, nor were PHCs analyzed in soil at that time, there are no background datasets for PHCs in groundwater, or for PHCs in soil. The background soil conditions can inform if there are naturally elevated concentrations of inorganic elements present at the site that could be influencing the landfill monitoring results.

Baseline conditions refer to the soil and groundwater chemistry around the perimeters of the landfills during the site investigation and/or remediation stages of the DEW Line Clean-Up project, generally based on sampling results collected over a period of one to three years. These values are used to determine the conditions at each landfill around the time of remediation, and create a baseline mean that can be used for comparison to data collected over time, following completion of the remediation program.

Monitoring data can be considered within baseline conditions when it is within three standard deviations (SD) of the baseline mean, to account for natural variability in soil and groundwater conditions. For simplicity in this report, the term 'baseline plus three standard deviations' is represented by 'BL+3SD'.

For some parameters, there were insufficient detectable results during the investigation and remediation of the site (greater than 50% non-detects); consequently, the baseline mean was set to the detection limit and no standard deviation was calculated. In these cases, results are still compared to the BL+3SD; however, additional evaluation may be warranted to explain that the baseline results were below detection and a SD was not calculated, therefore a certain amount of natural variability (within 3 times the baseline mean) is expected.

Analytical results of soil and groundwater samples collected downgradient of landfills are compared to those of samples collected upgradient of landfills. If concentrations upgradient of the landfill are similar to the concentrations downgradient, then it suggests that the landfill is performing as intended and any elevated results are an indication of natural variability or natural conditions. Upgradient and downgradient results are also compared to the BL+3SD. Results above the BL+SD could potentially indicate results outside of the natural variability in the area and should be further examined.

Trend evaluations are completed when there are more than seven years of data available for a landfill. Trend lines are provided on the graphs for each parameter for the upgradient locations combined (represented by a blue line on the graphs) and also for all of the downgradient locations combined (represented by a black line on the graphs). The trend evaluation involves a visual review of the data points and associated trend lines. No statistical analysis is completed at this time. The visual review results in a conclusion of no apparent trend, a decreasing trend or an increasing trend.

The visual trend analysis for each parameter at upgradient and downgradient sampling locations should result in an observation that falls into one of three categories detailed below:

1. No apparent trend, or a decreasing trend for both upgradient and downgradient locations; these outcomes suggest that the landfill is performing as expected and there is likely no contaminant migration from the landfill.
2. An increasing trend upgradient and either a similar increasing trend downgradient, or no trend/a decreasing trend downgradient; these outcomes could indicate contaminant migration towards the landfill from an upgradient source, or it could represent contamination that was not remediated upgradient of the landfill during the site remediation phase.
3. A decreasing or no apparent trend upgradient, but an increasing trend downgradient could indicate potential contaminant migration from the landfill.

It should be noted that the majority of the landfills present at CAM-1 only contain 5 years' worth of data points (including the current 2019 data set); therefore, trend analysis was not conducted in those instances. DND recommend trend analysis following collection of 7 years of data.

Arcadis conducted a chemical analysis review on the results of the soil samples collected and present these results in Sections 3 through 12 of this report. The BL+3SD comparison values vary from one landfill to another and can be viewed on the analytical tables presented in the table section of this report, following the main text.

The method detection limits for the DEW Line sites for PHCs in soil are far lower than the typical laboratory MDLs reported. The low MDLs combined with the approach used to determine the comparison value (i.e., *"For DEW Line Monitoring Data Tables, the background and baseline sample results were summarized by calculating the arithmetic mean, standard deviation, maximum concentration and minimum concentration along with the 95%^ confidence value of the mean. Concentrations which were below the detection limit were included in the calculations as half of the detection limit"*) created very low comparison reference values for PHCs (F1 through F4). It should also be noted that the action level for petroleum hydrocarbon remediation at DEW Line sites is typically 2500 mg/kg; therefore, detectible hydrocarbon contamination below this concentration is not uncommon in the vicinity of the landfills. In addition, low levels of naturally occurring arsenic have been found at the CAM-1 site and levels below 40 mg/kg were not remediated and were considered to be below the DEW Line clean-up criteria for this site.

2.1.5 Groundwater Sampling

Groundwater sampling at each monitoring well installed around the Non-Hazardous Waste Landfill and the Tier II Soil Disposal Facility was completed concurrently with the other monitoring activities. A Monitoring Well Sampling Report (using the groundwater monitoring log provided by DND as updated in 2018) was completed at each groundwater sampling location. These sampling reports note:

- Condition of the monitoring well;
- Any ponding water at the monitoring well location;
- Lock details;
- Monitoring well installation details;
- Water elevation(s);
- Depth to bottom of well;
- Height of well stick-up;
- Colour, odour, presence and thickness of free product if applicable;
- Purge volume and sampling equipment used; and
- pH, conductivity and in-situ temperature after each well volume purged and before sampling.

Monitoring wells were purged prior to sampling, with pH, conductivity, turbidity and temperature being measured continually during purging using the Horiba U-52 multi-parameter meter. These parameters were recorded every five minutes and groundwater sampling did not begin until the difference between measurements was <10% for all parameters. The purging and sampling of each monitoring well was completed using dedicated sampling equipment consisting of 6 mm diameter high density polyethylene (HDPE) tubing connected to a low flow peristaltic pump. Each well was purged and sampled using dedicated tubing supplies which were removed upon completion of sampling to prevent damage due to freezing. Other sampling equipment, such as the interface probe and the Horiba U-52 multi-parameter meter, were decontaminated between monitoring events using Alconox and distilled water.

Groundwater samples were collected at the locations specified in the TOR. The number of locations at each landfill is shown on the Table below.

Table 2-4: Summary of Groundwater Sampling Locations at CAM-1

Monitoring Well ID	Observations	# of Groundwater Samples Collected
Non-Hazardous Waste Landfill		
MW-01	Excellent Condition	None – frozen/dry
MW-02	Excellent Condition	None – limited water
MW-03	Excellent Condition	1
MW-04	Excellent Condition	1
Tier II Disposal Facility		
MW-05	Excellent Condition	None – frozen/dry
MW-06	Excellent Condition	None – frozen/dry
MW-07	Excellent Condition	None – frozen/dry
MW-08	Excellent Condition	None – frozen/dry

Groundwater samples were collected at 2 of the 8 monitoring well locations using the low-flow method as specified in the TOR. No sample was obtained from monitoring wells MW-01, MW-05, MW-06, MW-07, or MW-08 as the groundwater was frozen. In addition, MW-02 was purged dry on August 27, 2019 and re-checked on August 28, 2019; however, the well did not re-charge and therefore, no water sample could be collected.

Groundwater samples were analyzed for the following parameters:

- Inorganic elements – total concentrations: arsenic, cadmium, chromium, cobalt, copper, lead, nickel, zinc. (groundwater samples were not field filtered or preserved, as per DND instructions); and,
- Petroleum Hydrocarbons (PHCs): F1-F4 fractions.

Groundwater analyses was carried out by BV Laboratories (at the Edmonton, Alberta, facility for PHCs and Inorganics), an ISO 17025 certified facility.

Quality assurance and quality control (QA/QC) was carried out in accordance to the procedures outlined in Annex K of the TOR with alterations as specified by DND during the project kick off meeting (i.e., the elimination of the inter-laboratory analysis requirements). Blind duplicate samples and quality control and assurance measures were applied as appropriate. Blind duplicates were obtained for at least 10% of the groundwater samples collected. As requested by DND, no samples for inter-laboratory analyses were collected as part of this monitoring program. The specific locations where blind duplicates were collected were determined in the field, as it was dependant on the amount of water available at each location. One trip blank, one field blank, and one equipment blank were also collected as part of the sampling program.

The specific locations where blind duplicates were collected were determined in the field, as it was dependent on the amount of water available at each location. One trip blank, one field blank, and one

equipment blank were also collected as part of the sampling program. As requested by DND, no samples for inter-laboratory analyses were collected as part of this 2019 monitoring program.

Arcadis conducted a chemical analysis review on the results of the groundwater samples collected and present these results in Section 6 (Non-Hazardous Waste Landfill) and Section 7 (Tier II) of this report. The comparison values can be viewed on the analytical tables presented in the tables section of this report following the main text.

2.1.6 Thermal Monitoring

Thermal monitoring at the Tier II Soil Disposal Facility was completed concurrently with the other monitoring requirements. At each thermistor installation location, an updated (2018) Thermistor Annual Maintenance Report was completed (as provided by DND). Monitoring consisted of the following steps:

- Inspecting the condition of thermistor installations, noting their condition, damage if applicable, and any specific repair requirements. Batteries and desiccants were replaced for all thermistors;
- Retrieving ground temperature data from the thermistor installations. A personal computer equipped with the appropriate software and datalogger programming files was used to retrieve the data;
- Collecting manual readings of thermistors using a digital multi-meter and switch box;
- Resetting the datalogger memory to zero and restarting readings;
- Reprogramming the datalogger to secure readings every 48 hrs commencing at noon; and
- Monitoring the system using the personal computer to ensure that the dataloggers were functioning.

A total of four thermistors were inspected and the memory of each thermistor datalogger was downloaded. Thermal monitoring data was retrieved from the thermistor installations as specified in the TOR.

Table 2-5: Summary of Thermal Monitoring at CAM-1

DEW Line Site	Landfill	Thermistor ID	Observations/Notes
CAM-1 Jenny Lind Island	Tier II Disposal Facility	VT-1	No issues observed.
		VT-2	No issues observed.
		VT-3	No issues observed.
		VT-3	No issues observed.

2.2 Field Notes and Data Collection

2.2.1 Field Notes

Field notes were collected using the field forms provided in the TOR, namely the Visual Inspection Checklist, Soil Sampling Log and Monitoring Well Sampling Log (TOR annexes J2 and J3), as updated by DND in 2018. In addition, field notes regarding thermistor inspections were recorded on the field form (as provided in Annex M – Thermistor Inspection Template with updates provided by DND in 2019). A copy of the field notes is provided in **Appendix G**.

In addition to rough "field sketches", Arcadis collected the field data electronically using a Trimble R2 DGPS unit with Omnistar enabled. This allowed for the correction of Differential Global Positioning in real time in the field. The accuracy of the unit was an average of 18 to 75 cm during the field programs.

The data was then collected using a GIS collection system, which generates a computer model with points, lines, and areas with data attached to them. The data included in the GIS is all the data required to satisfy the visual inspection requirements in the TOR. In addition, all of the sample locations, photo locations, and wells were also added to this electronic data set.

2.2.2 Data Collection

The visual inspection was conducted with the aid of a Trimble R2 Differential Global Positioning System (DGPS) unit to locate features of note and to collect GIS information to be used in report preparation. The horizontal accuracy of the measurements taken with the DGPS unit ranged between 18 to 75 cm, with most results falling within the 20 and 50 cm accuracy range. DGPS data was tied into local site control monuments. DGPS data was also obtained for the eight existing monitoring wells, four existing thermistor installations and any other site bench marks that could be located. A detailed data dictionary (Trimble file) was created prior to the site visit to capture all required information as outlined in the long-term monitoring plan. An SSF file and the data dictionary (Trimble files) are included on the appended CD/DVD ROM to be used in future site investigations.

Placement of features of note on the figures for each landfill was completed using the DGPS information, supplemented by visual observations and field measurements. Arcadis utilized the same DGPS file that was created during the 2016 field monitoring event to ensure consistency and accuracy of observations and measurements; therefore, many of the observed geotechnical components remained in the same locations as 2016.

Thermistor data was downloaded onto a personal computer from dedicated dataloggers on the site and backed-up on an external hard drive and a USB thumb drive. Raw thermistor data is provided, as well as in Excel format on the appended CD/DVD ROM.

2.3 Quality Assurance and Quality Control

Quality assurance and quality control (QA/QC) was carried out in accordance to the procedures outlined in Annex K of the TOR with alterations as specified by DND during the project kick off meeting (i.e., the elimination of the inter-laboratory analysis requirements and more discrete nomenclature for duplicate sampling). QA/QC protocols were implemented for the soil and groundwater sampling programs. Blind

duplicate samples and quality control and assurance measures were applied as appropriate. Blind duplicates were obtained for at least 10% of the soil and groundwater samples collected. As requested by DND, no samples for inter-laboratory analyses were collected as part of this monitoring program.

The specific location where the blind duplicates were collected was determined in the field. One trip blank, one field blank, and one equipment blank were also collected as part of the groundwater sampling program.

Field personnel employed Arcadis' Quality Assurance/Quality Control (QA/QC) protocols, including appropriate techniques for soil and groundwater sampling, sample storage, shipping and handling, as well as collection of duplicates.

2.3.1 Field

Soil samples collected for potential laboratory analysis were placed in polyethylene bags, laboratory prepared 125 mL glass jars fitted with screw-tight Teflon-lined lids, and 40 mL vials with methanol preservative (for PHC F1 analysis only). Groundwater samples were collected from monitoring wells and placed in a variety of appropriately sized and prepared laboratory supplied vessels. Sample numbers were clearly marked on the containers. The soil jars and water bottles were filled to capacity with zero headspace and stored in coolers with cold packs to moderate temperature fluctuations during transport to the laboratory. To prevent cross contamination field staff wore new nitrile gloves at each sample location.

The samples were transported to the project laboratory accompanied by a Chain of Custody form. Soil samples for PHC F1 were preserved in the field using methanol. No preservative is required for F2 to F4 fraction PHCs in soil. Groundwater samples for PHC F1 and PHC F2 to F4 were preserved with sodium bisulfate. No preservatives for groundwater were used in laboratory-supplied sampling containers (metals) and no field filtering was conducted by Arcadis, as specified in the TOR. Upon sample receipt, the laboratory added a preservative to the groundwater samples submitted for metals analyses, as is required under their standard protocols.

2.3.2 Laboratory

Field (i.e., blind) duplicate samples and quality control and assurance measures were applied as appropriate. Blind duplicates were collected at a minimum of 10% of the locations. At the request of DND, no inter-laboratory analysis was completed as part of the 2019 monitoring. The specific locations where blind duplicates were collected was determined in the field, as it was dependent on the amount of groundwater and/or soil available at each location.

Trip blanks for groundwater were part of the sampling program. Laboratory prepared trip blanks were included in the sample bottle shipment and remained in the cooler with the collected groundwater samples throughout the duration of the project.

Field blanks for groundwater were collected by transferring laboratory supplied water, guaranteed to be free of any organics and inorganics (based on analysis), into the appropriate laboratory supplied sampling containers. The field blanks were collected in the field at the same time as the groundwater sample collection.

Two sets of equipment blanks were collected. The first set was collected by running laboratory supplied water, guaranteed to be free of any organics and inorganics (based on analysis), over the stainless-steel shovel that was used to dig the test pits and allowing the water to drain into laboratory supplied sample containers. The second set was collected by pumping laboratory supplied water, guaranteed to be free of any organics and inorganics (based on analysis), through new tubing from the same batch that was used to sample the groundwater wells and into laboratory supplied sample containers.

A discussion and analysis of QA/QC results is presented in **Appendix C**.

3 CAM-1: BORROW AREA NORTH LANDFILL

3.1 Landfill Description

The Borrow Area North Landfill is located along the road heading north of the station area, approximately 500 m north of the station infrastructure pad. During initial site investigations, geophysics identified five separate lobes of buried debris at the location.

This landfill comprises three regrade areas and encompasses a footprint of approximately 9,300 m^2 with final cover extending approximately 0.75 to 1 m above surrounding grades. The remediation of this landfill consisted of excavating Tier II contaminated soil from Lobe 3 and regrading with the placement of additional granular fill at all lobes. There is no instrumentation installed at this landfill.

The long-term monitoring plan for the Borrow Area North Landfill consists of visual inspection and the periodic collection of soil samples. The landfill layout, visual observations and photographic locations are presented on **Figure CAM-1.2A** and the soil analytical results are presented on **Figure CAM-1.2B** both located at the rear of this chapter.

3.2 Summary of Work Conducted

3.2.1 Visual Inspection

A visual inspection was completed on the Borrow Area North Landfill on August 27, 2019. The inspection was completed with no deviations from the visual inspection work plan.

3.2.2 Soil Sampling

Soil sampling at the Borrow Area North Landfill was conducted on August 27, 2019 and included the collection of ten soil samples from five soil sample stations (C1-1, C1-2, C1-3, C1-4, and C1-5).

Table 3-1 details the soil sampling activities conducted at the Borrow Area North Landfill.

Table 3-1: Summary of Work Conducted by Soil Sampling Location – Borrow Area North Landfill

Sample Location	Sample ID	Sample Depth (m bgs)	Notes
C1-1 (up-gradient)	C1-1A	0 - 0.15	Black organic peat, wet, no odour
	C1-1B	0.4 – 0.5	Brown sand and gravel, moist to wet, water at 45 cm, no odour
C1-2 (down-gradient)	C1-2A	0 - 0.15	Brown sand and gravel, moist, no odour
	C1-2B	0.3 – 0.4	Brown sand and gravel, moist – refusal on shallow bedrock, no odour
	C1-3A	0 - 0.15	Brown sand and gravel, moist, no odour

C1-3 (down-gradient)	C1-3B	0.4 – 0.5	Brown sand and gravel, moist, no odour
C1-4	C1-4A	0 - 0.15	Brown sand and gravel, moist, no odour
	C1-4B	0.4 – 0.5	Brown sand and gravel, moist, no odour
C1-5 (down-gradient)	C1-5A	0 - 0.15	Light brown sand, moist, no odour
	C1-5B	0.4 – 0.5	Light brown sand, moist, no odour

3.2.3 Groundwater Sampling

No groundwater monitoring wells are present at the Borrow Area North Landfill; therefore, no groundwater sampling or analysis was performed as part of the 2019 monitoring program.

3.2.4 Thermal Monitoring

No thermistors are present at the Borrow Area North Landfill; therefore, no thermal sampling or analysis was performed as part of the 2019 monitoring program.

3.3 Results of the Monitoring Program

3.3.1 Visual Inspection

The visual inspection was conducted in compliance with Section 5.2 of the TOR, and details are provided in Sections 3.3.1.1 through 3.3.1.5. **Figure CAM-1.2A** presents the visual inspection findings and photographic locations for the Borrow Area North Landfill.

3.3.1.1 Inspection Checklist

The visual inspection was completed as per the TOR and the visual inspection checklist is included in the Table below.

Table 3-2: Visual Inspection Checklist – Borrow Area North Landfill

SITE NAME: CAM-1 Jenny Lind Island
LANDFILL DESIGNATION: Borrow Area North Landfill LANDFILL TYPE: Regraded DATE OF INSPECTION: 27 August 2019 WEATHER CONDITIONS: Sunny, winds from south at approx.. 14 km/hr, 9 deg. Celsius.
DATE OF PREVIOUS INSPECTION: 9 August 2016
INSPECTED BY: Troy Austrins
REPORT PREPARED BY: Troy Austrins **The inspector represents to the best of their knowledge that the following statements and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.**

Table 3-2: Visual Inspection Checklist – BORROW AREA NORTH LANDFILL

Checklist Item	Present (Yes/No)	Feature Number	Feature Location	GPS Coordinates Easting/Northing/Zone	Length (m)	Width (m)	Depth (m)	Extent Relative to Landfill Surface	Description	Comparison with Historical Observations	Additional Comments/ Severity Rating	Photographic Records (photo reference, location, view point & direction, feature of note, scale)
Settlement	Yes	A	Lobes 1 and 2 south side slope	389726.392 / 7621415.174	14	1	1	0.05	<1%	Minor depression on side slope	First observed in Year 3 (2012). No significant change between 2014, 2016 and 2019.	Acceptable (feature is minor and not affecting landfill stability)	CAM-1 BAN 6
Settlement	Yes	B1	Lobe 3 northwest cover	389693.985 / 7621379.639	14	4.0	1.0	0.1	<1%	Two settlement depressions; side by side- approximate same 4m/1m/0.1m length/ width/ depths for each at this Feature location. Possibly associated with vehicle traffic.	First observed in Year 2 (2011). Two features recorded in 2014. One shown in 2016. Two depressions recorded in 2019. Possibly associated with vehicle traffic.	First noted as Feature A in 2011, changed to Feature B in 2012. Severity Rating – Acceptable (feature is minor and not affecting landfill stability)	CAM-1 BAN 14, 15, 16, 17
Settlement	Yes	B2	Lobe 3 northwest cover	389696.949 / 7621380.241	14	4.0	1.0	0.1	<1%	Two settlement depressions; side by side- approximate same 4m/1m/0.1m length/ width/ depths for each at this Feature location. Possibly associated with vehicle traffic.	First observed in Year 2 (2011). Two features recorded in 2014. One shown in 2016. Two depressions recorded in 2019. Possibly associated with vehicle traffic.	First noted as Feature A in 2011, changed to Feature B in 2012. Severity Rating – Acceptable (feature is minor and not affecting landfill stability)	CAM-1 BAN 14, 15, 16, 17
Settlement	Yes	G1	Lobes 1 and 2 northwest side slope	389726.05 / 7621441.194	14	1.2	0.4	0.04	<1%	Minor depression on side slope	First observed in Year 5 (2014) as 3 depressions. Only 2 depressions observed in 2016. Decrease in depth in 2019 (from 0.1 to 0.04 m)	Acceptable (features are minor and not affecting landfill stability)	CAM-1 BAN 3, 4
Settlement	Yes	G2	Lobes 1 and 2 northwest side slope	389724.902 / 7621439.695	14	1.0	0.4	0.04	<1%	Minor depression on side slope	First observed in Year 5 (2014) as 3 depressions. Only 2 depressions observed in 2016. Decrease in depth in 2019 (from 0.1 to 0.04 m)	Acceptable (features are minor and not affecting landfill stability)	CAM-1 BAN 3, 4
Settlement	Yes	H	Lobe 3 north side slope	389704.411/ 7621388.754	14	1.0	0.2	0.1	<1%	Minor linear depression	First observed in Year 5 (2014). No change observed between 2016 and 2019.	Acceptable (feature is minor and not affecting landfill stability)	CAM-1 BAN 11
Settlement	Yes	I	Lobes 4 and 5 east cover	389708.681 / 7621194.527	14	3	1	0.1	<1%	Minor linear depression	First observed in Year 5 (2014). No significant change between 2014, 2016 and 2019.	Acceptable (feature is minor and not affecting landfill stability)	CAM-1 BAN 39, 40
Settlement	Yes	P	Lobes 3 north side slope	389718.100 / 7621393.489	14	0.2	0.2	0.1	<1%	Minor depression	New Observation in 2019.	Acceptable (feature is minor and not affecting landfill stability)	CAM-1 BAN 12, 13
Erosion	Yes	C	Lobes 4 and 5 southeast side slope	389708.957 / 7621181.379	14	5	0.5	0.05	<1%	Minor erosion, washing of fines on base of side slope from shoreline ponding in spring. Appears as a beach formation at toe of slope.	First observed in Year 2 (2011). Notable reduction in size since 2011. No significant change between 2014, 2016 and 2019.	First noted in 2011 as Feature B. Changed to Feature C in 2012. Severity Rating – Acceptable (feature is minor and not affecting landfill stability)	CAM-1 BAN 41
Erosion	No	J	Lobe 3 east side slope	Not observed	N/A	N/A	N/A	N/A	N/A	Minor washing of fines on side slope. Not observed in 2019.	First observed in Year 5 (2014). Not observed in 2016 or in 2019.	Feature not observed in 2019.	CAM-1 BAN 20, 21, 22

Table 3-2: Visual Inspection Checklist – BORROW AREA NORTH LANDFILL

Checklist Item	Present (Yes/No)	Feature Number	Feature Location	GPS Coordinates Easting/Northing/Zone	Length (m)	Width (m)	Depth (m)	Extent Relative to Landfill Surface	Description	Comparison with Historical Observations	Additional Comments/ Severity Rating	Photographic Records (photo reference, location, view point & direction, feature of note, scale)
Erosion	Yes	K	Lobe 3 southeast side slope	389719.113 / 7621270.162	14	5	0.5-1.0	0.02	<1%	Minor washing of fines on side slope. Not distinct. Infilling occurring.	First observed in Year 5 (2014). No significant change between 2014, 2016 and 2019.	Acceptable (feature is minor and not affecting landfill stability)	CAM-1 BAN 29
Erosion	No	L	Lobes 4 and 5 southwest side slope	Not observed	N/A	N/A	N/A	N/A	N/A	Minor washing of fines on side slope. Not observed in 2019.	First observed in Year 5 (2014). Not observed in 2016 or 2019.	Not observed in 2019	CAM-1 BAN 46, 47
Lateral Movement	No												
Frost Action	No												
Sloughing	No												
Cracking	No	F	Northeast corner of Lobes 4 and 5	Not observed	N/A	N/A	N/A	N/A	N/A	Completely infilled tension crack	Feature first noted in Year 3 (2012). Feature was completely infilled and not observed in 2014, 2016 or 2019.	Not observed in 2016 or 2019	N/A
Cracking	Yes	N	Middle east side Lobe 3 cover	389715.818 / 7621354.246	14	16	0.02-0.03	0.02	<1%	Minor tension cracking	NEW OBSERVATION.	Acceptable (feature is minor and not affecting landfill stability)	CAM-1 BAN 48, 49
Cracking	Yes	O	Middle west side cover; middle of Lobe 3	389704.853 / 7621319.658	14	20	0.02	0.02	<1%	Minor tension cracking	NEW OBSERVATION.	Acceptable (feature is minor and not affecting landfill stability)	CAM-1 BAN 50, 51, 52
Animal Burrows	No												
Vegetation Establishment	Yes	Q	Lobes 4 and 5 east cover	389708.681 / 7621194.527	14	3	1	0.1	<1%	Sparse lichen growth on Lobes 4 and 5, southeast side	NEW OBSERVATION	Acceptable (vegetation growth is beneficial to landfill stability)	CAM-1 BAN 39, 40
Staining	No								Former Features D & E were moved to 'Other' category. These were not considered to be landfill staining features.				
Vegetation Stress	No												
Seepage Points (or) Ponded Water	Yes	N/A	Northeast of Lobes 1 and 3	389737.443 / 7621402.262	14	63	70	0.3	<1%	Permanent water pond northeast of Lobes 1 and 3	Not identified as feature. Not within landfill.	Depth was estimated from edge of pond. Severity Rating – Acceptable (ponded water is not on landfill and not affecting stability)	CAM-1 BAN 8, 19
Debris and/or Liner Exposed	No												
Presence & Condition of Monitoring Instruments	No												

Table 3-2: Visual Inspection Checklist – BORROW AREA NORTH LANDFILL

Checklist Item	Present (Yes/No)	Feature Number	Feature Location	GPS Coordinates Easting/Northing/Zone	Length (m)	Width (m)	Depth (m)	Extent Relative to Landfill Surface	Description	Comparison with Historical Observations	Additional Comments/ Severity Rating	Photographic Records (photo reference, location, view point & direction, feature of note, scale)
Features of Note/Other Relevant Observations	Yes	M	Southeast corner of Lobes 1 and 2	389732.106 / 7621412.615 389733.527 / 7621414.757	14	5	0.3	0.2	<1%	Vehicle ruts	No significant change since 2016.	Severity Rating – Acceptable (features are minor and not affecting landfill stability)	CAM-1 BAN 5
Features of Note/Other Observations	Yes	D	Beside Lobe 3, at east toe of slope	389741.107 / 7621312.356	14	10	5	0.05	<1%	Rust-coloured iron oxidation at slope toe and ponded water east of Lobe 3	First observed in Year 1 (2010). Slight reduction in size between 2013 and 2014. Oxidation is associated with an area of ponding water so size of feature will change from year to year. Dimensions are approximate as feature is an irregular shape. No significant change from 2016 to 2019.	Result of seasonal ponding. Not in contact with landfill. Changes in size are due to annual hydrological differences and not related to landfill. Severity Rating – Acceptable (feature is not on landfill)	CAM-1 BAN 24, 25, 26
Features of Note/Other Observations	Yes	E	Lobes 4 and 5 north side cover	389698.065 / 7621225.65	14	5	1.5	N/A	<1%	Minor colour differences of cover material on side slope caused by thinning of white granular cover and greater quantity of exposed brown cover soils beneath.	First observed in Year 2 (2011). No significant change in feature since first noted in 2011.	Faint discolouration on side slope. Feature first noted as Feature C in Year 2 (2011). Changed to Feature E in 2012. Severity Rating – Acceptable (discolouration appears to be due to different borrow materials exposed at surface)	CAM-1 BAN 33, 34

3.3.1.2 Preliminary Stability Assessment

The Preliminary Stability Assessment for the Borrow Area North Landfill was conducted on August 27, 2019 as per the TOR and the results are provided below in Table 3-3.

Table 3-3: Preliminary Stability Assessment – Borrow Area North Landfill

Feature	Severity Rating	Extent
Settlement	Acceptable	Occasional
Erosion	Acceptable	Occasional
Lateral Movement	Not Observed	None
Frost Action	Not Observed	None
Sloughing	Not Observed	None
Cracking	Acceptable	Occasional
Animal Burrows	Not Observed	None
Vegetation Establishment	Acceptable	Isolated
Staining	Not Observed	None
Vegetation Stress	Not Observed	None
Seepage / Ponded Water	Acceptable	Isolated
Debris and/or Liner Exposure	Not Observed	None
Other	Acceptable (Vehicle ruts) Acceptable (Discolouration)	Isolated Isolated
Overall Landfill Performance	**Acceptable**	

Note: please refer to Performance/Severity rating reference guide in Section 2.1.3.1 above.

3.3.1.3 Photographic Records

The detailed photographic record for the Borrow Area North Landfill has been completed as per Section 5.5 of the TOR and is included as **Appendix H**. The Photographic Record only contains an index of photographs collected; full sized photographs are contained in the appended CD/DVD-ROM. **Figure CAM-1.2A** illustrates the photograph locations and viewpoint directions.

3.3.1.4 Trend Analysis

A trend analysis was conducted with regards to observations made during the visual inspection of the Borrow Area North Landfill. The following Table outlines the results of the visual trend analysis.

Table 3-4: Visual Inspection Trends - Borrow Area North Landfill

Borrow Area North Landfill		
Checklist Item	**Feature Number**	**Comparison with Historical Observations**
Settlement	A - minor depression	No significant change.
	B - two linear depressions	No significant change.
	G- minor settlements	Two depressions were observed in 2016 & 2019; slight decrease in depth.
	H - minor settlement	No significant change.
	I - minor settlement	No significant change.
	Q- minor settlement	New observation
Erosion	C – minor fines erosion	No significant change.
	J – not observed	Feature not observed.
	K – non-distinct erosion	No significant change.
	L – not observed	Feature not observed.
Cracking	F – not observed (tension cracking)	Not observed.
	N – minor tension cracking	New observation
	O - minor tension cracking	New observation
Other (Discolouration)	D – iron oxide discolouration (ponding)	No significant change.
	E – thinned granular cover	No significant change.
Other (Vehicle Ruts)	M – vehicle ruts	No significant change.

3.3.1.5 Discussion of Results/Trends

A comparison of the visual inspection results of the 2016 and 2019 monitoring events Borrow Area North Landfill indicates that previously observed settlement and erosion features decreased in depth or saw no significant change. The absence of Features F, J and L is attributed to erosive infill during meltwater events. Two new tension cracking features were observed. Sparse vegetation (lichen) was newly observed at east side of Lobes 4 & 5. The results of the visual inspection and the observed trends indicate that the performance of the landfill is acceptable.

3.3.2 Soil Sampling

Soil sampling of the Borrow Area North Landfill was conducted on August 27, 2019. The soil sampling was conducted in compliance with Section 5.3.1 and 5.3.2 of the TOR. Details are provided below in the following Sections 3.3.2.1 through 3.3.2.3.

3.3.2.1 Laboratory Analytical Results

A total of ten soil samples were collected from five soil sample locations at the Borrow Area North Landfill and analyzed for inorganic elements (arsenic, cadmium, chromium, cobalt, copper, nickel, and zinc), polychlorinated biphenyls (PCBs), and Petroleum Hydrocarbons (PHC F1, F2, F3, and F4).

The full current and historical analytical results are presented in **Table 1** in the Tables section of this report immediately following the main text. The laboratory certificates of analysis and chains of custody are presented in **Appendix B** of this report. **Figure CAM-1.2B,** located at the end of this section, presents a summary of soil analytical results.

3.3.2.2 Summary of Soil Results

The soil results for 2019 are presented in the following table. The background and baseline mean are presented for information purposes. The discussions are focused on the comparison of the results to the BL+3SD.

Table 3-5: Evaluation of Results by Parameter- Borrow Area North Landfill

Parameter	Background (mg/kg)	Baseline Mean (mg/kg)	Baseline Mean+3SD (mg/kg)	Discussion of Results
Arsenic (As)	3.3	2.5	12.9	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
Cadmium (Cd)	1.0	1.0	1.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
Chromium (Cr)	20.0	20.0	20.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
Cobalt (Co)	5.0	5.0	5.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
Copper (Cu)	11.3	5.8	21.2	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
Lead (Pb)	10.0	10.0	10.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
Nickel (Ni)	5.0	5.0	5.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.

Parameter	Background (mg/kg)	Baseline Mean (mg/kg)	Baseline Mean+3SD (mg/kg)	Discussion of Results
Zinc (Zn)	15.0	15.0	15.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
PCBs (Total)	0.1	0.1	0.1	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
F1 (C_6-C_{10})	N/A	10	10	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
F2 (C_{10}-C_{16})	N/A	37.5	148	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
F3 (C_{16}-C_{34})	N/A	59.9	243.6	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
F4 (C_{34}-C_{50})	N/A	52.4	201.9	All soil sample results were below the BL+3SD at upgradient and downgradient locations.

Note: BL+3SD + = baseline data mean + 3x standard deviations. Soil concentrations are shown are in mg/kg.

3.3.2.3 Discussion of Soil Results

From the limited results available, both upgradient and downgradient soil sample results were below the BL+3SD for all parameters. Soil results from 2019 were comparable to the results from the previous monitoring events and there is no indication of contaminant migration from the landfill at this time.

It should be noted that there are insufficient data points at this time to determine trends in the soil concentrations. The performance of the landfill should be re-evaluated once seven years of data are available.

Overall, the landfill seems to be performing well and there is no indication of contaminant migration from the landfill at this time based on the existing soil data.

3.4 Conclusions and Overall Landfill Performance

From the limited results available, both upgradient and downgradient soil sample results were below the BL+3SD for all parameters. Soil results from 2019 were comparable to the results from the previous monitoring events and there is no indication of contaminant migration from the landfill at this time.

A review of the analytical data indicates that the landfill is performing as intended and there is no indication of contaminant migration from the landfill at this time.

Based on the results of the 2019 monitoring program, the overall performance of the Borrow Area North Landfill is acceptable.

3.5 Recommendations

Based on this review, it is recommended to continue the long-term monitoring of soils as planned. The environmental trend analyses for the landfill should be re-evaluated once seven years of data are available.

Based on the results of the visual inspection, the Borrow Area North landfill performance is acceptable. No remedial work or deviations from the monitoring plan are recommended at this time.



Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C6-C10 (mg/kg)	F2* C10-C16 (mg/kg)	F3* C16-C34 (mg/kg)	F4* C34-C50 (mg/kg)
C1-2 surface - downgradient																		
10-16611	C1-2	2010	1	Phase I	0-10	1.1	<1	<20	<5	<3	<10	<5	<15	0.005	<10	7.2	41	47
C112-2A	C1-2	2012	3	Phase I	0-15	**2.6**	N/A	1.7	1.0	<5	3.0	1.2	<10	<0.01	<12	<10	<10	N/A
C114-2A	C1-2	2014	5	Phase I	0-15	1.5	0.02	1.4	1.0	2.7	<4.9	1.1	4.0	<0.10	<10	<50	<50	<100
16-C1-2A	C1-2	2016	7	Phase II	0-15	<1	<0.05	<1	<0.5	1.5	1.4	<1	<10	<0.01	<12	11	**68**	<50
C1-2A	C1-2	2019	10	Phase II	0-15	2.3	<0.050	2.0	1.6	4.5	3.2	1.4	8.6	<0.01	<16	<4.0	10	<6.0
C1-2 depth - downgradient																		
10-16613	C1-2	2010	1	Phase I	30-35	2.0	<1	<20	<5	3.0	<10	<5	<15	0.006	<10	5.9	19	24
C112-2B	C1-2	2012	3	Phase I	40-50	**3.3**	N/A	4.8	2.3	**9.1**	4.6	3.8	<10	<0.01	<12	<10	<10	N/A
C114-2B	C1-2	2014	5	Phase I	40-50	2.1	0.02	2.9	1.8	3.2	<5	2.0	5.0	<0.10	<10	<50	<50	<100
16-C1-2B	C1-2	2016	7	Phase II	30-40	1.5	<0.05	1.2	0.9	2.9	2.2	1.1	<10	<0.01	<12	<10	<50	<50
C1-2B	C1-2	2019	10	Phase II	30-40	2.3	<0.050	2.2	1.3	3.3	3.4	1.5	4.1	<0.01	<7.0	<4.0	<8.0	<6.0

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C6-C10 (mg/kg)	F2* C10-C16 (mg/kg)	F3* C16-C34 (mg/kg)	F4* C34-C50 (mg/kg)
C1-3 surface - downgradient																		
10-16615	C1-3	2010	1	Phase I	0-10	2.3	<1	<20	<5	<3	<10	<5	<15	0.007	<10	5.2	18	17
C112-3A	C1-3	2012	3	Phase I	0-15	**3.5**	N/A	3.8	2.1	<5	4.1	2.8	<10	<0.01	<12	<10	16	N/A
C114-3A	C1-3	2014	5	Phase I	0-15	**2.5**	0.03	2.9	1.8	3.5	<4.9	1.9	7.0	<0.10	<10	<50	<50	<100
16-C1-3A	C1-3	2016	7	Phase II	0-15	**2.6**	<0.05	3.6	1.8	4.0	3.9	2.8	<10	<0.01	<12	<10	<50	<50
C1-3A	C1-3	2019	10	Phase II	0-15	**3.5**	<0.050	2.4	1.5	3.2	4.9	3.3	5.7	<0.01	<7.0	<4.0	10.0	<6.0
C1-3 depth - downgradient																		
10-16617	C1-3	2010	1	Phase I	30-50	1.7	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	4.2	9.6	12
10-16618 (Dup)	C1-3	2010	1	Phase I	30-50	1.3	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	4.2	9.6	12
C112-3B	C1-3	2012	3	Phase I	40-50	**6.8**	N/A	3.6	3.1	<5	6.2	3.4	<10	<0.01	<12	<10	<10	N/A
C114-3B	C1-3	2014	5	Phase I	40-50	1.8	0.01	2.5	1.5	2.9	<5	1.4	4.0	<0.10	<10	<50	<50	<100
16-C1-3B	C1-3	2016	7	Phase II	40-50	**5.1**	<0.05	3.0	2.0	**6.5**	6.0	2.2	<10	<0.01	<12	<10	<50	<50
C1-3B	C1-3	2019	10	Phase II	40-50	1.5	<0.050	2.1	0.83	1.8	2.9	1.0	2.4	<0.01	<7.0	<4.0	8.5	<6.0

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C6-C10 (mg/kg)	F2* C10-C16 (mg/kg)	F3* C16-C34 (mg/kg)	F4* C34-C50 (mg/kg)
C1-1 surface - upgradient																		
10-16619	C1-1	2010	1	Phase I	0-10	**4.7**	<1	<20	<5	**13.2**	<10	**9.8**	<15	<0.003	<10	11	**140**	**79**
C112-1A	C1-1	2012	3	Phase I	0-15	**2.5**	N/A	<1	1.0	**7.9**	3.3	1.7	<10	<0.01	<12	<10	27	N/A
C114-1A	C1-1	2014	5	Phase I	0-15	1.0	0.04	1.0	0.6	3.8	<5	1.5	8.0	<0.10	<10	<50	53	<100
16-C1-1A	C1-1	2016	7	Phase II	0-15	2.3	<0.05	2.2	1.0	4.5	6.1	1.6	<10	<0.02	<23	<23	<110	<110
C1-1A	C1-1	2019	10	Phase II	0-15	1.3	<0.10	1.1	<1.0	4.4	1.7	1.6	1.2	<0.01	<22	<4.0	38	7.7
C1-1 depth- upgradient																		
10-16621	C1-1	2010	1	Phase I	30-50	**2.6**	<1	<20	<5	3.5	<10	<5	<15	<0.003	<10	7.7	20	28
C112-1B	C1-1	2012	3	Phase I	40-50	**4.6**	N/A	1.7	1.7	<5	8.0	1.9	<10	<0.01	<12	<10	17	N/A
C114-1B	C1-1	2014	5	Phase I	40-50	**2.8**	0.02	2.4	1.2	4.2	7.1	1.8	3.0	<0.10	<10	<50	<50	<100
16-C1-1B	C1-1	2016	7	Phase II	30-40	**3.6**	<0.05	2.3	1.4	4.8	8.1	1.5	<10	<0.01	<12	<10	<50	<50
C1-1B	C1-1	2019	10	Phase II	40-50	2.0	<0.050	2.2	1.0	2.6	4.8	<1.0	2.6	<0.01	<7.0	<4.0	12	<6.0

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C6-C10 (mg/kg)	F2* C10-C16 (mg/kg)	F3* C16-C34 (mg/kg)	F4* C34-C50 (mg/kg)
C1-4 surface - downgradient																		
10-16623	C1-4	2010	1	Phase I	0-10	1.4	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	7	43	49
C112-4A	C1-4	2012	3	Phase I	0-15	<1	N/A	<1	<1	<5	1.3	<1	<10	<0.01	<12	<10	22	N/A
C114-4A	C1-4	2014	5	Phase I	0-15	0.8	0.02	1.2	0.8	1.7	<4.9	0.8	10.0	<0.10	<10	<50	<50	<100
C114-BD3 (Dup)	C1-4	2014	5	Phase I	0-15	0.7	0.02	1.3	0.7	1.6	<4.9	0.7	9.0	<0.10	<10	<50	<50	<100
C114-4A(Interlab)	C1-4	2014	5	Phase I	0-15	<1	<0.1	2.6	<1	<5	1.8	1.8	<10	<0.01	<12	<10	<50	N/A
16-C1-4A	C1-4	2016	7	Phase II	0-15	1.0	<0.05	1.3	0.65	1.8	2.0	<1	<10	<0.01	<12	<10	<50	<50
C1-4A	C1-4	2019	10	Phase II	0-15	1.2	<0.050	1.2	0.72	1.7	2.5	<1.0	6.7	<0.01	<7.0	<4.0	12	<6.0
C1-4 depth - downgradient																		
10-16625	C1-4	2010	1	Phase I	30-50	1.3	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	6.6	14	20
C112-4B	C1-4	2012	3	Phase I	40-50	1.8	N/A	2.7	1.5	<5	4.6	1.9	<10	<0.01	<12	<10	<10	N/A
C114-4B	C1-4	2014	5	Phase I	40-50	1.6	0.01	2.2	2.0	2.1	<4.9	1.3	5.0	<0.10	<10	<50	<50	<100
16-C1-4B	C1-4	2016	7	Phase II	30-40	1.3	<0.05	2.7	1.0	1.8	2.4	1.1	<10	<0.01	<12	<10	<50	<50
C1-4B	C1-4	2019	10	Phase II	40-50	1.1	<0.050	1.7	0.87	1.6	2.0	1.2	3.6	<0.01	<7.0	<4.0	<8.0	<6.0

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C6-C10 (mg/kg)	F2* C10-C16 (mg/kg)	F3* C16-C34 (mg/kg)	F4* C34-C50 (mg/kg)
C1-5 surface - downgradient																		
10-16627	C1-5	2010	1	Phase I	0-10	2.0	<1	<20	<5	<3	<10	<5	<15	0.016	<10	5.5	21	23
C112-5A	C1-5	2012	3	Phase I	0-15	1.6	N/A	<1	<1	<5	1.8	<1	<10	<0.01	<12	<10	<10	N/A
C114-5A	C1-5	2014	5	Phase I	0-15	1.6	0.02	1.1	0.9	1.6	<4.9	0.7	5.0	<0.10	<10	<50	<50	<100
16-C1-5A	C1-5	2016	7	Phase II	0-15	1.0	<0.05	<1	<0.5	1.7	1.6	<1	<10	<0.01	<12	<10	<50	<50
C1-DUP1 (Dup)	C1-5	2016	7	Phase II	0-15	1.2	<0.05	1.2	<0.5	<1	1.6	<1	<10	<0.01	<12	<10	<50	<50
16-C1-5A(Interlab)	C1-5	2016	7	Phase II	0-15	1.2	<0.02	1.1	0.46	1.1	1.6	0.5	<2	<0.05	<10	<20	<20	<20
C1-5A	C1-5	2019	10	Phase II	0-15	1.4	<0.050	<1.0	0.61	1.6	2.3	<1.0	3.6	<0.01	<7.0	<4.0	17	<6.0
C1-5 depth - downgradient																		
10-16629	C1-5	2010	1	Phase I	30-50	<1	<1	<20	<5	<3	<10	<5	<15	0.015	<10	5.2	<9	12
C112-5B	C1-5	2012	3	Phase I	40-50	<1	N/A	<1	<1	<5	1.2	<1	<10	<0.01	<12	<10	<10	N/A
C114-5B	C1-5	2014	5	Phase I	40-50	1.3	0.01	1.0	0.7	1.6	<5	0.6	3.0	<0.10	<10	<50	<50	<100
16-C1-5B	C1-5	2016	7	Phase II	40-50	1.2	<0.05	<1	<0.5	1.5	1.5	<1	<10	<0.01	<12	<10	<50	<50
C1-5B	C1-5	2019	10	Phase II	40-50	<1.0	<0.050	<1.0	<0.50	1.7	1.4	<1.0	1.6	<0.01	<7.0	<4.0	8.0	<6.0

CAM-1 Borrow Area North Landfill	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
Background Data - Arithmetic Mean	3.3	1.0	20.0	5.0	11.3	10.0	5.0	15.0	0.10	N/A	N/A	N/A	N/A
Baseline Data - Arithmetic Mean	**2.5**	**1.0**	**20.0**	**5.0**	**5.8**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**37.5**	**59.9**	**52.4**
Baseline Data - Standard Deviation	3.5	0.0	0.0	0.0	5.1	0.0	0.0	0.0	0.00	0.0	36.8	61.2	49.8
Baseline Data Mean + 3x Standard Deviation	**12.9**	**1.0**	**20.0**	**5.0**	**21.2**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**148.0**	**243.6**	**201.9**

** If baseline or background arithmetic mean was below the detection limit, the mean has been modified to match the detection limit value.*

LEGEND

- MONITORING SOIL SAMPLE LOCATION
- BM–2 PERMANENT BENCHMARK LOCATION
- BODY OF WATER
- TOP OF LANDFILL
- TOE OF LANDFILL

XX	Sample exceeds baseline mean
XX	Sample exceeds baseline mean + 3x SD

Meters

40 0 40 80

1:2000

NO.	VERSION	DATE	PAR	VERIF.	APPR.
3	FINAL	2020.04.17	RF	TA	CG

Construction de Défense Canada
Defence Construction Canada

COLLECTION OF LANDFILL MONITORING DATA

CAM-1, JENNY LIND ISLAND, NU

BORROW AREA NORTH 2019 SOIL ANALYTICAL RESULTS

ARCADIS
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MEASUREMENT UNIT	SCALE	DATE OF PLOTTING
Metre	1 : 2000	MARCH 2020
DRAWN BY	VERIFIED BY	APPROVED BY
R. FLETCHER	T. ASUTRINS, P.ENG	C. GRAVELLE, P.ENG
PROJECT NO: 30000251	DRAWING NO: 30000251-CAM-1.2	PAGE: PL

FIGURE CAM-1.2B

4 CAM-1: NORTHEAST LANDFILL

4.1 Landfill Description

The Northeast Landfill is located in the Station Area, along the west side of the road heading north of the station. Geophysics identified two lobes of debris at this location. This landfill encompasses a footprint of approximately 3,900 m^2 which extends across two re-grade areas.

The remediation of this landfill consisted of the excavation of Tier II contaminated soil and regrading of the surface with additional granular fill. Final cover extends approximately 0.75 m above surrounding grades. There is no instrumentation installed at this landfill.

The long-term monitoring plan for the Northeast Landfill consists of visual inspection, and the periodic collection of soil samples. The landfill layout, visual observations and photographic locations are presented on **Figure CAM-1.3A** and the soil analytical results are presented on **Figure CAM-1.3B** both of which are provided at the end of this section.

4.2 Summary of Work Conducted

4.2.1 Visual Inspection

Visual inspection of the Northeast Landfill was conducted on August 27, 2019. The visual inspection of the landfill was completed with no deviations from the accepted work plan.

4.2.2 Soil Sampling

Soil sampling at the Northeast Landfill was conducted on August 27, 2019 and consisted of the collection of eight soil samples from four soil sample stations (C1-6, C1-7, C1-8, and C1-9). Table 4-1 outlines the soil sampling activities conducted at the Northeast Landfill.

Table 4-1: Summary of Work Conducted by Soil Sampling Location- Northeast Landfill

Sample Location	Sample ID	Sample Depth (m bgs)	Notes
C1-6 (up-gradient)	C1-6A	0 – 0.15	Brown to orange sand and gravel, no odour
	C1-6B	0.4 – 0.5	Brown to orange sand and gravel, no odour
C1-7 (down-gradient)	C1-7A	0 – 0.15	Black organic peat, roots, no odour
	C1-7B	0.4 – 0.5	Dark brown sand and gravel, moist, no odour
C1-8 (down-gradient)	C1-8A	0 – 0.15	Light brown sand and gravel, moist, no odour
	C1-8B	0.4 – 0.5	Light brown sand and gravel, moist, no odour
C1-9 (down-gradient)	C1-9A	0 - 0.15	Light brown sand and gravel, moist, no odour
	C1-9B	0.4 – 0.5	Light brown sand and gravel, moist, no odour

4.2.3 Groundwater Sampling

No groundwater monitoring wells are present at the Northeast Landfill; therefore, no groundwater sampling or analysis was performed as part of the 2019 monitoring program.

4.2.4 Thermal Monitoring

No thermistors are present at the Northeast Landfill; therefore, no thermal monitoring was performed as part of the 2019 monitoring program.

4.3 Results of the Monitoring Program

The following Sections 4.3.1 through 4.3.2 summarize the results of the CAM-1 monitoring program at the Northeast Landfill.

4.3.1 Visual Inspection

The visual inspection was conducted in compliance with Section 5.2 of the TOR and details are provided below in the following Sections 4.3.1.1 through 4.3.1.5. **Figure CAM-1.3A** presents the visual inspection findings and photographic locations.

4.3.1.1 Inspection Checklist

The visual inspection was completed as per the TOR and the visual inspection checklist is included as Table 4-2 of this report below.

Table 4-2: Visual Inspection Checklist – Northeast Landfill

SITE NAME: CAM-1 Jenny Lind Island
LANDFILL DESIGNATION: Northeast Landfill LANDFILL TYPE: Regraded DATE OF INSPECTION: 27 August 2019 WEATHER CONDITIONS: Sunny, winds from south at approx. 14 km/hr, 10 deg. Celsius
DATE OF PREVIOUS INSPECTION: 10 August 2016
INSPECTED BY: Troy Austrins
REPORT PREPARED BY: Troy Austrins The inspector represents to the best of their knowledge that the following statements and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.

Table 4-2: Visual Inspection Checklist – NORTHEAST LANDFILL

Checklist Item	Present (Yes/No)	Feature Number	Feature Location	GPS Coordinates Easting/Northing/Zone		Length (m)	Width (m)	Depth (m)	Extent Relative to Landfill Surface	Description	Comparison with Historical Observations	Additional Comments/ Severity Rating	Photographic Records (photo reference, location, view point & direction, feature of note, scale)
Settlement	Yes	A1 A2 A3	Lobes 1 and 3 north side slope	389530.892 / 7621161.807 389534.570 / 7621162.142 389535.852 / 7621157.962	14 14 14	0.3 0.3 2	0.3 0.3 1	0.1 0.1 0.3	<1%	three depressions, two on inside corner slope and one on north side slope	First noted in Year 2 (2011). Marginal increases in magnitude or depth in 2013 and 2014. No significant change in features from 2014 to 2016. Slight decrease in length and width observed in 2019 for all sub-features.	Acceptable (features are minor and not affecting landfill stability)	CAM-1 NE 25, 26, 27
Settlement	Yes	D	Lobe 2 east landfill cover	389545.663 / 7621118.126	14	13	0.2	0.05	<1%	Linear depression- possibly caused by poor final grading	First noted in Year 5 (2014). Length, width and depth similar to 2016.	Acceptable (feature is minor and not affecting landfill stability)	CAM-1 NE 6, 7
Settlement	Yes	E	Lobes 1 and 3 northwest corner	389509.750 / 7621167.366	14	0.4	0.3	0.1	<1%	Pothole depression	First noted in Year 5 (2014). No significant change as compared to 2016.	Acceptable (feature is minor and not affecting landfill stability)	CAM-1 NE 20
Settlement	Yes	H	Lobe 2 west landfill cover	389521.190 / 7621104.078	14	7	0.3	0.05	<1%	Linear depression	No significant change from 2016 conditions.	Acceptable (feature is minor and not affecting landfill stability)	CAM-1 NE 34, 35
Erosion	Yes	C	Lobes 1 and 3 north side slope	389539.163 / 7621166.074	14	4	0.15	0.05	<1%	Minor erosion	First noted in Year 4 (2013). No significant change as compared to 2016.	Acceptable (feature is minor and not affecting landfill stability)	CAM-1 NE 30
Erosion	Yes	F	Lobes 1 and 3 northeast corner	389558.501 / 7621161.751	14	3	0.1	0.05	<1%	Minor erosion	First noted in Year 5 (2014). No significant change from 2016 conditions.	Acceptable (feature is minor and not affecting landfill stability)	CAM-1 NE 31
Erosion	Yes	G	Lobes 1 and 3 west side slope	389501.738 / 7621156.291	14	7	0.5	0.1	<1%	Minor erosion- feature possibly caused by poor final grading	First noted in Year 5 (2014). No significant change from 2016.	Acceptable (feature is minor and not affecting landfill stability)	CAM-1 NE 18, 19
Lateral Movement	No												
Frost Action	No												
Sloughing	No												
Cracking	No												
Animal Burrows	No												
Vegetation Establishment	Yes	I1 I2 I3	Lobes 1 and 3 side slopes; Feature I	389510.994 / 7621130.119 389527.370 / 7621165.043 389555.944 / 7621167.549	14 14 14	14 8 6	3.5 3 3	0.1 0.1 0.1	<1%	Isolated-small grass tufts on some landfill side slopes.	First observed in 2016. Sparse growth observed.	Acceptable (vegetation establishment will be beneficial for landfill stability)	CAM-1 NE 12 CAM-1 NE 21 CAM-1 NE 31
Staining	No												
Vegetation Stress	No												

Table 4-2: Visual Inspection Checklist – NORTHEAST LANDFILL												
Checklist Item	**Present (Yes/No)**	**Feature Number**	**Feature Location**	**GPS Coordinates Easting/Northing/Zone**	**Length (m)**	**Width (m)**	**Depth (m)**	**Extent Relative to Landfill Surface**	**Description**	**Comparison with Historical Observations**	**Additional Comments/ Severity Rating**	**Photographic Records (photo reference, location, view point & direction, feature of note, scale)**
Seepage Points (or) Ponded Water	No											
Debris and/or Liner Exposed	No											
Presence & Condition of Monitoring Instruments	No											
Features of Note/Other Relevant Observations (e.g., signs of activity, ruts…)	Yes	B	Lobes 1 and 3 north corner on side slope	389511.212 / 7621173.053	14	4	4	N/A	<1%	Uneven side slope	First noted in Year 1 (2010). Reduction in size indicated on drawing as compared to 2016.	Acceptable (feature has undergone no significant change since 2010 and is not affecting landfill stability)	CAM-1 NE 22

4.3.1.2 Preliminary Stability Assessment

The Preliminary Stability Assessment for the Northeast Landfill was conducted on August 27, 2019 as per the TOR and the results are provided in the Table below.

Table 4-3: Preliminary Stability Assessment – Northeast Landfill

Feature	Severity Rating	Extent
Settlement	Acceptable	Occasional
Erosion	Acceptable	Occasional
Lateral Movement	Not Observed	None
Frost Action	Not Observed	None
Sloughing	Not Observed	None
Cracking	Not Observed	None
Animal Burrows	Not Observed	None
Vegetation Establishment	Acceptable	Occasional
Staining	Not Observed	None
Vegetation Stress	Not Observed	None
Seepage / Ponded Water	Not Observed	None
Debris and/or Liner Exposure	Not Observed	None
Other (uneven side slopes)	Acceptable	None
Overall Landfill Performance	**Acceptable**	

Note: please refer to Performance/Severity rating reference guide in Section 2.1.3.1 above.

4.3.1.3 Photographic Records

The detailed photographic record for the Northeast Landfill has been completed as per Section 5.5 of the TOR and is included as Appendix H. The Photographic Record only contains an index of photographs collected; full sized photographs are contained in the separately appended CD/DVD-ROM. **Figure CAM-1.3A** illustrates the photograph locations and directions.

4.3.1.4 Trend Analysis

A trend analysis was conducted with regards to observations made during the visual inspection of the Northeast Landfill. The following Table 4-4 outlines the results of the visual trend analysis.

Table 4-4: Visual Inspection Trends - Northeast Landfill

Northeast Landfill		
Checklist Item	**Feature Number**	**Comparison with Historical Observations**
Settlement	A – minor settlement x 3	Slight decrease in width and length for these three sub-features.
	D – minor settlement	No significant change.
	E – minor pothole settlement	No significant change.
	H – minor settlement	No significant change.
Erosion	C – minor erosion	No significant change.
	F – minor erosion	No significant change.
	G – minor erosion	No significant change.
Vegetation	I - vegetation	Some sparse vegetation observed- no change from 2016
Other Features	B - Uneven Side Slope	No significant change.

4.3.1.5 Discussion of Results/Trends

A comparison of the visual inspection results of the 2016 and 2019 monitoring events at the Northeast Landfill indicates that previously observed settlement features saw no significant change. No new features were observed. The results of the visual inspection and the observed trends indicate that the performance of the landfill is acceptable.

4.3.2 Soil Sampling

Soil sampling of the Northeast Landfill was conducted on August 27, 2019. The soil sampling was conducted in compliance with Section 5.3.1 and 5.3.2 of the TOR and details are provided below in the following Sections 4.3.2.1 through 4.3.2.3.

4.3.2.1 Laboratory Analytical Results

A total of eight soil samples were analysed from four soil sample locations at the Northeast Landfill and analysed for inorganic elements (arsenic, cadmium, chromium, cobalt, copper, nickel, and zinc), polychlorinated biphenyls (PCBs), and Petroleum Hydrocarbons (PHC F1, F2, F3, and F4).

The full current and historical analytical results are presented in **Table 2** in the Tables section of this report immediately following the main text. The laboratory certificates of analysis and chain of custody forms are presented in **Appendix B** of this report. **Figure CAM-1.3B** presents a summary of soil analytical results.

4.3.2.2 Summary of Soil Results

The soil results for 2019 are presented in the following table. The background and baseline mean are presented for information purposes. The discussions are focused on the comparison of the results to the BL+3SD.

Table 4-5: Evaluation of Results by Parameter - Northeast Landfill

Parameter	Background (mg/kg)	Baseline Mean (mg/kg)	Baseline Mean+3SD (mg/kg)	Discussion of Results
Arsenic (As)	3.3	3.3	10.1	Upgradient sample C1-6 at depth exceeded the BL+3SD at 14 mg/kg; this was similar to concentrations observed in previous monitoring years. All other soil sample results were below the BL+3SD at upgradient and downgradient locations.
Cadmium (Cd)	1.0	1.0	1.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
Chromium (Cr)	20.0	20.0	20.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
Cobalt (Co)	5.0	5.0	5.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
Copper (Cu)	11.3	5.0	15.2	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
Lead (Pb)	10.0	10.0	10.0	Upgradient sample C1-6 at surface and depth exceeded the BL+3SD at 11 and 29 mg/kg respectively; this was similar to concentrations observed in previous monitoring years. Downgradient soil sample C1-9 at depth exceeded the BL+3SD at 17 mg/kg but was within 3 times the baseline mean. All other soil sample results were below the BL+3SD at all downgradient locations.
Nickel (Ni)	5.0	5.0	5.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
Zinc (Zn)	15.0	15.0	15.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
PCBs (Total)	0.1	0.1	0.1	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
F1 (C_6-C_{10})	N/A	10.0	10.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.

Parameter	Background (mg/kg)	Baseline Mean (mg/kg)	Baseline Mean+3SD (mg/kg)	Discussion of Results
F2 (C_{10}-C_{16})	N/A	31.4	156	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
F3 (C_{16}-C_{34})	N/A	107.6	508.1	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
F4 (C_{34}-C_{50})	N/A	108.1	505.9	All soil sample results were below the BL+3SD at upgradient and downgradient locations.

Note: BL+3SD + = baseline data mean + 3x standard deviations. Soil concentrations are shown are in mg/kg.

4.3.2.3 Discussion of Soil Results

Based on a visual comparison of upgradient and downgradient data on the graphs, concentrations were within what would be expected of natural variability when comparing upgradient and downgradient sample locations.

The concentrations of lead at upgradient sample C1-6 at surface and depth exceeded the BL+3SD at 11 and 29 mg/kg respectively; this was similar to concentrations observed in previous monitoring years. Downgradient soil sample C1-9 at depth exceeded the BL+3SD for lead at 17 mg/kg. However similar concentrations were observed in historical monitoring events. These lead results likely representative of natural variability.

Low levels of naturally occurring arsenic have been found at CAM-1 (as shown on summary page of the LTM tables) and levels below 40 mg/kg were not historically remediated. Arsenic in upgradient sample C1- 6 at depth exceeded the BL+3SD at 14 mg/kg, however, this concentration was consistent with concentrations reported in previous monitoring years and is likely representative of natural background conditions. The arsenic concentrations at this landfill are well below the CAM-1, site-specific, DEW Line clean-up criteria of 40 mg/kg and are not considered a concern at this time.

Overall, both the upgradient and downgradient soil results from 2019 are comparable to the results from the previous monitoring events and there is no indication of contaminant migration from the landfill at this time.

It should be noted that there are insufficient data points at this time to determine trends in the soil concentrations. The performance of the landfill should be re-evaluated once seven years of data are available.

4.4 Conclusions and Overall Landfill Performance

Although concentrations of arsenic and lead were identified exceeding the BL+3SD, these concentrations are consistent with those from previous monitoring events and are representative of expected natural variability. These are not considered a concern at this time.

Based on review and analysis of chemical data, overall, both the upgradient and downgradient soil results from 2019 are comparable to the results from the previous monitoring events and there is no indication of

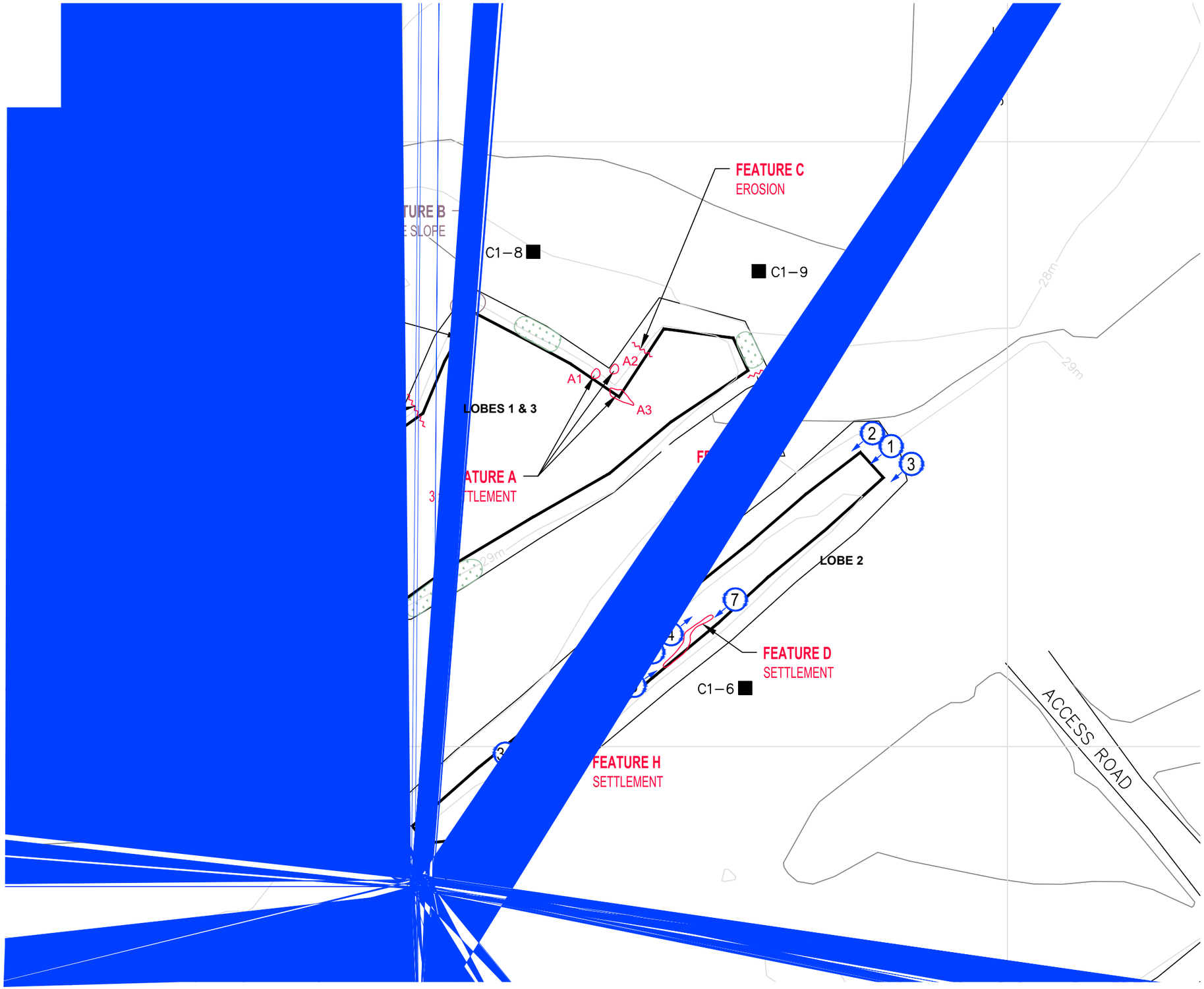
contaminant migration from the landfill at this time. A review of the analytical data indicates that the landfill is performing as intended and there is no indication of contaminant migration from the landfill at this time.

Based on the results of the 2019 monitoring program, the overall performance of the Northeast Landfill is acceptable.

4.5 Recommendations

Based on this review, it is recommended to continue the long-term monitoring of soils as planned.

Based on the results of the visual inspection, the Northeast landfill performance is acceptable. No remedial work or deviations from the monitoring plan are recommended at this time.



LEGEND

- MONITORING SOIL SAMPLE LOCATION
- SETTLEMENT
- EROSION
- VEGETATION
- APPROX. PHOTOGRAPHIC VIEWPOINT (2019) T VISUAL INSPECTION PHOTOS 1 - 35
- TOP OF LANDFILL
- TOE OF LANDFILL

NOTE:
RED = 2019 FEATURES
PURPLE = FEATURES FROM PREVIOUS MONITORING EVENTS

Meters
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1:650

2 FINAL 2020.04.17 RF TA CG

Construction de Défense Canada
Defence Construction Canada

COLLECTION OF LANDFILL MONITORING DATA

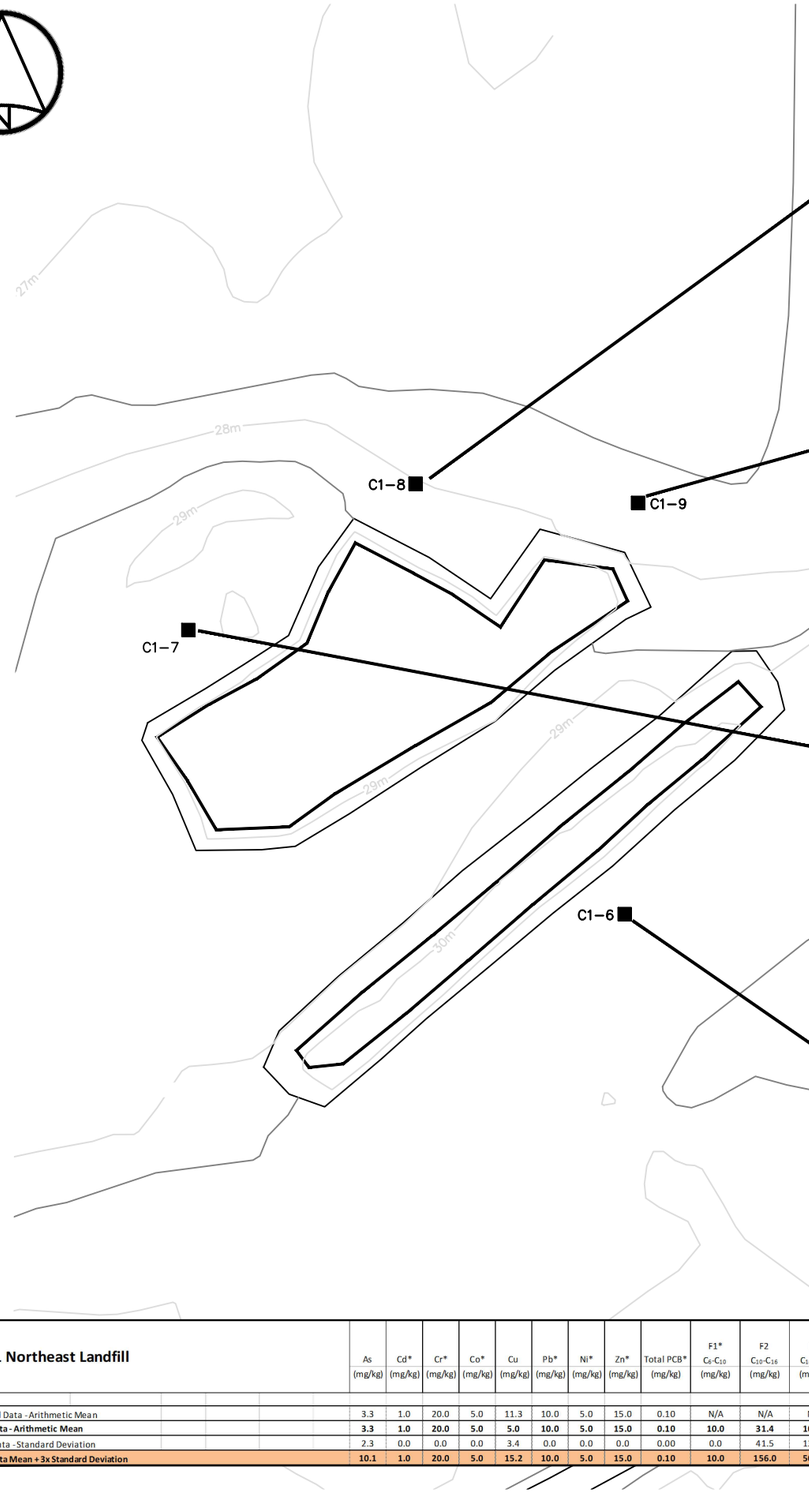
CAM-1, JENNY LIND ISLAND, NU

NORTHEAST LANDFILL 2019 VISUAL INSPECTION

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Metre	1 : 650	MARCH 2020
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30000251	30000251-PIN-4.3	PL

FIGURE CAM-1.3A



Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C6-C10 (mg/kg)	F2* C10-C16 (mg/kg)	F3* C16-C34 (mg/kg)	F4* C34-C50 (mg/kg)
C1-8 surface - downgradient																		
10-16639	C1-8	2010	1	Phase I	0-10	1.9	<1	<20	<5	<3	<10	<5	<15	0.005	<10	<4	12	17
C112-8A	C1-8	2012	3	Phase I	0-15	1.9	N/A	1.8	<1	<5	2.9	1.1	<10	<0.01	<12	<10	<10	N/A
C112-BD3 (Dup)	C1-8	2012	3	Phase I	0-15	1.5	N/A	1.3	<1	<5	2.4	<1	<10	<0.01	<12	<10	<10	N/A
C112-8A (Interlab)	C1-8	2012	3	Phase I	0-15	2.5	0.01	1.9	0.8	1.0	5.1	1.4	5.0	<0.10	<10	<50	<50	<100
C114-8A	C1-8	2014	5	Phase I	0-15	1.5	0.02	1.8	0.7	1.5	<4.9	0.9	6.0	<0.10	<10	<50	<50	<100
C114-BD4 (Dup)	C1-8	2014	5	Phase I	0-15	1.2	0.01	2.0	0.7	1.5	<5	0.9	5.0	<0.10	<10	<50	<50	<100
C114-8A (Interlab)	C1-8	2014	5	Phase I	0-15	1.9	<0.1	1.7	<1	<5	3.2	1.0	<10	<0.01	<12	<10	<50	N/A
16-C1-8A	C1-8	2016	7	Phase II	0-15	2.1	<0.05	1.4	0.55	1.1	2.8	<1	<10	<0.01	<12	<10	<50	<50
C1-DUP2 (Dup)	C1-8	2016	7	Phase II	0-15	**13.0**	<0.05	2.4	1.3	3.3	**12.0**	2.4	10.0	<0.01	<12	<10	<50	<50
16-C1-8A (Interlab)	C1-8	2016	7	Phase II	0-15	1.46	<0.02	1.9	0.66	1.0	2.2	1.0	3.8	<0.05	<10	<20	<20	<20
C1-8A	C1-8	2019	10	Phase II	0-15	1.2	<0.050	1.2	<0.50	1.3	1.8	<1.0	2.8	<0.01	<7.0	<4.0	11	<6.0
C1-8 depth - downgradient																		
10-16641	C1-8	2010	1	Phase I	30-50	**3.6**	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	<4	18	16
C112-8B	C1-8	2012	3	Phase I	40-50	**10.0**	N/A	2.7	1.7	**8.0**	**12.0**	2.5	<10	<0.01	<12	<10	<10	N/A
C114-8B	C1-8	2014	5	Phase I	40-50	**5.8**	0.02	2.5	2.2	2.6	**11.0**	1.8	7.0	<0.10	<10	<50	<50	<100
16-C1-8B	C1-8	2016	7	Phase II	40-50	3.3	<0.05	1.7	1.0	1.7	6.2	1.3	<10	<0.01	<12	<10	<50	<50
C1-8B	C1-8	2019	10	Phase II	40-50	3.0	<0.050	1.7	0.98	1.6	4.7	1.3	3.8	<0.01	<7.0	<4.0	12	<6.0

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C6-C10 (mg/kg)	F2* C10-C16 (mg/kg)	F3* C16-C34 (mg/kg)	F4* C34-C50 (mg/kg)
C1-9 surface - downgradient																		
10-16643	C1-9	2010	1	Phase I	0-10	1.8	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	<4	13	16
C112-9A	C1-9	2012	3	Phase I	0-15	2.6	N/A	**36.0**	<1	**10.0**	**110.0**	2.7	<10	<0.01	<12	<10	57	N/A
C114-9A	C1-9	2014	5	Phase I	0-15	**4.0**	0.12	4.3	1.5	**16.6**	7.9	4.6	7.0	<0.10	<10	<50	<50	<100
16-C1-9A	C1-9	2016	7	Phase II	0-15	**5.0**	0.075	2.2	1.3	**6.4**	7.3	2.4	<10	<0.01	<12	<10	<50	<50
C1-9A	C1-9	2019	10	Phase II	0-15	**4.8**	0.11	2.1	0.82	**7.6**	3.7	2.5	2.8	<0.01	<7.0	<4.0	61	11
C1-9 depth - downgradient																		
10-16645	C1-9	2010	1	Phase I	30-40	2.7	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	<4	12	17
C112-9B	C1-9	2012	3	Phase I	40-50	**7.8**	N/A	3.0	2.2	**12.0**	**13.0**	3.3	<10	<0.01	<12	<10	24	N/A
C114-9B	C1-9	2014	5	Phase I	40-50	**12.9**	0.10	3.6	3.5	**12.5**	**22.4**	4.6	15.0	<0.10	<10	<50	<50	<100
16-C1-9B	C1-9	2016	7	Phase II	35-45	**3.8**	<0.05	1.6	1.0	3.4	6.4	1.6	<10	<0.01	<12	<10	<50	<50
C1-9B	C1-9	2019	10	Phase II	40-50	**9.9**	0.055	2.2	3.4	**6.9**	**17.0**	3.7	7.0	<0.01	<7.0	<4.0	16	<6.0

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C6-C10 (mg/kg)	F2* C10-C16 (mg/kg)	F3* C16-C34 (mg/kg)	F4* C34-C50 (mg/kg)
C1-7 surface - downgradient																		
10-16635	C1-7	2010	1	Phase I	0-10	2.3	<1	<20	<5	<3	<10	<5	<15	0.009	<10	12	53	45
10-16636 (Dup)	C1-7	2010	1	Phase I	0-10	2.8	<1	<20	<5	<3	<10	<5	<15	0.005	<10	4.5	18	24
C112-7A	C1-7	2012	3	Phase I	0-15	**3.6**	N/A	2.3	1.1	<5	6.4	1.6	<10	<0.01	<12	<10	<10	N/A
C114-7A	C1-7	2014	5	Phase I	0-15	2.1	0.03	1.5	0.7	1.8	<5	0.9	9.0	<0.10	<10	<50	<50	<100
16-C1-7A	C1-7	2016	7	Phase II	0-15	**3.6**	<0.05	2.7	1.1	2.0	6.5	1.8	<10	<0.01	<12	<10	<50	<50
C1-7A	C1-7	2019	10	Phase II	0-15	2.4	<0.050	1.5	0.66	<1.0	4.4	<1.0	2.5	<0.01	<7.0	<4.0	34	<6.0
C1-7 depth - downgradient																		
10-16637	C1-7	2010	1	Phase I	30-50	**4.1**	<1	<20	<5	<3	<10	<5	<15	0.007	<10	7.6	19	30
C112-7B	C1-7	2012	3	Phase I	40-50	**3.6**	N/A	2.3	1.1	<5	6.7	1.6	<10	<0.01	<12	<10	<10	N/A
C114-7B	C1-7	2014	5	Phase I	40-50	**3.7**	0.02	2.7	1.6	2.4	8.0	1.8	6.0	<0.10	<10	<50	<50	<100
16-C1-7B	C1-7	2016	7	Phase II	40-50	**3.4**	<0.05	2.4	1.2	3.0	7.0	1.5	<10	<0.01	<12	<10	<50	<50
C1-7B	C1-7	2019	10	Phase II	40-50	<1.0	<0.050	1.2	<0.50	1.5	1.7	<1.0	4.6	<0.01	<7.0	<4.0	9.2	<6.0

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/Kg)	Cr* (mg/Kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C6-C10 (mg/kg)	F2* C10-C16 (mg/kg)	F3* C16-C34 (mg/kg)	F4* C34-C50 (mg/kg)
C1-6 surface - upgradient																		
10-16631	C1-6	2010	1	Phase I	0-10	**9.0**	<1	<20	<5	3.0	**12.0**	<5	<15	0.012	<10	5.3	20	21
C112-6A	C1-6	2012	3	Phase I	0-15	**11.0**	N/A	2.2	1.7	<5	**15.0**	2.5	<10	<0.01	<12	<10	12	N/A
C114-6A	C1-6	2014	5	Phase I	0-15	**5.6**	0.04	2.2	1.7	3.6	**12.4**	1.2	4.0	<0.10	<10	<50	<50	<100
16-C1-6A	C1-6	2016	7	Phase II	0-15	**6.9**	<0.05	2.2	0.98	2.8	**11.0**	1.6	<10	<0.01	<12	<10	<50	<50
C1-6A	C1-6	2019	10	Phase II	0-15	**5.6**	<0.050	2.0	1.1	2.9	**11.0**	1.4	3.7	<0.01	<7.0	<4.0	15	<6.0
C1-6 depth - upgradient																		
10-16633	C1-6	2010	1	Phase I	10-25	**7.9**	<1	<20	<5	4.3	**15.0**	<5	<15	0.005	<10	4.8	27	22
C112-6B	C1-6	2012	3	Phase I	40-50	**16.0**	N/A	2.7	2.4	**5.7**	**27.0**	3.3	<10	<0.01	<12	17	55	N/A
C114-6B	C1-6	2014	5	Phase I	40-50	**8.5**	0.04	2.4	2.1	4.4	**19.4**	1.5	4.0	<0.10	<10	<50	<50	<100
16-C1-6B	C1-6	2016	7	Phase II	30-35	**7.6**	<0.05	1.9	1.6	4.0	**17.0**	2.0	<10	<0.01	<12	<10	<50	<50
C1-6B	C1-6	2019	10	Phase II	40-50	**14.0**	<0.050	2.4	2.2	5.0	**29.0**	2.5	4.3	<0.01	<7.0	<4.0	16	<6.0

CAM-1 Northeast Landfill	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
Background Data - Arithmetic Mean	3.3	1.0	20.0	5.0	11.3	10.0	5.0	15.0	0.10	N/A	N/A	N/A	N/A
Baseline Data - Arithmetic Mean	**3.3**	**1.0**	**20.0**	**5.0**	**5.0**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**31.4**	**107.6**	**108.1**
Baseline Data - Standard Deviation	2.3	0.0	0.0	0.0	3.4	0.0	0.0	0.0	0.00	0.0	41.5	133.5	132.6
Baseline Data Mean + 3x Standard Deviation	**10.1**	**1.0**	**20.0**	**5.0**	**15.2**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**156.0**	**508.1**	**505.9**

LEGEND

- MONITORING SOIL SAMPLE LOCATION
- TOP OF LANDFILL
- TOE OF LANDFILL

XX	Sample exceeds baseline mean
XX	Sample exceeds baseline mean + 3x SD

Meters

20 0 20 40

1:1000

NO.	VERSION	DATE	DRAWN	VERIF.	APPR.
2	FINAL	2020.04.17	RF	TA	CG

Construction de Défense Canada
Defence Construction Canada

COLLECTION OF LANDFILL MONITORING DATA

CAM-1, JENNY LIND ISLAND, NU

NORTHEAST LANDFILL 2019 SOIL ANALYTICAL RESULTS

ARCADIS
1050 Morrison Drive, Suite 201, Ottawa, Ontario, K2H 8K7
Office General +1 613 721 0555

MEASUREMENT UNIT:	SCALE:	DATE (month-year):
Metre	1 : 1000	MARCH 2020
DRAWN BY:	VERIFIED BY:	APPROVED BY:
R. FLETCHER	T. AUSTRINS	C. GRAVELLE, P.ENG
PROJECT NO:	DRAWING NO:	PAGE
30000251	30000251-PIN-4.3	PL

FIGURE CAM-1.3B

5 CAM-1: STATION WEST LANDFILL

5.1 Landfill Description

The Station West Landfill is located west of the intersection between the main access road between the Beach Area and Station Area and the access road heading northwest from the Station Area. It is found approximately 175 m west of the Non-Hazardous Waste landfill. The landfill is a single regrade area with a footprint of approximately 2,400 m^2.

The remediation of the Station West Landfill included the excavation of Tier II contaminated soil, removal of debris from the pit area and landfill surface and regrading with the placement of additional granular fill. Final cover extends approximately 0.75 above surrounding grades. There is no instrumentation installed at this landfill.

The long-term monitoring plan consists of visual inspection and the periodic collection of soil samples. The landfill layout, visual observations and photographic locations are presented on **Figure CAM-1.4A** and the soil analytical results are presented on **Figure CAM-1.4B** both of which are provided at the rear of this section.

5.2 Summary of Work Conducted

5.2.1 Visual Inspection

Visual inspection of the Station West Landfill was conducted on August 26, 2019. The visual inspection of the landfill was completed with no deviations from the accepted work plan.

5.2.2 Soil Sampling

Soil sampling at the Station West Landfill was conducted on August 26, 2019 and consisted of the collection of eight soil samples from four soil sample stations (C1-10, C1-11, C1-12, and C1-13). The table below outlines the soil sampling activities conducted at the Station West Landfill.

Table 5-1: Summary of Work Conducted by Soil Sampling Location- Station West Landfill

Sample Location	Sample ID	Sample Depth (m bgs)	Notes
C1-10 (up-gradient)	C1-10A	0 – 0.15	Brown sand and gravel, cobbles, moist, no odour
	C1-10B	0.4 – 0.5	Brown sand and gravel, cobbles, moist, no odour
C1-11 (down-gradient)	C1-11A	0 – 0.15	Brown sand, some gravel, moist, no odour
	C1-11B	0.4 – 0.5	Brown sand, some gravel, moist, no odour
C1-12 (down-gradient)	C1-12A	0 – 0.15	Brown sand, some gravel, moist, no odour
	C1-12B	0.4 – 0.5	Brown sand, some gravel, moist, no odour
	C1-13A	0 - 0.15	Brown sand, some gravel, moist, no odour

Sample Location	Sample ID	Sample Depth (m bgs)	Notes
C1-13 (down-gradient)	C1-13B	0.4 – 0.5	Brown sand, some gravel, moist, no odour, gravelly at 0.45

5.2.3 Groundwater Sampling

No groundwater monitoring wells are present at the Station West Landfill; therefore, no groundwater sampling or analysis was performed as part of the 2019 monitoring program.

5.2.4 Thermal Monitoring

No thermistors are present at the Station West Landfill; therefore, no thermal monitoring was performed.

5.3 Results of the Monitoring Program

The following Sections 5.3.1 through 5.3.2 summarize the results of the CAM-1 monitoring program at the Station West Landfill.

5.3.1 Visual Inspection

The visual inspection was conducted in compliance with Section 5.2 of the TOR and details are provided below in the following Sections 4.3.1.1 through 4.3.1.5. **Figure CAM-1.4A** presents the visual inspection findings and photographic locations.

5.3.1.1 Inspection Checklist

The visual inspection was completed as per the TOR and the visual inspection checklist is included as Table 5-2 of this report below.

Table 5-2: Visual Inspection Checklist – Station West Landfill

SITE NAME: CAM-1 Jenny Lind Island
LANDFILL DESIGNATION: Station West Landfill LANDFILL TYPE: Regraded DATE OF INSPECTION: 26 August 2019 WEATHER CONDITIONS: sunny, ~ 14 ^{o}C, approx.. 18 km/hr winds from south.
DATE OF PREVIOUS INSPECTION: 10 August 2016
INSPECTED BY: Troy Austrins
REPORT PREPARED BY: Troy Austrins The inspector represents to the best of their knowledge that the following statements and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.

Table 5-2: Visual Inspection Checklist- STATION WEST LANDFILL

Checklist Item	Present (Yes/No)	Feature Number	Feature Location	GPS Coordinates Easting/Northing/Zone		Length (m)	Width (m)	Depth (m)	Extent Relative to Landfill Surface	Description	Comparison with Historical Observations	Additional Comments/ Severity Rating	Photographic Records (photo reference, location, view point & direction, feature of note, scale)
Settlement	Yes	A1	East side slope	389038.888 / 7620948.867	14	2.5	0.6	0.05	<1%	Minor settlement at three locations. Feature A4 not observed in 2019.	First noted in Year 2 (2011). No significant change from 2011 through to 2019 although Feature A4 not observed in 2019.	Acceptable (features are minor and not affecting landfill stability)	CAM-1 STNW 9
		A2		389044.251 / 7620943.503		0.5	0.6	0.05					CAM-1 STNW-4
		A3		389047.664 / 7620936.840		1.0	0.6	0.05					CAM-1 STNW 8
		A4		389051.727 / 7620933.427		N/A	N/A	N/A					CAM-1 STNW 3
Settlement	Yes	B1	Northwest side slope and north cover	389012.993 / 7620946.231	14	1.0	0.3	0.05	<1%	Minor settlement at three locations	First noted in Year 2 (2011). No significant change from 2011 to 2019.	Acceptable (features are minor and not affecting landfill stability)	CAM-1 STNW 29
		B2		389027.387 / 7620954.688		1.0	0.2	0.05					CAM-1 STNW 34
		B3		389028.363 / 7620955.746		2.5	0.3	0.05					CAM-1 STNW 34
Settlement	Yes	E	Northeast corner	389057.152 / 7620945.750	14	6	3	0.1	<2%	Large area of minor settlement/erosion. Likely caused by poor final grading.	First noted in Year 2 (2011). Marginal increase in size between years 4 and 5. No significant change between 2014, 2016 and 2019.	Acceptable (feature is minor and not affecting landfill stability)	CAM-1 STNW 10, 11, 12
Settlement	Yes	J	Southeast corner of cover	389048.813 / 7620911.283	14	0.4	0.2	0.05	<1%	Minor settlement	First noted in Year 5 (2014). No significant change between 2014 and 2019.	Acceptable (feature is minor and not affecting landfill stability)	CAM-1 STNW 35
Settlement	Yes	K1	Southwest side slope	389013.516 / 7620912.010	14	0.3	0.3	0.05	<1%	Minor settlement at two locations	First noted in Year 5 (2014). No significant change between 2014, 2016, and 2019.	Acceptable (features are minor and not affecting landfill stability)	CAM-1 STNW 24
		K2		389017.474 / 7620909.021		0.3	0.5	0.05					CAM-1 STNW 23
Settlement	Yes	L	Northeast side slope	389038.666 / 7620951.333	14	3	0.2	0.05	<1%	Minor settlement	Increase in length from 0.5 m to 3 m as compared to 2016.	Acceptable (feature is minor and not affecting landfill stability)	CAM-1 STNW 9
Settlement	Yes	M	North cover	389027.306 / 7620952.086	14	0.5	1.0	0.05	<1%	Minor settlement	Slight increase in width compared to 2016.	Acceptable (feature is minor and not affecting landfill stability)	CAM-1 STNW 34
Settlement	Yes	N	North cover	389019.394 / 7620950.216	14	0.6	0.1	0.05	<1%	Minor settlement	No significant change	Acceptable (feature is minor and not affecting landfill stability)	CAM-1 STNW 33
Erosion	No	D	East side slope	Not Observed	N/A	N/A	N/A	N/A	N/A	Minor erosion, washing of fines- Not Observed in 2019.	First noted in Year 2 (2011). Marginal increase in size between 2013 and 2014. Length of erosion shortened to 3 from 5 m between 2014 and 2016.Not observed in 2019	Not Observed	CAM-1 STNW 6, 7
Lateral Movement	No												
Frost Action	No												
Sloughing	No												

Table 5-2: Visual Inspection Checklist- STATION WEST LANDFILL

Checklist Item	Present (Yes/No)	Feature Number	Feature Location	GPS Coordinates Easting/Northing/Zone	Length (m)	Width (m)	Depth (m)	Extent Relative to Landfill Surface	Description	Comparison with Historical Observations	Additional Comments/ Severity Rating	Photographic Records (photo reference, location, view point & direction, feature of note, scale)
Cracking	Yes	G1	South side slope	389037.410 / 7620902.003	3	0.01	0.01	<1%	Partially infilled small tension cracks; five observed- two new in 2019 (=G2 and G5)	First noted in Year 1 (2010). Notable increase in size in 2013. Cracking discontinuous. Two additional cracks observed in 2019 as compared to 2016.	Acceptable (features are infilling and no evidence was observed to indicate feature is affecting landfill stability)	CAM-1 STNW 17
		G2		389034.383 / 7620901.844	0.2	0.02	0.02					CAM-1 STNW 36 (NEW)
		G3		389031.675 / 7620901.445	2	0.02	0.02					CAM-1 STNW 20, 21, 36
		G4		389031.271 / 7620901.725	1.5	0.03	0.03					CAM-1 STNW 37
		G5		389029.202 / 7620901.490	1.5	0.02	0.02					CAM-1 STNW 37 (NEW)
Cracking	Yes	H1	Northeast side slope	389057.152 / 7620945.750	2	0.02	0.01	<1%	Partially infilled tension cracks	First noted in Year 3 (2012). Feature decreased in size in 2013 and was completely infilled in 2014. Discontinuous cracks were visible again in 2016 & 2019.	Acceptable (features are infilling, and no evidence was observed to indicate features are affecting landfill stability)	CAM-1 STNW 9, 10
		H2		389041.106 / 7620949.957	2	0.02	0.01					CAM-1 STNW 9, 10
Cracking	Yes	I	East side slope	389049.837 / 7620934.054	14	3	0.02	0.01	<1%	Partially infilled tension crack	First noted in Year 4 (2013). Crack shortened to 2 m from 6m between 2014 and 2016. Now at 3m length. Has become more infilled in 2019.	Acceptable (feature is infilling, and no evidence was observed to indicate feature is affecting landfill stability)	CAM-1 STNW 7
Animal Burrows	No											
Vegetation Establishment	No											
Staining	No											
Vegetation Stress	No											
Seepage Points (or) Ponded Water	No											
Debris and/or Liner Exposed	No											
Presence & Condition of Monitoring Instruments	No											
Features of Note/Other Relevant Observations	Yes	C	Southwest corner of landfill	389003.984 / 7620920.432	14	5	5	0.05	<1%	Uneven side slope	First noted in Year 1 (2010). No significant change.	Acceptable (feature is minor and is not affecting landfill stability)	CAM-1 STNW 27
Features of Note/Other Relevant Observations	Yes	O	To west of landfill	388990.137 / 7620937.049	14	27	10	0.3	<1%	Equipment tracks located to west of landfill	First identified as Feature O in 2016. Tracks are outside landfill and do not affect landfill stability. No significant change.	Acceptable (beyond landfill site)	CAM-1 STNW 32

Table 5-2: Visual Inspection Checklist- STATION WEST LANDFILL

Checklist Item	Present (Yes/No)	Feature Number	Feature Location		GPS Coordinates Easting/Northing/Zone	Length (m)	Width (m)	Depth (m)	Extent Relative to Landfill Surface	Description	Comparison with Historical Observations	Additional Comments/ Severity Rating	Photographic Records (photo reference, location, view point & direction, feature of note, scale)
Features of Note/Other Observations	Yes	F1	South cover	landfill	389042.266 / 7620918.313	3	0.3			Discoloured cover material at 5 locations. Caused by absence of white granular cover with underlying brown soil fill exposed.	First noted in Year 1 (2010). Additional features noted in 2012, 2013 and 2014. No significant change from 2014 to 2019.	Acceptable (features are minor, and discolouration is believed to result from different borrow source material or grading)	CAM-1 STNW 28
		F2			389039.573 / 7620919.375	3	0.5						CAM-1 STNW 18
		F3			389035.984 / 7620921.641	14	4	2.0	N/A	<1%			CAM-1 STNW 16
		F4			389022.156 / 7620909.415		0.6	1.2					CAM-1 STNW 15
		F5			389013.802 / 7620921.763		4	2.0					CAM-1 STNW 16

5.3.1.2 Preliminary Stability Assessment

The Preliminary Stability Assessment for the Station West Landfill was conducted on August 26, 2019 as per the TOR and the results are provided below in the Table below.

Table 5-3: Preliminary Stability Assessment – Station West Landfill

Feature	Severity Rating	Extent
Settlement	Acceptable	Occasional
Erosion	Acceptable	Occasional
Lateral Movement	Not Observed	None
Frost Action	Not Observed	None
Sloughing	Not Observed	None
Cracking	Acceptable	Occasional
Animal Burrows	Not Observed	None
Vegetation Establishment	Not Observed	None
Staining	Not Observed	None
Vegetation Stress	Not Observed	None
Seepage / Ponded Water	Not Observed	None
Debris and/or Liner Exposure	Not Observed	None
Other	Acceptable (uneven surface) Acceptable (discolouration) Acceptable (equipment tracks outside landfill)	Isolated Occassional Isolated
Overall Landfill Performance	**Acceptable**	

Note: please refer to Performance/Severity rating reference guide in Section 2.1.3.1 above.

5.3.1.3 Photographic Records

The detailed photographic record for the Station West Landfill has been completed as per Section 5.5 of the TOR and is included as **Appendix H**. The Photographic Record only contains an index of photographs collected; full sized photographs are contained in the separately appended CD/DVD-ROM. **Figure CAM-1.4A** illustrates the photograph locations and directions.

5.3.1.4 Trend Analysis

A trend analysis was conducted with regards to observations made during the visual inspection of the Station West Landfill. The following table outlines the results of the visual trend analysis.

Table 5-4: Visual Inspection Trends - Station West Landfill

Station West Landfill		
Checklist Item	**Feature Number**	**Comparison with Historical Observations**
Settlement	A – very minor settlement	One feature not observed. Otherwise, no significant change.
	B - - very minor settlement	No significant change.
	E – minor settlement	No significant change.
	J – minor settlement	No significant change.
	K – minor settlement	No significant change.
	L – very minor settlement	Slight increase in length.
	M – very minor settlement	Slight width increase.
	N – very minor settlement	No significant change.
Erosion	D - erosion	Not Observed.
Cracking	G- tension cracking	2 new minor tension cracks observed in 2019.
	H – tension cracking	Tension crack had completely infilled in 2014 but reappeared in 2016. Visible in 2019.
	I – tension cracking	Observed tension cracks have partially infilled.
Other Features	C - uneven side slope	No significant change.
	O - equipment tracks	Newly identified in 2016, however it is likely this feature was created during the remedial works and has undergone little change since then.
	F – Discolouration	Borrow soil differences appears as discolouration. No changes.

5.3.1.5 Discussion of Results/Trends

A comparison of the visual inspection results of the 2016 and 2019 monitoring events at the Station West Landfill indicates that previously observed settlement features saw no significant change or only minor increased in length/width. No erosion features were identified in 2019. Two new minor tension cracking features were observed. The results of the visual inspection and the observed trends indicate that the performance of the landfill is acceptable.

5.3.2 Soil Sampling

Soil sampling of the Station West Landfill was conducted on August 26, 2019. The soil sampling was conducted in compliance with Section 5.3.1 and 5.3.2 of the TOR and details are provided below in the following Sections 5.3.2.1 through 5.3.2.3.

5.3.2.1 Laboratory Analytical Results

A total of eight soil samples were analysed from four soil sample locations at the Station West Landfill and analysed for inorganic elements (arsenic, cadmium, chromium, cobalt, copper, nickel, and zinc), polychlorinated biphenyls (PCBs), and Petroleum Hydrocarbons (PHC F1, F2, F3, and F4).

The full current and historical analytical results are presented in **Table 3** in the Tables section of this report immediately following the main text. The laboratory certificates of analysis and chain of custody forms are presented in **Appendix B** of this report. **Figure CAM-1.4B** presents a summary of soil analytical results.

5.3.2.2 Summary of Soil Results

Analytical results were compared against background concentrations, baseline data – arithmetic mean, and baseline date mean + 3x standard deviation. The following table summarizes the comparison of results.

Table 5-5: Evaluation of Results by Parameter - Station West Landfill

Parameter	Background (mg/kg)	Baseline Mean (mg/kg)	Baseline Mean+3SD (mg/kg)	Discussion of Results
Arsenic (As)	3.3	1.0	1.0	Upgradient sample C1-10 at surface and depth exceeded the BL+3SD at 2.7 and 2.6 mg/kg respectively but was below the 3 times the baseline mean. These were similar to concentrations observed in previous monitoring years. Downgradient soil sample C1-13 at depth exceeded the BL+3SD at 2.1 mg/kg but was within 3 times the baseline mean; also similar in concentrations to previous years. All other soil sample results were below the BL+3SD at all downgradient locations.
Cadmium (Cd)	1.0	1.0	1.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.

Parameter	Background (mg/kg)	Baseline Mean (mg/kg)	Baseline Mean+3SD (mg/kg)	Discussion of Results
Chromium (Cr)	20	20	20	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
Cobalt (Co)	5.0	5.0	5.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
Copper (Cu)	11.3	5.0	17.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
Lead (Pb)	10.0	10.0	10.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
Nickel (Ni)	5.0	5.0	5.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
Zinc (Zn)	15.0	15.0	15.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
PCBs (Total)	0.1	0.1	0.1	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
F1 (C_6-C_{10})	N/A	10.0	10.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
F2 (C_{10}-C_{16})	N/A	7.6	19.7	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
F3 (C_{16}-C_{34})	N/A	50.9	165.4	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
F4 (C_{34}-C_{50})	N/A	46.1	175.5	All soil sample results were below the BL+3SD at upgradient and downgradient locations.

Note: BL+3SD + = baseline data mean + 3x standard deviations. Soil concentrations are shown are in mg/kg.

5.3.2.3 Discussion of Soil Results

Based on a visual comparison of upgradient and downgradient data on the graphs, downgradient concentrations were either below upgradient or of similar concentrations. This is suggestive of what would be expected of natural variability when comparing upgradient and downgradient sample locations.

The concentrations of arsenic at upgradient sample C1-10 at surface and depth exceeded the BL+3SD at 2.7 and 2.6 mg/kg respectively but was below the 3 times the baseline mean. These were similar to concentrations observed in previous monitoring years. Downgradient soil sample C1-13 at depth exceeded the BL+3SD at 2.1 mg/kg, also within 3 times the baseline mean and similar in concentrations to previous years. All other soil sample results were below the BL+3SD at all downgradient locations. These arsenic

results likely represent natural variability, especially considering low-levels of naturally occurring arsenic were identified at CAM-1 during the background sample collection. In addition, the arsenic concentrations at this landfill are well below the CAM-1, site-specific, DEW Line clean-up criterion of 40 mg/kg.

Overall, both the upgradient and downgradient soil results from 2019 are comparable to the results from the previous monitoring events and there is no indication of contaminant migration from the landfill at this time.

It should be noted that there are insufficient data points at this time to determine trends in the soil concentrations. The performance of the landfill should be re-evaluated once seven years of data are available.

5.4 Conclusions and Overall Landfill Performance

A review of the analytical data indicates that the landfill is performing as intended and there is no indication of contaminant migration from the landfill at this time.

Based on the results of the 2019 monitoring program, the overall performance of the Station West Landfill is acceptable.

Overall, both the upgradient and downgradient soil results from 2019 are comparable to the results from the previous monitoring events and there is no indication of contaminant migration from the landfill at this time.

5.5 Recommendations

Based on the results of the visual inspection, the Station West landfill performance is acceptable. Based on this review, it is recommended to continue the long-term monitoring of soils as planned.

389 000 E

389 100 E

C1–13

C1–12

C1–11

C1–10

7 620 900 N

FEATURE M
SETTLEMENT

FEATURE N
SETTLEMENT

FEATURE O
EQUIPMENT TRACKS

FEATURE E
SETTLEMENT

FEATURE E
SETTLEMENT

FEATURE L
SETTLEMENT

FEATURE H
CRACK

FEATURE A
SETTLEMENT

FEATURE B
SETTLEMENT

EROSION

A4 NOT OBSERVED 2019

FEATURE
OTHER
(DISCOL TION)

FEATURE I
CRACK

FEATURE J
SETTLEMENT

FEATURE C
UNEVEN SIDE SLOPE

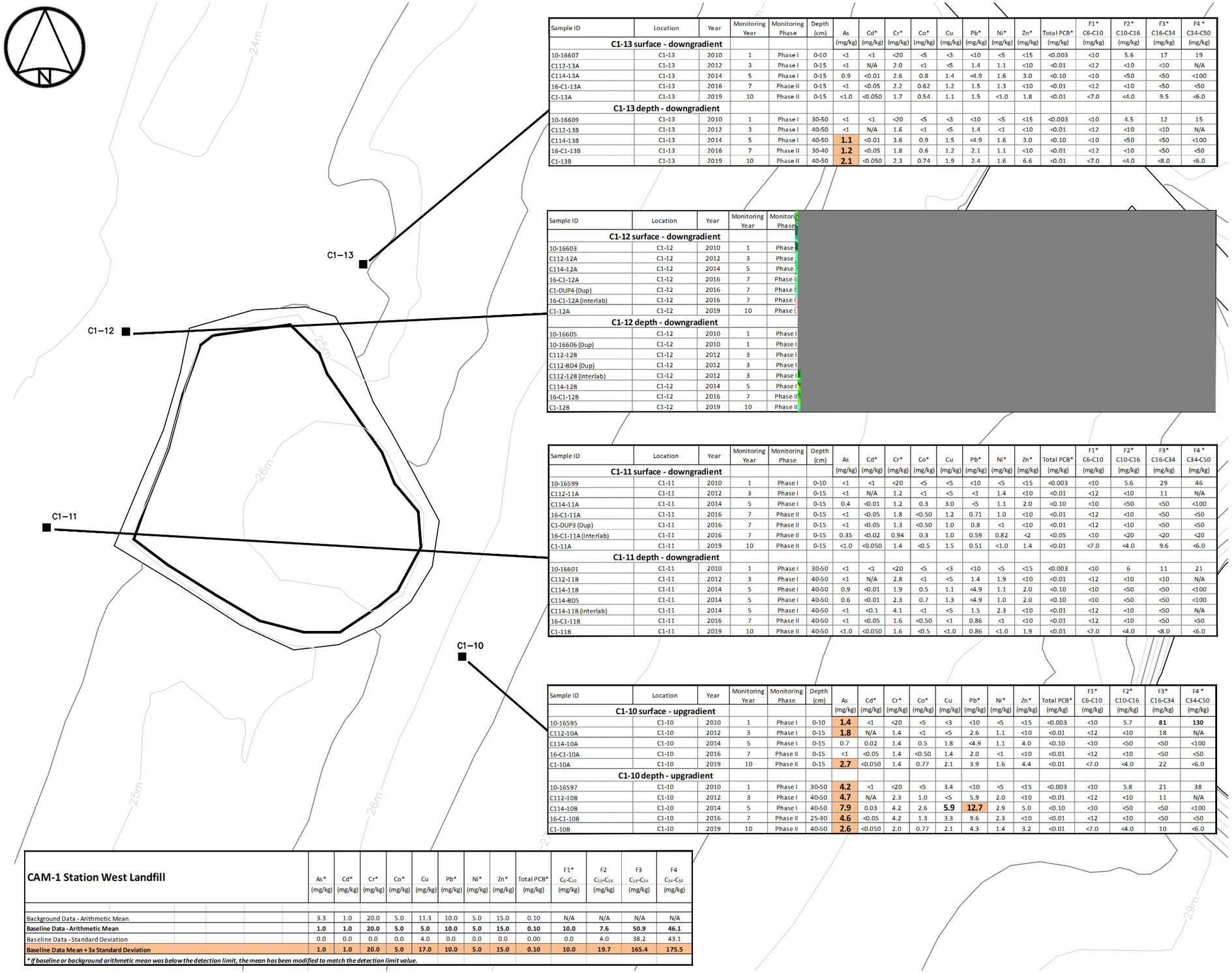
FEATURE K
SETTLEMENT

FEATURE G
CRACKS (G2 & G5 NEW 2019)

24m

25m

26m



Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C6-C10 (mg/kg)	F2* C10-C16 (mg/kg)	F3* C16-C34 (mg/kg)	F4* C34-C50 (mg/kg)
C1-13 surface - downgradient																		
10-16607	C1-13	2010	1	Phase I	0-10	<1	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	5.6	17	19
C112-13A	C1-13	2012	3	Phase I	0-15	<1	N/A	2.0	<1	<5	1.4	1.1	<10	<0.01	<12	<10	11	N/A
C114-13A	C1-13	2014	5	Phase I	0-15	0.9	<0.01	2.6	0.8	1.4	<4.9	1.6	3.0	<0.10	<10	<50	<50	<100
16-C1-13A	C1-13	2016	7	Phase II	0-15	<1	<0.05	2.2	0.62	1.2	1.5	1.3	<10	<0.01	<12	<10	<50	<50
C1-13A	C1-13	2019	10	Phase II	0-15	<1.0	<0.050	1.7	0.54	1.1	1.5	<1.0	1.8	<0.01	<7.0	<4.0	9.5	<6.0
C1-13 depth - downgradient																		
10-16609	C1-13	2010	1	Phase I	30-50	<1	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	4.5	12	15
C112-13B	C1-13	2012	3	Phase I	40-50	<1	N/A	1.6	<1	<5	1.4	<1	<10	<0.01	<12	<10	<10	N/A
C114-13B	C1-13	2014	5	Phase I	40-50	**1.1**	<0.01	3.6	0.9	1.5	<4.9	1.6	3.0	<0.10	<10	<50	<50	<100
16-C1-13B	C1-13	2016	7	Phase II	30-40	**1.2**	<0.05	1.8	0.6	1.2	2.1	1.1	<10	<0.01	<12	<10	<50	<50
C1-13B	C1-13	2019	10	Phase II	40-50	**2.1**	<0.050	2.3	0.74	1.9	2.4	1.6	6.6	<0.01	<7.0	<4.0	<8.0	<6.0

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C6-C10 (mg/kg)	F2* C10-C16 (mg/kg)	F3* C16-C34 (mg/kg)	F4* C34-C50 (mg/kg)
C1-12 surface - downgradient																		
10-16603	C1-12	2010	1	Phase I														
C112-12A	C1-12	2012	3	Phase I														
C114-12A	C1-12	2014	5	Phase I														
16-C1-12A	C1-12	2016	7	Phase I														
C1-DUP4 (Dup)	C1-12	2016	7	Phase I														
16-C1-12A (Interlab)	C1-12	2016	7	Phase I														
C1-12A	C1-12	2019	10	Phase I														
C1-12 depth - downgradient																		
10-16605	C1-12	2010	1	Phase I														
10-16606 (Dup)	C1-12	2010	1	Phase I														
C112-12B	C1-12	2012	3	Phase I														
C112-BD4 (Dup)	C1-12	2012	3	Phase I														
C112-12B (Interlab)	C1-12	2012	3	Phase I														
C114-12B	C1-12	2014	5	Phase I														
16-C1-12B	C1-12	2016	7	Phase II														
C1-12B	C1-12	2019	10	Phase II														

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C6-C10 (mg/kg)	F2* C10-C16 (mg/kg)	F3* C16-C34 (mg/kg)	F4* C34-C50 (mg/kg)
C1-11 surface - downgradient																		
10-16599	C1-11	2010	1	Phase I	0-10	<1	<1	<20	<5	<5	<10	<5	<15	<0.003	<10	5.6	29	46
C112-11A	C1-11	2012	3	Phase I	0-15	<1	N/A	1.2	<1	<5	<1	1.4	<10	<0.01	<12	<10	11	N/A
C114-11A	C1-11	2014	5	Phase I	0-15	0.4	<0.01	1.2	0.3	3.0	<5	1.1	2.0	<0.10	<10	<50	<50	<100
16-C1-11A	C1-11	2016	7	Phase II	0-15	<1	<0.05	1.8	<0.50	1.2	0.71	1.0	<10	<0.01	<12	<10	<50	<50
C1-DUP3 (Dup)	C1-11	2016	7	Phase II	0-15	<1	<0.05	1.3	<0.50	1.0	0.8	<1	<10	<0.01	<12	<10	<50	<50
16-C1-11A (Interlab)	C1-11	2016	7	Phase II	0-15	0.35	<0.02	0.94	0.3	1.0	0.59	0.82	<2	<0.05	<10	<20	<20	<20
C1-11A	C1-11	2019	10	Phase II	0-15	<1.0	<0.050	1.4	<0.5	1.5	0.51	<1.0	1.4	<0.01	<7.0	<4.0	9.6	<6.0
C1-11 depth - downgradient																		
10-16601	C1-11	2010	1	Phase I	30-50	<1	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	6	11	21
C112-11B	C1-11	2012	3	Phase I	40-50	<1	N/A	2.8	<1	<5	1.4	1.9	<10	<0.01	<12	<10	<10	N/A
C114-11B	C1-11	2014	5	Phase I	40-50	0.9	<0.01	1.9	0.5	1.1	<4.9	1.1	2.0	<0.10	<10	<50	<50	<100
C114-BD5	C1-11	2014	5	Phase I	40-50	0.6	<0.01	2.3	0.7	1.3	<4.9	1.0	2.0	<0.10	<10	<50	<50	<100
C114-11B (Interlab)	C1-11	2014	5	Phase I	40-50	<1	<0.1	4.1	<1	<5	1.5	2.3	<10	<0.01	<12	<10	<50	N/A
16-C1-11B	C1-11	2016	7	Phase II	40-50	<1	<0.05	1.6	<0.50	<1	0.86	<1	<10	<0.01	<12	<10	<50	<50
C1-11B	C1-11	2019	10	Phase II	40-50	<1.0	<0.050	1.6	<0.5	<1.0	0.86	<1.0	1.9	<0.01	<7.0	<4.0	<8.0	<6.0

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C6-C10 (mg/kg)	F2* C10-C16 (mg/kg)	F3* C16-C34 (mg/kg)	F4* C34-C50 (mg/kg)
C1-10 surface - upgradient																		
10-16595	C1-10	2010	1	Phase I	0-10	**1.4**	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	5.7	**81**	**130**
C112-10A	C1-10	2012	3	Phase I	0-15	**1.8**	N/A	1.4	<1	<5	2.6	1.1	<10	<0.01	<12	<10	18	N/A
C114-10A	C1-10	2014	5	Phase I	0-15	0.7	0.02	1.4	0.5	1.8	<4.9	1.1	4.0	<0.10	<10	<50	<50	<100
16-C1-10A	C1-10	2016	7	Phase II	0-15	<1	<0.05	1.4	<0.50	1.4	2.0	<1	<10	<0.01	<12	<10	<50	<50
C1-10A	C1-10	2019	10	Phase II	0-15	**2.7**	<0.050	1.4	0.77	2.1	3.9	1.6	4.4	<0.01	<7.0	<4.0	22	<6.0
C1-10 depth - upgradient																		
10-16597	C1-10	2010	1	Phase I	30-50	**4.2**	<1	<20	<5	3.4	<10	<5	<15	<0.003	<10	5.8	21	38
C112-10B	C1-10	2012	3	Phase I	40-50	**4.7**	N/A	2.3	1.0	<5	5.9	2.0	<10	<0.01	<12	<10	11	N/A
C114-10B	C1-10	2014	5	Phase I	40-50	**7.9**	0.03	4.2	2.6	**5.9**	**12.7**	2.9	5.0	<0.10	<10	<50	<50	<100
16-C1-10B	C1-10	2016	7	Phase II	25-30	**4.6**	<0.05	4.2	1.3	3.3	9.6	2.3	<10	<0.01	<12	<10	<50	<50
C1-10B	C1-10	2019	10	Phase II	40-50	**2.6**	<0.050	2.0	0.77	2.1	4.3	1.4	3.2	<0.01	<7.0	<4.0	10	<6.0

CAM-1 Station West Landfill	As* (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
Background Data - Arithmetic Mean	3.3	1.0	20.0	5.0	11.3	10.0	5.0	15.0	0.10	N/A	N/A	N/A	N/A
Baseline Data - Arithmetic Mean	**1.0**	**1.0**	**20.0**	**5.0**	**5.0**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**7.6**	**50.9**	**46.1**
Baseline Data - Standard Deviation	0.0	0.0	0.0	0.0	4.0	0.0	0.0	0.0	0.00	0.0	4.0	38.2	43.1
Baseline Data Mean + 3x Standard Deviation	**1.0**	**1.0**	**20.0**	**5.0**	**17.0**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**19.7**	**165.4**	**175.5**

** If baseline or background arithmetic mean was below the detection limit, the mean has been modified to match the detection limit value.*

LEGEND

- MONITORING SOIL SAMPLE LOCATION
- TOP OF LANDFILL
- TOE OF LANDFILL

XX	Sample exceeds baseline mean
XX	Sample exceeds baseline mean + 3x SD

Meters
10 0 10 20
1:700

NO.	VERSION	DATE	BY	VERIF.	APPR.
2	FINAL	2020.04.17	RF	TA	CG

Construction de Défense Canada
Defence Construction Canada

COLLECTION OF LANDFILL MONITORING DATA

CAM-1, JENNY LIND ISLAND, NU

STATION WEST LANDFILL 2019 SOIL ANALYTICAL RESULTS

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MEASUREMENT UNIT	SCALE	DATE OF ISSUE
Metre	1 : 700	MARCH 2020
DRAWN BY: R. FLETCHER	VERIFIED BY: T. AUSTRINS, P.ENG	APPROVED BY: C. GRAVELLE, P.ENG
PROJECT NO: 30000251	DRAWING NO: 30000251-CAM-1.4	PAGE: PL

FIGURE CAM-1.4B

6 CAM-1: NON-HAZARDOUS WASTE LANDFILL

6.1 Landfill Description

The Non-Hazardous Waste Landfill is located in the Station Area, immediately north of the intersection between the main access road between the Beach Area and Station Area and the road heading northwest from the Station Area. The landfill, including granular cover, encompasses an approximate 5,850 m^2 area.

The landfill was constructed to contain non-hazardous waste generated from the demolition, from the removal of surface debris and the Tier I and Type A hydrocarbon (lubricating oil and greases) contaminated soil (please refer to the *Abandoned Military Site Remediation Protocol Dec. 2008*). Final cover matches to or extends 1 to 3.5 m above the surrounding grade.

The design of this landfill incudes compacted perimeter berms, and placement of a cover of compacted granular fill over the landfilled material. Four groundwater monitoring wells were installed at the landfill perimeter.

The long-term monitoring plan for the Non-Hazardous Waste Landfill consists of visual inspection, and the periodic collection of soil and groundwater samples. The landfill layout, visual observations and photographic locations are presented on **Figure CAM-1.5A** and soil analytical results are presented on **Figure CAM-1.5B**, both located at the end of this section.

6.2 Summary of Work Conducted

6.2.1 Visual Inspection

A visual inspection was conducted on the Non-Hazardous Waste Landfill on August 27, 2019. The visual inspection of the landfill was completed with no deviations from the visual inspection work plan.

6.2.2 Soil Sampling

Soil sampling at the Non-Hazardous Waste Landfill was conducted on August 27, 2019 and consisted of the collection of eight soil samples from four soil sample stations (MW-01, MW-02, MW-03, and MW-04). Depth limitations were encountered at soil sampling station MW-02, where refusal on bedrock limited the depth sample from 0.20 to 0.30 metres below ground surface; MW-03 where refusal on bedrock limited the depth sample from 0.30 to 0.40 metres below ground surface; and MW-04 where refusal on bedrock limited the depth sample from 0.25 to 0.35 metres below ground surface. The table below outlines the soil sampling activities conducted at the Non-Hazardous Waste Landfill.

Table 6-1: Summary of Work Conducted by Soil Sampling Location – Non-Hazardous Waste Landfill

Sample Location	Sample ID	Sample Depth (m bgs)	Notes
	MW-01A	0 – 0.15	Brown sand and gravel, moist, no odour

Sample Location	Sample ID	Sample Depth (m bgs)	Notes
MW-01	MW-01B	40 - 50	Brown sand and gravel, moist, no odour
MW-02	MW-02A	0 – 0.15	Orange to brown sand, moist, no odour
	MW-02B	20 - 30	Orange to brown sand, moist, no odour
MW-03	MW-03A	0 – 0.15	Grey sand and gravel, moist, no odour
	MW-03B	0.4 – 0.5	Grey sand and gravel, moist, no odour
MW-04	MW-04A	0 – 0.15	Dark brown sand and gravel, moist, no odour
	MW-04B	0.4 – 0.5	Dark brown sand and gravel, moist, no odour

6.2.3 Groundwater Sampling

Groundwater monitoring at the Non-Hazardous Waste Landfill was conducted on August 27, 2019 and consisted of the inspection and groundwater monitoring of four monitoring wells (MW-01, MW-02, MW-03, and MW-04). One well, MW-1, was observed to be frozen/dry. Monitoring well MW-02 contained water; however, did not re-charge after being purged dry. Monitoring wells MW-03, and MW-04 contained sufficient water and groundwater samples were collected for analysis. Monitoring well sampling logs are presented in **Appendix F**. The Table below outlines the soil sampling activities conducted at the Non-Hazardous Waste Landfill.

Table 6-2: Summary of Work Conducted by Monitoring Well – Non-Hazardous Waste Landfill

Monitoring Well ID	Observations	# of Groundwater Samples Collected
NHW Landfill		
MW-01	Excellent condition	none
MW-02	Excellent condition	none
MW-03	Excellent condition	1
MW-04	Excellent condition	1

6.2.4 Thermal Monitoring

No thermistors are present at the Non-Hazardous Waste Landfill; therefore, no thermal monitoring was performed as part of the 2019 monitoring program.

6.3 Results of the Monitoring Program

The following Sections 6.3.1 through 6.3.3.1 summarize the results of the CAM-1 monitoring program at the Non-Hazardous Waste Landfill.

6.3.1 Visual Inspection

The visual inspection of the Non-Hazardous Waste Landfill was conducted on August 19, 2018. The visual inspection was conducted in compliance with Section 5.2 of the TOR and details are provided below in the following Sections 6.3.1.1 through 6.3.1.5. **Figure CAM-1.5A** presents the visual inspection findings and photographic locations.

6.3.1.1 Inspection Checklist

The visual inspection was completed as per the TOR and the visual inspection checklist is included as Table 6-3 of this report below.

Table 6-3: Visual Inspection Checklist – Non-Hazardous Waste Landfill

SITE NAME: CAM-1 Jenny Lind Island
LANDFILL DESIGNATION: Non-Hazardous Waste Landfill LANDFILL TYPE: NHWL DATE OF INSPECTION: 27 August 2019 WEATHER CONDITIONS: 15° C, sunny, approximate 16 km/hr winds from south
DATE OF PREVIOUS INSPECTION: 10 August 2016
INSPECTED BY: Troy Austrins, P.Eng.
REPORT PREPARED BY: Troy Austrins, P.Eng. The inspector represents to the best of their knowledge that the following statements and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.

In comparison with the 2016 report, it was noted that surficial regrading had recently occurred along the southwest edge of this landfill, most noticeably in the vicinity of MW-01.

Table 6-3: Visual Inspection Checklist- NON-HAZARDOUS WASTE LANDFILL

Checklist Item	Present (Yes/No)	Feature Number	Feature Location	GPS Coordinates Easting/Northing/Zone	Length (m)	Width (m)	Depth (m)	Extent Relative to Surface	Description	Comparison with Historical Observations	Additional Comments/ Severity Rating	Photographic Records (photo reference, location, view point & direction, feature of note, scale)
Settlement	Yes	A1 A2	Southwest cover	Not Observed 389266.929/ 7620919.285 14	N/A 1.0	N/A 0.4	N/A 0.05	<1%	Linear depressions – one observed in 2019	First observed in Year 3 (2012). Cover appears stable. Two observed in 2016. Only one observed in 2019.	Acceptable (feature is minor and not affecting landfill stability)	CAM-1 NHW 3
Settlement	Yes	C	North corner slope	389279.781/ 7620986.969 14	0.9	0.3	0.05	<1%	Linear depression	First observed in Year 5 (2014). Side slope appears stable. No Significant Change from 2016.	Acceptable (feature is minor and not affecting landfill stability)	CAM-1 NHW 20, 21
Settlement	Yes	D	Northwest side slope	389252.971/ 7620959.166 14	0.6	0.2	0.1	<1%	Linear depression	First observed in Year 5 (2014). Side slope appears stable. Slight decrease in length from 1.0 m to 0.6 m in 2019.	Acceptable (feature is minor and not affecting landfill stability)	CAM-1 NHW 25
Settlement	Yes	F1 F2	Southwest cover	389265.453 / 7620919.451 389265.938 / 7620918.286 14	0.2 0.2	0.2 0.2	0.1 0.1	<1%	Two minor pothole depressions	First observed in 2016. No Significant Change from 2016.	Acceptable (features are minor and not affecting landfill stability)	CAM-1 NHW 28, 29
Erosion	No											
Lateral Movement	No											
Frost Action	No											
Sloughing	No											
Cracking	No											
Animal Burrow	No											
Vegetation Establishment	No											
Staining	No											
Vegetation Stress	No											
Seepage Points/Ponding	No											
Debris and/or Liner Exposed	Yes	B1 B2 B3 B4 B5	North, east, west side of cover	389256.749 / 7620944.117 389295.431 / 7620952.511 389318.311 / 7620937.532 14 NOT OBSERVED NOT OBSERVED	0.1 0.3 0.3 N/A N/A	0.1 0.2 0.2 N/A N/A	N/A	<1%	Exposed embedded geotextile material – three locations observed	First observed in Year 1 (2010) as five exposed geotextile locations. Only three locations were observed in 2019.	Acceptable (features are minor and not affecting integrity of landfill cover)	CAM-1 NHW 11 CAM-1 NHW 12 CAM-1 NHW 16 CAM-1 NHW 7 CAM-1 NHW 6
Debris and/or Liner Exposed	Yes	E	West side of cover	389265.473 / 7620941.154 14	0.1	0.1	N/A	<1%	Exposed embedded metal debris – one location	First observed in 2016. No Significant Change from 2016.	Acceptable (feature is minor and not affecting integrity of landfill cover)	CAM-1 NHW 26, 27
Presence & Condition of Monitoring Instruments	Yes	N/A	Outside landfill	N/A	N/A	N/A	N/A	N/A	MW-01, MW-02, MW-03, MW-04	Small amounts of metal debris are piled on boulders and the ground approximately 3 m	Acceptable (MWs in good condition)	CAM-1 NHW 1, 30

Table 6-3: Visual Inspection Checklist- NON-HAZARDOUS WASTE LANDFILL												
Checklist Item	**Present (Yes/No)**	**Feature Number**	**Feature Location**	**GPS Coordinates Easting/Northing/Zone**	**Length (m)**	**Width (m)**	**Depth (m)**	**Extent Relative to Surface**	**Description**	**Comparison with Historical Observations**	**Additional Comments/ Severity Rating**	**Photographic Records (photo reference, location, view point & direction, feature of note, scale)**
										southeast of MW-01 (also noted in 2013, and 2016).		
Features of Note/Other	No											

6.3.1.2 Preliminary Stability Assessment

The Preliminary Stability Assessment for the Non-Hazardous Waste Landfill was conducted on August 27, 2019 as per the TOR and the results are provided in the Table below.

Table 6-4: Preliminary Stability Assessment – Non-Hazardous Waste Landfill

Non-Hazardous Waste Landfill		
Feature	**Severity Rating**	**Extent**
Settlement	Acceptable	Occasional
Erosion	Not Observed	None
Lateral Movement	Not Observed	None
Frost Action	Not Observed	None
Sloughing	Not Observed	None
Cracking	Not Observed	None
Animal Burrows	Not Observed	None
Vegetation Establishment	Not Observed	None
Staining	Not Observed	None
Vegetation Stress	Not Observed	None
Seepage / Ponded Water	Not Observed	None
Debris and/or Liner Exposure	Acceptable	Occasional
Other	Not Observed	None
Overall Landfill Performance	**Acceptable**	

Note: please refer to Performance/Severity rating reference guide in Section 2.1.3.1 above.

6.3.1.3 Photographic Records

The detailed photographic record for the Non-Hazardous Waste Landfill has been completed as per Section 5.5 of the TOR and is included as **Appendix H**. The photographic record only contains an index of photographs collected; full sized photographs are contained in an Appended CD/DVD-ROM, separate to this report. **Figure CAM-1.5A** illustrates the photograph locations and directions.

6.3.1.4 Trend Analysis

A trend analysis was conducted with regards to observations made during the visual inspection of the Non-Hazardous Waste Landfill. The following Table outlines the results of the visual trend analysis.

Table 6-5: Visual Inspection Trends – Non-Hazardous Waste Landfill

Non-Hazardous Waste Landfill		
Checklist Item	**Feature Number**	**Comparison with Historical Observations**
Settlement	A – two linear depressions C – linear depression D – linear depression F – two minor pothole depressions	Only one observed in 2019. No significant change. Slight decrease on length. No significant change.
Debris Exposed	B – geotextile exposed E – embedded metal strap	No significant change although only 3 of 5 locations observed in 2019. No significant change.

6.3.1.5 Discussion of Results/Trends

A comparison of the visual inspection results of the 2016 and 2019 monitoring events at the Non-Hazardous Waste Landfill indicates that most features showed no significant change. No new features were observed. The results of the visual inspection and the observed trends indicate that the performance of the landfill is acceptable.

6.3.2 Soil Sampling

Soil sampling of the Non-Hazardous Waste Landfill was conducted on August 27, 2019. The soil sampling was conducted in compliance with Section 5.3.1 and 5.3.2 of the TOR and details are provided below in the following Sections 6.3.2.1 through 6.3.2.3.

6.3.2.1 Laboratory Analytical Results

A total of eight soil samples were analysed from four soil sample locations at the Non-Hazardous Waste Landfill and analysed for inorganic elements (arsenic, cadmium, chromium, cobalt, copper, nickel, and zinc), polychlorinated biphenyls (PCBs), and Petroleum Hydrocarbons (PHC F1, F2, F3, and F4).

The full current and historical analytical results are presented in **Table 4A** in the Tables section of this report immediately following the main text. The laboratory certificates of analysis and chain of custody forms are presented in **Appendix B** of this report. **Figure CAM-1.5B** presents a summary of significant soil analytical results.

6.3.2.2 Summary of Soil Results

The soil results for 2019 are presented in the following table. The background and baseline mean are presented for information purposes. The discussions are focused on the comparison of the results to the BL+3SD.

Table 6-6: Evaluation of Results by Parameter – Non-Hazardous Waste Landfill

Parameter	Background (mg/kg)	Baseline Mean (mg/kg)	Baseline Mean+3SD (mg/kg)	Discussion of Results
Arsenic (As)	3.3	6.9	29.6	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
Cadmium (Cd)	1.0	1.0	1.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
Chromium (Cr)	20.0	20.0	20.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
Cobalt (Co)	5.0	5.0	5.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
Copper (Cu)	11.3	5.9	16.1	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
Lead (Pb)	10.0	20.0	75.1	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
Nickel (Ni)	5.0	5.0	5.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
Zinc (Zn)	15.0	15.0	15.0	Upgradient sample MW-01 at surface exceeded the BL+3SD at 32 mg/kg but was below the 3 times the baseline mean. This concentration is anomalously high compared to previous years monitoring events. Downgradient soil sample MW-04 at surface also exceeded the BL+3SD at 21 mg/kg but was within 3 times the baseline mean and was similar in concentrations to previous years. All other soil sample results were below the BL+3SD at all remaining locations.
PCBs (Total)	0.1	0.1	0.1	Upgradient sample MW-01 at surface exceeded the BL+3SD at 0.43 mg/kg and was also above 3 times the baseline mean. This concentration is anomalously high compared to previous years monitoring events. All other soil sample results were below the BL+3SD at all remaining locations.

Parameter	Background (mg/kg)	Baseline Mean (mg/kg)	Baseline Mean+3SD (mg/kg)	Discussion of Results
F1 (C_6-C_{10})	N/A	10.0	10.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
F2 (C_{10}-C_{16})	N/A	10.0	10.0	Upgradient sample MW-01 at surface exceeded the BL+3SD at 18 mg. All remaining upgradient and downgradient results were below the BL+3SD.
F3 (C_{16}-C_{34})	N/A	34.1	126.3	Downgradient sample MW-04 at surface exceeded the BL+3SD at 480 mg. The concentrations are higher than observed in previous monitoring years. All remaining upgradient and downgradient results were below the BL+3SD.
F4 (C_{34}-C_{50})	N/A	17.4	55.3	Downgradient sample MW-04 at surface exceeded the BL+3SD at 110 mg. The concentrations are similar to concentrations observed in previous monitoring years. All remaining upgradient and downgradient results were below the BL+3SD.

Note: BL+3SD = baseline data mean + 3x standard deviations. Soil concentrations are shown are in mg/kg.

6.3.2.3 Discussion of Soil Results

Based on a visual comparison of upgradient and downgradient data on the graphs, downgradient concentrations were generally higher than the upgradient sampling point.

The concentrations of zinc at upgradient sample MW-01 at surface exceeded the BL+3SD at 32 mg/kg but was below the 3 times the baseline mean. This concentration is anomalously high compared to previous years monitoring events. Downgradient soil sample MW-04 at surface also exceeded the BL+3SD at 21 mg/kg but was within 3 times the baseline mean and was similar in concentrations to previous years. It is also worth noting that the exceedance at MW-04 is lower than the concentrations reported at the upgradient sample MW-01.

Downgradient sample MW-04 also exceeded the BL+3SD for PHC F3 and F4 at 480 and 110 mg/kg respectively. No peat or organic material was noted in the test pit logs and these PHC concentrations are not believed to be influenced by naturally occurring biogenic organic compounds.

The observed PHC concentrations are not considered a concern at this time given that the remediation goal for total petroleum hydrocarbons at DEW Line sites was typically 2,500 mg/kg Overall, both the upgradient and downgradient soil results from 2019 are comparable to the results from the previous monitoring events and there is no indication of contaminant migration from the landfill at this time.

Upgradient sample MW-01 at surface exceeded the BL+3SD for PCBs at 0.430 mg/kg. This concentration is anomalously high compared to previous monitoring events. The DEW Line Tier I and Tier II criteria for PCBs in soil was set at 1 mg/kg and 5 mg/kg, respectively, at all sites. Based on this and the fact that the

PCB concentration was derived from an up-gradient sampling location, this PCB exceedance was therefore is not considered a concern at this time.

It should be noted that there are insufficient data points at this time to determine trends in the soil concentrations. The performance of the landfill should be re-evaluated once seven years of data are available.

6.3.3 Groundwater Sampling

6.3.3.1 Monitoring Well Sampling/Inspection Logs

As per Section 5.3.3.2 of the TOR, groundwater monitoring logs were filled out for each monitoring well. Monitoring well sampling logs are presented in **Appendix F**.

6.3.3.2 Water Levels/Groundwater Flow

Groundwater levels were collected and are presented in the Table below.

Table 6-7: Summary of Groundwater Levels – Non-Hazardous Waste Landfill

Monitoring Well ID	Monitoring Well Elevation (m)	Water Level (TOC) (m)	Well Stick up (m)	Water Level (from ground surface) (m)	Groundwater Elevation (m asl)	Notes
MW-01	33.7	2.507	0.5	2.007	N/A	Frozen/Dry
MW-02	30.7	1.605	0.34	1.265	29.435	No recharge/Dry
MW-03	28.7	1.173	0.35	0.823	27.877	
MW-04	28.7	1.500	0.41	1.09	27.61	

Based on the available information, it appears that the groundwater flow is in a north of northwesterly direction, as groundwater elevations decreased from MW-2 through MW-3 and MW-4. Groundwater contours are presented on **Figure CAM-1.5C** following the text from this chapter.

6.3.3.3 Groundwater Laboratory Analytical Results

Two groundwater samples were analyzed at the Non-Hazardous Waste Landfill (MW-03 and MW-04) and analysed for total inorganic elements (arsenic, cadmium, chromium, cobalt, copper, nickel, and zinc) and Petroleum Hydrocarbons (PHC F1, F2, F3, and F4). MW-02 did not re-charge after purging dry and MW-01 was dry/frozen.

The full current and historical analytical results are presented in **Table 4B** in the Tables section of this report immediately following the main text. The laboratory certificates of analysis and chain of custody forms are presented in **Appendix B** of this report. **Figure CAM-1.5C** presents a summary of significant groundwater analytical results

6.3.3.4 Summary of Groundwater Results

A limited number of groundwater samples were collected in 2019, due to frozen/dry well conditions or lack of recharge. Only two downgradient samples could be collected. The groundwater results for 2019 are presented in the following table. The baseline mean is presented for information purposes. The discussions are focused on the comparison of the results to the BL+3SD.

Table 6-8: Evaluation of Groundwater Analytical Results – Non-Hazardous Waste Landfill

Parameter	Baseline Mean (mg/kg)	Baseline Mean+3SD (mg/kg)	Discussion of Results
Arsenic (As)	0.003	0.0075	All groundwater sample results were below the BL+3SD at downgradient locations.
Cadmium (Cd)	0.001	0.001	All groundwater sample results were below the BL+3SD at downgradient locations.
Chromium (Cr)	0.0894	0.3378	All groundwater sample results were below the BL+3SD at downgradient locations.
Cobalt (Co)	0.003	0.003	All groundwater sample results were below the BL+3SD at downgradient locations.
Copper (Cu)	0.0092	0.0273	All groundwater sample results were below the BL+3SD at downgradient locations.
Lead (Pb)	0.01	0.01	All groundwater sample results were below the BL+3SD at downgradient locations.
Nickel (Ni)	0.036	0.1203	All groundwater sample results were below the BL+3SD at downgradient locations.
Zinc (Zn)	0.0092	0.0395	All groundwater sample results were below the BL+3SD at downgradient locations.
F1 (C_6-C_{10})	0.05	0.05	All groundwater sample results were below the BL+3SD at downgradient locations.
F2 (C_{10}-C_{16})	0.5	0.5	All groundwater sample results were below the BL+3SD at downgradient locations.
F3 (C_{16}-C_{34})	1.0	1.0	All groundwater sample results were below the BL+3SD at downgradient locations.
F4 (C_{34}-C_{50})	1.0	1.0	All groundwater sample results were below the BL+3SD at downgradient locations.

Note: BL+3SD = baseline data mean + 3x standard deviations. Soil concentrations are shown are in mg/L.

6.3.3.5 Discussion of Groundwater Results

From the limited results available, downgradient groundwater sample results were below the baseline mean and the BL+3SD for all parameters and no upgradient sample was available for collection. Groundwater results from 2019 were comparable to the results from the previous monitoring events and there is no indication of contaminant migration from the landfill at this time.

It should be noted that there are insufficient data points at this time to determine trends in the groundwater concentrations. The performance of the landfill should be re-evaluated once seven years of data are available.

6.4 Conclusions and Overall Landfill Performance

Downgradient soil sample MW-04 at surface exceeded the BL+3SD for both PHC F3 and F4 at 480 and 110 mg/kg respectively. No peat or organic material was noted in the test pit logs; therefore, these PHC concentrations are not believed to be influenced by biogenic organic compounds. PHC results should be continued to be examined in the next monitoring event to determine if concentrations are increasing over time. It is also worth noting that this PHC concentration is still well below the action level for petroleum hydrocarbon remediation at DEW Line sites, which is typically 2,500 mg/kg; therefore, detectible hydrocarbon contamination below this concentration may be expected in the vicinity of this landfill.

Upgradient sample MW-01 at surface exceeded the BL+3SD for PCBs at 0.430 mg/kg, was also above 3 times the baseline mean and was considered to be anomalously high compared to previous years monitoring events. The DEW Line Tier I and Tier II criteria for PCBs in soil was set at 1 mg/kg and 5 mg/kg, respectively, at all sites. Based on this and the fact that the PCB concentration was derived from an up-gradient sampling location, this PCB exceedance was therefore is not considered a concern at this time.

From the limited groundwater results available, downgradient groundwater sample results were below the baseline mean and the BL+3SD for all parameters, and no upgradient sample was available for collection. Groundwater results from 2019 were comparable to the results from the previous monitoring events and there is no indication of contaminant migration from the landfill at this time.

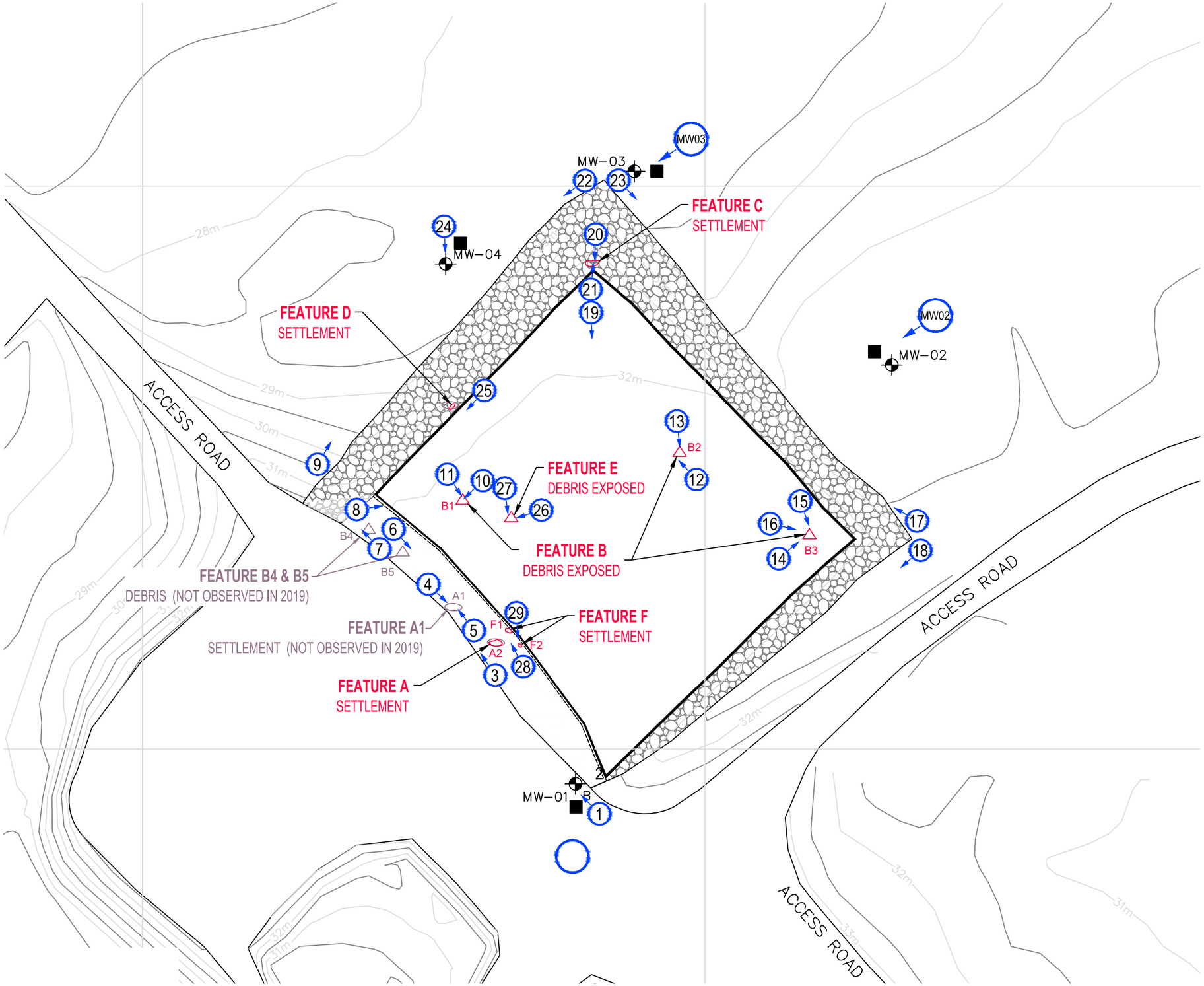
Overall, the remainder upgradient and downgradient soil results from 2019 are comparable to the results from the previous monitoring events and there is no indication of contaminant migration from the landfill at this time. A review of the analytical data indicates that the landfill is performing as intended and there is no indication of contaminant migration from the landfill at this time.

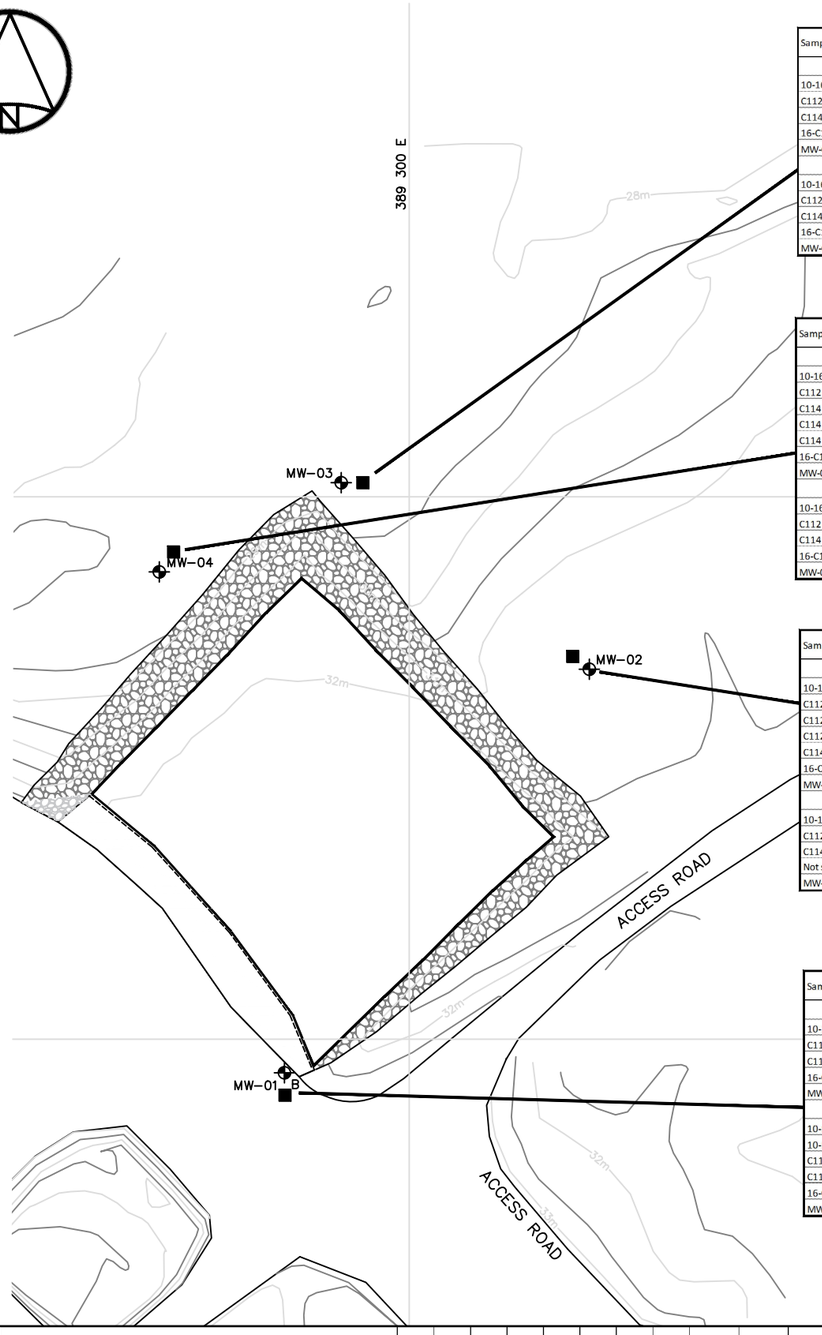
Based on the results of the 2019 monitoring program, the overall performance of the Non-Hazardous Waste Landfill is acceptable.

6.5 Recommendations

Soil PHC results should continue to be examined, particularly at MW-04, in the next monitoring event to determine if concentrations are increasing with time.

Based on the results of the visual inspection, the Non-Hazardous Waste landfill performance is acceptable. Based on this review, it is recommended to continue with the long-term monitoring as planned and no remedial work or deviations from the monitoring plan are recommended at this time.


MW03
MW–03
22
23
FEATURE C
SETTLEMENT
24
MW–04
20
21
19
FEATURE D
SETTLEMENT
MW02
MW–02
25
32m
29m
30m
31m
ACCESS ROAD
9
13
B2
12
11
10
27
B1
26
FEATURE E
DEBRIS EXPOSED
8
6
B4
7
B5
FEATURE B
DEBRIS EXPOSED
15
16
14
B3
17
18
FEATURE B4 & B5
DEBRIS (NOT OBSERVED IN 2019)
4
A1
FEATURE A1
SETTLEMENT (NOT OBSERVED IN 2019)
5
29
F1
F2
FEATURE F
SETTLEMENT
A2
28
3
FEATURE A
SETTLEMENT
MW–01
B
1
ACCESS ROAD
ACCESS ROAD
32m
31m
33m



Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C6-C10 (mg/kg)	F2* C10-C16 (mg/kg)	F3* C16-C34 (mg/kg)	F4* C34-C50 (mg/kg)
MW-03 surface - downgradient																		
10-16587	MW-03	2010	1	Phase I	0-10	1.4	<1	<20	<5	<3.0	<10	<5	<15	<0.003	<10	5.4	20	**23**
C112-3WA	MW-03	2012	3	Phase I	0-15	1.3	<0.1	3.1	1.0	<5	2.5	2.3	<10	<0.01	<12	<10	<10	N/A
C114-3WA	MW-03	2014	5	Phase I	0-15	1.3	<0.01	3.2	1.4	2.6	<4.9	1.7	3.0	<0.10	<10	<50	<50	<100
16-C1-MW03A	MW-03	2016	7	Phase II	0-15	2.1	<0.05	3.3	1.1	5.4	4.4	2.2	<10	0.015	<12	<10	<50	<50
MW-03A	MW-03	2019	10	Phase II	0-15	1.2	<0.05	3.9	1.0	2.2	2.6	2.3	2.3	<0.010	<7.0	<4.0	<8.0	<6.0
MW-03 depth - downgradient																		
10-16589	MW-03	2010	1	Phase I	30-50	2.7	<1	<20	<5	4.1	<10	<5	<15	0.013	<10	5.6	**56**	**50**
C112-3WB	MW-03	2012	3	Phase I	40-50	2.7	<0.1	3.0	1.2	<5	5.7	2.0	<10	**0.120**	<12	<10	<10	N/A
C114-3WB	MW-03	2014	5	Phase I	40-50	6.2	0.03	3.4	1.9	**6.2**	13.7	1.9	10.0	<0.10	<10	<50	<50	<100
16-C1-MW03B	MW-03	2016	7	Phase II	30-35	2.7	<0.05	3.5	1.2	3.3	5.6	2.6	<10	0.020	<12	<10	<50	<50
MW-03B	MW-03	2019	10	Phase II	30-40	5.2	<0.05	2.6	1.2	**7.7**	11.0	1.8	9.5	0.094	<7.0	<4.0	**61**	16

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C6-C10 (mg/kg)	F2* C10-C16 (mg/kg)	F3* C16-C34 (mg/kg)	F4* C34-C50 (mg/kg)
MW-04 surface - downgradient																		
10-16591	MW-04	2010	1	Phase I	0-10	2.6	<1	<20	<5	3.5	<10	<5	<15	0.017	<10	4.6	**37**	**42**
C112-4WA	MW-04	2012	3	Phase I	0-15	4.2	<0.1	3.0	<1.0	<5	11.0	1.7	<10	<0.01	<12	<10	<10	N/A
C114-4WA	MW-04	2014	5	Phase I	0-15	4.1	0.11	3.4	1.2	**10.5**	15.3	1.1	**23.0**	<0.10	<10	<50	**124**	<100
C114-BD6 (Dup)	MW-04	2014	5	Phase I	0-15	3.9	0.10	3.7	1.2	**10.8**	14.8	1.1	**23.0**	<0.10	<10	<50	**153**	<100
C114-4WA (Interlab)	MW-04	2014	5	Phase I	0-15	6.4	<0.1	13.0	1.2	**9.0**	15.0	**6.2**	**19.0**	0.091	<12	<10	**160**	N/A
16-C1-MW04A	MW-04	2016	7	Phase II	0-15	2.6	<0.05	2.5	0.7	2.3	6.4	1.3	<10	0.012	<12	<10	<50	<50
MW-04A	MW-04	2019	10	Phase II	0-15	4.4	0.11	3.0	0.90	**10.0**	14.0	1.5	**21.0**	0.083	<7.0	4.3	**480**	**110**
MW-04 depth - downgradient																		
10-16593	MW-04	2010	1	Phase I	30-50	**49.9**	<1	<20	<5	**10.5**	**62.0**	<5	<15	<0.003	<10	<4	<9	15
C112-4WB	MW-04	2012	3	Phase I	40-50	**21.0**	<0.1	2.7	1.3	**6.2**	**38.0**	2.7	<10	<0.01	<12	<10	<10	N/A
C114-4WB	MW-04	2014	5	Phase I	40-50	**89.6**	0.11	4.0	**6.6**	**11.3**	**126.0**	**7.1**	14.0	<0.10	<10	<50	<50	<100
16-C1-MW04B	MW-04	2016	7	Phase II	40-50	**37.0**	<0.05	3.2	1.9	**6.6**	**52.0**	3.9	<10	<0.01	<12	<10	<50	<50
MW-04B	MW-04	2019	10	Phase II	25-35	5.5	<0.050	2.3	0.87	**6.6**	12.0	1.5	9.9	<0.010	<7.0	<4.0	**37**	9.6

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C6-C10 (mg/kg)	F2* C10-C16 (mg/kg)	F3* C16-C34 (mg/kg)	F4* C34-C50 (mg/kg)
MW-02 surface - downgradient																		
10-16583	MW-02	2010	1	Phase I	0-10	4.2	<1	<20	<5	<3.0	17.0	<5	<15	<0.003	<10	<4	**37**	**26**
C112-2WA	MW-02	2012	3	Phase I	0-15	4.0	<0.1	2.3	<1.0	<5	11.0	1.6	<10	<0.01	<12	<10	<10	N/A
C112-BD8 (Dup)	MW-02	2012	3	Phase I	0-15	4.6	N/A	2.0	<1.0	<5	13.0	1.1	<10	<0.01	<12	<10	<10	N/A
C112-2WA (Interlab)	MW-02	2012	3	Phase I	0-15	4.0	0.01	2.7	0.8	2.0	13.1	**5.1**	4.0	<0.10	<10	<50	<50	<100
C114-2WA	MW-02	2014	5	Phase I	0-15	**8.8**	0.05	2.4	1.6	3.2	**32.6**	1.3	3.0	<0.10	<10	<50	<50	<100
16-C1-MW02A	MW-02	2016	7	Phase II	0-15	**11.0**	<0.05	2.0	0.85	2.6	**29.0**	1.6	<10	<0.01	<12	<10	<50	<50
MW-02A	MW-02	2019	10	Phase II	0-15	6.7	<0.050	1.9	0.73	2.3	**34.0**	1.3	3.3	<0.010	<7.0	<4.0	<8.0	<6.0
MW-02 depth - downgradient																		
10-16585	MW-02	2010	1	Phase I	30-50	**7.7**	<1	<20	<5	3.1	**23.0**	<5	<15	<0.003	<10	5.3	16	**20**
C112-2WB	MW-02	2012	3	Phase I	40-50	5.4	<0.1	1.8	<1.0	<5	16.0	1.4	<10	<0.01	<12	<10	<10	N/A
C114-2WB	MW-02	2014	5	Phase I	40-50	**43.8**	0.08	6.3	2.8	**6.7**	**159.0**	3.2	3.0	<0.10	<10	<50	<50	<100
Not sampled - refusal	MW-02	2016	7	Phase II														
MW-02B	MW-02	2019	10	Phase II	20-30	**10.0**	<0.05	2.0	1.4	3.6	**27.0**	1.6	3.3	<0.010	<7.0	<4.0	<8.0	<6.0

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C6-C10 (mg/kg)	F2* C10-C16 (mg/kg)	F3* C16-C34 (mg/kg)	F4* C34-C50 (mg/kg)
MW-01 surface - upgradient																		
10-16579	MW-01	2010	1	Phase I	0-10	1.0	<1	<20	<5	3.0	<10	<5	<15	0.041	<10	6.7	**50**	**40**
C112-1WA	MW-01	2012	3	Phase I	0-15	3.9	0.11	2.9	1.0	<5	10.0	1.7	<10	0.039	<12	<10	31	N/A
C114-1WA	MW-01	2014	5	Phase I	0-15	0.7	<0.01	3.1	1.0	2.0	<4.9	1.4	3.0	<0.10	<10	<50	<50	<100
16-C1-MW01A	MW-01	2016	7	Phase II	0-15	1.0	<0.05	2.9	1.0	2.2	3.0	2.0	<10	<0.01	<12	<10	<50	<50
MW-01A	MW-01	2019	10	Phase II	0-15	2.6	0.12	3.3	0.82	4.2	9.3	1.7	**32.0**	**0.430**	<7.0	**18**	**87**	**23**
MW-01 depth - upgradient																		
10-16581	MW-01	2010	1	Phase I	30-50	2.2	<1	<20	<5	4.5	10.0	<5	<15	**0.149**	<10	5.5	**63**	**46**
10-16582 (Dup)	MW-01	2010	1	Phase I	30-50	2.1	<1	<20	<5	4.3	<10	<5	<15	0.027	<10	10	**88**	**68**
C112-1WB	MW-01	2012	3	Phase I	40-50	4.8	<0.1	3.3	1.2	<5	10.0	2.7	<10	0.025	<12	<10	28	N/A
C114-1WB	MW-01	2014	5	Phase I	40-50	0.8	<0.01	2.3	0.9	1.8	<5	1.4	3.0	<0.10	<10	<50	<50	<100
16-C1-MW01B	MW-01	2016	7	Phase II	40-50	1.7	0.082	3.6	1.1	3.1	**34.0**	2.2	**17.0**	0.077	<12	<10	<50	<50
MW-01B	MW-01	2019	10	Phase II	40-50	2.7	0.061	2.6	0.86	**6.4**	11.0	1.4	15.0	0.076	<7.0	<4.0	**39**	8.1

CAM-1 Non-Hazardous Waste Landfill	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2* C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
Background Data - Arithmetic Mean	3.3	1.0	20.0	5.0	11.3	10.0	5.0	15.0	0.10	N/A	N/A	N/A	N/A
Baseline Data - Arithmetic Mean	**6.9**	**1.0**	**20.0**	**5.0**	**5.9**	**20.0**	**5.0**	**15.0**	**0.10**	**10.0**	**10.0**	**34.1**	**17.4**
Baseline Data - Standard Deviation	7.6	0.0	0.0	0.0	3.4	18.4	0.0	0.0	0.00	0.0	0.0	30.7	12.6
Baseline Data Mean + 3x Standard Deviation	**29.6**	**1.0**	**20.0**	**5.0**	**16.1**	**75.1**	**5.0**	**15.0**	**0.10**	**10.0**	**10.0**	**126.3**	**55.3**

** If baseline or background arithmetic mean was below the detection limit, the mean has been modified to match the detection limit value.*

LEGEND

- MONITORING SOIL SAMPLE LOCATION
- MW–05 — MONITORING WELL LOCATION
- B — BACKGROUND MONITORING WELL LOCATION
- TOP OF LANDFILL
- TOE OF LANDFILL

XX	Sample exceeds baseline mean
XX	Sample exceeds baseline mean + 3x SD

Meters
15 0 15 30
1:1100

NO.	VERSION	DATE	PAR	VERIF.	APPR.
01	FINAL	2020.04.17	*RF*	*TA*	*CG*

Construction de Défense Canada
Defence Construction Canada

COLLECTION OF LANDFILL MONITORING DATA

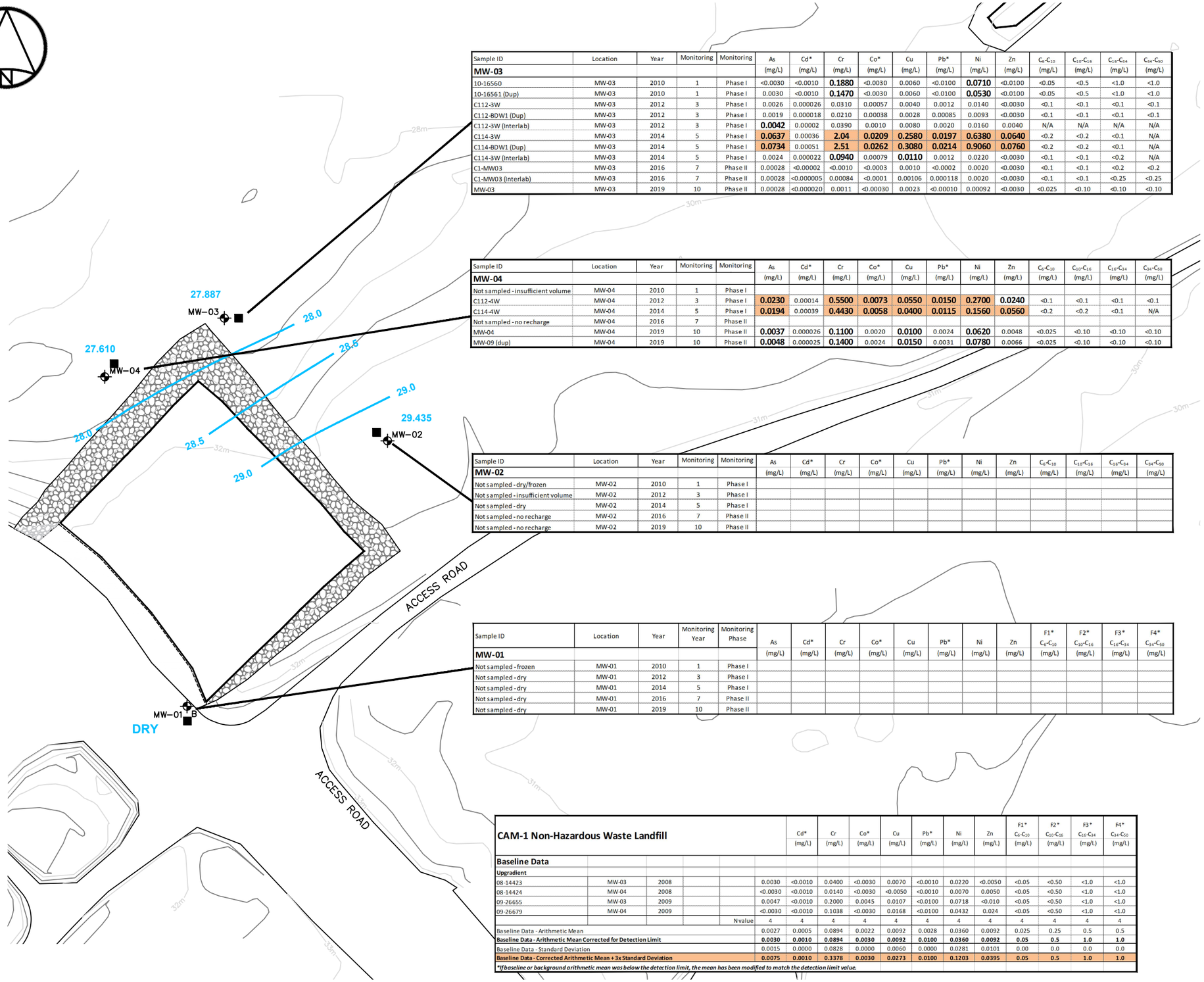
CAM-1, JENNY LIND ISLAND, NU

NON-HAZARDOUS WASTE LANDFILL 2019 SOIL ANALYTICAL RESULTS

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FIGURE CAM-1.5B



Sample ID	Location	Year	Monitoring	Monitoring	As	Cd*	Cr	Co*	Cu	Pb*	Ni	Zn	C_6-C_{10}	C_{10}-C_{16}	C_{16}-C_{34}	C_{34}-C_{50}
MW-03					(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
10-16560	MW-03	2010	1	Phase I	<0.0030	<0.0010	**0.1880**	<0.0030	0.0060	<0.0100	**0.0710**	<0.0100	<0.05	<0.5	<1.0	<1.0
10-16561 (Dup)	MW-03	2010	1	Phase I	0.0030	<0.0010	**0.1470**	<0.0030	0.0060	<0.0100	**0.0530**	<0.0100	<0.05	<0.5	<1.0	<1.0
C112-3W	MW-03	2012	3	Phase I	0.0026	0.000026	0.0310	0.00057	0.0040	0.0012	0.0140	<0.0030	<0.1	<0.1	<0.1	<0.1
C112-BDW1 (Dup)	MW-03	2012	3	Phase I	0.0019	0.000018	0.0210	0.00038	0.0028	0.00085	0.0093	<0.0030	<0.1	<0.1	<0.1	<0.1
C112-3W (Interlab)	MW-03	2012	3	Phase I	**0.0042**	0.00002	0.0390	0.0010	0.0080	0.0020	0.0160	0.0040	N/A	N/A	N/A	N/A
C114-3W	MW-03	2014	5	Phase I	**0.0637**	0.00036	**2.04**	**0.0209**	**0.2580**	**0.0197**	**0.6380**	**0.0640**	<0.2	<0.2	<0.1	N/A
C114-BDW1 (Dup)	MW-03	2014	5	Phase I	**0.0734**	0.00051	**2.51**	**0.0262**	**0.3080**	**0.0214**	**0.9060**	**0.0760**	<0.2	<0.2	<0.1	N/A
C114-3W (Interlab)	MW-03	2014	5	Phase I	0.0024	0.000022	**0.0940**	0.00079	**0.0110**	0.0012	0.0220	<0.0030	<0.1	<0.1	<0.2	N/A
C1-MW03	MW-03	2016	7	Phase II	0.00028	<0.00002	<0.0010	<0.0003	0.0010	<0.0002	0.0020	<0.0030	<0.1	<0.1	<0.2	<0.2
C1-MW03 (Interlab)	MW-03	2016	7	Phase II	0.00028	<0.000005	0.00084	<0.0001	0.00106	0.000118	0.0020	<0.0030	<0.1	<0.1	<0.25	<0.25
MW-03	MW-03	2019	10	Phase II	0.00028	<0.000020	0.0011	<0.00030	0.0023	<0.00010	0.00092	<0.0030	<0.025	<0.10	<0.10	<0.10

Sample ID	Location	Year	Monitoring	Monitoring	As	Cd*	Cr	Co*	Cu	Pb*	Ni	Zn	C_6-C_{10}	C_{10}-C_{16}	C_{16}-C_{34}	C_{34}-C_{50}
MW-04					(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
Not sampled - insufficient volume	MW-04	2010	1	Phase I												
C112-4W	MW-04	2012	3	Phase I	**0.0230**	0.00014	**0.5500**	**0.0073**	**0.0550**	**0.0150**	**0.2700**	**0.0240**	<0.1	<0.1	<0.1	<0.1
C114-4W	MW-04	2014	5	Phase I	**0.0194**	0.00039	**0.4430**	**0.0058**	**0.0400**	**0.0115**	**0.1560**	**0.0560**	<0.2	<0.2	<0.1	N/A
Not sampled - no recharge	MW-04	2016	7	Phase II												
MW-04	MW-04	2019	10	Phase II	**0.0037**	0.000026	**0.1100**	0.0020	**0.0100**	0.0024	**0.0620**	0.0048	<0.025	<0.10	<0.10	<0.10
MW-09 (dup)	MW-04	2019	10	Phase II	**0.0048**	0.000025	**0.1400**	0.0024	**0.0150**	0.0031	**0.0780**	0.0066	<0.025	<0.10	<0.10	<0.10

Sample ID	Location	Year	Monitoring	Monitoring	As	Cd*	Cr	Co*	Cu	Pb*	Ni	Zn	C_6-C_{10}	C_{10}-C_{16}	C_{16}-C_{34}	C_{34}-C_{50}
MW-02					(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
Not sampled - dry/frozen	MW-02	2010	1	Phase I												
Not sampled - insufficient volume	MW-02	2012	3	Phase I												
Not sampled - dry	MW-02	2014	5	Phase I												
Not sampled - no recharge	MW-02	2016	7	Phase II												
Not sampled - no recharge	MW-02	2019	10	Phase II												

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	As	Cd*	Cr	Co*	Cu	Pb*	Ni	Zn	F1* C_6-C_{10}	F2* C_{10}-C_{16}	F3* C_{16}-C_{34}	F4* C_{34}-C_{50}
MW-01					(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
Not sampled - frozen	MW-01	2010	1	Phase I												
Not sampled - dry	MW-01	2012	3	Phase I												
Not sampled - dry	MW-01	2014	5	Phase I												
Not sampled - dry	MW-01	2016	7	Phase II												
Not sampled - dry	MW-01	2019	10	Phase II												

CAM-1 Non-Hazardous Waste Landfill					Cd* (mg/L)	Cr (mg/L)	Co* (mg/L)	Cu (mg/L)	Pb* (mg/L)	Ni (mg/L)	Zn (mg/L)	F1* C_6-C_{10} (mg/L)	F2* C_{10}-C_{16} (mg/L)	F3* C_{16}-C_{34} (mg/L)	F4* C_{34}-C_{50} (mg/L)
Baseline Data															
Upgradient															
08-14423	MW-03	2008			0.0030	<0.0010	0.0400	<0.0030	0.0070	<0.0010	0.0220	<0.0050	<0.05	<0.50	<1.0	<1.0
08-14424	MW-04	2008			<0.0030	<0.0010	0.0140	<0.0030	<0.0050	<0.0010	0.0070	0.0050	<0.05	<0.50	<1.0	<1.0
09-26655	MW-03	2009			0.0047	<0.0010	0.2000	0.0045	0.0107	<0.0100	0.0718	<0.010	<0.05	<0.50	<1.0	<1.0
09-26679	MW-04	2009			<0.0030	<0.0010	0.1038	<0.0030	0.0168	<0.0100	0.0432	0.024	<0.05	<0.50	<1.0	<1.0
				Nvalue	4	4	4	4	4	4	4	4	4	4	4	4
Baseline Data - Arithmetic Mean					0.0027	0.0005	0.0894	0.0022	0.0092	0.0028	0.0360	0.0092	0.025	0.25	0.5	0.5
Baseline Data - Arithmetic Mean Corrected for Detection Limit					**0.0030**	**0.0010**	**0.0894**	**0.0030**	**0.0092**	**0.0100**	**0.0360**	**0.0092**	**0.05**	**0.5**	**1.0**	**1.0**
Baseline Data - Standard Deviation					0.0015	0.0000	0.0828	0.0000	0.0060	0.0000	0.0281	0.0101	0.00	0.0	0.0	0.0
Baseline Data - Corrected Arithmetic Mean + 3x Standard Deviation					**0.0075**	**0.0010**	**0.3378**	**0.0030**	**0.0273**	**0.0100**	**0.1203**	**0.0395**	**0.05**	**0.5**	**1.0**	**1.0**

**If baseline or background arithmetic mean was below the detection limit, the mean has been modified to match the detection limit value.*

LEGEND

- MONITORING SOIL SAMPLE LOCATION
- MW–05 MONITORING WELL LOCATION
- B BACKGROUND MONITORING WELL LOCATION
- INTERPRETED GROUNDWATER FLOW CONTOURS
- 7.72 GROUNDWATER ELEVATION (M.A.S.L.)
- TOP OF LANDFILL
- TOE OF LANDFILL

XX	Sample exceeds baseline mean
XX	Sample exceeds baseline mean + 3x SD

Meters
20 0 20 40
1:1100

NO.	VERSION	DATE	PAR	VERIF.	APPR.
01	FINAL	2020.04.17	RF	TA	CG

Construction de Défense Canada
Defence Construction Canada

COLLECTION OF LANDFILL MONITORING DATA

CAM-1, JENNY LIND ISLAND, NU

NON-HAZARDOUS WASTE LANDFILL 2019 GROUNDWATER ANALYTICAL RESULTS

ARCADIS
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MEASUREMENT UNIT	SCALE	DATE (YMMM. DAY)
Metre	1 : 1100	DECEMBER 2019
DRAWN BY: R. FLETCHER	VERIFIED BY: T. AUSTRINS, P.ENG	APPROVED BY: C. GRAVELLE, P.ENG
PROJECT NO.: 30000251	DRAWING NO.: 30000251-CAM-1.5	PAGE: PL

FIGURE CAM-1.5C

7 CAM-1: TIER II DISPOSAL FACILITY

7.1 Landfill Description

A Tier II Disposal Facility was constructed at the Jenny Lind Island site for the disposal of Tier II soil excavated during the cleanup. The location of the Tier II Soil Disposal Facility is southwest of the station, west of the access road between the airstrip and station areas.

This landfill encompasses a footprint of approximately 8,900 m^2 with final cover extending approximately 6 to 8 m above surrounding grades.

The design of this landfill includes a double containment system consisting of a liner system and the construction of saturated, low-permeability berms, followed by the placement of sufficient surface fill to promote freezing of landfill contents and containment berms. The liner was placed along the bottom of the landfill, along the berms and over the top of the landfill contents. Four groundwater monitoring wells were installed along the landfill perimeter. Thermistors were installed within the berms and the main body of the landfill.

The long-term monitoring plan for the Tier II Disposal Facility consists of visual inspection, the collection of soil and groundwater samples, and monitoring of subsurface ground temperatures in the berms and in the main body of the disposal facility. The landfill layout, visual observations and photographic locations are presented on **Figure CAM-1.6A** and soil analytical results are presented on **Figure CAM-1.6B**, both located at the rear of this section.

7.2 Summary of Work Conducted

7.2.1 Visual Inspection

A visual inspection was conducted on the Tier II Disposal Facility on August 27, 2019. The visual inspection of the landfill was completed with no deviations from the visual inspection work plan.

7.2.2 Soil Sampling

Soil sampling at the Tier II Disposal Facility was conducted on August 27, 2019 and consisted of the collection of eight soil samples from four soil sample stations (MW-05, MW-06, MW-07, and MW-08). Duplicate samples collected at this landfill are as follows and are discussed further in Appendix C:

- MW-06A = duplicate C1-44;
- MW-06B = duplicate C1-43; and
- MW-07B = duplicate C1-36.

The table below outlines the soil sampling activities conducted at the Tier II Disposal Facility.

Table 7-1: Summary of Work Conducted by Soil Sampling Location – Tier II Disposal Facility

Sample Location	Sample ID	Sample Depth (m bgs)	Notes
MW-05	MW-05A	0 – 0.15	Brown sand and gravel, moist, no odour
	MW-05B	0.4 – 0.5	Brown sand and gravel, moist, no odour
MW-06	MW-06A	0 – 0.15	Brown coarse sand and gravel, moist, no odour
	MW-06B	0.4 – 0.5	Brown coarse sand and gravel, moist, no odour
MW-07	MW-07A	0 – 0.15	Brown coarse sand and gravel, moist, no odour
	MW-07B	0.4 – 0.5	Brown coarse sand and gravel, moist, no odour
MW-08	MW-08A	0 – 0.15	Brown sandy gravel, cobbles, moist, no odour
	MW-08B	0.4 – 0.5	Brown sandy gravel, cobbles, moist, no odour

7.2.3 Groundwater Sampling

Groundwater monitoring at the Tier II Disposal Facility was conducted on August 27, 2019 and consisted of the inspection and groundwater monitoring of four monitoring wells (MW-05, MW-06, MW-07, and MW-08). All monitoring wells at this landfill were observed to be dry/frozen. Monitoring well sampling logs are presented in **Appendix F**. The table below outlines the soil sampling activities conducted at the Tier II Disposal Facility.

Table 7-2: Summary of Work Conducted by Monitoring Well – Tier II Disposal Facility

Monitoring Well ID	Observations	# of Groundwater Samples Collected
Tier II Disposal Facility		
MW-05	Excellent condition	none
MW-06	Excellent condition	none
MW-07	Excellent condition	none
MW-08	Excellent condition – frozen groundwater	none

7.2.4 Thermal Monitoring

Four thermistors (VT-1, VT-2, VT-3, and VT-4) are present at the Tier II Soil Disposal Facility. Each of the thermistor installations was inspected and data downloaded from the data loggers as per Section 5.4 of the TOR. All four thermistor dataloggers were reinstalled at the site with new batteries and desiccants. In

addition, all four dataloggers were reprogrammed to secure readings every 48 hours commencing at noon. The following table summarizes the 2019 thermal monitoring at the Tier II Soil Disposal Facility.

Table 7-3: Summary of 2019 Work Conducted at Thermistors – Tier II Disposal Facility

Thermistor ID	Observations/Notes
VT-1	No issues observed.
VT-2	No issues observed.
VT-3	No issues observed.
VT-4	No issues observed.

Thermistor inspection reports were filled out for each of the installations and are presented in **Appendix G**.

7.3 Results of the Monitoring Program

The following Sections 6.3.1 through 6.3.3.1 summarize the results of the CAM-1 monitoring program at the Tier II Disposal Facility.

7.3.1 Visual Inspection

The visual inspection of the Tier II Disposal Landfill was conducted on August 27, 2019. The visual inspection was conducted in compliance with Section 5.2 of the TOR and details are provided below in the following Sections 6.3.1.1 through 6.3.1.5. **Figure CAM-1.6A** presents the visual inspection findings and photographic locations.

7.3.1.1 Inspection Checklist

The visual inspection was completed as per the TOR and the visual inspection checklist is included in the following table.

Table 7-4: Visual Inspection Checklist – Tier II Disposal Facility

SITE NAME: CAM-1 Jenny Lind Island
LANDFILL DESIGNATION: Tier II Disposal Facility LANDFILL TYPE: Tier II DATE OF INSPECTION: 27 August 2019 WEATHER CONDITIONS: sunny, winds from south at approx. 12 km/hr, ~16° C
DATE OF PREVIOUS INSPECTION: 10 August 2016
INSPECTED BY: Troy Austrins, P.Eng.
REPORT PREPARED BY: Troy Austrins, P.Eng. The inspector represents to the best of their knowledge that the following statements and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.

Table 7-4: Visual Inspection Checklist- TIER II DISPOSAL FACILITY

Checklist Item	Present (Yes/No)	Feature Number	Feature Location	GPS Coordinates Easting/Northing/Zone		Length (m)	Width (m)	Depth (m)	Extent Relative to Landfill Surface	Description	Comparison with Historical Observations	Additional Comments/ Severity Rating	Photographic Records (photo reference, location, view point & direction, feature of note, scale)
Settlement	Yes	A	West side slope of landfill	389103.230 / 7620773.690	14	1.2	0.25	0.1	<1%	Linear depression	First observed in Year 3 (2012). Slope appears stable. No significant change from 2016.	Acceptable (feature is minor and not affecting landfill stability)	CAM-1 T2- 57
Settlement	Yes	C1 C2 C3	South and east landfill cover	389132.267 / 7620753.523 389119.340 / 7620729.918 Not Observed	14	8 10 N/A	0.2 0.2 N/A	0.1 0.1 N/A	<1%	Two linear depressions. One pothole depression not observed in 2019	First observed in Year 5 (2014). Cover appears stable. No significant change from 2016 other than un-observed Feature C3.	Acceptable (features are minor and not affecting landfill stability)	CAM-1 T2- 53 CAM-1 T2- 51 CAM-1 T2- 10
Settlement	Yes	D1 D2	Northeast side slope of landfill	389118.465 / 7620785.287 389125.527 / 7620781.363	14	1.0 1.2	0.3 0.6	0.1 0.05	<1%	Oval depressions – two locations	First observed in Year 5 (2014). Slope appears stable. No significant change from 2016 other than slight width increase at D2.	Acceptable (features are minor and not affecting landfill stability)	CAM-1 T2- 32 CAM-1 T2- 33
Settlement	Yes	G	Centre of landfill cover	389112.238 / 7620759.912	14	1.1	0.2	0.05	<1%	Depression	First Observed in 2016. Slight change in depth from 0.1 to 0.05 now in 2019.	Acceptable (feature is minor and not affecting landfill stability)	CAM-1 T2-60, 61
Settlement	Yes	H	North side, E corner, side slope near crest	389142.000 / 7620775.528	14	6	0.2	0.1	<1%	Linear depression	NEW OBSERVATION in 2019.	Acceptable (feature is minor and not affecting landfill stability)	CAM-1 T2-62
Erosion	Yes	B1 B2 B3 B4	Northwest corner and side slope of landfill	389102.477 / 7620814.396 Not Observed 389103.380 / 7620783.0189 389102.251 / 7620781.777	14	5 N/A 8 5	0.1 N/A 0.2 0.1	0.05 N/A 0.05 0.05	<1%	Shallow erosion channels – four locations identified in 2016. Only three locations observed in 2019.	First observed in Year 2 (2011). Slope appears stable. Five erosion channels were observed in 2014, however only four were observed in 2016 and three in 2019. Length changed from 2-12 to 3-8 from 2014 to 2016 and now 5 to 8m to 2019. Length of erosion channels may naturally change over time as erosion/infilling continues, or differences in length may be due to differences in measurement techniques. B2 not observed in 2019.	Acceptable (features are minor and not affecting landfill stability)	CAM-1 T2- 26 CAM-1 T2-34/35 CAM-1 T2- 36 CAM-1 T2- 37
Erosion	Yes	E	Northwest side slope of landfill	389095.972 / 7620758.894	14	6	0.1	0.05	<1%	Shallow erosion channel -very faint	First observed in Year 5 (2014). Slope appears stable. No significant change observed.	Acceptable (feature is minor and not affecting landfill stability)	CAM-1 T2- 56, 55
Lateral Movement	No												
Frost Action	No												
Sloughing	No												
Cracking	No												
Animal Burrows	No												
Vegetation Establishment	No												

Table 7-4: Visual Inspection Checklist- TIER II DISPOSAL FACILITY

Checklist Item	Present (Yes/No)	Feature Number	Feature Location	GPS Coordinates Easting/Northing/Zone	Length (m)	Width (m)	Depth (m)	Extent Relative to Landfill Surface	Description	Comparison with Historical Observations	Additional Comments/ Severity Rating	Photographic Records (photo reference, location, view point & direction, feature of note, scale)
Staining	Yes	F	Centre of landfill cover	389117.792 / 7620756.703	14	0.3	0.3	N/A	<1%	Localized dark stain	First noted in Year 5 (2014). No significant change from 2016 to 2019.	Acceptable (feature is minor, staining is suspected to have come from outside source rather than from landfill)	CAM-1 T2- 50
Vegetation Stress	No											
Seepage Points (or) Ponded Water	No											
Debris and/or Liner Exposed	No											
Presence & Condition of Monitoring Instruments	Yes	N/A	Four monitoring wells outside landfill, four thermistors on landfill cover						MW-5, MW-6, MW-7, MW-8, VT-1, VT-2, VT-3, VT-4	Locations were in good condition in 2019.	Acceptable	CAM-1 T2- 1, 11, 12, 13, 14, 16, 22, 38, 39, 40, 47, 48, 49
Features of Note/Other Relevant Observations (e.g., signs of activity, ruts…)	No											

7.3.1.2 Preliminary Stability Assessment

The Preliminary Stability Assessment for the Tier II Disposal Facility was conducted on August 27, 2019 as per the TOR and the results are provided in the table below.

Table 7-5: Preliminary Stability Assessment – Tier II Disposal Facility

Tier II Disposal Facility		
Feature	**Severity Rating**	**Extent**
Settlement	Acceptable	Occasional
Erosion	Acceptable	Occasional
Lateral Movement	Not Observed	None
Frost Action	Not Observed	None
Sloughing	Not Observed	None
Cracking	Not Observed	None
Animal Burrows	Not Observed	None
Vegetation Establishment	Not Observed	None
Staining	Acceptable	Isolated
Vegetation Stress	Not Observed	None
Seepage / Ponded Water	Not Observed	None
Debris and/or Liner Exposure	Not Observed	None
Other	Not Observed	None
Overall Landfill Performance	**Acceptable**	

Note: please refer to Performance/Severity rating reference guide in Section 2.1.3.1 above.

7.3.1.3 Photographic Records

The detailed photographic record for the Tier II Disposal Facility has been completed as per Section 5.5 of the TOR and is included as **Appendix H**. The photographic record only contains an index of photographs collected; full sized photographs are contained in an Appended CD/DVD-ROM, separate to this report. **Figure CAN-1.6A** illustrates the photograph locations and directions.

7.3.1.4 Trend Analysis

A trend analysis was conducted with regards to observations made during the visual inspection of the Tier II Disposal Facility. The following table outlines the results of the visual trend analysis.

Table 7-6: Visual Inspection Trends – Tier II Disposal Facility

Tier II Disposal Facility		
Checklist Item	**Feature Number**	**Comparison with Historical Observations**
Settlement	A - linear depression	No significant change.
	C – two linear depressions	Only two linear depressions observed. One pothole depression was not observed in 2019
	D – pothole depressions	No significant change from 2016 other than a slight width increase at Feature D2.
	G – depression	Slight change in depth from 0.1 to 0.05 observed in 2019.
	H – linear depression	New observation in 2019.
Erosion	B – minor erosion	Only three erosion channels observed in 2019.
	E –minor erosion	No significant change.
Staining	F – staining	No significant change.

7.3.1.5 Discussion of Results/Trends

A comparison of the visual inspection results of the 2016 and 2019 monitoring events at the Tier II Disposal Facility indicates that settlement and erosion features showed no significant change other than the presence of only two depressions at Feature C (one pothole feature was not observed), slight width increase for Feature D2, slight change in depth from 0.1 to 0.05 at Feature G and only three erosion channels observed in 2019 at Feature B. Only one new settlement feature (Feature H) was observed in 2019. The results of the visual inspection and the observed trends indicate that the performance of the landfill is acceptable.

7.3.2 Soil Sampling

Soil sampling of the Tier II Disposal Facility was conducted on August 27, 2019. The soil sampling was conducted in compliance with Section 5.3.1 and 5.3.2 of the TOR and details are provided below in the following Sections 6.3.2.1 through 7.3.2.4.

7.3.2.1 Laboratory Analytical Results

A total of eight soil samples were analysed from four soil sample locations at the Tier II Disposal Facility and analysed for inorganic elements (arsenic, cadmium, chromium, cobalt, copper, nickel, and zinc), polychlorinated biphenyls (PCBs), and Petroleum Hydrocarbons (PHC F1, F2, F3, and F4). Duplicate samples collected at this landfill are as follows and are discussed further in Appendix C:

- C1-44 = duplicate of MW06A;
- C1-43 = duplicate of MW06B; and
- C1-36 = duplicate of MW07B.

The full current and historical analytical results are presented in **Table 5A** in the Tables section of this report immediately following the main text. The laboratory certificates of analysis and chain of custody forms are presented in **Appendix B** of this report. **Figure CAM-1.6B** presents a summary of significant soil analytical results.

7.3.2.2 Summary of Soil Results

The soil results for 2019 are presented in the following table. The background and baseline mean are presented for information purposes. The discussions are focused on the comparison of the results to the BL+3SD.

Table 7-7: Evaluation of Results by Parameter – Tier II Disposal Facility

Parameter	Background (mg/kg)	Baseline Mean (mg/kg)	Baseline Mean+3SD (mg/kg)	Discussion of Results
Arsenic (As)	3.3	2.1	5.1	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
Cadmium (Cd)	1.0	1.0	1.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
Chromium (Cr)	20.0	20.0	20.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
Cobalt (Co)	5.0	5.0	5.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
Copper (Cu)	11.3	4.8	25.4	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
Lead (Pb)	10.0	10.0	10.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
Nickel (Ni)	5.0	5.0	5.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
Zinc (Zn)	5.0	5.0	5.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.

Parameter	Background (mg/kg)	Baseline Mean (mg/kg)	Baseline Mean+3SD (mg/kg)	Discussion of Results
PCBs (Total)	0.1	0.1	0.1	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
F1 (C_6-C_{10})	N/A	10.0	10.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
F2 (C_{10}-C_{16})	N/A	10.0	10.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
F3 (C_{16}-C_{34})	N/A	21.9	89.4	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
F4 (C_{34}-C_{50})	N/A	17.4	68.4	All soil sample results were below the BL+3SD at upgradient and downgradient locations.

Note: BL+3SD = baseline data mean + 3x standard deviations. Soil concentrations are shown are in mg/kg.

7.3.2.3 Summary of Soil Trends

Trends in parameter concentrations in soil, based on data from seven monitoring events that took place between 2010 and 2019, are presented in the following table.

Table 7-8: Discussion of Trends – Tier II Soil Disposal Facility

Parameter	Discussion of Trends
Arsenic (As)	Arsenic has no apparent trend for either upgradient or downgradient samples.
Cadmium (Cd)	Cadmium has no apparent trend for either upgradient or downgradient samples.
Chromium (Cr)	Chromium has no apparent trend for either upgradient or downgradient samples.
Cobalt (Co)	Cobalt has a very slight decreasing trend for both upgradient and downgradient samples
Copper (Cu)	Upgradient and downgradient concentrations appear to be slightly decreasing.
Lead (Pb)	Lead has no apparent trend for either upgradient or downgradient samples.
Nickel (Ni)	Nickel has no apparent trend for either upgradient or downgradient samples.
Zinc (Zn)	Zinc has no apparent trend for either upgradient or downgradient samples.
PCBs (Total)	PCBs have no apparent trend for either upgradient or downgradient samples.
F1 (C_6-C_{10})	F1 has no apparent trend for either upgradient or downgradient samples.
F2 (C_{10}-C_{16})	F2 has no apparent trend for either upgradient or downgradient samples.
F3 (C_{16}-C_{34})	F3 has no apparent trend for either upgradient or downgradient samples.
F4 (C_{34}-C_{50})	F4 has no apparent trend for either upgradient or downgradient samples.

The trends discussed in the previous table are presented on a series of graphs for each parameter in **Appendix D6**.

7.3.2.4 Discussion of Soil Results and Trends

Upgradient and downgradient samples and surface and depth were all below the BL+3SD for all parameters.

Overall, downgradient concentrations were comparable to upgradient concentrations with some downgradient results falling below and above upgradient results based on visual comparison of the 2019 data on the graphs presented in **Appendix D6**. These variations could represent natural variability.

Most analytes in soil did not exhibit any apparent trends in either upgradient or downgradient sample locations. However, cobalt appears to exhibit a very slight downward trend in both upgradient and downgradient locations, and copper also appears to be developing a slight downward trend in both upgradient and downgradient sample locations.

7.3.3 Groundwater Sampling

7.3.3.1 Monitoring Well Sampling/Inspection Logs

As per Section 5.3.3.2 of the TOR, groundwater monitoring logs were filled out for each monitoring well. Monitoring well sampling logs are presented in **Appendix F**.

7.3.3.2 Water Levels/Groundwater Flow

Groundwater levels were monitored and are presented in the Table below.

Table 7-9: Summary of Groundwater Levels – Tier II Disposal Facility

Monitoring Well ID	Monitoring Well Elevation (m)	Water Level (TOC) (m)	Well Stick up (m)	Water Level (from ground surface) (m)	Groundwater Elevation (m asl)	Notes
MW-05	31.2	1.785	0.3	1.485	N/A	Frozen/Dry
MW-06	29.3	1.781	0.5	1.281	N/A	Frozen/Dry
MW-07	28.5	1.609	0.5	1.109	N/A	Frozen/Dry
MW-08	36.7	1.671	0.5	1.171	N/A	Frozen/Dry

Based on the available information, no groundwater flow direction could be determined due to lack of available information. Groundwater contours are not presented on **Figure CAM-1.6C** at the rear of this chapter text.

7.3.3.3 Groundwater Laboratory Analytical Results

No groundwater samples were collected at the Tier II Disposal Facility in 2019.

The full current and historical analytical results are presented in **Table 5B** in the Tables section of this report immediately following the main text. The laboratory certificates of analysis and chain of custody forms are presented in **Appendix B** of this report. **Figure CAM-1.6C** presents a summary of groundwater analytical results

7.3.3.4 Summary of Groundwater Results

No groundwater samples were collected at the Tier II Disposal Facility in 2019; therefore, no sample results are available for discussion.

7.3.3.5 Discussion of Groundwater Results

Over the seven years of monitoring conducted at this landfill, only one single groundwater sample has been collected at MW-05, occurring in 2016. The analytical results for this single sample reported all parameters below the BL+3SD.

It should be noted that there are insufficient data points at this time to determine trends in the groundwater concentrations. The performance of the landfill should be re-evaluated once seven years of data are available. Groundwater data is plotted on the trend graphs presented in **Appendix D7.**

7.3.4 Thermal Monitoring

As per Section 5.4.3 of the TOR, thermistor inspection logs were filled out for thermistors as provided in **Appendix E**.

7.3.4.1 Summary of Findings from Annual DEW Line Thermal Reports

Raw thermistor data from our 2019 monitoring session was sent to DND for reference and review as part of the CAM-1 Field Progress report. No analysed thermistor data was provided to Arcadis for inclusion into the current 2019 monitoring report

7.4 Conclusions and Overall Landfill Performance

Upgradient and downgradient soil samples at surface and depth were all below the BL+3SD for all parameters. Overall, downgradient soil concentrations were comparable to upgradient concentrations with some downgradient results falling below and above upgradient results based on visual comparison of the 2019 data on the graphs presented in **Appendix D6**. These variations could represent natural variability and no apparent trends were observed for any of the parameters. There is no indication of contaminant migration from the landfill at this time.

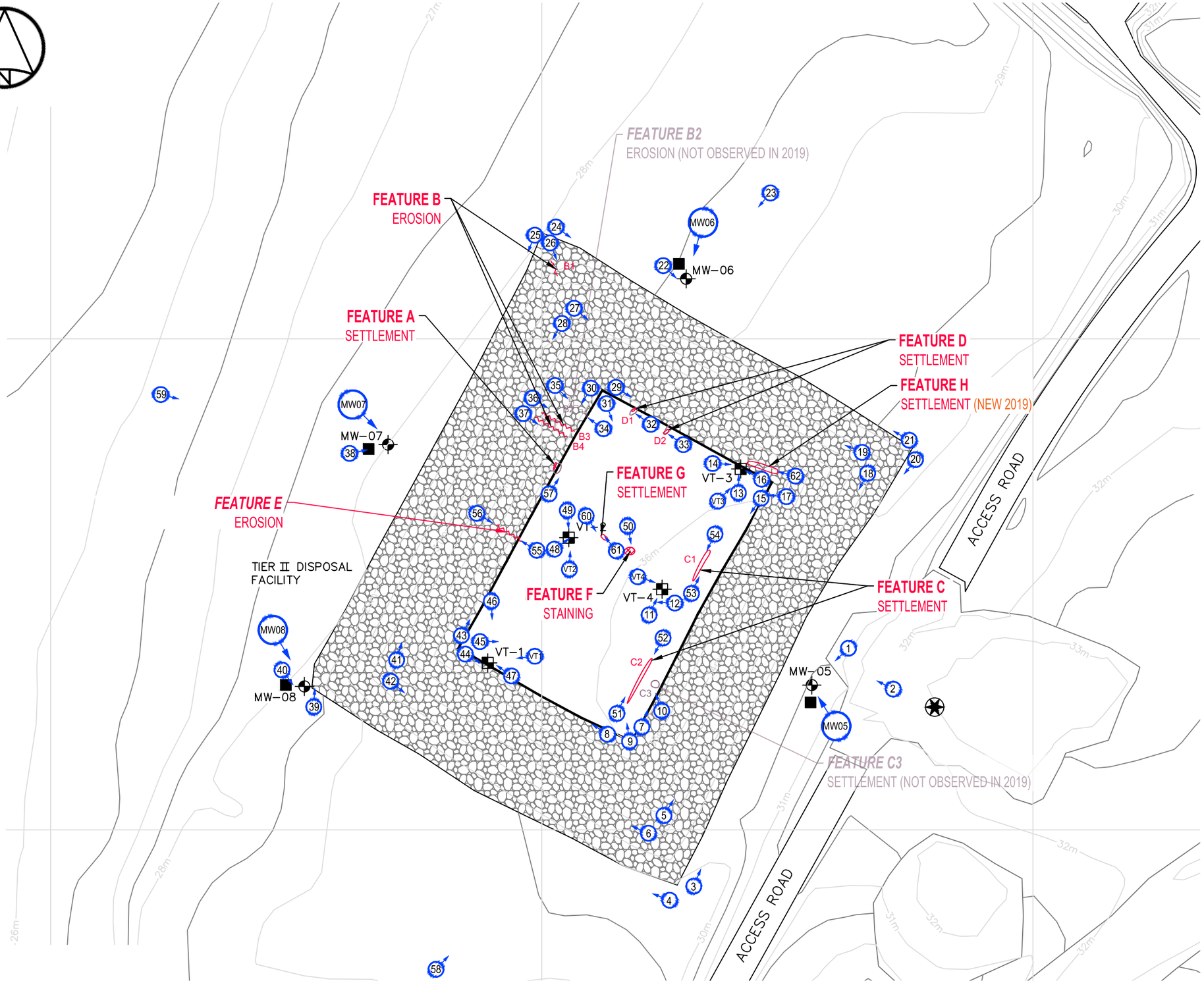
The majority of analytes in soil did not exhibit any apparent trends in either upgradient or downgradient sample locations. However, cobalt appears to exhibit a very slight downward trend at both upgradient and downgradient locations, and copper also appears to be developing a slight downward trend in both upgradient and downgradient sample locations.

Over the seven years of groundwater monitoring conducted at this landfill, only one single groundwater sample has been collected at MW-05 in 2016. The analytical results for this single sample and its duplicate reported all parameters below the BL+3SD.

Based on review and analysis of chemical data, it appears that both the soil and groundwater concentrations for the parameters tested have no significant observable trends with no obvious concentration increases or decreases over time. Based on the results of the 2019 environmental monitoring and visual inspection program, the overall performance of the Tier II Disposal Facility is acceptable.

7.5 Recommendations

Based on the visual and environmental monitoring completed, the Tier II Disposal Facility performance is acceptable. Based on this review, it is recommended to continue with the long-term monitoring as planned and no remedial work or deviations from the monitoring plan are recommended at this time.



LEGEND

- COMMEMORATIVE PLAQUE LOCATION
- MONITORING SOIL SAMPLE LOCATION
- MW–05 MONITORING WELL LOCATION
- VT–1 GROUND TEMPERATURE CABLE LOCATION
- SETTLEMENT
- EROSION
- STAINING
- APPROX. PHOTOGRAPHIC VIEWPOINT (2019) VISUAL INSPECTION PHOTOS 1 - 62
- TOP OF LANDFILL
- TOE OF LANDFILL
- SLOPE OF LANDFILL
- 2016 VISUAL INSPECTION OBSERVATIONS (FOR REFERENCE)

NOTE:
RED = 2019 FEATURES
PURPLE = 2016 FEATURES

Meters
15 0 15 30
1:800

NO.	VERSION	DATE	PAR	VERIF.	APPR.
2	FINAL	2020.04.17	RF	TA	CG

Construction de Défense Canada
Defence Construction Canada

COLLECTION OF LANDFILL MONITORING DATA

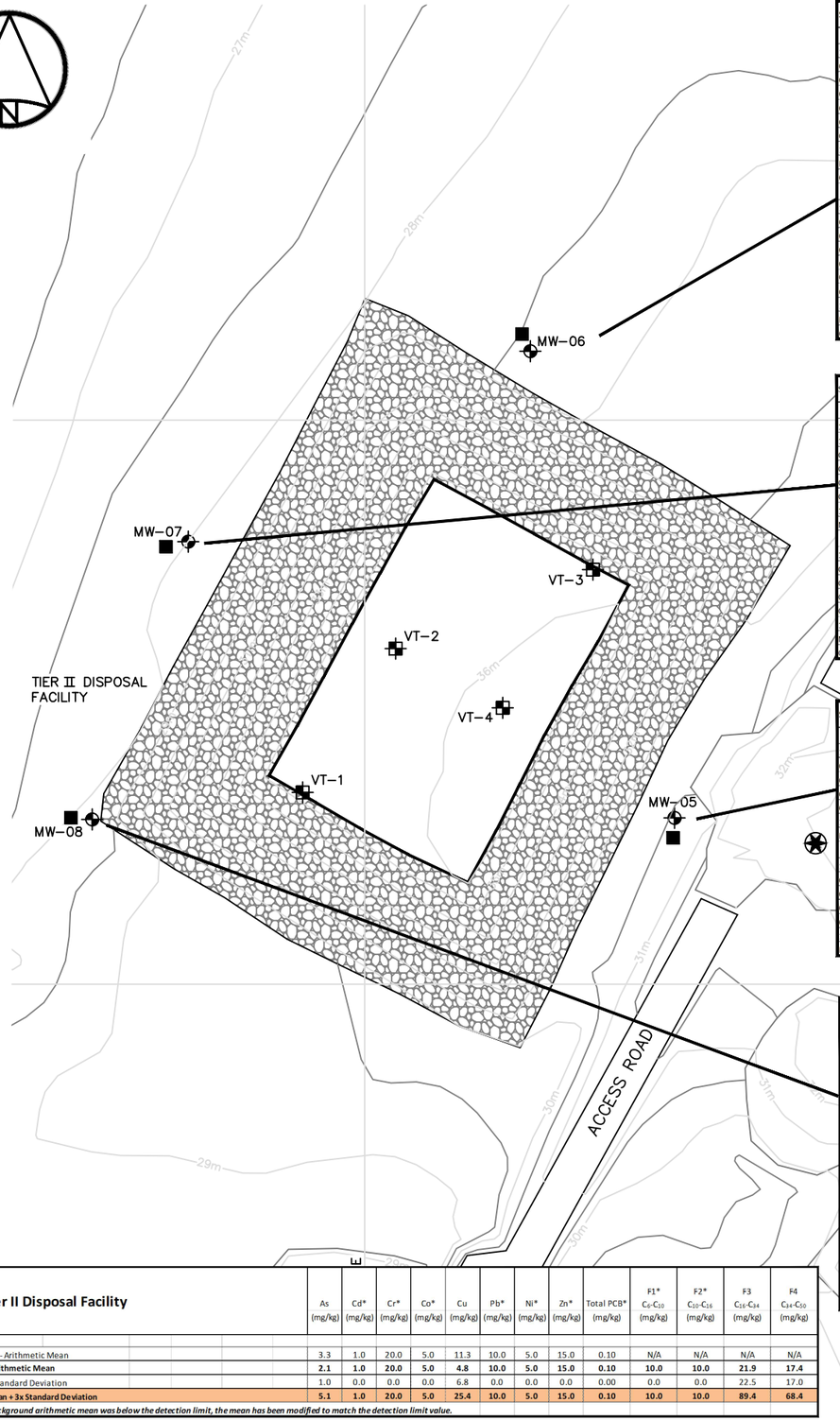
CAM-1, JENNY LIND ISLAND, NU

TIER II DISPOSAL FACILITY
2019 VISUAL INSPECTION

ARCADIS
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MEASUREMENT UNIT	SCALE	DATE (month-year)
Metre	1 : 800	MARCH 2020
DRAWN BY	VERIFIED BY	APPROVED BY
R. FLETCHER	T. AUSTRINS, P.ENG	C. GRAVELLE, P.ENG
PROJECT NO.	DRAWING NO.	PAGE
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FIGURE CAM-1.6A



Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2* C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
MW-06 surface - downgradient																		
10-16567	MW-06	2010	1	Phase I	0-10	**2.3**	<1	<20	<5	3.1	<10	<5	<15	<0.003	<10	10	**85**	**87**
C111-6WA	MW-06	2011	2	Phase I	0-15	**3.0**	<0.1	3.0	1.0	<5	6.0	2.0	<10	<0.01	<12	<10	<10	N/A
C112-6WA	MW-06	2012	3	Phase I	0-15	1.2	<0.1	2.1	<1	<5	2.6	2.1	<10	<0.01	<12	<10	**23**	N/A
C113-6WA	MW-06	2013	4	Phase I	0-15	1.8	<0.1	2.8	<1	<5	5.0	1.6	<10	<0.01	<12	<10	<50	<50
C113-BD1 (Dup)	MW-06	2013	4	Phase I	0-15	**2.3**	<0.1	3.4	1.0	<5	4.7	2.1	<10	<0.01	<12	<10	<50	<50
C113-6WA (Interlab)	MW-06	2013	4	Phase I	0-15	1.6	0.04	3.3	1.4	2.7	<4.9	2.6	8.0	<0.10	<10	<50	<50	<100
C114-6WA	MW-06	2014	5	Phase I	0-15	1.5	0.02	3.1	1.1	3.0	<5	2.7	6.0	<0.10	<10	<50	<50	<100
16-C1-MW06A	MW-06	2016	7	Phase II	0-15	1.8	<0.05	3.0	1.2	2.2	2.8	1.9	<10	<0.01	<12	<10	<50	<50
MW-06A	MW-06	2019	10	Phase II	0-15	1.9	<0.050	2.6	0.90	2.3	3.6	1.7	6.3	<0.010	<7.0	<4.0	**25**	<6.0
C1-44 (dup)	MW-06	2019	10	Phase II	0-15	1.8	<0.050	2.3	0.85	2.5	4.0	1.6	6.7	<0.010	<7.0	<4.0	**24**	<6.0
MW-06 depth - downgradient																		
10-16569	MW-06	2010	1	Phase I	40	1.5	<1	<20	<5	3.0	<10	<5	<15	<0.003	<10	7.2	**34**	**36**
C111-6WB	MW-06	2011	2	Phase I	40-50	2.0	<0.1	6.0	2.0	<5	4.0	3.0	<10	<0.01	<12	<10	<10	N/A
C111-BD1 (Dup)	MW-06	2011	2	Phase I	40-50	2.0	<0.1	16.0	1.0	<5	4.0	**8.0**	<10	<0.01	<12	<10	<10	N/A
C111-6WB (Interlab)	MW-06	2011	2	Phase I	40-50	**2.2**	0.02	5.8	2.1	3.0	4.5	4.6	6.0	<0.1	<4	<10	<30	<20
C112-6WB	MW-06	2012	3	Phase I	40-50	**2.4**	<0.1	3.1	1.3	<5	3.7	2.4	<10	<0.01	<12	<10	<10	N/A
C113-6WB	MW-06	2013	4	Phase I	40-50	**7.4**	<0.1	5.4	1.7	<5	4.8	3.4	<10	<0.01	<12	<10	<50	<50
C114-6WB	MW-06	2014	5	Phase I	40-50	1.7	<0.01	5.2	1.8	2.8	<4.9	2.5	5.0	<0.10	<10	<50	<50	<100
16-C1-MW06B	MW-06	2016	7	Phase II	40-50	1.6	<0.05	3.6	1.4	2.1	3.6	2.1	<10	<0.01	<12	<10	<50	<50
MW-06B	MW-06	2019	10	Phase II	40-50	1.7	<0.050	2.9	1.1	1.8	2.7	1.8	4.1	<0.010	<7.0	<4.0	<8.0	<6.0
C1-43 (dup)	MW-06	2019	10	Phase II	40-50	1.9	<0.050	4.3	1.3	2.1	3.2	2.2	4.5	<0.050	<7.0	<4.0	<8.0	<6.0

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2* C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
MW-07 surface - downgradient																		
10-16571	MW-07	2010	1	Phase I	0-10	1.2	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	7.7	**180**	**200**
10-16572 (Dup)	MW-07	2010	1	Phase I	0-10	<1	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	**15**	**110**	**130**
C111-7WA	MW-07	2011	2	Phase I	0-15	1.0	<0.1	3.0	<1	<5	3.0	2.0	<10	<0.01	<12	<10	<10	N/A
C112-7WA	MW-07	2012	3	Phase I	0-15	1.9	<0.1	1.8	<1	<5	3.1	1.3	<10	<0.01	<12	<10	12	N/A
C113-7WA	MW-07	2013	4	Phase I	0-15	**3.0**	<0.1	6.5	2.3	<5	5.8	3.8	<10	<0.01	<12	<10	<50	<50
C114-7WA	MW-07	2014	5	Phase I	0-15	0.7	<0.01	1.3	0.6	1.3	<5	0.8	6.0	<0.10	<10	<50	<50	<100
16-C1-MW07A	MW-07	2016	7	Phase II	0-15	1.8	<0.05	1.5	0.54	3.4	3.9	1.1	<10	<0.01	<12	<10	<50	<50
MW-07A	MW-07	2019	10	Phase II	0-15	1.1	<0.050	1.6	0.59	2.4	2.1	1.2	4.9	<0.010	<7.0	<4.0	**39**	7.5
MW-07 depth - downgradient																		
10-16573	MW-07	2010	1	Phase I	25-30	**2.9**	<1	<20	<5	4.4	<10	<5	<15	<0.003	<10	6.6	**30**	**41**
C111-7WB	MW-07	2011	2	Phase I	40-50	2.0	<0.1	4.0	1.0	<5	3.0	3.0	<10	<0.01	<12	<10	<10	N/A
C112-7WB	MW-07	2012	3	Phase I	40-50	1.9	<0.1	2.8	1.1	<5	3.2	1.9	<10	<0.01	<12	<10	<10	N/A
C113-7WB	MW-07	2013	4	Phase I	40-50	1.8	<0.1	4.0	1.4	<5	3.4	2.3	<10	<0.01	<12	<10	<50	<50
C114-7WB	MW-07	2014	5	Phase I	40-50	1.7	<0.01	4.3	1.5	2.4	<5	2.3	4.0	<0.10	<10	<50	<50	<100
16-C1-MW07B	MW-07	2016	7	Phase II	40-50	**2.6**	<0.05	4.2	1.6	4.3	4.6	2.5	<10	<0.01	<12	<10	<50	<50
MW-07B	MW-07	2019	10	Phase II	40-50	1.6	<0.050	4.1	1.3	3.3	2.9	2.9	5.1	<0.010	<7.0	<4.0	<8.0	<6.0
C1-36 (dup)	MW-07	2019	10	Phase II	40-50	**2.4**	<0.050	3.1	1.2	3.5	3.7	2.4	6.7	<0.010	<7.0	<4.0	<8.0	<6.0

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2* C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
MW-05 surface - upgradient																		
10-16563	MW-05	2010	1	Phase I	0-10	2.0	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	9	**39**	**26**
C111-5WA	MW-05	2011	2	Phase I	0-15	**3.0**	<0.1	3.0	1.0	<5	10.0	2.0	**49.0**	0.070	<12	<10	<10	N/A
C112-5WA	MW-05	2012	3	Phase I	0-15	1.4	<0.1	2.3	<1	<5	4.2	1.5	<10	0.067	<12	<10	21	N/A
C113-5WA	MW-05	2013	4	Phase I	0-15	**2.5**	<0.1	2.5	<1	<5	**11.0**	1.7	14.0	<0.01	<12	<10	**51**	<50
C114-5WA	MW-05	2014	5	Phase I	0-15	1.9	0.03	3.9	1.8	3.4	6.7	1.9	9.0	<0.10	<10	<50	<50	<100
16-C1-MW05A	MW-05	2016	7	Phase II	0-15	**2.6**	<0.05	2.7	1.0	2.5	5.1	2.4	<10	0.021	<12	<10	**57**	<50
MW-05A	MW-05	2019	10	Phase II	0-15	1.7	<0.050	2.1	0.94	3.1	7.2	1.5	11.0	<0.010	<7.0	<4.0	**25**	<6.0
MW-05 depth - upgradient																		
10-16565	MW-05	2010	1	Phase I	40	1.1	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	4.1	15	12
C111-5WB	MW-05	2011	2	Phase I	40-50	2.0	<0.1	4.0	1.0	**5.0**	5.0	3.0	**21.0**	<0.01	<12	<10	<10	N/A
C112-5WB	MW-05	2012	3	Phase I	40-50	1.4	<0.1	3.2	<1	<5	4.3	1.9	<10	0.015	<12	<10	13	N/A
C113-5WB	MW-05	2013	4	Phase I	40-50	1.5	<0.1	3.2	1.1	<5	3.8	2.0	<10	<0.01	<12	<10	<50	<50
C114-5WB	MW-05	2014	5	Phase I	40-50	1.6	0.01	2.9	1.4	1.7	<5	1.5	5.0	<0.10	<10	<50	<50	<100
16-C1-MW05B	MW-05	2016	7	Phase II	40-50	1.9	<0.05	2.9	1.1	1.7	3.2	1.6	<10	<0.01	<12	<10	<50	<50
MW-05B	MW-05	2019	10	Phase II	40-50	1.3	<0.050	2.9	0.86	1.3	2.5	1.5	3.4	<0.010	<7.0	<4.0	<8.0	<6.0

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2* C_{10}-C_{16} (mg/kg)	C ((
MW-08 surface - downgradient																	
10-16575	MW-08	2010	1	Phase I	0	1.8	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	5.6	
C111-8WA	MW-08	2011	2	Phase I	0-15	1.0	<0.1	3.0	1.0	<5	3.0	2.0	<10	<0.01	<12	<10	
C112-8WA	MW-08	2012	3	Phase I	0-15	<1	<0.1	1.7	<1	<5	1.9	1.1	<10	<0.01	<12	<10	
C112-BD7 (Dup)	MW-08	2012	3	Phase I	0-15	<1	N/A	2.5	<1	<5	1.4	1.8	<10	<0.01	<12	<10	
C112-8WA (Interlab)	MW-08	2012	3	Phase I	0-15	0.7	<0.01	2.3	0.7	1.0	2.0	2.0	4.0	<0.10	<10	<50	
C113-8WA	MW-08	2013	4	Phase I	0-15	1.9	<0.1	3.1	1.2	<5	3.9	2.2	<10	<0.01	<12	<10	
C114-8WA	MW-08	2014	5	Phase I	0-15	**2.4**	0.01	4.0	1.8	3.3	5.5	2.6	7.0	<0.10	<10	<50	
16-C1-MW08A	MW-08	2016	7	Phase II	0-15	**3.9**	0.051	4.0	1.4	**5.5**	7.1	2.9	<10	<0.01	<12	<10	
MW-08A	MW-08	2019	10	Phase II	0-15	1.7	<0.050	2.8	1.0	2.4	3.9	1.9	5.1	<0.010	<7.0	<4.0	
MW-08 depth - downgradient																	
10-16577	MW-08	2010	1	Phase I	40	1.1	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	4.4	
C111-8WB	MW-08	2011	2	Phase I	40-50	2.0	<0.1	6.0	2.0	<5	5.0	3.0	<10	<0.01	<12	<10	
C112-8WB	MW-08	2012	3	Phase I	40-50	1.8	<0.1	4.3	1.5	<5	3.2	3.2	<10	<0.01	<12	<10	
C113-8WB	MW-08	2013	4	Phase I	40-50	2.0	<0.1	4.9	1.6	<5	3.8	2.8	<10	<0.01	<12	<10	
C114-8WB	MW-08	2014	5	Phase I	40-50	1.4	<0.01	3.1	1.5	2.0	<5	1.5	4.0	<0.10	<10	<50	
C114-BD7 (Dup)	MW-08	2014	5	Phase I	40-50	**2.2**	0.01	5.0	2.4	3.9	<5	2.4	6.0	<0.10	<10	<50	
C114-8WB (Interlab)	MW-08	2014	5	Phase I	40-50	**2.5**	<0.1	**24.0**	1.5	<5	4.4	**11.0**	<10	<0.01	<12	<10	
16-C1-MW08B	MW-08	2016	7	Phase II	40-50	2.0	<0.05	3.7	1.2	2.3	4.0	2.2	<10	<0.01	<12	<10	
MW-08B	MW-08	2019	10	Phase II	40-50	2.0	<0.050	3.1	1.4	3.7	3.4	2.5	3.6	<0.010	<7.0	<4.0	

CAM-1 Tier II Disposal Facility	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2* C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
Background Data - Arithmetic Mean	3.3	1.0	20.0	5.0	11.3	10.0	5.0	15.0	0.10	N/A	N/A	N/A	N/A
Baseline Data - Arithmetic Mean	**2.1**	**1.0**	**20.0**	**5.0**	**4.8**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**10.0**	**21.9**	**17.4**
Baseline Data - Standard Deviation	1.0	0.0	0.0	0.0	6.8	0.0	0.0	0.0	0.00	0.0	0.0	22.5	17.0
Baseline Data Mean + 3x Standard Deviation	**5.1**	**1.0**	**20.0**	**5.0**	**25.4**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**10.0**	**89.4**	**68.4**

** If baseline or background arithmetic mean was below the detection limit, the mean has been modified to match the detection limit value.*

LEGEND

- COMMEMORATIVE PLAQUE LOCATION
- MONITORING SOIL SAMPLE LOCATION
- MW–05 MONITORING WELL LOCATION
- VT–1 GROUND TEMPERATURE CABLE LOCATION
- TOP OF LANDFILL
- TOE OF LANDFILL
- SLOPE OF LANDFILL

XX	Sample exceeds baseline mean
XX	Sample exceeds baseline mean + 3x SD

Meters: 15 0 15 30

1:1000

NO.	VERSION	DATE	PAR	VERIF.	APPR.
2	FINAL	2020.04.17	*RF*	*TA*	*CG*

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COLLECTION OF LANDFILL MONITORING DATA

CAM-1, JENNY LIND ISLAND, NU

TIER II DISPOSAL FACILITY 2019 SOIL ANALYTICAL RESULTS

ARCADIS
1050 Morrison Drive, Suite 201, Ottawa, Ontario, K2H 8K7
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MEASUREMENT UNIT	SCALE:	DATE: (month–year):
Metre	1 : 800	MARCH 2020
DRAWN BY:	VERIFIED BY:	APPROVED BY:
R. FLETCHER	*T. AUSTRINS, P.ENG*	*C. GRAVELLE, P.ENG*
PROJECT NO:	DRAWING NO:	PAGE
30000251	30000251-CAM-1.6	PL

FIGURE CAM-1.6B



Sample ID	Location	Year	Monitoring Year	Monitoring Phase	As (mg/L)	Cd* (mg/L)	Cr (mg/L)	Co* (mg/L)	Cu (mg/L)	Pb (mg/L)	Ni (mg/L)	Zn (mg/L)	F1* C_6-C_{10} (mg/L)	F2* C_{10}-C_{16} (mg/L)	F3* C_{16}-C_{34} (mg/L)	F4* C_{34}-C_{50} (mg/L)
MW-06																
Not sampled - frozen	MW-06	2010	1	Phase I												
Not sampled - dry	MW-06	2011	2	Phase I												
Not sampled - dry	MW-06	2012	3	Phase I												
Not sampled - dry	MW-06	2013	4	Phase I												
Not sampled - dry	MW-06	2014	5	Phase I												
Not sampled - insufficient water	MW-06	2016	7	Phase II												
Not sampled - insufficient water	MW-06	2019	10	Phase II												

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	As (mg/L)	Cd* (mg/L)	Cr (mg/L)	Co* (mg/L)	Cu (mg/L)	Pb (mg/L)	Ni (mg/L)	Zn (mg/L)	F1* C_6-C_{10} (mg/L)	F2* C_{10}-C_{16} (mg/L)	F3* C_{16}-C_{34} (mg/L)	F4* C_{34}-C_{50} (mg/L)
MW-07																
Not sampled - frozen	MW-07	2010	1	Phase I												
Not sampled - dry	MW-07	2011	2	Phase I												
Not sampled - dry	MW-07	2012	3	Phase I												
Not sampled - dry	MW-07	2013	4	Phase I												
Not sampled - dry	MW-07	2014	5	Phase I												
Not sampled - frozen	MW-07	2016	7	Phase II												
Not sampled - frozen	MW-07	2019	10	Phase II												

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	As (mg/L)	Cd* (mg/L)	Cr (mg/L)	Co* (mg/L)	Cu (mg/L)	Pb (mg/L)	Ni (mg/L)	Zn (mg/L)	F1* C_6-C_{10} (mg/L)	F2* C_{10}-C_{16} (mg/L)	F3* C_{16}-C_{34} (mg/L)	F4* C_{34}-C_{50} (mg/L)
MW-05																
Not sampled - dry	MW-05	2010	1	Phase I												
Not sampled - dry	MW-05	2011	2	Phase I												
Not sampled - dry	MW-05	2012	3	Phase I												
Not sampled - dry	MW-05	2013	4	Phase I												
Not sampled - dry	MW-05	2014	5	Phase I												
16-MW05	MW-05	2016	7	Phase II	0.00099	<0.00002	<0.0010	<0.0003	0.0034	<0.0002	0.0022	<0.0030	<0.1	<0.1	<0.2	<0.2
C1-DUP1 (Dup)	MW-05	2016	7	Phase II	0.0010	<0.00002	<0.0010	<0.0003	0.0034	<0.0002	0.0021	<0.0030	<0.1	<0.1	<0.2	<0.2
Not sampled - dry	MW-05	2019	10	Phase II												

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	As (mg/L)	Cd* (mg/L)	Cr (mg/L)	Co* (mg/L)	Cu (mg/L)	Pb (mg/L)	Ni (mg/L)	Zn (mg/L)	F1* C_6-C_{10} (mg/L)	F2* C_{10}-C_{16} (mg/L)	F3* C_{16}-C_{34} (mg/L)	F4* C_{34}-C_{50} (mg/L)
MW-08																
Not sampled - frozen	MW-08	2010	1	Phase I												
Not sampled - dry	MW-08	2011	2	Phase I												
Not sampled - dry	MW-08	2012	3	Phase I												
Not sampled - dry	MW-08	2013	4	Phase I												
Not sampled - dry	MW-08	2014	5	Phase I												
Not sampled - dry	MW-08	2016	7	Phase II												
Not sampled - dry	MW-08	2019	10	Phase II												

CAM-1 Tier II Disposal Facility					Cd* (mg/L)	Cr (mg/L)	Co* (mg/L)	Cu (mg/L)	Pb (mg/L)	Ni (mg/L)	Zn (mg/L)	F1* C_6-C_{10} (mg/L)	F2* C_{10}-C_{16} (mg/L)	F3* C_{16}-C_{34} (mg/L)	F4* C_{34}-C_{50} (mg/L)
Baseline Data															
Downgradient															
08-14439	MW-06	2008			0.0070	<0.0010	0.0310	<0.0030	0.0180	0.0140	0.0210	0.0080	<0.050	<0.50	<1.0	<1.0
08-14434	MW-07	2008			0.0030	<0.0010	0.0150	<0.0030	0.0080	0.0040	0.0110	0.0050	<0.050	<0.50	<1.0	<1.0
08-14429	MW-08	2008			<0.0030	<0.0010	0.0430	<0.0030	0.0090	0.0010	0.0280	<0.0050	<0.050	<0.50	<1.0	<1.0
				N value	3	3	3	3	3	3	3	3	3	3	3	3
Baseline Data - Arithmetic Mean					0.0038	0.0005	0.0297	0.0015	0.0117	0.0063	0.0200	0.0052	0.025	0.25	0.5	0.5
Baseline Data - Arithmetic Mean Corrected for Detection Limit					**0.0038**	**0.0010**	**0.0297**	**0.0030**	**0.0117**	**0.0063**	**0.0200**	**0.0052**	**0.05**	**0.5**	**1.0**	**1.0**
Baseline Data - Standard Deviation					0.0028	0.0000	0.0140	0.0000	0.0055	0.0068	0.0085	0.0028	0.00	0.0	0.0	0.0
Baseline Data - Corrected Arithmetic Mean + 3x Standard Deviation					**0.0124**	**0.0010**	**0.0718**	**0.0030**	**0.0282**	**0.0268**	**0.0456**	**0.0134**	**0.05**	**0.5**	**1.0**	**1.0**

**If baseline or background arithmetic mean was below the detection limit, the mean has been modified to match the detection limit value.*

LEGEND

- COMMEMORATIVE PLAQUE LOCATION
- MONITORING SOIL SAMPLE LOCATION
- MW–05 MONITORING WELL LOCATION
- VT–1 GROUND TEMPERATURE CABLE LOCATION
- TOP OF LANDFILL
- TOE OF LANDFILL
- SLOPE OF LANDFILL

XX	Sample exceeds baseline mean
XX	Sample exceeds baseline mean + 3x SD

Meters
15 0 15 30
1:1000

NO.	VERSION	DATE	PAR	VERIF.	APPR.
2	FINAL	2020.04.17	RF	TA	CG

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COLLECTION OF LANDFILL MONITORING DATA

CAM-1, JENNY LIND ISLAND, NU

TIER II DISPOSAL FACILITY 2019 GROUNDWATER ANALYTICAL RESULTS

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MEASUREMENT UNIT	SCALE	DATE (month-year)
Metre	1 : 800	MARCH 2020
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PROJECT NO.	DRAWING NO.	PAGE
30000251	30000251-CAM-1.6	PL

FIGURE CAM-1.6C

8 CAM-1: SOUTHEAST LANDFILL

8.1 Landfill Description

The Southeast Landfill is located in the southern portion of the Station Area, east of the Station POL access road. Geophysics previously identified two lobes of debris in the area. It is found approximately 125 m to the southeast of the Tier II Disposal Facility. This landfill includes two separate regrade areas (labelled as Lobes 1 and 2), and encompasses an approximate area of 2,900 m^2.

The remediation of this landfill included the removal of surface debris and regrading with the placement of additional granular fill. Final cover extends approximately 1 to 1.5 m above surrounding grades. There is no instrumentation installed at this landfill.

The long-term monitoring plan for the Southeast Landfill consists of visual inspection, and the periodic collection of soil samples. The landfill layout, visual observations and photographic locations are presented on **Figure CAM-1.7A**, soil analytical results on **Figure CAM-1.7B**, all of which are included at the rear of this section.

8.2 Summary of Work Conducted

8.2.1 Visual Inspection

A visual inspection was completed at the Southeast Landfill on August 26, 2019. The visual inspection of the landfill was completed with no deviations from the accepted work plan.

8.2.2 Soil Sampling

Soil sampling at the Southeast Landfill was conducted on August 26, 2019 and consisted of the collection of ten soil samples from five soil sample stations (C1-14, C1-15, C1-16, C1-17, C1-18). Depth limitations were encountered at soil sampling station C1-17, where refusal on bedrock limited the depth sample from 0.30 to 0.40 metres below ground surface. Duplicate samples collected at this landfill are as follows and are discussed further in Appendix C:

- C1-15A = duplicate C1-39, and
- C1-18A = duplicate C1-37

The table below outlines the soil sampling activities conducted at the Southeast Landfill.

Table 8-1: Summary of Work Conducted by Soil Sampling Location- Southeast Landfill

Sample Location	Sample ID	Sample Depth (m bgs)	Notes
C1-14 (up-gradient)	C1-14A	0 - 0.15	Brown sand and gravel, moist, no odour
	C1-14B	0.4 – 0.5	Brown sand and gravel, moist, no odour

Sample Location	Sample ID	Sample Depth (m bgs)	Notes
C1-15 (down-gradient)	C1-15A	0 - 0.15	Brown sand and gravel, moist, no odour
	C1-15B	0.4 – 0.5	Brown sand and gravel, moist, no odour
C1-16 (down-gradient)	C1-16A	0 - 0.15	Orange/brown sand and gravel, moist, no odour
	C1-16B	0.4 – 0.5	Orange/brown sand and gravel, moist, no odour
C1-17 (up-gradient)	C1-17A	0 - 0.15	Orange/brown sand and gravel, moist, no odour
	C1-17B	0.3 – 0.4	Orange/brown sand and gravel, moist, no odour
C1-18 (down-gradient)	C1-18A	0 - 0.15	Grey/brown sand and gravel, moist, no odour
	C1-18B	0.4 – 0.5	Grey/brown sand and gravel, moist, no odour

8.2.3 Groundwater Sampling

No groundwater monitoring wells are present at the Southeast Landfill; therefore, no groundwater sampling or analysis was conducted.

8.2.4 Thermal Monitoring

No thermistors are present at the Southeast Landfill; therefore, no thermal monitoring was conducted.

8.3 Results of the Monitoring Program

The following Sections 8.3.1 through 8.3.2 summarize the results of the CAM-1 monitoring program at the Southeast Landfill.

8.3.1 Visual Inspection

The visual inspection was conducted in compliance with Section 5.2 of the TOR and details are provided below in the following Sections 8.3.1.1 through 8.3.1.5. **Figure CAM-1.7A** presents the visual inspection findings and photographic locations.

8.3.1.1 Inspection Checklist

The visual inspection was completed as per the TOR and the visual inspection checklist is included as Table 8-2 of this report below.

Table 8-2: Visual Inspection Checklist – Southeast Landfill

SITE NAME: CAM-1 Jenny Lind Island
LANDFILL DESIGNATION: Southeast Landfill LANDFILL TYPE: Regraded DATE OF INSPECTION: 26 August 2019 WEATHER CONDITIONS: ~12° C, sunny, winds from south
DATE OF PREVIOUS INSPECTION: 10 August 2016
INSPECTED BY: Troy Austrins, P.Eng.
REPORT PREPARED BY: Troy Austrins, P.Eng. The inspector represents to the best of their knowledge that the following statements and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.

Table 8-2: Visual Inspection Checklist: SOUTHEAST LANDFILL

Checklist Item	Present (Yes/No)	Feature Number	Feature Location	GPS Coordinates Easting/Northing/Zone	Length (m)	Width (m)	Depth (m)	Extent Relative to Landfill Surface	Description	Comparison with Historical Observations	Additional Comments	Photographic Records (photo reference, location, view point & direction, feature of note, scale)
Settlement	Yes	A1	North side slope, Lobe 2	389231.673 / 7620629.562	14	2.5	0.15	0.05	<1%	Linear depression	Feature first noted in Year 2 (2011) as Feature A. Side slope appears stable. No significant change.	Acceptable (feature is minor and not affecting landfill stability)	CAM-1 SE 24
Settlement	Yes	A2	North side slope, Lobe 2	389235.392 / 7620632.816	14	2.0	0.5	0.05	<1%	Linear depression	New Observation in 2019	Acceptable (feature is minor and not affecting landfill stability)	CAM-1 SE 24
Settlement	No	E	East side slope, Lobe 1	Not Observed	N/A	N/A	N/A	N/A	N/a	Linear depression	Observed in 2019 but not considered to be settlement. This feature due to uneven final landfill grading and therefore indicated as “No” in Presence/absence column..	N/A	Not Observed
Settlement	No	B	Southeast crest, Lobe 1; not observed	Not Observed	N/A	N/A	N/A	N/A	N/A	Minor depression	Feature first noted in Year 3 (2012) and observed again in 2013. Feature not observed in 2014, 2016 or in 2019.	N/A	Not Observed
Erosion	No	C	South cover/side slope, Lobe 1; not observed	Not Observed	N/A	N/A	N/A	N/A	N/A	Minor erosion, washing of fines	Feature first noted in Year 3 (2012). Feature not observed in 2016 or in 2019.	N/A	CAM-1 SE 11
Lateral Movement	No												
Frost Action	No												
Sloughing	No												
Cracking	No												
Animal Burrows	No												
Vegetation Establishment	Yes	F	Landfill side slopes (Vegetation)	389252.342 / 7620561.333	14	12	5	0.05	<1%	Scattered isolated very small grass tufts present on south side Lobe 1 slope, east end, as well as other isolated areas	No significant change from 2016.	Acceptable (vegetation establishment will be beneficial for landfill stability)	CAM-1 SE 12
Staining	No												
Vegetation Stress	No												
Seepage Points (or) Ponded Water	No												
Debris and/or Liner Exposed	No												

Table 8-2: Visual Inspection Checklist: SOUTHEAST LANDFILL

Checklist Item	Present (Yes/No)	Feature Number	Feature Location	GPS Coordinates Easting/Northing/Zone		Length (m)	Width (m)	Depth (m)	Extent Relative to Landfill Surface	Description	Comparison with Historical Observations	Additional Comments	Photographic Records (photo reference, location, view point & direction, feature of note, scale)
Presence & Condition of Monitoring Instruments	No												
Features of Note/Other Relevant Observations (e.g., signs of activity, ruts…)	Yes	D	West side slope, Lobe 1; vehicle ruts	389211.966 / 7620562.750	14	3-5	0.15	0.05	<1%	Vehicle Ruts	Feature first noted in Year 2 (2011). Side slope appears stable. Length increased from 1-3 to 3-5 m between 2014 and 2016. Vehicle ruts are not expected to drastically increase in length from year to year so length increases may be a result of differences in measurement technique. No significant change observed in 2019 as compared to 2016.	Acceptable (feature is minor and not affecting landfill stability)	CAM-1 SE 4, 5
Features of Note/Other Observations													

8.3.1.2 Preliminary Stability Assessment

The Preliminary Stability Assessment for the Southeast Landfill was conducted on August 26, 2019 as per the TOR and the results are provided in the table below.

Table 8-3: Preliminary Stability Assessment – Southeast Landfill

Southeast Landfill		
Feature	Severity Rating	Extent
Settlement	Acceptable	Occasional
Erosion	Not Observed	None
Lateral Movement	Not Observed	None
Frost Action	Not Observed	None
Sloughing	Not Observed	None
Cracking	Not Observed	None
Animal Burrows	Not Observed	None
Vegetation Establishment	Acceptable	Occasional
Staining	Not Observed	None
Vegetation Stress	Not Observed	None
Seepage / Ponded Water	Not Observed	None
Debris and/or Liner Exposure	Not Observed	None
Other	Acceptable (Tire Ruts)	Isolated
Overall Landfill Performance	**Acceptable**	

Note: please refer to Performance/Severity rating reference guide in Section 2.1.3.1 above.

8.3.1.3 Photographic Records

The detailed photographic record for the Southeast Landfill has been completed as per Section 5.5 of the TOR and is included as **Appendix H**. The Photographic Record only contains an index of photographs collected; full sized photographs are contained in the separately appended CD/DVD-ROM. **Figure CAM-1.7A** illustrates the photograph locations and directions.

8.3.1.4 Trend Analysis

A trend analysis was conducted with regards to observations made during the visual inspection of the Southeast Landfill. The following Table outlines the results of the visual trend analysis.

Table 8-4: Visual Inspection Trends – Southeast Landfill

Southeast Landfill		
Checklist Item	Feature Number	Comparison with Historical Observations
Settlement	A1 – settlement	No significant change
	A2 – settlement	New feature observed in 2019.
	B – Not observed	Not observed in 2014, 2016 or in 2019
	E – not settlement; due to uneven final grading	Feature should be removed; caused by uneven final grading
Erosion	C -erosion	Previously observed in 2014 but not observed in 2016 or in 2019.
Vegetation Establishment	F	No vegetation establishment observed in 2014. Establishment of occasional small plants on some landfill side slopes observed in 2016 and 2019.
Other Features	D - Tire Rutting	No significant change from 2014 to 2019.

8.3.1.5 Discussion of Results/Trends

A comparison of the visual inspection results of the 2016 and 2019 monitoring events at the Southeast Landfill indicates that settlement features generally had no significant change, with one new feature observed next to Feature A1. Features B and C were not observed in 2019. Feature E was recommended for removal from the list as this was inferred to be related to uneven final landfill grading and not related to settlement. The results of the visual inspection and the observed trends indicate that the performance of the landfill is acceptable.

8.3.2 Soil Sampling

Soil sampling of the Southeast Landfill was conducted on August 26, 2019. The soil sampling was conducted in compliance with Section 5.3.1 and 5.3.2 of the TOR and details are provided below in the following Sections 8.3.2.1 through 8.3.2.3.

8.3.2.1 Laboratory Analytical Results

A total of twelve soil samples (including two duplicates) were analysed from five soil sample locations at Southeast Landfill and analysed for inorganic elements (arsenic, cadmium, chromium, cobalt, copper,

nickel, and zinc), polychlorinated biphenyls (PCBs), and Petroleum Hydrocarbons (PHC F1, F2, F3, and F4).

The full current and historical analytical results are presented in **Table 6** in the Tables section of this report immediately following the main text. The laboratory certificates of analysis and chain of custody forms are presented in **Appendix B** of this report. **Figure CAM-1.7B** presents a summary of soil analytical results.

8.3.2.2 Summary of Soil Results

The soil results for 2019 are presented in the following table. The background and baseline mean are presented for information purposes. The discussions are focused on the comparison of the results to the BL+3SD.

Table 8-5: Evaluation of Results by Parameter – Southeast Landfill

Parameter	Background (mg/kg)	Baseline Mean (mg/kg)	Baseline Mean+3SD (mg/kg)	Discussion of Results
Arsenic (As)	3.3	1.9	7.9	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
Cadmium (Cd)	1.0	1.0	1.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
Chromium (Cr)	20.0	20.0	20.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
Cobalt (Co)	5.0	5.0	5.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
Copper (Cu)	11.3	3.2	10.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
Lead (Pb)	10.0	10.0	10.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
Nickel (Ni)	5.0	5.0	5.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
Zinc (Zn)	15.0	15.0	15.0	Downgradient sample from C1-17 at surface exceeded the BL+3SD at 37 mg/kg, but was within 3 times the baseline mean. All upgradient and remaining downgradient results were below the BL+3SD.
PCBs (Total)	0.1	0.1	0.1	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
F1 (C_6-C_{10})	N/A	10.0.	10.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.

Parameter	Background (mg/kg)	Baseline Mean (mg/kg)	Baseline Mean+3SD (mg/kg)	Discussion of Results
F2 (C_{10}-C_{16})	N/A	10.0	10.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
F3 (C_{16}-C_{34})	N/A	18.9	56.6	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
F4 (C_{34}-C_{50})	N/A	13.8	35.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.

Note: BL+3SD = baseline data mean + 3x standard deviations. Soil concentrations are shown are in mg/kg.

8.3.2.3 Discussion of Soil Results

Downgradient sample from C1-17 at surface exceeded the BL+3SD at 37 mg/kg but was within 3 times the baseline mean for zinc. This concentration is the highest recorded at this sample station and appears to be anomalous and inconsistent with previous monitoring events. Upgradient and remaining downgradient results were all below the BL+3SD.

Overall, downgradient concentrations were comparable to upgradient concentrations with some downgradient results falling below and above upgradient results based on visual comparison of the 2019 data on the graphs presented in **Appendix D8**. These variations could represent natural variability. There is no indication of contaminant migration from the landfill at this time.

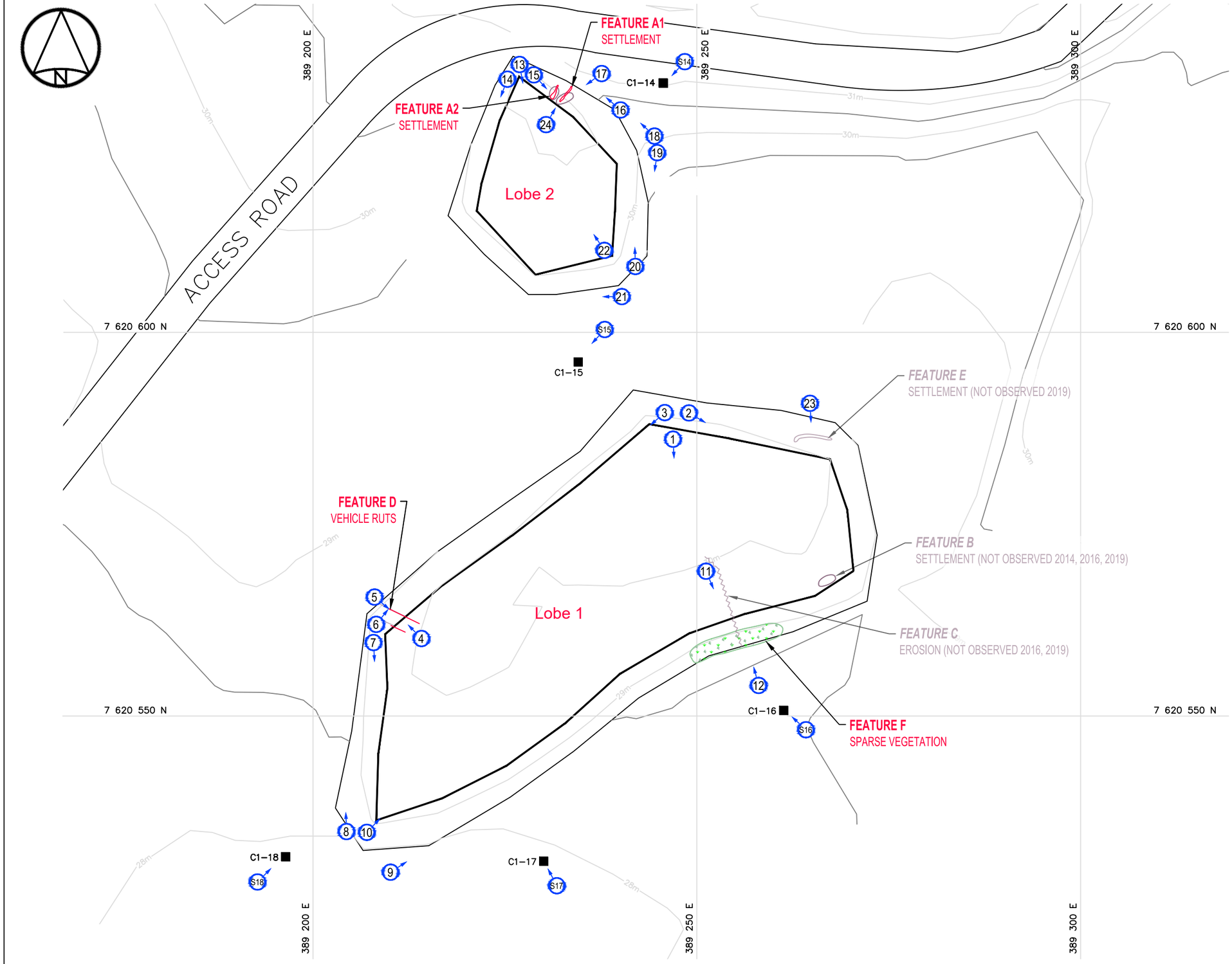
It should be noted that there are insufficient data points at this time to determine trends in the soil concentrations. The performance of the landfill should be re-evaluated once seven years of data are available.

8.4 Conclusions and Overall Landfill Performance

A review of the analytical data indicates that the landfill is performing as intended and there is no indication of contaminant migration from the landfill at this time. Based on the results of the 2019 monitoring program, the overall performance of the Southeast Landfill is acceptable.

8.5 Recommendations

Based on the results of the visual inspection, the Southeast Landfill performance is acceptable. No remedial work or deviations from the monitoring plan are recommended at this time. Based on this review, it is recommended to continue the long-term monitoring of soils as planned.



LEGEND

- MONITORING SOIL SAMPLE LOCATION
- SETTLEMENT
- EROSION
- VEHICLE RUTS
- VEGETATION
- APPROX. PHOTOGRAPHIC VIEWPOINT (2019) VISUAL INSPECTION PHOTOS 1 - 24
- TOP OF LANDFILL
- TOE OF LANDFILL
- 2016 VISUAL INSPECTION OBSERVATIONS (FOR REFERENCE)

NOTE:
RED = 2019 FEATURES
PURPLE = 2016 FEATURES

Meters
10 0 10 20
1:500

NO.	VERSION	DATE	PAR	VERIF.	APPR.
2	FINAL	2020.04.17	RF	TA	CG

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COLLECTION OF LANDFILL MONITORING DATA

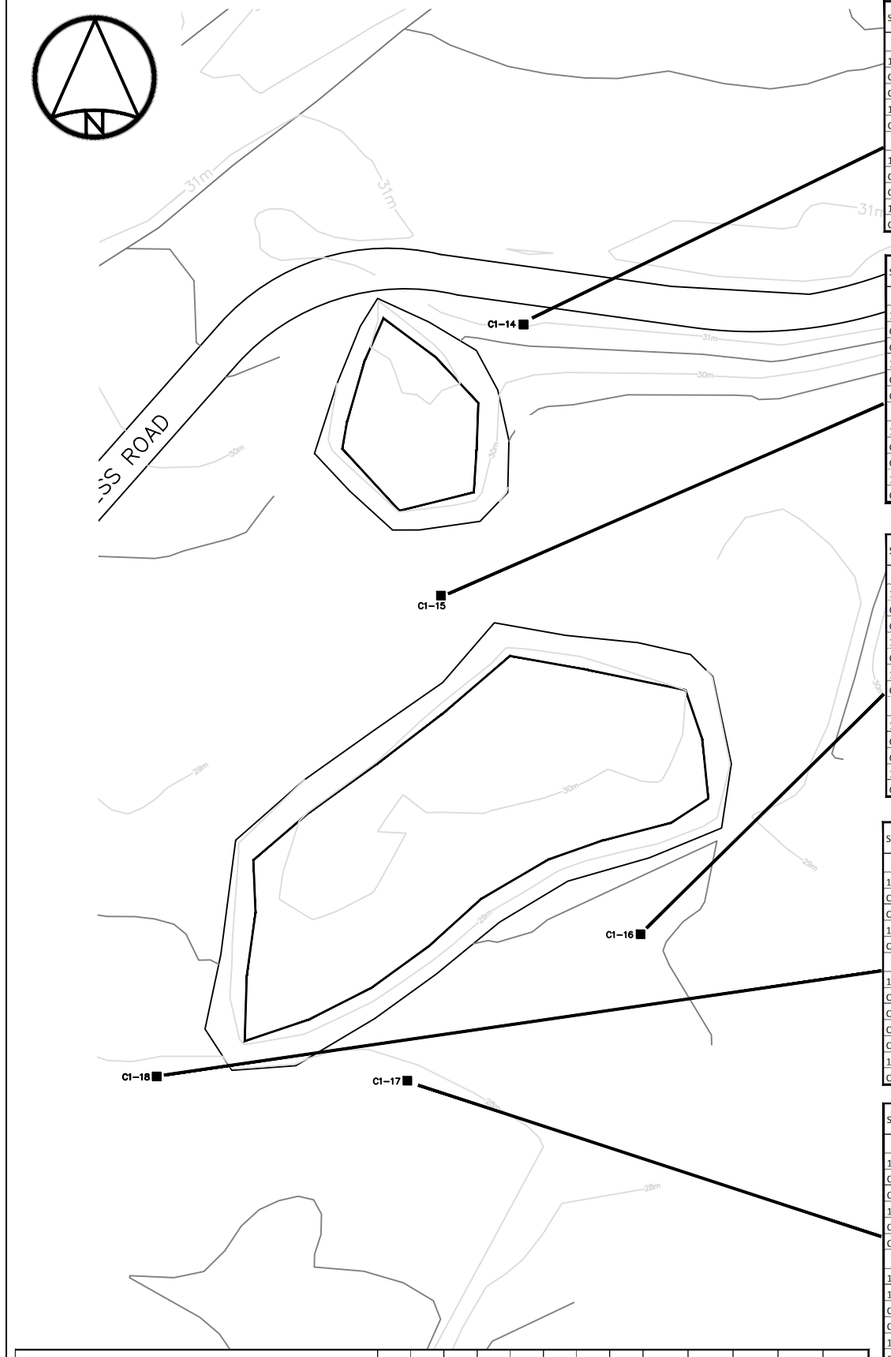
CAM-1, JENNY LIND ISLAND, NU

SOUTHEAST LANDFILL 2019 VISUAL INSPECTION

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FIGURE CAM-1.7A



Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2* C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
C1-14 surface - upgradient																		
10-16647	C1-14	2010	1	Phase I	0-10	**4.8**	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	<4	<9	10
C112-14A	C1-14	2012	3	Phase I	0-15	**3.0**	N/A	2.9	<1	<5	**18.0**	1.7	<10	<0.01	<12	<10	<10	N/A
C114-14A	C1-14	2014	5	Phase I	0-15	1.8	<0.01	2.2	0.9	1.7	<5	1.2	3.0	<0.10	<10	<50	<50	<100
16-C1-14A	C1-14	2016	7	Phase II	0-15	**3.5**	<0.05	3.6	1.1	1.9	7.6	2.1	<10	<0.01	<12	<10	<50	<50
C1-14A	C1-14	2019	10	Phase II	0-15	**2.9**	<0.050	2.3	0.81	1.6	7.1	1.2	3.3	<0.01	<7.0	<4.0	<8.0	<6.0
C1-14 depth - upgradient																		
10-16649	C1-14	2010	1	Phase I	30-50	1.6	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	<4	<9	<8
C112-14B	C1-14	2012	3	Phase I	40-50	1.6	N/A	2.3	<1	<5	2.9	3.3	<10	<0.01	<12	<10	<10	N/A
C114-14B	C1-14	2014	5	Phase I	40-50	**2.2**	<0.01	7.6	1.5	1.5	5.5	3.6	4.0	<0.10	<10	<50	<50	<100
16-C1-14B	C1-14	2016	7	Phase II	40-50	**2.3**	<0.05	2.5	0.77	1.3	4.2	1.6	<10	<0.01	<12	<10	<50	<50
C1-14B	C1-14	2019	10	Phase II	40-50	**2.9**	<0.050	1.5	0.82	1.6	9.4	1.3	1.7	<0.01	<7.0	<4.0	<8.0	<6.0

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2* C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
C1-15 surface - downgradient																		
10-16651	C1-15	2010	1	Phase I	0-10	1.6	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	<4	10	10
C112-15A	C1-15	2012	3	Phase I	0-15	1.6	N/A	2.2	<1	<5	4.5	1.3	<10	<0.01	<12	<10	<10	N/A
C114-15A	C1-15	2014	5	Phase I	0-15	**1.9**	<0.01	2.5	1.0	2.4	<5	1.3	4.0	<0.10	<10	<50	<50	<100
16-C1-15A	C1-15	2016	7	Phase II	0-15	**2.2**	<0.05	2.7	0.76	1.9	3.3	1.5	<10	<0.01	<12	<10	<50	<50
C1-15A	C1-15	2019	10	Phase II	0-15	1.6	<0.050	1.8	0.65	1.4	2.8	1.1	2.2	<0.01	<7.0	<4.0	<8.0	<6.0
C1-39 (dup)	C1-15	2019	10	Phase II	0-15	1.7	<0.050	2.0	0.77	1.6	3.0	1.6	3.0	<0.01	<7.0	<4.0	<8.0	<6.0
C1-15 depth - downgradient																		
10-16653	C1-15	2010	1	Phase I	30-50	1.8	<1	<20	<5	**3.2**	<10	<5	<15	<0.003	<10	4	12	11
C112-15B	C1-15	2012	3	Phase I	40-50	1.5	N/A	1.5	<1	<5	3.3	1.1	<10	<0.01	<12	<10	<10	N/A
C114-15B	C1-15	2014	5	Phase I	40-50	1.3	<0.01	2.0	1.1	1.8	<5	1.1	3.0	<0.10	<10	<50	<50	<100
16-C1-15B	C1-15	2016	7	Phase II	40-50	**2.1**	<0.05	2.9	0.76	1.9	2.9	1.4	<10	<0.01	<12	<10	<50	<50
C1-15B	C1-15	2019	10	Phase II	40-50	**2.1**	<0.050	1.5	0.54	1.9	3.3	1.0	2.2	<0.01	<7.0	<4.0	<8.0	<6.0

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2* C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
C1-16 surface - downgradient																		
10-16655	C1-16	2010	1	Phase I	0-10	<1	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	5	16	11
C112-16A	C1-16	2012	3	Phase I	0-15	<1	N/A	1.6	<1	<5	1.8	<1	<10	<0.01	<12	<10	<10	N/A
C114-16A	C1-16	2014	5	Phase I	0-15	0.7	0.02	1.4	0.4	<1	<4.9	<0.5	2.0	<0.10	<10	<50	<50	<100
16-C1-16A	C1-16	2016	7	Phase II	0-15	<1	<0.05	1.5	<0.5	<1	2.0	<1	<10	<0.01	<12	<10	<50	<50
C1-DUP5 (Dup)	C1-16	2016	7	Phase II	0-15	<1	<0.05	1.9	0.69	<1	1.8	1.0	<10	<0.01	<12	<10	<50	<50
16-C1-16A (Interlab)	C1-16	2016	7	Phase II	0-15	0.97	0.022	1.8	0.63	1.0	1.8	0.94	2.8	<0.05	<10	<20	<20	<20
C1-16A	C1-16	2019	10	Phase II	0-15	<1.0	<0.050	2.6	<0.50	2.0	1.1	<1.0	1.8	<0.01	<7.0	<4.0	<8.0	<6.0
C1-16 depth - downgradient																		
10-16657	C1-16	2010	1	Phase I	30-50	1.2	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	4.3	<9	10
C112-16B	C1-16	2012	3	Phase I	40-50	1.4	N/A	1.3	<1	<5	4.6	<1	<10	<0.01	<12	**13**	**19**	N/A
C114-16B	C1-16	2014	5	Phase I	40-50	1.2	0.02	1.8	0.6	1.7	<4.9	1.2	2.0	<0.10	<10	<50	<50	<100
16-C1-16B	C1-16	2016	7	Phase II	40-50	<1	<0.05	1.5	<0.5	<1	2.5	<1	<10	<0.01	<12	<10	<50	<50
C1-16B	C1-16	2019	10	Phase II	40-50	1.6	<0.050	1.4	<0.50	1.6	4.9	1.0	1.3	<0.01	<7.0	<4.0	<8.0	<6.0

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2* C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
C1-17 surface - downgradient																		
10-16659	C1-17	2010	1	Phase I	0-10	1.3	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	<4	<9	8.1
C112-17A	C1-17	2012	3	Phase I	0-15	1.0	N/A	1.8	<1	<5	2.2	1.2	<10	<0.01	<12	<10	<10	N/A
C114-17A	C1-17	2014	5	Phase I	0-15	0.7	0.01	1.7	0.6	1.4	<4.9	0.8	3.0	<0.10	<10	<50	<50	<100
16-C1-17A	C1-17	2016	7	Phase II	0-15	**2.3**	<0.05	1.8	<0.5	1.3	5.6	<1	<10	<0.01	<12	<10	<50	<50
C1-17A	C1-17	2019	10	Phase II	0-15	1.3	<0.050	1.7	0.57	1.5	3.0	1.1	**37.0**	<0.01	<7.0	<4.0	<8.0	<6.0
C1-17 depth - downgradient																		
10-16661	C1-17	2010	1	Phase I	30-50	**2.2**	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	5.6	<9	<8
C112-17B	C1-17	2012	3	Phase I	40-50	**14.0**	N/A	1.9	1.2	**5.5**	**41.0**	1.9	<10	<0.01	<12	<10	<10	N/A
C114-17B	C1-17	2014	5	Phase I	40-50	**2.7**	0.04	2.9	0.9	2.4	8.7	1.9	3.0	<0.10	<10	<50	<50	<100
C114-BD8 (Dup)	C1-17	2014	5	Phase I	40-50	**2.3**	0.03	1.6	0.6	1.4	7.9	<0.5	1.0	<0.10	<10	<50	<50	<100
C114-17B (Interlab)	C1-17	2014	5	Phase I	40-50	**2.1**	<0.1	4.2	<1	<5	6.8	2.0	<10	<0.01	<12	<10	<50	N/A
16-C1-17B	C1-17	2016	7	Phase II	30-35	**2.4**	<0.05	1.7	0.62	1.8	7.9	<1	<10	<0.01	<12	<10	<50	<50
C1-17B	C1-17	2019	10	Phase II	30-40	**2.7**	<0.050	1.8	0.63	2.4	8.2	1.1	1.7	<0.01	<7.0	<4.0	11	<6.0

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2* C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
C1-18 surface - downgradient																		
10-16663	C1-18	2010	1	Phase I	0-10	<1	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	<4	<9	<8
C112-18A	C1-18	2012	3	Phase I	0-15	<1	N/A	1.6	<1	<5	1.4	1.7	<10	<0.01	<12	<10	<10	N/A
C114-18A	C1-18	2014	5	Phase I	0-15	0.6	0.02	1.5	0.5	1.2	<5	1.0	3.0	<0.10	<10	<50	<50	<100
16-C1-18A	C1-18	2016	7	Phase II	0-15	<1	<0.05	1.6	<0.5	<1	1.1	<1	<10	<0.01	<12	<10	<50	<50
C1-18A	C1-18	2019	10	Phase II	0-15	<1.0	<0.050	1.5	<0.50	2.2	1.9	<1.0	2.4	<0.01	<7.0	<4.0	11	<6.0
C1-37 (dup)	C1-18	2019	10	Phase II	0-15	<1.0	<0.050	1.3	<0.50	<1.0	1.3	<1.0	2.2	<0.01	<7.0	<4.0	10	<6.0
C1-18 depth - downgradient																		
10-16665	C1-18	2010	1	Phase I	30-50	<1	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	4.7	<9	<8
10-16666 (Dup)	C1-18	2010	1	Phase I	30-50	<1	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	<4	11	<8
C112-18B	C1-18	2012	3	Phase I	40-50	<1	N/A	1.0	<1	<5	<1	<1	<10	<0.01	<12	<10	<10	N/A
C114-18B	C1-18	2014	5	Phase I	40-50	0.5	<0.01	1.6	0.4	<1	<4.9	0.5	2.0	<0.10	<10	<50	<50	<100
16-C1-18B	C1-18	2016	7	Phase II	40-50	<1	<0.05	1.6	<0.5	<1	1.1	<1	<10	<0.01	<12	<10	<50	<50
C1-18B	C1-18	2019	10	Phase II	40-50	<1.0	<0.050	1.4	<0.50	<1.0	1.1	<1.0	1.8	<0.01	<7.0	<4.0	8.2	<6.0

CAM-1 Southeast Landfill	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2* C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
Background Data - Arithmetic Mean	3.3	1.0	20.0	5.0	11.3	10.0	5.0	15.0	0.10	N/A	N/A	N/A	N/A
Baseline Data - Arithmetic Mean	**1.9**	**1.0**	**20.0**	**5.0**	**3.2**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**10.0**	**18.9**	**13.8**
Baseline Data - Standard Deviation	2.0	0.0	0.0	0.0	2.3	0.0	0.0	0.0	0.00	0.0	0.0	12.6	7.1
Baseline Data Mean + 3x Standard Deviation	**7.9**	**1.0**	**20.0**	**5.0**	**10.0**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**10.0**	**56.6**	**35.0**

** If baseline or background arithmetic mean was below the detection limit, the mean has been modified to match the detection limit value.*

LEGEND

- MONITORING SOIL SAMPLE LOCATION
- TOP OF LANDFILL
- TOE OF LANDFILL

XX	Sample exceeds baseline mean
XX	Sample exceeds baseline mean + 3x SD

Meters
10 0 10 20
1:800

NO.	VERSION	DATE	PAR	VERIF.	APPR.
2	FINAL	2020.04.17	*RF*	*TA*	*CG*

Construction de Défense Canada
Defence Construction Canada

COLLECTION OF LANDFILL MONITORING DATA

CAM-1, JENNY LIND ISLAND, NU

SOUTHEAST LANDFILL 2019 SOIL ANALYTICAL RESULTS

ARCADIS
1050 Morrison Drive, Suite 201, Ottawa, Ontario, K2H 8K7
Office General +1 613 721 0555

MEASUREMENT UNIT	SCALE	DATE (Month-Year)
Metre	1 : 800	MARCH 2020
DRAWN BY: *R. FLETCHER*	VERIF. BY: *T. AUSTRINS, P.ENG*	APPROVED BY: *C. GRAVELLE, P.ENG*
PROJECT NO: 30000251	DRAWING NO: 30000251-CAM-1.7	PAGE: PL

FIGURE CAM-1.7B

9 CAM-1: MAIN LANDFILL

9.1 Landfill Description

The Main Landfill is located at the terminus of a road heading east from the station infrastructure pad; located approximately 75 m to the southwest of the Station East landfill. This landfill consists of one main regrade area with a footprint of approximately 12,500 m^2. The final cover extends approximately 0.75 to 1 m above the surrounding grade.

The remediation of this landfill included the removal of Tier II contaminated soil and surface debris and regrading with the placement of additional granular fill. No instrumentation is installed at this landfill.

The long-term monitoring plan for the Main Landfill consists of visual inspection, and the periodic collection of soil samples. The Main Landfill layout, visual observations and photographic locations are presented on **Figure CAM-1.8A** and soil analytical results are presented on **Figure CAM-1.8B**, both located at the rear of this section.

9.2 Summary of Work Conducted

9.2.1 Visual Inspection

A visual inspection was completed at the Main Landfill August 26, 2019. The visual inspection of the landfill was completed with no deviations from the visual inspection work plan.

9.2.2 Soil Sampling

Soil sampling at the Main Landfill was conducted on August 26, 2019 and consisted of the collection of eight soil samples from four soil sample stations (C1-23, C1-24, C1-25, and C1-26). Depth limitations were encountered at soil sampling station C1-23, where refusal on bedrock limited the depth sample from 0.15 to 0.25 metres below ground surface; C1-25 where refusal on bedrock limited the depth sample from 0.25 to 0.37 metres below ground surface; and C1-26 where refusal on bedrock limited the depth sample from 0.25 to 0.35 metres below ground surface.

Duplicate samples collected at this landfill are as follows and are discussed further in Appendix C:

- C1-23A = duplicate C1-38, and
- C1-26B = duplicate C1-42

Table 9-1: Summary of Work Conducted by Soil Sampling Location – Main Landfill

Sample Location	Sample ID	Sample Depth (m bgs)	Notes
C1-23 (up-gradient)	C1-23A	0 - 0.15	Yellowish orange sand and gravel, moist, no odour
	C1-23B	0.15 – 0.25	Yellowish orange sand and gravel, moist, no odour
C1-24 (down-gradient)	C1-24A	0 - 0.15	Dark brown gravelly sand, moist, no odour
	C1-24B	0.4 – 0.5	Dark brown gravelly sand, moist, no odour
C1-25 (down-gradient)	C1-25A	0 - 0.15	Brown sand and gravel, moist, no odour
	C1-25B	0.25 – 0.37	Brown sand and gravel, moist, no odour

Sample Location	Sample ID	Sample Depth (m bgs)	Notes
C1-26 (down-gradient)	C1-26A	0 - 0.15	Grey sand and gravel, moist, no odour
	C1-26B	0.25 – 0.35	Grey sand and gravel, moist, no odour

9.2.3 Groundwater Sampling

Groundwater monitoring wells are present at the Main Landfill; therefore, no groundwater sampling was completed as part of the 2019 monitoring program.

9.2.4 Thermal Monitoring

No thermistors are present at the site; therefore, no thermal monitoring was completed as part of the 2019 monitoring program.

9.3 Results of the Monitoring Program

The following Sections 9.3.1 through 9.3.2 summarize the results of the CAM-1 monitoring program at the Main Landfill.

9.3.1 Visual Inspection

The visual inspection was conducted in compliance with Section 5.2 of the TOR and details are provided below in the following Sections 9.3.1.1 through 9.3.1.5. **Figure CAM-1.8A** presents the visual inspection findings and photographic locations.

9.3.1.1 Inspection Checklist

The visual inspection was completed as per the TOR and the checklist is included in the Table found below.

Table 9-2: Visual Inspection Checklist – Main Landfill

SITE NAME: CAM-1 Jenny Lind Island
LANDFILL DESIGNATION: Main Landfill LANDFILL TYPE: Regraded DATE OF INSPECTION: 26 August 2018 WEATHER CONDITIONS: Sunny, winds from south, ~12 ° C
DATE OF PREVIOUS INSPECTION: 11 August 2016
INSPECTED BY: Troy Austrins, P.Eng.
REPORT PREPARED BY: Troy Austrins, P.Eng. The inspector represents to the best of their knowledge that the following statements and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.

Tale 9-2: Visual Inspection Checklist- MAIN LANDFILL

Checklist Item	Present (Yes/No)	Feature Number	Feature Location	GPS Coordinates Easting/Northing/Zone		Length (m)	Width (m)	Depth (m)	Extent Relative to Landfill Surface	Description	Comparison with Historical Observations	Additional Comments/ Severity Rating	Photographic Records (photo reference, location, view point & direction, feature of note, scale)
Settlement	Yes	A1 A2 A3	Northwest and north landfill cover	389646.002 / 7620710.908 389649.419 / 7620705.317 389633.266 / 7620680.777	14	1.0 1.0 0.6	0.4 0.2 0.2	0.1 0.05 0.05	<1%	Three very minor depressions on landfill cover and side slope	First noted in Year 3 (2012). Formerly identified as Feature C in Years 2012 and 2013. No significant changes observed between 2014, 2016 and 2019.	Acceptable (features are minor and not affecting landfill stability)	CAM-1 MAIN 3 CAM-1 MAIN 44 CAM-1 MAIN 45
Settlement	Yes	B1 B2	Southwest cover and side slope	389619.185 / 7620631.353 389654.493 / 7620629.976	14	0.5 1.0	0.2 0.3	0.05 0.05	<1%	Two minor depressions	First noted in Year 3 (2012). No significant changes from 2014, 2016 to 2019.	Formerly identified as part of Feature C in Years 2012 and 2013. One new depression noted in 2014. Severity Rating – Acceptable (features are minor and not affecting landfill stability)	CAM-1 MAIN 46, CAM-1 MAIN 19
Settlement	Yes	C1 C2 C3	Southeast cover and side slope	389685.013 / 7620588.151 389730.663/ 7620617.105 389734.432 / 7620613.660	14	0.6 3 3	0.3 0.3 0.2	0.05 0.1 0.1	<1%	Three minor depressions	First noted in Year 5 (2014). No significant change from 2016 to 2019.	Acceptable (features are minor and not affecting landfill stability)	CAM-1 MAIN 22, 23, 24 CAM-1 MAIN 32, CAM-1 MAIN 31
Settlement	Yes	H	West cover	389620.080 / 7620633.946	14	0.4	0.6	0.05	<1%	One minor depression	No significant change from 2016	Acceptable (feature is minor and not affecting landfill stability)	CAM-1 MAIN 46
Settlement	Yes	I1 I2 (NEW)	Southwest cover	389651.424 / 7620632.975 389645.022 / 7620636.235	14	0.3 0.9	0.3 0.3	0.05 0.05	<1%	One minor depression (I1); one New minor depression (I2)	No significant change for Feature I1- Feature I2 is a New Observation.	Acceptable (features are minor and not affecting landfill stability)	CAM-1 MAIN 19 CAM-1 MAIN 47
Settlement	Yes	J1 J2 J3	South cover	389693.586 / 7620605.705 Not Observed 389690.354 / 7620598.200	14	0.2 N/A 0.2	0.2 N/A 0.2	0.1 N/A 0.1	<1%	Three minor depressions originally; only two observed in 2019	First noted in 2016. No significant change to two features. Feature J2 not observed in 2019.	Acceptable (features are minor and not affecting landfill stability)	CAM-1 MAIN 48 CAM-1 MAIN 48 CAM-1 MAIN 48
Erosion	Yes	D	Northwest side slope and corner	389626.818 / 7620697.096	14	27	0.4	0.05	<1%	One area of minor erosion along toe and side slopes. Washing of fines from seasonal ponding beach formation along toe of slope.	First noted in Year 2 (2011) as Feature A. Subsequently changed to Feature D in 2012-2014. One new area on northwest side slope noted in 2014. Identified as 3 areas of erosion in 2014, was observed as one continuous area of erosion in 2016. No significant change since 2016.	Severity Rating – Acceptable (feature is minor and not affecting landfill stability).	CAM-1 MAIN 6, 4, 5, 7, 8
Erosion	Yes	E1 E2 E3	Southwest toe and side slope	389647.794 / 7620629.402 389646.738 / 7620632.478 389658.529 / 7620621.342	14	24 2.5 2.5	0.4 0.2 0.2	0.05 0.01 0.01	<1%	One area of minor erosion along slope toe from washing of fines from seasonal ponding beach formation, two areas of very minor erosion on side slopes.	First noted in Year 2 (2011). Subsequently changed to Feature E in 2012-2014. Two areas on southwest side slope noted in Year 3. Marginal increase in depth of feature in 2014. No significant change from 2016 in 2019.	Severity Rating – Acceptable (feature is minor and not affecting landfill stability)	CAM-1 MAIN 17, 19, 15 CAM-1 MAIN 16 CAM-1 MAIN 18
Erosion	Yes	F1 F2 F3	Northeast corner side slope, corner and toe	Not Observed 389696.001 / 7620717.167 389698.990 / 7620713.076	14	N/A 1.0 20	N/A 1.0 2.0	N/A 0.05 0.05	<1%	Two areas of minor erosion on landfill corner, side slope and toe. Minor erosion along slope toe from	First noted in Year 2 (2011). No significant change between 2011 and 2014. First noted as Feature C in 2011, then Feature F in 2012-2014. New area on corner	Severity Rating – Acceptable (features are minor and not affecting landfill stability)	CAM-1 MAIN 42 CAM-1 MAIN 41 CAM-1 MAIN 41

Tale 9-2: Visual Inspection Checklist- MAIN LANDFILL												
Checklist Item	**Present (Yes/No)**	**Feature Number**	**Feature Location**	**GPS Coordinates Easting/Northing/Zone**	**Length (m)**	**Width (m)**	**Depth (m)**	**Extent Relative to Landfill Surface**	**Description**	**Comparison with Historical Observations**	**Additional Comments/ Severity Rating**	**Photographic Records (photo reference, location, view point & direction, feature of note, scale)**
									washing of fines from seasonal ponding beach formation. Feature F1 not observed in 2019.	noted in 2014. Erosion at toe has lengthened from 18 to 30 m between 2014 and 2016. Length reduced to 20 m in 2019.		
Lateral Movement	No											
Frost Action	No											
Sloughing	No											
Cracking	No											
Animal Burrows	No											
Vegetation Establishment	Yes	K1	Sparse vegetation on some landfill side slopes	389644.938 / 7620711.401	14	4	3	0.05	<1%	Isolated small grass tufts on landfill side slopes; five sub-features were identified	No significant change from 2016.	Severity Rating – Acceptable (vegetation establishment will be beneficial for landfill stability)	CAM-1 MAIN 3
		K2		389634.299 / 7620681.679		1	1	0.05				CAM-1 MAIN 45
		K3		389637.339 / 7620632.537		3	3	0.05				CAM-1 MAIN 15
		K4		389651.355 / 7620629.666		3	2	0.05				CAM-1 MAIN 16
		K5		389658.724 / 7620620.863		3	3	0.05				CAM-1 MAIN 18
Staining	No											
Vegetation Stress	No											
Seepage Points (or) Ponded Water	No											
Debris and/or Liner Exposed	No											
Presence & Condition of Monitoring Instruments	No											
Features of Note/Other Relevant Observations (e.g., signs of activity, ruts…)	Yes	G	Central cover of landfill (Discolouration)	389683.143 / 7620647.784	14	30	25	N/A	2%	Thinning of white granular cover exposes brown soil underneath causing discolouration.	First noted in Year 3 (2012). No significant change since 2012 although now re-classified as Other (Discolouration) rather than Staining.	Severity Rating – Acceptable (discolouration believed to be a result of different borrow source material)	CAM-1 MAIN 28, 29
Features of Note/Other Observations	Yes	L	South cover (Vehicle Ruts)	389691.621 / 7620597.871	14	12	0.2	0.05	<1%	Linear vehicle ruts	Formerly labelled as Feature J (Linear depression/ settlement-vehicle ruts). No significant change.	Acceptable (feature is minor and not affecting landfill stability)	CAM-1 MAIN 48

9.3.1.2 Preliminary Stability Assessment

The Preliminary Stability Assessment for the Main Landfill was conducted on August 26, 2019 as per the TOR and the results are provided on the table below.

Table 9-3: Preliminary Stability Assessment – Main Landfill

Main Landfill		
Feature	**Severity Rating**	**Extent**
Settlement	Acceptable	Occasional
Erosion	Acceptable	Occasional
Lateral Movement	Not Observed	None
Frost Action	Not Observed	None
Sloughing	Not Observed	None
Cracking	Not Observed	None
Animal Burrows	Not Observed	None
Vegetation Establishment	Acceptable	Occasional
Staining	Not Observed	None
Vegetation Stress	Not Observed	None
Seepage / Ponded Water	Not Observed	None
Debris and/or Liner Exposure	Not Observed	None
Other	Acceptable (Discolouration) Acceptable (Vehicle Ruts)	Isolated Isolated
Overall Landfill Performance	**Acceptable**	

Note: please refer to Performance/Severity rating reference guide in Section 2.1.3.1 above.

9.3.1.3 Photographic Records

The detailed photographic record for the Main Landfill has been completed as per Section 5.5 of the TOR and is included as **Appendix H**. The Photographic Record only contains an index of photographs collected; full sized photographs are contained in the separately appended CD/DVD-ROM. **Figure CAM-1.8A** illustrates the photograph locations and directions.

9.3.1.4 Trend Analysis

A trend analysis was conducted with regards to observations made during the visual inspection of the Main Landfill. The following Table 9-4: outlines the results of the visual trend analysis.

Table 9-4: Visual Inspection Trends – Main Landfill

Main Landfill		
Checklist Item	Feature Number	Comparison with Historical Observations
Settlement	A – three minor depressions	No significant change.
	B – two minor depressions	No significant change.
	C – three very minor depressions	No significant change.
	H – minor depression	No significant change.
	I – two minor depressions	No significant change for Feature I1. Feature I2 is new in 2019.
	J – three minor depressions	No significant change for J1 and J3. Feature J2 not observed in 2019.
Erosion	D - erosion	No significant change.
	E – three erosion features	No significant change.
	F – three erosion features	Feature F1 not observed. Feature F2 has no significant change. Length reduction for Feature F3.
Vegetation Establishment	K- vegetation	Sparse vegetation observed in 2019.
Other	G – discolouration (thin granular cover exposing brown soil beneath)	No significant change.
	L – vehicle ruts	No significant change.

9.3.1.5 Discussion of Results/Trends

One new minor feature was observed in 2019 (Feature I2). Other features of vehicle ruts and discolouration remain unchanged from 2016. Features F1 and J2 were not observed in 2019. Some sparse vegetation establishment was observed, generally on the side slopes of the landfill. The presence of vegetation is expected to benefit the stability of the landfill. Otherwise, a comparison of the visual inspection results of the 2016 and 2019 monitoring events at the Main Landfill indicates that previously observed minor

settlement and erosion features have not undergone any significant changes. The findings from the visual assessment do not indicate any issue with the stability of the landfill.

9.3.2 Soil Sampling

Soil sampling of the Main Landfill was conducted on August 26, 2019. The soil sampling was conducted in compliance with Section 5.3.1 and 5.3.2 of the TOR and details are provided below in the following Sections 9.3.2.1 through 9.3.2.3.

9.3.2.1 Laboratory Analytical Results

A total of ten soil samples (including two duplicates) were analysed from four soil sample locations at the Main Landfill and analysed for inorganic elements (arsenic, cadmium, chromium, cobalt, copper, nickel, and zinc), polychlorinated biphenyls (PCBs), and Petroleum Hydrocarbons (PHC F1, F2, F3, and F4).

The full current and historical analytical results are presented in **Table 7** in the Tables section of this report immediately following the main text. The laboratory certificates of analysis and chain of custody forms are presented in **Appendix B** of this report. **Figure CAM-1.8B** presents a summary of soil analytical results.

9.3.2.2 Summary of Soil Results

The soil results for 2019 are presented in the following table. The background and baseline mean are presented for information purposes. The discussions are focused on the comparison of the results to the BL+3SD.

Table 9-5: Evaluation of Results by Parameter – Main Landfill

Parameter	Background (mg/kg)	Baseline Mean (mg/kg)	Baseline Mean+3SD (mg/kg)	Discussion of Results
Arsenic (As)	3.3	5.4	22.0	Upgradient samples from C1-23 surface and depth exceeded the BL+3SD at 25 and 26 mg/kg, respectively. All remaining downgradient results were below the BL+3SD.
Cadmium (Cd)	1.0	1.0	1.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
Chromium (Cr)	20.0	20.0	20.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
Cobalt (Co)	5.0	5.0	5.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
Copper (Cu)	11.3	5.6	20.9	All soil sample results were below the BL+3SD at upgradient and downgradient locations.

Parameter	Background (mg/kg)	Baseline Mean (mg/kg)	Baseline Mean+3SD (mg/kg)	Discussion of Results
Lead (Pb)	10.0	10.0	10.0	Upgradient samples from C1-23 surface and depth exceeded the BL+3SD at 39 and 33 mg/kg respectively and also exceeded the 3 times the baseline mean. All downgradient results were below the BL+3SD
Nickel (Ni)	5.0	5.0	5.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
Zinc (Zn)	15.0	15.0	15.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
PCBs (Total)	0.1	0.1	0.1	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
F1 (C_6-C_{10})	N/A	10.0	10.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
F2 (C_{10}-C_{16})	N/A	10.0	10.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
F3 (C_{16}-C_{34})	N/A	54.8	157.2	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
F4 (C_{34}-C_{50})	N/A	45.0	135.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.

Note: BL+3SD = baseline data mean + 3x standard deviations. Soil concentrations are shown are in mg/kg.

9.3.2.3 Discussion of Soil Results

Based on a visual comparison of upgradient and downgradient data on the graphs, downgradient concentrations were of similar concentrations to both historical monitoring events and/or upgradient sample locations, with the exceptions noted below. Overall, this is suggestive of what would be expected of natural variability when comparing upgradient and downgradient sample locations.

The concentrations of arsenic at upgradient sample C1-23 at surface and depth exceeded the BL+3SD at 25 mg/kg (with 22 mg/kg at its duplicate) and 26 mg/kg, respectively. These concentrations were similar to those observed in previous monitoring events and within what could be considered as natural variability. The concentrations detected were well below the DEW Line site specific arsenic clean-up criterion of 40 mg/kg. These arsenic exceedances were therefore not considered a concern at this time.

Lead was detected at upgradient sample C1-23 at surface (39 mg/kg; duplicate at 32 mg/kg) and at depth (33 mg/kg) in concentrations greater than the BL+3SD. These concentrations are well below the DEW Line Tier I and Tier II lead criteria of 200 mg/kg and 500 mg/kg, respectively. The concentrations at depth were similar to concentrations observed in previous monitoring years and within what could be considered natural

variability although it's worth noting that the depth sample was collected at a shallow depth (maximum 0.25 m) due to refusal. Additionally, the lead concentrations were observed at an up-gradient location but not at any down-gradient locations in 2019. These lead exceedances were therefore not considered a concern at this time.

Overall, the downgradient soil results from 2019 are comparable to the results from the previous monitoring events and were below the BL+3SD concentrations; therefore, there is no indication of contaminant migration from the landfill at this time. It should be noted that there are insufficient data points at this time to determine trends in the soil concentrations. The environmental performance of the landfill should be re-evaluated once seven years of data are available. Plots of soil data gathered to date are provided in **Appendix D9** for the Main Landfill.

9.4 Conclusions and Overall Landfill Performance

Based on review and analysis of chemical data, it appears that the soil concentrations for arsenic at the upgradient sample location are elevated when compared to downgradient sample locations; however, both remain well below the CAM-1, site-specific, DEW Line clean-up criteria and are not considered a concern at this time. Lead concentrations detected at upgradient sampling locations were similar to concentrations observed in previous monitoring years and within what could be considered natural variability. These lead exceedances were therefore not considered a concern at this time.

A review of the analytical data indicates that the landfill is performing as intended and there is no indication of contaminant migration from the landfill at this time.

Based on the results of the 2019 monitoring program, the overall performance of the Main Landfill is acceptable.

9.5 Recommendations

Soil concentration parameters for arsenic and lead at the upgradient sample location should continue to be examined in the next monitoring events.

Based on this review, it is recommended to continue the long-term monitoring of soils as planned.

Based on the results of the visual inspection, the Main Landfill performance is acceptable. No remedial work or deviations from the monitoring plan are recommended at this time.

BM–4

C1–23

7 620 700 N

MAIN LANDFILL
LOBES 1 AND 2

FEATURE F1
NOT OBSERVED 2019

FEATURE F
EROSION

WEST SIDE OF STATION EAST LANDFILL

FEATURE D
EROSION

FEATURE K
SPARSE VEGETATION

FEATURE G
OTHER (DISCOLOURATION)

28m

29m

27m

389 750 E

FEATURE B
SETTLEMENT

FEATURE H
SETTLEMENT

FEATURE I
SETTLEMENT

FEATURE K
SPARSE VEGETATION

C1–26

C1–24

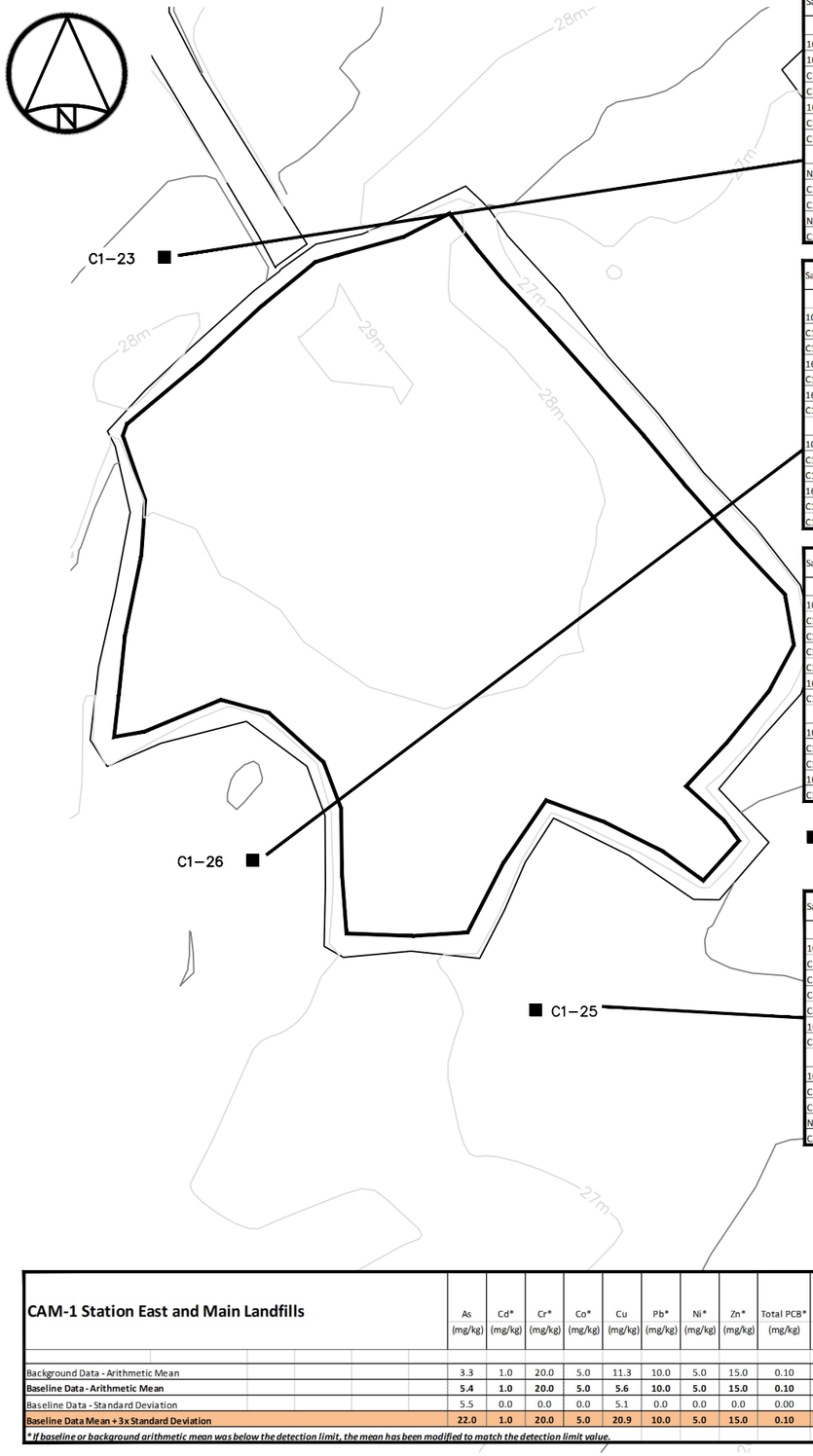
FEATURE J
SETTLEMENT

FEATURE L
OTHER (VEHICLE RUTS)

389 600 E

C1–25

FEATURE C
SETTLEMENT



Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2* C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
C1-23 surface - upgradient																		
10-16667	C1-23	2010	1	Phase I	0-10	**42.2**	<1	<20	<5	4.1	**50.0**	<5	<15	<0.003	<10	4.1	9.1	<8
10-16668 (Dup)	C1-23	2010	1	Phase I	0-10	**27.7**	<1	<20	<5	3.1	**33.0**	<5	<15	<0.003	<10	4.2	<9	<8
C112-23A	C1-23	2012	3	Phase I	0-15	**38.0**	N/A	1.9	1.4	<5	**42.0**	2.6	<10	<0.01	<12	<10	<10	N/A
C114-23A	C1-23	2014	5	Phase I	0-15	**39.4**	0.05	1.7	1.9	5.2	**67.0**	2.5	1.0	<0.10	<10	<50	<50	<100
16-C1-23A	C1-23	2016	7	Phase II	0-15	**19.0**	<0.05	7.2	1.0	2.4	**56.0**	1.6	**32.0**	<0.01	<12	<10	<50	<50
C1-23A	C1-23	2019	10	Phase II	0-15	**25.0**	<0.050	1.6	1.0	3.8	**39.0**	1.8	3.8	<0.01	<7.0	<4.0	12	<6.0
C1-38 (dup)	C1-23	2019	10	Phase II	0-15	**22.0**	<0.050	1.5	0.97	3.3	**32.0**	1.6	3.2	<0.01	<7.0	<4.0	16	<6.0
C1-23 depth - upgradient																		
Not sampled - refusal	C1-23	2010	1	Phase I														
C112-23B	C1-23	2012	3	Phase I	40-50	**39.0**	N/A	1.6	1.2	<5	**42.0**	2.0	<10	<0.01	<12	<10	12	N/A
C114-23B	C1-23	2014	5	Phase I	40-50	**25.9**	0.03	1.6	1.3	4.1	**45.4**	1.8	1.0	<0.10	<10	<50	<50	<100
Not sampled - refusal	C1-23	2016	7	Phase II														
C1-23B	C1-23	2019	10	Phase II	15-25	**26.0**	<0.050	1.7	1.6	5.0	**33.0**	1.9	7.5	<0.01	<7.0	<4.0	<8.0	<6.0

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2* C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
C1-26 surface - downgradient																		
10-16677	C1-26	2010	1	Phase I	0-10	1.1	<1	**29.0**	<5	<3	<10	**16.2**	<15	<0.003	<10	<4	<9	<8
C112-26A	C1-26	2012	3	Phase I	0-15	1.5	N/A	3.4	<1	<5	3.9	1.6	<10	<0.01	<12	<10	<10	N/A
C114-26A	C1-26	2014	5	Phase I	0-15	1.7	0.03	4.2	1.2	1.4	5.6	0.7	7.0	<0.10	<10	<50	<50	<100
16-C1-26A	C1-26	2016	7	Phase II	0-15	1.4	<0.05	3.7	0.79	1.5	4.5	1.5	<10	<0.01	<12	<10	<50	<50
C1-DUP7 (Dup)	C1-26	2016	7	Phase II	0-15	1.2	<0.05	3.4	0.7	1.5	4.5	1.3	<10	<0.01	<12	<10	<50	<50
16-C1-26A (Interlab)	C1-26	2016	7	Phase II	0-15	1.73	0.03	3.7	0.87	1.4	4.5	1.5	4.8	<0.05	<10	<20	<20	<20
C1-26A	C1-26	2019	10	Phase II	0-15	1.4	<0.050	3.1	0.67	1.6	5.7	1.2	5.5	<0.01	<7.0	<4.0	**58**	9.4
C1-26 depth - downgradient																		
10-16679	C1-26	2010	1	Phase I	30-50	1.2	<1	<20	<5	3.7	<10	<5	<15	<0.003	<10	<4	<9	<8
C112-26B	C1-26	2012	3	Phase I	40-50	2.2	N/A	3.4	<1	**5.8**	3.7	1.9	<10	<0.01	<12	<10	<10	N/A
C114-26B	C1-26	2014	5	Phase I	40-50	**9.4**	0.03	2.8	1.3	4.0	**18.3**	2.5	3.0	<0.10	<10	<50	<50	<100
16-C1-26B	C1-26	2016	7	Phase II	25-35	2.0	<0.05	3.7	0.83	1.9	4.3	1.8	<10	<0.01	<12	<10	<50	<50
C1-26B	C1-26	2019	10	Phase II	25-35	2.9	<0.050	3.2	0.88	2.2	4.4	1.6	3.1	<0.01	<7.0	<4.0	<8.0	<6.0
C1-42 (dup)	C1-26	2019	10	Phase II	25-35	2.8	<0.050	2.9	0.81	2.0	4.6	1.7	3.2	<0.01	<7.0	<4.0	<8.0	<6.0

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2* C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
C1-24 surface - downgradient																		
10-16669	C1-24	2010	1	Phase I	0-10	2.4	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	7.2	<9	8.5
C112-24A	C1-24	2012	3	Phase I	0-15	2.9	N/A	2.3	<1	<5	5.5	1.0	<10	<0.01	<12	<10	<10	N/A
C114-24A	C1-24	2014	5	Phase I	0-15	5.0	0.07	3.5	0.9	3.5	9.0	1.7	7.0	<0.10	<10	<50	<50	<100
C114-BD10	C1-24	2014	5	Phase I	0-15	2.8	0.02	2.7	0.7	1.3	5.2	0.8	5.0	<0.10	<10	<50	<50	<100
C114-24A (Interlab)	C1-24	2014	5	Phase I	0-15	4.0	<0.1	11.0	<1	<5	4.8	4.8	<10	<0.01	<12	<10	<50	N/A
16-C1-24A	C1-24	2016	7	Phase II	0-15	2.1	<0.05	5.6	<0.5	1.5	4.4	1.1	<10	<0.01	<12	<10	<50	<50
C1-24A	C1-24	2019	10	Phase II	0-15	3.6	<0.050	2.3	0.66	1.8	6.4	1.1	5.0	<0.01	<7.0	<4.0	19	<6.0
C1-24 depth - downgradient																		
10-16671	C1-24	2010	1	Phase I	30-50	3.3	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	4.6	<9	8.6
C112-24B	C1-24	2012	3	Phase I	40-50	**6.4**	N/A	2.7	<1	<5	9.5	1.7	<10	<0.01	<12	<10	<10	N/A
C114-24B	C1-24	2014	5	Phase I	40-50	**7.4**	0.05	3.8	1.3	2.6	**14.0**	1.7	7.0	<0.10	<10	<50	<50	<100
16-C1-24B	C1-24	2016	7	Phase II	40-50	2.9	<0.05	2.2	0.57	1.6	5.6	1.2	<10	<0.01	<12	<10	<50	<50
C1-24B	C1-24	2019	10	Phase II	40-50	**5.9**	<0.050	2.8	0.91	2.5	9.6	1.7	4.2	<0.01	<7.0	<4.0	20	<6.0

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2* C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
C1-25 surface - downgradient																		
10-16673	C1-25	2010	1	Phase I	0-10	1.5	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	<4	<9	<8
C112-25A	C1-25	2012	3	Phase I	0-15	1.7	N/A	2.5	3.8	**34.0**	3.1	1.8	<10	<0.01	<12	<10	<10	N/A
C112-BD6 (Dup)	C1-25	2012	3	Phase I	0-15	1.6	N/A	2.4	3.5	**26.0**	3.4	1.5	<10	<0.01	<12	<10	<10	N/A
C112-25A (Interlab)	C1-25	2012	3	Phase I	0-15	1.8	<0.01	3.3	4.8	**44.0**	4.1	3.0	5.0	<0.10	<10	<50	<50	<100
C114-25A	C1-25	2014	5	Phase I	0-15	1.5	0.03	2.4	0.7	2.3	<4.9	1.4	6.0	<0.10	<10	<50	<50	<100
16-C1-25A	C1-25	2016	7	Phase II	0-15	2.1	0.055	2.4	0.52	3.5	5.5	1.2	<10	<0.10	<12	<10	<50	<50
C1-25A	C1-25	2019	10	Phase II	0-15	1.2	<0.050	2.2	0.51	1.5	3.7	1.3	4.1	<0.01	<7.0	<4.0	13	<6.0
C1-25 depth - downgradient																		
10-16675	C1-25	2010	1	Phase I	30-50	2.6	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	<4	<9	<8
C112-25B	C1-25	2012	3	Phase I	40-50	3.0	N/A	3.7	1.0	5.3	4.6	2.1	<10	<0.01	<12	<10	<10	N/A
C114-25B	C1-25	2014	5	Phase I	40-50	2.8	0.01	3.2	1.1	2.2	<4.9	1.5	3.0	<0.10	<10	<50	<50	<100
Not sampled - refusal	C1-25	2016	7	Phase II														
C1-25B	C1-25	2019	10	Phase II	25-37	2.5	<0.050	3.0	0.86	2.4	3.7	1.7	2.7	<0.01	<7.0	<4.0	8.4	<6.0

CAM-1 Station East and Main Landfills	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2* C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
Background Data - Arithmetic Mean	3.3	1.0	20.0	5.0	11.3	10.0	5.0	15.0	0.10	N/A	N/A	N/A	N/A
Baseline Data - Arithmetic Mean	**5.4**	**1.0**	**20.0**	**5.0**	**5.6**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**10.0**	**54.8**	**45.0**
Baseline Data - Standard Deviation	5.5	0.0	0.0	0.0	5.1	0.0	0.0	0.0	0.00	0.0	0.0	34.1	30.0
Baseline Data Mean + 3x Standard Deviation	**22.0**	**1.0**	**20.0**	**5.0**	**20.9**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**10.0**	**157.2**	**135.0**

** If baseline or background arithmetic mean was below the detection limit, the mean has been modified to match the detection limit value.*

LEGEND

- MONITORING SOIL SAMPLE LOCATION
- TOP OF LANDFILL
- TOE OF LANDFILL

XX	Sample exceeds baseline mean
XX	Sample exceeds baseline mean + 3x SD

Meters

25 0 25 50

1:1100

NO.	VERSION	DATE	DRAWN BY	VERIFIED BY	APPROVED BY
2	FINAL	2020.04.17	RF	TA	CG

Construction de Défense Canada
Defence Construction Canada

COLLECTION OF LANDFILL MONITORING DATA

CAM-1, JENNY LIND ISLAND, NU

MAIN LANDFILL 2019 SOIL ANALYTICAL RESULTS

ARCADIS
1050 Morrison Drive, Suite 201, Ottawa, Ontario, K2H 8K7
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MEASUREMENT UNIT	SCALE:	DATE (month–year):
Metre	1 : 1100	MARCH 2020
DRAWN BY: R. FLETCHER	VERIFIED BY: T. AUSTRINS, P.ENG	APPROVED BY: C. GRAVELLE, P.ENG
PROJECT NO.: 30000251	DRAWING NO.: 30000251-CAM-1.8	PAGE: PL

FIGURE CAM-1.8B

10 CAM-1: STATION EAST LANDFILL

10.1 Landfill Description

The Station East Landfill is located in the Station Area, approximately 75 m to the northeast of the Main Landfill, at the terminus of a road from the station infrastructure pad. This landfill covers an approximate area of 2,400 m^2 and comprises of a single regrade area.

The remediation of this landfill consisted of the removal of surface debris and regrading of the landfill surface with the placement of additional granular fill. Final cover extends approximately 0.75 to 1.5 m above surrounding grade. No instrumentation is installed at this landfill.

The long-term monitoring plan for the Station East Landfill consists of visual inspection, and the periodic collection of soil samples. The landfill layout, visual observations and photographic locations are presented on **Figures CAM-1.9A** and soil analytical results are presented on **Figures CAM-1.9B**, both of which are located at the rear of the report.

10.2 Summary of Work Conducted

10.2.1 Visual Inspection

A visual inspection was completed at the Station East Landfill on August 26, 2019. The visual inspection of the landfill was completed with no deviations from the accepted work plan.

10.2.2 Soil Sampling

Soil sampling at Station East Landfill was conducted on August 26, 2019 and consisted of the collection of eight soil samples from four soil sample stations (C1-19, C1-20, C1-21, C1-22). Depth limitations were encountered at soil sampling station C1-21, where refusal on bedrock limited the depth sample from 0.25 to 0.35 metres below ground surface. The table below outlines the soil sampling activities conducted at the Station East Landfill.

Table 10-1: Summary of Work Conducted by Soil Sampling Location- Station East Landfill

Sample Location	Sample ID	Sample Depth (m bgs)	Notes
C1-19 (up-gradient)	C1-19A	0 - 0.15	Fractured bedrock with brown sand, trace organics, moist, no odour
	C1-19B	0.4 - 0.5	Fractured bedrock with brown sand, trace organics, moist, no odour
C1-20 (down-gradient)	C1-20A	0 - 0.15	Fractured bedrock with brown sand, trace organics, moist, no odour

Sample Location	Sample ID	Sample Depth (m bgs)	Notes
	C1-20B	0.4 – 0.5	Fractured bedrock with brown sand, trace organics, moist, no odour
C1-21 (down-gradient)	C1-21A	0 - 0.15	Fractured bedrock with brown sand, moist, no odour
	C1-21B	0.25 – 0.35	As above, with refusal on shallow bedrock
C1-22 (down-gradient)	C1-22A	0 - 0.15	Brown sand and gravel, moist, no odour
	C1-22B	0.4 – 0.5	Brown sand and gravel, moist, no odour

10.2.3 Groundwater Sampling

No groundwater monitoring wells are present at the Station East Landfill; therefore, no groundwater monitoring or analyses was performed as part of the 2019 monitoring program.

10.2.4 Thermal Monitoring

No thermistors are present at the Station East Landfill; therefore, no thermal monitoring was performed as part of the 2019 monitoring program.

10.3 Results of the Monitoring Program

The following Sections 10.3.1 through 10.3.2 summarize the results of the CAM-1 monitoring program at the Station East Landfill.

10.3.1 Visual Inspection

The visual inspection was conducted in compliance with Section 5.2 of the TOR and details are provided below in the following Sections 10.3.1.1 through 10.3.2. **Figure CAM-1.9A** presents the visual inspection findings and photographic locations.

10.3.1.1 Inspection Checklist

The visual was completed as per the TOR and the visual inspection checklist is included in the tabular checklist report below.

Table 10-2: Visual Inspection Checklist – Station East Landfill

SITE NAME: CAM-1 Jenny Lind Island
LANDFILL DESIGNATION: Station East Landfill LANDFILL TYPE: Regraded DATE OF INSPECTION: 27 August 2019 WEATHER CONDITIONS: sunny, winds from south at 10 km/hr, ~15 ° C
DATE OF PREVIOUS INSPECTION: 11 August 2016
INSPECTED BY: Troy Austrins, P.Eng.
REPORT PREPARED BY: Troy Austrins, P.Eng. The inspector represents to the best of their knowledge that the following statements and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.

Table 10-2: Visual Inspection Checklist: STATION EAST LANDFILL

Checklist Item	Present (Yes/No)	Feature Number	Feature Location	GPS Coordinates Easting/Northing/Zone		Length (m)	Width (m)	Depth (m)	Extent Relative to Landfill Surface	Description	Comparison with Historical Observations	Additional Comments/ Severity Rating	Photographic Records (photo reference, location, view point & direction, feature of note, scale)
Settlement	Yes	A1	Southwest landfill cover	389771.680 / 7620736.137	14	0.3	0.3	0.05	<1%	Three minor linear and pothole depressions	First noted in Year 3 (2012). No significant change from 2014 to 2016 to 2019.	Acceptable (features are minor and not affecting landfill stability)	CAM-1 STNE 39
		A2		389779.462 / 7620729.794		0.2	0.2	0.05					CAM-1 STNE 37
		A3		389799.571 / 7620719.5532		1.3	0.4	0.05					CAM-1 STNE 36
Settlement	Yes	C1	West cover and side slope	389769.639 / 7620774.134	14	1.2	0.3	0.05	<1%	Five minor linear and pothole depressions were observed; six were noted in 2016. Feature C6 removed as it was considered to be reflective of poor re-grading and not a settlement feature.	First noted in Year 5 (2014). One fewer feature observed in 2016 (6) than 2014 (7). Features are minor and were difficult to differentiate from regular differences in landfill topography/ grading. Only five locations observed in 2019.	Acceptable (features are minor and not affecting landfill stability)	CAM-1 STNE 8
		C2		389769.224 / 7620766.913		1.1	0.2	0.05					CAM-1 STNE 9
		C3		389767.566 / 7620761.633		1.2	0.4	0.05					CAM-1 STNE 11
		C4		389765.495 / 7620751.750		2.5	1.3	0.05					CAM-1 STNE 10
		C5		389757.568 / 7620751.218		1	0.4	0.05					CAM-1 STNE 10
		C6		Not considered as settlement		N/A	N/A	N/A					CAM-1 STNE 2
Settlement	Yes	D1	Northeast cover	389811.014 / 7620798.862	14	0.9	0.15	0.05	<1%	Six minor linear or pothole depressions	First noted in Year 1 (2010). Part of Feature A in 2014. Notable increase in length of linear features in 2014. Two additional minor features observed in 2016. Features are minor and were difficult to differentiate from improper landfill grading No significant change from 2016.	Acceptable (features are minor and not affecting landfill stability)	CAM-1 STNE 15
		D2		389809.932 / 7620795.926		0.2	0.2	0.1					No photo
		D3		389811.168 / 7620793.299		2.1	0.3	0.05					CAM-1 STNE 17
		D4		389815.496 / 7620793.608		8	0.4	0.05					CAM-1 STNE 16
		D5		389821.214 / 7620793.144		3.2	0.2	0.1					CAM-1 STNE 16
		D6		389844.727 / 7620775.171		0.7	0.3	0.1					CAM-1 STNE 20
Erosion	No	B	West side slope toe; Not Observed	N/A	14	N/A	N/A	N/A	N/A	Minor erosion, washing of fines at toe of slope- Not Observed in 2019.	First noted in Year 2 (2011). No significant change from 2014 to 2016. Not Observed in 2019.	Not Observed	CAM-1 STNE 4
Erosion	Yes	E	Northwest side slope	389760.167 / 7620786.035	14	4	0.2	0.05	<1%	Minor erosion, washing of fines	First noted in Year 5 (2014). No significant change from 2014 to 2016 to 2019.	Acceptable (feature is minor and not affecting landfill stability)	CAM-1 STNE 5
Erosion	Yes	F1	North side slope	389853.959 / 7620767.027	14	4	0.2	0.05	<1%	Three adjacent minor erosion channels	First noted in Year 5 (2014). No significant change from 2014 to 2016 to 2019.	Acceptable (feature is minor and not affecting landfill stability)	CAM-1 STNE 24, 25
		F2		389854.931 / 7620766.276		5	0.2	0.05					CAM-1 STNE 24, 25
		F3		389855.564 / 7620765.716		6	0.2	0.05					CAM-1 STNE 24, 25
Erosion	Yes	G	Southwest side slope	389798.867 / 7620727.579	14	5.5	0.1	0.05	<1%	Minor erosion, washing of fines	First noted in Year 5 (2014). No significant change from 2014 to 2016 to 2019.	Acceptable (feature is minor and not affecting landfill stability)	CAM-1 STNE 37
Lateral Movement	No												
Frost Action	No												
Sloughing	No												
Cracking	No												
Animal Burrows	No												

Table 10-2: Visual Inspection Checklist: STATION EAST LANDFILL												
Checklist Item	**Present (Yes/No)**	**Feature Number**	**Feature Location**	**GPS Coordinates Easting/Northing/Zone**	**Length (m)**	**Width (m)**	**Depth (m)**	**Extent Relative to Landfill Surface**	**Description**	**Comparison with Historical Observations**	**Additional Comments/ Severity Rating**	**Photographic Records (photo reference, location, view point & direction, feature of note, scale)**
Vegetation Establishment	No											
Staining	No											
Vegetation Stress	No											
Seepage Points (or) Ponded Water	No											
Debris and/or Liner Exposed	No											
Presence & Condition of Monitoring Instruments	No											
Features of Note/Other Relevant Observations (e.g., signs of activity, ruts…)	No											

10.3.1.2 Preliminary Stability Assessment

The Preliminary Stability Assessment for the Station East Landfill was conducted on August 27, 2019 as per the TOR and the results are provided below in.

Table 10-3: Preliminary Stability Assessment – Station East Landfill

Station East Landfill		
Feature	Severity Rating	Extent
Settlement	Acceptable	Occasional
Erosion	Acceptable	Occasional
Lateral Movement	Not Observed	None
Frost Action	Not Observed	None
Sloughing	Not Observed	None
Cracking	Not Observed	None
Animal Burrows	Not Observed	None
Vegetation Establishment	Not Observed	None
Staining	Not Observed	None
Vegetation Stress	Not Observed	None
Seepage / Ponded Water	Not Observed	None
Debris and/or Liner Exposure	Not Observed	None
Other	Not Observed	None
Overall Landfill Performance	**Acceptable**	

Note: please refer to Performance/Severity rating reference guide in Section 2.1.3.1 above.

10.3.1.3 Photographic Records

The detailed photographic record for the Station East Landfill has been completed as per Section 5.5 of the TOR and is included as **Appendix H**. The Photographic Record only contains an index of photographs collected; full sized photographs are contained as a separately appended CD/DVD-ROM. **Figure CAM-1.9A** illustrates the photograph locations and directions.

10.3.1.4 Trend Analysis

A trend analysis was conducted with regards to observations made during the visual inspection of the Station East Landfill. The following outlines the results of the visual trend analysis.

Table 10-4: Visual Inspection Trends – Station East Landfill

Station East Landfill		
Checklist Item	**Feature Number**	**Comparison with Historical Observations**
Settlement	A – three minor settlement features	No significant change.
	C – five settlement features	No significant change at 5 locations observed. Feature C6 removed as it was not considered to be settlement.
	D- six minor settlement features	No significant change.
Erosion	B	Not observed in 2019
	E	No significant change.
	F – three minor erosion channels	No significant change.
	G	No significant change.

10.3.2 Discussion of Results/Trends

A comparison of the visual inspection results of the 2016 and 2019 monitoring events at the Station East Landfill indicates that most settlement or erosion features generally did not undergo any significant change. Feature B was not observed in 2019. Feature C6 was removed from the list as it was not considered to be a settlement feature. No new features were observed. The results of the visual inspection and the observed trends indicate that the performance of the landfill is acceptable.

10.3.3 Soil Sampling

Soil sampling of the Station East Landfill was conducted on August 27, 2019. The soil sampling was conducted in compliance with Section 5.3.1 and 5.3.2 of the TOR and details are provided below in the following Sections 10.3.3.1 through 10.3.3.3.

10.3.3.1 Laboratory Analytical Results

A total of eight soil samples were analysed from four soil sample locations at the Station East Landfill and analysed for inorganic elements (arsenic, cadmium, chromium, cobalt, copper, nickel, and zinc), polychlorinated biphenyls (PCBs), and Petroleum Hydrocarbons (PHC F1, F2, F3, and F4).

The full current and historical analytical results are presented in **Table 8** in the Tables section of this report immediately following the main text. The laboratory certificates of analysis and chain of custody forms are presented in **Appendix B** of this report. **Figure CAM-1.9B** presents a summary of significant soil analytical results.

10.3.3.2 Summary of Soil Results

The soil results for 2019 are presented in the following table. The background and baseline mean are presented for information purposes. The discussions are focused on the comparison of the results to the BL+3SD.

Table 10-5: Evaluation of Results by Parameter – Station East Landfill

Parameter	Background (mg/kg)	Baseline Mean (mg/kg)	Baseline Mean+3SD (mg/kg)	Discussion of Results
Arsenic (As)	3.3	5.4	22.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
Cadmium (Cd)	1.0	1.0	1.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
Chromium (Cr)	20.0	20.0	20.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
Cobalt (Co)	5.0	5.0	5.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
Copper (Cu)	11.3	5.6	20.9	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
Lead (Pb)	10.0	10.0	10.0	Upgradient samples from C1-19 depth exceeded the BL+3SD at 11 mg/kg but was well below 3 times the baseline mean. Downgradient samples from C1-21 depth and surface exceeded the BL+3SD at 11 and 11 mg/kg respectively but were both well below 3 times the baseline mean. All remaining upgradient and downgradient results were below the BL+3SD.
Nickel (Ni)	5.0	5.0	5.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
Zinc (Zn)	15.0	15.0	15.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
PCBs (Total)	0.1	0.1	0.1	All soil sample results were below the BL+3SD at upgradient and downgradient locations.

Parameter	Background (mg/kg)	Baseline Mean (mg/kg)	Baseline Mean+3SD (mg/kg)	Discussion of Results
F1 (C_6-C_{10})	N/A	10.0	10.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
F2 (C_{10}-C_{16})	N/A	10.0	10.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
F3 (C_{16}-C_{34})	N/A	54.8	157.2	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
F4 (C_{34}-C_{50})	N/A	45.0	135.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.

Note: BL+3SD = baseline data mean + 3x standard deviations. Soil concentrations are shown are in mg/kg.

10.3.3.3 Discussion of Soil Results

Based on a visual comparison of upgradient and downgradient data on the graphs, downgradient concentrations were of similar concentrations to both historical monitoring events and/or upgradient sample locations. Overall, this is suggestive of what would be expected of natural variability when comparing upgradient and downgradient sample locations.

The concentrations of lead at upgradient sample C1-19 depth marginally exceeded the BL+3SD of 10 mg/kg at 11 mg/kg but was well below 3 times the baseline mean. These were similar to concentrations observed in previous monitoring years and well within what could be considered natural variability. The concentrations of lead at downgradient sample C1-21 at surface and depth also marginally exceeded the BL+3SD of 10 mg/kg at 11 and 11 mg/kg respectively but was well below 3 times the baseline mean and also equal to the upgradient sample at C1-19. These lead concentrations were similar to concentrations observed in previous monitoring years and within what could be considered natural variability and do not indicate contaminant migration.

The remainder of the soil results from 2019 are comparable to the results from the previous monitoring events and were below the BL+3SD concentrations; therefore, there is no indication of contaminant migration from the landfill at this time.

It should be noted that there are insufficient data points at this time to determine trends in the soil concentrations. The performance of the landfill should be re-evaluated once seven years of data are available. Plots of soil data gathered to date are provided in **Appendix D9** for the Station East Landfill.

10.4 Conclusions and Overall Landfill Performance

Two sample locations which exceed the BL+3SD for lead were observed, one upgradient and one downgradient. These concentrations are only marginally above the BL+3SD of 10 mg/kg at a concentration of 11 mg/kg and are not believed to represent landfill contaminant migration and are within what could be expected of natural variability.

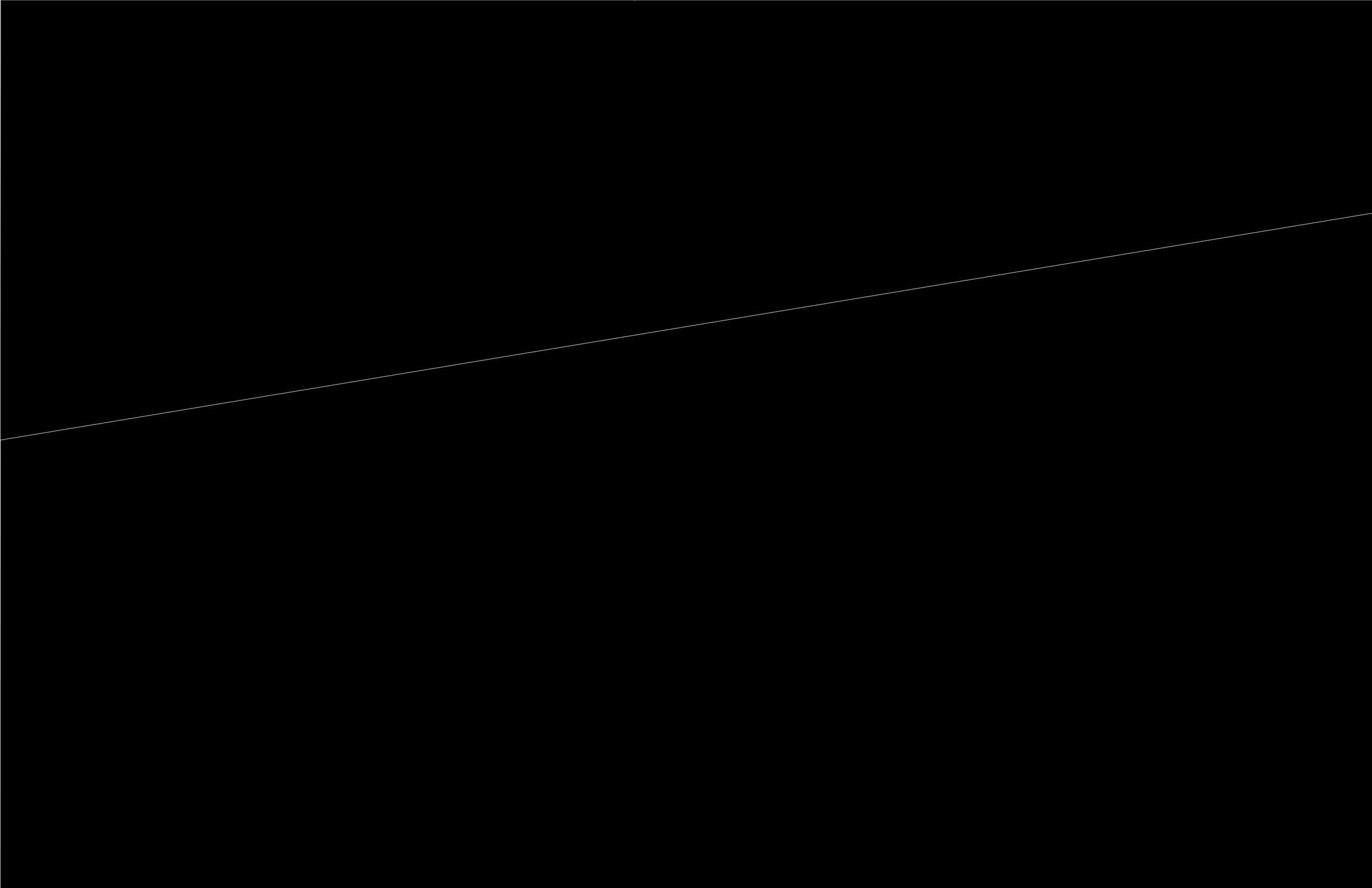
A review of the analytical data indicates that the landfill is performing as intended and there is no indication of contaminant migration from the landfill at this time.

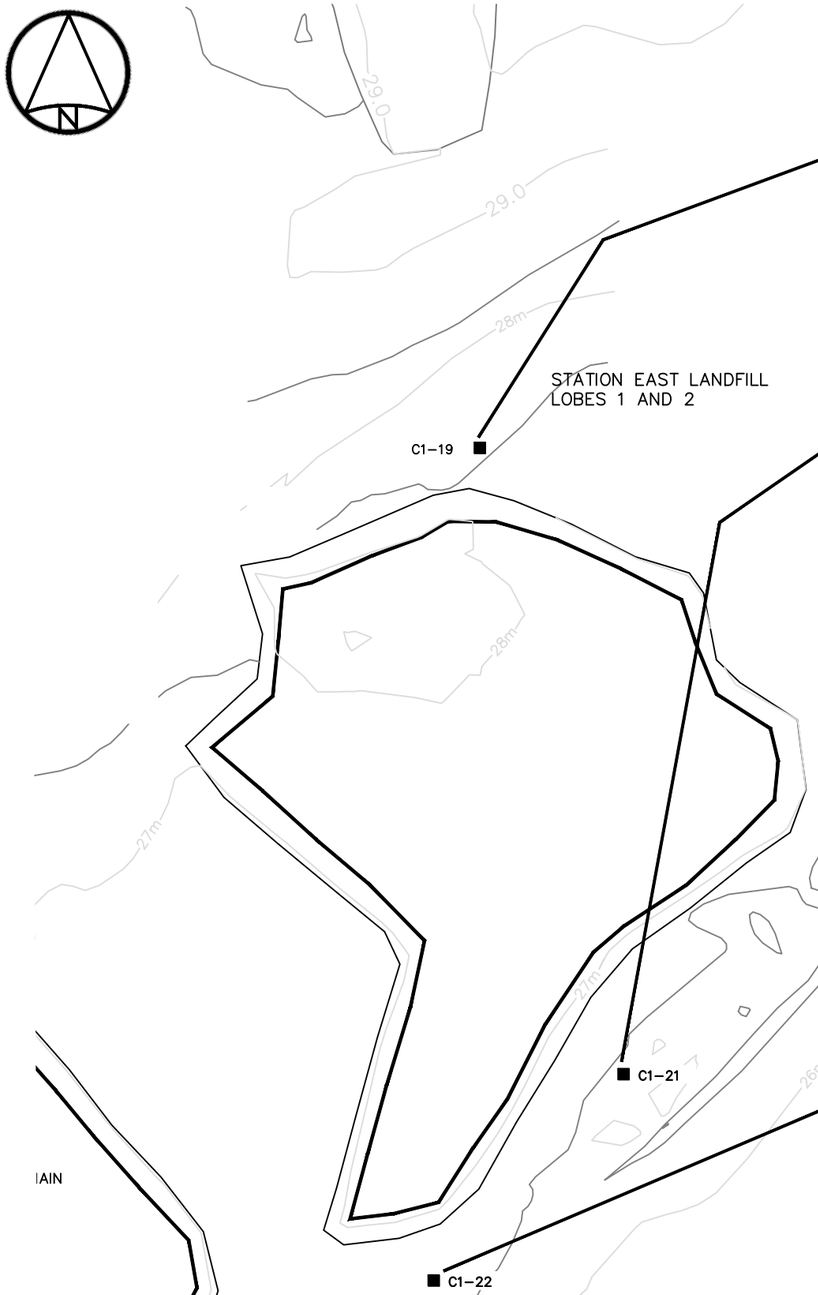
Based on the results of the 2019 monitoring program, the overall performance of the Station East Landfill is acceptable.

10.5 Recommendations

Based on this review, it is recommended to continue the long-term monitoring of soils as planned.

Based on the results of the visual inspection, the Station East Landfill performance is acceptable. No remedial work or deviations from the monitoring plan are recommended at this time.





Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2* C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
C1-19 surface - upgradient																		
10-16681	C1-19	2010	1	Phase I	0-10	4.2	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	<4	<9	<8
C112-19A	C1-19	2012	3	Phase I	0-15	4.4	N/A	3.1	<1	<5	7.2	1.9	<10	<0.01	<12	<10	<10	N/A
C114-19A	C1-19	2014	5	Phase I	0-15	2.6	0.03	5.7	2.2	**14.1**	**14.7**	3.7	**18.0**	<0.10	<10	<50	<50	<100
16-C1-19A	C1-19	2016	7	Phase II	0-15	**6.8**	<0.05	1.6	0.76	3.3	8.5	1.2	<10	<0.01	<12	<10	<50	<50
C1-19A	C1-19	2019	10	Phase II	0-15	1.3	<0.050	2.6	1.0	2.0	6.5	1.6	3.4	<0.01	<7.0	<4.0	11	<6.0
C1-19 depth - upgradient																		
10-16683	C1-19	2010	1	Phase I	30-50	5.1	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	<4	<9	<8
C112-19B	C1-19	2012	3	Phase I	40-50	1.7	N/A	2.8	<1	<5	4.0	1.2	<10	<0.01	<12	<10	<10	N/A
C114-19B	C1-19	2014	5	Phase I	40-50	1.9	<0.01	2.6	0.8	1.2	<5	0.7	3.0	<0.10	<10	<50	<50	<100
16-C1-19B	C1-19	2016	7	Phase II	40-50	**6.8**	<0.01	7.7	<1	5.2	9.9	3.8	<20	<0.02	<12	<10	<50	<50
C1-19B	C1-19	2019	10	Phase II	40-50	2.3	<0.050	5.7	1.9	4.2	**11.0**	4.3	6.8	<0.01	<7.0	<4.0	8.6	<6.0

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2* C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
C1-21 surface - downgradient																		
10-16689	C1-21	2010	1	Phase I	0-10	**8.4**	<1	<20	<5	<3	**11.0**	<5	<15	<0.003	<10	4.2	<9	<8
C112-21A	C1-21	2012	3	Phase I	0-15	**8.4**	N/A	2.8	<1	<5	**11.0**	1.9	<10	<0.01	<12	<10	<10	N/A
C112-BD5 (Dup)	C1-21	2012	3	Phase I	0-15	**7.9**	N/A	2.8	<1	<5	**11.0**	1.8	<10	<0.01	<12	<10	<10	N/A
C112-21A (Interlab)	C1-21	2012	3	Phase I	0-15	**7.4**	0.01	3.5	1.0	2.0	**12.0**	1.5	4.0	<0.10	<10	<50	<50	<100
C114-21A	C1-21	2014	5	Phase I	0-15	**8.8**	0.03	4.2	1.2	2.6	**13.9**	1.5	5.0	<0.10	<10	<50	<50	<100
16-C1-21A	C1-21	2016	7	Phase II	0-15	**8.5**	<0.05	3.0	0.84	3.6	**11.0**	2.3	<10	<0.01	<12	<10	<50	<50
C1-21A	C1-21	2019	10	Phase II	0-15	**7.3**	<0.050	3.0	0.82	1.8	**11.0**	1.8	3.5	<0.01	<7.0	<4.0	8.8	<6.0
C1-21 depth - downgradient																		
10-16691	C1-21	2010	1	Phase I	30-50	**8.3**	<1	<20	<5	<3	**12.0**	<5	<15	<0.003	<10	5.7	38	<8
C112-21B	C1-21	2012	3	Phase I	40-50	**8.3**	N/A	3.0	<1	<5	**12.0**	2.0	<10	<0.01	<12	<10	<10	N/A
C114-21B	C1-21	2014	5	Phase I	40-50	**10.2**	0.03	3.6	1.2	2.9	**16.0**	1.8	5.0	<0.10	<10	<50	<50	<100
16-C1-21B	C1-21	2016	7	Phase II	35-40	**8.2**	<0.05	2.7	0.87	2.5	**11.0**	2.0	<10	<0.01	<12	<10	<50	<50
C1-21B	C1-21	2019	10	Phase II	25-35	**7.8**	<0.050	3.0	0.79	1.9	**11.0**	1.8	3.4	<0.01	<7.0	<4.0	<8.0	<6.0

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2* C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
C1-20 surface - upgradient																		
10-16685	C1-20	2010	1	Phase I	0-10	**6.4**	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	<4	<9	<8
C112-20A	C1-20	2012	3	Phase I	0-15	**7.6**	N/A	2.7	<1	<5	7.2	1.9	<10	<0.01	<12	<10	<10	N/A
C114-20A	C1-20	2014	5	Phase I	0-15	**7.9**	0.05	2.8	0.8	2.6	11.0	2.1	11.0	<0.10	<10	<50	<50	<100
16-C1-20A	C1-20	2016	7	Phase II	0-15	**10.0**	0.052	3.9	1.1	3.2	11.0	2.3	11.0	<0.01	<12	<10	<50	<50
C1-20A	C1-20	2019	10	Phase II	0-15	4.1	<0.050	2.1	0.5	1.9	6.8	1.6	3.8	<0.01	<7.0	<4.0	9.2	<6.0
C1-20 depth - upgradient																		
10-16687	C1-20	2010	1	Phase I	30-50	**6.4**	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	<4	<9	<8
C112-20B	C1-20	2012	3	Phase I	40-50	**26.0**	N/A	2.7	1.1	3.1	7.2	1.9	<10	<0.01	<12	<10	<10	N/A
C-114-20B	C1-20	2014	5	Phase I	40-50	**7.0**	0.03	2.9	0.8	2.6	11.0	2.1	11.0	<0.10	<10	<50	<50	<100
16-C1-20B	C1-20	2016	7	Phase II	40-50	2.3	<0.05	2.3	0.6	3.2	11.0	2.3	11.0	<0.01	<12	<10	<50	<50
C1-DUP6 (Dup)	C1-20	2016	7	Phase II	40-50	2.0	<0.05	2.1	0.5	3.1	11.0	2.2	11.0	<0.01	<12	<10	<50	<50
16-C1-20B (Interlab)	C1-20	2016	7	Phase II	40-50	3.17	<0.02	2.3	0.6	3.2	11.0	2.3	11.0	<0.01	<12	<10	<50	<50
C1-20B	C1-20	2019	10	Phase II	40-50	4.3	<0.050	2.6	0.6	2.4	8.6	1.9	4.4	<0.01	<7.0	<4.0	9.6	<6.0

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2* C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
C1-22 surface - downgradient																		
10-16693	C1-22	2010	1	Phase I	0-10	**5.6**	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	<4	12	<8
C112-22A	C1-22	2012	3	Phase I	0-15	**5.4**	N/A	3.5	<1	**9.0**	9.2	1.9	<10	<0.01	<12	<10	40	N/A
C114-22A	C1-22	2014	5	Phase I	0-15	4.6	0.04	2.9	0.9	2.2	8.8	0.9	6.0	<0.10	<10	<50	<50	<100
16-C1-22A	C1-22	2016	7	Phase II	0-15	5.0	<0.05	3.0	0.7	1.9	9.7	1.4	<10	<0.01	<12	<10	<50	<50
C1-22A	C1-22	2019	10	Phase II	0-15	4.0	<0.050	2.2	0.53	1.7	7.2	1.2	3.0	<0.01	<7.0	<4.0	23	<6.0
C1-22 depth - downgradient																		
10-16695	C1-22	2010	1	Phase I	30-50	**5.4**	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	<4	<9	<8
10-16696 (Dup)	C1-22	2010	1	Phase I	30-50	4.8	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	<4	19	<8
C112-22B	C1-22	2012	3	Phase I	40-50	3.7	N/A	2.2	<1	<5	7.0	1.1	<10	<0.01	<12	<10	<10	N/A
C114-22B	C1-22	2014	5	Phase I	40-50	4.1	0.01	3.1	0.8	1.4	9.4	0.7	3.0	<0.10	<10	<50	<50	<100
C114-BD9	C1-22	2014	5	Phase I	40-50	4.0	0.02	3.2	0.8	1.4	9.0	0.7	3.0	<0.10	<10	<50	<50	<100
C114-22B (Interlab)	C1-22	2014	5	Phase I	40-50	**5.8**	<0.1	**23.0**	<1	<5	8.9	**10.0**	<10	<0.01	<12	<10	<50	N/A
16-C1-22B	C1-22	2016	7	Phase II	30-40	5.2	<0.05	4.0	0.72	1.8	8.9	1.5	<10	<0.01	<12	<10	<50	<50
C1-22B	C1-22	2019	10	Phase II	40-50	5.3	<0.050	3.2	0.62	1.8	9.9	1.4	3.2	<0.01	<7.0	<4.0	12	<6.0

CAM-1 Station East and Main Landfills	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2* C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
Background Data - Arithmetic Mean	3.3	1.0	20.0	5.0	11.3	10.0	5.0	15.0	0.10	N/A	N/A	N/A	N/A
Baseline Data - Arithmetic Mean	**5.4**	**1.0**	**20.0**	**5.0**	**5.6**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**10.0**	**54.8**	**45.0**
Baseline Data - Standard Deviation	5.5	0.0	0.0	0.0	5.1	0.0	0.0	0.0	0.00	0.0	0.0	34.1	30.0
Baseline Data Mean + 3 x Standard Deviation	**22.0**	**1.0**	**20.0**	**5.0**	**20.9**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**10.0**	**157.2**	**135.0**

** If baseline or background arithmetic mean was below the detection limit, the mean has been modified to match the detection limit value.*

LEGEND

- MONITORING SOIL SAMPLE LOCATION
- TOP OF LANDFILL
- TOE OF LANDFILL

XX	Sample exceeds baseline mean
XX	Sample exceeds baseline mean + 3x SD

Meters
25 0 25 50
1:1200

NO.	VERSION	DATE	PAR	VERIF.	APPR.
2	FINAL	2020.04.17	*RF*	*TA*	*CG*

Construction de Défense Canada
Defence Construction Canada

COLLECTION OF
LANDFILL MONITORING DATA
CAM-1, JENNY LIND ISLAND, NU

STATION EAST LANDFILL
2019 SOIL ANALYTICAL RESULTS

ARCADIS
1050 Morrison Drive, Suite 201, Ottawa, Ontario, K2H 8K7
Office General +1 613 721 0555

MEASUREMENT UNIT	SCALE	DATE (Month - Year)
Metre	1 : 1200	MARCH 2020
DRAWN BY	VERIFIED BY	APPROVED BY
R. FLETCHER	*T. AUSTRINS, P.ENG*	*C. GRAVELLE, P.ENG*
PROJECT NO.	DRAWING NO.	PAGE
30000251	30000251-CAM-1.9	PL

FIGURE CAM-1.9B

11 CAM-1: USAF LANDFILL

11.1 Landfill Description

The USAF Landfill is located approximately 570 m north of the west end of the airstrip, on the east side of the main road connecting the Airstrip to the Station Area. Two lobes of debris were identified at this location. The total footprint of the USAF landfill encompasses approximately 3,000 m^2 across the two lobes.

The remediation of this landfill included the removal of surface debris and regrading with the placement of additional granular fill. Final cover extends approximately 0.5 to 0.75 m above the surrounding grade. No instrumentation is installed at this landfill.

The long term monitoring plan for the USAF Landfill consists of visual inspection, and the periodic collection of soil samples. The landfill layout, visual observations and photographic locations are presented on **Figures CAM-1.10A** and soil analytical results are presented on **Figures CAM-1.10B**, both of which are located at the rear of the report.

11.2 Summary of Work Conducted

11.2.1 Visual Inspection

A visual inspection was completed at the USAF Landfill on August 26, 2019. The visual inspection of the landfill was completed with no deviations from the accepted work plan.

11.2.2 Soil Sampling

Soil sampling at USAF Landfill was conducted on August 26, 2019 and consisted of the collection of ten soil samples from five soil sample stations (C1-27, C1-28, C1-29, C1-30, and C1-31). The Table below outlines the soil sampling activities conducted at the USAF Landfill.

Duplicate sample collected at this landfill are as follows and is discussed further in Appendix C:

- C1-28A = duplicate C1-40

Table 11-1: Summary of Work Conducted by Soil Sampling Location- USAF Landfill

Sample Location	Sample ID	Sample Depth (m bgs)	Notes
C1-27	C1-27A	0 - 0.15	Brown sand and gravel, moist, no odour
	C1-27B	0.4 - 0.5	Brown sand and gravel, moist, no odour
C1-28	C1-28A	0 - 0.15	Brown sand and gravel, moist, no odour
	C1-28B	0.4 – 0.5	Brown sand and gravel, moist, no odour

Sample Location	Sample ID	Sample Depth (m bgs)	Notes
C1-29	C1-29A	0 - 0.15	Brown sand and gravel, moist, no odour
	C1-29B	0.4 – 0.5	Brown sand and gravel, moist, no odour
C1-30	C1-30A	0 - 0.15	Brown sand and gravel, organics, moist, no odour
	C1-30B	0.4 – 0.5	Brown sand and gravel, moist, no odour
C1-31	C1-31A	0 - 0.15	Light brown sand and gravel, moist, no odour
	C1-31B	0.4 – 0.5	Light brown sand and gravel, moist, no odour

11.2.3 Groundwater Sampling

No groundwater monitoring wells are present at the USAF Landfill; therefore, no groundwater monitoring or analyses was performed.

11.2.4 Thermal Monitoring

No thermistors are present at the USAF Landfill; therefore, no thermal monitoring was performed.

11.3 Results of the Monitoring Program

The following Sections 11.3.1 through 11.3.2 summarize the results of the CAM-1 monitoring program at the USAF Landfill.

11.3.1 Visual Inspection

The visual inspection was conducted in compliance with Section 5.2 of the TOR and details are provided below in the following Sections 11.3.1.1 through 11.3.1.4. **Figure CAM-1.10A** presents the visual inspection findings and photographic locations.

11.3.1.1 Inspection Checklist

The visual was completed as per the TOR and the visual inspection checklist is included as Table 11-2 of this report below.

Table 11-2: Visual Inspection Checklist – USAF Landfill

SITE NAME: CAM-1 Jenny Lind Island
LANDFILL DESIGNATION: USAF Landfill LANDFILL TYPE: Regraded DATE OF INSPECTION: 26 August 2019 WEATHER CONDITIONS: sunny, winds from south, ~ 9 ° C
DATE OF PREVIOUS INSPECTION: 11 August 2016
INSPECTED BY: Troy Austrins, P.Eng.
REPORT PREPARED BY: Troy Austrins, P.Eng. The inspector represents to the best of their knowledge that the following statements and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.

Table 11-2: Visual Monitoring- USAF LANDFILL

Checklist Item	Present (Yes/No)	Feature Number	Feature Location	GPS Coordinates Easting/Northing/Zone	Length (m)	Width (m)	Depth (m)	Extent Relative to Landfill Surface	Description	Comparison with Historical Observations	Additional Comments/ Severity Rating	Photographic Records (photo reference, location, view point & direction, feature of note, scale)
Settlement	No											
Erosion	Yes	A	West side slope, Lobe 1	388455.770 / 7619272.295 14	5	0.1	0.01	<1%	Minor washing of fines	First noted in year 5 (2014). Decrease in length from 6 to 5 m from 2014 to 2016. No significant change in 2019 as compared to 2016. Slope appears stable	Severity Rating – Acceptable (feature is minor and not affecting landfill stability)	CAM-1 USAF- 4, 5
Lateral Movement	No											
Frost Action	No											
Sloughing	No											
Cracking	No											
Animal Burrows	No											
Vegetation Establishment	No											
Staining	No											
Vegetation Stress	No											
Seepage Points (or) Ponded Water	No											
Debris and/or Liner Exposed	No											
Presence & Condition of Monitoring Instruments	No											
Features of Note/Other Relevant Observations (e.g., signs of activity, ruts…)	No											

11.3.1.2 Preliminary Stability Assessment

The Preliminary Stability Assessment for the USAF Landfill was conducted on August 26, 2019 as per the TOR and the results are provided below.

Table 11-3: Preliminary Stability Assessment – USAF Landfill

USAF Landfill		
Feature	Severity Rating	Extent
Settlement	Not Observed	None
Erosion	Acceptable	Isolated
Lateral Movement	Not Observed	None
Frost Action	Not Observed	None
Sloughing	Not Observed	None
Cracking	Not Observed	None
Animal Burrows	Not Observed	None
Vegetation Establishment	Not Observed	None
Staining	Not Observed	None
Vegetation Stress	Not Observed	None
Seepage / Ponded Water	Not Observed	None
Debris and/or Liner Exposure	Not Observed	None
Other	Not Observed	None
Overall Landfill Performance	**Acceptable**	

Note: please refer to Performance/Severity rating reference guide in Section 2.1.3.1 above.

11.3.1.3 Photographic Records

The detailed photographic record for the USAF Landfill has been completed as per Section 5.5 of the TOR and is included as **Appendix H**. The Photographic Record only contains an index of photographs collected; full sized photographs are contained as a separately appended CD/DVD-ROM. **Figure CAM-1.10A** illustrates the photograph locations and directions.

11.3.1.4 Trend Analysis

A trend analysis was conducted with regards to observations made during the visual inspection of the USAF Landfill. The following outlines the results of the visual trend analysis.

Table 11-4: Visual Inspection Trends – USAF Landfill

USAF Landfill		
Checklist Item	**Feature Number**	**Comparison with Historical Observations**
Erosion	A	No significant change observed in 2019 as compared to 2016.

11.3.1.5 Discussion of Results/Trends

A comparison of the visual inspection results of the 2016 and 2019 monitoring events at the USAF Landfill indicates that no new features of note are present at the landfill. The one minor erosion feature present at the landfill has not undergone any significant change. The results of the visual inspection and the observed trends indicate that the performance of the landfill is acceptable.

11.3.2 Soil Sampling

Soil sampling of the USAF Landfill was conducted on August 26, 2019. The soil sampling was conducted in compliance with Section 5.3.1 and 5.3.2 of the TOR and details are provided below in the following Sections.

11.3.2.1 Laboratory Analytical Results

A total of eleven soil samples (including one duplicate) were analysed from five soil sample locations at the USAF Landfill and analysed for inorganic elements (arsenic, cadmium, chromium, cobalt, copper, nickel, and zinc), polychlorinated biphenyls (PCBs), and Petroleum Hydrocarbons (PHC F1, F2, F3, and F4).

The full current and historical analytical results are presented in **Table 9** in the Tables section of this report immediately following the main text. The laboratory certificates of analysis and chain of custody forms are presented in **Appendix B** of this report. **Figure CAM-1.10B** presents a summary of significant soil analytical results.

11.3.2.2 Summary of Soil Results

The soil results for 2019 are presented in the following table. The background and baseline mean are presented for information purposes. The discussions are focused on the comparison of the results to the BL+3SD.

Table 11-5: Evaluation of Results by Parameter – USAF Landfill

Parameter	Background (mg/kg)	Baseline Mean (mg/kg)	Baseline Mean+3SD (mg/kg)	Discussion of Results
Arsenic (As)	3.3	1.0	1.0	Upgradient samples from C1-27 at surface and depth exceeded the BL+3SD at 1.4 and 1.2 mg/kg respectively but were below 3 times the baseline mean. Downgradient sample C1-28 at surface exceeded the BL+3SD at 2.0 mg/kg but was below 3 times the baseline mean. All remaining downgradient results were below the BL+3SD.
Cadmium (Cd)	1.0	1.0	1.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
Chromium (Cr)	20.0	20.0	20.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
Cobalt (Co)	5.0	5.0	5.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
Copper (Cu)	11.3	3.9	8.5	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
Lead (Pb)	10.0	10.0	10.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
Nickel (Ni)	5.0	5.0	5.0	Downgradient sample C1-28 at surface exceeded the BL+3SD at 7.1 mg/kg but was below 3 times the baseline mean. All upgradient and remaining downgradient results were below the BL+3SD.
Zinc (Zn)	15.0	15.0	15.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
PCBs (Total)	0.1	0.1	0.1	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
F1 (C_6-C_{10})	N/A	10.0	10.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
F2 (C_{10}-C_{16})	N/A	28.4	100.1	All soil sample results were below the BL+3SD at upgradient and downgradient locations.

Parameter	Background (mg/kg)	Baseline Mean (mg/kg)	Baseline Mean+3SD (mg/kg)	Discussion of Results
F3 (C_{16}-C_{34})	N/A	55.3	208.1	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
F4 (C_{34}-C_{50})	N/A	23.8	75.2	All soil sample results were below the BL+3SD at upgradient and downgradient locations.

Note: BL+3SD = baseline data mean + 3x standard deviations. Soil concentrations are shown are in mg/kg.

11.3.2.3 Discussion of Soil Results

Arsenic was identified exceeding the BL+3SD in the surface and at depth samples from upgradient station C1-27 and in the surface sample from downgradient station C1-28. Nickel was also identified above the BL+3SD in the surface sample from downgradient station C1-28. However, given that the BL+3SD value for both parameters was set at the baseline arithmetic mean and no standard deviation was calculated, the reported concentrations are within a range that may represent natural variation (i.e., within 3 times the baseline mean value). Therefore, these exceedances are not considered to be an indication of landfill contaminant migration.

All remaining upgradient and downgradient results were below the BL+3SD for all other parameters.

Overall, downgradient concentrations were comparable to upgradient concentrations with some downgradient results falling below and above upgradient results based on visual comparison of the 2019 data on the graphs presented in **Appendix D10**. These variations could represent natural variability. There is no indication of contaminant migration from the landfill at this time.

It should be noted that there are insufficient data points at this time to determine trends in the soil concentrations. The performance of the landfill should be re-evaluated once seven years of data are available.

11.4 Conclusions and Overall Landfill Performance

A review of the analytical data indicates that the landfill is performing as intended and there is no indication of contaminant migration from the landfill at this time.

Based on the results of the 2019 monitoring program, the overall performance of the USAF Landfill is acceptable.

11.5 Recommendations

Based on this review, it is recommended to continue the long-term monitoring of soils as planned.

Based on the results of the visual inspection, the USAF Landfill performance is acceptable. No remedial work or deviations from the monitoring plan are recommended at this time.

C1–30

C1–31

C1–29

21m

21m

25

26

23

22

19

17

18

1

2

3

4

5

6

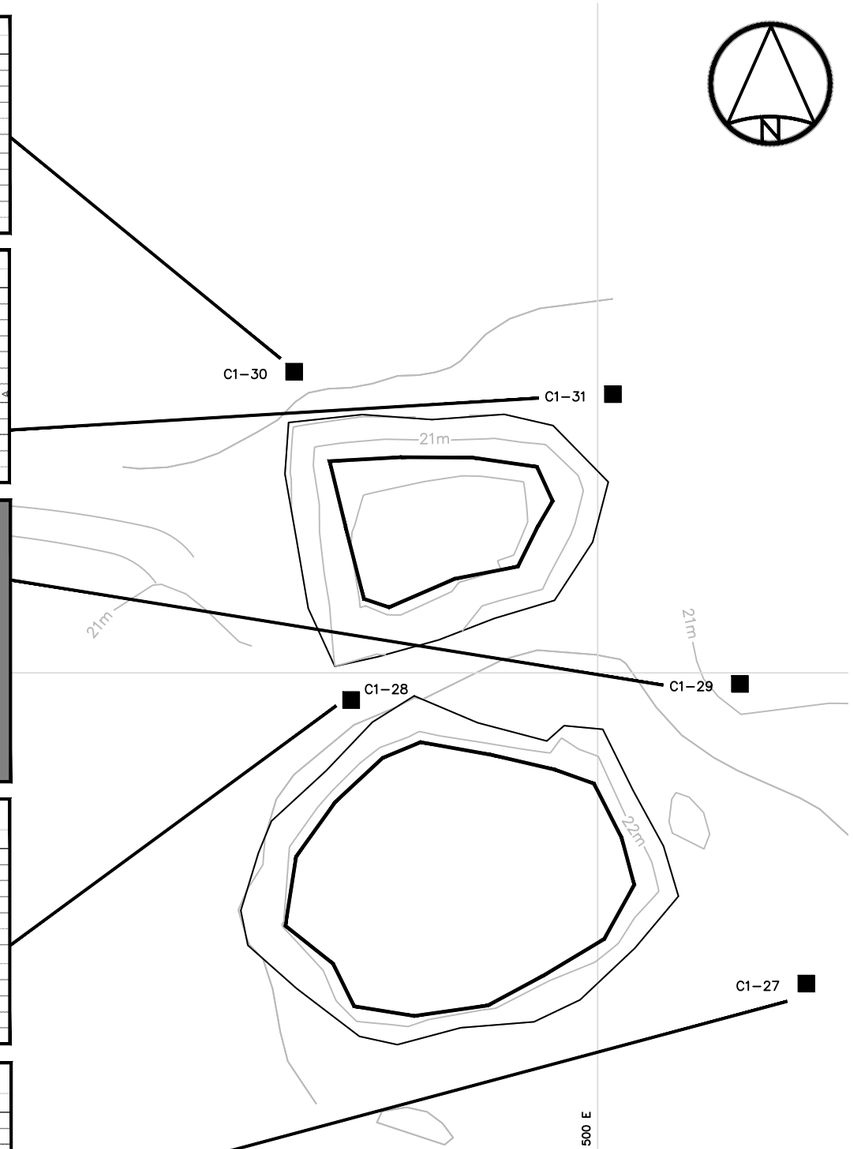
Sample ID	Location	Year	Monitoring	Monitoring	Depth	As*	Cd*	Cr*	Co*	Cu	Pb*	Ni*	Zn*	Total PCB*	C_6-C_{10}	C_{10}-C_{16}	C_{16}-C_{34}	C_{34}-C_{50}
						(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
C1-30 surface - downgradient																		
10-16725	C1-30	2010	1	Phase I	0-10	<1	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	<4	22	<8
C112-30A	C1-30	2012	3	Phase I	0-15	<1	N/A	2.8	<1	**6.0**	1.8	2.2	<10	<0.01	<12	<10	20	N/A
C114-30A	C1-30	2014	5	Phase I	0-15	1.0	0.10	4.0	1.4	**5.7**	<4.9	3.8	9.0	<0.10	<10	<50	<50	<100
16-C1-30A	C1-30	2016	7	Phase II	0-15	<1	<0.05	2.6	0.83	1.6	1.7	1.5	<10	<0.01	<12	<10	<50	<50
C1-30B	C1-30	2019	10	Phase II	0-15	<1.0	<0.050	2.7	0.84	1.7	2.6	1.7	2.9	<0.01	<7.0	<4.0	17	<6.0
C1-30 depth - downgradient																		
10-16727	C1-30	2010	1	Phase I	30-50	<1	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	<4	17	<8
C112-30B	C1-30	2012	3	Phase I	40-50	<1	N/A	3.6	<1	<5	1.6	2.0	<10	<0.01	<12	<10	<10	N/A
C114-30B	C1-30	2014	5	Phase I	40-50	0.6	0.01	3.0	0.9	3.8	<5	2.1	2.0	<0.10	<10	<50	<50	<100
16-C1-30B	C1-30	2016	7	Phase II	40-50	<1	<0.05	4.4	1.1	2.6	1.7	2.7	<10	<0.01	<12	<10	<50	<50
C1-30B	C1-30	2019	10	Phase II	40-50	<1.0	<0.050	4.2	1.0	2.9	1.9	3.0	3.9	<0.01	<7.0	<4.0	9.7	<6.0

Sample ID	Location	Year	Monitoring	Monitoring	Depth	As*	Cd*	Cr*	Co*	Cu	Pb*	Ni*	Zn*	Total PCB*	C_6-C_{10}	C_{10}-C_{16}	C_{16}-C_{34}	C_{34}-C_{50}
						(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
C1-31 surface - downgradient																		
10-16729	C1-31	2010	1	Phase I	0-10	<1	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	<4	<9	<8
10-16730 (Dup)	C1-31	2010	1	Phase I	0-10	<1	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	<4	<9	<8
C112-31A	C1-31	2012	3	Phase I	0-15	<1	N/A	2.7	<1	<5	1.4	1.4	<10	<0.01	<12	<10	<10	N/A
C114-31A	C1-31	2014	5	Phase I	0-15	0.7	<0.01	2.8	1.1	1.5	<5	1.5	3.0	<0.10	<10	<50	<50	<100
16-C1-31A	C1-31	2016	7	Phase II	0-15	<1	<0.05	9.1	0.81	1.6	2.0	4.1	<10	<0.01	<12	<10	<50	<50
C1-31A	C1-31	2019	10	Phase II	0-15	<1.0	<0.050	2.9	0.78	1.4	1.8	1.6	2.1	<0.01	<7.0	<4.0	12	<6.0
C1-31 depth - downgradient																		
10-16731	C1-31	2010	1	Phase I	30-50	<1	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	<4	<9	<8
C112-31B	C1-31	2012	3	Phase I	40-50	<1	N/A	3.4	<1	<5	1.5	2.1	<10	<0.01	<12	<10	<10	N/A
C114-31B	C1-31	2014	5	Phase I	40-50	0.8	<0.01	4.0	0.9	2.0	<5	2.0	3.0	<0.10	<10	<50	<50	<100
16-C1-31B	C1-31	2016	7	Phase II	40-50	<1	<0.05	3.2	0.69	1.9	1.7	2.1	<10	<0.01	<12	<10	<50	<50
C1-31B	C1-31	2019	10	Phase II	40-50	<1.0	<0.050	2.9	0.59	1.6	1.4	1.6	2.1	<0.01	<7.0	<4.0	9	<6.0

Sample ID	Location	Year	Monitoring	Monitoring	Depth	As*	Cd*	Cr*	Co*	(n
						(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	
C1-29 surface - downgradient										
10-16721	C1-29	2010	1	Phase I	0-10	**1.5**	<1	<20	<5	
C112-29A	C1-29	2012	3	Phase I	0-15	**1.4**	N/A	3.2	<1	
C114-29A	C1-29	2014	5	Phase I	0-15	0.7	<0.01	2.5	0.9	
C114-8D2 (Dup)	C1-29	2014	5	Phase I	40-50	0.7	<0.01	3.0	0.8	
C114-29A (Interlab)	C1-29	2014	5	Phase I	40-50	<1	<0.1	10.0	<1	
16-C1-29A	C1-29	2016	7	Phase II	0-15	<1	<0.05	3.8	0.62	
C1-DUP8 (Dup)	C1-29	2016	7	Phase II	0-15	1.0	<0.05	2.7	0.69	
16-C1-29A (Interlab)	C1-29	2016	7	Phase II	0-15	0.89	<0.02	2.8	0.67	
C1-29A	C1-29	2019	10	Phase II	0-15	1.0	<0.050	3.2	0.77	
C1-29 depth - downgradient										
10-16723	C1-29	2010	1	Phase I	25-30	**1.1**	<1	<20	<5	
C112-29B	C1-29	2012	3	Phase I	40-50	**1.3**	N/A	5.6	1.1	
C114-29B	C1-29	2014	5	Phase I	40-50	1.0	<0.01	4.0	1.3	
16-C1-29B	C1-29	2016	7	Phase II	40-50	<1	<0.05	3.3	0.82	
C1-29B	C1-29	2019	10	Phase II	40-50	<1.0	<0.050	2.5	0.68	

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As*	Cd*	Cr*	Co*	Cu	Pb*	Ni*	Zn*	Total PCB*	F1* C_6-C_{10}	F2 C_{10}-C_{16}	F3 C_{16}-C_{34}	F4 C_{34}-C_{50}
						(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
C1-28 surface - downgradient																		
10-16717	C1-28	2010	1	Phase I	0-10	**2.1**	<1	<20	<5	3.8	<10	**5.6**	<15	<0.003	<10	<4	<9	<8
C112-28A	C1-28	2012	3	Phase I	0-15	**2.2**	N/A	9.1	2.7	**6.2**	4.7	**6.8**	<10	<0.01	<12	<10	<10	N/A
C114-28A	C1-28	2014	5	Phase I	0-15	**1.4**	0.02	7.1	2.4	**4.8**	<5	4.9	7.0	<0.10	<10	<50	<50	<100
16-C1-28A	C1-28	2016	7	Phase II	0-15	**2.0**	<0.05	9.0	2.6	**5.0**	4.3	**6.1**	<10	<0.01	<12	<10	<50	<50
C1-28A	C1-28	2019	10	Phase II	0-15	**1.8**	<0.050	7.0	2.1	**4.3**	3.7	**5.1**	8.2	<0.01	<7.0	<4.0	11	<6.0
C1-40 (dup)	C1-28	2019	10	Phase II	0-15	**2.0**	<0.050	10.0	2.9	**6.4**	4.3	**7.1**	11.0	<0.05	<7.0	<4.0	8.5	<6.0
C1-28 depth - downgradient																		
10-16719	C1-28	2010	1	Phase I	30-50	**1.8**	<1	<20	<5	3.1	<10	<5	<15	0.004	N/A	<4	<9	<8
C112-28B	C1-28	2012	3	Phase I	40-50	**2.3**	N/A	11.0	2.9	**21.0**	4.6	**7.9**	13.0	<0.01	<12	<10	<10	N/A
C114-28B	C1-28	2014	5	Phase I	40-50	0.8	<0.01	3.6	1.2	1.9	<5	1.9	4.0	<0.10	<10	<50	<50	<100
16-C1-28B	C1-28	2016	7	Phase II	40-50	<1	<0.05	<1	<0.5	<1	<0.5	<1	<10	<0.01	<12	<10	<50	<50
C1-28B	C1-28	2019	10	Phase II	40-50	<1.0	<0.050	4.2	1.2	**4.3**	2.3	2.7	4.8	<0.01	<7.0	<4.0	<8.0	<6.0

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As*	Cd*	Cr*	Co*	Cu	Pb*	Ni*	Zn*	Total PCB*	F1* C_6-C_{10}	F2 C_{10}-C_{16}	F3 C_{16}-C_{34}	F4 C_{34}-C_{50}
						(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
C1-27 surface - upgradient																		
10-16713	C1-27	2010	1	Phase I	0-10	**5.4**	<1	<20	<5	3.2	<10	<5	<15	<0.003	<10	<4	<9	<8
C112-27A	C1-27	2012	3	Phase I	0-15	**1.3**	N/A	2.5	<1	<5	4.9	2.0	<10	<0.01	<12	<10	37	N/A
C112-8D2 (Dup)	C1-27	2012	3	Phase I	0-15	**1.3**	N/A	3.9	<1	<5	2.5	2.1	<10	<0.01	<12	<10	35	N/A
C112-27A (Interlab)	C1-27	2012	3	Phase I	0-15	**1.5**	0.03	4.1	1.0	3.0	3.6	4.2	3.0	<0.10	<10	<50	<50	<100
C114-27A	C1-27	2014	5	Phase I	0-15	**1.5**	0.22	3.6	1.0	**9.6**	<5	**5.7**	4.0	<0.10	<10	<50	**61**	<100
16-C1-27A	C1-27	2016	7	Phase II	0-15	**1.1**	<0.05	2.5	0.84	3.3	2.1	2.2	<10	<0.01	<12	<10	<50	<50
C1-27A	C1-27	2019	10	Phase II	0-15	**1.4**	0.081	4.4	1.3	**5.7**	3.0	3.9	4.2	<0.01	<7.0	<4.0	11	<6.0
C1-27 depth - upgradient																		
10-16715	C1-27	2010	1	Phase I	30-50	**1.4**	<1	<20	<5	**4.6**	<10	**8.9**	<15	<0.003	<10	<4	10	<8
C112-27B	C1-27	2012	3	Phase I	40-50	**1.6**	N/A	3.5	1.2	<5	2.6	3.0	<10	<0.01	<12	<10	<10	N/A
C114-27B	C1-27	2014	5	Phase I	40-50	**1.1**	0.01	2.3	0.9	2.3	<4.9	1.9	2.0	<0.10	<10	<50	<50	<100
16-C1-27B	C1-27	2016	7	Phase II	40-50	**1.2**	<0.05	2.9	0.85	1.7	2.0	1.7	<10	<0.01	<12	<10	<50	<50
C1-27B	C1-27	2019	10	Phase II	40-50	**1.2**	<0.050	2.8	0.89	1.6	2.0	1.6	2.9	<0.01	<7.0	<4.0	18	<6.0



LEGEND

- MONITORING SOIL SAMPLE LOCATION
- TOP OF LANDFILL
- TOE OF LANDFILL

XX	Sample exceeds baseline mean
XX	Sample exceeds baseline mean + 3x SD

Meters
15 0 15 30
1:800

NO.	VERSION	DATE	PAR	VERIF.	APPR.
2	FINAL	2020.04.17	*RF*	*TA*	*CG*

Construction de Défense Canada
Defence Construction Canada

COLLECTION OF LANDFILL MONITORING DATA

CAM-1. JENNY LIND ISLAND, NU

USAF LANDFILL 2019 SOIL ANALYTICAL RESULTS

ARCADIS
1050 Morrison Drive, Suite 201, Ottawa, Ontario, K2H 8K7
Office General +1 613 721 0555

MEASUREMENT UNIT:	SCALE:	DATE: (MONTH - YEAR)
Metre	1 : 800	MARCH 2020
DRAWN BY:	VERIFIED BY:	APPROVED BY:
R. FLETCHER	*T. AUSTRINS*	*C. GRAVELLE, P.ENG*
PROJECT NO:	DRAWING NO:	PAGE
30000251	30000251-CAM-1.10	PL

FIGURE CAM-1.10B

CAM-1 USAF Landfill	As* (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
Background Data - Arithmetic Mean	3.3	1.0	20.0	5.0	11.3	10.0	5.0	15.0	0.10	N/A	N/A	N/A	N/A
Baseline Data - Arithmetic Mean	**1.0**	**1.0**	**20.0**	**5.0**	**3.9**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**28.4**	**55.3**	**23.8**
Baseline Data - Standard Deviation	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.00	0.0	23.9	50.9	17.2
Baseline Data Mean + 3x Standard Deviation	**1.0**	**1.0**	**20.0**	**5.0**	**8.5**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**100.1**	**208.1**	**75.2**

** If baseline or background arithmetic mean was below the detection limit, the mean has been modified to match the detection limit value.*

12 CAM-1: EAST LANDING LANDFILL

12.1 Landfill Description

The East Landing Landfill is located in the Beach Area, southeast of the end of the road connecting the Beach Area and the Station Area. It is found approximately 30 m distance from the shoreline. This landfill encompasses approximately 2,200 m^2.

The landfill initially consisted of the five lobes of buried debris. The remediation of this landfill included excavation of Tier II contaminated soil, the removal of surface and partially embedded debris, complete excavation of two of the lobes and regrading of the remaining footprint with the placement of additional granular fill. Final cover extends approximately 0.75 to 3.0 m above surrounding grade. No instrumentation is installed at this landfill.

The long-term monitoring plan for the East Landing Landfill consists of visual inspection, and the periodic collection of soil samples. The landfill layout, visual observations and photographic locations are presented on **Figures CAM-1.11A** and soil analytical results are presented on **Figures CAM-1.11B**, both of which are located at the rear of the report.

12.2 Summary of Work Conducted

12.2.1 Visual Inspection

A visual inspection was completed at the East Landing Landfill on August 25, 2019. The visual inspection of the landfill was completed with no deviations from the accepted work plan.

12.2.2 Soil Sampling

Soil sampling at East Landing Landfill was conducted on August 28, 2019 and consisted of the collection of eight soil samples from four soil sample stations (C1-32, C1-33, C1-34, and C1-35). The Table below outlines the soil sampling activities conducted at the East Landing Landfill.

Duplicate sample collected at this landfill is as follows and is discussed further in Appendix C:

- C1-32A = duplicate C1-41

Table 12-1: Summary of Work Conducted by Soil Sampling Location- East Landing Landfill

Sample Location	Sample ID	Sample Depth (m bgs)	Notes
C1-32	C1-32A	0 - 0.15	Grey fine sand and gravel, organics, saturated, no odour
	C1-32B	0.4 - 0.5	Grey fine sand and gravel, saturated, clay at bottom, no odour

Sample Location	Sample ID	Sample Depth (m bgs)	Notes
C1-33	C1-33A	0 - 0.15	Grey gravel and cobbles, no odour
	C1-33B	0.4 – 0.5	Grey gravel and cobbles, no odour
C1-34	C1-34A	0 - 0.15	Grey gravel and cobbles, no odour
	C1-34B	0.4 – 0.5	Grey gravel and cobbles, no odour
C1-35	C1-35A	0 - 0.15	Grey sand and gravel, moist, no odour
	C1-35B	0.4 – 0.5	Grey sand and gravel, moist, no odour

12.2.3 Groundwater Sampling

No groundwater monitoring wells are present at the East Landing Landfill; therefore, no groundwater monitoring or analyses was performed as part of the 2019 monitoring program.

12.2.4 Thermal Monitoring

No thermistors are present at the East Landing Landfill; therefore, no thermal monitoring was performed as part of the 2019 monitoring program.

12.3 Results of the Monitoring Program

The following Sections 12.3.1 through 12.3.4 summarize the results of the CAM-1 monitoring program at the East Landing Landfill.

12.3.1 Visual Inspection

The visual inspection was conducted in compliance with Section 5.2 of the TOR and details are provided below in the following Sections. **Figure CAM-1.11A** presents the visual inspection findings and photographic locations.

12.3.1.1 Inspection Checklist

The visual inspection was completed as per the TOR requirements and the resulting visual inspection checklist is included below.

Table 12-2: Visual Inspection Checklist – East Landing Landfill

SITE NAME: CAM-1 Jenny Lind Island
LANDFILL DESIGNATION: East Landing Landfill LANDFILL TYPE: Regraded DATE OF INSPECTION: 25 August 2019 WEATHER CONDITIONS: mainly sunny, 25 km/hr winds from west, ~11 °C
DATE OF PREVIOUS INSPECTION: 11 August 2016
INSPECTED BY: Troy Austrins, P.Eng.
REPORT PREPARED BY: Troy Austrins, P.Eng. The inspector represents to the best of their knowledge that the following statements and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.

Table 12-2: Visual Inspection Checklist- EAST LANDING LANDFILL

Checklist Item	Present (Yes/No)	Feature Number	Feature Location	GPS Coordinates Easting/Northing/Zone	Length (m)	Width (m)	Depth (m)	Extent Relative to Landfill Surface	Description	Comparison with Historical Observations	Additional Comments/ Severity Rating	Photographic Records (photo reference, location, view point & direction, feature of note, scale)
Settlement	Yes	A1 A2	Southwest side slope of landfill	388158.277 / 7618210.382 388158.160 / 7618207.275	14	0.5 1.5	0.5 0.6	0.1 0.2	<1%	Two minor depressions observed alongside ATV ruts.	Single depression first noted in Year 3 (2012). Two additional depressions noted in 2014. Two depressions observed in 2019 adjacent to ATV ruts. Third Feature A depression, as listed in 2014/2016, considered to be associated with ATV rut. No significant change.	Severity Rating – Acceptable (features are minor and not affecting landfill stability)	CAM-1 EL 24 CAM-1 EL 27
Settlement	Yes	F	SE side slope of landfill	388192.989 / 7618201.095	14	0.3	0.5	0.1	<1%	Minor depression	No significant change.	Acceptable (feature is minor and not affecting landfill stability)	CAM-1 EL 32
Settlement	Yes	G	S side slope of landfill	388170.557 / 7618208.649	14	2.2	0.9	0.05	<1%	Minor depression	Decrease in length from 5 m to 2.2 m in 2019.	Acceptable (feature is minor and not affecting landfill stability)	CAM-1 EL 33
Erosion	Yes	C	NW side slope of landfill	388155.962 / 7618236.923	14	4	0.3	0.02	<1%	Minor erosion	Feature first noted in Year 5 (2014). Side slope appears stable. No significant change.	Acceptable (feature is minor and not affecting landfill stability)	CAM-1 EL 20
Erosion	No	N/A	SW side slope of landfill	See Feature D below	N/A	N/A	N/A	N/A	N/A	N/A	Feature first noted in Year 5 (2014). Re-labelled as Other (ATV ruts) instead of Erosion; see below	N/A	N/A
Lateral Movement	No												
Frost Action	No												
Sloughing	No												
Cracking	Yes	B	SE corner of landfill cover	388180.174 / 7618212.175	14	37	0.03 - 0.05	0.04	<1%	Continuous tension crack	Feature first noted in Year 3 (2012). Crack has widened from 0.05 m in some sections and has lengthened from 28 to 37 m since 2014. Changed from 39m to 37m from 2016 to 2019. Depth decreased from 0.1 to 0.04m between 2016 to 2019.The crack runs off of the landfill towards the east. Evidence of infilling of crack is present.	Acceptable (feature has increased in length since 2012, however no evidence was observed to indicate feature is affecting landfill stability)	CAM-1 EL 28, 29, 30, 31
Cracking	No	E	NW side slope of landfill- Not Observed	N/A	N/A	N/A	N/A	N/A	N/A	Completely infilled tension crack	Feature first noted in Year 5 (2014). Crack was completely infilled in 2016 and was not observed in 2019.	N/A	CAM-1 EL 19, 20, 21
Animal Burrows	No												
Vegetation Establishment	No												

Table 12-2: Visual Inspection Checklist- EAST LANDING LANDFILL

Checklist Item	Present (Yes/No)	Feature Number	Feature Location	GPS Coordinates Easting/Northing/Zone	Length (m)	Width (m)	Depth (m)	Extent Relative to Landfill Surface	Description	Comparison with Historical Observations	Additional Comments/ Severity Rating	Photographic Records (photo reference, location, view point & direction, feature of note, scale)
Staining	No											
Vegetation Stress	No											
Seepage Points (or) Ponded Water	No											
Debris and/or Liner Exposed	No											
Presence & Condition of Monitoring Instruments	No											
Features of Note/Other Relevant Observations (e.g., signs of activity, ruts…)	Yes	D	Southwest side slope of landfill (ATV ruts)	388158.160 / 7618207.275	14	6	0.2	0.1	<1%	ATV tire ruts	Feature first noted in Year 5 (2014). Side slope appears stable. Decrease in length from 6 to 5 m from 2014 to 2016 (former Erosion Feature D). In 2019, this feature re-labelled as Feature D-Other (ATV ruts).	Acceptable (Modified observation from erosion to ATV tire rutting in 2019; not affecting long-term landfill stability)	CAM-1 EL 26

12.3.1.2 Preliminary Stability Assessment

The Preliminary Stability Assessment for the East Landing Landfill was conducted on August 25, 2019 as per the TOR and the results are provided below in.

Table 12-3: Preliminary Stability Assessment – East Landing Landfill

East Landing Landfill		
Feature	**Severity Rating**	**Extent**
Settlement	Acceptable	Occasional
Erosion	Acceptable	Isolated
Lateral Movement	Not Observed	None
Frost Action	Not Observed	None
Sloughing	Not Observed	None
Cracking	Acceptable	Isolated
Animal Burrows	Not Observed	None
Vegetation Establishment	Not Observed	None
Staining	Not Observed	None
Vegetation Stress	Not Observed	None
Seepage / Ponded Water	Not Observed	None
Debris and/or Liner Exposure	Not Observed	None
Other	Acceptable (ATV ruts)	Isolated
Overall Landfill Performance	**Acceptable**	

Note: please refer to Performance/Severity rating reference guide in Section 2.1.3.1 above.

12.3.1.3 Photographic Records

The detailed photographic record for the East Landing Landfill has been completed as per Section 5.5 of the TOR and is included as **Appendix H**. The Photographic Record only contains an index of photographs collected; full sized photographs are contained as a separately appended CD/DVD-ROM. **Figure CAM-1.11A** illustrates the photograph locations and directions.

12.3.1.4 Trend Analysis

A trend analysis was conducted with regards to observations made during the visual inspection of the East Landing Landfill. The following outlines the results of the visual trend analysis.

Table 12-4: Visual Inspection Trends – East Landing Landfill

East Landing Landfill		
Checklist Item	**Feature Number**	**Comparison with Historical Observations**
Settlement	A1/A2 – two minor depressions F - settlement G – settlement	No significant change No significant change Decrease in length from 5 to 2.2 m in 2019
Erosion	C – minor erosion D – minor erosion	No significant change No significant change
Cracking	B – continuous tension crack E -former tension crack	Length change from 39m in 2016 to 37m in 2019. Completely infilled from 2014 to 2016. Not observed in 2019.
Other (ATV Ruts)	D- ATV Ruts	Newly re-classified observation (formerly termed erosion). Acceptable.

12.3.1.5 Discussion of Results/Trends

A comparison of the visual inspection results of the 2016 and 2019 monitoring events at the East Landing Landfill indicates that most settlement, erosion or cracking features generally did not undergo significant change. However, the length of Feature B changed from 39 m in 2016 to 37 m in 2019. Feature G decreased in length from 5 to 2.2 m in 2019. A new feature related to ATV tracks was observed in area formerly labelled as erosion (Feature D). The results of the visual inspection and the observed trends indicate that the performance of the landfill is acceptable.

12.3.2 Soil Sampling

Soil sampling of the East Landing Landfill was conducted on August 26, 2019. The soil sampling was conducted in compliance with Sections 5.3.1 and 5.3.2 of the TOR and details are provided below in the following Sections 12.3.2.1 through 12.3.2.3.

12.3.2.1 Laboratory Analytical Results

A total of eight soil samples were analysed from four soil sample locations at the East Landing Landfill and analysed for inorganic elements (arsenic, cadmium, chromium, cobalt, copper, nickel, and zinc), polychlorinated biphenyls (PCBs), and Petroleum Hydrocarbons (PHC F1, F2, F3, and F4).

The full current and historical analytical results are presented in **Table 10** in the Tables section of this report immediately following the main text. The laboratory certificates of analysis and chain of custody forms are presented in **Appendix B** of this report. **Figure CAM-1.11B** presents a summary of significant soil analytical results.

12.3.2.2 Summary of Soil Results

The soil results for 2019 are presented in the following table. The background and baseline mean are presented for information purposes. The discussions are focused on the comparison of the results to the BL+3SD.

Table 12-5: Evaluation of Results by Parameter – East Landing Landfill

Parameter	Background (mg/kg)	Baseline Mean (mg/kg)	Baseline Mean+3SD (mg/kg)	Discussion of Results
Arsenic (As)	3.3	5.8	21.2	Downgradient sample C1-35 at depth exceeded the BL+3SD at 23 mg/kg. This is a new maximum for this landfill. All remaining upgradient and downgradient results were below the BL+3SD.
Cadmium (Cd)	1.0	1.0	1.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
Chromium (Cr)	20.0	20.0	20.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
Cobalt (Co)	5.0	5.0	5.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
Copper (Cu)	11.3	7.6	18.6	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
Lead (Pb)	10.0	13.8	43.2	Downgradient sample C1-35 at depth exceeded the BL+3SD at 93 mg/kg. All remaining upgradient and downgradient results were below the BL+3SD.
Nickel (Ni)	5.0	7.3	19.1	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
Zinc (Zn)	15.0	15.0	15.0	Upgradient sample C1-32 at depth exceeded the BL+3SD at 43 mg/kg but was below 3X baseline mean. This is a new maximum for this landfill and appears anomalous in

Parameter	Background (mg/kg)	Baseline Mean (mg/kg)	Baseline Mean+3SD (mg/kg)	Discussion of Results
				nature. All remaining upgradient and downgradient results were below the BL+3SD.
PCBs (Total)	0.1	0.1	0.1	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
F1 (C_6-C_{10})	N/A	10.0	10.0	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
F2 (C_{10}-C_{16})	N/A	4.9	13.2	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
F3 (C_{16}-C_{34})	N/A	48.4	152.8	All soil sample results were below the BL+3SD at upgradient and downgradient locations.
F4 (C_{34}-C_{50})	N/A	30.4	99.8	All soil sample results were below the BL+3SD at upgradient and downgradient locations.

Note: BL+3SD = baseline data mean + 3x standard deviations. Soil concentrations are shown are in mg/kg.

12.3.2.3 Discussion of Soil Results

Downgradient sample C1-35 at depth exceeded the BL+3SD for both arsenic at 23 mg/kg and lead at 93 mg/kg. Low levels of naturally occurring arsenic have been found at CAM-1 (as shown on summary page of the LTM tables) and levels below 40 mg/kg were not historically remediated. The 2019 arsenic concentration is a new maximum for the landfill; however, remains well below the CAM-1, site-specific, DEW Line clean-up criterion of 40 mg/kg for arsenic. The lead concentration detected is well below the DEW Line Tier I and Tier II lead criteria of 200 mg/kg and 500 mg/kg, respectively. In addition, both of these concentrations appear anomalous in nature and are significantly higher than the majority of historically reported concentrations to date. It is worth noting that sample station C1-35, even though considered a downgradient sample station, is more of a cross-gradient location to the west of the landfill. Both the elevated arsenic and lead concentrations were not considered a concern at this time.

Upgradient sample C1-32 at depth exceeded the BL+3SD for zinc with a concentration of 43 mg/kg but was observed to be below 3X baseline mean. This is a new maximum for this landfill, also appears anomalous in nature, and does not appear consistent when compared to the other soil samples collected at this landfill. It is worth noting that this concentration is still well below the CAM-1 Tier II DEW Line clean-up criterion of 500 mg/kg for zinc. Based on the items listed above and the fact that this exceedance occurred at an up-gradient location, this zinc concentration is not considered a concern at this time.

All remaining upgradient and downgradient results were below the BL+3SD for all other parameters.

With the exception of the above noted instances, generally, downgradient concentrations were comparable to upgradient concentrations with some downgradient results falling below and above upgradient results based on visual comparison of the 2019 data on the graphs presented in **Appendix D11**. Some parameters

seem to exhibit a higher degree of fluctuation, such as arsenic, chromium, cobalt, and nickel; however, concentrations remain below the BL+3SD and can still be considered what would be expected of natural variation. These variations could represent natural variability and consideration should be given to the three very distinctly different soil types present at this landfill site (sand + gravel, clay, and washed gravel with cobbles). There is no indication of contaminant migration from the landfill at this time.

It should be noted that there are insufficient data points at this time to determine trends in the soil concentrations. The performance of the landfill should be re-evaluated once seven years of data are available.

12.4 Conclusions and Overall Landfill Performance

Both arsenic and lead parameters at C1-35 should be examined in the next and future monitoring events to determine if concentrations are consistent with the 2019 results. In addition, zinc at the upgradient sample station C1-32 should also be examined in the next and future monitoring events to confirm/refute this apparent anomalously high concentration.

A review of the analytical data indicates that the landfill is performing as intended and there is no indication of contaminant migration from the landfill at this time.

Based on the results of the 2019 monitoring program, the overall performance of the East Landing Landfill is acceptable.

12.5 Recommendations

Based on this review, it is recommended to continue the long-term monitoring of soils as planned.

Based on the results of the visual inspection, the East Landing Landfill performance is acceptable. No remedial work or deviations from the monitoring plan are recommended at this time.

388 150 E

388 200 E

7 618 250 N

7 618 200 N

FEATURE E
INFILLED CRACK (NOT OBSERVED 2019)

FEATURE C
EROSION

FEATURE A1
SETTLEMENT

FEATURE A2
SETTLEMENT

FEATURE B
CRACK

FEATURE D
OTHER (ATV TRACKS)

FEATURE F
SETTLEMENT

FEATURE G
SETTLEMENT

C1–32

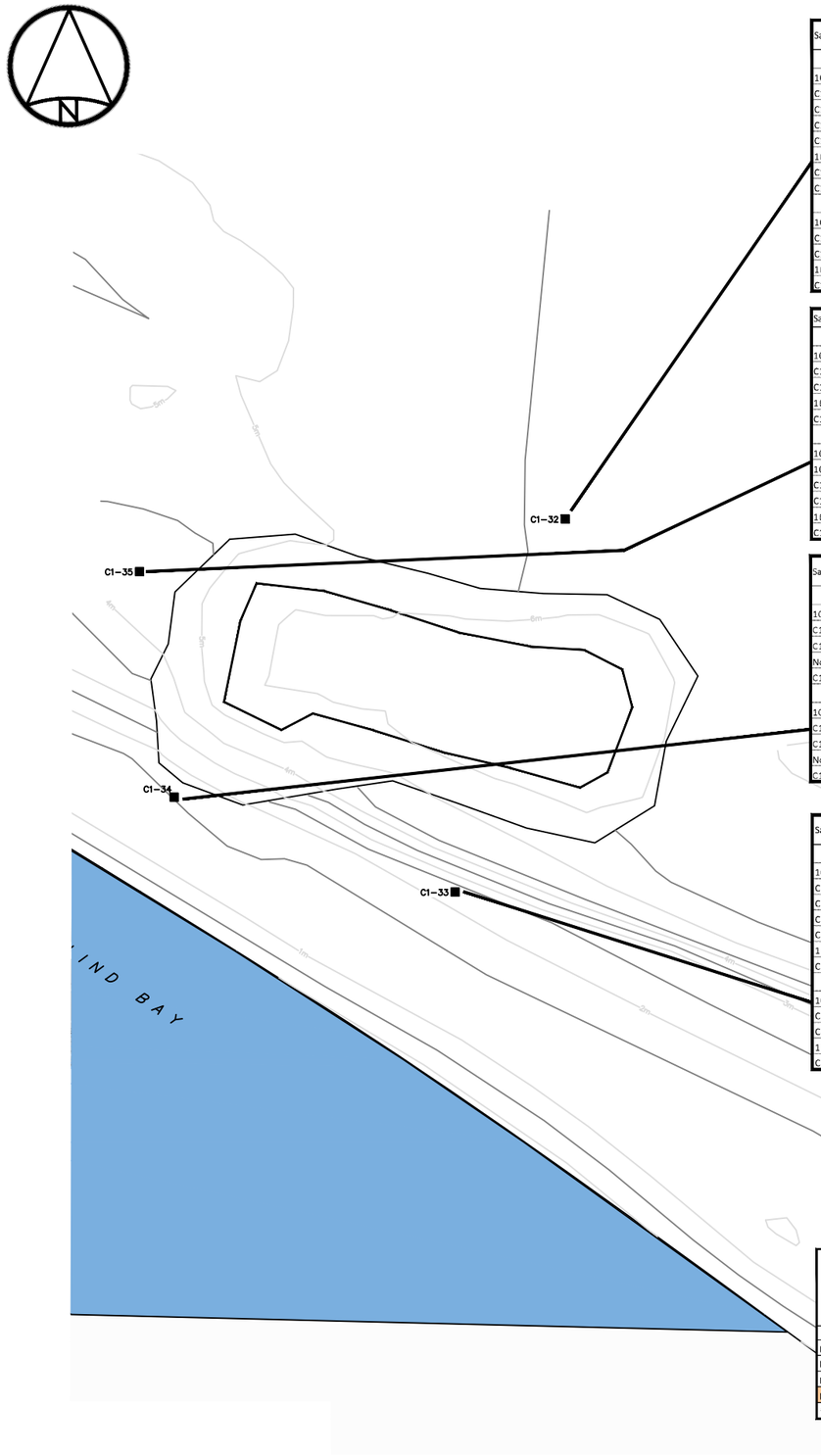
C1–35

C1–34

C1–33

JENNY LIND BAY

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 27 28 29 30 31 32



Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb (mg/kg)	Ni (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
C1-32 surface - upgradient																		
10-16697	C1-32	2010	1	Phase I	0-10	1.8	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	<4	<9	<8
C112-32A	C1-32	2012	3	Phase I	0-15	2.0	N/A	9.6	2.0	7.3	4.3	5.7	<10	<0.01	<12	<10	40	N/A
C114-32A	C1-32	2014	5	Phase I	0-15	0.4	<0.01	3.7	0.9	1.2	<4.9	1.6	4.0	<0.10	<10	<50	<50	<100
C114-BD1 (Dup)	C1-32	2014	5	Phase I	0-15	0.5	0.02	4.6	0.9	2.4	<5	3.2	4.0	<0.10	<10	<50	<50	<100
C114-32A (Interlab)	C1-32	2014	5	Phase I	0-15	<1	<0.1	3.1	<1	<5	11.0	1.6	<10	<0.01	<12	<10	<50	N/A
16-C1-32A	C1-32	2016	7	Phase II	0-15	2.0	<0.05	13.0	0.87	2.0	1.9	6.6	<10	<0.01	<12	<10	<50	<50
C1-32A	C1-32	2019	10	Phase II	0-15	<1.0	<0.050	3.3	0.79	1.7	2.3	1.8	3.4	<0.01	<7.0	<4.0	20	<6.0
C1-41 (dup)	C1-32	2019	10	Phase II	0-15	<1.0	<0.050	3.6	0.90	1.9	2.1	2.2	3.8	<0.01	<7.0	<4.0	15	<6.0
C1-32 depth - upgradient																		
10-16699	C1-32	2010	1	Phase I	30-50	2.7	<1	<20	<5	4.9	<10	5.2	<15	<0.003	<10	<4	<9	<8
C112-32B	C1-32	2012	3	Phase I	40-50	2.2	N/A	7.2	2.2	7.2	5.1	5.2	<10	<0.01	<12	<10	33	N/A
C114-32B	C1-32	2014	5	Phase I	40-50	0.7	0.01	3.9	0.9	2.3	<4.9	2.2	3.0	<0.10	<10	<50	<50	<100
16-C1-32B	C1-32	2016	7	Phase II	40-50	2.0	<0.05	11.0	1.4	2.7	3.4	5.8	<10	<0.01	<12	<10	**83**	<50
C1-32B	C1-32	2019	10	Phase II	40-50	2.0	<0.050	15.0	4.0	**12.0**	5.3	**11.0**	**43.0**	<0.01	<7.0	<4.0	16	<6.0

Sample ID	Location	Year	Monitoring	Monitoring	Depth	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb (mg/kg)	Ni (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	C_6-C_{10} (mg/kg)	C_{10}-C_{16} (mg/kg)	C_{16}-C_{34} (mg/kg)	C_{34}-C_{50} (mg/kg)
C1-35 surface - downgradient																		
10-16709	C1-35	2010	1	Phase I	0-10	**7.9**	<1	<20	<5	4.9	**16.0**	6.6	<15	<0.003	<10	<4	<9	<8
C112-35A	C1-35	2012	3	Phase I	0-15	5.4	N/A	7.9	2.4	6.9	12.0	5.6	<10	<0.01	<12	<10	<10	N/A
C114-35A	C1-35	2014	5	Phase I	0-15	4.0	<0.01	7.4	2.2	3.5	12.7	4.4	7.0	<0.10	<10	<50	<50	<100
16-C1-35A	C1-35	2016	7	Phase II	0-15	**6.7**	<0.05	18.0	3.0	**7.8**	**15.0**	**11.0**	<10	<0.01	<12	<10	<50	<50
C1-35A	C1-35	2019	10	Phase II	0-15	5.8	<0.050	4.2	1.6	3.4	**20.0**	3.3	5.8	<0.01	<7.0	<4.0	<8.0	<6.0
C1-35 depth - downgradient																		
10-16711	C1-35	2010	1	Phase I	30-50	3.0	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	<4	<9	<8
10-16712 (Dup)	C1-35	2010	1	Phase I	30-50	3.3	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	<4	<9	<8
C112-35B	C1-35	2012	3	Phase I	40-50	2.3	N/A	4.0	1.2	<5	7.4	2.5	<10	<0.01	<12	<10	<10	N/A
C114-35B	C1-35	2014	5	Phase I	40-50	2.9	<0.01	7.4	2.7	4.3	7.5	5.9	8.0	<0.10	<10	<50	<50	<100
16-C1-35B	C1-35	2016	7	Phase II	40-50	2.6	<0.05	3.7	1.3	3.0	7.6	2.6	<10	<0.01	<12	<10	<50	<50
C1-35B	C1-35	2019	10	Phase II	40-50	**23.0**	<0.050	5.1	3.7	5.6	**93.0**	6.8	11.0	<0.01	<7.0	<4.0	14	13

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb (mg/kg)	Ni (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
C1-34 surface - downgradient																		
10-16705	C1-34	2010	1	Phase I	0-10	**6.5**	<1	<20	<5	6.7	**39.0**	**7.4**	**17.0**	<0.003	<10	<4	<9	<8
C112-34A	C1-34	2012	3	Phase I	0-15	4.7	N/A	5.9	2.1	**57.0**	**22.0**	4.8	**19.0**	<0.01	<12	<10	<10	N/A
C114-34A	C1-34	2014	5	Phase I	0-15	5.6	0.04	7.5	3.3	5.7	**47.1**	5.2	13.0	<0.10	<10	<50	<50	<100
Not sampled - limited soil	C1-34	2016	7	Phase II														
C1-34A	C1-34	2019	10	Phase II	0-15	**8.2**	<0.050	6.5	3.3	5.8	**24.0**	7.1	6.5	<0.01	<7.0	<4.0	<8.0	<6.0
C1-34 depth - downgradient																		
10-16707	C1-34	2010	1	Phase I	30-50	5.0	<1	<20	<5	4.7	**136.0**	5.9	<15	<0.003	<10	**5.4**	21	<8
C112-34B	C1-34	2012	3	Phase I	40-50	4.0	N/A	11.0	2.8	**19.0**	11.0	7.3	<10	<0.01	<12	<10	<10	N/A
C114-34B	C1-34	2014	5	Phase I	40-50	5.1	0.03	6.7	3.0	4.9	**40.8**	5.1	7.0	<0.10	<10	<50	<50	<100
Not sampled - limited soil	C1-34	2016	7	Phase II														
C1-34B	C1-34	2019	10	Phase II	40-50	5.5	<0.050	6.1	2.5	4.5	**19.0**	5.5	4.7	<0.01	<7.0	<4.0	10	<6.0

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb (mg/kg)	Ni (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
C1-33 surface - downgradient																		
10-16701	C1-33	2010	1	Phase I	0-10	**6.7**	<1	<20	<5	**7.7**	**20.0**	7.0	<15	<0.003	<10	<4	<9	<8
C112-33A	C1-33	2012	3	Phase I	0-15	**6.4**	N/A	6.2	2.5	<5	**18.0**	5.0	<10	<0.01	<12	<10	<10	N/A
C112-BD1 (Dup)	C1-33	2012	3	Phase I	0-15	**7.5**	N/A	6.7	2.8	5.2	**24.0**	6.7	<10	<0.01	<12	<10	<10	N/A
C112-33A (Interlab)	C1-33	2012	3	Phase I	0-15	5.2	0.01	6.5	3.2	5.0	**21.9**	5.6	5.0	<0.10	<10	<50	<50	<100
C114-33A	C1-33	2014	5	Phase I	0-15	**9.3**	0.02	8.8	**5.1**	**7.6**	**26.9**	**10.0**	9.0	<0.10	<10	<50	<50	<100
16-C1-33A	C1-33	2016	7	Phase II	0-15	**11.0**	<0.05	9.2	3.8	5.8	**32.0**	**8.5**	<10	<0.01	<12	<10	<50	<50
C1-33A	C1-33	2019	10	Phase II	0-15	5.7	<0.050	5.6	2.9	7.3	**20.0**	6.4	8.6	<0.01	<7.0	<4.0	8.0	<6.0
C1-33 depth - downgradient																		
10-16703	C1-33	2010	1	Phase I	30-50	**7.4**	<1	<20	<5	4.5	**23.0**	5.8	<15	<0.003	<10	**8**	18	11
C112-33B	C1-33	2012	3	Phase I	40-50	**7.0**	N/A	8.5	3.1	**12.0**	**23.0**	7.1	<10	<0.01	<12	<10	<10	N/A
C114-33B	C1-33	2014	5	Phase I	40-50	**7.7**	0.02	9.5	4.7	**7.6**	**21.6**	**9.3**	7.0	<0.10	<10	<50	<50	<100
16-C1-33B	C1-33	2016	7	Phase II	40-50	5.1	<0.05	6.2	2.3	4.4	**14.0**	5.2	<10	<0.01	<12	<10	<50	<50
C1-33B	C1-33	2019	10	Phase II	40-50	**6.6**	<0.050	6.7	3.3	**8.9**	**21.0**	**7.8**	6.8	<0.01	<7.0	<4.0	<8.0	<6.0

East Landing Landfill	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb (mg/kg)	Ni (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
Background Data - Arithmetic Mean	3.3	1.0	20.0	5.0	11.3	10.0	5.0	15.0	0.10	N/A	N/A	N/A	N/A
Baseline Data - Arithmetic Mean	**5.8**	**1.0**	**20.0**	**5.0**	**7.6**	**13.8**	**7.3**	**15.0**	**0.10**	**10.0**	**4.9**	**48.4**	**30.4**
Baseline Data - Standard Deviation	5.1	0.0	0.0	0.0	3.7	9.8	3.9	0.0	0.00	0.0	2.8	34.8	23.1
Baseline Data Mean + 3x Standard Deviation	**21.2**	**1.0**	**20.0**	**5.0**	**18.6**	**43.2**	**19.1**	**15.0**	**0.10**	**10.0**	**13.2**	**152.8**	**99.8**

** If baseline or background arithmetic mean was below the detection limit, the mean has been modified to match the detection limit value.*

LEGEND

- MONITORING SOIL SAMPLE LOCATION
- TOP OF LANDFILL
- TOE OF LANDFILL

XX	Sample exceeds baseline mean
XX	Sample exceeds baseline mean + 3x SD

Meters
15 0 15 30
1:800

NO.	VERSION	DATE	BY	VERIF.	APPR.
2	FINAL	2020.04.17	RF	TA	CG

Construction de Défense Canada
Defence Construction Canada

COLLECTION OF LANDFILL MONITORING DATA

CAM-1, JENNY LIND ISLAND, NU

EAST LANDING LANDFILL 2019 SOIL ANALYTICAL RESULTS

ARCADIS
1050 Morrison Drive, Suite 201, Ottawa, Ontario, K2H 8K7
Office General +1 613 721 0555

MEASUREMENT UNIT	SCALE:	DATE (Month - Year):
Metre	1 : 800	MARCH 2020
DRAWN BY: R. FLETCHER	VERIFIED BY: T. AUSTRINS, P.ENG	APPROVED BY: C. GRAVELLE, P.ENG
PROJECT NO: 30000251	DRAWING NO: 30000251-CAM-1.11	PAGE: PL

FIGURE CAM-1.11B

TABLES

Table 1

CAM-1 Borrow Area North Landfill - Summary of Soil Monitoring Analytical Data

Link To: Table of Contents

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
Background Data - Arithmetic Mean						3.3	1.0	20.0	5.0	11.3	10.0	5.0	15.0	0.10	N/A	N/A	N/A	N/A
Baseline Data - Arithmetic Mean						**2.5**	**1.0**	**20.0**	**5.0**	**5.8**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**37.5**	**59.9**	**52.4**
Baseline Data - Standard Deviation						3.5	0.0	0.0	0.0	5.1	0.0	0.0	0.0	0.00	0.0	36.8	61.2	49.8
Baseline Data Mean + 3x Standard Deviation						**12.9**	**1.0**	**20.0**	**5.0**	**21.2**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**148.0**	**243.6**	**201.9**
**** If baseline or background arithmetic mean was below the detection limit, the mean has been modified to match the detection limit value.***																		
DEW Line Cleanup Tier I Criteria											*200*			*1*				
CAM-1 Site-Specfic As Criterion and DEW Line Cleanup Tier II Criteria						*40*	*5*	*250*	*50*	*100*	*500*	*100*	*500*	*5*				
Monitoring Data																		
Upgradient																		
	C1-1 surface																	
10-16619	C1-1	2010	1	Phase I	0-10	**4.7**	<1	<20	<5	**13.2**	<10	**9.8**	<15	<0.003	<10	11	**140**	**79**
C112-1A	C1-1	2012	3	Phase I	0-15	**2.5**	N/A	<1	1.0	**7.9**	3.3	1.7	<10	<0.01	<12	<10	27	N/A
C114-1A	C1-1	2014	5	Phase I	0-15	1.0	0.04	1.0	0.6	3.8	<5	1.5	8.0	<0.10	<10	<50	53	<100
16-C1-1A	C1-1	2016	7	Phase II	0-15	2.3	<0.05	2.2	1.0	4.5	6.1	1.6	<10	<0.02	<23	<23	<110	<110
C1-1A	C1-1	2019	10	Phase II	0-15	1.3	<0.10	1.1	<1.0	4.4	1.7	1.6	1.2	<0.01	<22	<4.0	38	7.7
	C1-1 depth																	
10-16621	C1-1	2010	1	Phase I	30-50	**2.6**	<1	<20	<5	3.5	<10	<5	<15	<0.003	<10	7.7	20	28
C112-1B	C1-1	2012	3	Phase I	40-50	**4.6**	N/A	1.7	1.7	<5	8.0	1.9	<10	<0.01	<12	<10	17	N/A
C114-1B	C1-1	2014	5	Phase I	40-50	**2.8**	0.02	2.4	1.2	4.2	7.1	1.8	3.0	<0.10	<10	<50	<50	<100
16-C1-1B	C1-1	2016	7	Phase II	30-40	**3.6**	<0.05	2.3	1.4	4.8	8.1	1.5	<10	<0.01	<12	<10	<50	<50
C1-1B	C1-1	2019	10	Phase II	40-50	2.0	<0.050	2.2	1.0	2.6	4.8	<1.0	2.6	<0.01	<7.0	<4.0	12	<6.0

Table 1

CAM-1 Borrow Area North Landfill - Summary of Soil Monitoring Analytical Data

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Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
Background Data - Arithmetic Mean						3.3	1.0	20.0	5.0	11.3	10.0	5.0	15.0	0.10	N/A	N/A	N/A	N/A
Baseline Data - Arithmetic Mean						**2.5**	**1.0**	**20.0**	**5.0**	**5.8**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**37.5**	**59.9**	**52.4**
Baseline Data - Standard Deviation						3.5	0.0	0.0	0.0	5.1	0.0	0.0	0.0	0.00	0.0	36.8	61.2	49.8
Baseline Data Mean + 3x Standard Deviation						**12.9**	**1.0**	**20.0**	**5.0**	**21.2**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**148.0**	**243.6**	**201.9**
Downgradient																		
	C1-2 surface																	
10-16611	C1-2	2010	1	Phase I	0-10	1.1	<1	<20	<5	<3	<10	<5	<15	0.005	<10	7.2	41	47
C112-2A	C1-2	2012	3	Phase I	0-15	**2.6**	N/A	1.7	1.0	<5	3.0	1.2	<10	<0.01	<12	<10	<10	N/A
C114-2A	C1-2	2014	5	Phase I	0-15	1.5	0.02	1.4	1.0	2.7	<4.9	1.1	4.0	<0.10	<10	<50	<50	<100
16-C1-2A	C1-2	2016	7	Phase II	0-15	<1	<0.05	<1	<0.5	1.5	1.4	<1	<10	<0.01	<12	11	**68**	<50
C1-2A	C1-2	2019	10	Phase II	0-15	2.3	<0.050	2.0	1.6	4.5	3.2	1.4	8.6	<0.01	<16	<4.0	10	<6.0
	C1-2 depth																	
10-16613	C1-2	2010	1	Phase I	30-35	2.0	<1	<20	<5	3.0	<10	<5	<15	0.006	<10	5.9	19	24
C112-2B	C1-2	2012	3	Phase I	40-50	**3.3**	N/A	4.8	2.3	**9.1**	4.6	3.8	<10	<0.01	<12	<10	<10	N/A
C114-2B	C1-2	2014	5	Phase I	40-50	2.1	0.02	2.9	1.8	3.2	<5	2.0	5.0	<0.10	<10	<50	<50	<100
16-C1-2B	C1-2	2016	7	Phase II	30-40	1.5	<0.05	1.2	0.9	2.9	2.2	1.1	<10	<0.01	<12	<10	<50	<50
C1-2B	C1-2	2019	10	Phase II	30-40	2.3	<0.050	2.2	1.3	3.3	3.4	1.5	4.1	<0.01	<7.0	<4.0	<8.0	<6.0

Table 1

CAM-1 Borrow Area North Landfill - Summary of Soil Monitoring Analytical Data

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Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
Background Data - Arithmetic Mean						3.3	1.0	20.0	5.0	11.3	10.0	5.0	15.0	0.10	N/A	N/A	N/A	N/A
Baseline Data - Arithmetic Mean						**2.5**	**1.0**	**20.0**	**5.0**	**5.8**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**37.5**	**59.9**	**52.4**
Baseline Data - Standard Deviation						3.5	0.0	0.0	0.0	5.1	0.0	0.0	0.0	0.00	0.0	36.8	61.2	49.8
Baseline Data Mean + 3x Standard Deviation						**12.9**	**1.0**	**20.0**	**5.0**	**21.2**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**148.0**	**243.6**	**201.9**
Downgradient																		
	C1-3 surface																	
10-16615	C1-3	2010	1	Phase I	0-10	2.3	<1	<20	<5	<3	<10	<5	<15	0.007	<10	5.2	18	17
C112-3A	C1-3	2012	3	Phase I	0-15	**3.5**	N/A	3.8	2.1	<5	4.1	2.8	<10	<0.01	<12	<10	16	N/A
C114-3A	C1-3	2014	5	Phase I	0-15	**2.5**	0.03	2.9	1.8	3.5	<4.9	1.9	7.0	<0.10	<10	<50	<50	<100
16-C1-3A	C1-3	2016	7	Phase II	0-15	**2.6**	<0.05	3.6	1.8	4.0	3.9	2.8	<10	<0.01	<12	<10	<50	<50
C1-3A	C1-3	2019	10	Phase II	0-15	**3.5**	<0.050	2.4	1.5	3.2	4.9	3.3	5.7	<0.01	<7.0	<4.0	10.0	<6.0
	C1-3 depth																	
10-16617	C1-3	2010	1	Phase I	30-50	1.7	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	4.2	9.6	12
10-16618 (Dup)	C1-3	2010	1	Phase I	30-50	1.3	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	4.2	9.6	12
C112-3B	C1-3	2012	3	Phase I	40-50	**6.8**	N/A	3.6	3.1	<5	6.2	3.4	<10	<0.01	<12	<10	<10	N/A
C114-3B	C1-3	2014	5	Phase I	40-50	1.8	0.01	2.5	1.5	2.9	<5	1.4	4.0	<0.10	<10	<50	<50	<100
16-C1-3B	C1-3	2016	7	Phase II	40-50	**5.1**	<0.05	3.0	2.0	**6.5**	6.0	2.2	<10	<0.01	<12	<10	<50	<50
C1-3B	C1-3	2019	10	Phase II	40-50	1.5	<0.050	2.1	0.83	1.8	2.9	1.0	2.4	<0.01	<7.0	<4.0	8.5	<6.0

Table 1

CAM-1 Borrow Area North Landfill - Summary of Soil Monitoring Analytical Data

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Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
Background Data - Arithmetic Mean						3.3	1.0	20.0	5.0	11.3	10.0	5.0	15.0	0.10	N/A	N/A	N/A	N/A
Baseline Data - Arithmetic Mean						**2.5**	**1.0**	**20.0**	**5.0**	**5.8**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**37.5**	**59.9**	**52.4**
Baseline Data - Standard Deviation						3.5	0.0	0.0	0.0	5.1	0.0	0.0	0.0	0.00	0.0	36.8	61.2	49.8
Baseline Data Mean + 3x Standard Deviation						**12.9**	**1.0**	**20.0**	**5.0**	**21.2**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**148.0**	**243.6**	**201.9**
Downgradient																		
	C1-4 surface																	
10-16623	C1-4	2010	1	Phase I	0-10	1.4	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	7	43	49
C112-4A	C1-4	2012	3	Phase I	0-15	<1	N/A	<1	<1	<5	1.3	<1	<10	<0.01	<12	<10	22	N/A
C114-4A	C1-4	2014	5	Phase I	0-15	0.8	0.02	1.2	0.8	1.7	<4.9	0.8	10.0	<0.10	<10	<50	<50	<100
C114-BD3 (Dup)	C1-4	2014	5	Phase I	0-15	0.7	0.02	1.3	0.7	1.6	<4.9	0.7	9.0	<0.10	<10	<50	<50	<100
C114-4A (Interlab)	C1-4	2014	5	Phase I	0-15	<1	<0.1	2.6	<1	<5	1.8	1.8	<10	<0.01	<12	<10	<50	N/A
16-C1-4A	C1-4	2016	7	Phase II	0-15	1.0	<0.05	1.3	0.65	1.8	2.0	<1	<10	<0.01	<12	<10	<50	<50
C1-4A	C1-4	2019	10	Phase II	0-15	1.2	<0.050	1.2	0.72	1.7	2.5	<1.0	6.7	<0.01	<7.0	<4.0	12	<6.0
	C1-4 depth																	
10-16625	C1-4	2010	1	Phase I	30-50	1.3	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	6.6	14	20
C112-4B	C1-4	2012	3	Phase I	40-50	1.8	N/A	2.7	1.5	<5	4.6	1.9	<10	<0.01	<12	<10	<10	N/A
C114-4B	C1-4	2014	5	Phase I	40-50	1.6	0.01	2.2	2.0	2.1	<4.9	1.3	5.0	<0.10	<10	<50	<50	<100
16-C1-4B	C1-4	2016	7	Phase II	30-40	1.3	<0.05	2.7	1.0	1.8	2.4	1.1	<10	<0.01	<12	<10	<50	<50
C1-4B	C1-4	2019	10	Phase II	40-50	1.1	<0.050	1.7	0.87	1.6	2.0	1.2	3.6	<0.01	<7.0	<4.0	<8.0	<6.0

Table 1

CAM-1 Borrow Area North Landfill - Summary of Soil Monitoring Analytical Data

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Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
Background Data - Arithmetic Mean						3.3	1.0	20.0	5.0	11.3	10.0	5.0	15.0	0.10	N/A	N/A	N/A	N/A
Baseline Data - Arithmetic Mean						**2.5**	**1.0**	**20.0**	**5.0**	**5.8**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**37.5**	**59.9**	**52.4**
Baseline Data - Standard Deviation						3.5	0.0	0.0	0.0	5.1	0.0	0.0	0.0	0.00	0.0	36.8	61.2	49.8
Baseline Data Mean + 3x Standard Deviation						**12.9**	**1.0**	**20.0**	**5.0**	**21.2**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**148.0**	**243.6**	**201.9**
Downgradient																		
	C1-5 surface																	
10-16627	C1-5	2010	1	Phase I	0-10	2.0	<1	<20	<5	<3	<10	<5	<15	0.016	<10	5.5	21	23
C112-5A	C1-5	2012	3	Phase I	0-15	1.6	N/A	<1	<1	<5	1.8	<1	<10	<0.01	<12	<10	<10	N/A
C114-5A	C1-5	2014	5	Phase I	0-15	1.6	0.02	1.1	0.9	1.6	<4.9	0.7	5.0	<0.10	<10	<50	<50	<100
16-C1-5A	C1-5	2016	7	Phase II	0-15	1.0	<0.05	<1	<0.5	1.7	1.6	<1	<10	<0.01	<12	<10	<50	<50
C1-DUP1 (Dup)	C1-5	2016	7	Phase II	0-15	1.2	<0.05	1.2	<0.5	<1	1.6	<1	<10	<0.01	<12	<10	<50	<50
16-C1-5A (Interlab)	C1-5	2016	7	Phase II	0-15	1.2	<0.02	1.1	0.46	1.1	1.6	0.5	<2	<0.05	<10	<20	<20	<20
C1-5A	C1-5	2019	10	Phase II	0-15	1.4	<0.050	<1.0	0.61	1.6	2.3	<1.0	3.6	<0.01	<7.0	<4.0	17	<6.0
	C1-5 depth																	
10-16629	C1-5	2010	1	Phase I	30-50	<1	<1	<20	<5	<3	<10	<5	<15	0.015	<10	5.2	<9	12
C112-5B	C1-5	2012	3	Phase I	40-50	<1	N/A	<1	<1	<5	1.2	<1	<10	<0.01	<12	<10	<10	N/A
C114-5B	C1-5	2014	5	Phase I	40-50	1.3	0.01	1.0	0.7	1.6	<5	0.6	3.0	<0.10	<10	<50	<50	<100
16-C1-5B	C1-5	2016	7	Phase II	40-50	1.2	<0.05	<1	<0.5	1.5	1.5	<1	<10	<0.01	<12	<10	<50	<50
C1-5B	C1-5	2019	10	Phase II	40-50	<1.0	<0.050	<1.0	<0.50	1.7	1.4	<1.0	1.6	<0.01	<7.0	<4.0	8.0	<6.0

N/A = not analyzed

Legend

XX **Sample exceeds baseline mean**

XX **Sample exceeds baseline mean + 3x SD**

Table 2

CAM-1 Northeast Landfill - Summary of Soil Monitoring Analytical Data

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Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
Background Data - Arithmetic Mean						3.3	1.0	20.0	5.0	11.3	10.0	5.0	15.0	0.10	N/A	N/A	N/A	N/A
Baseline Data - Arithmetic Mean						**3.3**	**1.0**	**20.0**	**5.0**	**5.0**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**31.4**	**107.6**	**108.1**
Baseline Data - Standard Deviation						2.3	0.0	0.0	0.0	3.4	0.0	0.0	0.0	0.00	0.0	41.5	133.5	132.6
Baseline Data Mean + 3x Standard Deviation						**10.1**	**1.0**	**20.0**	**5.0**	**15.2**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**156.0**	**508.1**	**505.9**
**** If baseline or background arithmetic mean was below the detection limit, the mean has been modified to match the detection limit value.***																		
DEW Line Cleanup Tier I Criteria											*200*			*1*				
CAM-1 Site-Specfic As Criterion and DEW Line Cleanup Tier II Criteria						*40*	*5*	*250*	*50*	*100*	*500*	*100*	*500*	*5*				
Monitoring Data																		
Upgradient																		
	C1-6 surface																	
10-16631	C1-6	2010	1	Phase I	0-10	**9.0**	<1	<20	<5	3.0	**12.0**	<5	<15	0.012	<10	5.3	20	21
C112-6A	C1-6	2012	3	Phase I	0-15	**11.0**	N/A	2.2	1.7	<5	**15.0**	2.5	<10	<0.01	<12	<10	12	N/A
C114-6A	C1-6	2014	5	Phase I	0-15	**5.6**	0.04	2.2	1.7	3.6	**12.4**	1.2	4.0	<0.10	<10	<50	<50	<100
16-C1-6A	C1-6	2016	7	Phase II	0-15	**6.9**	<0.05	2.2	0.98	2.8	**11.0**	1.6	<10	<0.01	<12	<10	<50	<50
C1-6A	C1-6	2019	10	Phase II	0-15	**5.6**	<0.050	2.0	1.1	2.9	**11.0**	1.4	3.7	<0.01	<7.0	<4.0	15	<6.0
	C1-6 depth																	
10-16633	C1-6	2010	1	Phase I	10-25	**7.9**	<1	<20	<5	4.3	**15.0**	<5	<15	0.005	<10	4.8	27	22
C112-6B	C1-6	2012	3	Phase I	40-50	**16.0**	N/A	2.7	2.4	**5.7**	**27.0**	3.3	<10	<0.01	<12	17	55	N/A
C114-6B	C1-6	2014	5	Phase I	40-50	**8.5**	0.04	2.4	2.1	4.4	**19.4**	1.5	4.0	<0.10	<10	<50	<50	<100
16-C1-6B	C1-6	2016	7	Phase II	30-35	**7.6**	<0.05	1.9	1.6	4.0	**17.0**	2.0	<10	<0.01	<12	<10	<50	<50
C1-6B	C1-6	2019	10	Phase II	40-50	**14.0**	<0.050	2.4	2.2	5.0	**29.0**	2.5	4.3	<0.01	<7.0	<4.0	16	<6.0

Table 2

CAM-1 Northeast Landfill - Summary of Soil Monitoring Analytical Data

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Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
Background Data - Arithmetic Mean						3.3	1.0	20.0	5.0	11.3	10.0	5.0	15.0	0.10	N/A	N/A	N/A	N/A
Baseline Data - Arithmetic Mean						**3.3**	**1.0**	**20.0**	**5.0**	**5.0**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**31.4**	**107.6**	**108.1**
Baseline Data - Standard Deviation						2.3	0.0	0.0	0.0	3.4	0.0	0.0	0.0	0.00	0.0	41.5	133.5	132.6
Baseline Data Mean + 3x Standard Deviation						**10.1**	**1.0**	**20.0**	**5.0**	**15.2**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**156.0**	**508.1**	**505.9**
Downgradient																		
	C1-7 surface																	
10-16635	C1-7	2010	1	Phase I	0-10	2.3	<1	<20	<5	<3	<10	<5	<15	0.009	<10	12	53	45
10-16636 (Dup)	C1-7	2010	1	Phase I	0-10	2.8	<1	<20	<5	<3	<10	<5	<15	0.005	<10	4.5	18	24
C112-7A	C1-7	2012	3	Phase I	0-15	**3.6**	N/A	2.3	1.1	<5	6.4	1.6	<10	<0.01	<12	<10	<10	N/A
C114-7A	C1-7	2014	5	Phase I	0-15	2.1	0.03	1.5	0.7	1.8	<5	0.9	9.0	<0.10	<10	<50	<50	<100
16-C1-7A	C1-7	2016	7	Phase II	0-15	**3.6**	<0.05	2.7	1.1	2.0	6.5	1.8	<10	<0.01	<12	<10	<50	<50
C1-7A	C1-7	2019	10	Phase II	0-15	2.4	<0.050	1.5	0.66	<1.0	4.4	<1.0	2.5	<0.01	<7.0	<4.0	34	<6.0
	C1-7 depth																	
10-16637	C1-7	2010	1	Phase I	30-50	**4.1**	<1	<20	<5	<3	<10	<5	<15	0.007	<10	7.6	19	30
C112-7B	C1-7	2012	3	Phase I	40-50	**3.6**	N/A	2.3	1.1	<5	6.7	1.6	<10	<0.01	<12	<10	<10	N/A
C114-7B	C1-7	2014	5	Phase I	40-50	**3.7**	0.02	2.7	1.6	2.4	8.0	1.8	6.0	<0.10	<10	<50	<50	<100
16-C1-7B	C1-7	2016	7	Phase II	40-50	**3.4**	<0.05	2.4	1.2	3.0	7.0	1.5	<10	<0.01	<12	<10	<50	<50
C1-7B	C1-7	2019	10	Phase II	40-50	<1.0	<0.050	1.2	<0.50	1.5	1.7	<1.0	4.6	<0.01	<7.0	<4.0	9.2	<6.0

Table 2

CAM-1 Northeast Landfill - Summary of Soil Monitoring Analytical Data

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Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
Background Data - Arithmetic Mean						3.3	1.0	20.0	5.0	11.3	10.0	5.0	15.0	0.10	N/A	N/A	N/A	N/A
Baseline Data - Arithmetic Mean						**3.3**	**1.0**	**20.0**	**5.0**	**5.0**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**31.4**	**107.6**	**108.1**
Baseline Data - Standard Deviation						2.3	0.0	0.0	0.0	3.4	0.0	0.0	0.0	0.00	0.0	41.5	133.5	132.6
Baseline Data Mean + 3x Standard Deviation						**10.1**	**1.0**	**20.0**	**5.0**	**15.2**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**156.0**	**508.1**	**505.9**
Downgradient																		
	C1-8 surface																	
10-16639	C1-8	2010	1	Phase I	0-10	1.9	<1	<20	<5	<3	<10	<5	<15	0.005	<10	<4	12	17
C112-8A	C1-8	2012	3	Phase I	0-15	1.9	N/A	1.8	<1	<5	2.9	1.1	<10	<0.01	<12	<10	<10	N/A
C112-BD3 (Dup)	C1-8	2012	3	Phase I	0-15	1.5	N/A	1.3	<1	<5	2.4	<1	<10	<0.01	<12	<10	<10	N/A
C112-8A (Interlab)	C1-8	2012	3	Phase I	0-15	2.5	0.01	1.9	0.8	1.0	5.1	1.4	5.0	<0.10	<10	<50	<50	<100
C114-8A	C1-8	2014	5	Phase I	0-15	1.5	0.02	1.8	0.7	1.5	<4.9	0.9	6.0	<0.10	<10	<50	<50	<100
C114-BD4 (Dup)	C1-8	2014	5	Phase I	0-15	1.2	0.01	2.0	0.7	1.5	<5	0.9	5.0	<0.10	<10	<50	<50	<100
C114-8A (Interlab)	C1-8	2014	5	Phase I	0-15	1.9	<0.1	1.7	<1	<5	3.2	1.0	<10	<0.01	<12	<10	<50	N/A
16-C1-8A	C1-8	2016	7	Phase II	0-15	2.1	<0.05	1.4	0.55	1.1	2.8	<1	<10	<0.01	<12	<10	<50	<50
C1-DUP2 (Dup)	C1-8	2016	7	Phase II	0-15	**13.0**	<0.05	2.4	1.3	3.3	**12.0**	2.4	10.0	<0.01	<12	<10	<50	<50
16-C1-8A (Interlab)	C1-8	2016	7	Phase II	0-15	1.46	<0.02	1.9	0.66	1.0	2.2	1.0	3.8	<0.05	<10	<20	<20	<20
C1-8A	C1-8	2019	10	Phase II	0-15	1.2	<0.050	1.2	<0.50	1.3	1.8	<1.0	2.8	<0.01	<7.0	<4.0	11	<6.0
	C1-8 depth																	
10-16641	C1-8	2010	1	Phase I	30-50	**3.6**	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	<4	18	16
C112-8B	C1-8	2012	3	Phase I	40-50	**10.0**	N/A	2.7	1.7	**8.0**	**12.0**	2.5	<10	<0.01	<12	<10	<10	N/A
C114-8B	C1-8	2014	5	Phase I	40-50	**5.8**	0.02	2.5	2.2	2.6	**11.0**	1.8	7.0	<0.10	<10	<50	<50	<100
16-C1-8B	C1-8	2016	7	Phase II	40-50	3.3	<0.05	1.7	1.0	1.7	6.2	1.3	<10	<0.01	<12	<10	<50	<50
C1-8B	C1-8	2019	10	Phase II	40-50	3.0	<0.050	1.7	0.98	1.6	4.7	1.3	3.8	<0.01	<7.0	<4.0	12	<6.0

Table 2

CAM-1 Northeast Landfill - Summary of Soil Monitoring Analytical Data

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Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
Background Data - Arithmetic Mean						3.3	1.0	20.0	5.0	11.3	10.0	5.0	15.0	0.10	N/A	N/A	N/A	N/A
Baseline Data - Arithmetic Mean						**3.3**	**1.0**	**20.0**	**5.0**	**5.0**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**31.4**	**107.6**	**108.1**
Baseline Data - Standard Deviation						2.3	0.0	0.0	0.0	3.4	0.0	0.0	0.0	0.00	0.0	41.5	133.5	132.6
Baseline Data Mean + 3x Standard Deviation						**10.1**	**1.0**	**20.0**	**5.0**	**15.2**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**156.0**	**508.1**	**505.9**
Downgradient																		
	C1-9 surface																	
10-16643	C1-9	2010	1	Phase I	0-10	1.8	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	<4	13	16
C112-9A	C1-9	2012	3	Phase I	0-15	2.6	N/A	**36.0**	<1	**10.0**	**110.0**	2.7	<10	<0.01	<12	<10	57	N/A
C114-9A	C1-9	2014	5	Phase I	0-15	**4.0**	0.12	4.3	1.5	**16.6**	7.9	4.6	7.0	<0.10	<10	<50	<50	<100
16-C1-9A	C1-9	2016	7	Phase II	0-15	**5.0**	0.075	2.2	1.3	**6.4**	7.3	2.4	<10	<0.01	<12	<10	<50	<50
C1-9A	C1-9	2019	10	Phase II	0-15	**4.8**	0.11	2.1	0.82	**7.6**	3.7	2.5	2.8	<0.01	<7.0	<4.0	61	11
	C1-9 depth																	
10-16645	C1-9	2010	1	Phase I	30-40	2.7	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	<4	12	17
C112-9B	C1-9	2012	3	Phase I	40-50	**7.8**	N/A	3.0	2.2	**12.0**	**13.0**	3.3	<10	<0.01	<12	<10	24	N/A
C114-9B	C1-9	2014	5	Phase I	40-50	**12.9**	0.10	3.6	3.5	**12.5**	**22.4**	4.6	15.0	<0.10	<10	<50	<50	<100
16-C1-9B	C1-9	2016	7	Phase II	35-45	**3.8**	<0.05	1.6	1.0	3.4	6.4	1.6	<10	<0.01	<12	<10	<50	<50
C1-9B	C1-9	2019	10	Phase II	40-50	**9.9**	0.055	2.2	3.4	**6.9**	**17.0**	3.7	7.0	<0.01	<7.0	<4.0	16	<6.0

N/A = not analyzed

Legend

XX	**Sample exceeds baseline mean**
XX	**Sample exceeds baseline mean + 3x SD**

Table 3

CAM-1 Station West Landfill - Summary of Soil Monitoring Analytical Data

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Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As* (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
Background Data - Arithmetic Mean						3.3	1.0	20.0	5.0	11.3	10.0	5.0	15.0	0.10	N/A	N/A	N/A	N/A
Baseline Data - Arithmetic Mean						**1.0**	**1.0**	**20.0**	**5.0**	**5.0**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**7.6**	**50.9**	**46.1**
Baseline Data - Standard Deviation						0.0	0.0	0.0	0.0	4.0	0.0	0.0	0.0	0.00	0.0	4.0	38.2	43.1
Baseline Data Mean + 3x Standard Deviation						**1.0**	**1.0**	**20.0**	**5.0**	**17.0**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**19.7**	**165.4**	**175.5**
**** If baseline or background arithmetic mean was below the detection limit, the mean has been modified to match the detection limit value.***																		
DEW Line Cleanup Tier I Criteria											*200*			*1*				
CAM-1 Site-Specfic As Criterion and DEW Line Cleanup Tier II Criteria						*40*	*5*	*250*	*50*	*100*	*500*	*100*	*500*	*5*				
Monitoring Data																		
Upgradient																		
	C1-10 surface																	
10-16595	C1-10	2010	1	Phase I	0-10	**1.4**	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	5.7	**81**	**130**
C112-10A	C1-10	2012	3	Phase I	0-15	**1.8**	N/A	1.4	<1	<5	2.6	1.1	<10	<0.01	<12	<10	18	N/A
C114-10A	C1-10	2014	5	Phase I	0-15	0.7	0.02	1.4	0.5	1.8	<4.9	1.1	4.0	<0.10	<10	<50	<50	<100
16-C1-10A	C1-10	2016	7	Phase II	0-15	<1	<0.05	1.4	<0.50	1.4	2.0	<1	<10	<0.01	<12	<10	<50	<50
C1-10A	C1-10	2019	10	Phase II	0-15	**2.7**	<0.050	1.4	0.77	2.1	3.9	1.6	4.4	<0.01	<7.0	<4.0	22	<6.0
	C1-10 depth																	
10-16597	C1-10	2010	1	Phase I	30-50	**4.2**	<1	<20	<5	3.4	<10	<5	<15	<0.003	<10	5.8	21	38
C112-10B	C1-10	2012	3	Phase I	40-50	**4.7**	N/A	2.3	1.0	<5	5.9	2.0	<10	<0.01	<12	<10	11	N/A
C114-10B	C1-10	2014	5	Phase I	40-50	**7.9**	0.03	4.2	2.6	**5.9**	**12.7**	2.9	5.0	<0.10	<10	<50	<50	<100
16-C1-10B	C1-10	2016	7	Phase II	25-30	**4.6**	<0.05	4.2	1.3	3.3	9.6	2.3	<10	<0.01	<12	<10	<50	<50
C1-10B	C1-10	2019	10	Phase II	40-50	**2.6**	<0.050	2.0	0.77	2.1	4.3	1.4	3.2	<0.01	<7.0	<4.0	10	<6.0

Table 3

CAM-1 Station West Landfill - Summary of Soil Monitoring Analytical Data

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Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As* (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
Background Data - Arithmetic Mean						3.3	1.0	20.0	5.0	11.3	10.0	5.0	15.0	0.10	N/A	N/A	N/A	N/A
Baseline Data - Arithmetic Mean						**1.0**	**1.0**	**20.0**	**5.0**	**5.0**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**7.6**	**50.9**	**46.1**
Baseline Data - Standard Deviation						0.0	0.0	0.0	0.0	4.0	0.0	0.0	0.0	0.00	0.0	4.0	38.2	43.1
Baseline Data Mean + 3x Standard Deviation						**1.0**	**1.0**	**20.0**	**5.0**	**17.0**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**19.7**	**165.4**	**175.5**
Downgradient																		
	C1-11 surface																	
10-16599	C1-11	2010	1	Phase I	0-10	<1	<1	<20	<5	<5	<10	<5	<15	<0.003	<10	5.6	29	46
C112-11A	C1-11	2012	3	Phase I	0-15	<1	N/A	1.2	<1	<5	<1	1.4	<10	<0.01	<12	<10	11	N/A
C114-11A	C1-11	2014	5	Phase I	0-15	0.4	<0.01	1.2	0.3	3.0	<5	1.1	2.0	<0.10	<10	<50	<50	<100
16-C1-11A	C1-11	2016	7	Phase II	0-15	<1	<0.05	1.8	<0.50	1.2	0.71	1.0	<10	<0.01	<12	<10	<50	<50
C1-DUP3 (Dup)	C1-11	2016	7	Phase II	0-15	<1	<0.05	1.3	<0.50	1.0	0.8	<1	<10	<0.01	<12	<10	<50	<50
16-C1-11A (Interlab)	C1-11	2016	7	Phase II	0-15	0.35	<0.02	0.94	0.3	1.0	0.59	0.82	<2	<0.05	<10	<20	<20	<20
C1-11A	C1-11	2019	10	Phase II	0-15	<1.0	<0.050	1.4	<0.5	1.5	0.51	<1.0	1.4	<0.01	<7.0	<4.0	9.6	<6.0
	C1-11 depth																	
10-16601	C1-11	2010	1	Phase I	30-50	<1	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	6	11	21
C112-11B	C1-11	2012	3	Phase I	40-50	<1	N/A	2.8	<1	<5	1.4	1.9	<10	<0.01	<12	<10	<10	N/A
C114-11B	C1-11	2014	5	Phase I	40-50	0.9	<0.01	1.9	0.5	1.1	<4.9	1.1	2.0	<0.10	<10	<50	<50	<100
C114-BD5	C1-11	2014	5	Phase I	40-50	0.6	<0.01	2.3	0.7	1.3	<4.9	1.0	2.0	<0.10	<10	<50	<50	<100
C114-11B (Interlab)	C1-11	2014	5	Phase I	40-50	<1	<0.1	4.1	<1	<5	1.5	2.3	<10	<0.01	<12	<10	<50	N/A
16-C1-11B	C1-11	2016	7	Phase II	40-50	<1	<0.05	1.6	<0.50	<1	0.86	<1	<10	<0.01	<12	<10	<50	<50
C1-11B	C1-11	2019	10	Phase II	40-50	<1.0	<0.050	1.6	<0.5	<1.0	0.86	<1.0	1.9	<0.01	<7.0	<4.0	<8.0	<6.0

Table 3

CAM-1 Station West Landfill - Summary of Soil Monitoring Analytical Data

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Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As* (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
Background Data - Arithmetic Mean						3.3	1.0	20.0	5.0	11.3	10.0	5.0	15.0	0.10	N/A	N/A	N/A	N/A
Baseline Data - Arithmetic Mean						**1.0**	**1.0**	**20.0**	**5.0**	**5.0**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**7.6**	**50.9**	**46.1**
Baseline Data - Standard Deviation						0.0	0.0	0.0	0.0	4.0	0.0	0.0	0.0	0.00	0.0	4.0	38.2	43.1
Baseline Data Mean + 3x Standard Deviation						**1.0**	**1.0**	**20.0**	**5.0**	**17.0**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**19.7**	**165.4**	**175.5**
Downgradient																		
	C1-12 surface																	
10-16603	C1-12	2010	1	Phase I	0-10	<1	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	5.5	16	26
C112-12A	C1-12	2012	3	Phase I	0-15	<1	N/A	1.3	<1	<5	<1	<1	<10	<0.01	<12	<10	<10	N/A
C114-12A	C1-12	2014	5	Phase I	0-15	0.3	<0.01	1.5	0.4	1.5	<4.9	0.9	2.0	<0.10	<10	<50	<50	<100
16-C1-12A	C1-12	2016	7	Phase II	0-15	<1	<0.05	<1	<0.50	1.0	<0.50	<1	<10	<0.01	<12	<10	<50	<50
C1-DUP4 (Dup)	C1-12	2016	7	Phase II	0-15	<1	<0.05	1.2	<0.50	1.8	0.53	<1	<10	<0.01	<12	<10	<50	<50
16-C1-12A (Interlab)	C1-12	2016	7	Phase II	0-15	0.32	<0.02	1.2	0.23	1.2	<0.50	0.72	<2	<0.05	<10	<20	<20	<20
C1-12A	C1-12	2019	10	Phase II	0-15	<1.0	<0.050	1.1	<0.5	<1.0	0.54	<1.0	1.9	<0.01	<7.0	<4.0	<8.0	<6.0
	C1-12 depth																	
10-16605	C1-12	2010	1	Phase I	30-50	<1	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	6.1	17	18
10-16606 (Dup)	C1-12	2010	1	Phase I	30-50	<1	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	5.4	15	18
C112-12B	C1-12	2012	3	Phase I	40-50	<1	N/A	2.6	<1	<5	1.1	1.7	<10	<0.01	<12	<10	<10	N/A
C112-BD4 (Dup)	C1-12	2012	3	Phase I	40-50	<1	N/A	1.8	<1	<5	<1	1.2	<10	<0.01	<12	<10	<10	N/A
C112-12B (Interlab)	C1-12	2012	3	Phase I	40-50	0.5	<0.01	2.3	0.5	1.0	1.0	1.9	2.0	<0.10	<10	<50	<50	<100
C114-12B	C1-12	2014	5	Phase I	40-50	0.6	<0.01	2.2	0.8	1.3	<5	1.4	3.0	<0.10	<10	<50	<50	<100
16-C1-12B	C1-12	2016	7	Phase II	40-50	<1	<0.05	2.6	0.59	1.3	1.2	1.5	<10	<0.01	<12	<10	<50	<50
C1-12B	C1-12	2019	10	Phase II	40-50	<1.0	<0.050	1.9	<0.5	<1.0	0.9	<1.0	2.2	<0.01	<7.0	<4.0	<8.0	<6.0

Table 3

CAM-1 Station West Landfill - Summary of Soil Monitoring Analytical Data

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Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As* (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
Background Data - Arithmetic Mean						3.3	1.0	20.0	5.0	11.3	10.0	5.0	15.0	0.10	N/A	N/A	N/A	N/A
Baseline Data - Arithmetic Mean						**1.0**	**1.0**	**20.0**	**5.0**	**5.0**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**7.6**	**50.9**	**46.1**
Baseline Data - Standard Deviation						0.0	0.0	0.0	0.0	4.0	0.0	0.0	0.0	0.00	0.0	4.0	38.2	43.1
Baseline Data Mean + 3x Standard Deviation						**1.0**	**1.0**	**20.0**	**5.0**	**17.0**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**19.7**	**165.4**	**175.5**
Downgradient																		
	C1-13 surface																	
10-16607	C1-13	2010	1	Phase I	0-10	<1	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	5.6	17	19
C112-13A	C1-13	2012	3	Phase I	0-15	<1	N/A	2.0	<1	<5	1.4	1.1	<10	<0.01	<12	<10	<10	N/A
C114-13A	C1-13	2014	5	Phase I	0-15	0.9	<0.01	2.6	0.8	1.4	<4.9	1.6	3.0	<0.10	<10	<50	<50	<100
16-C1-13A	C1-13	2016	7	Phase II	0-15	<1	<0.05	2.2	0.62	1.2	1.5	1.3	<10	<0.01	<12	<10	<50	<50
C1-13A	C1-13	2019	10	Phase II	0-15	<1.0	<0.050	1.7	0.54	1.1	1.5	<1.0	1.8	<0.01	<7.0	<4.0	9.5	<6.0
	C1-13 depth																	
10-16609	C1-13	2010	1	Phase I	30-50	<1	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	4.5	12	15
C112-13B	C1-13	2012	3	Phase I	40-50	<1	N/A	1.6	<1	<5	1.4	<1	<10	<0.01	<12	<10	<10	N/A
C114-13B	C1-13	2014	5	Phase I	40-50	**1.1**	<0.01	3.6	0.9	1.5	<4.9	1.6	3.0	<0.10	<10	<50	<50	<100
16-C1-13B	C1-13	2016	7	Phase II	30-40	**1.2**	<0.05	1.8	0.6	1.2	2.1	1.1	<10	<0.01	<12	<10	<50	<50
C1-13B	C1-13	2019	10	Phase II	40-50	**2.1**	<0.050	2.3	0.74	1.9	2.4	1.6	6.6	<0.01	<7.0	<4.0	<8.0	<6.0

N/A = not analyzed

Legend	
XX	**Sample exceeds baseline mean**
XX	**Sample exceeds baseline mean + 3x SD**

Table 4A

CAM-1 Non-Hazardous Waste Landfill - Summary of Soil Monitoring Analytical Data

Link To: Table of Contents

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2* C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
Background Data - Arithmetic Mean						3.3	1.0	20.0	5.0	11.3	10.0	5.0	15.0	0.10	N/A	N/A	N/A	N/A
Baseline Data - Arithmetic Mean						**6.9**	**1.0**	**20.0**	**5.0**	**5.9**	**20.0**	**5.0**	**15.0**	**0.10**	**10.0**	**10.0**	**34.1**	**17.4**
Baseline Data - Standard Deviation						7.6	0.0	0.0	0.0	3.4	18.4	0.0	0.0	0.00	0.0	0.0	30.7	12.6
Baseline Data Mean + 3x Standard Deviation						**29.6**	**1.0**	**20.0**	**5.0**	**16.1**	**75.1**	**5.0**	**15.0**	**0.10**	**10.0**	**10.0**	**126.3**	**55.3**
**** If baseline or background arithmetic mean was below the detection limit, the mean has been modified to match the detection limit value.***																		
DEW Line Cleanup Tier I Criteria											*200*			*1*				
CAM-1 Site-Specfic As Criterion and DEW Line Cleanup Tier II Criteria						*40*	*5*	*250*	*50*	*100*	*500*	*100*	*500*	*5*				
Monitoring Data																		
Upgradient																		
	MW-01 surface																	
10-16579	MW-01	2010	1	Phase I	0-10	1.0	<1	<20	<5	3.0	<10	<5	<15	0.041	<10	6.7	**50**	**40**
C112-1WA	MW-01	2012	3	Phase I	0-15	3.9	0.11	2.9	1.0	<5	10.0	1.7	<10	0.039	<12	<10	31	N/A
C114-1WA	MW-01	2014	5	Phase I	0-15	0.7	<0.01	3.1	1.0	2.0	<4.9	1.4	3.0	<0.10	<10	<50	<50	<100
16-C1-MW01A	MW-01	2016	7	Phase II	0-15	1.0	<0.05	2.9	1.0	2.2	3.0	2.0	<10	<0.01	<12	<10	<50	<50
MW-01A	MW-01	2019	10	Phase II	0-15	2.6	0.12	3.3	0.82	4.2	9.3	1.7	**32.0**	**0.430**	<7.0	**18**	**87**	**23**
	MW-01 depth																	
10-16581	MW-01	2010	1	Phase I	30-50	2.2	<1	<20	<5	4.5	10.0	<5	<15	**0.149**	<10	5.5	**63**	**46**
10-16582 (Dup)	MW-01	2010	1	Phase I	30-50	2.1	<1	<20	<5	4.3	<10	<5	<15	0.027	<10	10	**88**	**68**
C112-1WB	MW-01	2012	3	Phase I	40-50	4.8	<0.1	3.3	1.2	<5	10.0	2.7	<10	0.025	<12	<10	28	N/A
C114-1WB	MW-01	2014	5	Phase I	40-50	0.8	<0.01	2.3	0.9	1.8	<5	1.4	3.0	<0.10	<10	<50	<50	<100
16-C1-MW01B	MW-01	2016	7	Phase II	40-50	1.7	0.082	3.6	1.1	3.1	**34.0**	2.2	**17.0**	0.077	<12	<10	<50	<50
MW-01B	MW-01	2019	10	Phase II	40-50	2.7	0.061	2.6	0.86	**6.4**	11.0	1.4	15.0	0.076	<7.0	<4.0	**39**	8.1

Table 4A

CAM-1 Non-Hazardous Waste Landfill - Summary of Soil Monitoring Analytical Data

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Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2* C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
Background Data - Arithmetic Mean						3.3	1.0	20.0	5.0	11.3	10.0	5.0	15.0	0.10	N/A	N/A	N/A	N/A
Baseline Data - Arithmetic Mean						**6.9**	**1.0**	**20.0**	**5.0**	**5.9**	**20.0**	**5.0**	**15.0**	**0.10**	**10.0**	**10.0**	**34.1**	**17.4**
Baseline Data - Standard Deviation						7.6	0.0	0.0	0.0	3.4	18.4	0.0	0.0	0.00	0.0	0.0	30.7	12.6
Baseline Data Mean + 3x Standard Deviation						**29.6**	**1.0**	**20.0**	**5.0**	**16.1**	**75.1**	**5.0**	**15.0**	**0.10**	**10.0**	**10.0**	**126.3**	**55.3**
Downgradient																		
	MW-02 surface																	
10-16583	MW-02	2010	1	Phase I	0-10	4.2	<1	<20	<5	<3.0	17.0	<5	<15	<0.003	<10	<4	**37**	**26**
C112-2WA	MW-02	2012	3	Phase I	0-15	4.0	<0.1	2.3	<1.0	<5	11.0	1.6	<10	<0.01	<12	<10	<10	N/A
C112-BD8 (Dup)	MW-02	2012	3	Phase I	0-15	4.6	N/A	2.0	<1.0	<5	13.0	1.1	<10	<0.01	<12	<10	<10	N/A
C112-2WA (Interlab)	MW-02	2012	3	Phase I	0-15	4.0	0.01	2.7	0.8	2.0	13.1	**5.1**	4.0	<0.10	<10	<50	<50	<100
C114-2WA	MW-02	2014	5	Phase I	0-15	**8.8**	0.05	2.4	1.6	3.2	**32.6**	1.3	3.0	<0.10	<10	<50	<50	<100
16-C1-MW02A	MW-02	2016	7	Phase II	0-15	**11.0**	<0.05	2.0	0.85	2.6	**29.0**	1.6	<10	<0.01	<12	<10	<50	<50
MW-02A	MW-02	2019	10	Phase II	0-15	6.7	<0.050	1.9	0.73	2.3	**34.0**	1.3	3.3	<0.010	<7.0	<4.0	<8.0	<6.0
	MW-02 depth																	
10-16585	MW-02	2010	1	Phase I	30-50	**7.7**	<1	<20	<5	3.1	**23.0**	<5	<15	<0.003	<10	5.3	16	**20**
C112-2WB	MW-02	2012	3	Phase I	40-50	5.4	<0.1	1.8	<1.0	<5	16.0	1.4	<10	<0.01	<12	<10	<10	N/A
C114-2WB	MW-02	2014	5	Phase I	40-50	**43.8**	0.08	6.3	2.8	**6.7**	**159.0**	3.2	3.0	<0.10	<10	<50	<50	<100
Not sampled - refusal	MW-02	2016	7	Phase II														
MW-02B	MW-02	2019	10	Phase II	20-30	**10.0**	<0.05	2.0	1.4	3.6	**27.0**	1.6	3.3	<0.010	<7.0	<4.0	<8.0	<6.0

Table 4A

CAM-1 Non-Hazardous Waste Landfill - Summary of Soil Monitoring Analytical Data

Link To: Table of Contents

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2* C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
Background Data - Arithmetic Mean						3.3	1.0	20.0	5.0	11.3	10.0	5.0	15.0	0.10	N/A	N/A	N/A	N/A
Baseline Data - Arithmetic Mean						**6.9**	**1.0**	**20.0**	**5.0**	**5.9**	**20.0**	**5.0**	**15.0**	**0.10**	**10.0**	**10.0**	**34.1**	**17.4**
Baseline Data - Standard Deviation						7.6	0.0	0.0	0.0	3.4	18.4	0.0	0.0	0.00	0.0	0.0	30.7	12.6
Baseline Data Mean + 3x Standard Deviation						**29.6**	**1.0**	**20.0**	**5.0**	**16.1**	**75.1**	**5.0**	**15.0**	**0.10**	**10.0**	**10.0**	**126.3**	**55.3**
Downgradient																		
	MW-03 surface																	
10-16587	MW-03	2010	1	Phase I	0-10	1.4	<1	<20	<5	<3.0	<10	<5	<15	<0.003	<10	5.4	20	**23**
C112-3WA	MW-03	2012	3	Phase I	0-15	1.3	<0.1	3.1	1.0	<5	2.5	2.3	<10	<0.01	<12	<10	<10	N/A
C114-3WA	MW-03	2014	5	Phase I	0-15	1.3	<0.01	3.2	1.4	2.6	<4.9	1.7	3.0	<0.10	<10	<50	<50	<100
16-C1-MW03A	MW-03	2016	7	Phase II	0-15	2.1	<0.05	3.3	1.1	5.4	4.4	2.2	<10	0.015	<12	<10	<50	<50
MW-03A	MW-03	2019	10	Phase II	0-15	1.2	<0.05	3.9	1.0	2.2	2.6	2.3	2.3	<0.010	<7.0	<4.0	<8.0	<6.0
	MW-03 depth																	
10-16589	MW-03	2010	1	Phase I	30-50	2.7	<1	<20	<5	4.1	<10	<5	<15	0.013	<10	5.6	**56**	**50**
C112-3WB	MW-03	2012	3	Phase I	40-50	2.7	<0.1	3.0	1.2	<5	5.7	2.0	<10	**0.120**	<12	<10	<10	N/A
C114-3WB	MW-03	2014	5	Phase I	40-50	6.2	0.03	3.4	1.9	**6.2**	13.7	1.9	10.0	<0.10	<10	<50	<50	<100
16-C1-MW03B	MW-03	2016	7	Phase II	30-35	2.7	<0.05	3.5	1.2	3.3	5.6	2.6	<10	0.020	<12	<10	<50	<50
MW-03B	MW-03	2019	10	Phase II	30-40	5.2	<0.05	2.6	1.2	**7.7**	11.0	1.8	9.5	0.094	<7.0	<4.0	**61**	16

Table 4A

CAM-1 Non-Hazardous Waste Landfill - Summary of Soil Monitoring Analytical Data

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Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2* C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
Background Data - Arithmetic Mean						3.3	1.0	20.0	5.0	11.3	10.0	5.0	15.0	0.10	N/A	N/A	N/A	N/A
Baseline Data - Arithmetic Mean						**6.9**	**1.0**	**20.0**	**5.0**	**5.9**	**20.0**	**5.0**	**15.0**	**0.10**	**10.0**	**10.0**	**34.1**	**17.4**
Baseline Data - Standard Deviation						7.6	0.0	0.0	0.0	3.4	18.4	0.0	0.0	0.00	0.0	0.0	30.7	12.6
Baseline Data Mean + 3x Standard Deviation						**29.6**	**1.0**	**20.0**	**5.0**	**16.1**	**75.1**	**5.0**	**15.0**	**0.10**	**10.0**	**10.0**	**126.3**	**55.3**
Downgradient																		
	MW-04 surface																	
10-16591	MW-04	2010	1	Phase I	0-10	2.6	<1	<20	<5	3.5	<10	<5	<15	0.017	<10	4.6	**37**	**42**
C112-4WA	MW-04	2012	3	Phase I	0-15	4.2	<0.1	3.0	<1.0	<5	11.0	1.7	<10	<0.01	<12	<10	<10	N/A
C114-4WA	MW-04	2014	5	Phase I	0-15	4.1	0.11	3.4	1.2	**10.5**	15.3	1.1	**23.0**	<0.10	<10	<50	**124**	<100
C114-BD6 (Dup)	MW-04	2014	5	Phase I	0-15	3.9	0.10	3.7	1.2	**10.8**	14.8	1.1	**23.0**	<0.10	<10	<50	**153**	<100
C114-4WA (Interlab)	MW-04	2014	5	Phase I	0-15	6.4	<0.1	13.0	1.2	**9.0**	15.0	**6.2**	**19.0**	0.091	<12	<10	**160**	N/A
16-C1-MW04A	MW-04	2016	7	Phase II	0-15	2.6	<0.05	2.5	0.7	2.3	6.4	1.3	<10	0.012	<12	<10	<50	<50
MW-04A	MW-04	2019	10	Phase II	0-15	4.4	0.11	3.0	0.90	**10.0**	14.0	1.5	**21.0**	0.083	<7.0	4.3	**480**	**110**
	MW-04 depth																	
10-16593	MW-04	2010	1	Phase I	30-50	**49.9**	<1	<20	<5	**10.5**	**62.0**	<5	<15	<0.003	<10	<4	<9	15
C112-4WB	MW-04	2012	3	Phase I	40-50	**21.0**	<0.1	2.7	1.3	**6.2**	**38.0**	2.7	<10	<0.01	<12	<10	<10	N/A
C114-4WB	MW-04	2014	5	Phase I	40-50	**89.6**	0.11	4.0	**6.6**	**11.3**	**126.0**	**7.1**	14.0	<0.10	<10	<50	<50	<100
16-C1-MW04B	MW-04	2016	7	Phase II	40-50	**37.0**	<0.05	3.2	1.9	**6.6**	**52.0**	3.9	<10	<0.01	<12	<10	<50	<50
MW-04B	MW-04	2019	10	Phase II	25-35	5.5	<0.050	2.3	0.87	**6.6**	12.0	1.5	9.9	<0.010	<7.0	<4.0	**37**	9.6

N/A = not analyzed

Legend	
XX	Sample exceeds baseline mean
XX	Sample exceeds baseline mean + 3x SD

Table 4B

CAM-1 Non-Hazardous Waste Landfill - Summary of Groundwater Monitoring Analytical Data

Link To: Table of Contents

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	As (mg/L)	Cd* (mg/L)	Cr (mg/L)	Co* (mg/L)	Cu (mg/L)	Pb* (mg/L)	Ni (mg/L)	Zn (mg/L)	F1* C_6-C_{10} (mg/L)	F2* C_{10}-C_{16} (mg/L)	F3* C_{16}-C_{34} (mg/L)	F4* C_{34}-C_{50} (mg/L)
Baseline Data																
Upgradient																
08-14423	MW-03	2008			0.0030	<0.0010	0.0400	<0.0030	0.0070	<0.0010	0.0220	<0.0050	<0.05	<0.50	<1.0	<1.0
08-14424	MW-04	2008			<0.0030	<0.0010	0.0140	<0.0030	<0.0050	<0.0010	0.0070	0.0050	<0.05	<0.50	<1.0	<1.0
09-26655	MW-03	2009			0.0047	<0.0010	0.2000	0.0045	0.0107	<0.0100	0.0718	<0.010	<0.05	<0.50	<1.0	<1.0
09-26679	MW-04	2009			<0.0030	<0.0010	0.1038	<0.0030	0.0168	<0.0100	0.0432	0.024	<0.05	<0.50	<1.0	<1.0
				N value	4	4	4	4	4	4	4	4	4	4	4	4
Baseline Data - Arithmetic Mean					0.0027	0.0005	0.0894	0.0022	0.0092	0.0028	0.0360	0.0092	0.025	0.25	0.5	0.5
Baseline Data - Arithmetic Mean Corrected for Detection Limit					**0.0030**	**0.0010**	**0.0894**	**0.0030**	**0.0092**	**0.0100**	**0.0360**	**0.0092**	**0.05**	**0.5**	**1.0**	**1.0**
Baseline Data - Standard Deviation					0.0015	0.0000	0.0828	0.0000	0.0060	0.0000	0.0281	0.0101	0.00	0.0	0.0	0.0
Baseline Data - Corrected Arithmetic Mean + 3x Standard Deviation					**0.0075**	**0.0010**	**0.3378**	**0.0030**	**0.0273**	**0.0100**	**0.1203**	**0.0395**	**0.05**	**0.5**	**1.0**	**1.0**
If baseline or background arithmetic mean was below the detection limit, the mean has been modified to match the detection limit value.																
Monitoring Data																
Upgradient - MW-01																
Not sampled - frozen	MW-01	2010	1	Phase I												
Not sampled - dry	MW-01	2012	3	Phase I												
Not sampled - dry	MW-01	2014	5	Phase I												
Not sampled - dry	MW-01	2016	7	Phase II												
Not sampled - dry	MW-01	2019	10	Phase II												

Table 4B

CAM-1 Non-Hazardous Waste Landfill - Summary of Groundwater Monitoring Analytical Data

Link To: Table of Contents

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	As (mg/L)	Cd* (mg/L)	Cr (mg/L)	Co* (mg/L)	Cu (mg/L)	Pb* (mg/L)	Ni (mg/L)	Zn (mg/L)	F1* C_6-C_{10} (mg/L)	F2* C_{10}-C_{16} (mg/L)	F3* C_{16}-C_{34} (mg/L)	F4* C_{34}-C_{50} (mg/L)
Baseline Data																
Upgradient																
08-14423	MW-03	2008			0.0030	<0.0010	0.0400	<0.0030	0.0070	<0.0010	0.0220	<0.0050	<0.05	<0.50	<1.0	<1.0
08-14424	MW-04	2008			<0.0030	<0.0010	0.0140	<0.0030	<0.0050	<0.0010	0.0070	0.0050	<0.05	<0.50	<1.0	<1.0
09-26655	MW-03	2009			0.0047	<0.0010	0.2000	0.0045	0.0107	<0.0100	0.0718	<0.010	<0.05	<0.50	<1.0	<1.0
09-26679	MW-04	2009			<0.0030	<0.0010	0.1038	<0.0030	0.0168	<0.0100	0.0432	0.024	<0.05	<0.50	<1.0	<1.0
				N value	4	4	4	4	4	4	4	4	4	4	4	4
Baseline Data - Arithmetic Mean					0.0027	0.0005	0.0894	0.0022	0.0092	0.0028	0.0360	0.0092	0.025	0.25	0.5	0.5
Baseline Data - Arithmetic Mean Corrected for Detection Limit					**0.0030**	**0.0010**	**0.0894**	**0.0030**	**0.0092**	**0.0100**	**0.0360**	**0.0092**	**0.05**	**0.5**	**1.0**	**1.0**
Baseline Data - Standard Deviation					0.0015	0.0000	0.0828	0.0000	0.0060	0.0000	0.0281	0.0101	0.00	0.0	0.0	0.0
Baseline Data - Corrected Arithmetic Mean + 3x Standard Deviation					**0.0075**	**0.0010**	**0.3378**	**0.0030**	**0.0273**	**0.0100**	**0.1203**	**0.0395**	**0.05**	**0.5**	**1.0**	**1.0**
Downgradient - MW-02																
Not sampled - dry/frozen	MW-02	2010	1	Phase I												
Not sampled - insufficient volume	MW-02	2012	3	Phase I												
Not sampled - dry	MW-02	2014	5	Phase I												
Not sampled - no recharge	MW-02	2016	7	Phase II												
Not sampled - no recharge	MW-02	2019	10	Phase II												

Table 4B

CAM-1 Non-Hazardous Waste Landfill - Summary of Groundwater Monitoring Analytical Data

Link To: Table of Contents

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	As (mg/L)	Cd* (mg/L)	Cr (mg/L)	Co* (mg/L)	Cu (mg/L)	Pb* (mg/L)	Ni (mg/L)	Zn (mg/L)	F1* C_6-C_{10} (mg/L)	F2* C_{10}-C_{16} (mg/L)	F3* C_{16}-C_{34} (mg/L)	F4* C_{34}-C_{50} (mg/L)
Baseline Data																
Upgradient																
08-14423	MW-03	2008			0.0030	<0.0010	0.0400	<0.0030	0.0070	<0.0010	0.0220	<0.0050	<0.05	<0.50	<1.0	<1.0
08-14424	MW-04	2008			<0.0030	<0.0010	0.0140	<0.0030	<0.0050	<0.0010	0.0070	0.0050	<0.05	<0.50	<1.0	<1.0
09-26655	MW-03	2009			0.0047	<0.0010	0.2000	0.0045	0.0107	<0.0100	0.0718	<0.010	<0.05	<0.50	<1.0	<1.0
09-26679	MW-04	2009			<0.0030	<0.0010	0.1038	<0.0030	0.0168	<0.0100	0.0432	0.024	<0.05	<0.50	<1.0	<1.0
				N value	4	4	4	4	4	4	4	4	4	4	4	4
Baseline Data - Arithmetic Mean					0.0027	0.0005	0.0894	0.0022	0.0092	0.0028	0.0360	0.0092	0.025	0.25	0.5	0.5
Baseline Data - Arithmetic Mean Corrected for Detection Limit					**0.0030**	**0.0010**	**0.0894**	**0.0030**	**0.0092**	**0.0100**	**0.0360**	**0.0092**	**0.05**	**0.5**	**1.0**	**1.0**
Baseline Data - Standard Deviation					0.0015	0.0000	0.0828	0.0000	0.0060	0.0000	0.0281	0.0101	0.00	0.0	0.0	0.0
Baseline Data - Corrected Arithmetic Mean + 3x Standard Deviation					**0.0075**	**0.0010**	**0.3378**	**0.0030**	**0.0273**	**0.0100**	**0.1203**	**0.0395**	**0.05**	**0.5**	**1.0**	**1.0**
Downgradient - MW-03																
10-16560	MW-03	2010	1	Phase I	<0.0030	<0.0010	**0.1880**	<0.0030	0.0060	<0.0100	**0.0710**	<0.0100	<0.05	<0.5	<1.0	<1.0
10-16561 (Dup)	MW-03	2010	1	Phase I	0.0030	<0.0010	**0.1470**	<0.0030	0.0060	<0.0100	**0.0530**	<0.0100	<0.05	<0.5	<1.0	<1.0
C112-3W	MW-03	2012	3	Phase I	0.0026	0.000026	0.0310	0.00057	0.0040	0.0012	0.0140	<0.0030	<0.1	<0.1	<0.1	<0.1
C112-BDW1 (Dup)	MW-03	2012	3	Phase I	0.0019	0.000018	0.0210	0.00038	0.0028	0.00085	0.0093	<0.0030	<0.1	<0.1	<0.1	<0.1
C112-3W (Interlab)	MW-03	2012	3	Phase I	**0.0042**	0.00002	0.0390	0.0010	0.0080	0.0020	0.0160	0.0040	N/A	N/A	N/A	N/A
C114-3W	MW-03	2014	5	Phase I	**0.0637**	0.00036	**2.04**	**0.0209**	**0.2580**	**0.0197**	**0.6380**	**0.0640**	<0.2	<0.2	<0.1	N/A
C114-BDW1 (Dup)	MW-03	2014	5	Phase I	**0.0734**	0.00051	**2.51**	**0.0262**	**0.3080**	**0.0214**	**0.9060**	**0.0760**	<0.2	<0.2	<0.1	N/A
C114-3W (Interlab)	MW-03	2014	5	Phase I	0.0024	0.000022	**0.0940**	0.00079	**0.0110**	0.0012	0.0220	<0.0030	<0.1	<0.1	<0.2	N/A
C1-MW03	MW-03	2016	7	Phase II	0.00028	<0.00002	<0.0010	<0.0003	0.0010	<0.0002	0.0020	<0.0030	<0.1	<0.1	<0.2	<0.2
C1-MW03 (Interlab)	MW-03	2016	7	Phase II	0.00028	<0.000005	0.00084	<0.0001	0.00106	0.000118	0.0020	<0.0030	<0.1	<0.1	<0.25	<0.25
MW-03	MW-03	2019	10	Phase II	0.00028	<0.000020	0.0011	<0.00030	0.0023	<0.00010	0.00092	<0.0030	<0.025	<0.10	<0.10	<0.10

Table 4B

CAM-1 Non-Hazardous Waste Landfill - Summary of Groundwater Monitoring Analytical Data

Link To: Table of Contents

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	As (mg/L)	Cd* (mg/L)	Cr (mg/L)	Co* (mg/L)	Cu (mg/L)	Pb* (mg/L)	Ni (mg/L)	Zn (mg/L)	F1* C_6-C_{10} (mg/L)	F2* C_{10}-C_{16} (mg/L)	F3* C_{16}-C_{34} (mg/L)	F4* C_{34}-C_{50} (mg/L)
Baseline Data																
Upgradient																
08-14423	MW-03	2008			0.0030	<0.0010	0.0400	<0.0030	0.0070	<0.0010	0.0220	<0.0050	<0.05	<0.50	<1.0	<1.0
08-14424	MW-04	2008			<0.0030	<0.0010	0.0140	<0.0030	<0.0050	<0.0010	0.0070	0.0050	<0.05	<0.50	<1.0	<1.0
09-26655	MW-03	2009			0.0047	<0.0010	0.2000	0.0045	0.0107	<0.0100	0.0718	<0.010	<0.05	<0.50	<1.0	<1.0
09-26679	MW-04	2009			<0.0030	<0.0010	0.1038	<0.0030	0.0168	<0.0100	0.0432	0.024	<0.05	<0.50	<1.0	<1.0
				N value	4	4	4	4	4	4	4	4	4	4	4	4
Baseline Data - Arithmetic Mean					0.0027	0.0005	0.0894	0.0022	0.0092	0.0028	0.0360	0.0092	0.025	0.25	0.5	0.5
Baseline Data - Arithmetic Mean Corrected for Detection Limit					**0.0030**	**0.0010**	**0.0894**	**0.0030**	**0.0092**	**0.0100**	**0.0360**	**0.0092**	**0.05**	**0.5**	**1.0**	**1.0**
Baseline Data - Standard Deviation					0.0015	0.0000	0.0828	0.0000	0.0060	0.0000	0.0281	0.0101	0.00	0.0	0.0	0.0
Baseline Data - Corrected Arithmetic Mean + 3x Standard Deviation					**0.0075**	**0.0010**	**0.3378**	**0.0030**	**0.0273**	**0.0100**	**0.1203**	**0.0395**	**0.05**	**0.5**	**1.0**	**1.0**
Downgradient - MW-04																
Not sampled - insufficient volume	MW-04	2010	1	Phase I												
C112-4W	MW-04	2012	3	Phase I	**0.0230**	0.00014	**0.5500**	**0.0073**	**0.0550**	**0.0150**	**0.2700**	**0.0240**	<0.1	<0.1	<0.1	<0.1
C114-4W	MW-04	2014	5	Phase I	**0.0194**	0.00039	**0.4430**	**0.0058**	**0.0400**	**0.0115**	**0.1560**	**0.0560**	<0.2	<0.2	<0.1	N/A
Not sampled - no recharge	MW-04	2016	7	Phase II												
MW-04	MW-04	2019	10	Phase II	**0.0037**	0.000026	**0.1100**	0.0020	**0.0100**	0.0024	**0.0620**	0.0048	<0.025	<0.10	<0.10	<0.10
MW-09 (dup)	MW-04	2019	10	Phase II	**0.0048**	0.000025	**0.1400**	0.0024	**0.0150**	0.0031	**0.0780**	0.0066	<0.025	<0.10	<0.10	<0.10

N/A = not analyzed

Legend	
XX	**Sample exceeds baseline mean**
XX	**Sample exceeds baseline mean + 3x SD**

Table 5A

CAM-1 Tier II Disposal Facility - Summary of Soil Monitoring Analytical Data

Link To: Table of Contents

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2* C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
Background Data - Arithmetic Mean						3.3	1.0	20.0	5.0	11.3	10.0	5.0	15.0	0.10	N/A	N/A	N/A	N/A
Baseline Data - Arithmetic Mean						**2.1**	**1.0**	**20.0**	**5.0**	**4.8**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**10.0**	**21.9**	**17.4**
Baseline Data - Standard Deviation						1.0	0.0	0.0	0.0	6.8	0.0	0.0	0.0	0.00	0.0	0.0	22.5	17.0
Baseline Data Mean + 3x Standard Deviation						**5.1**	**1.0**	**20.0**	**5.0**	**25.4**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**10.0**	**89.4**	**68.4**
**** If baseline or background arithmetic mean was below the detection limit, the mean has been modified to match the detection limit value.***																		
DEW Line Cleanup Tier I Criteria											*200*			*1*				
CAM-1 Site-Specfic As Criterion and DEW Line Cleanup Tier II Criteria						*40*	*5*	*250*	*50*	*100*	*500*	*100*	*500*	*5*				
Monitoring Data																		
Upgradient																		
	MW-05 surface																	
10-16563	MW-05	2010	1	Phase I	0-10	2.0	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	9	**39**	**26**
C111-5WA	MW-05	2011	2	Phase I	0-15	**3.0**	<0.1	3.0	1.0	<5	10.0	2.0	**49.0**	0.070	<12	<10	<10	N/A
C112-5WA	MW-05	2012	3	Phase I	0-15	1.4	<0.1	2.3	<1	<5	4.2	1.5	<10	0.067	<12	<10	21	N/A
C113-5WA	MW-05	2013	4	Phase I	0-15	**2.5**	<0.1	2.5	<1	<5	**11.0**	1.7	14.0	<0.01	<12	<10	**51**	<50
C114-5WA	MW-05	2014	5	Phase I	0-15	1.9	0.03	3.9	1.8	3.4	6.7	1.9	9.0	<0.10	<10	<50	<50	<100
16-C1-MW05A	MW-05	2016	7	Phase II	0-15	**2.6**	<0.05	2.7	1.0	2.5	5.1	2.4	<10	0.021	<12	<10	**57**	<50
MW-05A	MW-05	2019	10	Phase II	0-15	1.7	<0.050	2.1	0.94	3.1	7.2	1.5	11.0	<0.010	<7.0	<4.0	**25**	<6.0
	MW-05 depth																	
10-16565	MW-05	2010	1	Phase I	40	1.1	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	4.1	15	12
C111-5WB	MW-05	2011	2	Phase I	40-50	2.0	<0.1	4.0	1.0	**5.0**	5.0	3.0	**21.0**	<0.01	<12	<10	<10	N/A
C112-5WB	MW-05	2012	3	Phase I	40-50	1.4	<0.1	3.2	<1	<5	4.3	1.9	<10	0.015	<12	<10	13	N/A
C113-5WB	MW-05	2013	4	Phase I	40-50	1.5	<0.1	3.2	1.1	<5	3.8	2.0	<10	<0.01	<12	<10	<50	<50
C114-5WB	MW-05	2014	5	Phase I	40-50	1.6	0.01	2.9	1.4	1.7	<5	1.5	5.0	<0.10	<10	<50	<50	<100
16-C1-MW05B	MW-05	2016	7	Phase II	40-50	1.9	<0.05	2.9	1.1	1.7	3.2	1.6	<10	<0.01	<12	<10	<50	<50
MW-05B	MW-05	2019	10	Phase II	40-50	1.3	<0.050	2.9	0.86	1.3	2.5	1.5	3.4	<0.010	<7.0	<4.0	<8.0	<6.0

Table 5A

CAM-1 Tier II Disposal Facility - Summary of Soil Monitoring Analytical Data

Link To: Table of Contents

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2* C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
Background Data - Arithmetic Mean						3.3	1.0	20.0	5.0	11.3	10.0	5.0	15.0	0.10	N/A	N/A	N/A	N/A
Baseline Data - Arithmetic Mean						**2.1**	**1.0**	**20.0**	**5.0**	**4.8**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**10.0**	**21.9**	**17.4**
Baseline Data - Standard Deviation						1.0	0.0	0.0	0.0	6.8	0.0	0.0	0.0	0.00	0.0	0.0	22.5	17.0
Baseline Data Mean + 3x Standard Deviation						**5.1**	**1.0**	**20.0**	**5.0**	**25.4**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**10.0**	**89.4**	**68.4**
Downgradient																		
	MW-06 surface																	
10-16567	MW-06	2010	1	Phase I	0-10	**2.3**	<1	<20	<5	3.1	<10	<5	<15	<0.003	<10	10	**85**	**87**
C111-6WA	MW-06	2011	2	Phase I	0-15	**3.0**	<0.1	3.0	1.0	<5	6.0	2.0	<10	<0.01	<12	<10	<10	N/A
C112-6WA	MW-06	2012	3	Phase I	0-15	1.2	<0.1	2.1	<1	<5	2.6	2.1	<10	<0.01	<12	<10	**23**	N/A
C113-6WA	MW-06	2013	4	Phase I	0-15	1.8	<0.1	2.8	<1	<5	5.0	1.6	<10	<0.01	<12	<10	<50	<50
C113-BD1 (Dup)	MW-06	2013	4	Phase I	0-15	**2.3**	<0.1	3.4	1.0	<5	4.7	2.1	<10	<0.01	<12	<10	<50	<50
C113-6WA (Interlab)	MW-06	2013	4	Phase I	0-15	1.6	0.04	3.3	1.4	2.7	<4.9	2.6	8.0	<0.10	<10	<50	<50	<100
C114-6WA	MW-06	2014	5	Phase I	0-15	1.5	0.02	3.1	1.1	3.0	<5	2.7	6.0	<0.10	<10	<50	<50	<100
16-C1-MW06A	MW-06	2016	7	Phase II	0-15	1.8	<0.05	3.0	1.2	2.2	2.8	1.9	<10	<0.01	<12	<10	<50	<50
MW-06A	MW-06	2019	10	Phase II	0-15	1.9	<0.050	2.6	0.90	2.3	3.6	1.7	6.3	<0.010	<7.0	<4.0	**25**	<6.0
C1-44 (dup)	MW-06	2019	10	Phase II	0-15	1.8	<0.050	2.3	0.85	2.5	4.0	1.6	6.7	<0.010	<7.0	<4.0	**24**	<6.0
	MW-06 depth																	
10-16569	MW-06	2010	1	Phase I	40	1.5	<1	<20	<5	3.0	<10	<5	<15	<0.003	<10	7.2	**34**	**36**
C111-6WB	MW-06	2011	2	Phase I	40-50	2.0	<0.1	6.0	2.0	<5	4.0	3.0	<10	<0.01	<12	<10	<10	N/A
C111-BD1 (Dup)	MW-06	2011	2	Phase I	40-50	2.0	<0.1	16.0	1.0	<5	4.0	**8.0**	<10	<0.01	<12	<10	<10	N/A
C111-6WB (Interlab)	MW-06	2011	2	Phase I	40-50	**2.2**	0.02	5.8	2.1	3.0	4.5	4.6	6.0	<0.1	<4	<10	<30	<20
C112-6WB	MW-06	2012	3	Phase I	40-50	**2.4**	<0.1	3.1	1.3	<5	3.7	2.4	<10	<0.01	<12	<10	<10	N/A
C113-6WB	MW-06	2013	4	Phase I	40-50	**7.4**	<0.1	5.4	1.7	<5	4.8	3.4	<10	<0.01	<12	<10	<50	<50
C114-6WB	MW-06	2014	5	Phase I	40-50	1.7	<0.01	5.2	1.8	2.8	<4.9	2.5	5.0	<0.10	<10	<50	<50	<100
16-C1-MW06B	MW-06	2016	7	Phase II	40-50	1.6	<0.05	3.6	1.4	2.1	3.6	2.1	<10	<0.01	<12	<10	<50	<50
MW-06B	MW-06	2019	10	Phase II	40-50	1.7	<0.050	2.9	1.1	1.8	2.7	1.8	4.1	<0.010	<7.0	<4.0	<8.0	<6.0
C1-43 (dup)	MW-06	2019	10	Phase II	40-50	1.9	<0.050	4.3	1.3	2.1	3.2	2.2	4.5	<0.050	<7.0	<4.0	<8.0	<6.0

Table 5A

CAM-1 Tier II Disposal Facility - Summary of Soil Monitoring Analytical Data

Link To: Table of Contents

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2* C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
Background Data - Arithmetic Mean						3.3	1.0	20.0	5.0	11.3	10.0	5.0	15.0	0.10	N/A	N/A	N/A	N/A
Baseline Data - Arithmetic Mean						**2.1**	**1.0**	**20.0**	**5.0**	**4.8**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**10.0**	**21.9**	**17.4**
Baseline Data - Standard Deviation						1.0	0.0	0.0	0.0	6.8	0.0	0.0	0.0	0.00	0.0	0.0	22.5	17.0
Baseline Data Mean + 3x Standard Deviation						**5.1**	**1.0**	**20.0**	**5.0**	**25.4**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**10.0**	**89.4**	**68.4**
Downgradient																		
	MW-07 surface																	
10-16571	MW-07	2010	1	Phase I	0-10	1.2	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	7.7	**180**	**200**
10-16572 (Dup)	MW-07	2010	1	Phase I	0-10	<1	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	**15**	**110**	**130**
C111-7WA	MW-07	2011	2	Phase I	0-15	1.0	<0.1	3.0	<1	<5	3.0	2.0	<10	<0.01	<12	<10	<10	N/A
C112-7WA	MW-07	2012	3	Phase I	0-15	1.9	<0.1	1.8	<1	<5	3.1	1.3	<10	<0.01	<12	<10	12	N/A
C113-7WA	MW-07	2013	4	Phase I	0-15	**3.0**	<0.1	6.5	2.3	<5	5.8	3.8	<10	<0.01	<12	<10	<50	<50
C114-7WA	MW-07	2014	5	Phase I	0-15	0.7	<0.01	1.3	0.6	1.3	<5	0.8	6.0	<0.10	<10	<50	<50	<100
16-C1-MW07A	MW-07	2016	7	Phase II	0-15	1.8	<0.05	1.5	0.54	3.4	3.9	1.1	<10	<0.01	<12	<10	<50	<50
MW-07A	MW-07	2019	10	Phase II	0-15	1.1	<0.050	1.6	0.59	2.4	2.1	1.2	4.9	<0.010	<7.0	<4.0	**39**	7.5
	MW-07 depth																	
10-16573	MW-07	2010	1	Phase I	25-30	**2.9**	<1	<20	<5	4.4	<10	<5	<15	<0.003	<10	6.6	**30**	**41**
C111-7WB	MW-07	2011	2	Phase I	40-50	2.0	<0.1	4.0	1.0	<5	3.0	3.0	<10	<0.01	<12	<10	<10	N/A
C112-7WB	MW-07	2012	3	Phase I	40-50	1.9	<0.1	2.8	1.1	<5	3.2	1.9	<10	<0.01	<12	<10	<10	N/A
C113-7WB	MW-07	2013	4	Phase I	40-50	1.8	<0.1	4.0	1.4	<5	3.4	2.3	<10	<0.01	<12	<10	<50	<50
C114-7WB	MW-07	2014	5	Phase I	40-50	1.7	<0.01	4.3	1.5	2.4	<5	2.3	4.0	<0.10	<10	<50	<50	<100
16-C1-MW07B	MW-07	2016	7	Phase II	40-50	**2.6**	<0.05	4.2	1.6	4.3	4.6	2.5	<10	<0.01	<12	<10	<50	<50
MW-07B	MW-07	2019	10	Phase II	40-50	1.6	<0.050	4.1	1.3	3.3	2.9	2.9	5.1	<0.010	<7.0	<4.0	<8.0	<6.0
C1-36 (dup)	MW-07	2019	10	Phase II	40-50	**2.4**	<0.050	3.1	1.2	3.5	3.7	2.4	6.7	<0.010	<7.0	<4.0	<8.0	<6.0

Table 5A

CAM-1 Tier II Disposal Facility - Summary of Soil Monitoring Analytical Data

Link To: Table of Contents

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2* C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
Background Data - Arithmetic Mean						3.3	1.0	20.0	5.0	11.3	10.0	5.0	15.0	0.10	N/A	N/A	N/A	N/A
Baseline Data - Arithmetic Mean						**2.1**	**1.0**	**20.0**	**5.0**	**4.8**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**10.0**	**21.9**	**17.4**
Baseline Data - Standard Deviation						1.0	0.0	0.0	0.0	6.8	0.0	0.0	0.0	0.00	0.0	0.0	22.5	17.0
Baseline Data Mean + 3x Standard Deviation						**5.1**	**1.0**	**20.0**	**5.0**	**25.4**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**10.0**	**89.4**	**68.4**
Downgradient																		
	MW-08 surface																	
10-16575	MW-08	2010	1	Phase I	0	1.8	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	5.6	**37**	**44**
C111-8WA	MW-08	2011	2	Phase I	0-15	1.0	<0.1	3.0	1.0	<5	3.0	2.0	<10	<0.01	<12	<10	<10	N/A
C112-8WA	MW-08	2012	3	Phase I	0-15	<1	<0.1	1.7	<1	<5	1.9	1.1	<10	<0.01	<12	<10	12	N/A
C112-BD7 (Dup)	MW-08	2012	3	Phase I	0-15	<1	N/A	2.5	<1	<5	1.4	1.8	<10	<0.01	<12	<10	21	N/A
C112-8WA (Interlab)	MW-08	2012	3	Phase I	0-15	0.7	<0.01	2.3	0.7	1.0	2.0	2.0	4.0	<0.10	<10	<50	<50	<100
C113-8WA	MW-08	2013	4	Phase I	0-15	1.9	<0.1	3.1	1.2	<5	3.9	2.2	<10	<0.01	<12	<10	<50	<50
C114-8WA	MW-08	2014	5	Phase I	0-15	**2.4**	0.01	4.0	1.8	3.3	5.5	2.6	7.0	<0.10	<10	<50	<50	<100
16-C1-MW08A	MW-08	2016	7	Phase II	0-15	**3.9**	0.051	4.0	1.4	**5.5**	7.1	2.9	<10	<0.01	<12	<10	**59**	<50
MW-08A	MW-08	2019	10	Phase II	0-15	1.7	<0.050	2.8	1.0	2.4	3.9	1.9	5.1	<0.010	<7.0	<4.0	**23**	<6.0
	MW-08 depth																	
10-16577	MW-08	2010	1	Phase I	40	1.1	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	4.4	18	**24**
C111-8WB	MW-08	2011	2	Phase I	40-50	2.0	<0.1	6.0	2.0	<5	5.0	3.0	<10	<0.01	<12	<10	<10	N/A
C112-8WB	MW-08	2012	3	Phase I	40-50	1.8	<0.1	4.3	1.5	<5	3.2	3.2	<10	<0.01	<12	<10	<10	N/A
C113-8WB	MW-08	2013	4	Phase I	40-50	2.0	<0.1	4.9	1.6	<5	3.8	2.8	<10	<0.01	<12	<10	<50	<50
C114-8WB	MW-08	2014	5	Phase I	40-50	1.4	<0.01	3.1	1.5	2.0	<5	1.5	4.0	<0.10	<10	<50	<50	<100
C114-BD7 (Dup)	MW-08	2014	5	Phase I	40-50	**2.2**	0.01	5.0	2.4	3.9	<5	2.4	6.0	<0.10	<10	<50	<50	<100
C114-8WB (Interlab)	MW-08	2014	5	Phase I	40-50	**2.5**	<0.1	**24.0**	1.5	<5	4.4	**11.0**	<10	<0.01	<12	<10	<50	N/A
16-C1-MW08B	MW-08	2016	7	Phase II	40-50	2.0	<0.05	3.7	1.2	2.3	4.0	2.2	<10	<0.01	<12	<10	<50	<50
MW-08B	MW-08	2019	10	Phase II	40-50	2.0	<0.050	3.1	1.4	3.7	3.4	2.5	3.6	<0.010	<7.0	<4.0	<8.0	<6.0

N/A = not analyzed

Legend

XX	**Sample exceeds baseline mean**
XX	**Sample exceeds baseline mean + 3x SD**

Table 5B

CAM-1 Tier II Disposal Facility - Summary of Groundwater Monitoring Analytical Data

Link To: Table of Contents

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	As (mg/L)	Cd* (mg/L)	Cr (mg/L)	Co* (mg/L)	Cu (mg/L)	Pb (mg/L)	Ni (mg/L)	Zn (mg/L)	F1* C_6-C_{10} (mg/L)	F2* C_{10}-C_{16} (mg/L)	F3* C_{16}-C_{34} (mg/L)	F4* C_{34}-C_{50} (mg/L)
Baseline Data																
Downgradient																
08-14439	MW-06	2008			0.0070	<0.0010	0.0310	<0.0030	0.0180	0.0140	0.0210	0.0080	<0.050	<0.50	<1.0	<1.0
08-14434	MW-07	2008			0.0030	<0.0010	0.0150	<0.0030	0.0080	0.0040	0.0110	0.0050	<0.050	<0.50	<1.0	<1.0
08-14429	MW-08	2008			<0.0030	<0.0010	0.0430	<0.0030	0.0090	0.0010	0.0280	<0.0050	<0.050	<0.50	<1.0	<1.0
				N value	3	3	3	3	3	3	3	3	3	3	3	3
Baseline Data - Arithmetic Mean					0.0038	0.0005	0.0297	0.0015	0.0117	0.0063	0.0200	0.0052	0.025	0.25	0.5	0.5
Baseline Data - Arithmetic Mean Corrected for Detection Limit					**0.0038**	**0.0010**	**0.0297**	**0.0030**	**0.0117**	**0.0063**	**0.0200**	**0.0052**	**0.05**	**0.5**	**1.0**	**1.0**
Baseline Data - Standard Deviation					0.0028	0.0000	0.0140	0.0000	0.0055	0.0068	0.0085	0.0028	0.00	0.0	0.0	0.0
Baseline Data - Corrected Arithmetic Mean + 3x Standard Deviation					**0.0124**	**0.0010**	**0.0718**	**0.0030**	**0.0282**	**0.0268**	**0.0456**	**0.0134**	**0.05**	**0.5**	**1.0**	**1.0**
If baseline or background arithmetic mean was below the detection limit, the mean has been modified to match the detection limit value.																
Monitoring Data																
Upgradient - MW-05																
Not sampled - dry	MW-05	2010	1	Phase I												
Not sampled - dry	MW-05	2011	2	Phase I												
Not sampled - dry	MW-05	2012	3	Phase I												
Not sampled - dry	MW-05	2013	4	Phase I												
Not sampled - dry	MW-05	2014	5	Phase I												
16-MW05	MW-05	2016	7	Phase II	0.00099	<0.00002	<0.0010	<0.0003	0.0034	<0.0002	0.0022	<0.0030	<0.1	<0.1	<0.2	<0.2
C1-DUP1 (Dup)	MW-05	2016	7	Phase II	0.0010	<0.00002	<0.0010	<0.0003	0.0034	<0.0002	0.0021	<0.0030	<0.1	<0.1	<0.2	<0.2
Not sampled - dry	MW-05	2019	10	Phase II												

Table 5B

CAM-1 Tier II Disposal Facility - Summary of Groundwater Monitoring Analytical Data

Link To: Table of Contents

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	As (mg/L)	Cd* (mg/L)	Cr (mg/L)	Co* (mg/L)	Cu (mg/L)	Pb (mg/L)	Ni (mg/L)	Zn (mg/L)	F1* C_6-C_{10} (mg/L)	F2* C_{10}-C_{16} (mg/L)	F3* C_{16}-C_{34} (mg/L)	F4* C_{34}-C_{50} (mg/L)
Baseline Data																
Downgradient																
08-14439	MW-06	2008			0.0070	<0.0010	0.0310	<0.0030	0.0180	0.0140	0.0210	0.0080	<0.050	<0.50	<1.0	<1.0
08-14434	MW-07	2008			0.0030	<0.0010	0.0150	<0.0030	0.0080	0.0040	0.0110	0.0050	<0.050	<0.50	<1.0	<1.0
08-14429	MW-08	2008			<0.0030	<0.0010	0.0430	<0.0030	0.0090	0.0010	0.0280	<0.0050	<0.050	<0.50	<1.0	<1.0
				N value	3	3	3	3	3	3	3	3	3	3	3	3
Baseline Data - Arithmetic Mean					0.0038	0.0005	0.0297	0.0015	0.0117	0.0063	0.0200	0.0052	0.025	0.25	0.5	0.5
Baseline Data - Arithmetic Mean Corrected for Detection Limit					**0.0038**	**0.0010**	**0.0297**	**0.0030**	**0.0117**	**0.0063**	**0.0200**	**0.0052**	**0.05**	**0.5**	**1.0**	**1.0**
Baseline Data - Standard Deviation					0.0028	0.0000	0.0140	0.0000	0.0055	0.0068	0.0085	0.0028	0.00	0.0	0.0	0.0
Baseline Data - Corrected Arithmetic Mean + 3x Standard Deviation					**0.0124**	**0.0010**	**0.0718**	**0.0030**	**0.0282**	**0.0268**	**0.0456**	**0.0134**	**0.05**	**0.5**	**1.0**	**1.0**
Downgradient - MW-06																
Not sampled - frozen	MW-06	2010	1	Phase I												
Not sampled - dry	MW-06	2011	2	Phase I												
Not sampled - dry	MW-06	2012	3	Phase I												
Not sampled - dry	MW-06	2013	4	Phase I												
Not sampled - dry	MW-06	2014	5	Phase I												
Not sampled - insufficient water	MW-06	2016	7	Phase II												
Not sampled - insufficient water	MW-06	2019	10	Phase II												

Table 5B

CAM-1 Tier II Disposal Facility - Summary of Groundwater Monitoring Analytical Data

Link To: Table of Contents

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	As (mg/L)	Cd* (mg/L)	Cr (mg/L)	Co* (mg/L)	Cu (mg/L)	Pb (mg/L)	Ni (mg/L)	Zn (mg/L)	F1* C_6-C_{10} (mg/L)	F2* C_{10}-C_{16} (mg/L)	F3* C_{16}-C_{34} (mg/L)	F4* C_{34}-C_{50} (mg/L)
Baseline Data																
Downgradient																
08-14439	MW-06	2008			0.0070	<0.0010	0.0310	<0.0030	0.0180	0.0140	0.0210	0.0080	<0.050	<0.50	<1.0	<1.0
08-14434	MW-07	2008			0.0030	<0.0010	0.0150	<0.0030	0.0080	0.0040	0.0110	0.0050	<0.050	<0.50	<1.0	<1.0
08-14429	MW-08	2008			<0.0030	<0.0010	0.0430	<0.0030	0.0090	0.0010	0.0280	<0.0050	<0.050	<0.50	<1.0	<1.0
				N value	3	3	3	3	3	3	3	3	3	3	3	3
Baseline Data - Arithmetic Mean					0.0038	0.0005	0.0297	0.0015	0.0117	0.0063	0.0200	0.0052	0.025	0.25	0.5	0.5
Baseline Data - Arithmetic Mean Corrected for Detection Limit					**0.0038**	**0.0010**	**0.0297**	**0.0030**	**0.0117**	**0.0063**	**0.0200**	**0.0052**	**0.05**	**0.5**	**1.0**	**1.0**
Baseline Data - Standard Deviation					0.0028	0.0000	0.0140	0.0000	0.0055	0.0068	0.0085	0.0028	0.00	0.0	0.0	0.0
Baseline Data - Corrected Arithmetic Mean + 3x Standard Deviation					**0.0124**	**0.0010**	**0.0718**	**0.0030**	**0.0282**	**0.0268**	**0.0456**	**0.0134**	**0.05**	**0.5**	**1.0**	**1.0**
Downgradient - MW-07																
Not sampled - frozen	MW-07	2010	1	Phase I												
Not sampled - dry	MW-07	2011	2	Phase I												
Not sampled - dry	MW-07	2012	3	Phase I												
Not sampled - dry	MW-07	2013	4	Phase I												
Not sampled - dry	MW-07	2014	5	Phase I												
Not sampled - frozen	MW-07	2016	7	Phase II												
Not sampled - frozen	MW-07	2019	10	Phase II												

Table 5B

CAM-1 Tier II Disposal Facility - Summary of Groundwater Monitoring Analytical Data

Link To: Table of Contents

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	As (mg/L)	Cd* (mg/L)	Cr (mg/L)	Co* (mg/L)	Cu (mg/L)	Pb (mg/L)	Ni (mg/L)	Zn (mg/L)	F1* C_6-C_{10} (mg/L)	F2* C_{10}-C_{16} (mg/L)	F3* C_{16}-C_{34} (mg/L)	F4* C_{34}-C_{50} (mg/L)
Baseline Data																
Downgradient																
08-14439	MW-06	2008			0.0070	<0.0010	0.0310	<0.0030	0.0180	0.0140	0.0210	0.0080	<0.050	<0.50	<1.0	<1.0
08-14434	MW-07	2008			0.0030	<0.0010	0.0150	<0.0030	0.0080	0.0040	0.0110	0.0050	<0.050	<0.50	<1.0	<1.0
08-14429	MW-08	2008			<0.0030	<0.0010	0.0430	<0.0030	0.0090	0.0010	0.0280	<0.0050	<0.050	<0.50	<1.0	<1.0
				N value	3	3	3	3	3	3	3	3	3	3	3	3
Baseline Data - Arithmetic Mean					0.0038	0.0005	0.0297	0.0015	0.0117	0.0063	0.0200	0.0052	0.025	0.25	0.5	0.5
Baseline Data - Arithmetic Mean Corrected for Detection Limit					**0.0038**	**0.0010**	**0.0297**	**0.0030**	**0.0117**	**0.0063**	**0.0200**	**0.0052**	**0.05**	**0.5**	**1.0**	**1.0**
Baseline Data - Standard Deviation					0.0028	0.0000	0.0140	0.0000	0.0055	0.0068	0.0085	0.0028	0.00	0.0	0.0	0.0
Baseline Data - Corrected Arithmetic Mean + 3x Standard Deviation					**0.0124**	**0.0010**	**0.0718**	**0.0030**	**0.0282**	**0.0268**	**0.0456**	**0.0134**	**0.05**	**0.5**	**1.0**	**1.0**
Downgradient - MW-08																
Not sampled - frozen	MW-08	2010	1	Phase I												
Not sampled - dry	MW-08	2011	2	Phase I												
Not sampled - dry	MW-08	2012	3	Phase I												
Not sampled - dry	MW-08	2013	4	Phase I												
Not sampled - dry	MW-08	2014	5	Phase I												
Not sampled - dry	MW-08	2016	7	Phase II												
Not sampled - dry	MW-08	2019	10	Phase II												

N/A = not analyzed

Legend	
XX	Sample exceeds baseline mean
XX	Sample exceeds baseline mean + 3x SD

Table 6

CAM-1 Southeast Landfill - Summary of Soil Monitoring Analytical Data

Link To: Table of Contents

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2* C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
Background Data - Arithmetic Mean						3.3	1.0	20.0	5.0	11.3	10.0	5.0	15.0	0.10	N/A	N/A	N/A	N/A
Baseline Data - Arithmetic Mean						**1.9**	**1.0**	**20.0**	**5.0**	**3.2**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**10.0**	**18.9**	**13.8**
Baseline Data - Standard Deviation						2.0	0.0	0.0	0.0	2.3	0.0	0.0	0.0	0.00	0.0	0.0	12.6	7.1
Baseline Data Mean + 3x Standard Deviation						**7.9**	**1.0**	**20.0**	**5.0**	**10.0**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**10.0**	**56.6**	**35.0**
**** If baseline or background arithmetic mean was below the detection limit, the mean has been modified to match the detection limit value.***																		
DEW Line Cleanup Tier I Criteria											*200*			*1*				
CAM-1 Site-Specfic As Criterion and DEW Line Cleanup Tier II Criteria						*40*	*5*	*250*	*50*	*100*	*500*	*100*	*500*	*5*				
Monitoring Data																		
Upgradient																		
	C1-14 surface																	
10-16647	C1-14	2010	1	Phase I	0-10	**4.8**	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	<4	<9	10
C112-14A	C1-14	2012	3	Phase I	0-15	**3.0**	N/A	2.9	<1	<5	**18.0**	1.7	<10	<0.01	<12	<10	<10	N/A
C114-14A	C1-14	2014	5	Phase I	0-15	1.8	<0.01	2.2	0.9	1.7	<5	1.2	3.0	<0.10	<10	<50	<50	<100
16-C1-14A	C1-14	2016	7	Phase II	0-15	**3.5**	<0.05	3.6	1.1	1.9	7.6	2.1	<10	<0.01	<12	<10	<50	<50
C1-14A	C1-14	2019	10	Phase II	0-15	**2.9**	<0.050	2.3	0.81	1.6	7.1	1.2	3.3	<0.01	<7.0	<4.0	<8.0	<6.0
	C1-14 depth																	
10-16649	C1-14	2010	1	Phase I	30-50	1.6	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	<4	<9	<8
C112-14B	C1-14	2012	3	Phase I	40-50	1.6	N/A	2.3	<1	<5	2.9	3.3	<10	<0.01	<12	<10	<10	N/A
C114-14B	C1-14	2014	5	Phase I	40-50	**2.2**	<0.01	7.6	1.5	1.5	5.5	3.6	4.0	<0.10	<10	<50	<50	<100
16-C1-14B	C1-14	2016	7	Phase II	40-50	**2.3**	<0.05	2.5	0.77	1.3	4.2	1.6	<10	<0.01	<12	<10	<50	<50
C1-14B	C1-14	2019	10	Phase II	40-50	**2.9**	<0.050	1.5	0.82	1.6	9.4	1.3	1.7	<0.01	<7.0	<4.0	<8.0	<6.0

Table 6

CAM-1 Southeast Landfill - Summary of Soil Monitoring Analytical Data

Link To: Table of Contents

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2* C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
Background Data - Arithmetic Mean						3.3	1.0	20.0	5.0	11.3	10.0	5.0	15.0	0.10	N/A	N/A	N/A	N/A
Baseline Data - Arithmetic Mean						**1.9**	**1.0**	**20.0**	**5.0**	**3.2**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**10.0**	**18.9**	**13.8**
Baseline Data - Standard Deviation						2.0	0.0	0.0	0.0	2.3	0.0	0.0	0.0	0.00	0.0	0.0	12.6	7.1
Baseline Data Mean + 3x Standard Deviation						**7.9**	**1.0**	**20.0**	**5.0**	**10.0**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**10.0**	**56.6**	**35.0**
Downgradient																		
	C1-15 surface																	
10-16651	C1-15	2010	1	Phase I	0-10	1.6	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	<4	10	10
C112-15A	C1-15	2012	3	Phase I	0-15	1.6	N/A	2.2	<1	<5	4.5	1.3	<10	<0.01	<12	<10	<10	N/A
C114-15A	C1-15	2014	5	Phase I	0-15	**1.9**	<0.01	2.5	1.0	2.4	<5	1.3	4.0	<0.10	<10	<50	<50	<100
16-C1-15A	C1-15	2016	7	Phase II	0-15	**2.2**	<0.05	2.7	0.76	1.9	3.3	1.5	<10	<0.01	<12	<10	<50	<50
C1-15A	C1-15	2019	10	Phase II	0-15	1.6	<0.050	1.8	0.65	1.4	2.8	1.1	2.2	<0.01	<7.0	<4.0	<8.0	<6.0
C1-39 (dup)	C1-15	2019	10	Phase II	0-15	1.7	<0.050	2.0	0.77	1.6	3.0	1.6	3.0	<0.01	<7.0	<4.0	<8.0	<6.0
	C1-15 depth																	
10-16653	C1-15	2010	1	Phase I	30-50	1.8	<1	<20	<5	**3.2**	<10	<5	<15	<0.003	<10	4	12	11
C112-15B	C1-15	2012	3	Phase I	40-50	1.5	N/A	1.5	<1	<5	3.3	1.1	<10	<0.01	<12	<10	<10	N/A
C114-15B	C1-15	2014	5	Phase I	40-50	1.3	<0.01	2.0	1.1	1.8	<5	1.1	3.0	<0.10	<10	<50	<50	<100
16-C1-15B	C1-15	2016	7	Phase II	40-50	**2.1**	<0.05	2.9	0.76	1.9	2.9	1.4	<10	<0.01	<12	<10	<50	<50
C1-15B	C1-15	2019	10	Phase II	40-50	**2.1**	<0.050	1.5	0.54	1.9	3.3	1.0	2.2	<0.01	<7.0	<4.0	<8.0	<6.0

Table 6

CAM-1 Southeast Landfill - Summary of Soil Monitoring Analytical Data

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Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2* C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
Background Data - Arithmetic Mean						3.3	1.0	20.0	5.0	11.3	10.0	5.0	15.0	0.10	N/A	N/A	N/A	N/A
Baseline Data - Arithmetic Mean						**1.9**	**1.0**	**20.0**	**5.0**	**3.2**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**10.0**	**18.9**	**13.8**
Baseline Data - Standard Deviation						2.0	0.0	0.0	0.0	2.3	0.0	0.0	0.0	0.00	0.0	0.0	12.6	7.1
Baseline Data Mean + 3x Standard Deviation						**7.9**	**1.0**	**20.0**	**5.0**	**10.0**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**10.0**	**56.6**	**35.0**
Downgradient																		
	C1-16 surface																	
10-16655	C1-16	2010	1	Phase I	0-10	<1	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	5	16	11
C112-16A	C1-16	2012	3	Phase I	0-15	<1	N/A	1.6	<1	<5	1.8	<1	<10	<0.01	<12	<10	<10	N/A
C114-16A	C1-16	2014	5	Phase I	0-15	0.7	0.02	1.4	0.4	<1	<4.9	<0.5	2.0	<0.10	<10	<50	<50	<100
16-C1-16A	C1-16	2016	7	Phase II	0-15	<1	<0.05	1.5	<0.5	<1	2.0	<1	<10	<0.01	<12	<10	<50	<50
C1-DUP5 (Dup)	C1-16	2016	7	Phase II	0-15	<1	<0.05	1.9	0.69	<1	1.8	1.0	<10	<0.01	<12	<10	<50	<50
16-C1-16A (Interlab)	C1-16	2016	7	Phase II	0-15	0.97	0.022	1.8	0.63	1.0	1.8	0.94	2.8	<0.05	<10	<20	<20	<20
C1-16A	C1-16	2019	10	Phase II	0-15	<1.0	<0.050	2.6	<0.50	2.0	1.1	<1.0	1.8	<0.01	<7.0	<4.0	<8.0	<6.0
	C1-16 depth																	
10-16657	C1-16	2010	1	Phase I	30-50	1.2	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	4.3	<9	10
C112-16B	C1-16	2012	3	Phase I	40-50	1.4	N/A	1.3	<1	<5	4.6	<1	<10	<0.01	<12	**13**	**19**	N/A
C114-16B	C1-16	2014	5	Phase I	40-50	1.2	0.02	1.8	0.6	1.7	<4.9	1.2	2.0	<0.10	<10	<50	<50	<100
16-C1-16B	C1-16	2016	7	Phase II	40-50	<1	<0.05	1.5	<0.5	<1	2.5	<1	<10	<0.01	<12	<10	<50	<50
C1-16B	C1-16	2019	10	Phase II	40-50	1.6	<0.050	1.4	<0.50	1.6	4.9	1.0	1.3	<0.01	<7.0	<4.0	<8.0	<6.0

Table 6

CAM-1 Southeast Landfill - Summary of Soil Monitoring Analytical Data

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Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2* C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
Background Data - Arithmetic Mean						3.3	1.0	20.0	5.0	11.3	10.0	5.0	15.0	0.10	N/A	N/A	N/A	N/A
Baseline Data - Arithmetic Mean						**1.9**	**1.0**	**20.0**	**5.0**	**3.2**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**10.0**	**18.9**	**13.8**
Baseline Data - Standard Deviation						2.0	0.0	0.0	0.0	2.3	0.0	0.0	0.0	0.00	0.0	0.0	12.6	7.1
Baseline Data Mean + 3x Standard Deviation						**7.9**	**1.0**	**20.0**	**5.0**	**10.0**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**10.0**	**56.6**	**35.0**
Downgradient																		
	C1-17 surface																	
10-16659	C1-17	2010	1	Phase I	0-10	1.3	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	<4	<9	8.1
C112-17A	C1-17	2012	3	Phase I	0-15	1.0	N/A	1.8	<1	<5	2.2	1.2	<10	<0.01	<12	<10	<10	N/A
C114-17A	C1-17	2014	5	Phase I	0-15	0.7	0.01	1.7	0.6	1.4	<4.9	0.8	3.0	<0.10	<10	<50	<50	<100
16-C1-17A	C1-17	2016	7	Phase II	0-15	**2.3**	<0.05	1.8	<0.5	1.3	5.6	<1	<10	<0.01	<12	<10	<50	<50
C1-17A	C1-17	2019	10	Phase II	0-15	1.3	<0.050	1.7	0.57	1.5	3.0	1.1	**37.0**	<0.01	<7.0	<4.0	<8.0	<6.0
	C1-17 depth																	
10-16661	C1-17	2010	1	Phase I	30-50	**2.2**	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	5.6	<9	<8
C112-17B	C1-17	2012	3	Phase I	40-50	**14.0**	N/A	1.9	1.2	**5.5**	**41.0**	1.9	<10	<0.01	<12	<10	<10	N/A
C114-17B	C1-17	2014	5	Phase I	40-50	**2.7**	0.04	2.9	0.9	2.4	8.7	1.9	3.0	<0.10	<10	<50	<50	<100
C114-BD8 (Dup)	C1-17	2014	5	Phase I	40-50	**2.3**	0.03	1.6	0.6	1.4	7.9	<0.5	1.0	<0.10	<10	<50	<50	<100
C114-17B (Interlab)	C1-17	2014	5	Phase I	40-50	**2.1**	<0.1	4.2	<1	<5	6.8	2.0	<10	<0.01	<12	<10	<50	N/A
16-C1-17B	C1-17	2016	7	Phase II	30-35	**2.4**	<0.05	1.7	0.62	1.8	7.9	<1	<10	<0.01	<12	<10	<50	<50
C1-17B	C1-17	2019	10	Phase II	30-40	**2.7**	<0.050	1.8	0.63	2.4	8.2	1.1	1.7	<0.01	<7.0	<4.0	11	<6.0

Table 6

CAM-1 Southeast Landfill - Summary of Soil Monitoring Analytical Data

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Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2* C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
Background Data - Arithmetic Mean						3.3	1.0	20.0	5.0	11.3	10.0	5.0	15.0	0.10	N/A	N/A	N/A	N/A
Baseline Data - Arithmetic Mean						**1.9**	**1.0**	**20.0**	**5.0**	**3.2**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**10.0**	**18.9**	**13.8**
Baseline Data - Standard Deviation						2.0	0.0	0.0	0.0	2.3	0.0	0.0	0.0	0.00	0.0	0.0	12.6	7.1
Baseline Data Mean + 3x Standard Deviation						**7.9**	**1.0**	**20.0**	**5.0**	**10.0**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**10.0**	**56.6**	**35.0**
Downgradient																		
	C1-18 surface																	
10-16663	C1-18	2010	1	Phase I	0-10	<1	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	<4	<9	<8
C112-18A	C1-18	2012	3	Phase I	0-15	<1	N/A	1.6	<1	<5	1.4	1.7	<10	<0.01	<12	<10	<10	N/A
C114-18A	C1-18	2014	5	Phase I	0-15	0.6	0.02	1.5	0.5	1.2	<5	1.0	3.0	<0.10	<10	<50	<50	<100
16-C1-18A	C1-18	2016	7	Phase II	0-15	<1	<0.05	1.6	<0.5	<1	1.1	<1	<10	<0.01	<12	<10	<50	<50
C1-18A	C1-18	2019	10	Phase II	0-15	<1.0	<0.050	1.5	<0.50	2.2	1.9	<1.0	2.4	<0.01	<7.0	<4.0	11	<6.0
C1-37 (dup)	C1-18	2019	10	Phase II	0-15	<1.0	<0.050	1.3	<0.50	<1.0	1.3	<1.0	2.2	<0.01	<7.0	<4.0	10	<6.0
	C1-18 depth																	
10-16665	C1-18	2010	1	Phase I	30-50	<1	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	4.7	<9	<8
10-16666 (Dup)	C1-18	2010	1	Phase I	30-50	<1	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	<4	11	<8
C112-18B	C1-18	2012	3	Phase I	40-50	<1	N/A	1.0	<1	<5	<1	<1	<10	<0.01	<12	<10	<10	N/A
C114-18B	C1-18	2014	5	Phase I	40-50	0.5	<0.01	1.6	0.4	<1	<4.9	0.5	2.0	<0.10	<10	<50	<50	<100
16-C1-18B	C1-18	2016	7	Phase II	40-50	<1	<0.05	1.6	<0.5	<1	1.1	<1	<10	<0.01	<12	<10	<50	<50
C1-18B	C1-18	2019	10	Phase II	40-50	<1.0	<0.050	1.4	<0.50	<1.0	1.1	<1.0	1.8	<0.01	<7.0	<4.0	8.2	<6.0

N/A = not analyzed

Legend	
XX	Sample exceeds baseline mean
XX	Sample exceeds baseline mean + 3x SD

Table 7

CAM-1 Station East and Main Landfills - Summary of Soil Monitoring Analytical Data

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Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2* C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
Background Data - Arithmetic Mean						3.3	1.0	20.0	5.0	11.3	10.0	5.0	15.0	0.10	N/A	N/A	N/A	N/A
Baseline Data - Arithmetic Mean						**5.4**	**1.0**	**20.0**	**5.0**	**5.6**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**10.0**	**54.8**	**45.0**
Baseline Data - Standard Deviation						5.5	0.0	0.0	0.0	5.1	0.0	0.0	0.0	0.00	0.0	0.0	34.1	30.0
Baseline Data Mean + 3x Standard Deviation						**22.0**	**1.0**	**20.0**	**5.0**	**20.9**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**10.0**	**157.2**	**135.0**
**** If baseline or background arithmetic mean was below the detection limit, the mean has been modified to match the detection limit value.***																		
DEW Line Cleanup Tier I Criteria											*200*			*1*				
CAM-1 Site-Specfic As Criterion and DEW Line Cleanup Tier II Criteria						*40*	*5*	*250*	*50*	*100*	*500*	*100*	*500*	*5*				
Monitoring Data																		
Upgradient																		
	C1-19 surface																	
10-16681	C1-19	2010	1	Phase I	0-10	4.2	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	<4	<9	<8
C112-19A	C1-19	2012	3	Phase I	0-15	4.4	N/A	3.1	<1	<5	7.2	1.9	<10	<0.01	<12	<10	<10	N/A
C114-19A	C1-19	2014	5	Phase I	0-15	2.6	0.03	5.7	2.2	**14.1**	**14.7**	3.7	**18.0**	<0.10	<10	<50	<50	<100
16-C1-19A	C1-19	2016	7	Phase II	0-15	**6.8**	<0.05	1.6	0.76	3.3	8.5	1.2	<10	<0.01	<12	<10	<50	<50
C1-19A	C1-19	2019	10	Phase II	0-15	1.3	<0.050	2.6	1.0	2.0	6.5	1.6	3.4	<0.01	<7.0	<4.0	11	<6.0
	C1-19 depth																	
10-16683	C1-19	2010	1	Phase I	30-50	5.1	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	<4	<9	<8
C112-19B	C1-19	2012	3	Phase I	40-50	1.7	N/A	2.8	<1	<5	4.0	1.2	<10	<0.01	<12	<10	<10	N/A
C114-19B	C1-19	2014	5	Phase I	40-50	1.9	<0.01	2.6	0.8	1.2	<5	0.7	3.0	<0.10	<10	<50	<50	<100
16-C1-19B	C1-19	2016	7	Phase II	40-50	**6.8**	<0.01	7.7	<1	5.2	9.9	3.8	<20	<0.02	<12	<10	<50	<50
C1-19B	C1-19	2019	10	Phase II	40-50	2.3	<0.050	5.7	1.9	4.2	**11.0**	4.3	6.8	<0.01	<7.0	<4.0	8.6	<6.0

Table 7

CAM-1 Station East and Main Landfills - Summary of Soil Monitoring Analytical Data

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Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2* C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
Background Data - Arithmetic Mean						3.3	1.0	20.0	5.0	11.3	10.0	5.0	15.0	0.10	N/A	N/A	N/A	N/A
Baseline Data - Arithmetic Mean						**5.4**	**1.0**	**20.0**	**5.0**	**5.6**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**10.0**	**54.8**	**45.0**
Baseline Data - Standard Deviation						5.5	0.0	0.0	0.0	5.1	0.0	0.0	0.0	0.00	0.0	0.0	34.1	30.0
Baseline Data Mean + 3x Standard Deviation						**22.0**	**1.0**	**20.0**	**5.0**	**20.9**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**10.0**	**157.2**	**135.0**
Upgradient																		
	C1-23 surface																	
10-16667	C1-23	2010	1	Phase I	0-10	**42.2**	<1	<20	<5	4.1	**50.0**	<5	<15	<0.003	<10	4.1	9.1	<8
10-16668 (Dup)	C1-23	2010	1	Phase I	0-10	**27.7**	<1	<20	<5	3.1	**33.0**	<5	<15	<0.003	<10	4.2	<9	<8
C112-23A	C1-23	2012	3	Phase I	0-15	**38.0**	N/A	1.9	1.4	<5	**42.0**	2.6	<10	<0.01	<12	<10	<10	N/A
C114-23A	C1-23	2014	5	Phase I	0-15	**39.4**	0.05	1.7	1.9	5.2	**67.0**	2.5	1.0	<0.10	<10	<50	<50	<100
16-C1-23A	C1-23	2016	7	Phase II	0-15	**19.0**	<0.05	7.2	1.0	2.4	**56.0**	1.6	**32.0**	<0.01	<12	<10	<50	<50
C1-23A	C1-23	2019	10	Phase II	0-15	**25.0**	<0.050	1.6	1.0	3.8	**39.0**	1.8	3.8	<0.01	<7.0	<4.0	12	<6.0
C1-38 (dup)	C1-23	2019	10	Phase II	0-15	**22.0**	<0.050	1.5	0.97	3.3	**32.0**	1.6	3.2	<0.01	<7.0	<4.0	16	<6.0
	C1-23 depth																	
Not sampled - refusal	C1-23	2010	1	Phase I														
C112-23B	C1-23	2012	3	Phase I	40-50	**39.0**	N/A	1.6	1.2	<5	**42.0**	2.0	<10	<0.01	<12	<10	12	N/A
C114-23B	C1-23	2014	5	Phase I	40-50	**25.9**	0.03	1.6	1.3	4.1	**45.4**	1.8	1.0	<0.10	<10	<50	<50	<100
Not sampled - refusal	C1-23	2016	7	Phase II														
C1-23B	C1-23	2019	10	Phase II	15-25	**26.0**	<0.050	1.7	1.6	5.0	**33.0**	1.9	7.5	<0.01	<7.0	<4.0	<8.0	<6.0

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CAM-1 Station East and Main Landfills - Summary of Soil Monitoring Analytical Data

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Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2* C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
Background Data - Arithmetic Mean						3.3	1.0	20.0	5.0	11.3	10.0	5.0	15.0	0.10	N/A	N/A	N/A	N/A
Baseline Data - Arithmetic Mean						**5.4**	**1.0**	**20.0**	**5.0**	**5.6**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**10.0**	**54.8**	**45.0**
Baseline Data - Standard Deviation						5.5	0.0	0.0	0.0	5.1	0.0	0.0	0.0	0.00	0.0	0.0	34.1	30.0
Baseline Data Mean + 3x Standard Deviation						**22.0**	**1.0**	**20.0**	**5.0**	**20.9**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**10.0**	**157.2**	**135.0**
Downgradient																		
	C1-20 surface																	
10-16685	C1-20	2010	1	Phase I	0-10	**6.4**	<1	<20	<5	3.0	<10	<5	<15	0.004	<10	4.2	<9	<8
C112-20A	C1-20	2012	3	Phase I	0-15	**7.6**	N/A	2.7	<1	<5	9.9	2.0	<10	<0.01	<12	<10	21	N/A
C114-20A	C1-20	2014	5	Phase I	0-15	**7.9**	0.05	2.8	0.9	4.3	**11.0**	1.6	7.0	<0.10	<10	<50	<50	<100
16-C1-20A	C1-20	2016	7	Phase II	0-15	**10.0**	0.052	3.9	1.1	5.4	**14.0**	2.5	10.0	<0.01	<12	<10	<50	<50
C1-20A	C1-20	2019	10	Phase II	0-15	4.1	<0.050	2.1	0.52	1.4	6.9	1.1	3.5	<0.01	<7.0	<4.0	16	<6.0
	C1-20 depth																	
10-16687	C1-20	2010	1	Phase I	30-50	**6.4**	<1	<20	<5	<3	10.0	<5	<15	<0.003	<10	4	<9	<8
C112-20B	C1-20	2012	3	Phase I	40-50	**26.0**	N/A	2.7	1.1	<5	**26.0**	2.2	<10	<0.01	<12	<10	<10	N/A
C-114-20B	C1-20	2014	5	Phase I	40-50	**7.0**	0.03	2.9	0.8	2.8	**11.4**	1.2	5.0	<0.10	<10	<50	<50	<100
16-C1-20B	C1-20	2016	7	Phase II	40-50	2.3	<0.05	2.3	0.62	1.5	4.6	1.2	<10	<0.01	<12	<10	<50	<50
C1-DUP6 (Dup)	C1-20	2016	7	Phase II	40-50	2.0	<0.05	2.1	0.51	1.2	5.0	<1	<10	<0.01	<12	<10	<50	<50
16-C1-20B (Interlab)	C1-20	2016	7	Phase II	40-50	3.17	<0.02	2.3	0.62	1.3	5.8	1.1	2.9	<0.05	<10	<20	<20	<20
C1-20B	C1-20	2019	10	Phase II	40-50	4.3	<0.050	2.6	0.64	1.7	8.2	1.6	5.5	<0.01	<7.0	<4.0	29	11

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Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2* C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
Background Data - Arithmetic Mean						3.3	1.0	20.0	5.0	11.3	10.0	5.0	15.0	0.10	N/A	N/A	N/A	N/A
Baseline Data - Arithmetic Mean						**5.4**	**1.0**	**20.0**	**5.0**	**5.6**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**10.0**	**54.8**	**45.0**
Baseline Data - Standard Deviation						5.5	0.0	0.0	0.0	5.1	0.0	0.0	0.0	0.00	0.0	0.0	34.1	30.0
Baseline Data Mean + 3x Standard Deviation						**22.0**	**1.0**	**20.0**	**5.0**	**20.9**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**10.0**	**157.2**	**135.0**
Downgradient																		
	C1-21 surface																	
10-16689	C1-21	2010	1	Phase I	0-10	**8.4**	<1	<20	<5	<3	**11.0**	<5	<15	<0.003	<10	4.2	<9	<8
C112-21A	C1-21	2012	3	Phase I	0-15	**8.4**	N/A	2.8	<1	<5	**11.0**	1.9	<10	<0.01	<12	<10	<10	N/A
C112-BD5 (Dup)	C1-21	2012	3	Phase I	0-15	**7.9**	N/A	2.8	<1	<5	**11.0**	1.8	<10	<0.01	<12	<10	<10	N/A
C112-21A (Interlab)	C1-21	2012	3	Phase I	0-15	**7.4**	0.01	3.5	1.0	2.0	**12.0**	1.5	4.0	<0.10	<10	<50	<50	<100
C114-21A	C1-21	2014	5	Phase I	0-15	**8.8**	0.03	4.2	1.2	2.6	**13.9**	1.5	5.0	<0.10	<10	<50	<50	<100
16-C1-21A	C1-21	2016	7	Phase II	0-15	**8.5**	<0.05	3.0	0.84	3.6	**11.0**	2.3	<10	<0.01	<12	<10	<50	<50
C1-21A	C1-21	2019	10	Phase II	0-15	**7.3**	<0.050	3.0	0.82	1.8	**11.0**	1.8	3.5	<0.01	<7.0	<4.0	8.8	<6.0
	C1-21 depth																	
10-16691	C1-21	2010	1	Phase I	30-50	**8.3**	<1	<20	<5	<3	**12.0**	<5	<15	<0.003	<10	5.7	38	<8
C112-21B	C1-21	2012	3	Phase I	40-50	**8.3**	N/A	3.0	<1	<5	**12.0**	2.0	<10	<0.01	<12	<10	<10	N/A
C114-21B	C1-21	2014	5	Phase I	40-50	**10.2**	0.03	3.6	1.2	2.9	**16.0**	1.8	5.0	<0.10	<10	<50	<50	<100
16-C1-21B	C1-21	2016	7	Phase II	35-40	**8.2**	<0.05	2.7	0.87	2.5	**11.0**	2.0	<10	<0.01	<12	<10	<50	<50
C1-21B	C1-21	2019	10	Phase II	25-35	**7.8**	<0.050	3.0	0.79	1.9	**11.0**	1.8	3.4	<0.01	<7.0	<4.0	<8.0	<6.0

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Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2* C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
Background Data - Arithmetic Mean						3.3	1.0	20.0	5.0	11.3	10.0	5.0	15.0	0.10	N/A	N/A	N/A	N/A
Baseline Data - Arithmetic Mean						**5.4**	**1.0**	**20.0**	**5.0**	**5.6**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**10.0**	**54.8**	**45.0**
Baseline Data - Standard Deviation						5.5	0.0	0.0	0.0	5.1	0.0	0.0	0.0	0.00	0.0	0.0	34.1	30.0
Baseline Data Mean + 3x Standard Deviation						**22.0**	**1.0**	**20.0**	**5.0**	**20.9**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**10.0**	**157.2**	**135.0**
Downgradient																		
	C1-22 surface																	
10-16693	C1-22	2010	1	Phase I	0-10	**5.6**	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	<4	12	<8
C112-22A	C1-22	2012	3	Phase I	0-15	**5.4**	N/A	3.5	<1	**9.0**	9.2	1.9	<10	<0.01	<12	<10	40	N/A
C114-22A	C1-22	2014	5	Phase I	0-15	4.6	0.04	2.9	0.9	2.2	8.8	0.9	6.0	<0.10	<10	<50	<50	<100
16-C1-22A	C1-22	2016	7	Phase II	0-15	5.0	<0.05	3.0	0.7	1.9	9.7	1.4	<10	<0.01	<12	<10	<50	<50
C1-22A	C1-22	2019	10	Phase II	0-15	4.0	<0.050	2.2	0.53	1.7	7.2	1.2	3.0	<0.01	<7.0	<4.0	23	<6.0
	C1-22 depth																	
10-16695	C1-22	2010	1	Phase I	30-50	**5.4**	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	<4	<9	<8
10-16696 (Dup)	C1-22	2010	1	Phase I	30-50	4.8	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	<4	19	<8
C112-22B	C1-22	2012	3	Phase I	40-50	3.7	N/A	2.2	<1	<5	7.0	1.1	<10	<0.01	<12	<10	<10	N/A
C114-22B	C1-22	2014	5	Phase I	40-50	4.1	0.01	3.1	0.8	1.4	9.4	0.7	3.0	<0.10	<10	<50	<50	<100
C114-BD9	C1-22	2014	5	Phase I	40-50	4.0	0.02	3.2	0.8	1.4	9.0	0.7	3.0	<0.10	<10	<50	<50	<100
C114-22B (Interlab)	C1-22	2014	5	Phase I	40-50	**5.8**	<0.1	**23.0**	<1	<5	8.9	**10.0**	<10	<0.01	<12	<10	<50	N/A
16-C1-22B	C1-22	2016	7	Phase II	30-40	5.2	<0.05	4.0	0.72	1.8	8.9	1.5	<10	<0.01	<12	<10	<50	<50
C1-22B	C1-22	2019	10	Phase II	40-50	5.3	<0.050	3.2	0.62	1.8	9.9	1.4	3.2	<0.01	<7.0	<4.0	12	<6.0

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Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2* C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
Background Data - Arithmetic Mean						3.3	1.0	20.0	5.0	11.3	10.0	5.0	15.0	0.10	N/A	N/A	N/A	N/A
Baseline Data - Arithmetic Mean						**5.4**	**1.0**	**20.0**	**5.0**	**5.6**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**10.0**	**54.8**	**45.0**
Baseline Data - Standard Deviation						5.5	0.0	0.0	0.0	5.1	0.0	0.0	0.0	0.00	0.0	0.0	34.1	30.0
Baseline Data Mean + 3x Standard Deviation						**22.0**	**1.0**	**20.0**	**5.0**	**20.9**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**10.0**	**157.2**	**135.0**
Downgradient																		
	C1-24 surface																	
10-16669	C1-24	2010	1	Phase I	0-10	2.4	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	7.2	<9	8.5
C112-24A	C1-24	2012	3	Phase I	0-15	2.9	N/A	2.3	<1	<5	5.5	1.0	<10	<0.01	<12	<10	<10	N/A
C114-24A	C1-24	2014	5	Phase I	0-15	5.0	0.07	3.5	0.9	3.5	9.0	1.7	7.0	<0.10	<10	<50	<50	<100
C114-BD10	C1-24	2014	5	Phase I	0-15	2.8	0.02	2.7	0.7	1.3	5.2	0.8	5.0	<0.10	<10	<50	<50	<100
C114-24A (Interlab)	C1-24	2014	5	Phase I	0-15	4.0	<0.1	11.0	<1	<5	4.8	4.8	<10	<0.01	<12	<10	<50	N/A
16-C1-24A	C1-24	2016	7	Phase II	0-15	2.1	<0.05	5.6	<0.5	1.5	4.4	1.1	<10	<0.01	<12	<10	<50	<50
C1-24A	C1-24	2019	10	Phase II	0-15	3.6	<0.050	2.3	0.66	1.8	6.4	1.1	5.0	<0.01	<7.0	<4.0	19	<6.0
	C1-24 depth																	
10-16671	C1-24	2010	1	Phase I	30-50	3.3	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	4.6	<9	8.6
C112-24B	C1-24	2012	3	Phase I	40-50	**6.4**	N/A	2.7	<1	<5	9.5	1.7	<10	<0.01	<12	<10	<10	N/A
C114-24B	C1-24	2014	5	Phase I	40-50	**7.4**	0.05	3.8	1.3	2.6	**14.0**	1.7	7.0	<0.10	<10	<50	<50	<100
16-C1-24B	C1-24	2016	7	Phase II	40-50	2.9	<0.05	2.2	0.57	1.6	5.6	1.2	<10	<0.01	<12	<10	<50	<50
C1-24B	C1-24	2019	10	Phase II	40-50	**5.9**	<0.050	2.8	0.91	2.5	9.6	1.7	4.2	<0.01	<7.0	<4.0	20	<6.0

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Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2* C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
Background Data - Arithmetic Mean						3.3	1.0	20.0	5.0	11.3	10.0	5.0	15.0	0.10	N/A	N/A	N/A	N/A
Baseline Data - Arithmetic Mean						**5.4**	**1.0**	**20.0**	**5.0**	**5.6**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**10.0**	**54.8**	**45.0**
Baseline Data - Standard Deviation						5.5	0.0	0.0	0.0	5.1	0.0	0.0	0.0	0.00	0.0	0.0	34.1	30.0
Baseline Data Mean + 3x Standard Deviation						**22.0**	**1.0**	**20.0**	**5.0**	**20.9**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**10.0**	**157.2**	**135.0**
Downgradient																		
	C1-25 surface																	
10-16673	C1-25	2010	1	Phase I	0-10	1.5	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	<4	<9	<8
C112-25A	C1-25	2012	3	Phase I	0-15	1.7	N/A	2.5	3.8	**34.0**	3.1	1.8	<10	<0.01	<12	<10	<10	N/A
C112-BD6 (Dup)	C1-25	2012	3	Phase I	0-15	1.6	N/A	2.4	3.5	**26.0**	3.4	1.5	<10	<0.01	<12	<10	<10	N/A
C112-25A (Interlab)	C1-25	2012	3	Phase I	0-15	1.8	<0.01	3.3	4.8	**44.0**	4.1	3.0	5.0	<0.10	<10	<50	<50	<100
C114-25A	C1-25	2014	5	Phase I	0-15	1.5	0.03	2.4	0.7	2.3	<4.9	1.4	6.0	<0.10	<10	<50	<50	<100
16-C1-25A	C1-25	2016	7	Phase II	0-15	2.1	0.055	2.4	0.52	3.5	5.5	1.2	<10	<0.10	<12	<10	<50	<50
C1-25A	C1-25	2019	10	Phase II	0-15	1.2	<0.050	2.2	0.51	1.5	3.7	1.3	4.1	<0.01	<7.0	<4.0	13	<6.0
	C1-25 depth																	
10-16675	C1-25	2010	1	Phase I	30-50	2.6	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	<4	<9	<8
C112-25B	C1-25	2012	3	Phase I	40-50	3.0	N/A	3.7	1.0	5.3	4.6	2.1	<10	<0.01	<12	<10	<10	N/A
C114-25B	C1-25	2014	5	Phase I	40-50	2.8	0.01	3.2	1.1	2.2	<4.9	1.5	3.0	<0.10	<10	<50	<50	<100
Not sampled - refusal	C1-25	2016	7	Phase II														
C1-25B	C1-25	2019	10	Phase II	25-37	2.5	<0.050	3.0	0.86	2.4	3.7	1.7	2.7	<0.01	<7.0	<4.0	8.4	<6.0

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Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2* C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
Background Data - Arithmetic Mean						3.3	1.0	20.0	5.0	11.3	10.0	5.0	15.0	0.10	N/A	N/A	N/A	N/A
Baseline Data - Arithmetic Mean						**5.4**	**1.0**	**20.0**	**5.0**	**5.6**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**10.0**	**54.8**	**45.0**
Baseline Data - Standard Deviation						5.5	0.0	0.0	0.0	5.1	0.0	0.0	0.0	0.00	0.0	0.0	34.1	30.0
Baseline Data Mean + 3x Standard Deviation						**22.0**	**1.0**	**20.0**	**5.0**	**20.9**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**10.0**	**157.2**	**135.0**
Downgradient																		
	C1-26 surface																	
10-16677	C1-26	2010	1	Phase I	0-10	1.1	<1	**29.0**	<5	<3	<10	**16.2**	<15	<0.003	<10	<4	<9	<8
C112-26A	C1-26	2012	3	Phase I	0-15	1.5	N/A	3.4	<1	<5	3.9	1.6	<10	<0.01	<12	<10	<10	N/A
C114-26A	C1-26	2014	5	Phase I	0-15	1.7	0.03	4.2	1.2	1.4	5.6	0.7	7.0	<0.10	<10	<50	<50	<100
16-C1-26A	C1-26	2016	7	Phase II	0-15	1.4	<0.05	3.7	0.79	1.5	4.5	1.5	<10	<0.01	<12	<10	<50	<50
C1-DUP7 (Dup)	C1-26	2016	7	Phase II	0-15	1.2	<0.05	3.4	0.7	1.5	4.5	1.3	<10	<0.01	<12	<10	<50	<50
16-C1-26A (Interlab)	C1-26	2016	7	Phase II	0-15	1.73	0.03	3.7	0.87	1.4	4.5	1.5	4.8	<0.05	<10	<20	<20	<20
C1-26A	C1-26	2019	10	Phase II	0-15	1.4	<0.050	3.1	0.67	1.6	5.7	1.2	5.5	<0.01	<7.0	<4.0	**58**	9.4
	C1-26 depth																	
10-16679	C1-26	2010	1	Phase I	30-50	1.2	<1	<20	<5	3.7	<10	<5	<15	<0.003	<10	<4	<9	<8
C112-26B	C1-26	2012	3	Phase I	40-50	2.2	N/A	3.4	<1	**5.8**	3.7	1.9	<10	<0.01	<12	<10	<10	N/A
C114-26B	C1-26	2014	5	Phase I	40-50	**9.4**	0.03	2.8	1.3	4.0	**18.3**	2.5	3.0	<0.10	<10	<50	<50	<100
16-C1-26B	C1-26	2016	7	Phase II	25-35	2.0	<0.05	3.7	0.83	1.9	4.3	1.8	<10	<0.01	<12	<10	<50	<50
C1-26B	C1-26	2019	10	Phase II	25-35	2.9	<0.050	3.2	0.88	2.2	4.4	1.6	3.1	<0.01	<7.0	<4.0	<8.0	<6.0
C1-42 (dup)	C1-26	2019	10	Phase II	25-35	2.8	<0.050	2.9	0.81	2.0	4.6	1.7	3.2	<0.01	<7.0	<4.0	<8.0	<6.0

N/A = not analyzed

Legend

XX	**Sample exceeds baseline mean**
XX	**Sample exceeds baseline mean + 3x SD**

Table 8

CAM-1 USAF Landfill - Summary of Soil Monitoring Analytical Data

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Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As* (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
Background Data - Arithmetic Mean						3.3	1.0	20.0	5.0	11.3	10.0	5.0	15.0	0.10	N/A	N/A	N/A	N/A
Baseline Data - Arithmetic Mean						**1.0**	**1.0**	**20.0**	**5.0**	**3.9**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**28.4**	**55.3**	**23.8**
Baseline Data - Standard Deviation						0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.00	0.0	23.9	50.9	17.2
Baseline Data Mean + 3x Standard Deviation						**1.0**	**1.0**	**20.0**	**5.0**	**8.5**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**100.1**	**208.1**	**75.2**
**** If baseline or background arithmetic mean was below the detection limit, the mean has been modified to match the detection limit value.***																		
DEW Line Cleanup Tier I Criteria											*200*			*1*				
CAM-1 Site-Specfic As Criterion and DEW Line Cleanup Tier II Criteria						*40*	*5*	*250*	*50*	*100*	*500*	*100*	*500*	*5*				
Monitoring Data																		
Upgradient																		
	C1-27 surface																	
10-16713	C1-27	2010	1	Phase I	0-10	**5.4**	<1	<20	<5	3.2	<10	<5	<15	<0.003	<10	<4	<9	<8
C112-27A	C1-27	2012	3	Phase I	0-15	**1.3**	N/A	2.5	<1	<5	4.9	2.0	<10	<0.01	<12	<10	37	N/A
C112-BD2 (Dup)	C1-27	2012	3	Phase I	0-15	**1.3**	N/A	3.9	<1	<5	2.5	2.1	<10	<0.01	<12	<10	35	N/A
C112-27A (Interlab)	C1-27	2012	3	Phase I	0-15	**1.5**	0.03	4.1	1.0	3.0	3.6	4.2	3.0	<0.10	<10	<50	<50	<100
C114-27A	C1-27	2014	5	Phase I	0-15	**1.5**	0.22	3.6	1.0	**9.6**	<5	**5.7**	4.0	<0.10	<10	<50	**61**	<100
16-C1-27A	C1-27	2016	7	Phase II	0-15	**1.1**	<0.05	2.5	0.84	3.3	2.1	2.2	<10	<0.01	<12	<10	<50	<50
C1-27A	C1-27	2019	10	Phase II	0-15	**1.4**	0.081	4.4	1.3	**5.7**	3.0	3.9	4.2	<0.01	<7.0	<4.0	11	<6.0
	C1-27 depth																	
10-16715	C1-27	2010	1	Phase I	30-50	**1.4**	<1	<20	<5	**4.6**	<10	**8.9**	<15	<0.003	<10	<4	10	<8
C112-27B	C1-27	2012	3	Phase I	40-50	**1.6**	N/A	3.5	1.2	<5	2.6	3.0	<10	<0.01	<12	<10	<10	N/A
C114-27B	C1-27	2014	5	Phase I	40-50	**1.1**	0.01	2.3	0.9	2.3	<4.9	1.9	2.0	<0.10	<10	<50	<50	<100
16-C1-27B	C1-27	2016	7	Phase II	40-50	**1.2**	<0.05	2.9	0.85	1.7	2.0	1.7	<10	<0.01	<12	<10	<50	<50
C1-27B	C1-27	2019	10	Phase II	40-50	**1.2**	<0.050	2.8	0.89	1.6	2.0	1.6	2.9	<0.01	<7.0	<4.0	18	<6.0

Table 8

CAM-1 USAF Landfill - Summary of Soil Monitoring Analytical Data

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Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As* (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
Background Data - Arithmetic Mean						3.3	1.0	20.0	5.0	11.3	10.0	5.0	15.0	0.10	N/A	N/A	N/A	N/A
Baseline Data - Arithmetic Mean						**1.0**	**1.0**	**20.0**	**5.0**	**3.9**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**28.4**	**55.3**	**23.8**
Baseline Data - Standard Deviation						0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.00	0.0	23.9	50.9	17.2
Baseline Data Mean + 3x Standard Deviation						**1.0**	**1.0**	**20.0**	**5.0**	**8.5**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**100.1**	**208.1**	**75.2**
Downgradient																		
	C1-28 surface																	
10-16717	C1-28	2010	1	Phase I	0-10	**2.1**	<1	<20	<5	3.8	<10	**5.6**	<15	<0.003	<10	<4	<9	<8
C112-28A	C1-28	2012	3	Phase I	0-15	**2.2**	N/A	9.1	2.7	**6.2**	4.7	**6.8**	<10	<0.01	<12	<10	<10	N/A
C114-28A	C1-28	2014	5	Phase I	0-15	**1.4**	0.02	7.1	2.4	**4.8**	<5	4.9	7.0	<0.10	<10	<50	<50	<100
16-C1-28A	C1-28	2016	7	Phase II	0-15	**2.0**	<0.05	9.0	2.6	**5.0**	4.3	**6.1**	<10	<0.01	<12	<10	<50	<50
C1-28A	C1-28	2019	10	Phase II	0-15	**1.8**	<0.050	7.0	2.1	**4.3**	3.7	**5.1**	8.2	<0.01	<7.0	<4.0	11	<6.0
C1-40 (dup)	C1-28	2019	10	Phase II	0-15	**2.0**	<0.050	10.0	2.9	**6.4**	4.3	**7.1**	11.0	<0.05	<7.0	<4.0	8.5	<6.0
	C1-28 depth																	
10-16719	C1-28	2010	1	Phase I	30-50	**1.8**	<1	<20	<5	3.1	<10	<5	<15	0.004	N/A	<4	<9	<8
C112-28B	C1-28	2012	3	Phase I	40-50	**2.3**	N/A	11.0	2.9	**21.0**	4.6	**7.9**	13.0	<0.01	<12	<10	<10	N/A
C114-28B	C1-28	2014	5	Phase I	40-50	0.8	<0.01	3.6	1.2	1.9	<5	1.9	4.0	<0.10	<10	<50	<50	<100
16-C1-28B	C1-28	2016	7	Phase II	40-50	<1	<0.05	<1	<0.5	<1	<0.5	<1	<10	<0.01	<12	<10	<50	<50
C1-28B	C1-28	2019	10	Phase II	40-50	<1.0	<0.050	4.2	1.2	**4.3**	2.3	2.7	4.8	<0.01	<7.0	<4.0	<8.0	<6.0

Table 8

CAM-1 USAF Landfill - Summary of Soil Monitoring Analytical Data

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Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As* (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
Background Data - Arithmetic Mean						3.3	1.0	20.0	5.0	11.3	10.0	5.0	15.0	0.10	N/A	N/A	N/A	N/A
Baseline Data - Arithmetic Mean						**1.0**	**1.0**	**20.0**	**5.0**	**3.9**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**28.4**	**55.3**	**23.8**
Baseline Data - Standard Deviation						0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.00	0.0	23.9	50.9	17.2
Baseline Data Mean + 3x Standard Deviation						**1.0**	**1.0**	**20.0**	**5.0**	**8.5**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**100.1**	**208.1**	**75.2**
Downgradient																		
	C1-29 surface																	
10-16721	C1-29	2010	1	Phase I	0-10	**1.5**	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	<4	<9	<8
C112-29A	C1-29	2012	3	Phase I	0-15	**1.4**	N/A	3.2	<1	<5	2.3	2.2	<10	<0.01	<12	<10	<10	N/A
C114-29A	C1-29	2014	5	Phase I	0-15	0.7	<0.01	2.5	0.9	1.7	<4.9	1.5	3.0	<0.10	<10	<50	<50	<100
C114-BD2 (Dup)	C1-29	2014	5	Phase I	40-50	0.7	<0.01	3.0	0.8	1.5	<5	1.5	3.0	<0.10	<10	<50	<50	<100
C114-29A (Interlab)	C1-29	2014	5	Phase I	40-50	<1	<0.1	10.0	<1	<5	1.9	4.7	<10	<0.01	<12	<10	<50	N/A
16-C1-29A	C1-29	2016	7	Phase II	0-15	<1	<0.05	3.8	0.62	2.4	2.0	1.6	<10	<0.01	<12	<10	<50	<50
C1-DUP8 (Dup)	C1-29	2016	7	Phase II	0-15	1.0	<0.05	2.7	0.69	1.7	2.3	1.7	<10	<0.01	<12	<10	<50	<50
16-C1-29A (Interlab)	C1-29	2016	7	Phase II	0-15	0.89	<0.02	2.8	0.67	1.4	1.7	1.5	3.0	<0.05	<10	<20	<20	<20
C1-29A	C1-29	2019	10	Phase II	0-15	1.0	<0.050	3.2	0.77	**5.7**	2.3	2.0	3.3	<0.01	<7.0	<4.0	<8.0	<6.0
	C1-29 depth																	
10-16723	C1-29	2010	1	Phase I	25-30	**1.1**	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	<4	<9	<8
C112-29B	C1-29	2012	3	Phase I	40-50	**1.3**	N/A	5.6	1.1	<5	2.6	3.5	<10	<0.01	<12	<10	<10	N/A
C114-29B	C1-29	2014	5	Phase I	40-50	1.0	<0.01	4.0	1.3	2.8	<5	3.4	3.0	<0.10	<10	<50	<50	<100
16-C1-29B	C1-29	2016	7	Phase II	40-50	<1	<0.05	3.3	0.82	1.9	2.0	2.2	<10	<0.01	<12	<10	<50	<50
C1-29B	C1-29	2019	10	Phase II	40-50	<1.0	<0.050	2.5	0.68	3.8	1.8	1.9	3.6	<0.01	<7.0	<4.0	<8.0	<6.0

Table 8

CAM-1 USAF Landfill - Summary of Soil Monitoring Analytical Data

Link To: Table of Contents

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As* (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
Background Data - Arithmetic Mean						3.3	1.0	20.0	5.0	11.3	10.0	5.0	15.0	0.10	N/A	N/A	N/A	N/A
Baseline Data - Arithmetic Mean						**1.0**	**1.0**	**20.0**	**5.0**	**3.9**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**28.4**	**55.3**	**23.8**
Baseline Data - Standard Deviation						0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.00	0.0	23.9	50.9	17.2
Baseline Data Mean + 3x Standard Deviation						**1.0**	**1.0**	**20.0**	**5.0**	**8.5**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**100.1**	**208.1**	**75.2**
Downgradient																		
	C1-30 surface																	
10-16725	C1-30	2010	1	Phase I	0-10	<1	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	<4	22	<8
C112-30A	C1-30	2012	3	Phase I	0-15	<1	N/A	2.8	<1	**6.0**	1.8	2.2	<10	<0.01	<12	<10	20	N/A
C114-30A	C1-30	2014	5	Phase I	0-15	1.0	0.10	4.0	1.4	**5.7**	<4.9	3.8	9.0	<0.10	<10	<50	<50	<100
16-C1-30A	C1-30	2016	7	Phase II	0-15	<1	<0.05	2.6	0.83	1.6	1.7	1.5	<10	<0.01	<12	<10	<50	<50
C1-30B	C1-30	2019	10	Phase II	0-15	<1.0	<0.050	2.7	0.84	1.7	2.6	1.7	2.9	<0.01	<7.0	<4.0	17	<6.0
	C1-30 depth																	
10-16727	C1-30	2010	1	Phase I	30-50	<1	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	<4	17	<8
C112-30B	C1-30	2012	3	Phase I	40-50	<1	N/A	3.6	<1	<5	1.6	2.0	<10	<0.01	<12	<10	<10	N/A
C114-30B	C1-30	2014	5	Phase I	40-50	0.6	0.01	3.0	0.9	3.8	<5	2.1	2.0	<0.10	<10	<50	<50	<100
16-C1-30B	C1-30	2016	7	Phase II	40-50	<1	<0.05	4.4	1.1	2.6	1.7	2.7	<10	<0.01	<12	<10	<50	<50
C1-30B	C1-30	2019	10	Phase II	40-50	<1.0	<0.050	4.2	1.0	2.9	1.9	3.0	3.9	<0.01	<7.0	<4.0	9.7	<6.0

Table 8

CAM-1 USAF Landfill - Summary of Soil Monitoring Analytical Data

Link To: Table of Contents

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As* (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb* (mg/kg)	Ni* (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
Background Data - Arithmetic Mean						3.3	1.0	20.0	5.0	11.3	10.0	5.0	15.0	0.10	N/A	N/A	N/A	N/A
Baseline Data - Arithmetic Mean						**1.0**	**1.0**	**20.0**	**5.0**	**3.9**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**28.4**	**55.3**	**23.8**
Baseline Data - Standard Deviation						0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.00	0.0	23.9	50.9	17.2
Baseline Data Mean + 3x Standard Deviation						**1.0**	**1.0**	**20.0**	**5.0**	**8.5**	**10.0**	**5.0**	**15.0**	**0.10**	**10.0**	**100.1**	**208.1**	**75.2**
Downgradient																		
	C1-31 surface																	
10-16729	C1-31	2010	1	Phase I	0-10	<1	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	<4	<9	<8
10-16730 (Dup)	C1-31	2010	1	Phase I	0-10	<1	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	<4	<9	<8
C112-31A	C1-31	2012	3	Phase I	0-15	<1	N/A	2.7	<1	<5	1.4	1.4	<10	<0.01	<12	<10	<10	N/A
C114-31A	C1-31	2014	5	Phase I	0-15	0.7	<0.01	2.8	1.1	1.5	<5	1.5	3.0	<0.10	<10	<50	<50	<100
16-C1-31A	C1-31	2016	7	Phase II	0-15	<1	<0.05	9.1	0.81	1.6	2.0	4.1	<10	<0.01	<12	<10	<50	<50
C1-31A	C1-31	2019	10	Phase II	0-15	<1.0	<0.050	2.9	0.78	1.4	1.8	1.6	2.1	<0.01	<7.0	<4.0	12	<6.0
	C1-31 depth																	
10-16731	C1-31	2010	1	Phase I	30-50	<1	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	<4	<9	<8
C112-31B	C1-31	2012	3	Phase I	40-50	<1	N/A	3.4	<1	<5	1.5	2.1	<10	<0.01	<12	<10	<10	N/A
C114-31B	C1-31	2014	5	Phase I	40-50	0.8	<0.01	4.0	0.9	2.0	<5	2.0	3.0	<0.10	<10	<50	<50	<100
16-C1-31B	C1-31	2016	7	Phase II	40-50	<1	<0.05	3.2	0.69	1.9	1.7	2.1	<10	<0.01	<12	<10	<50	<50
C1-31B	C1-31	2019	10	Phase II	40-50	<1.0	<0.050	2.9	0.59	1.6	1.4	1.6	2.1	<0.01	<7.0	<4.0	9	<6.0

N/A = not analyzed

Legend	
XX	Sample exceeds baseline mean
XX	Sample exceeds baseline mean + 3x SD

Table 9

CAM-1 East Landing Landfill - Summary of Soil Monitoring Analytical Data

Link To: Table of Contents

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb (mg/kg)	Ni (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
Background Data - Arithmetic Mean						3.3	1.0	20.0	5.0	11.3	10.0	5.0	15.0	0.10	N/A	N/A	N/A	N/A
Baseline Data - Arithmetic Mean						**5.8**	**1.0**	**20.0**	**5.0**	**7.6**	**13.8**	**7.3**	**15.0**	**0.10**	**10.0**	**4.9**	**48.4**	**30.4**
Baseline Data - Standard Deviation						5.1	0.0	0.0	0.0	3.7	9.8	3.9	0.0	0.00	0.0	2.8	34.8	23.1
Baseline Data Mean + 3x Standard Deviation						**21.2**	**1.0**	**20.0**	**5.0**	**18.6**	**43.2**	**19.1**	**15.0**	**0.10**	**10.0**	**13.2**	**152.8**	**99.8**
**** If baseline or background arithmetic mean was below the detection limit, the mean has been modified to match the detection limit value.***																		
DEW Line Cleanup Tier I Criteria											*200*			*1*				
CAM-1 Site-Specfic As Criterion and DEW Line Cleanup Tier II Criteria						*40*	*5*	*250*	*50*	*100*	*500*	*100*	*500*	*5*				
Monitoring Data																		
Upgradient																		
	C1-32 surface																	
10-16697	C1-32	2010	1	Phase I	0-10	1.8	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	<4	<9	<8
C112-32A	C1-32	2012	3	Phase I	0-15	2.0	N/A	9.6	2.0	7.3	4.3	5.7	<10	<0.01	<12	<10	40	N/A
C114-32A	C1-32	2014	5	Phase I	0-15	0.4	<0.01	3.7	0.9	1.2	<4.9	1.6	4.0	<0.10	<10	<50	<50	<100
C114-BD1 (Dup)	C1-32	2014	5	Phase I	0-15	0.5	0.02	4.6	0.9	2.4	<5	3.2	4.0	<0.10	<10	<50	<50	<100
C114-32A (Interlab)	C1-32	2014	5	Phase I	0-15	<1	<0.1	3.1	<1	<5	11.0	1.6	<10	<0.01	<12	<10	<50	N/A
16-C1-32A	C1-32	2016	7	Phase II	0-15	2.0	<0.05	13.0	0.87	2.0	1.9	6.6	<10	<0.01	<12	<10	<50	<50
C1-32A	C1-32	2019	10	Phase II	0-15	<1.0	<0.050	3.3	0.79	1.7	2.3	1.8	3.4	<0.01	<7.0	<4.0	20	<6.0
C1-41 (dup)	C1-32	2019	10	Phase II	0-15	<1.0	<0.050	3.6	0.90	1.9	2.1	2.2	3.8	<0.01	<7.0	<4.0	15	<6.0
	C1-32 depth																	
10-16699	C1-32	2010	1	Phase I	30-50	2.7	<1	<20	<5	4.9	<10	5.2	<15	<0.003	<10	<4	<9	<8
C112-32B	C1-32	2012	3	Phase I	40-50	2.2	N/A	7.2	2.2	7.2	5.1	5.2	<10	<0.01	<12	<10	33	N/A
C114-32B	C1-32	2014	5	Phase I	40-50	0.7	0.01	3.9	0.9	2.3	<4.9	2.2	3.0	<0.10	<10	<50	<50	<100
16-C1-32B	C1-32	2016	7	Phase II	40-50	2.0	<0.05	11.0	1.4	2.7	3.4	5.8	<10	<0.01	<12	<10	**83**	<50
C1-32B	C1-32	2019	10	Phase II	40-50	2.0	<0.050	15.0	4.0	**12.0**	5.3	**11.0**	**43.0**	<0.01	<7.0	<4.0	16	<6.0

Table 9

CAM-1 East Landing Landfill - Summary of Soil Monitoring Analytical Data

Link To: Table of Contents

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb (mg/kg)	Ni (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
Background Data - Arithmetic Mean						3.3	1.0	20.0	5.0	11.3	10.0	5.0	15.0	0.10	N/A	N/A	N/A	N/A
Baseline Data - Arithmetic Mean						**5.8**	**1.0**	**20.0**	**5.0**	**7.6**	**13.8**	**7.3**	**15.0**	**0.10**	**10.0**	**4.9**	**48.4**	**30.4**
Baseline Data - Standard Deviation						5.1	0.0	0.0	0.0	3.7	9.8	3.9	0.0	0.00	0.0	2.8	34.8	23.1
Baseline Data Mean + 3x Standard Deviation						**21.2**	**1.0**	**20.0**	**5.0**	**18.6**	**43.2**	**19.1**	**15.0**	**0.10**	**10.0**	**13.2**	**152.8**	**99.8**
Downgradient																		
	C1-33 surface																	
10-16701	C1-33	2010	1	Phase I	0-10	**6.7**	<1	<20	<5	**7.7**	**20.0**	7.0	<15	<0.003	<10	<4	<9	<8
C112-33A	C1-33	2012	3	Phase I	0-15	**6.4**	N/A	6.2	2.5	<5	**18.0**	5.0	<10	<0.01	<12	<10	<10	N/A
C112-BD1 (Dup)	C1-33	2012	3	Phase I	0-15	**7.5**	N/A	6.7	2.8	5.2	**24.0**	6.7	<10	<0.01	<12	<10	<10	N/A
C112-33A (Interlab)	C1-33	2012	3	Phase I	0-15	5.2	0.01	6.5	3.2	5.0	**21.9**	5.6	5.0	<0.10	<10	<50	<50	<100
C114-33A	C1-33	2014	5	Phase I	0-15	**9.3**	0.02	8.8	**5.1**	**7.6**	**26.9**	**10.0**	9.0	<0.10	<10	<50	<50	<100
16-C1-33A	C1-33	2016	7	Phase II	0-15	**11.0**	<0.05	9.2	3.8	5.8	**32.0**	**8.5**	<10	<0.01	<12	<10	<50	<50
C1-33A	C1-33	2019	10	Phase II	0-15	5.7	<0.050	5.6	2.9	7.3	**20.0**	6.4	8.6	<0.01	<7.0	<4.0	8.0	<6.0
	C1-33 depth																	
10-16703	C1-33	2010	1	Phase I	30-50	**7.4**	<1	<20	<5	4.5	**23.0**	5.8	<15	<0.003	<10	**8**	18	11
C112-33B	C1-33	2012	3	Phase I	40-50	**7.0**	N/A	8.5	3.1	**12.0**	**23.0**	7.1	<10	<0.01	<12	<10	<10	N/A
C114-33B	C1-33	2014	5	Phase I	40-50	**7.7**	0.02	9.5	4.7	**7.6**	**21.6**	**9.3**	7.0	<0.10	<10	<50	<50	<100
16-C1-33B	C1-33	2016	7	Phase II	40-50	5.1	<0.05	6.2	2.3	4.4	**14.0**	5.2	<10	<0.01	<12	<10	<50	<50
C1-33B	C1-33	2019	10	Phase II	40-50	**6.6**	<0.050	6.7	3.3	**8.9**	**21.0**	**7.8**	6.8	<0.01	<7.0	<4.0	<8.0	<6.0

Table 9

CAM-1 East Landing Landfill - Summary of Soil Monitoring Analytical Data

Link To: Table of Contents

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb (mg/kg)	Ni (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
Background Data - Arithmetic Mean						3.3	1.0	20.0	5.0	11.3	10.0	5.0	15.0	0.10	N/A	N/A	N/A	N/A
Baseline Data - Arithmetic Mean						**5.8**	**1.0**	**20.0**	**5.0**	**7.6**	**13.8**	**7.3**	**15.0**	**0.10**	**10.0**	**4.9**	**48.4**	**30.4**
Baseline Data - Standard Deviation						5.1	0.0	0.0	0.0	3.7	9.8	3.9	0.0	0.00	0.0	2.8	34.8	23.1
Baseline Data Mean + 3x Standard Deviation						**21.2**	**1.0**	**20.0**	**5.0**	**18.6**	**43.2**	**19.1**	**15.0**	**0.10**	**10.0**	**13.2**	**152.8**	**99.8**
Downgradient																		
	C1-34 surface																	
10-16705	C1-34	2010	1	Phase I	0-10	**6.5**	<1	<20	<5	6.7	**39.0**	**7.4**	**17.0**	<0.003	<10	<4	<9	<8
C112-34A	C1-34	2012	3	Phase I	0-15	4.7	N/A	5.9	2.1	**57.0**	**22.0**	4.8	**19.0**	<0.01	<12	<10	<10	N/A
C114-34A	C1-34	2014	5	Phase I	0-15	5.6	0.04	7.5	3.3	5.7	**47.1**	5.2	13.0	<0.10	<10	<50	<50	<100
Not sampled - limited soil	C1-34	2016	7	Phase II														
C1-34A	C1-34	2019	10	Phase II	0-15	**8.2**	<0.050	6.5	3.3	5.8	**24.0**	7.1	6.5	<0.01	<7.0	<4.0	<8.0	<6.0
	C1-34 depth																	
10-16707	C1-34	2010	1	Phase I	30-50	5.0	<1	<20	<5	4.7	**136.0**	5.9	<15	<0.003	<10	**5.4**	21	<8
C112-34B	C1-34	2012	3	Phase I	40-50	4.0	N/A	11.0	2.8	**19.0**	11.0	7.3	<10	<0.01	<12	<10	<10	N/A
C114-34B	C1-34	2014	5	Phase I	40-50	5.1	0.03	6.7	3.0	4.9	**40.8**	5.1	7.0	<0.10	<10	<50	<50	<100
Not sampled - limited soil	C1-34	2016	7	Phase II														
C1-34B	C1-34	2019	10	Phase II	40-50	5.5	<0.050	6.1	2.5	4.5	**19.0**	5.5	4.7	<0.01	<7.0	<4.0	10	<6.0

Table 9

CAM-1 East Landing Landfill - Summary of Soil Monitoring Analytical Data

Link To: Table of Contents

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	As (mg/kg)	Cd* (mg/kg)	Cr* (mg/kg)	Co* (mg/kg)	Cu (mg/kg)	Pb (mg/kg)	Ni (mg/kg)	Zn* (mg/kg)	Total PCB* (mg/kg)	F1* C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	F4 C_{34}-C_{50} (mg/kg)
Background Data - Arithmetic Mean						3.3	1.0	20.0	5.0	11.3	10.0	5.0	15.0	0.10	N/A	N/A	N/A	N/A
Baseline Data - Arithmetic Mean						**5.8**	**1.0**	**20.0**	**5.0**	**7.6**	**13.8**	**7.3**	**15.0**	**0.10**	**10.0**	**4.9**	**48.4**	**30.4**
Baseline Data - Standard Deviation						5.1	0.0	0.0	0.0	3.7	9.8	3.9	0.0	0.00	0.0	2.8	34.8	23.1
Baseline Data Mean + 3x Standard Deviation						**21.2**	**1.0**	**20.0**	**5.0**	**18.6**	**43.2**	**19.1**	**15.0**	**0.10**	**10.0**	**13.2**	**152.8**	**99.8**
Downgradient																		
	C1-35 surface																	
10-16709	C1-35	2010	1	Phase I	0-10	**7.9**	<1	<20	<5	4.9	**16.0**	6.6	<15	<0.003	<10	<4	<9	<8
C112-35A	C1-35	2012	3	Phase I	0-15	5.4	N/A	7.9	2.4	6.9	12.0	5.6	<10	<0.01	<12	<10	<10	N/A
C114-35A	C1-35	2014	5	Phase I	0-15	4.0	<0.01	7.4	2.2	3.5	12.7	4.4	7.0	<0.10	<10	<50	<50	<100
16-C1-35A	C1-35	2016	7	Phase II	0-15	**6.7**	<0.05	18.0	3.0	**7.8**	**15.0**	**11.0**	<10	<0.01	<12	<10	<50	<50
C1-35A	C1-35	2019	10	Phase II	0-15	5.8	<0.050	4.2	1.6	3.4	**20.0**	3.3	5.8	<0.01	<7.0	<4.0	<8.0	<6.0
	C1-35 depth																	
10-16711	C1-35	2010	1	Phase I	30-50	3.0	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	<4	<9	<8
10-16712 (Dup)	C1-35	2010	1	Phase I	30-50	3.3	<1	<20	<5	<3	<10	<5	<15	<0.003	<10	<4	<9	<8
C112-35B	C1-35	2012	3	Phase I	40-50	2.3	N/A	4.0	1.2	<5	7.4	2.5	<10	<0.01	<12	<10	<10	N/A
C114-35B	C1-35	2014	5	Phase I	40-50	2.9	<0.01	7.4	2.7	4.3	7.5	5.9	8.0	<0.10	<10	<50	<50	<100
16-C1-35B	C1-35	2016	7	Phase II	40-50	2.6	<0.05	3.7	1.3	3.0	7.6	2.6	<10	<0.01	<12	<10	<50	<50
C1-35B	C1-35	2019	10	Phase II	40-50	**23.0**	<0.050	5.1	3.7	5.6	**93.0**	6.8	11.0	<0.01	<7.0	<4.0	14	13

N/A = not analyzed

Legend	
XX	**Sample exceeds baseline mean**
XX	**Sample exceeds baseline mean + 3x SD**

APPENDIX A

Statement of Limitations

Your Project #: 30000251
Site#: CAM-1

Attention: Elliott Holden

ARCADIS Canada Inc
1050 Morrison Drive
Suite 201
Ottawa, ON
Canada K2H 8K7

Your C.O.C. #: 591656-01-01, 591656-02-01, 591656-03-01, 591656-04-01, 591656-05-01, 591656-06-01, 591656-07-01, 591656-08-01, 591656-09-01, 591656-10-01, 591656-11-01

Report Date: 2019/12/12
Report #: R2823135
Version: 3 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BV LABS JOB #: B973139
Received: 2019/08/29, 14:00

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Parminder Virk, Key Account Specialist
Email: Parminder.Virk@bvlabs.com
Phone# (403)735-2235

==========

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

AT1 BTEX AND F1-F4 IN SOIL (VIALS)

BV Labs ID		WK3630			WK3631	WK3631			WK3632		
Sampling Date		2019/08/27			2019/08/27	2019/08/27			2019/08/27		
COC Number		591656-01-01			591656-01-01	591656-01-01			591656-01-01		
	UNITS	C1-1A	RDL	QC Batch	C1-1B	C1-1B Lab-Dup	RDL	QC Batch	C1-2A	RDL	QC Batch
Ext. Pet. Hydrocarbon											
F2 (C10-C16 Hydrocarbons)	mg/kg	<4.0	4.0	9577186	<4.0	N/A	4.0	9576406	<4.0	4.0	9575080
F3 (C16-C34 Hydrocarbons)	mg/kg	38	8.0	9577186	12	N/A	8.0	9576406	10	8.0	9575080
F4 (C34-C50 Hydrocarbons)	mg/kg	7.7	6.0	9577186	<6.0	N/A	6.0	9576406	<6.0	6.0	9575080
Reached Baseline at C50	mg/kg	Yes	N/A	9577186	Yes	N/A	N/A	9576406	Yes	N/A	9575080
Physical Properties											
Moisture	%	33	0.30	9576150	15	N/A	0.30	9575815	11	0.30	9573607
Field Preserved Volatiles											
F1 (C6-C10)	mg/kg	<22 (1)	22	9574291	<7.0	<7.0	7.0	9574291	<16 (1)	16	9574291
Surrogate Recovery (%)											
1,4-Difluorobenzene (sur.)	%	96	N/A	9574291	95	95	N/A	9574291	99	N/A	9574291
4-Bromofluorobenzene (sur.)	%	101	N/A	9574291	101	101	N/A	9574291	103	N/A	9574291
D10-o-Xylene (sur.)	%	106	N/A	9574291	103	102	N/A	9574291	107	N/A	9574291
D4-1,2-Dichloroethane (sur.)	%	99	N/A	9574291	100	98	N/A	9574291	100	N/A	9574291
O-TERPHENYL (sur.)	%	87	N/A	9577186	99	N/A	N/A	9576406	84	N/A	9575080

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable
(1) Detection limits raised based on sample weight used for analysis.

Bureau Veritas Laboratories Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

BV Labs Job #: B973139
Report Date: 2019/12/12

ARCADIS Canada Inc
Client Project #: 30000251
Sampler Initials: RF

AT1 BTEX AND F1-F4 IN SOIL (VIALS)

BV Labs ID		WK3633		WK3634		WK3635		WK3636		
Sampling Date		2019/08/27		2019/08/27		2019/08/27		2019/08/27		
COC Number		591656-01-01		591656-01-01		591656-01-01		591656-01-01		
	UNITS	C1-2B	QC Batch	C1-3A	QC Batch	C1-3B	QC Batch	C1-4A	RDL	QC Batch
Ext. Pet. Hydrocarbon										
F2 (C10-C16 Hydrocarbons)	mg/kg	<4.0	9575080	<4.0	9576406	<4.0	9577186	<4.0	4.0	9575080
F3 (C16-C34 Hydrocarbons)	mg/kg	<8.0	9575080	10	9576406	8.5	9577186	12	8.0	9575080
F4 (C34-C50 Hydrocarbons)	mg/kg	<6.0	9575080	<6.0	9576406	<6.0	9577186	<6.0	6.0	9575080
Reached Baseline at C50	mg/kg	Yes	9575080	Yes	9576406	Yes	9577186	Yes	N/A	9575080
Physical Properties										
Moisture	%	6.1	9573607	5.8	9575815	3.2	9576150	30	0.30	9573607
Field Preserved Volatiles										
F1 (C6-C10)	mg/kg	<7.0	9574291	<7.0	9574291	<7.0	9574291	<7.0	7.0	9574291
Surrogate Recovery (%)										
1,4-Difluorobenzene (sur.)	%	97	9574291	97	9574291	98	9574291	96	N/A	9574291
4-Bromofluorobenzene (sur.)	%	100	9574291	100	9574291	102	9574291	100	N/A	9574291
D10-o-Xylene (sur.)	%	109	9574291	110	9574291	103	9574291	111	N/A	9574291
D4-1,2-Dichloroethane (sur.)	%	99	9574291	99	9574291	100	9574291	101	N/A	9574291
O-TERPHENYL (sur.)	%	87	9575080	100	9576406	98	9577186	86	N/A	9575080

RDL = Reportable Detection Limit
N/A = Not Applicable

AT1 BTEX AND F1-F4 IN SOIL (VIALS)

BV Labs ID		WK3637		WK3638		WK3639		WK3643		
Sampling Date		2019/08/27		2019/08/27		2019/08/27		2019/08/27		
COC Number		591656-01-01		591656-01-01		591656-01-01		591656-02-01		
	UNITS	C1-4B	QC Batch	C1-5A	QC Batch	C1-5B	QC Batch	C1-6A	RDL	QC Batch
Ext. Pet. Hydrocarbon										
F2 (C10-C16 Hydrocarbons)	mg/kg	<4.0	9575080	<4.0	9577691	<4.0	9575080	<4.0	4.0	9577932
F3 (C16-C34 Hydrocarbons)	mg/kg	<8.0	9575080	17	9577691	8.0	9575080	15	8.0	9577932
F4 (C34-C50 Hydrocarbons)	mg/kg	<6.0	9575080	<6.0	9577691	<6.0	9575080	<6.0	6.0	9577932
Reached Baseline at C50	mg/kg	Yes	9575080	Yes	9577691	Yes	9575080	Yes	N/A	9577932
Physical Properties										
Moisture	%	4.8	9573607	12	9577508	4.5	9573607	8.5	0.30	9577729
Field Preserved Volatiles										
F1 (C6-C10)	mg/kg	<7.0	9574291	<7.0	9574172	<7.0	9574172	<7.0	7.0	9574291
Surrogate Recovery (%)										
1,4-Difluorobenzene (sur.)	%	96	9574291	100	9574172	100	9574172	97	N/A	9574291
4-Bromofluorobenzene (sur.)	%	100	9574291	99	9574172	99	9574172	100	N/A	9574291
D10-o-Xylene (sur.)	%	109	9574291	112	9574172	119	9574172	108	N/A	9574291
D4-1,2-Dichloroethane (sur.)	%	100	9574291	107	9574172	105	9574172	100	N/A	9574291
O-TERPHENYL (sur.)	%	84	9575080	90	9577691	82	9575080	75	N/A	9577932

RDL = Reportable Detection Limit
N/A = Not Applicable

Bureau Veritas Laboratories Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

AT1 BTEX AND F1-F4 IN SOIL (VIALS)

BV Labs ID		WK3644	WK3644		WK3645		WK3646	WK3646		
Sampling Date		2019/08/27	2019/08/27		2019/08/27		2019/08/27	2019/08/27		
COC Number		591656-02-01	591656-02-01		591656-02-01		591656-02-01	591656-02-01		
	UNITS	C1-6B	C1-6B Lab-Dup	QC Batch	C1-7A	QC Batch	C1-7B	C1-7B Lab-Dup	RDL	QC Batch
Ext. Pet. Hydrocarbon										
F2 (C10-C16 Hydrocarbons)	mg/kg	<4.0	N/A	9577932	<4.0	9576406	<4.0	N/A	4.0	9577186
F3 (C16-C34 Hydrocarbons)	mg/kg	16	N/A	9577932	34	9576406	9.2	N/A	8.0	9577186
F4 (C34-C50 Hydrocarbons)	mg/kg	<6.0	N/A	9577932	<6.0	9576406	<6.0	N/A	6.0	9577186
Reached Baseline at C50	mg/kg	Yes	N/A	9577932	Yes	9576406	Yes	N/A	N/A	9577186
Physical Properties										
Moisture	%	10	N/A	9577729	16	9575815	4.8	N/A	0.30	9576150
Field Preserved Volatiles										
F1 (C6-C10)	mg/kg	<7.0	<7.0	9574172	<7.0	9574244	<7.0	<7.0	7.0	9574244
Surrogate Recovery (%)										
1,4-Difluorobenzene (sur.)	%	101	99	9574172	96	9574244	96	95	N/A	9574244
4-Bromofluorobenzene (sur.)	%	100	98	9574172	101	9574244	102	101	N/A	9574244
D10-o-Xylene (sur.)	%	113	113	9574172	109	9574244	102	103	N/A	9574244
D4-1,2-Dichloroethane (sur.)	%	106	107	9574172	98	9574244	98	101	N/A	9574244
O-TERPHENYL (sur.)	%	77	N/A	9577932	102	9576406	93	N/A	N/A	9577186

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

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AT1 BTEX AND F1-F4 IN SOIL (VIALS)

BV Labs ID		WK3647	WK3648		WK3649		WK3650		
Sampling Date		2019/08/27	2019/08/27		2019/08/27		2019/08/27		
COC Number		591656-02-01	591656-02-01		591656-02-01		591656-02-01		
	UNITS	C1-8A	C1-8B	QC Batch	C1-9A	QC Batch	C1-9B	RDL	QC Batch
Ext. Pet. Hydrocarbon									
F2 (C10-C16 Hydrocarbons)	mg/kg	<4.0	<4.0	9576406	<4.0	9577186	<4.0	4.0	9576776
F3 (C16-C34 Hydrocarbons)	mg/kg	11	12	9576406	61	9577186	16	8.0	9576776
F4 (C34-C50 Hydrocarbons)	mg/kg	<6.0	<6.0	9576406	11	9577186	<6.0	6.0	9576776
Reached Baseline at C50	mg/kg	Yes	Yes	9576406	Yes	9577186	Yes	N/A	9576776
Physical Properties									
Moisture	%	13	8.4	9575815	35	9576150	12	0.30	9576315
Field Preserved Volatiles									
F1 (C6-C10)	mg/kg	<7.0	<7.0	9574244	<7.0	9574244	<7.0	7.0	9574244
Surrogate Recovery (%)									
1,4-Difluorobenzene (sur.)	%	98	98	9574244	98	9574244	96	N/A	9574244
4-Bromofluorobenzene (sur.)	%	102	101	9574244	102	9574244	101	N/A	9574244
D10-o-Xylene (sur.)	%	94	102	9574244	115	9574244	118	N/A	9574244
D4-1,2-Dichloroethane (sur.)	%	97	98	9574244	98	9574244	97	N/A	9574244
O-TERPHENYL (sur.)	%	97	97	9576406	88	9577186	96	N/A	9576776

RDL = Reportable Detection Limit
N/A = Not Applicable

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AT1 BTEX AND F1-F4 IN SOIL (VIALS)

BV Labs ID		WK3651		WK3652		WK3653	WK3653		
Sampling Date		2019/08/26		2019/08/26		2019/08/26	2019/08/26		
COC Number		591656-02-01		591656-02-01		591656-03-01	591656-03-01		
	UNITS	C1-10A	QC Batch	C1-10B	QC Batch	C1-11A	C1-11A Lab-Dup	RDL	QC Batch
Ext. Pet. Hydrocarbon									
F2 (C10-C16 Hydrocarbons)	mg/kg	<4.0	9577186	<4.0	9576406	<4.0	<4.0	4.0	9577186
F3 (C16-C34 Hydrocarbons)	mg/kg	22	9577186	10	9576406	9.6	9.4	8.0	9577186
F4 (C34-C50 Hydrocarbons)	mg/kg	<6.0	9577186	<6.0	9576406	<6.0	<6.0	6.0	9577186
Reached Baseline at C50	mg/kg	Yes	9577186	Yes	9576406	Yes	Yes	N/A	9577186
Physical Properties									
Moisture	%	39	9576150	16	9575815	5.3	5.0	0.30	9576150
Field Preserved Volatiles									
F1 (C6-C10)	mg/kg	<7.0	9574237	<7.0	9574230	<7.0	<7.0	7.0	9574237
Surrogate Recovery (%)									
1,4-Difluorobenzene (sur.)	%	97	9574237	101	9574230	98	96	N/A	9574237
4-Bromofluorobenzene (sur.)	%	98	9574237	96	9574230	99	98	N/A	9574237
D10-o-Xylene (sur.)	%	127	9574237	115	9574230	120	120	N/A	9574237
D4-1,2-Dichloroethane (sur.)	%	96	9574237	104	9574230	93	94	N/A	9574237
O-TERPHENYL (sur.)	%	90	9577186	103	9576406	84	88	N/A	9577186

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

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AT1 BTEX AND F1-F4 IN SOIL (VIALS)

BV Labs ID		WK3654		WK3655	WK3655	WK3656		WK3657		
Sampling Date		2019/08/26		2019/08/26	2019/08/26	2019/08/26		2019/08/26		
COC Number		591656-03-01		591656-03-01	591656-03-01	591656-03-01		591656-03-01		
	UNITS	C1-11B	QC Batch	C1-12A	C1-12A Lab-Dup	C1-12B	QC Batch	C1-13A	RDL	QC Batch
Ext. Pet. Hydrocarbon										
F2 (C10-C16 Hydrocarbons)	mg/kg	<4.0	9576406	<4.0	<4.0	<4.0	9576406	<4.0	4.0	9577186
F3 (C16-C34 Hydrocarbons)	mg/kg	<8.0	9576406	<8.0	<8.0	<8.0	9576406	9.5	8.0	9577186
F4 (C34-C50 Hydrocarbons)	mg/kg	<6.0	9576406	<6.0	<6.0	<6.0	9576406	<6.0	6.0	9577186
Reached Baseline at C50	mg/kg	Yes	9576406	Yes	Yes	Yes	9576406	Yes	N/A	9577186
Physical Properties										
Moisture	%	3.3	9575815	4.6	4.7	7.7	9575815	4.7	0.30	9576150
Field Preserved Volatiles										
F1 (C6-C10)	mg/kg	<7.0	9574237	<7.0	<7.0	<7.0	9574230	<7.0	7.0	9574237
Surrogate Recovery (%)										
1,4-Difluorobenzene (sur.)	%	99	9574237	102	102	103	9574230	99	N/A	9574237
4-Bromofluorobenzene (sur.)	%	99	9574237	97	97	97	9574230	99	N/A	9574237
D10-o-Xylene (sur.)	%	104	9574237	108	106	105	9574230	109	N/A	9574237
D4-1,2-Dichloroethane (sur.)	%	96	9574237	101	100	102	9574230	95	N/A	9574237
O-TERPHENYL (sur.)	%	95	9576406	102	98	103	9576406	85	N/A	9577186

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

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BV Labs Job #: B973139
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AT1 BTEX AND F1-F4 IN SOIL (VIALS)

BV Labs ID		WK3658		WK3659	WK3660		WK3661		
Sampling Date		2019/08/26		2019/08/26	2019/08/26		2019/08/26		
COC Number		591656-03-01		591656-03-01	591656-03-01		591656-03-01		
	UNITS	C1-13B	QC Batch	C1-14A	C1-14B	QC Batch	C1-15A	RDL	QC Batch
Ext. Pet. Hydrocarbon									
F2 (C10-C16 Hydrocarbons)	mg/kg	<4.0	9576406	<4.0	<4.0	9576406	<4.0	4.0	9576406
F3 (C16-C34 Hydrocarbons)	mg/kg	<8.0	9576406	<8.0	<8.0	9576406	<8.0	8.0	9576406
F4 (C34-C50 Hydrocarbons)	mg/kg	<6.0	9576406	<6.0	<6.0	9576406	<6.0	6.0	9576406
Reached Baseline at C50	mg/kg	Yes	9576406	Yes	Yes	9576406	Yes	N/A	9576406
Physical Properties									
Moisture	%	3.6	9575815	2.7	3.0	9575815	2.6	0.30	9575815
Field Preserved Volatiles									
F1 (C6-C10)	mg/kg	<7.0	9574237	<7.0	<7.0	9574230	<7.0	7.0	9574237
Surrogate Recovery (%)									
1,4-Difluorobenzene (sur.)	%	99	9574237	102	102	9574230	100	N/A	9574237
4-Bromofluorobenzene (sur.)	%	100	9574237	97	96	9574230	98	N/A	9574237
D10-o-Xylene (sur.)	%	105	9574237	119	109	9574230	110	N/A	9574237
D4-1,2-Dichloroethane (sur.)	%	95	9574237	101	102	9574230	96	N/A	9574237
O-TERPHENYL (sur.)	%	100	9576406	102	97	9576406	96	N/A	9576406

RDL = Reportable Detection Limit
N/A = Not Applicable

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AT1 BTEX AND F1-F4 IN SOIL (VIALS)

BV Labs ID		WK3662		WK3663	WK3664	WK3665		WK3666		
Sampling Date		2019/08/26		2019/08/26	2019/08/26	2019/08/26		2019/08/26		
COC Number		591656-03-01		591656-04-01	591656-04-01	591656-04-01		591656-04-01		
	UNITS	**C1-15B**	**QC Batch**	**C1-16A**	**C1-16B**	**C1-17A**	**QC Batch**	**C1-17B**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon										
F2 (C10-C16 Hydrocarbons)	mg/kg	<4.0	9577186	<4.0	<4.0	<4.0	9576406	<4.0	4.0	9577932
F3 (C16-C34 Hydrocarbons)	mg/kg	<8.0	9577186	<8.0	<8.0	<8.0	9576406	11	8.0	9577932
F4 (C34-C50 Hydrocarbons)	mg/kg	<6.0	9577186	<6.0	<6.0	<6.0	9576406	<6.0	6.0	9577932
Reached Baseline at C50	mg/kg	Yes	9577186	Yes	Yes	Yes	9576406	Yes	N/A	9577932
Physical Properties										
Moisture	%	2.9	9576150	4.8	4.4	4.6	9575815	5.3	0.30	9577729
Field Preserved Volatiles										
F1 (C6-C10)	mg/kg	<7.0	9574237	<7.0	<7.0	<7.0	9574230	<7.0	7.0	9574230
Surrogate Recovery (%)										
1,4-Difluorobenzene (sur.)	%	99	9574237	102	101	103	9574230	103	N/A	9574230
4-Bromofluorobenzene (sur.)	%	98	9574237	98	97	98	9574230	97	N/A	9574230
D10-o-Xylene (sur.)	%	114	9574237	120	113	105	9574230	112	N/A	9574230
D4-1,2-Dichloroethane (sur.)	%	94	9574237	103	102	103	9574230	101	N/A	9574230
O-TERPHENYL (sur.)	%	89	9577186	95	102	94	9576406	74	N/A	9577932

RDL = Reportable Detection Limit
N/A = Not Applicable

AT1 BTEX AND F1-F4 IN SOIL (VIALS)

BV Labs ID		WK3667	WK3668		WK3669		WK3670		
Sampling Date		2019/08/26	2019/08/26		2019/08/26		2019/08/26		
COC Number		591656-04-01	591656-04-01		591656-04-01		591656-04-01		
	UNITS	C1-18A	C1-18B	QC Batch	C1-19A	QC Batch	C1-19B	RDL	QC Batch
Ext. Pet. Hydrocarbon									
F2 (C10-C16 Hydrocarbons)	mg/kg	<4.0	<4.0	9577932	<4.0	9577186	<4.0	4.0	9577691
F3 (C16-C34 Hydrocarbons)	mg/kg	11	8.2	9577932	11	9577186	8.6	8.0	9577691
F4 (C34-C50 Hydrocarbons)	mg/kg	<6.0	<6.0	9577932	<6.0	9577186	<6.0	6.0	9577691
Reached Baseline at C50	mg/kg	Yes	Yes	9577932	Yes	9577186	Yes	N/A	9577691
Physical Properties									
Moisture	%	2.4	4.6	9577729	7.1	9576150	6.0	0.30	9577508
Field Preserved Volatiles									
F1 (C6-C10)	mg/kg	<7.0	<7.0	9574230	<7.0	9574230	<7.0	7.0	9574230
Surrogate Recovery (%)									
1,4-Difluorobenzene (sur.)	%	103	101	9574230	102	9574230	103	N/A	9574230
4-Bromofluorobenzene (sur.)	%	97	98	9574230	97	9574230	96	N/A	9574230
D10-o-Xylene (sur.)	%	129	107	9574230	123	9574230	109	N/A	9574230
D4-1,2-Dichloroethane (sur.)	%	104	103	9574230	104	9574230	104	N/A	9574230
O-TERPHENYL (sur.)	%	72	76	9577932	86	9577186	88	N/A	9577691

RDL = Reportable Detection Limit
N/A = Not Applicable

BV Labs Job #: B973139
Report Date: 2019/12/12

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AT1 BTEX AND F1-F4 IN SOIL (VIALS)

BV Labs ID		WK3671		WK3672	WK3673		WK3674	WK3675		
Sampling Date		2019/08/26		2019/08/26	2019/08/26		2019/08/26	2019/08/26		
COC Number		591656-04-01		591656-04-01	591656-05-01		591656-05-01	591656-05-01		
	UNITS	C1-20A	QC Batch	C1-20B	C1-21A	QC Batch	C1-21B	C1-22A	RDL	QC Batch
Ext. Pet. Hydrocarbon										
F2 (C10-C16 Hydrocarbons)	mg/kg	<4.0	9577691	<4.0	<4.0	9577691	<4.0	<4.0	4.0	9577186
F3 (C16-C34 Hydrocarbons)	mg/kg	16	9577691	29	8.8	9577691	<8.0	23	8.0	9577186
F4 (C34-C50 Hydrocarbons)	mg/kg	<6.0	9577691	11	<6.0	9577691	<6.0	<6.0	6.0	9577186
Reached Baseline at C50	mg/kg	Yes	9577691	Yes	Yes	9577691	Yes	Yes	N/A	9577186
Physical Properties										
Moisture	%	13	9577508	11	11	9577508	8.9	15	0.30	9576150
Field Preserved Volatiles										
F1 (C6-C10)	mg/kg	<7.0	9574291	<7.0	<7.0	9574172	<7.0	<7.0	7.0	9574172
Surrogate Recovery (%)										
1,4-Difluorobenzene (sur.)	%	97	9574291	99	100	9574172	100	100	N/A	9574172
4-Bromofluorobenzene (sur.)	%	102	9574291	100	101	9574172	99	98	N/A	9574172
D10-o-Xylene (sur.)	%	108	9574291	110	111	9574172	113	112	N/A	9574172
D4-1,2-Dichloroethane (sur.)	%	102	9574291	109	108	9574172	111	111	N/A	9574172
O-TERPHENYL (sur.)	%	96	9577691	94	92	9577691	92	86	N/A	9577186

RDL = Reportable Detection Limit
N/A = Not Applicable

BV Labs Job #: B973139
Report Date: 2019/12/12

ARCADIS Canada Inc
Client Project #: 30000251
Sampler Initials: RF

AT1 BTEX AND F1-F4 IN SOIL (VIALS)

BV Labs ID		WK3676		WK3677		WK3678		WK3679		
Sampling Date		2019/08/26		2019/08/26		2019/08/26		2019/08/26		
COC Number		591656-05-01		591656-05-01		591656-05-01		591656-05-01		
	UNITS	C1-22B	QC Batch	C1-23A	QC Batch	C1-23B	QC Batch	C1-24A	RDL	QC Batch
Ext. Pet. Hydrocarbon										
F2 (C10-C16 Hydrocarbons)	mg/kg	<4.0	9577691	<4.0	9577186	<4.0	9577691	<4.0	4.0	9577186
F3 (C16-C34 Hydrocarbons)	mg/kg	12	9577691	12	9577186	<8.0	9577691	19	8.0	9577186
F4 (C34-C50 Hydrocarbons)	mg/kg	<6.0	9577691	<6.0	9577186	<6.0	9577691	<6.0	6.0	9577186
Reached Baseline at C50	mg/kg	Yes	9577691	Yes	9577186	Yes	9577691	Yes	N/A	9577186
Physical Properties										
Moisture	%	9.5	9577508	8.9	9576150	8.5	9577508	11	0.30	9576150
Field Preserved Volatiles										
F1 (C6-C10)	mg/kg	<7.0	9574172	<7.0	9574230	<7.0	9574230	<7.0	7.0	9574230
Surrogate Recovery (%)										
1,4-Difluorobenzene (sur.)	%	102	9574172	103	9574230	105	9574230	102	N/A	9574230
4-Bromofluorobenzene (sur.)	%	100	9574172	99	9574230	95	9574230	98	N/A	9574230
D10-o-Xylene (sur.)	%	110	9574172	109	9574230	107	9574230	106	N/A	9574230
D4-1,2-Dichloroethane (sur.)	%	109	9574172	105	9574230	108	9574230	107	N/A	9574230
O-TERPHENYL (sur.)	%	98	9577691	86	9577186	90	9577691	89	N/A	9577186

RDL = Reportable Detection Limit
N/A = Not Applicable

BV Labs Job #: B973139
Report Date: 2019/12/12

ARCADIS Canada Inc
Client Project #: 30000251
Sampler Initials: RF

AT1 BTEX AND F1-F4 IN SOIL (VIALS)

BV Labs ID		WK3680		WK3681	WK3682	WK3683		WK3684		
Sampling Date		2019/08/26		2019/08/26	2019/08/26	2019/08/26		2019/08/26		
COC Number		591656-05-01		591656-05-01	591656-05-01	591656-06-01		591656-06-01		
	UNITS	C1-24B	QC Batch	C1-25A	C1-25B	C1-26A	QC Batch	C1-26B	RDL	QC Batch
Ext. Pet. Hydrocarbon										
F2 (C10-C16 Hydrocarbons)	mg/kg	<4.0	9577186	<4.0	<4.0	<4.0	9577186	<4.0	4.0	9576406
F3 (C16-C34 Hydrocarbons)	mg/kg	20	9577186	13	8.4	58	9577186	<8.0	8.0	9576406
F4 (C34-C50 Hydrocarbons)	mg/kg	<6.0	9577186	<6.0	<6.0	9.4	9577186	<6.0	6.0	9576406
Reached Baseline at C50	mg/kg	Yes	9577186	Yes	Yes	Yes	9577186	Yes	N/A	9576406
Physical Properties										
Moisture	%	9.3	9576150	7.1	5.2	30	9576150	6.9	0.30	9575815
Field Preserved Volatiles										
F1 (C6-C10)	mg/kg	<7.0	9574172	<7.0	<7.0	<7.0	9574230	<7.0	7.0	9574237
Surrogate Recovery (%)										
1,4-Difluorobenzene (sur.)	%	99	9574172	103	101	101	9574230	100	N/A	9574237
4-Bromofluorobenzene (sur.)	%	101	9574172	98	97	97	9574230	100	N/A	9574237
D10-o-Xylene (sur.)	%	106	9574172	111	122	115	9574230	115	N/A	9574237
D4-1,2-Dichloroethane (sur.)	%	110	9574172	108	104	108	9574230	98	N/A	9574237
O-TERPHENYL (sur.)	%	87	9577186	88	88	96	9577186	101	N/A	9576406

RDL = Reportable Detection Limit
N/A = Not Applicable

AT1 BTEX AND F1-F4 IN SOIL (VIALS)

BV Labs ID		WK3685		WK3686	WK3686		WK3687		
Sampling Date		2019/08/26		2019/08/26	2019/08/26		2019/08/26		
COC Number		591656-06-01		591656-06-01	591656-06-01		591656-06-01		
	UNITS	C1-27A	QC Batch	C1-27B	C1-27B Lab-Dup	QC Batch	C1-28A	RDL	QC Batch
Ext. Pet. Hydrocarbon									
F2 (C10-C16 Hydrocarbons)	mg/kg	<4.0	9577186	<4.0	<4.0	9577691	<4.0	4.0	9577932
F3 (C16-C34 Hydrocarbons)	mg/kg	11	9577186	18	17	9577691	11	8.0	9577932
F4 (C34-C50 Hydrocarbons)	mg/kg	<6.0	9577186	<6.0	<6.0	9577691	<6.0	6.0	9577932
Reached Baseline at C50	mg/kg	Yes	9577186	Yes	Yes	9577691	Yes	N/A	9577932
Physical Properties									
Moisture	%	5.0	9576150	6.4	6.1	9577508	6.3	0.30	9577729
Field Preserved Volatiles									
F1 (C6-C10)	mg/kg	<7.0	9574172	<7.0	N/A	9574230	<7.0	7.0	9574172
Surrogate Recovery (%)									
1,4-Difluorobenzene (sur.)	%	99	9574172	101	N/A	9574230	100	N/A	9574172
4-Bromofluorobenzene (sur.)	%	101	9574172	97	N/A	9574230	100	N/A	9574172
D10-o-Xylene (sur.)	%	115	9574172	112	N/A	9574230	114	N/A	9574172
D4-1,2-Dichloroethane (sur.)	%	111	9574172	106	N/A	9574230	112	N/A	9574172
O-TERPHENYL (sur.)	%	84	9577186	90	100	9577691	79	N/A	9577932

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

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BV Labs Job #: B973139
Report Date: 2019/12/12

ARCADIS Canada Inc
Client Project #: 30000251
Sampler Initials: RF

AT1 BTEX AND F1-F4 IN SOIL (VIALS)

BV Labs ID		WK3688	WK3689		WK3690		WK3691	WK3692		
Sampling Date		2019/08/26	2019/08/26		2019/08/26		2019/08/26	2019/08/26		
COC Number		591656-06-01	591656-06-01		591656-06-01		591656-06-01	591656-06-01		
	UNITS	C1-28B	C1-29A	QC Batch	C1-29B	QC Batch	C1-30A	C1-30B	RDL	QC Batch
Ext. Pet. Hydrocarbon										
F2 (C10-C16 Hydrocarbons)	mg/kg	<4.0	<4.0	9575080	<4.0	9577932	<4.0	<4.0	4.0	9577691
F3 (C16-C34 Hydrocarbons)	mg/kg	<8.0	<8.0	9575080	<8.0	9577932	17	9.7	8.0	9577691
F4 (C34-C50 Hydrocarbons)	mg/kg	<6.0	<6.0	9575080	<6.0	9577932	<6.0	<6.0	6.0	9577691
Reached Baseline at C50	mg/kg	Yes	Yes	9575080	Yes	9577932	Yes	Yes	N/A	9577691
Physical Properties										
Moisture	%	5.6	5.9	9573607	13	9577729	19	6.8	0.30	9577508
Field Preserved Volatiles										
F1 (C6-C10)	mg/kg	<7.0	<7.0	9574172	<7.0	9574172	<7.0	<7.0	7.0	9574172
Surrogate Recovery (%)										
1,4-Difluorobenzene (sur.)	%	100	99	9574172	100	9574172	99	100	N/A	9574172
4-Bromofluorobenzene (sur.)	%	100	100	9574172	100	9574172	102	100	N/A	9574172
D10-o-Xylene (sur.)	%	116	115	9574172	112	9574172	119	113	N/A	9574172
D4-1,2-Dichloroethane (sur.)	%	112	112	9574172	111	9574172	113	114	N/A	9574172
O-TERPHENYL (sur.)	%	85	86	9575080	77	9577932	86	89	N/A	9577691

RDL = Reportable Detection Limit
N/A = Not Applicable

BV Labs Job #: B973139
Report Date: 2019/12/12

ARCADIS Canada Inc
Client Project #: 30000251
Sampler Initials: RF

AT1 BTEX AND F1-F4 IN SOIL (VIALS)

BV Labs ID		WK3693	WK3694	WK3695		WK3696		WK3697		
Sampling Date		2019/08/26	2019/08/26	2019/08/26		2019/08/26		2019/08/26		
COC Number		591656-07-01	591656-07-01	591656-07-01		591656-07-01		591656-07-01		
	UNITS	C1-31A	C1-31B	C1-32A	QC Batch	C1-32B	QC Batch	C1-33A	RDL	QC Batch
Ext. Pet. Hydrocarbon										
F2 (C10-C16 Hydrocarbons)	mg/kg	<4.0	<4.0	<4.0	9577691	<4.0	9577691	<4.0	4.0	9576406
F3 (C16-C34 Hydrocarbons)	mg/kg	12	9.0	20	9577691	16	9577691	8.0	8.0	9576406
F4 (C34-C50 Hydrocarbons)	mg/kg	<6.0	<6.0	<6.0	9577691	<6.0	9577691	<6.0	6.0	9576406
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	9577691	Yes	9577691	Yes	N/A	9576406
Physical Properties										
Moisture	%	6.2	3.3	22	9577508	14	9577508	3.6	0.30	9575815
Field Preserved Volatiles										
F1 (C6-C10)	mg/kg	<7.0	<7.0	<7.0	9574172	<7.0	9574291	<7.0	7.0	9574237
Surrogate Recovery (%)										
1,4-Difluorobenzene (sur.)	%	99	102	103	9574172	96	9574291	103	N/A	9574237
4-Bromofluorobenzene (sur.)	%	99	98	99	9574172	101	9574291	100	N/A	9574237
D10-o-Xylene (sur.)	%	110	104	118	9574172	114	9574291	116	N/A	9574237
D4-1,2-Dichloroethane (sur.)	%	114	97	100	9574172	102	9574291	100	N/A	9574237
O-TERPHENYL (sur.)	%	87	101	91	9577691	88	9577691	98	N/A	9576406

RDL = Reportable Detection Limit
N/A = Not Applicable

AT1 BTEX AND F1-F4 IN SOIL (VIALS)

BV Labs ID		WK3698	WK3699		WK3700		WK3701	WK3702		
Sampling Date		2019/08/26	2019/08/26		2019/08/26		2019/08/26	2019/08/26		
COC Number		591656-07-01	591656-07-01		591656-07-01		591656-07-01	591656-07-01		
	UNITS	**C1-33B**	**C1-34A**	**QC Batch**	**C1-34B**	**QC Batch**	**C1-35A**	**C1-35B**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon										
F2 (C10-C16 Hydrocarbons)	mg/kg	<4.0	<4.0	9576406	<4.0	9577932	<4.0	<4.0	4.0	9577691
F3 (C16-C34 Hydrocarbons)	mg/kg	<8.0	<8.0	9576406	10	9577932	<8.0	14	8.0	9577691
F4 (C34-C50 Hydrocarbons)	mg/kg	<6.0	<6.0	9576406	<6.0	9577932	<6.0	13	6.0	9577691
Reached Baseline at C50	mg/kg	Yes	Yes	9576406	Yes	9577932	Yes	Yes	N/A	9577691
Physical Properties										
Moisture	%	3.4	4.1	9575815	5.1	9577729	3.6	4.6	0.30	9577508
Field Preserved Volatiles										
F1 (C6-C10)	mg/kg	<7.0	<7.0	9574291	<7.0	9574172	<7.0	<7.0	7.0	9574291
Surrogate Recovery (%)										
1,4-Difluorobenzene (sur.)	%	97	96	9574291	99	9574172	95	95	N/A	9574291
4-Bromofluorobenzene (sur.)	%	101	102	9574291	101	9574172	101	101	N/A	9574291
D10-o-Xylene (sur.)	%	116	125	9574291	118	9574172	118	111	N/A	9574291
D4-1,2-Dichloroethane (sur.)	%	104	105	9574291	113	9574172	104	105	N/A	9574291
O-TERPHENYL (sur.)	%	89	93	9576406	75	9577932	98	90	N/A	9577691

RDL = Reportable Detection Limit
N/A = Not Applicable

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AT1 BTEX AND F1-F4 IN SOIL (VIALS)

BV Labs ID		WK3703	WK3704		WK3705	WK3706	WK3707		
Sampling Date		2019/08/27	2019/08/27		2019/08/27	2019/08/27	2019/08/27		
COC Number		591656-08-01	591656-08-01		591656-08-01	591656-08-01	591656-08-01		
	UNITS	**MW-01A**	**MW-01B**	**QC Batch**	**MW-02A**	**MW-02B**	**MW-03A**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon									
F2 (C10-C16 Hydrocarbons)	mg/kg	18	<4.0	9576776	<4.0	<4.0	<4.0	4.0	9576776
F3 (C16-C34 Hydrocarbons)	mg/kg	87	39	9576776	<8.0	<8.0	<8.0	8.0	9576776
F4 (C34-C50 Hydrocarbons)	mg/kg	23	8.1	9576776	<6.0	<6.0	<6.0	6.0	9576776
Reached Baseline at C50	mg/kg	Yes	Yes	9576776	Yes	Yes	Yes	N/A	9576776
Physical Properties									
Moisture	%	8.7	6.1	9576315	4.3	5.6	2.2	0.30	9576315
Field Preserved Volatiles									
F1 (C6-C10)	mg/kg	<7.0	<7.0	9574244	<7.0	<7.0	<7.0	7.0	9574237
Surrogate Recovery (%)									
1,4-Difluorobenzene (sur.)	%	96	96	9574244	99	101	100	N/A	9574237
4-Bromofluorobenzene (sur.)	%	102	101	9574244	100	101	100	N/A	9574237
D10-o-Xylene (sur.)	%	108	105	9574244	112	111	123	N/A	9574237
D4-1,2-Dichloroethane (sur.)	%	101	100	9574244	97	101	101	N/A	9574237
O-TERPHENYL (sur.)	%	94	101	9576776	92	89	89	N/A	9576776

RDL = Reportable Detection Limit
N/A = Not Applicable

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BV Labs Job #: B973139
Report Date: 2019/12/12

ARCADIS Canada Inc
Client Project #: 30000251
Sampler Initials: RF

AT1 BTEX AND F1-F4 IN SOIL (VIALS)

BV Labs ID		WK3708		WK3709	WK3710		WK3711	WK3712		
Sampling Date		2019/08/27		2019/08/27	2019/08/27		2019/08/27	2019/08/27		
COC Number		591656-08-01		591656-08-01	591656-08-01		591656-08-01	591656-08-01		
	UNITS	MW-03B	QC Batch	MW-04A	MW-04B	QC Batch	MW-05A	MW-05B	RDL	QC Batch
Ext. Pet. Hydrocarbon										
F2 (C10-C16 Hydrocarbons)	mg/kg	<4.0	9577691	4.3	<4.0	9576776	<4.0	<4.0	4.0	9577691
F3 (C16-C34 Hydrocarbons)	mg/kg	61	9577691	480	37	9576776	25	<8.0	8.0	9577691
F4 (C34-C50 Hydrocarbons)	mg/kg	16	9577691	110	9.6	9576776	<6.0	<6.0	6.0	9577691
Reached Baseline at C50	mg/kg	Yes	9577691	Yes	Yes	9576776	Yes	Yes	N/A	9577691
Physical Properties										
Moisture	%	6.3	9577508	10	9.6	9576315	12	3.4	0.30	9577508
Field Preserved Volatiles										
F1 (C6-C10)	mg/kg	<7.0	9574237	<7.0	<7.0	9574244	<7.0	<7.0	7.0	9574244
Surrogate Recovery (%)										
1,4-Difluorobenzene (sur.)	%	101	9574237	98	96	9574244	96	95	N/A	9574244
4-Bromofluorobenzene (sur.)	%	100	9574237	102	101	9574244	102	100	N/A	9574244
D10-o-Xylene (sur.)	%	112	9574237	108	106	9574244	113	105	N/A	9574244
D4-1,2-Dichloroethane (sur.)	%	101	9574237	101	101	9574244	100	102	N/A	9574244
O-TERPHENYL (sur.)	%	97	9577691	91	93	9576776	88	87	N/A	9577691

RDL = Reportable Detection Limit
N/A = Not Applicable

AT1 BTEX AND F1-F4 IN SOIL (VIALS)

BV Labs ID		WK3713	WK3714		WK3715	WK3716	WK3717		
Sampling Date		2019/08/27	2019/08/27		2019/08/27	2019/08/27	2019/08/27		
COC Number		591656-09-01	591656-09-01		591656-09-01	591656-09-01	591656-09-01		
	UNITS	**MW-06A**	**MW-06B**	**QC Batch**	**MW-07A**	**MW-07B**	**MW-08A**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon									
F2 (C10-C16 Hydrocarbons)	mg/kg	<4.0	<4.0	9576776	<4.0	<4.0	<4.0	4.0	9576776
F3 (C16-C34 Hydrocarbons)	mg/kg	25	<8.0	9576776	39	<8.0	23	8.0	9576776
F4 (C34-C50 Hydrocarbons)	mg/kg	<6.0	<6.0	9576776	7.5	<6.0	<6.0	6.0	9576776
Reached Baseline at C50	mg/kg	Yes	Yes	9576776	Yes	Yes	Yes	N/A	9576776
Physical Properties									
Moisture	%	8.2	3.8	9576315	16	3.9	11	0.30	9576315
Field Preserved Volatiles									
F1 (C6-C10)	mg/kg	<7.0	<7.0	9574244	<7.0	<7.0	<7.0	7.0	9574237
Surrogate Recovery (%)									
1,4-Difluorobenzene (sur.)	%	97	97	9574244	100	101	102	N/A	9574237
4-Bromofluorobenzene (sur.)	%	102	101	9574244	100	100	99	N/A	9574237
D10-o-Xylene (sur.)	%	110	107	9574244	111	109	111	N/A	9574237
D4-1,2-Dichloroethane (sur.)	%	101	102	9574244	100	100	99	N/A	9574237
O-TERPHENYL (sur.)	%	88	89	9576776	87	90	87	N/A	9576776

RDL = Reportable Detection Limit
N/A = Not Applicable

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AT1 BTEX AND F1-F4 IN SOIL (VIALS)

BV Labs ID		WK3718		WK3719		WK3720	WK3721		
Sampling Date		2019/08/27		2019/08/27		2019/08/26	2019/08/26		
COC Number		591656-09-01		591656-09-01		591656-09-01	591656-09-01		
	UNITS	MW-08B	QC Batch	C1-36	QC Batch	C1-37	C1-38	RDL	QC Batch
Ext. Pet. Hydrocarbon									
F2 (C10-C16 Hydrocarbons)	mg/kg	<4.0	9576776	<4.0	9577691	<4.0	<4.0	4.0	9577186
F3 (C16-C34 Hydrocarbons)	mg/kg	<8.0	9576776	<8.0	9577691	10	16	8.0	9577186
F4 (C34-C50 Hydrocarbons)	mg/kg	<6.0	9576776	<6.0	9577691	<6.0	<6.0	6.0	9577186
Reached Baseline at C50	mg/kg	Yes	9576776	Yes	9577691	Yes	Yes	N/A	9577186
Physical Properties									
Moisture	%	6.0	9576315	3.8	9577508	4.0	7.6	0.30	9576150
Field Preserved Volatiles									
F1 (C6-C10)	mg/kg	<7.0	9574237	<7.0	9574244	<7.0	<7.0	7.0	9574244
Surrogate Recovery (%)									
1,4-Difluorobenzene (sur.)	%	103	9574237	96	9574244	99	98	N/A	9574244
4-Bromofluorobenzene (sur.)	%	100	9574237	102	9574244	101	102	N/A	9574244
D10-o-Xylene (sur.)	%	106	9574237	104	9574244	111	104	N/A	9574244
D4-1,2-Dichloroethane (sur.)	%	102	9574237	102	9574244	102	101	N/A	9574244
O-TERPHENYL (sur.)	%	86	9576776	86	9577691	100	100	N/A	9577186

RDL = Reportable Detection Limit
N/A = Not Applicable

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AT1 BTEX AND F1-F4 IN SOIL (VIALS)

BV Labs ID		WK3722	WK3723	WK3724		WK3725	WK3726		
Sampling Date		2019/08/26	2019/08/26	2019/08/26		2019/08/26	2019/08/27		
COC Number		591656-09-01	591656-10-01	591656-10-01		591656-10-01	591656-10-01		
	UNITS	**C1-39**	**C1-40**	**C1-41**	**QC Batch**	**C1-42**	**C1-43**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon									
F2 (C10-C16 Hydrocarbons)	mg/kg	<4.0	<4.0	<4.0	9576776	<4.0	<4.0	4.0	9576776
F3 (C16-C34 Hydrocarbons)	mg/kg	<8.0	8.5	15	9576776	<8.0	<8.0	8.0	9576776
F4 (C34-C50 Hydrocarbons)	mg/kg	<6.0	<6.0	<6.0	9576776	<6.0	<6.0	6.0	9576776
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	9576776	Yes	Yes	N/A	9576776
Physical Properties									
Moisture	%	2.7	7.3	18	9576315	6.9	3.6	0.30	9576315
Field Preserved Volatiles									
F1 (C6-C10)	mg/kg	<7.0	<7.0	<7.0	9574244	<7.0	<7.0	7.0	9574237
Surrogate Recovery (%)									
1,4-Difluorobenzene (sur.)	%	98	97	98	9574244	100	102	N/A	9574237
4-Bromofluorobenzene (sur.)	%	102	100	102	9574244	100	101	N/A	9574237
D10-o-Xylene (sur.)	%	105	103	114	9574244	107	111	N/A	9574237
D4-1,2-Dichloroethane (sur.)	%	102	100	104	9574244	101	102	N/A	9574237
O-TERPHENYL (sur.)	%	92	89	94	9576776	91	98	N/A	9576776

RDL = Reportable Detection Limit
N/A = Not Applicable

ARCADIS Canada Inc
Client Project #: 30000251
Sampler Initials: RF

AT1 BTEX AND F1-F4 IN SOIL (VIALS)

BV Labs ID		WK3727	WK3727		
Sampling Date		2019/08/27	2019/08/27		
COC Number		591656-10-01	591656-10-01		
	UNITS	C1-44	C1-44 Lab-Dup	RDL	QC Batch
Ext. Pet. Hydrocarbon					
F2 (C10-C16 Hydrocarbons)	mg/kg	<4.0	<4.0	4.0	9576776
F3 (C16-C34 Hydrocarbons)	mg/kg	24	24	8.0	9576776
F4 (C34-C50 Hydrocarbons)	mg/kg	<6.0	<6.0	6.0	9576776
Reached Baseline at C50	mg/kg	Yes	Yes	N/A	9576776
Physical Properties					
Moisture	%	8.3	7.2	0.30	9576315
Field Preserved Volatiles					
F1 (C6-C10)	mg/kg	<7.0	N/A	7.0	9574237
Surrogate Recovery (%)					
1,4-Difluorobenzene (sur.)	%	101	N/A	N/A	9574237
4-Bromofluorobenzene (sur.)	%	100	N/A	N/A	9574237
D10-o-Xylene (sur.)	%	112	N/A	N/A	9574237
D4-1,2-Dichloroethane (sur.)	%	100	N/A	N/A	9574237
O-TERPHENYL (sur.)	%	91	91	N/A	9576776

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

AT1 BTEX AND F1-F4 IN WATER (WATER)

BV Labs ID		WK3728	WK3729	WK3729	WK3730	WK3731		
Sampling Date		2019/08/28	2019/08/28	2019/08/28	2019/08/28	2019/08/27		
COC Number		591656-11-01	591656-11-01	591656-11-01	591656-11-01	591656-11-01		
	UNITS	TRIP BLANK	TUB-EB	TUB-EB Lab-Dup	SH-BL	MW-03	RDL	QC Batch
Ext. Pet. Hydrocarbon								
F2 (C10-C16 Hydrocarbons)	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	9574670
F3 (C16-C34 Hydrocarbons)	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	9574670
F4 (C34-C50 Hydrocarbons)	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	9574670
Volatiles								
F1 (C6-C10)	ug/L	<25	<25	<25	<25	<25	25	9575727
Surrogate Recovery (%)								
1,4-Difluorobenzene (sur.)	%	106	106	107	107	107	N/A	9575727
4-Bromofluorobenzene (sur.)	%	96	93	93	92	93	N/A	9575727
D4-1,2-Dichloroethane (sur.)	%	80	80	80	81	81	N/A	9575727
O-TERPHENYL (sur.)	%	98	95	100	95	97	N/A	9574670

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

BV Labs ID		WK3732	WK3733	WK3734		
Sampling Date		2019/08/27	2019/08/27	2019/08/27		
COC Number		591656-11-01	591656-11-01	591656-11-01		
	UNITS	MW-04	MW-09	MW-10	RDL	QC Batch
Ext. Pet. Hydrocarbon						
F2 (C10-C16 Hydrocarbons)	mg/L	<0.10	<0.10	<0.10	0.10	9574670
F3 (C16-C34 Hydrocarbons)	mg/L	<0.10	<0.10	<0.10	0.10	9574670
F4 (C34-C50 Hydrocarbons)	mg/L	<0.10	<0.10	<0.10	0.10	9574670
Volatiles						
F1 (C6-C10)	ug/L	<25	<25	<25	25	9575716
Surrogate Recovery (%)						
1,4-Difluorobenzene (sur.)	%	107	107	107	N/A	9575716
4-Bromofluorobenzene (sur.)	%	92	92	92	N/A	9575716
D4-1,2-Dichloroethane (sur.)	%	82	82	82	N/A	9575716
O-TERPHENYL (sur.)	%	96	96	98	N/A	9574670

RDL = Reportable Detection Limit
N/A = Not Applicable

PETROLEUM HYDROCARBONS (CCME)

BV Labs ID		WK3709		
Sampling Date		2019/08/27		
COC Number		591656-08-01		
	UNITS	**MW-04A**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon				
F3A (C16-C22)	mg/kg	70	50	9694792
F3B (C22-C34)	mg/kg	410	50	9694792
F2% (BIC)	mg/kg	1.0	N/A	9689819
Reached Baseline at C50	mg/kg	Yes	N/A	9694792
Surrogate Recovery (%)				
O-TERPHENYL (sur.)	%	91	N/A	9694792
RDL = Reportable Detection Limit N/A = Not Applicable				

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

BV Labs ID		WK3630	WK3631	WK3632	WK3633	WK3634	WK3635		
Sampling Date		2019/08/27	2019/08/27	2019/08/27	2019/08/27	2019/08/27	2019/08/27		
COC Number		591656-01-01	591656-01-01	591656-01-01	591656-01-01	591656-01-01	591656-01-01		
	UNITS	C1-1A	C1-1B	C1-2A	C1-2B	C1-3A	C1-3B	RDL	QC Batch
Polychlorinated Biphenyls									
Aroclor 1016	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	9576404
Aroclor 1221	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	9576404
Aroclor 1232	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	9576404
Aroclor 1242	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	9576404
Aroclor 1248	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	9576404
Aroclor 1254	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	9576404
Aroclor 1260	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	9576404
Aroclor 1262	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	9576404
Aroclor 1268	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	9576404
Total PCB	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	9573266
Surrogate Recovery (%)									
NONACHLOROBIPHENYL (sur.)	%	55	74	78	85	82	85	N/A	9576404

RDL = Reportable Detection Limit
N/A = Not Applicable

BV Labs ID		WK3636	WK3637		WK3638		WK3639		
Sampling Date		2019/08/27	2019/08/27		2019/08/27		2019/08/27		
COC Number		591656-01-01	591656-01-01		591656-01-01		591656-01-01		
	UNITS	C1-4A	C1-4B	QC Batch	C1-5A	QC Batch	C1-5B	RDL	QC Batch
Polychlorinated Biphenyls									
Aroclor 1016	mg/kg	<0.010	<0.010	9574955	<0.010	9576593	<0.010	0.010	9574955
Aroclor 1221	mg/kg	<0.010	<0.010	9574955	<0.010	9576593	<0.010	0.010	9574955
Aroclor 1232	mg/kg	<0.010	<0.010	9574955	<0.010	9576593	<0.010	0.010	9574955
Aroclor 1242	mg/kg	<0.010	<0.010	9574955	<0.010	9576593	<0.010	0.010	9574955
Aroclor 1248	mg/kg	<0.010	<0.010	9574955	<0.010	9576593	<0.010	0.010	9574955
Aroclor 1254	mg/kg	<0.010	<0.010	9574955	<0.010	9576593	<0.010	0.010	9574955
Aroclor 1260	mg/kg	<0.010	<0.010	9574955	<0.010	9576593	<0.010	0.010	9574955
Aroclor 1262	mg/kg	<0.010	<0.010	9574955	<0.010	9576593	<0.010	0.010	9574955
Aroclor 1268	mg/kg	<0.010	<0.010	9574955	<0.010	9576593	<0.010	0.010	9574955
Total PCB	mg/kg	<0.010	<0.010	9573266	<0.010	9573266	<0.010	0.010	9573266
Surrogate Recovery (%)									
NONACHLOROBIPHENYL (sur.)	%	76	84	9574955	60	9576593	89	N/A	9574955

RDL = Reportable Detection Limit
N/A = Not Applicable

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POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

BV Labs ID		WK3643		WK3644		WK3645	WK3646		
Sampling Date		2019/08/27		2019/08/27		2019/08/27	2019/08/27		
COC Number		591656-02-01		591656-02-01		591656-02-01	591656-02-01		
	UNITS	C1-6A	QC Batch	C1-6B	QC Batch	C1-7A	C1-7B	RDL	QC Batch
Polychlorinated Biphenyls									
Aroclor 1016	mg/kg	<0.010	9576404	<0.010	9575452	<0.010	<0.010	0.010	9576404
Aroclor 1221	mg/kg	<0.010	9576404	<0.010	9575452	<0.010	<0.010	0.010	9576404
Aroclor 1232	mg/kg	<0.010	9576404	<0.010	9575452	<0.010	<0.010	0.010	9576404
Aroclor 1242	mg/kg	<0.010	9576404	<0.010	9575452	<0.010	<0.010	0.010	9576404
Aroclor 1248	mg/kg	<0.010	9576404	<0.010	9575452	<0.010	<0.010	0.010	9576404
Aroclor 1254	mg/kg	<0.010	9576404	<0.010	9575452	<0.010	<0.010	0.010	9576404
Aroclor 1260	mg/kg	<0.010	9576404	<0.010	9575452	<0.010	<0.010	0.010	9576404
Aroclor 1262	mg/kg	<0.010	9576404	<0.010	9575452	<0.010	<0.010	0.010	9576404
Aroclor 1268	mg/kg	<0.010	9576404	<0.010	9575452	<0.010	<0.010	0.010	9576404
Total PCB	mg/kg	<0.010	9573266	<0.010	9573266	<0.010	<0.010	0.010	9573266
Surrogate Recovery (%)									
NONACHLOROBIPHENYL (sur.)	%	82	9576404	92	9575452	84	93	N/A	9576404

RDL = Reportable Detection Limit
N/A = Not Applicable

BV Labs ID		WK3647	WK3648	WK3649		WK3650		
Sampling Date		2019/08/27	2019/08/27	2019/08/27		2019/08/27		
COC Number		591656-02-01	591656-02-01	591656-02-01		591656-02-01		
	UNITS	C1-8A	C1-8B	C1-9A	QC Batch	C1-9B	RDL	QC Batch
Polychlorinated Biphenyls								
Aroclor 1016	mg/kg	<0.010	<0.010	<0.010	9576404	<0.010	0.010	9574955
Aroclor 1221	mg/kg	<0.010	<0.010	<0.010	9576404	<0.010	0.010	9574955
Aroclor 1232	mg/kg	<0.010	<0.010	<0.010	9576404	<0.010	0.010	9574955
Aroclor 1242	mg/kg	<0.010	<0.010	<0.010	9576404	<0.010	0.010	9574955
Aroclor 1248	mg/kg	<0.010	<0.010	<0.010	9576404	<0.010	0.010	9574955
Aroclor 1254	mg/kg	<0.010	<0.010	<0.010	9576404	<0.010	0.010	9574955
Aroclor 1260	mg/kg	<0.010	<0.010	<0.010	9576404	<0.010	0.010	9574955
Aroclor 1262	mg/kg	<0.010	<0.010	<0.010	9576404	<0.010	0.010	9574955
Aroclor 1268	mg/kg	<0.010	<0.010	<0.010	9576404	<0.010	0.010	9574955
Total PCB	mg/kg	<0.010	<0.010	<0.010	9573266	<0.010	0.010	9573266
Surrogate Recovery (%)								
NONACHLOROBIPHENYL (sur.)	%	83	89	77	9576404	81	N/A	9574955

RDL = Reportable Detection Limit
N/A = Not Applicable

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POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

BV Labs ID		WK3651	WK3651	WK3652		WK3653	WK3654		
Sampling Date		2019/08/26	2019/08/26	2019/08/26		2019/08/26	2019/08/26		
COC Number		591656-02-01	591656-02-01	591656-02-01		591656-03-01	591656-03-01		
	UNITS	C1-10A	C1-10A Lab-Dup	C1-10B	QC Batch	C1-11A	C1-11B	RDL	QC Batch
Polychlorinated Biphenyls									
Aroclor 1016	mg/kg	<0.010	<0.010	<0.010	9575452	<0.010	<0.010	0.010	9576404
Aroclor 1221	mg/kg	<0.010	<0.010	<0.010	9575452	<0.010	<0.010	0.010	9576404
Aroclor 1232	mg/kg	<0.010	<0.010	<0.010	9575452	<0.010	<0.010	0.010	9576404
Aroclor 1242	mg/kg	<0.010	<0.010	<0.010	9575452	<0.010	<0.010	0.010	9576404
Aroclor 1248	mg/kg	<0.010	<0.010	<0.010	9575452	<0.010	<0.010	0.010	9576404
Aroclor 1254	mg/kg	<0.010	<0.010	<0.010	9575452	<0.010	<0.010	0.010	9576404
Aroclor 1260	mg/kg	<0.010	<0.010	<0.010	9575452	<0.010	<0.010	0.010	9576404
Aroclor 1262	mg/kg	<0.010	<0.010	<0.010	9575452	<0.010	<0.010	0.010	9576404
Aroclor 1268	mg/kg	<0.010	<0.010	<0.010	9575452	<0.010	<0.010	0.010	9576404
Total PCB	mg/kg	<0.010	N/A	<0.010	9573266	<0.010	<0.010	0.010	9573266
Surrogate Recovery (%)									
NONACHLOROBIPHENYL (sur.)	%	98	89	100	9575452	101	103	N/A	9576404

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

BV Labs ID		WK3655	WK3656		WK3657		WK3658		
Sampling Date		2019/08/26	2019/08/26		2019/08/26		2019/08/26		
COC Number		591656-03-01	591656-03-01		591656-03-01		591656-03-01		
	UNITS	C1-12A	C1-12B	QC Batch	C1-13A	QC Batch	C1-13B	RDL	QC Batch
Polychlorinated Biphenyls									
Aroclor 1016	mg/kg	<0.010	<0.010	9575452	<0.010	9574955	<0.010	0.010	9576404
Aroclor 1221	mg/kg	<0.010	<0.010	9575452	<0.010	9574955	<0.010	0.010	9576404
Aroclor 1232	mg/kg	<0.010	<0.010	9575452	<0.010	9574955	<0.010	0.010	9576404
Aroclor 1242	mg/kg	<0.010	<0.010	9575452	<0.010	9574955	<0.010	0.010	9576404
Aroclor 1248	mg/kg	<0.010	<0.010	9575452	<0.010	9574955	<0.010	0.010	9576404
Aroclor 1254	mg/kg	<0.010	<0.010	9575452	<0.010	9574955	<0.010	0.010	9576404
Aroclor 1260	mg/kg	<0.010	<0.010	9575452	<0.010	9574955	<0.010	0.010	9576404
Aroclor 1262	mg/kg	<0.010	<0.010	9575452	<0.010	9574955	<0.010	0.010	9576404
Aroclor 1268	mg/kg	<0.010	<0.010	9575452	<0.010	9574955	<0.010	0.010	9576404
Total PCB	mg/kg	<0.010	<0.010	9573266	<0.010	9573266	<0.010	0.010	9573266
Surrogate Recovery (%)									
NONACHLOROBIPHENYL (sur.)	%	100	96	9575452	91	9574955	91	N/A	9576404

RDL = Reportable Detection Limit
N/A = Not Applicable

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POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

BV Labs ID		WK3659	WK3660		WK3661		WK3662		
Sampling Date		2019/08/26	2019/08/26		2019/08/26		2019/08/26		
COC Number		591656-03-01	591656-03-01		591656-03-01		591656-03-01		
	UNITS	C1-14A	C1-14B	QC Batch	C1-15A	QC Batch	C1-15B	RDL	QC Batch
Polychlorinated Biphenyls									
Aroclor 1016	mg/kg	<0.010	<0.010	9575452	<0.010	9576593	<0.010	0.010	9575452
Aroclor 1221	mg/kg	<0.010	<0.010	9575452	<0.010	9576593	<0.010	0.010	9575452
Aroclor 1232	mg/kg	<0.010	<0.010	9575452	<0.010	9576593	<0.010	0.010	9575452
Aroclor 1242	mg/kg	<0.010	<0.010	9575452	<0.010	9576593	<0.010	0.010	9575452
Aroclor 1248	mg/kg	<0.010	<0.010	9575452	<0.010	9576593	<0.010	0.010	9575452
Aroclor 1254	mg/kg	<0.010	<0.010	9575452	<0.010	9576593	<0.010	0.010	9575452
Aroclor 1260	mg/kg	<0.010	<0.010	9575452	<0.010	9576593	<0.010	0.010	9575452
Aroclor 1262	mg/kg	<0.010	<0.010	9575452	<0.010	9576593	<0.010	0.010	9575452
Aroclor 1268	mg/kg	<0.010	<0.010	9575452	<0.010	9576593	<0.010	0.010	9575452
Total PCB	mg/kg	<0.010	<0.010	9573266	<0.010	9573266	<0.010	0.010	9573266
Surrogate Recovery (%)									
NONACHLOROBIPHENYL (sur.)	%	97	106	9575452	80	9576593	98	N/A	9575452

RDL = Reportable Detection Limit
N/A = Not Applicable

BV Labs ID		WK3663	WK3664	WK3665		WK3666		
Sampling Date		2019/08/26	2019/08/26	2019/08/26		2019/08/26		
COC Number		591656-04-01	591656-04-01	591656-04-01		591656-04-01		
	UNITS	C1-16A	C1-16B	C1-17A	QC Batch	C1-17B	RDL	QC Batch
Polychlorinated Biphenyls								
Aroclor 1016	mg/kg	<0.010	<0.010	<0.010	9575452	<0.010	0.010	9576404
Aroclor 1221	mg/kg	<0.010	<0.010	<0.010	9575452	<0.010	0.010	9576404
Aroclor 1232	mg/kg	<0.010	<0.010	<0.010	9575452	<0.010	0.010	9576404
Aroclor 1242	mg/kg	<0.010	<0.010	<0.010	9575452	<0.010	0.010	9576404
Aroclor 1248	mg/kg	<0.010	<0.010	<0.010	9575452	<0.010	0.010	9576404
Aroclor 1254	mg/kg	<0.010	<0.010	<0.010	9575452	<0.010	0.010	9576404
Aroclor 1260	mg/kg	<0.010	<0.010	<0.010	9575452	<0.010	0.010	9576404
Aroclor 1262	mg/kg	<0.010	<0.010	<0.010	9575452	<0.010	0.010	9576404
Aroclor 1268	mg/kg	<0.010	<0.010	<0.010	9575452	<0.010	0.010	9576404
Total PCB	mg/kg	<0.010	<0.010	<0.010	9573266	<0.010	0.010	9573266
Surrogate Recovery (%)								
NONACHLOROBIPHENYL (sur.)	%	93	100	97	9575452	70	N/A	9576404

RDL = Reportable Detection Limit
N/A = Not Applicable

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POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

BV Labs ID		WK3667		WK3668		WK3669	WK3670		
Sampling Date		2019/08/26		2019/08/26		2019/08/26	2019/08/26		
COC Number		591656-04-01		591656-04-01		591656-04-01	591656-04-01		
	UNITS	C1-18A	QC Batch	C1-18B	QC Batch	C1-19A	C1-19B	RDL	QC Batch
Polychlorinated Biphenyls									
Aroclor 1016	mg/kg	<0.010	9574955	<0.010	9575452	<0.010	<0.010	0.010	9574955
Aroclor 1221	mg/kg	<0.010	9574955	<0.010	9575452	<0.010	<0.010	0.010	9574955
Aroclor 1232	mg/kg	<0.010	9574955	<0.010	9575452	<0.010	<0.010	0.010	9574955
Aroclor 1242	mg/kg	<0.010	9574955	<0.010	9575452	<0.010	<0.010	0.010	9574955
Aroclor 1248	mg/kg	<0.010	9574955	<0.010	9575452	<0.010	<0.010	0.010	9574955
Aroclor 1254	mg/kg	<0.010	9574955	<0.010	9575452	<0.010	<0.010	0.010	9574955
Aroclor 1260	mg/kg	<0.010	9574955	<0.010	9575452	<0.010	<0.010	0.010	9574955
Aroclor 1262	mg/kg	<0.010	9574955	<0.010	9575452	<0.010	<0.010	0.010	9574955
Aroclor 1268	mg/kg	<0.010	9574955	<0.010	9575452	<0.010	<0.010	0.010	9574955
Total PCB	mg/kg	<0.010	9573266	<0.010	9573266	<0.010	<0.010	0.010	9573266
Surrogate Recovery (%)									
NONACHLOROBIPHENYL (sur.)	%	77	9574955	93	9575452	81	99	N/A	9574955

RDL = Reportable Detection Limit
N/A = Not Applicable

BV Labs ID		WK3671	WK3672		WK3673	WK3674		
Sampling Date		2019/08/26	2019/08/26		2019/08/26	2019/08/26		
COC Number		591656-04-01	591656-04-01		591656-05-01	591656-05-01		
	UNITS	C1-20A	C1-20B	QC Batch	C1-21A	C1-21B	RDL	QC Batch
Polychlorinated Biphenyls								
Aroclor 1016	mg/kg	<0.010	<0.010	9576593	<0.010	<0.010	0.010	9575923
Aroclor 1221	mg/kg	<0.010	<0.010	9576593	<0.010	<0.010	0.010	9575923
Aroclor 1232	mg/kg	<0.010	<0.010	9576593	<0.010	<0.010	0.010	9575923
Aroclor 1242	mg/kg	<0.010	<0.010	9576593	<0.010	<0.010	0.010	9575923
Aroclor 1248	mg/kg	<0.010	<0.010	9576593	<0.010	<0.010	0.010	9575923
Aroclor 1254	mg/kg	<0.010	<0.010	9576593	<0.010	<0.010	0.010	9575923
Aroclor 1260	mg/kg	<0.010	<0.010	9576593	<0.010	<0.010	0.010	9575923
Aroclor 1262	mg/kg	<0.010	<0.010	9576593	<0.010	<0.010	0.010	9575923
Aroclor 1268	mg/kg	<0.010	<0.010	9576593	<0.010	<0.010	0.010	9575923
Total PCB	mg/kg	<0.010	<0.010	9573266	<0.010	<0.010	0.010	9573268
Surrogate Recovery (%)								
NONACHLOROBIPHENYL (sur.)	%	97	68	9576593	80	62	N/A	9575923

RDL = Reportable Detection Limit
N/A = Not Applicable

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BV Labs Job #: B973139
Report Date: 2019/12/12

ARCADIS Canada Inc
Client Project #: 30000251
Sampler Initials: RF

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

BV Labs ID		WK3675		WK3676		WK3677		WK3678		
Sampling Date		2019/08/26		2019/08/26		2019/08/26		2019/08/26		
COC Number		591656-05-01		591656-05-01		591656-05-01		591656-05-01		
	UNITS	C1-22A	QC Batch	C1-22B	QC Batch	C1-23A	QC Batch	C1-23B	RDL	QC Batch
Polychlorinated Biphenyls										
Aroclor 1016	mg/kg	<0.010	9575452	<0.010	9575923	<0.010	9574955	<0.010	0.010	9575923
Aroclor 1221	mg/kg	<0.010	9575452	<0.010	9575923	<0.010	9574955	<0.010	0.010	9575923
Aroclor 1232	mg/kg	<0.010	9575452	<0.010	9575923	<0.010	9574955	<0.010	0.010	9575923
Aroclor 1242	mg/kg	<0.010	9575452	<0.010	9575923	<0.010	9574955	<0.010	0.010	9575923
Aroclor 1248	mg/kg	<0.010	9575452	<0.010	9575923	<0.010	9574955	<0.010	0.010	9575923
Aroclor 1254	mg/kg	<0.010	9575452	<0.010	9575923	<0.010	9574955	<0.010	0.010	9575923
Aroclor 1260	mg/kg	<0.010	9575452	<0.010	9575923	<0.010	9574955	<0.010	0.010	9575923
Aroclor 1262	mg/kg	<0.010	9575452	<0.010	9575923	<0.010	9574955	<0.010	0.010	9575923
Aroclor 1268	mg/kg	<0.010	9575452	<0.010	9575923	<0.010	9574955	<0.010	0.010	9575923
Total PCB	mg/kg	<0.010	9573268	<0.010	9573268	<0.010	9573268	<0.010	0.010	9573268
Surrogate Recovery (%)										
NONACHLOROBIPHENYL (sur.)	%	85	9575452	86	9575923	86	9574955	81	N/A	9575923

RDL = Reportable Detection Limit
N/A = Not Applicable

BV Labs ID		WK3679		WK3680		WK3681		WK3682		
Sampling Date		2019/08/26		2019/08/26		2019/08/26		2019/08/26		
COC Number		591656-05-01		591656-05-01		591656-05-01		591656-05-01		
	UNITS	C1-24A	QC Batch	C1-24B	QC Batch	C1-25A	QC Batch	C1-25B	RDL	QC Batch
Polychlorinated Biphenyls										
Aroclor 1016	mg/kg	<0.010	9575923	<0.010	9576593	<0.010	9576404	<0.010	0.010	9574955
Aroclor 1221	mg/kg	<0.010	9575923	<0.010	9576593	<0.010	9576404	<0.010	0.010	9574955
Aroclor 1232	mg/kg	<0.010	9575923	<0.010	9576593	<0.010	9576404	<0.010	0.010	9574955
Aroclor 1242	mg/kg	<0.010	9575923	<0.010	9576593	<0.010	9576404	<0.010	0.010	9574955
Aroclor 1248	mg/kg	<0.010	9575923	<0.010	9576593	<0.010	9576404	<0.010	0.010	9574955
Aroclor 1254	mg/kg	<0.010	9575923	<0.010	9576593	<0.010	9576404	<0.010	0.010	9574955
Aroclor 1260	mg/kg	<0.010	9575923	<0.010	9576593	<0.010	9576404	<0.010	0.010	9574955
Aroclor 1262	mg/kg	<0.010	9575923	<0.010	9576593	<0.010	9576404	<0.010	0.010	9574955
Aroclor 1268	mg/kg	<0.010	9575923	<0.010	9576593	<0.010	9576404	<0.010	0.010	9574955
Total PCB	mg/kg	<0.010	9573268	<0.010	9573268	<0.010	9573268	<0.010	0.010	9573268
Surrogate Recovery (%)										
NONACHLOROBIPHENYL (sur.)	%	51	9575923	63	9576593	72	9576404	86	N/A	9574955

RDL = Reportable Detection Limit
N/A = Not Applicable

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

BV Labs ID		WK3682		WK3683		WK3684		WK3685		
Sampling Date		2019/08/26		2019/08/26		2019/08/26		2019/08/26		
COC Number		591656-05-01		591656-06-01		591656-06-01		591656-06-01		
	UNITS	C1-25B Lab-Dup	QC Batch	C1-26A	QC Batch	C1-26B	QC Batch	C1-27A	RDL	QC Batch
Polychlorinated Biphenyls										
Aroclor 1016	mg/kg	<0.010	9574955	<0.010	9576404	<0.010	9575452	<0.010	0.010	9575923
Aroclor 1221	mg/kg	<0.010	9574955	<0.010	9576404	<0.010	9575452	<0.010	0.010	9575923
Aroclor 1232	mg/kg	<0.010	9574955	<0.010	9576404	<0.010	9575452	<0.010	0.010	9575923
Aroclor 1242	mg/kg	<0.010	9574955	<0.010	9576404	<0.010	9575452	<0.010	0.010	9575923
Aroclor 1248	mg/kg	<0.010	9574955	<0.010	9576404	<0.010	9575452	<0.010	0.010	9575923
Aroclor 1254	mg/kg	<0.010	9574955	<0.010	9576404	<0.010	9575452	<0.010	0.010	9575923
Aroclor 1260	mg/kg	<0.010	9574955	<0.010	9576404	<0.010	9575452	<0.010	0.010	9575923
Aroclor 1262	mg/kg	<0.010	9574955	<0.010	9576404	<0.010	9575452	<0.010	0.010	9575923
Aroclor 1268	mg/kg	<0.010	9574955	<0.010	9576404	<0.010	9575452	<0.010	0.010	9575923
Total PCB	mg/kg	N/A	9573268	<0.010	9573268	<0.010	9573268	<0.010	0.010	9573268
Surrogate Recovery (%)										
NONACHLOROBIPHENYL (sur.)	%	82	9574955	91	9576404	103	9575452	106	N/A	9575923

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

BV Labs ID		WK3686	WK3687		WK3688		WK3689		
Sampling Date		2019/08/26	2019/08/26		2019/08/26		2019/08/26		
COC Number		591656-06-01	591656-06-01		591656-06-01		591656-06-01		
	UNITS	C1-27B	C1-28A	QC Batch	C1-28B	QC Batch	C1-29A	RDL	QC Batch
Polychlorinated Biphenyls									
Aroclor 1016	mg/kg	<0.010	<0.010	9574955	<0.010	9575452	<0.010	0.010	9574955
Aroclor 1221	mg/kg	<0.010	<0.010	9574955	<0.010	9575452	<0.010	0.010	9574955
Aroclor 1232	mg/kg	<0.010	<0.010	9574955	<0.010	9575452	<0.010	0.010	9574955
Aroclor 1242	mg/kg	<0.010	<0.010	9574955	<0.010	9575452	<0.010	0.010	9574955
Aroclor 1248	mg/kg	<0.010	<0.010	9574955	<0.010	9575452	<0.010	0.010	9574955
Aroclor 1254	mg/kg	<0.010	<0.010	9574955	<0.010	9575452	<0.010	0.010	9574955
Aroclor 1260	mg/kg	<0.010	<0.010	9574955	<0.010	9575452	<0.010	0.010	9574955
Aroclor 1262	mg/kg	<0.010	<0.010	9574955	<0.010	9575452	<0.010	0.010	9574955
Aroclor 1268	mg/kg	<0.010	<0.010	9574955	<0.010	9575452	<0.010	0.010	9574955
Total PCB	mg/kg	<0.010	<0.010	9573268	<0.010	9573268	<0.010	0.010	9573268
Surrogate Recovery (%)									
NONACHLOROBIPHENYL (sur.)	%	72	90	9574955	103	9575452	82	N/A	9574955

RDL = Reportable Detection Limit
N/A = Not Applicable

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POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

BV Labs ID		WK3690		WK3691	WK3692		WK3693		
Sampling Date		2019/08/26		2019/08/26	2019/08/26		2019/08/26		
COC Number		591656-06-01		591656-06-01	591656-06-01		591656-07-01		
	UNITS	C1-29B	QC Batch	C1-30A	C1-30B	QC Batch	C1-31A	RDL	QC Batch
Polychlorinated Biphenyls									
Aroclor 1016	mg/kg	<0.010	9575452	<0.010	<0.010	9575923	<0.010	0.010	9574955
Aroclor 1221	mg/kg	<0.010	9575452	<0.010	<0.010	9575923	<0.010	0.010	9574955
Aroclor 1232	mg/kg	<0.010	9575452	<0.010	<0.010	9575923	<0.010	0.010	9574955
Aroclor 1242	mg/kg	<0.010	9575452	<0.010	<0.010	9575923	<0.010	0.010	9574955
Aroclor 1248	mg/kg	<0.010	9575452	<0.010	<0.010	9575923	<0.010	0.010	9574955
Aroclor 1254	mg/kg	<0.010	9575452	<0.010	<0.010	9575923	<0.010	0.010	9574955
Aroclor 1260	mg/kg	<0.010	9575452	<0.010	<0.010	9575923	<0.010	0.010	9574955
Aroclor 1262	mg/kg	<0.010	9575452	<0.010	<0.010	9575923	<0.010	0.010	9574955
Aroclor 1268	mg/kg	<0.010	9575452	<0.010	<0.010	9575923	<0.010	0.010	9574955
Total PCB	mg/kg	<0.010	9573268	<0.010	<0.010	9573268	<0.010	0.010	9573268
Surrogate Recovery (%)									
NONACHLOROBIPHENYL (sur.)	%	100	9575452	69	69	9575923	86	N/A	9574955

RDL = Reportable Detection Limit
N/A = Not Applicable

BV Labs ID		WK3694	WK3694	WK3695		WK3696		
Sampling Date		2019/08/26	2019/08/26	2019/08/26		2019/08/26		
COC Number		591656-07-01	591656-07-01	591656-07-01		591656-07-01		
	UNITS	C1-31B	C1-31B Lab-Dup	C1-32A	QC Batch	C1-32B	RDL	QC Batch
Polychlorinated Biphenyls								
Aroclor 1016	mg/kg	<0.010	<0.010	<0.010	9576593	<0.010	0.010	9574955
Aroclor 1221	mg/kg	<0.010	<0.010	<0.010	9576593	<0.010	0.010	9574955
Aroclor 1232	mg/kg	<0.010	<0.010	<0.010	9576593	<0.010	0.010	9574955
Aroclor 1242	mg/kg	<0.010	<0.010	<0.010	9576593	<0.010	0.010	9574955
Aroclor 1248	mg/kg	<0.010	<0.010	<0.010	9576593	<0.010	0.010	9574955
Aroclor 1254	mg/kg	<0.010	<0.010	<0.010	9576593	<0.010	0.010	9574955
Aroclor 1260	mg/kg	<0.010	<0.010	<0.010	9576593	<0.010	0.010	9574955
Aroclor 1262	mg/kg	<0.010	<0.010	<0.010	9576593	<0.010	0.010	9574955
Aroclor 1268	mg/kg	<0.010	<0.010	<0.010	9576593	<0.010	0.010	9574955
Total PCB	mg/kg	<0.010	N/A	<0.010	9573268	<0.010	0.010	9573268
Surrogate Recovery (%)								
NONACHLOROBIPHENYL (sur.)	%	66	76	75	9576593	91	N/A	9574955

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

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POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

BV Labs ID		WK3697	WK3698		WK3699	WK3699		
Sampling Date		2019/08/26	2019/08/26		2019/08/26	2019/08/26		
COC Number		591656-07-01	591656-07-01		591656-07-01	591656-07-01		
	UNITS	C1-33A	C1-33B	QC Batch	C1-34A	C1-34A Lab-Dup	RDL	QC Batch
Polychlorinated Biphenyls								
Aroclor 1016	mg/kg	<0.010	<0.010	9575452	<0.010	<0.010	0.010	9576404
Aroclor 1221	mg/kg	<0.010	<0.010	9575452	<0.010	<0.010	0.010	9576404
Aroclor 1232	mg/kg	<0.010	<0.010	9575452	<0.010	<0.010	0.010	9576404
Aroclor 1242	mg/kg	<0.010	<0.010	9575452	<0.010	<0.010	0.010	9576404
Aroclor 1248	mg/kg	<0.010	<0.010	9575452	<0.010	<0.010	0.010	9576404
Aroclor 1254	mg/kg	<0.010	<0.010	9575452	<0.010	<0.010	0.010	9576404
Aroclor 1260	mg/kg	<0.010	<0.010	9575452	<0.010	<0.010	0.010	9576404
Aroclor 1262	mg/kg	<0.010	<0.010	9575452	<0.010	<0.010	0.010	9576404
Aroclor 1268	mg/kg	<0.010	<0.010	9575452	<0.010	<0.010	0.010	9576404
Total PCB	mg/kg	<0.010	<0.010	9573268	<0.010	N/A	0.010	9573268
Surrogate Recovery (%)								
NONACHLOROBIPHENYL (sur.)	%	102	99	9575452	106	81	N/A	9576404

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

BV Labs ID		WK3700		WK3701		WK3702		
Sampling Date		2019/08/26		2019/08/26		2019/08/26		
COC Number		591656-07-01		591656-07-01		591656-07-01		
	UNITS	C1-34B	QC Batch	C1-35A	QC Batch	C1-35B	RDL	QC Batch
Polychlorinated Biphenyls								
Aroclor 1016	mg/kg	<0.010	9575452	<0.010	9575923	<0.010	0.010	9575452
Aroclor 1221	mg/kg	<0.010	9575452	<0.010	9575923	<0.010	0.010	9575452
Aroclor 1232	mg/kg	<0.010	9575452	<0.010	9575923	<0.010	0.010	9575452
Aroclor 1242	mg/kg	<0.010	9575452	<0.010	9575923	<0.010	0.010	9575452
Aroclor 1248	mg/kg	<0.010	9575452	<0.010	9575923	<0.010	0.010	9575452
Aroclor 1254	mg/kg	<0.010	9575452	<0.010	9575923	<0.010	0.010	9575452
Aroclor 1260	mg/kg	<0.010	9575452	<0.010	9575923	<0.010	0.010	9575452
Aroclor 1262	mg/kg	<0.010	9575452	<0.010	9575923	<0.010	0.010	9575452
Aroclor 1268	mg/kg	<0.010	9575452	<0.010	9575923	<0.010	0.010	9575452
Total PCB	mg/kg	<0.010	9573268	<0.010	9573268	<0.010	0.010	9573268
Surrogate Recovery (%)								
NONACHLOROBIPHENYL (sur.)	%	87	9575452	88	9575923	96	N/A	9575452

RDL = Reportable Detection Limit
N/A = Not Applicable

BV Labs Job #: B973139
Report Date: 2019/12/12

ARCADIS Canada Inc
Client Project #: 30000251
Sampler Initials: RF

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

BV Labs ID		WK3703			WK3704	WK3705	WK3706	WK3707		
Sampling Date		2019/08/27			2019/08/27	2019/08/27	2019/08/27	2019/08/27		
COC Number		591656-08-01			591656-08-01	591656-08-01	591656-08-01	591656-08-01		
	UNITS	MW-01A	RDL	QC Batch	MW-01B	MW-02A	MW-02B	MW-03A	RDL	QC Batch
Polychlorinated Biphenyls										
Aroclor 1016	mg/kg	<0.050	0.050	9576593	<0.010	<0.010	<0.010	<0.010	0.010	9575923
Aroclor 1221	mg/kg	<0.050	0.050	9576593	<0.010	<0.010	<0.010	<0.010	0.010	9575923
Aroclor 1232	mg/kg	<0.050	0.050	9576593	<0.010	<0.010	<0.010	<0.010	0.010	9575923
Aroclor 1242	mg/kg	<0.050	0.050	9576593	<0.010	<0.010	<0.010	<0.010	0.010	9575923
Aroclor 1248	mg/kg	<0.050	0.050	9576593	<0.010	<0.010	<0.010	<0.010	0.010	9575923
Aroclor 1254	mg/kg	0.43	0.050	9576593	0.076	<0.010	<0.010	<0.010	0.010	9575923
Aroclor 1260	mg/kg	<0.050	0.050	9576593	<0.010	<0.010	<0.010	<0.010	0.010	9575923
Aroclor 1262	mg/kg	<0.050	0.050	9576593	<0.010	<0.010	<0.010	<0.010	0.010	9575923
Aroclor 1268	mg/kg	<0.050	0.050	9576593	<0.010	<0.010	<0.010	<0.010	0.010	9575923
Total PCB	mg/kg	0.43	0.050	9573268	0.076	<0.010	<0.010	<0.010	0.010	9573268
Surrogate Recovery (%)										
NONACHLOROBIPHENYL (sur.)	%	68	N/A	9576593	78	95	73	79	N/A	9575923

RDL = Reportable Detection Limit
N/A = Not Applicable

BV Labs ID		WK3708	WK3709	WK3710		WK3711		
Sampling Date		2019/08/27	2019/08/27	2019/08/27		2019/08/27		
COC Number		591656-08-01	591656-08-01	591656-08-01		591656-08-01		
	UNITS	MW-03B	MW-04A	MW-04B	QC Batch	MW-05A	RDL	QC Batch
Polychlorinated Biphenyls								
Aroclor 1016	mg/kg	<0.010	<0.010	<0.010	9574955	<0.010	0.010	9575923
Aroclor 1221	mg/kg	<0.010	<0.010	<0.010	9574955	<0.010	0.010	9575923
Aroclor 1232	mg/kg	<0.010	<0.010	<0.010	9574955	<0.010	0.010	9575923
Aroclor 1242	mg/kg	<0.010	<0.010	<0.010	9574955	<0.010	0.010	9575923
Aroclor 1248	mg/kg	<0.010	<0.010	<0.010	9574955	<0.010	0.010	9575923
Aroclor 1254	mg/kg	0.094	0.083	<0.010	9574955	<0.010	0.010	9575923
Aroclor 1260	mg/kg	<0.010	<0.010	<0.010	9574955	<0.010	0.010	9575923
Aroclor 1262	mg/kg	<0.010	<0.010	<0.010	9574955	<0.010	0.010	9575923
Aroclor 1268	mg/kg	<0.010	<0.010	<0.010	9574955	<0.010	0.010	9575923
Total PCB	mg/kg	0.094	0.083	<0.010	9573268	<0.010	0.010	9573268
Surrogate Recovery (%)								
NONACHLOROBIPHENYL (sur.)	%	78	74	85	9574955	67	N/A	9575923

RDL = Reportable Detection Limit
N/A = Not Applicable

BV Labs Job #: B973139
Report Date: 2019/12/12

ARCADIS Canada Inc
Client Project #: 30000251
Sampler Initials: RF

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

BV Labs ID		WK3712		WK3713		WK3714		WK3715		
Sampling Date		2019/08/27		2019/08/27		2019/08/27		2019/08/27		
COC Number		591656-08-01		591656-09-01		591656-09-01		591656-09-01		
	UNITS	MW-05B	QC Batch	MW-06A	QC Batch	MW-06B	QC Batch	MW-07A	RDL	QC Batch
Polychlorinated Biphenyls										
Aroclor 1016	mg/kg	<0.010	9576593	<0.010	9574955	<0.010	9575923	<0.010	0.010	9576593
Aroclor 1221	mg/kg	<0.010	9576593	<0.010	9574955	<0.010	9575923	<0.010	0.010	9576593
Aroclor 1232	mg/kg	<0.010	9576593	<0.010	9574955	<0.010	9575923	<0.010	0.010	9576593
Aroclor 1242	mg/kg	<0.010	9576593	<0.010	9574955	<0.010	9575923	<0.010	0.010	9576593
Aroclor 1248	mg/kg	<0.010	9576593	<0.010	9574955	<0.010	9575923	<0.010	0.010	9576593
Aroclor 1254	mg/kg	<0.010	9576593	<0.010	9574955	<0.010	9575923	<0.010	0.010	9576593
Aroclor 1260	mg/kg	<0.010	9576593	<0.010	9574955	<0.010	9575923	<0.010	0.010	9576593
Aroclor 1262	mg/kg	<0.010	9576593	<0.010	9574955	<0.010	9575923	<0.010	0.010	9576593
Aroclor 1268	mg/kg	<0.010	9576593	<0.010	9574955	<0.010	9575923	<0.010	0.010	9576593
Total PCB	mg/kg	<0.010	9573268	<0.010	9573269	<0.010	9573269	<0.010	0.010	9573269
Surrogate Recovery (%)										
NONACHLOROBIPHENYL (sur.)	%	62	9576593	94	9574955	79	9575923	70	N/A	9576593

RDL = Reportable Detection Limit
N/A = Not Applicable

BV Labs ID		WK3716		WK3717	WK3718		WK3719		
Sampling Date		2019/08/27		2019/08/27	2019/08/27		2019/08/27		
COC Number		591656-09-01		591656-09-01	591656-09-01		591656-09-01		
	UNITS	MW-07B	QC Batch	MW-08A	MW-08B	QC Batch	C1-36	RDL	QC Batch
Polychlorinated Biphenyls									
Aroclor 1016	mg/kg	<0.010	9576593	<0.010	<0.010	9575923	<0.010	0.010	9574955
Aroclor 1221	mg/kg	<0.010	9576593	<0.010	<0.010	9575923	<0.010	0.010	9574955
Aroclor 1232	mg/kg	<0.010	9576593	<0.010	<0.010	9575923	<0.010	0.010	9574955
Aroclor 1242	mg/kg	<0.010	9576593	<0.010	<0.010	9575923	<0.010	0.010	9574955
Aroclor 1248	mg/kg	<0.010	9576593	<0.010	<0.010	9575923	<0.010	0.010	9574955
Aroclor 1254	mg/kg	<0.010	9576593	<0.010	<0.010	9575923	<0.010	0.010	9574955
Aroclor 1260	mg/kg	<0.010	9576593	<0.010	<0.010	9575923	<0.010	0.010	9574955
Aroclor 1262	mg/kg	<0.010	9576593	<0.010	<0.010	9575923	<0.010	0.010	9574955
Aroclor 1268	mg/kg	<0.010	9576593	<0.010	<0.010	9575923	<0.010	0.010	9574955
Total PCB	mg/kg	<0.010	9573269	<0.010	<0.010	9573269	<0.010	0.010	9573269
Surrogate Recovery (%)									
NONACHLOROBIPHENYL (sur.)	%	82	9576593	60	80	9575923	92	N/A	9574955

RDL = Reportable Detection Limit
N/A = Not Applicable

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

BV Labs ID		WK3720		WK3721		WK3722		
Sampling Date		2019/08/26		2019/08/26		2019/08/26		
COC Number		591656-09-01		591656-09-01		591656-09-01		
	UNITS	C1-37	QC Batch	C1-38	QC Batch	C1-39	RDL	QC Batch
Polychlorinated Biphenyls								
Aroclor 1016	mg/kg	<0.010	9576404	<0.010	9576593	<0.010	0.010	9575923
Aroclor 1221	mg/kg	<0.010	9576404	<0.010	9576593	<0.010	0.010	9575923
Aroclor 1232	mg/kg	<0.010	9576404	<0.010	9576593	<0.010	0.010	9575923
Aroclor 1242	mg/kg	<0.010	9576404	<0.010	9576593	<0.010	0.010	9575923
Aroclor 1248	mg/kg	<0.010	9576404	<0.010	9576593	<0.010	0.010	9575923
Aroclor 1254	mg/kg	<0.010	9576404	<0.010	9576593	<0.010	0.010	9575923
Aroclor 1260	mg/kg	<0.010	9576404	<0.010	9576593	<0.010	0.010	9575923
Aroclor 1262	mg/kg	<0.010	9576404	<0.010	9576593	<0.010	0.010	9575923
Aroclor 1268	mg/kg	<0.010	9576404	<0.010	9576593	<0.010	0.010	9575923
Total PCB	mg/kg	<0.010	9573269	<0.010	9573269	<0.010	0.010	9573269
Surrogate Recovery (%)								
NONACHLOROBIPHENYL (sur.)	%	87	9576404	76	9576593	88	N/A	9575923

RDL = Reportable Detection Limit
N/A = Not Applicable

BV Labs ID		WK3723		WK3724		WK3725	WK3725		
Sampling Date		2019/08/26		2019/08/26		2019/08/26	2019/08/26		
COC Number		591656-10-01		591656-10-01		591656-10-01	591656-10-01		
	UNITS	C1-40	RDL	C1-41	QC Batch	C1-42	C1-42 Lab-Dup	RDL	QC Batch
Polychlorinated Biphenyls									
Aroclor 1016	mg/kg	<0.050	0.050	<0.010	9576593	<0.010	<0.010	0.010	9575923
Aroclor 1221	mg/kg	<0.050	0.050	<0.010	9576593	<0.010	<0.010	0.010	9575923
Aroclor 1232	mg/kg	<0.050	0.050	<0.010	9576593	<0.010	<0.010	0.010	9575923
Aroclor 1242	mg/kg	<0.050	0.050	<0.010	9576593	<0.010	<0.010	0.010	9575923
Aroclor 1248	mg/kg	<0.050	0.050	<0.010	9576593	<0.010	<0.010	0.010	9575923
Aroclor 1254	mg/kg	<0.050	0.050	<0.010	9576593	<0.010	<0.010	0.010	9575923
Aroclor 1260	mg/kg	<0.050	0.050	<0.010	9576593	<0.010	<0.010	0.010	9575923
Aroclor 1262	mg/kg	<0.050	0.050	<0.010	9576593	<0.010	<0.010	0.010	9575923
Aroclor 1268	mg/kg	<0.050	0.050	<0.010	9576593	<0.010	<0.010	0.010	9575923
Total PCB	mg/kg	<0.050	0.050	<0.010	9573269	<0.010	N/A	0.010	9573269
Surrogate Recovery (%)									
NONACHLOROBIPHENYL (sur.)	%	89	N/A	73	9576593	85	87	N/A	9575923

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

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POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

BV Labs ID		WK3726			WK3727		
Sampling Date		2019/08/27			2019/08/27		
COC Number		591656-10-01			591656-10-01		
	UNITS	C1-43	RDL	QC Batch	C1-44	RDL	QC Batch
Polychlorinated Biphenyls							
Aroclor 1016	mg/kg	<0.050	0.050	9576593	<0.010	0.010	9575923
Aroclor 1221	mg/kg	<0.050	0.050	9576593	<0.010	0.010	9575923
Aroclor 1232	mg/kg	<0.050	0.050	9576593	<0.010	0.010	9575923
Aroclor 1242	mg/kg	<0.050	0.050	9576593	<0.010	0.010	9575923
Aroclor 1248	mg/kg	<0.050	0.050	9576593	<0.010	0.010	9575923
Aroclor 1254	mg/kg	<0.050	0.050	9576593	<0.010	0.010	9575923
Aroclor 1260	mg/kg	<0.050	0.050	9576593	<0.010	0.010	9575923
Aroclor 1262	mg/kg	<0.050	0.050	9576593	<0.010	0.010	9575923
Aroclor 1268	mg/kg	<0.050	0.050	9576593	<0.010	0.010	9575923
Total PCB	mg/kg	<0.050	0.050	9573269	<0.010	0.010	9573269
Surrogate Recovery (%)							
NONACHLOROBIPHENYL (sur.)	%	83	N/A	9576593	66	N/A	9575923

RDL = Reportable Detection Limit
N/A = Not Applicable

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ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

BV Labs ID		WK3630		WK3631		WK3632		WK3633		
Sampling Date		2019/08/27		2019/08/27		2019/08/27		2019/08/27		
COC Number		591656-01-01		591656-01-01		591656-01-01		591656-01-01		
	UNITS	C1-1A	RDL	C1-1B	QC Batch	C1-2A	QC Batch	C1-2B	RDL	QC Batch
Elements										
Total Arsenic (As)	mg/kg	1.3 (1)	1.0	2.0	9576810	2.3	9576310	2.3	1.0	9576066
Total Cadmium (Cd)	mg/kg	<0.10 (2)	0.10	<0.050	9576810	<0.050	9576310	<0.050	0.050	9576066
Total Chromium (Cr)	mg/kg	1.1 (1)	1.0	2.2	9576810	2.0	9576310	2.2	1.0	9576066
Total Cobalt (Co)	mg/kg	<1.0 (2)	1.0	1.0	9576810	1.6	9576310	1.3	0.50	9576066
Total Copper (Cu)	mg/kg	4.4 (1)	1.0	2.6	9576810	4.5	9576310	3.3	1.0	9576066
Total Lead (Pb)	mg/kg	1.7 (2)	1.0	4.8	9576810	3.2	9576310	3.4	0.50	9576066
Total Nickel (Ni)	mg/kg	1.6 (1)	1.0	<1.0	9576810	1.4	9576310	1.5	1.0	9576066
Total Zinc (Zn)	mg/kg	1.2 (1)	1.0	2.6 (1)	9576810	8.6 (1)	9576310	4.1 (1)	1.0	9576066

RDL = Reportable Detection Limit
(1) Detection limits calculated based on method detection limits (MDLs) at client request.
(2) Detection limits raised due to sample matrix.

BV Labs ID		WK3634		WK3635		WK3636		WK3637		
Sampling Date		2019/08/27		2019/08/27		2019/08/27		2019/08/27		
COC Number		591656-01-01		591656-01-01		591656-01-01		591656-01-01		
	UNITS	C1-3A	QC Batch	C1-3B	QC Batch	C1-4A	QC Batch	C1-4B	RDL	QC Batch
Elements										
Total Arsenic (As)	mg/kg	3.5	9576715	1.5	9576810	1.2	9576066	1.1	1.0	9576291
Total Cadmium (Cd)	mg/kg	<0.050	9576715	<0.050	9576810	<0.050	9576066	<0.050	0.050	9576291
Total Chromium (Cr)	mg/kg	2.4	9576715	2.1	9576810	1.2	9576066	1.7	1.0	9576291
Total Cobalt (Co)	mg/kg	1.5	9576715	0.83	9576810	0.72	9576066	0.87	0.50	9576291
Total Copper (Cu)	mg/kg	3.2	9576715	1.8	9576810	1.7	9576066	1.6	1.0	9576291
Total Lead (Pb)	mg/kg	4.9	9576715	2.9	9576810	2.5	9576066	2.0	0.50	9576291
Total Nickel (Ni)	mg/kg	3.3	9576715	1.0	9576810	<1.0	9576066	1.2	1.0	9576291
Total Zinc (Zn)	mg/kg	5.7 (1)	9576715	2.4 (1)	9576810	6.7 (1)	9576066	3.6 (1)	1.0	9576291

RDL = Reportable Detection Limit
(1) Detection limits calculated based on method detection limits (MDLs) at client request.

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BV Labs Job #: B973139
Report Date: 2019/12/12

ARCADIS Canada Inc
Client Project #: 30000251
Sampler Initials: RF

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

BV Labs ID		WK3638		WK3639		WK3643	WK3644		
Sampling Date		2019/08/27		2019/08/27		2019/08/27	2019/08/27		
COC Number		591656-01-01		591656-01-01		591656-02-01	591656-02-01		
	UNITS	C1-5A	QC Batch	C1-5B	QC Batch	C1-6A	C1-6B	RDL	QC Batch
Elements									
Total Arsenic (As)	mg/kg	1.4	9576310	<1.0	9576291	5.6	14	1.0	9576066
Total Cadmium (Cd)	mg/kg	<0.050	9576310	<0.050	9576291	<0.050	<0.050	0.050	9576066
Total Chromium (Cr)	mg/kg	<1.0	9576310	<1.0	9576291	2.0	2.4	1.0	9576066
Total Cobalt (Co)	mg/kg	0.61	9576310	<0.50	9576291	1.1	2.2	0.50	9576066
Total Copper (Cu)	mg/kg	1.6	9576310	1.7	9576291	2.9	5.0	1.0	9576066
Total Lead (Pb)	mg/kg	2.3	9576310	1.4	9576291	11	29	0.50	9576066
Total Nickel (Ni)	mg/kg	<1.0	9576310	<1.0	9576291	1.4	2.5	1.0	9576066
Total Zinc (Zn)	mg/kg	3.6 (1)	9576310	1.6 (1)	9576291	3.7 (1)	4.3 (1)	1.0	9576066

RDL = Reportable Detection Limit
(1) Detection limits calculated based on method detection limits (MDLs) at client request.

BV Labs ID		WK3645		WK3646	WK3647		WK3648	WK3649		
Sampling Date		2019/08/27		2019/08/27	2019/08/27		2019/08/27	2019/08/27		
COC Number		591656-02-01		591656-02-01	591656-02-01		591656-02-01	591656-02-01		
	UNITS	C1-7A	QC Batch	C1-7B	C1-8A	QC Batch	C1-8B	C1-9A	RDL	QC Batch
Elements										
Total Arsenic (As)	mg/kg	2.4	9576715	<1.0	1.2	9576810	3.0	4.8	1.0	9576715
Total Cadmium (Cd)	mg/kg	<0.050	9576715	<0.050	<0.050	9576810	<0.050	0.11	0.050	9576715
Total Chromium (Cr)	mg/kg	1.5	9576715	1.2	1.2	9576810	1.7	2.1	1.0	9576715
Total Cobalt (Co)	mg/kg	0.66	9576715	<0.50	<0.50	9576810	0.98	0.82	0.50	9576715
Total Copper (Cu)	mg/kg	<1.0	9576715	1.5	1.3	9576810	1.6	7.6	1.0	9576715
Total Lead (Pb)	mg/kg	4.4	9576715	1.7	1.8	9576810	4.7	3.7	0.50	9576715
Total Nickel (Ni)	mg/kg	<1.0	9576715	<1.0	<1.0	9576810	1.3	2.5	1.0	9576715
Total Zinc (Zn)	mg/kg	2.5 (1)	9576715	4.6 (1)	2.8 (1)	9576810	3.8 (1)	2.8 (1)	1.0	9576715

RDL = Reportable Detection Limit
(1) Detection limits calculated based on method detection limits (MDLs) at client request.

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

BV Labs ID		WK3650		WK3651		WK3652	WK3653	WK3654		
Sampling Date		2019/08/27		2019/08/26		2019/08/26	2019/08/26	2019/08/26		
COC Number		591656-02-01		591656-02-01		591656-02-01	591656-03-01	591656-03-01		
	UNITS	C1-9B	QC Batch	C1-10A	QC Batch	C1-10B	C1-11A	C1-11B	RDL	QC Batch
Elements										
Total Arsenic (As)	mg/kg	9.9	9576810	2.7	9576778	2.6	<1.0	<1.0	1.0	9576310
Total Cadmium (Cd)	mg/kg	0.055	9576810	<0.050	9576778	<0.050	<0.050	<0.050	0.050	9576310
Total Chromium (Cr)	mg/kg	2.2	9576810	1.4	9576778	2.0	1.4	1.6	1.0	9576310
Total Cobalt (Co)	mg/kg	3.4	9576810	0.77	9576778	0.77	<0.50	<0.50	0.50	9576310
Total Copper (Cu)	mg/kg	6.9	9576810	2.1	9576778	2.1	1.5	<1.0	1.0	9576310
Total Lead (Pb)	mg/kg	17	9576810	3.9	9576778	4.3	0.51	0.86	0.50	9576310
Total Nickel (Ni)	mg/kg	3.7	9576810	1.6	9576778	1.4	<1.0	<1.0	1.0	9576310
Total Zinc (Zn)	mg/kg	7.0 (1)	9576810	4.4 (1)	9576778	3.2 (1)	1.4 (1)	1.9	1.0	9576310

RDL = Reportable Detection Limit
(1) Detection limits calculated based on method detection limits (MDLs) at client request.

BV Labs ID		WK3654		WK3655		WK3656		WK3657		
Sampling Date		2019/08/26		2019/08/26		2019/08/26		2019/08/26		
COC Number		591656-03-01		591656-03-01		591656-03-01		591656-03-01		
	UNITS	C1-11B Lab-Dup	QC Batch	C1-12A	QC Batch	C1-12B	QC Batch	C1-13A	RDL	QC Batch
Elements										
Total Arsenic (As)	mg/kg	<1.0	9576310	<1.0	9576066	<1.0	9576778	<1.0	1.0	9576810
Total Cadmium (Cd)	mg/kg	<0.050	9576310	<0.050	9576066	<0.050	9576778	<0.050	0.050	9576810
Total Chromium (Cr)	mg/kg	1.6	9576310	1.1	9576066	1.9	9576778	1.7	1.0	9576810
Total Cobalt (Co)	mg/kg	<0.50	9576310	<0.50	9576066	<0.50	9576778	0.54	0.50	9576810
Total Copper (Cu)	mg/kg	<1.0	9576310	<1.0	9576066	<1.0	9576778	1.1	1.0	9576810
Total Lead (Pb)	mg/kg	0.88	9576310	0.54	9576066	0.90	9576778	1.5	0.50	9576810
Total Nickel (Ni)	mg/kg	<1.0	9576310	<1.0	9576066	<1.0	9576778	<1.0	1.0	9576810
Total Zinc (Zn)	mg/kg	1.8 (1)	9576310	1.9 (1)	9576066	2.2 (1)	9576778	1.8 (1)	1.0	9576810

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
(1) Detection limits calculated based on method detection limits (MDLs) at client request.

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ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

BV Labs ID		WK3658		WK3659	WK3660	WK3661	WK3662		
Sampling Date		2019/08/26		2019/08/26	2019/08/26	2019/08/26	2019/08/26		
COC Number		591656-03-01		591656-03-01	591656-03-01	591656-03-01	591656-03-01		
	UNITS	C1-13B	QC Batch	C1-14A	C1-14B	C1-15A	C1-15B	RDL	QC Batch
Elements									
Total Arsenic (As)	mg/kg	2.1	9576778	2.9	2.9	1.6	2.1	1.0	9576310
Total Cadmium (Cd)	mg/kg	<0.050	9576778	<0.050	<0.050	<0.050	<0.050	0.050	9576310
Total Chromium (Cr)	mg/kg	2.3	9576778	2.3	1.5	1.8	1.5	1.0	9576310
Total Cobalt (Co)	mg/kg	0.74	9576778	0.81	0.82	0.65	0.54	0.50	9576310
Total Copper (Cu)	mg/kg	1.9	9576778	1.6	1.6	1.4	1.9	1.0	9576310
Total Lead (Pb)	mg/kg	2.4	9576778	7.1	9.4	2.8	3.3	0.50	9576310
Total Nickel (Ni)	mg/kg	1.6	9576778	1.2	1.3	1.1	1.0	1.0	9576310
Total Zinc (Zn)	mg/kg	6.6 (1)	9576778	3.3 (1)	1.7 (1)	2.2 (1)	2.2 (1)	1.0	9576310

RDL = Reportable Detection Limit
(1) Detection limits calculated based on method detection limits (MDLs) at client request.

BV Labs ID		WK3663		WK3664	WK3665	WK3666		WK3667		
Sampling Date		2019/08/26		2019/08/26	2019/08/26	2019/08/26		2019/08/26		
COC Number		591656-04-01		591656-04-01	591656-04-01	591656-04-01		591656-04-01		
	UNITS	C1-16A	QC Batch	C1-16B	C1-17A	C1-17B	QC Batch	C1-18A	RDL	QC Batch
Elements										
Total Arsenic (As)	mg/kg	<1.0	9576291	1.6	1.3	2.7	9576310	<1.0	1.0	9576291
Total Cadmium (Cd)	mg/kg	<0.050	9576291	<0.050	<0.050	<0.050	9576310	<0.050	0.050	9576291
Total Chromium (Cr)	mg/kg	2.6	9576291	1.4	1.7	1.8	9576310	1.5	1.0	9576291
Total Cobalt (Co)	mg/kg	<0.50	9576291	<0.50	0.57	0.63	9576310	<0.50	0.50	9576291
Total Copper (Cu)	mg/kg	2.0	9576291	1.6	1.5	2.4	9576310	2.2	1.0	9576291
Total Lead (Pb)	mg/kg	1.1	9576291	4.9	3.0	8.2	9576310	1.9	0.50	9576291
Total Nickel (Ni)	mg/kg	<1.0	9576291	1.0	1.1	1.1	9576310	<1.0	1.0	9576291
Total Zinc (Zn)	mg/kg	1.8 (1)	9576291	1.3 (1)	37 (1)	1.7 (1)	9576310	2.4 (1)	1.0	9576291

RDL = Reportable Detection Limit
(1) Detection limits calculated based on method detection limits (MDLs) at client request.

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

BV Labs ID		WK3668	WK3668		WK3669		WK3670		
Sampling Date		2019/08/26	2019/08/26		2019/08/26		2019/08/26		
COC Number		591656-04-01	591656-04-01		591656-04-01		591656-04-01		
	UNITS	C1-18B	C1-18B Lab-Dup	QC Batch	C1-19A	QC Batch	C1-19B	RDL	QC Batch
Elements									
Total Arsenic (As)	mg/kg	<1.0	<1.0	9576778	1.3	9576810	2.3	1.0	9576715
Total Cadmium (Cd)	mg/kg	<0.050	<0.050	9576778	<0.050	9576810	<0.050	0.050	9576715
Total Chromium (Cr)	mg/kg	1.4	2.9	9576778	2.6	9576810	5.7	1.0	9576715
Total Cobalt (Co)	mg/kg	<0.50	0.56	9576778	1.0	9576810	1.9	0.50	9576715
Total Copper (Cu)	mg/kg	<1.0	1.3	9576778	2.0	9576810	4.2	1.0	9576715
Total Lead (Pb)	mg/kg	1.1	1.4	9576778	6.5	9576810	11	0.50	9576715
Total Nickel (Ni)	mg/kg	<1.0	1.6	9576778	1.6	9576810	4.3	1.0	9576715
Total Zinc (Zn)	mg/kg	1.8 (1)	1.9	9576778	3.4 (1)	9576810	6.8 (1)	1.0	9576715

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
(1) Detection limits calculated based on method detection limits (MDLs) at client request.

BV Labs ID		WK3671		WK3672	WK3673		WK3674		
Sampling Date		2019/08/26		2019/08/26	2019/08/26		2019/08/26		
COC Number		591656-04-01		591656-04-01	591656-05-01		591656-05-01		
	UNITS	C1-20A	QC Batch	C1-20B	C1-21A	QC Batch	C1-21B	RDL	QC Batch
Elements									
Total Arsenic (As)	mg/kg	4.1	9576310	4.3	7.3	9576291	7.8	1.0	9576715
Total Cadmium (Cd)	mg/kg	<0.050	9576310	<0.050	<0.050	9576291	<0.050	0.050	9576715
Total Chromium (Cr)	mg/kg	2.1	9576310	2.6	3.0	9576291	3.0	1.0	9576715
Total Cobalt (Co)	mg/kg	0.52	9576310	0.64	0.82	9576291	0.79	0.50	9576715
Total Copper (Cu)	mg/kg	1.4	9576310	1.7	1.8	9576291	1.9	1.0	9576715
Total Lead (Pb)	mg/kg	6.9	9576310	8.2	11	9576291	11	0.50	9576715
Total Nickel (Ni)	mg/kg	1.1	9576310	1.6	1.8	9576291	1.8	1.0	9576715
Total Zinc (Zn)	mg/kg	3.5 (1)	9576310	5.5 (1)	3.5 (1)	9576291	3.4 (1)	1.0	9576715

RDL = Reportable Detection Limit
(1) Detection limits calculated based on method detection limits (MDLs) at client request.

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BV Labs Job #: B973139
Report Date: 2019/12/12

ARCADIS Canada Inc
Client Project #: 30000251
Sampler Initials: RF

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

BV Labs ID		WK3675		WK3676		WK3677	WK3678	WK3679		
Sampling Date		2019/08/26		2019/08/26		2019/08/26	2019/08/26	2019/08/26		
COC Number		591656-05-01		591656-05-01		591656-05-01	591656-05-01	591656-05-01		
	UNITS	C1-22A	QC Batch	C1-22B	QC Batch	C1-23A	C1-23B	C1-24A	RDL	QC Batch
Elements										
Total Arsenic (As)	mg/kg	4.0	9576291	5.3	9576066	25	26	3.6	1.0	9576810
Total Cadmium (Cd)	mg/kg	<0.050	9576291	<0.050	9576066	<0.050	<0.050	<0.050	0.050	9576810
Total Chromium (Cr)	mg/kg	2.2	9576291	3.2	9576066	1.6	1.7	2.3	1.0	9576810
Total Cobalt (Co)	mg/kg	0.53	9576291	0.62	9576066	1.0	1.6	0.66	0.50	9576810
Total Copper (Cu)	mg/kg	1.7	9576291	1.8	9576066	3.8	5.0	1.8	1.0	9576810
Total Lead (Pb)	mg/kg	7.2	9576291	9.9	9576066	39	33	6.4	0.50	9576810
Total Nickel (Ni)	mg/kg	1.2	9576291	1.4	9576066	1.8	1.9	1.1	1.0	9576810
Total Zinc (Zn)	mg/kg	3.0 (1)	9576291	3.2 (1)	9576066	3.8 (1)	7.5 (1)	5.0 (1)	1.0	9576810

RDL = Reportable Detection Limit
(1) Detection limits calculated based on method detection limits (MDLs) at client request.

BV Labs ID		WK3680		WK3681		WK3682		WK3683		
Sampling Date		2019/08/26		2019/08/26		2019/08/26		2019/08/26		
COC Number		591656-05-01		591656-05-01		591656-05-01		591656-06-01		
	UNITS	C1-24B	QC Batch	C1-25A	QC Batch	C1-25B	QC Batch	C1-26A	RDL	QC Batch
Elements										
Total Arsenic (As)	mg/kg	5.9	9576810	1.2	9576778	2.5	9576066	1.4	1.0	9576715
Total Cadmium (Cd)	mg/kg	<0.050	9576810	<0.050	9576778	<0.050	9576066	<0.050	0.050	9576715
Total Chromium (Cr)	mg/kg	2.8	9576810	2.2	9576778	3.0	9576066	3.1	1.0	9576715
Total Cobalt (Co)	mg/kg	0.91	9576810	0.51	9576778	0.86	9576066	0.67	0.50	9576715
Total Copper (Cu)	mg/kg	2.5	9576810	1.5	9576778	2.4	9576066	1.6	1.0	9576715
Total Lead (Pb)	mg/kg	9.6	9576810	3.7	9576778	3.7	9576066	5.7	0.50	9576715
Total Nickel (Ni)	mg/kg	1.7	9576810	1.3	9576778	1.7	9576066	1.2	1.0	9576715
Total Zinc (Zn)	mg/kg	4.2 (1)	9576810	4.1 (1)	9576778	2.7 (1)	9576066	5.5 (1)	1.0	9576715

RDL = Reportable Detection Limit
(1) Detection limits calculated based on method detection limits (MDLs) at client request.

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BV Labs Job #: B973139
Report Date: 2019/12/12

ARCADIS Canada Inc
Client Project #: 30000251
Sampler Initials: RF

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

BV Labs ID		WK3684	WK3685		WK3686		WK3687		
Sampling Date		2019/08/26	2019/08/26		2019/08/26		2019/08/26		
COC Number		591656-06-01	591656-06-01		591656-06-01		591656-06-01		
	UNITS	C1-26B	C1-27A	QC Batch	C1-27B	QC Batch	C1-28A	RDL	QC Batch
Elements									
Total Arsenic (As)	mg/kg	2.9	1.4	9576291	1.2	9576066	1.8	1.0	9576778
Total Cadmium (Cd)	mg/kg	<0.050	0.081	9576291	<0.050	9576066	<0.050	0.050	9576778
Total Chromium (Cr)	mg/kg	3.2	4.4	9576291	2.8	9576066	7.0	1.0	9576778
Total Cobalt (Co)	mg/kg	0.88	1.3	9576291	0.89	9576066	2.1	0.50	9576778
Total Copper (Cu)	mg/kg	2.2	5.7	9576291	1.6	9576066	4.3	1.0	9576778
Total Lead (Pb)	mg/kg	4.4	3.0	9576291	2.0	9576066	3.7	0.50	9576778
Total Nickel (Ni)	mg/kg	1.6	3.9	9576291	1.6	9576066	5.1	1.0	9576778
Total Zinc (Zn)	mg/kg	3.1 (1)	4.2 (1)	9576291	2.9 (1)	9576066	8.2 (1)	1.0	9576778

RDL = Reportable Detection Limit
(1) Detection limits calculated based on method detection limits (MDLs) at client request.

BV Labs ID		WK3688	WK3689		WK3690		WK3691	WK3692		
Sampling Date		2019/08/26	2019/08/26		2019/08/26		2019/08/26	2019/08/26		
COC Number		591656-06-01	591656-06-01		591656-06-01		591656-06-01	591656-06-01		
	UNITS	C1-28B	C1-29A	QC Batch	C1-29B	QC Batch	C1-30A	C1-30B	RDL	QC Batch
Elements										
Total Arsenic (As)	mg/kg	<1.0	1.0	9576310	<1.0	9576291	<1.0	<1.0	1.0	9576778
Total Cadmium (Cd)	mg/kg	<0.050	<0.050	9576310	<0.050	9576291	<0.050	<0.050	0.050	9576778
Total Chromium (Cr)	mg/kg	4.2	3.2	9576310	2.5	9576291	2.7	4.2	1.0	9576778
Total Cobalt (Co)	mg/kg	1.2	0.77	9576310	0.68	9576291	0.84	1.0	0.50	9576778
Total Copper (Cu)	mg/kg	4.3	5.7	9576310	3.8	9576291	1.7	2.9	1.0	9576778
Total Lead (Pb)	mg/kg	2.3	2.3	9576310	1.8	9576291	2.6	1.9	0.50	9576778
Total Nickel (Ni)	mg/kg	2.7	2.0	9576310	1.9	9576291	1.7	3.0	1.0	9576778
Total Zinc (Zn)	mg/kg	4.8 (1)	3.3 (1)	9576310	3.6 (1)	9576291	2.9 (1)	3.9 (1)	1.0	9576778

RDL = Reportable Detection Limit
(1) Detection limits calculated based on method detection limits (MDLs) at client request.

BV Labs Job #: B973139
Report Date: 2019/12/12

ARCADIS Canada Inc
Client Project #: 30000251
Sampler Initials: RF

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

BV Labs ID		WK3693	WK3694	WK3695	WK3696	WK3697	WK3698		
Sampling Date		2019/08/26	2019/08/26	2019/08/26	2019/08/26	2019/08/26	2019/08/26		
COC Number		591656-07-01	591656-07-01	591656-07-01	591656-07-01	591656-07-01	591656-07-01		
	UNITS	C1-31A	C1-31B	C1-32A	C1-32B	C1-33A	C1-33B	RDL	QC Batch
Elements									
Total Arsenic (As)	mg/kg	<1.0	<1.0	<1.0	2.0	5.7	6.6	1.0	9576778
Total Cadmium (Cd)	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	9576778
Total Chromium (Cr)	mg/kg	2.9	2.9	3.3	15	5.6	6.7	1.0	9576778
Total Cobalt (Co)	mg/kg	0.78	0.59	0.79	4.0	2.9	3.3	0.50	9576778
Total Copper (Cu)	mg/kg	1.4	1.6	1.7	12	7.3	8.9	1.0	9576778
Total Lead (Pb)	mg/kg	1.8	1.4	2.3	5.3	20	21	0.50	9576778
Total Nickel (Ni)	mg/kg	1.6	1.6	1.8	11	6.4	7.8	1.0	9576778
Total Zinc (Zn)	mg/kg	2.1 (1)	2.1 (1)	3.4 (1)	43 (1)	8.6 (1)	6.8 (1)	1.0	9576778

RDL = Reportable Detection Limit
(1) Detection limits calculated based on method detection limits (MDLs) at client request.

BV Labs ID		WK3699	WK3700		WK3701		WK3702	WK3702		
Sampling Date		2019/08/26	2019/08/26		2019/08/26		2019/08/26	2019/08/26		
COC Number		591656-07-01	591656-07-01		591656-07-01		591656-07-01	591656-07-01		
	UNITS	C1-34A	C1-34B	QC Batch	C1-35A	QC Batch	C1-35B	C1-35B Lab-Dup	RDL	QC Batch
Elements										
Total Arsenic (As)	mg/kg	8.2	5.5	9576778	5.8	9576291	23 (1)	3.5 (2)	1.0	9576744
Total Cadmium (Cd)	mg/kg	<0.050	<0.050	9576778	<0.050	9576291	<0.050	<0.050	0.050	9576744
Total Chromium (Cr)	mg/kg	6.5	6.1	9576778	4.2	9576291	5.1	5.5	1.0	9576744
Total Cobalt (Co)	mg/kg	3.3	2.5	9576778	1.6	9576291	3.7 (3)	2.1 (2)	0.50	9576744
Total Copper (Cu)	mg/kg	5.8	4.5	9576778	3.4	9576291	5.6	5.3	1.0	9576744
Total Lead (Pb)	mg/kg	24	19	9576778	20	9576291	93 (3)	9.9 (2)	0.50	9576744
Total Nickel (Ni)	mg/kg	7.1	5.5	9576778	3.3	9576291	6.8 (3)	4.7 (2)	1.0	9576744
Total Zinc (Zn)	mg/kg	6.5 (4)	4.7 (4)	9576778	5.8 (4)	9576291	11 (5)	5.0 (2)	1.0	9576744

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
(1) Duplicate exceeds acceptance criteria due to sample non homogeneity. Reanalysis yields similar results.
Matrix spike exceeds acceptance limits, probable matrix interference.
(2) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.
(3) Duplicate exceeds acceptance criteria due to sample non homogeneity. Reanalysis yields similar results.
(4) Detection limits calculated based on method detection limits (MDLs) at client request.
(5) Detection limits calculated based on method detection limits (MDLs) at client request.
Duplicate exceeds acceptance criteria due to sample non homogeneity. Reanalysis yields similar results.

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ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

BV Labs ID		WK3703	WK3704		WK3705	WK3706		WK3707		
Sampling Date		2019/08/27	2019/08/27		2019/08/27	2019/08/27		2019/08/27		
COC Number		591656-08-01	591656-08-01		591656-08-01	591656-08-01		591656-08-01		
	UNITS	MW-01A	MW-01B	QC Batch	MW-02A	MW-02B	QC Batch	MW-03A	RDL	QC Batch
Elements										
Total Arsenic (As)	mg/kg	2.6	2.7	9576715	6.7	10	9576778	1.2	1.0	9576810
Total Cadmium (Cd)	mg/kg	0.12	0.061	9576715	<0.050	<0.050	9576778	<0.050	0.050	9576810
Total Chromium (Cr)	mg/kg	3.3	2.6	9576715	1.9	2.0	9576778	3.9	1.0	9576810
Total Cobalt (Co)	mg/kg	0.82	0.86	9576715	0.73	1.4	9576778	1.0	0.50	9576810
Total Copper (Cu)	mg/kg	4.2	6.4	9576715	2.3	3.6	9576778	2.2	1.0	9576810
Total Lead (Pb)	mg/kg	9.3	11	9576715	34	27	9576778	2.6	0.50	9576810
Total Nickel (Ni)	mg/kg	1.7	1.4	9576715	1.3	1.6	9576778	2.3	1.0	9576810
Total Zinc (Zn)	mg/kg	32 (1)	15 (1)	9576715	3.3 (1)	3.3 (1)	9576778	2.3 (1)	1.0	9576810

RDL = Reportable Detection Limit
(1) Detection limits calculated based on method detection limits (MDLs) at client request.

BV Labs ID		WK3708		WK3709	WK3709	WK3710		WK3711		
Sampling Date		2019/08/27		2019/08/27	2019/08/27	2019/08/27		2019/08/27		
COC Number		591656-08-01		591656-08-01	591656-08-01	591656-08-01		591656-08-01		
	UNITS	MW-03B	QC Batch	MW-04A	MW-04A Lab-Dup	MW-04B	QC Batch	MW-05A	RDL	QC Batch
Elements										
Total Arsenic (As)	mg/kg	5.2	9576810	4.4	3.9	5.5	9576715	1.7	1.0	9576744
Total Cadmium (Cd)	mg/kg	<0.050	9576810	0.11	0.10	<0.050	9576715	<0.050	0.050	9576744
Total Chromium (Cr)	mg/kg	2.6	9576810	3.0	2.9	2.3	9576715	2.1	1.0	9576744
Total Cobalt (Co)	mg/kg	1.2	9576810	0.90	0.90	0.87	9576715	0.94	0.50	9576744
Total Copper (Cu)	mg/kg	7.7	9576810	10	10	6.6	9576715	3.1	1.0	9576744
Total Lead (Pb)	mg/kg	11	9576810	14	13	12	9576715	7.2	0.50	9576744
Total Nickel (Ni)	mg/kg	1.8	9576810	1.5	1.6	1.5	9576715	1.5	1.0	9576744
Total Zinc (Zn)	mg/kg	9.5 (1)	9576810	21 (1)	22	9.9 (1)	9576715	11 (1)	1.0	9576744

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
(1) Detection limits calculated based on method detection limits (MDLs) at client request.

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ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

BV Labs ID		WK3712		WK3713		WK3714		WK3715		
Sampling Date		2019/08/27		2019/08/27		2019/08/27		2019/08/27		
COC Number		591656-08-01		591656-09-01		591656-09-01		591656-09-01		
	UNITS	MW-05B	QC Batch	MW-06A	QC Batch	MW-06B	QC Batch	MW-07A	RDL	QC Batch
Elements										
Total Arsenic (As)	mg/kg	1.3	9576715	1.9	9576744	1.7	9576715	1.1	1.0	9576810
Total Cadmium (Cd)	mg/kg	<0.050	9576715	<0.050	9576744	<0.050	9576715	<0.050	0.050	9576810
Total Chromium (Cr)	mg/kg	2.9	9576715	2.6	9576744	2.9	9576715	1.6	1.0	9576810
Total Cobalt (Co)	mg/kg	0.86	9576715	0.90	9576744	1.1	9576715	0.59	0.50	9576810
Total Copper (Cu)	mg/kg	1.3	9576715	2.3	9576744	1.8	9576715	2.4	1.0	9576810
Total Lead (Pb)	mg/kg	2.5	9576715	3.6	9576744	2.7	9576715	2.1	0.50	9576810
Total Nickel (Ni)	mg/kg	1.5	9576715	1.7	9576744	1.8	9576715	1.2	1.0	9576810
Total Zinc (Zn)	mg/kg	3.4 (1)	9576715	6.3 (1)	9576744	4.1 (1)	9576715	4.9 (1)	1.0	9576810

RDL = Reportable Detection Limit
(1) Detection limits calculated based on method detection limits (MDLs) at client request.

BV Labs ID		WK3716		WK3717		WK3718	WK3718	WK3719		
Sampling Date		2019/08/27		2019/08/27		2019/08/27	2019/08/27	2019/08/27		
COC Number		591656-09-01		591656-09-01		591656-09-01	591656-09-01	591656-09-01		
	UNITS	MW-07B	QC Batch	MW-08A	QC Batch	MW-08B	MW-08B Lab-Dup	C1-36	RDL	QC Batch
Elements										
Total Arsenic (As)	mg/kg	1.6	9576310	1.7	9576778	2.0	1.7	2.4	1.0	9576810
Total Cadmium (Cd)	mg/kg	<0.050	9576310	<0.050	9576778	<0.050	<0.050	<0.050	0.050	9576810
Total Chromium (Cr)	mg/kg	4.1	9576310	2.8	9576778	3.1	2.7	3.1	1.0	9576810
Total Cobalt (Co)	mg/kg	1.3	9576310	1.0	9576778	1.4	1.2	1.2	0.50	9576810
Total Copper (Cu)	mg/kg	3.3	9576310	2.4	9576778	3.7	1.8	3.5	1.0	9576810
Total Lead (Pb)	mg/kg	2.9	9576310	3.9	9576778	3.4	3.2	3.7	0.50	9576810
Total Nickel (Ni)	mg/kg	2.9	9576310	1.9	9576778	2.5	1.9	2.4	1.0	9576810
Total Zinc (Zn)	mg/kg	5.1 (1)	9576310	5.1 (1)	9576778	3.6 (1)	3.2	6.7 (1)	1.0	9576810

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
(1) Detection limits calculated based on method detection limits (MDLs) at client request.

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

BV Labs ID		WK3720		WK3721	WK3722	WK3723		WK3724		
Sampling Date		2019/08/26		2019/08/26	2019/08/26	2019/08/26		2019/08/26		
COC Number		591656-09-01		591656-09-01	591656-09-01	591656-10-01		591656-10-01		
	UNITS	C1-37	QC Batch	C1-38	C1-39	C1-40	QC Batch	C1-41	RDL	QC Batch
Elements										
Total Arsenic (As)	mg/kg	<1.0	9576715	22	1.7	2.0	9577658	<1.0	1.0	9576715
Total Cadmium (Cd)	mg/kg	<0.050	9576715	<0.050	<0.050	<0.050	9577658	<0.050	0.050	9576715
Total Chromium (Cr)	mg/kg	1.3	9576715	1.5	2.0	10	9577658	3.6	1.0	9576715
Total Cobalt (Co)	mg/kg	<0.50	9576715	0.97	0.77	2.9	9577658	0.90	0.50	9576715
Total Copper (Cu)	mg/kg	<1.0	9576715	3.3	1.6	6.4	9577658	1.9	1.0	9576715
Total Lead (Pb)	mg/kg	1.3	9576715	32	3.0	4.3	9577658	2.1	0.50	9576715
Total Nickel (Ni)	mg/kg	<1.0	9576715	1.6	1.6	7.1	9577658	2.2	1.0	9576715
Total Zinc (Zn)	mg/kg	2.2 (1)	9576715	3.2 (1)	3.0 (1)	11 (1)	9577658	3.8 (1)	1.0	9576715

RDL = Reportable Detection Limit
(1) Detection limits calculated based on method detection limits (MDLs) at client request.

BV Labs ID		WK3725	WK3726		WK3727		
Sampling Date		2019/08/26	2019/08/27		2019/08/27		
COC Number		591656-10-01	591656-10-01		591656-10-01		
	UNITS	C1-42	C1-43	QC Batch	C1-44	RDL	QC Batch
Elements							
Total Arsenic (As)	mg/kg	2.8	1.9	9576715	1.8	1.0	9576810
Total Cadmium (Cd)	mg/kg	<0.050	<0.050	9576715	<0.050	0.050	9576810
Total Chromium (Cr)	mg/kg	2.9	4.3	9576715	2.3	1.0	9576810
Total Cobalt (Co)	mg/kg	0.81	1.3	9576715	0.85	0.50	9576810
Total Copper (Cu)	mg/kg	2.0	2.1	9576715	2.5	1.0	9576810
Total Lead (Pb)	mg/kg	4.6	3.2	9576715	4.0	0.50	9576810
Total Nickel (Ni)	mg/kg	1.7	2.2	9576715	1.6	1.0	9576810
Total Zinc (Zn)	mg/kg	3.2 (1)	4.5 (1)	9576715	6.7 (1)	1.0	9576810

RDL = Reportable Detection Limit
(1) Detection limits calculated based on method detection limits (MDLs) at client request.

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ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

BV Labs ID		WK3728	WK3729	WK3730	WK3731	WK3732		
Sampling Date		2019/08/28	2019/08/28	2019/08/28	2019/08/27	2019/08/27		
COC Number		591656-11-01	591656-11-01	591656-11-01	591656-11-01	591656-11-01		
	UNITS	TRIP BLANK	TUB-EB	SH-BL	MW-03	MW-04	RDL	QC Batch
Elements								
Total Arsenic (As)	mg/L	<0.00020	<0.00020	0.00020	0.00028	0.0037	0.00020	9579003
Total Cadmium (Cd)	mg/L	<0.000020	<0.000020	0.00044	<0.000020	0.000026	0.000020	9579003
Total Chromium (Cr)	mg/L	<0.0010	<0.0010	0.010	0.0011	0.11	0.0010	9579003
Total Cobalt (Co)	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	0.0020	0.00030	9579003
Total Copper (Cu)	mg/L	<0.00020	<0.00020	0.0011	0.0023	0.010	0.00020	9579003
Total Lead (Pb)	mg/L	<0.00010 (1)	<0.00010 (1)	0.0014 (1)	<0.00010 (1)	0.0024 (1)	0.00010	9579003
Total Nickel (Ni)	mg/L	<0.00050	<0.00050	0.0014	0.00092	0.062	0.00050	9579003
Total Zinc (Zn)	mg/L	<0.0030	<0.0030	0.0038	<0.0030	0.0048	0.0030	9579003

RDL = Reportable Detection Limit
(1) Detection limits calculated based on method detection limits (MDLs) at client request.

BV Labs ID		WK3733	WK3734		
Sampling Date		2019/08/27	2019/08/27		
COC Number		591656-11-01	591656-11-01		
	UNITS	MW-09	MW-10	RDL	QC Batch
Elements					
Total Arsenic (As)	mg/L	0.0048	<0.00020	0.00020	9579003
Total Cadmium (Cd)	mg/L	0.000025	<0.000020	0.000020	9579003
Total Chromium (Cr)	mg/L	0.14	<0.0010	0.0010	9579003
Total Cobalt (Co)	mg/L	0.0024	<0.00030	0.00030	9579003
Total Copper (Cu)	mg/L	0.015	<0.00020	0.00020	9579003
Total Lead (Pb)	mg/L	0.0031 (1)	<0.00010 (1)	0.00010	9579003
Total Nickel (Ni)	mg/L	0.078	<0.00050	0.00050	9579003
Total Zinc (Zn)	mg/L	0.0066	<0.0030	0.0030	9579003

RDL = Reportable Detection Limit
(1) Detection limits calculated based on method detection limits (MDLs) at client request.

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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	2.0°C
Package 2	4.2°C
Package 3	1.7°C
Package 4	2.5°C
Package 5	3.3°C
Package 6	2.5°C
Package 7	3.0°C

BTEXF1-4:Detection limits calculated based on method detection limits (MDLs) at client request.

Version 2: Report reissued to include results for F3a and F3b on sample MW-04A as per client request received 2019/11/27

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL) Comments

Sample WK3703 [MW-01A] Polychlorinated Biphenyls in Soil: Detection limits raised due to dilution to bring analyte within the calibrated range.
Sample WK3723 [C1-40] Polychlorinated Biphenyls in Soil: Detection limits raised due to matrix interference.
Sample WK3726 [C1-43] Polychlorinated Biphenyls in Soil: Detection limits raised due to matrix interference.

Results relate only to the items tested.

Bureau Veritas Laboratories Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

BV Labs Job #: B973139
Report Date: 2019/12/12

QUALITY ASSURANCE REPORT

ARCADIS Canada Inc
Client Project #: 30000251
Sampler Initials: RF

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
9574172	1,4-Difluorobenzene (sur.)	2019/09/05	95	50 - 140	99	50 - 140	101	%				
9574172	4-Bromofluorobenzene (sur.)	2019/09/05	98	50 - 140	98	50 - 140	98	%				
9574172	D10-o-Xylene (sur.)	2019/09/05	120	50 - 140	109	50 - 140	106	%				
9574172	D4-1,2-Dichloroethane (sur.)	2019/09/05	105	50 - 140	103	50 - 140	106	%				
9574230	1,4-Difluorobenzene (sur.)	2019/09/06	98	50 - 140	101	50 - 140	102	%				
9574230	4-Bromofluorobenzene (sur.)	2019/09/06	98	50 - 140	96	50 - 140	96	%				
9574230	D10-o-Xylene (sur.)	2019/09/06	114	50 - 140	115	50 - 140	111	%				
9574230	D4-1,2-Dichloroethane (sur.)	2019/09/06	99	50 - 140	99	50 - 140	104	%				
9574237	1,4-Difluorobenzene (sur.)	2019/09/06	94	50 - 140	100	50 - 140	97	%				
9574237	4-Bromofluorobenzene (sur.)	2019/09/06	103	50 - 140	103	50 - 140	98	%				
9574237	D10-o-Xylene (sur.)	2019/09/06	128	50 - 140	108	50 - 140	104	%				
9574237	D4-1,2-Dichloroethane (sur.)	2019/09/06	91	50 - 140	97	50 - 140	94	%				
9574244	1,4-Difluorobenzene (sur.)	2019/09/07	99	50 - 140	98	50 - 140	96	%				
9574244	4-Bromofluorobenzene (sur.)	2019/09/07	101	50 - 140	102	50 - 140	101	%				
9574244	D10-o-Xylene (sur.)	2019/09/07	106	50 - 140	104	50 - 140	101	%				
9574244	D4-1,2-Dichloroethane (sur.)	2019/09/07	104	50 - 140	100	50 - 140	97	%				
9574291	1,4-Difluorobenzene (sur.)	2019/09/06	99	50 - 140	96	50 - 140	95	%				
9574291	4-Bromofluorobenzene (sur.)	2019/09/06	103	50 - 140	102	50 - 140	101	%				
9574291	D10-o-Xylene (sur.)	2019/09/06	104	50 - 140	103	50 - 140	101	%				
9574291	D4-1,2-Dichloroethane (sur.)	2019/09/06	106	50 - 140	100	50 - 140	98	%				
9574670	O-TERPHENYL (sur.)	2019/09/04	97	60 - 140	97	60 - 140	98	%				
9574955	NONACHLOROBIPHENYL (sur.)	2019/09/05	75	50 - 130	90	50 - 130	75	%				
9575080	O-TERPHENYL (sur.)	2019/09/05	95	60 - 140	90	60 - 140	89	%				
9575452	NONACHLOROBIPHENYL (sur.)	2019/09/05	89	50 - 130	93	50 - 130	100	%				
9575716	1,4-Difluorobenzene (sur.)	2019/09/06	101	50 - 140	101	50 - 140	107	%				
9575716	4-Bromofluorobenzene (sur.)	2019/09/06	93	50 - 140	91	50 - 140	92	%				
9575716	D4-1,2-Dichloroethane (sur.)	2019/09/06	83	50 - 140	79	50 - 140	83	%				
9575727	1,4-Difluorobenzene (sur.)	2019/09/05	102	50 - 140	103	50 - 140	107	%				
9575727	4-Bromofluorobenzene (sur.)	2019/09/05	93	50 - 140	94	50 - 140	92	%				
9575727	D4-1,2-Dichloroethane (sur.)	2019/09/05	81	50 - 140	79	50 - 140	81	%				
9575923	NONACHLOROBIPHENYL (sur.)	2019/09/06	75	50 - 130	87	50 - 130	88	%				
9576404	NONACHLOROBIPHENYL (sur.)	2019/09/06	86	50 - 130	106	50 - 130	79	%				

Bureau Veritas Laboratories Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
9576406	O-TERPHENYL (sur.)	2019/09/09	97	60 - 140	90	60 - 140	100	%				
9576593	NONACHLOROBIPHENYL (sur.)	2019/09/06	79	50 - 130	88	50 - 130	90	%				
9576776	O-TERPHENYL (sur.)	2019/09/08	93	60 - 140	91	60 - 140	96	%				
9577186	O-TERPHENYL (sur.)	2019/09/06	84	60 - 140	94	60 - 140	88	%				
9577691	O-TERPHENYL (sur.)	2019/09/07	87	60 - 140	76	60 - 140	91	%				
9577932	O-TERPHENYL (sur.)	2019/09/07	71	60 - 140	76	60 - 140	78	%				
9694792	O-TERPHENYL (sur.)	2019/08/29			79	60 - 140	90	%				
9573607	Moisture	2019/09/05					<0.30	%	0.70	20		
9574172	F1 (C6-C10)	2019/09/05	118	60 - 140	96	60 - 140	<7.0	mg/kg	NC	30		
9574230	F1 (C6-C10)	2019/09/06	120	60 - 140	110	60 - 140	<7.0	mg/kg	NC	30		
9574237	F1 (C6-C10)	2019/09/06	124	60 - 140	115	60 - 140	<7.0	mg/kg	NC	30		
9574244	F1 (C6-C10)	2019/09/07	92	60 - 140	81	60 - 140	<7.0	mg/kg	NC	30		
9574291	F1 (C6-C10)	2019/09/06	114	60 - 140	116	60 - 140	<7.0	mg/kg	NC	30		
9574670	F2 (C10-C16 Hydrocarbons)	2019/09/04	109	60 - 140	110	60 - 140	<0.10	mg/L	NC	30		
9574670	F3 (C16-C34 Hydrocarbons)	2019/09/04	109	60 - 140	111	60 - 140	<0.10	mg/L	NC	30		
9574670	F4 (C34-C50 Hydrocarbons)	2019/09/04	105	60 - 140	108	60 - 140	<0.10	mg/L	NC	30		
9574955	Aroclor 1016	2019/09/05					<0.010	mg/kg	NC	50		
9574955	Aroclor 1221	2019/09/05					<0.010	mg/kg	NC	50		
9574955	Aroclor 1232	2019/09/05					<0.010	mg/kg	NC	50		
9574955	Aroclor 1242	2019/09/05					<0.010	mg/kg	NC	50		
9574955	Aroclor 1248	2019/09/05					<0.010	mg/kg	NC	50		
9574955	Aroclor 1254	2019/09/05					<0.010	mg/kg	NC	50		
9574955	Aroclor 1260	2019/09/05	77	50 - 130	86	50 - 130	<0.010	mg/kg	NC	50		
9574955	Aroclor 1262	2019/09/05					<0.010	mg/kg	NC	50		
9574955	Aroclor 1268	2019/09/05					<0.010	mg/kg	NC	50		
9575080	F2 (C10-C16 Hydrocarbons)	2019/09/05	102	60 - 140	97	60 - 140	<10	mg/kg	NC	40		
9575080	F3 (C16-C34 Hydrocarbons)	2019/09/05	103	60 - 140	99	60 - 140	<50	mg/kg	NC	40		
9575080	F4 (C34-C50 Hydrocarbons)	2019/09/05	106	60 - 140	100	60 - 140	<50	mg/kg	NC	40		
9575452	Aroclor 1016	2019/09/05					<0.010	mg/kg	NC	50		
9575452	Aroclor 1221	2019/09/05					<0.010	mg/kg	NC	50		
9575452	Aroclor 1232	2019/09/05					<0.010	mg/kg	NC	50		
9575452	Aroclor 1242	2019/09/05					<0.010	mg/kg	NC	50		

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
9575452	Aroclor 1248	2019/09/05					<0.010	mg/kg	NC	50		
9575452	Aroclor 1254	2019/09/05					<0.010	mg/kg	NC	50		
9575452	Aroclor 1260	2019/09/05	128	50 - 130	91	50 - 130	<0.010	mg/kg	NC	50		
9575452	Aroclor 1262	2019/09/05					<0.010	mg/kg	NC	50		
9575452	Aroclor 1268	2019/09/05					<0.010	mg/kg	NC	50		
9575716	F1 (C6-C10)	2019/09/06	103	60 - 140	77	60 - 140	<25	ug/L	NC	30		
9575727	F1 (C6-C10)	2019/09/05	106	60 - 140	112	60 - 140	<25	ug/L	NC	30		
9575815	Moisture	2019/09/06					<0.30	%	2.2	20		
9575923	Aroclor 1016	2019/09/06					<0.010	mg/kg	NC	50		
9575923	Aroclor 1221	2019/09/06					<0.010	mg/kg	NC	50		
9575923	Aroclor 1232	2019/09/06					<0.010	mg/kg	NC	50		
9575923	Aroclor 1242	2019/09/06					<0.010	mg/kg	NC	50		
9575923	Aroclor 1248	2019/09/06					<0.010	mg/kg	NC	50		
9575923	Aroclor 1254	2019/09/06					<0.010	mg/kg	NC	50		
9575923	Aroclor 1260	2019/09/06	75	50 - 130	88	50 - 130	<0.010	mg/kg	NC	50		
9575923	Aroclor 1262	2019/09/06					<0.010	mg/kg	NC	50		
9575923	Aroclor 1268	2019/09/06					<0.010	mg/kg	NC	50		
9576066	Total Arsenic (As)	2019/09/05	98	75 - 125	100	80 - 120	<1.0	mg/kg	1.3	30	102	53 - 147
9576066	Total Cadmium (Cd)	2019/09/05	99	75 - 125	99	80 - 120	<0.050	mg/kg	4.4	30	96	72 - 128
9576066	Total Chromium (Cr)	2019/09/05	111	75 - 125	102	80 - 120	<1.0	mg/kg	9.6	30	88	59 - 141
9576066	Total Cobalt (Co)	2019/09/05	97	75 - 125	101	80 - 120	<0.50	mg/kg	1.4	30	92	58 - 142
9576066	Total Copper (Cu)	2019/09/05	94	75 - 125	100	80 - 120	<1.0	mg/kg	26	30	107	83 - 117
9576066	Total Lead (Pb)	2019/09/05	92	75 - 125	99	80 - 120	<0.50	mg/kg	1.7	35	99	79 - 121
9576066	Total Nickel (Ni)	2019/09/05	101	75 - 125	101	80 - 120	<1.0	mg/kg	7.6	30	98	79 - 121
9576066	Total Zinc (Zn)	2019/09/05	97	75 - 125	100	80 - 120	<10	mg/kg	1.5	30	97	79 - 121
9576150	Moisture	2019/09/06					<0.30	%	5.8	20		
9576291	Total Arsenic (As)	2019/09/05	110	75 - 125	98	80 - 120	<1.0	mg/kg			100	53 - 147
9576291	Total Cadmium (Cd)	2019/09/05	106	75 - 125	98	80 - 120	<0.050	mg/kg	1.6	30	113	72 - 128
9576291	Total Chromium (Cr)	2019/09/05	115	75 - 125	99	80 - 120	<1.0	mg/kg	14	30	80	59 - 141
9576291	Total Cobalt (Co)	2019/09/05	104	75 - 125	98	80 - 120	<0.50	mg/kg			91	58 - 142
9576291	Total Copper (Cu)	2019/09/05	NC	75 - 125	99	80 - 120	<1.0	mg/kg	35 (1)	30	113	83 - 117
9576291	Total Lead (Pb)	2019/09/05	84	75 - 125	97	80 - 120	<0.50	mg/kg	49 (1)	35	98	79 - 121

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
9576291	Total Nickel (Ni)	2019/09/05	103	75 - 125	97	80 - 120	<1.0	mg/kg	9.4	30	98	79 - 121
9576291	Total Zinc (Zn)	2019/09/05	NC	75 - 125	97	80 - 120	<10	mg/kg	17	30	99	79 - 121
9576310	Total Arsenic (As)	2019/09/05	103	75 - 125	97	80 - 120	<1.0	mg/kg	NC	30	102	53 - 147
9576310	Total Cadmium (Cd)	2019/09/05	104	75 - 125	97	80 - 120	<0.050	mg/kg	NC	30	98	72 - 128
9576310	Total Chromium (Cr)	2019/09/05	108	75 - 125	99	80 - 120	<1.0	mg/kg	1.5	30	76	59 - 141
9576310	Total Cobalt (Co)	2019/09/05	101	75 - 125	98	80 - 120	<0.50	mg/kg	NC	30	88	58 - 142
9576310	Total Copper (Cu)	2019/09/05	99	75 - 125	98	80 - 120	<1.0	mg/kg	NC	30	110	83 - 117
9576310	Total Lead (Pb)	2019/09/05	98	75 - 125	98	80 - 120	<0.50	mg/kg	1.5	35	100	79 - 121
9576310	Total Nickel (Ni)	2019/09/05	100	75 - 125	97	80 - 120	<1.0	mg/kg	NC	30	99	79 - 121
9576310	Total Zinc (Zn)	2019/09/05	99	75 - 125	97	80 - 120	<10	mg/kg	3.9 (2)	30	100	79 - 121
9576315	Moisture	2019/09/06					<0.30	%	14	20		
9576404	Aroclor 1016	2019/09/06					<0.010	mg/kg	NC	50		
9576404	Aroclor 1221	2019/09/06					<0.010	mg/kg	NC	50		
9576404	Aroclor 1232	2019/09/06					<0.010	mg/kg	NC	50		
9576404	Aroclor 1242	2019/09/06					<0.010	mg/kg	NC	50		
9576404	Aroclor 1248	2019/09/06					<0.010	mg/kg	NC	50		
9576404	Aroclor 1254	2019/09/06					<0.010	mg/kg	NC	50		
9576404	Aroclor 1260	2019/09/06	82	50 - 130	99	50 - 130	<0.010	mg/kg	NC	50		
9576404	Aroclor 1262	2019/09/06					<0.010	mg/kg	NC	50		
9576404	Aroclor 1268	2019/09/06					<0.010	mg/kg	NC	50		
9576406	F2 (C10-C16 Hydrocarbons)	2019/09/09	101	60 - 140	97	60 - 140	<4.0	mg/kg	NC	40		
9576406	F3 (C16-C34 Hydrocarbons)	2019/09/09	104	60 - 140	101	60 - 140	<8.0	mg/kg	NC	40		
9576406	F4 (C34-C50 Hydrocarbons)	2019/09/09	101	60 - 140	97	60 - 140	<6.0	mg/kg	NC	40		
9576593	Aroclor 1016	2019/09/06					<0.010	mg/kg	NC	50		
9576593	Aroclor 1221	2019/09/06					<0.010	mg/kg	NC	50		
9576593	Aroclor 1232	2019/09/06					<0.010	mg/kg	NC	50		
9576593	Aroclor 1242	2019/09/06					<0.010	mg/kg	NC	50		
9576593	Aroclor 1248	2019/09/06					<0.010	mg/kg	NC	50		
9576593	Aroclor 1254	2019/09/06					<0.010	mg/kg	NC	50		
9576593	Aroclor 1260	2019/09/06	73	50 - 130	84	50 - 130	<0.010	mg/kg	NC	50		
9576593	Aroclor 1262	2019/09/06					<0.010	mg/kg	NC	50		
9576593	Aroclor 1268	2019/09/06					<0.010	mg/kg	NC	50		

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
9576715	Total Arsenic (As)	2019/09/05	98	75 - 125	98	80 - 120	<1.0	mg/kg	11	30	101	53 - 147
9576715	Total Cadmium (Cd)	2019/09/05	99	75 - 125	96	80 - 120	<0.050	mg/kg	5.0	30	97	72 - 128
9576715	Total Chromium (Cr)	2019/09/05	99	75 - 125	100	80 - 120	<1.0	mg/kg	1.7	30	77	59 - 141
9576715	Total Cobalt (Co)	2019/09/05	94	75 - 125	99	80 - 120	<0.50	mg/kg	0.098	30	90	58 - 142
9576715	Total Copper (Cu)	2019/09/05	91	75 - 125	99	80 - 120	<1.0	mg/kg	1.4	30	109	83 - 117
9576715	Total Lead (Pb)	2019/09/05	93	75 - 125	97	80 - 120	<0.50	mg/kg	6.3	35	99	79 - 121
9576715	Total Nickel (Ni)	2019/09/05	93	75 - 125	98	80 - 120	<1.0	mg/kg	7.8	30	99	79 - 121
9576715	Total Zinc (Zn)	2019/09/05	91	75 - 125	97	80 - 120	<10	mg/kg	1.5	30	99	79 - 121
9576744	Total Arsenic (As)	2019/09/05	67 (1)	75 - 125	97	80 - 120	<1.0	mg/kg	146 (1)	30	97	53 - 147
9576744	Total Cadmium (Cd)	2019/09/05	106	75 - 125	96	80 - 120	<0.050	mg/kg	NC	30	91	72 - 128
9576744	Total Chromium (Cr)	2019/09/05	114	75 - 125	99	80 - 120	<1.0	mg/kg	6.6	30	86	59 - 141
9576744	Total Cobalt (Co)	2019/09/05	99	75 - 125	97	80 - 120	<0.50	mg/kg	57 (1)	30	92	58 - 142
9576744	Total Copper (Cu)	2019/09/05	95	75 - 125	98	80 - 120	<1.0	mg/kg	5.5	30	110	83 - 117
9576744	Total Lead (Pb)	2019/09/05	NC	75 - 125	98	80 - 120	<0.50	mg/kg	162 (1)	35	96	79 - 121
9576744	Total Nickel (Ni)	2019/09/05	97	75 - 125	97	80 - 120	<1.0	mg/kg	37 (1)	30	101	79 - 121
9576744	Total Zinc (Zn)	2019/09/05	88	75 - 125	97	80 - 120	<10	mg/kg	73 (1)	30	99	79 - 121
9576776	F2 (C10-C16 Hydrocarbons)	2019/09/08	99	60 - 140	99	60 - 140	<4.0	mg/kg	NC	40		
9576776	F3 (C16-C34 Hydrocarbons)	2019/09/08	103	60 - 140	102	60 - 140	<8.0	mg/kg	2.1	40		
9576776	F4 (C34-C50 Hydrocarbons)	2019/09/08	101	60 - 140	99	60 - 140	<6.0	mg/kg	NC	40		
9576778	Total Arsenic (As)	2019/09/07	103	75 - 125	96	80 - 120	<1.0	mg/kg	NC	30	100	53 - 147
9576778	Total Cadmium (Cd)	2019/09/07	105	75 - 125	97	80 - 120	<0.050	mg/kg	NC	30	96	72 - 128
9576778	Total Chromium (Cr)	2019/09/07	105	75 - 125	97	80 - 120	<1.0	mg/kg	NC	30	76	59 - 141
9576778	Total Cobalt (Co)	2019/09/07	100	75 - 125	95	80 - 120	<0.50	mg/kg	12	30	90	58 - 142
9576778	Total Copper (Cu)	2019/09/07	97	75 - 125	96	80 - 120	<1.0	mg/kg	23	30	107	83 - 117
9576778	Total Lead (Pb)	2019/09/07	98	75 - 125	98	80 - 120	<0.50	mg/kg	29	35	99	79 - 121
9576778	Total Nickel (Ni)	2019/09/07	99	75 - 125	95	80 - 120	<1.0	mg/kg	NC	30	100	79 - 121
9576778	Total Zinc (Zn)	2019/09/07	97	75 - 125	95	80 - 120	<10	mg/kg	7.1	30	99	79 - 121
9576810	Total Arsenic (As)	2019/09/06	92	75 - 125	96	80 - 120	<1.0	mg/kg	17	30	110	53 - 147
9576810	Total Cadmium (Cd)	2019/09/06	93	75 - 125	94	80 - 120	<0.050	mg/kg	NC	30	100	72 - 128
9576810	Total Chromium (Cr)	2019/09/06	90	75 - 125	95	80 - 120	<1.0	mg/kg	12	30	93	59 - 141
9576810	Total Cobalt (Co)	2019/09/06	88	75 - 125	94	80 - 120	<0.50	mg/kg	12	30	97	58 - 142
9576810	Total Copper (Cu)	2019/09/06	82	75 - 125	96	80 - 120	<1.0	mg/kg	NC	30	114	83 - 117

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
9576810	Total Lead (Pb)	2019/09/06	88	75 - 125	94	80 - 120	<0.50	mg/kg	5.5	35	116	79 - 121
9576810	Total Nickel (Ni)	2019/09/06	86	75 - 125	94	80 - 120	<1.0	mg/kg	NC	30	102	79 - 121
9576810	Total Zinc (Zn)	2019/09/06	87	75 - 125	94	80 - 120	<10	mg/kg	12	30	105	79 - 121
9577186	F2 (C10-C16 Hydrocarbons)	2019/09/06	88	60 - 140	98	60 - 140	<4.0	mg/kg	NC	40		
9577186	F3 (C16-C34 Hydrocarbons)	2019/09/06	92	60 - 140	101	60 - 140	<8.0	mg/kg	1.9	40		
9577186	F4 (C34-C50 Hydrocarbons)	2019/09/06	91	60 - 140	100	60 - 140	<6.0	mg/kg	NC	40		
9577508	Moisture	2019/09/07					<0.30	%	4.8	20		
9577658	Total Arsenic (As)	2019/09/06	104	75 - 125	96	80 - 120	<1.0	mg/kg			102	53 - 147
9577658	Total Cadmium (Cd)	2019/09/06	112	75 - 125	94	80 - 120	<0.050	mg/kg	4.5	30	94	72 - 128
9577658	Total Chromium (Cr)	2019/09/06	112	75 - 125	99	80 - 120	<1.0	mg/kg	14	30	80	59 - 141
9577658	Total Cobalt (Co)	2019/09/06	106	75 - 125	100	80 - 120	<0.50	mg/kg			93	58 - 142
9577658	Total Copper (Cu)	2019/09/06	NC	75 - 125	100	80 - 120	<1.0	mg/kg	67 (1)	30	113	83 - 117
9577658	Total Lead (Pb)	2019/09/06	NC	75 - 125	97	80 - 120	<0.50	mg/kg	74 (1)	35	98	79 - 121
9577658	Total Nickel (Ni)	2019/09/06	101	75 - 125	99	80 - 120	<1.0	mg/kg	11	30	105	79 - 121
9577658	Total Zinc (Zn)	2019/09/06	NC	75 - 125	99	80 - 120	<10	mg/kg	25	30	102	79 - 121
9577691	F2 (C10-C16 Hydrocarbons)	2019/09/07	93	60 - 140	91	60 - 140	<4.0	mg/kg	NC	40		
9577691	F3 (C16-C34 Hydrocarbons)	2019/09/07	97	60 - 140	92	60 - 140	<8.0	mg/kg	6.1	40		
9577691	F4 (C34-C50 Hydrocarbons)	2019/09/07	94	60 - 140	100	60 - 140	<6.0	mg/kg	NC	40		
9577729	Moisture	2019/09/07					<0.30	%	15	20		
9577932	F2 (C10-C16 Hydrocarbons)	2019/09/07	79	60 - 140	83	60 - 140	<4.0	mg/kg	NC	40		
9577932	F3 (C16-C34 Hydrocarbons)	2019/09/07	82	60 - 140	86	60 - 140	<8.0	mg/kg	NC	40		
9577932	F4 (C34-C50 Hydrocarbons)	2019/09/07	78	60 - 140	81	60 - 140	<6.0	mg/kg	NC	40		
9579003	Total Arsenic (As)	2019/09/07	97	80 - 120	101	80 - 120	<0.00020	mg/L	7.0	20		
9579003	Total Cadmium (Cd)	2019/09/07	100	80 - 120	101	80 - 120	<0.000020	mg/L				
9579003	Total Chromium (Cr)	2019/09/07	99	80 - 120	104	80 - 120	<0.0010	mg/L	NC	20		
9579003	Total Cobalt (Co)	2019/09/07	97	80 - 120	104	80 - 120	<0.00030	mg/L	NC	20		
9579003	Total Copper (Cu)	2019/09/07	96	80 - 120	104	80 - 120	<0.00020	mg/L	11	20		
9579003	Total Lead (Pb)	2019/09/07	97	80 - 120	101	80 - 120	<0.00020	mg/L	NC	20		
9579003	Total Nickel (Ni)	2019/09/07	96	80 - 120	103	80 - 120	<0.00050	mg/L	5.8	20		
9579003	Total Zinc (Zn)	2019/09/07	95	80 - 120	102	80 - 120	<0.0030	mg/L	NC	20		
9694792	F3A (C16-C22)	2019/08/29			93	60 - 140	<50	mg/kg				

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
9694792	F3B (C22-C34)	2019/08/29			91	60 - 140	<50	mg/kg				

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

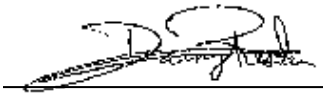
NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

(2) Detection limits calculated based on method detection limits (MDLs) at client request.

VALIDATION SIGNATURE PAGE

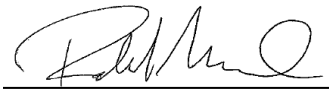
The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



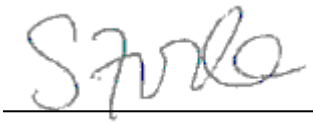
Daniel Reslan, cCT, QP, Organics Manager



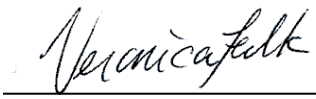
Justin Geisel, B.Sc., Organics Supervisor



Roland Menard, Analyst II



Suwan Fock, B.Sc., QP, Inorganics Senior Analyst



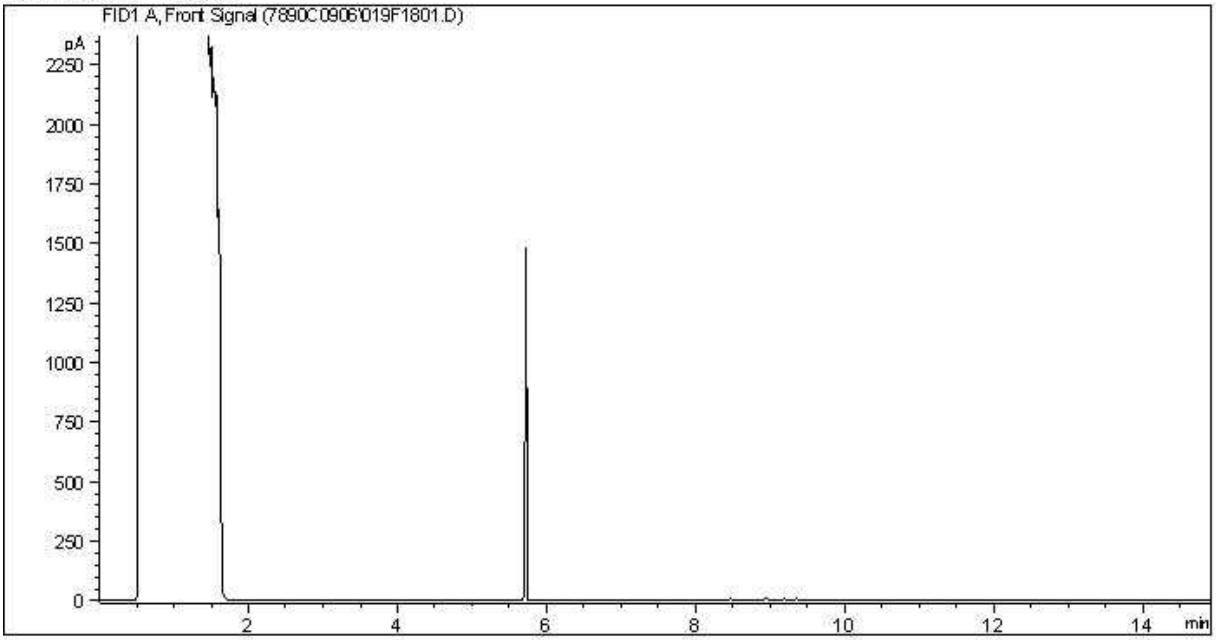
Veronica Falk, B.Sc., P.Chem., QP, Scientific Specialist, Organics

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
For Service Group specific validation please refer to the Validation Signature Page.

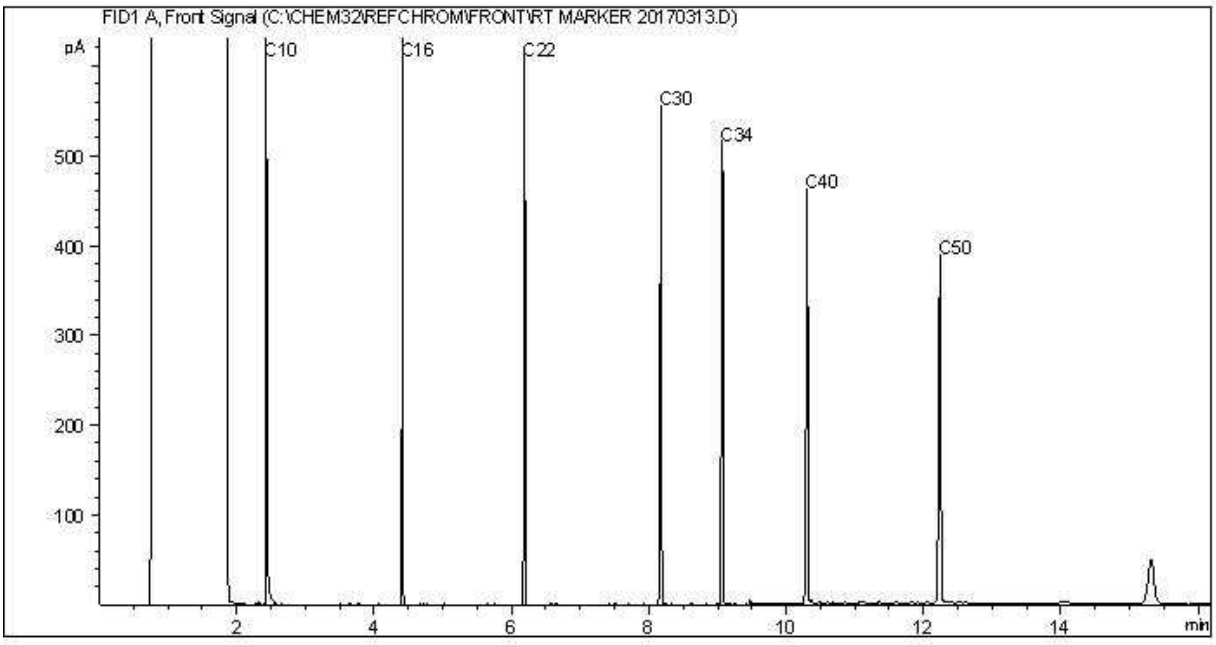
Bureau Veritas Laboratories Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Instrument: 7890C



Carbon Range Distribution - Reference Chromatogram



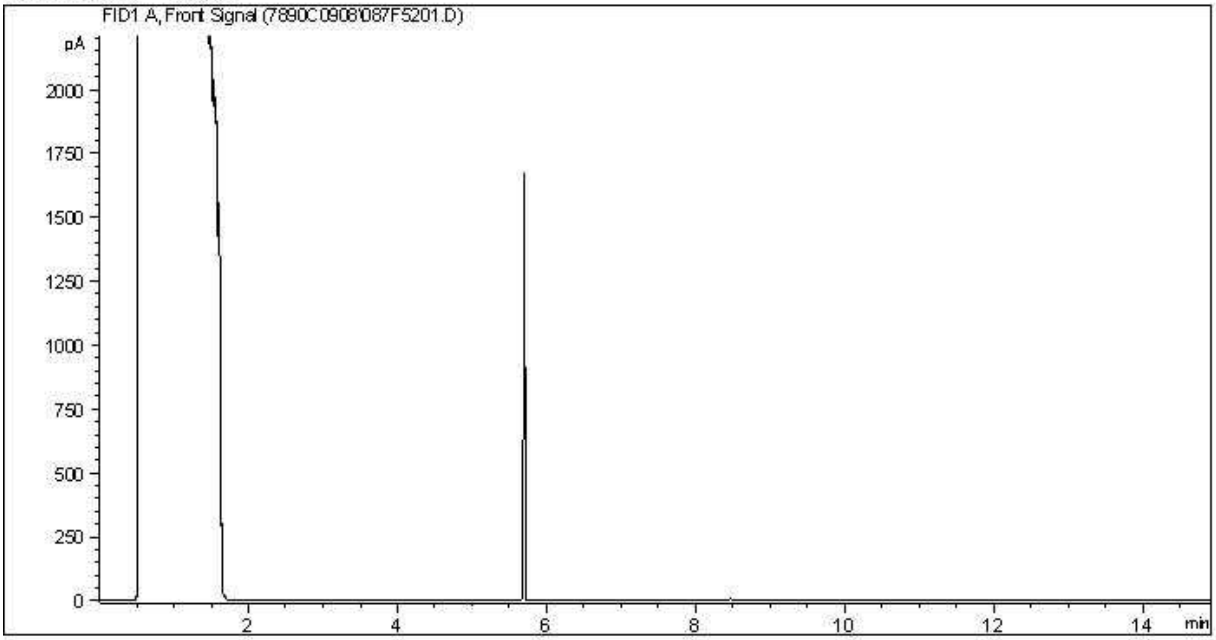
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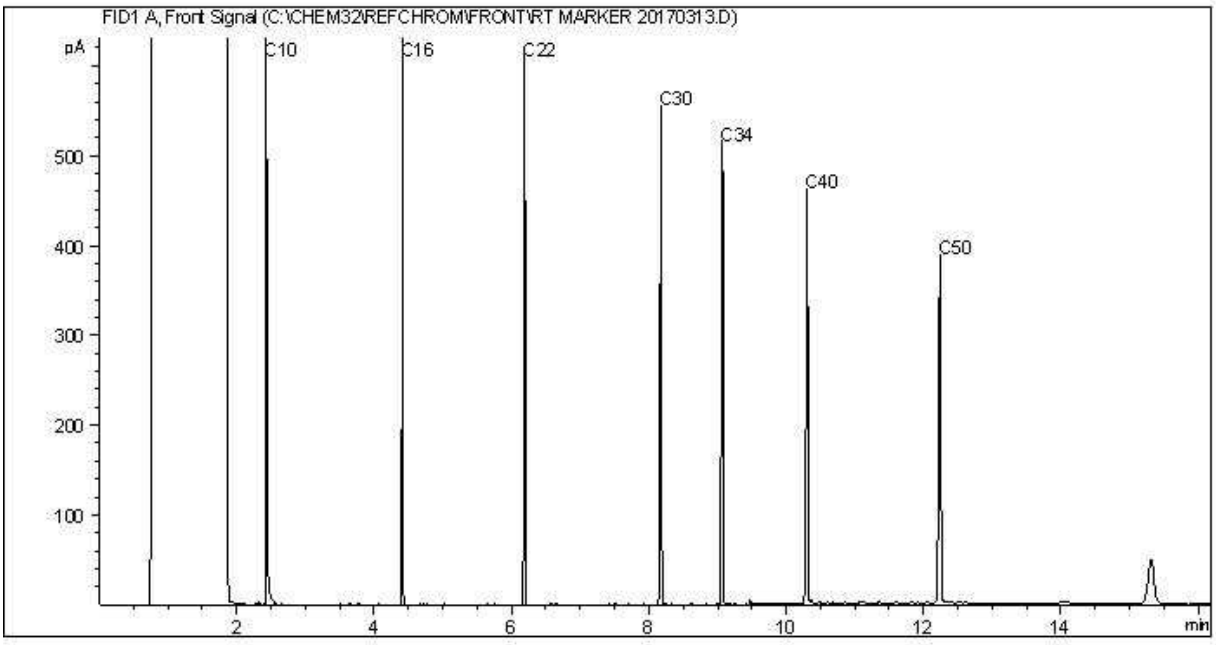
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CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Instrument: 7890C



Carbon Range Distribution - Reference Chromatogram



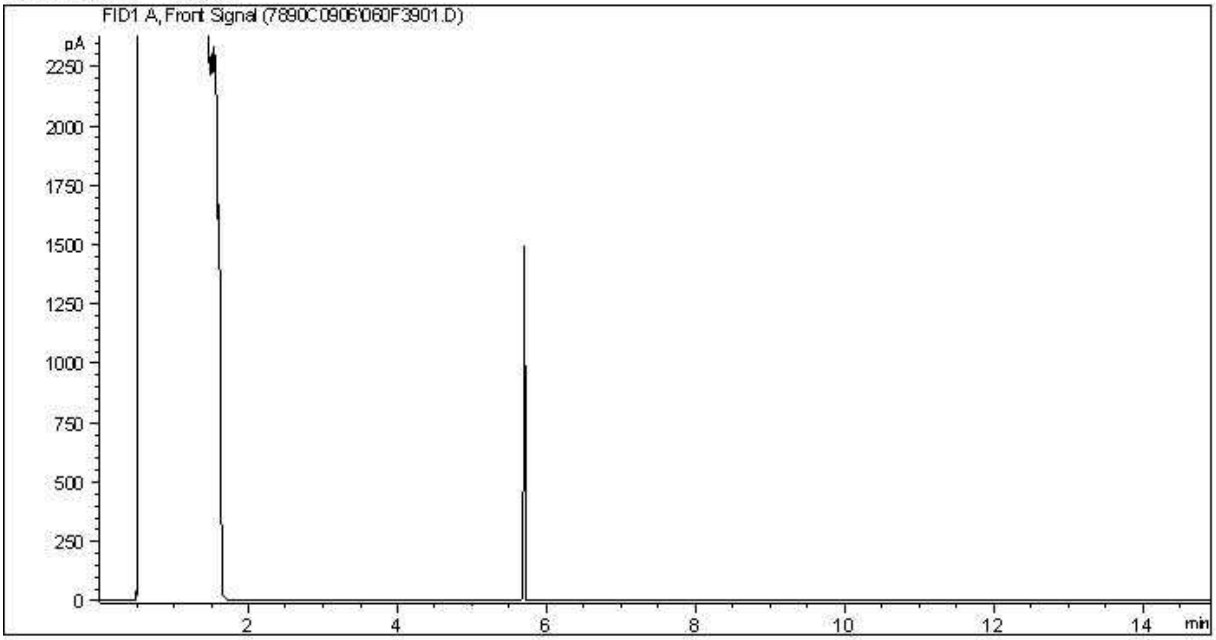
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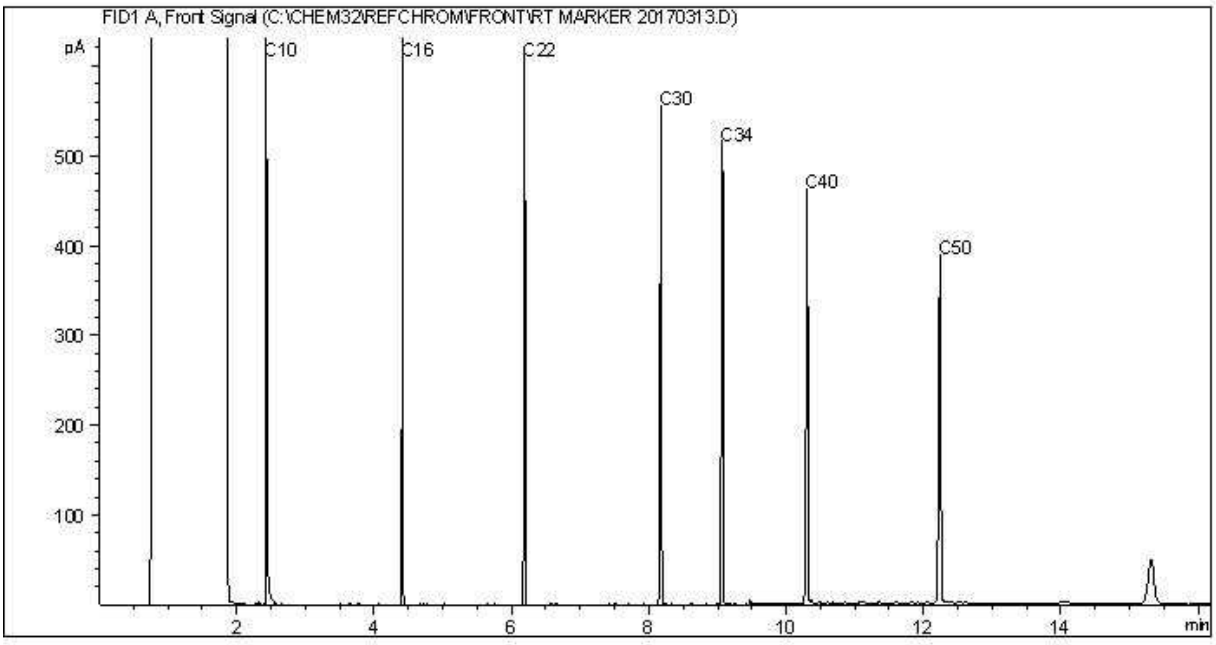
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CCME Hydrocarbons (F2-F4 in soil) Chromatogram

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Carbon Range Distribution - Reference Chromatogram



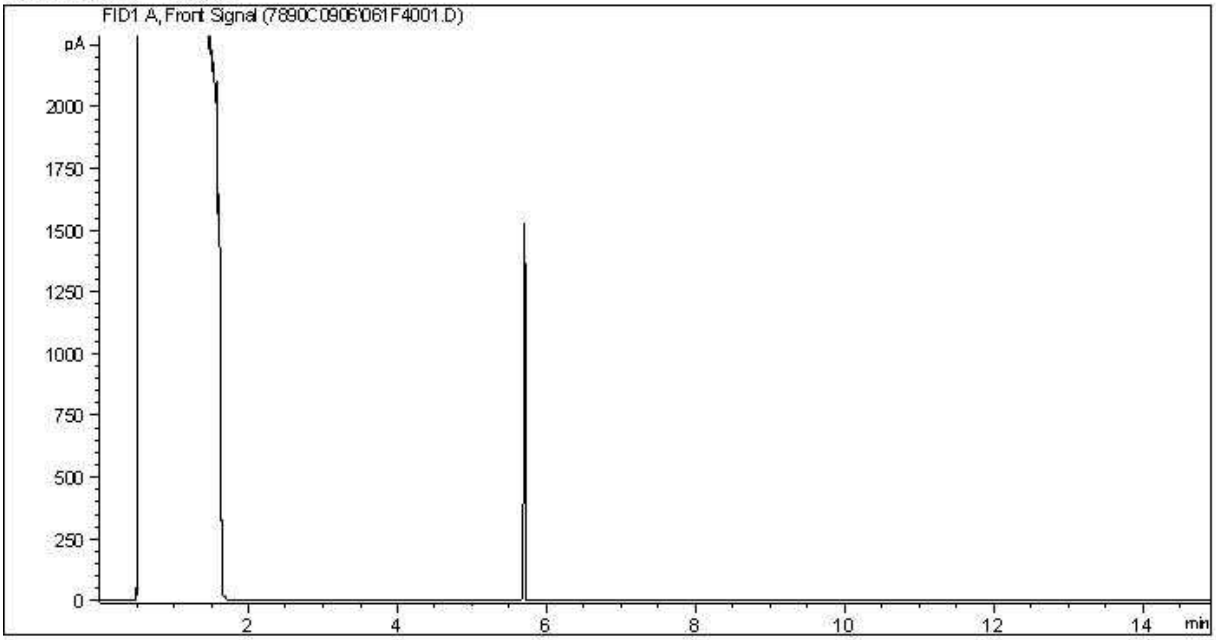
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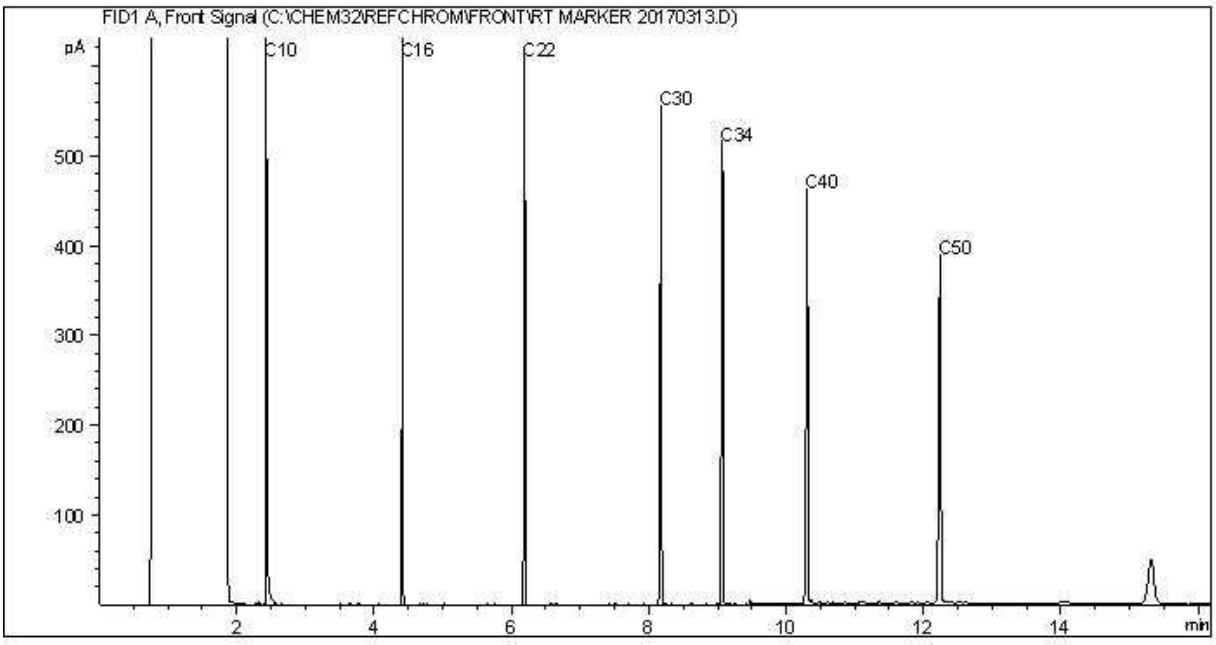
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Carbon Range Distribution - Reference Chromatogram



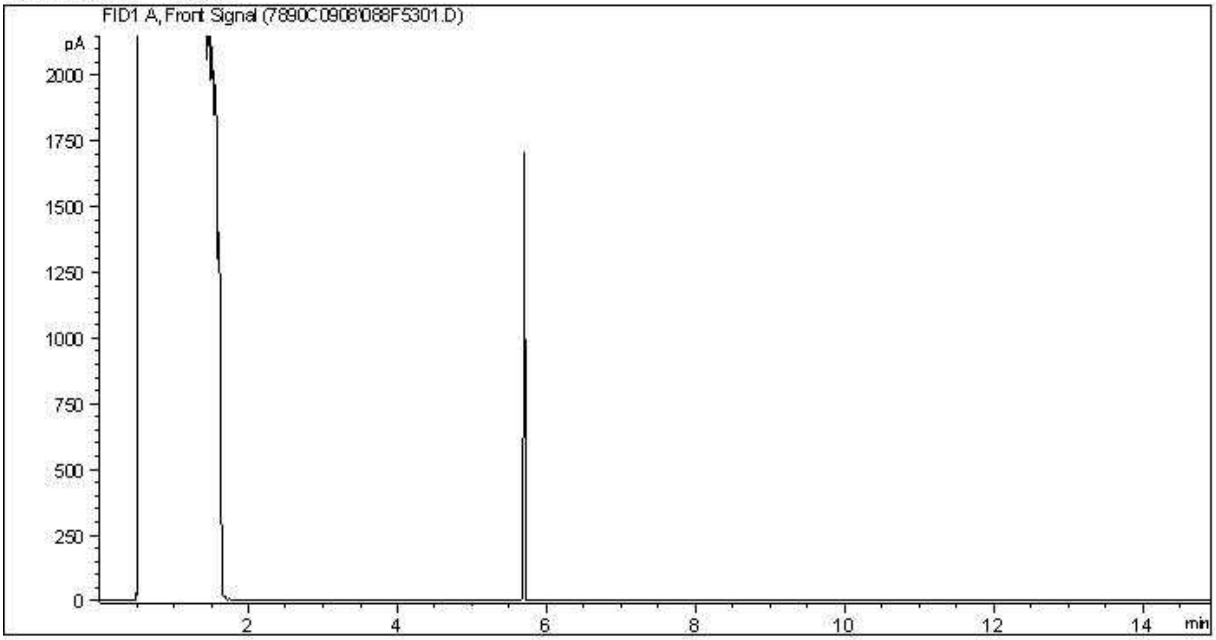
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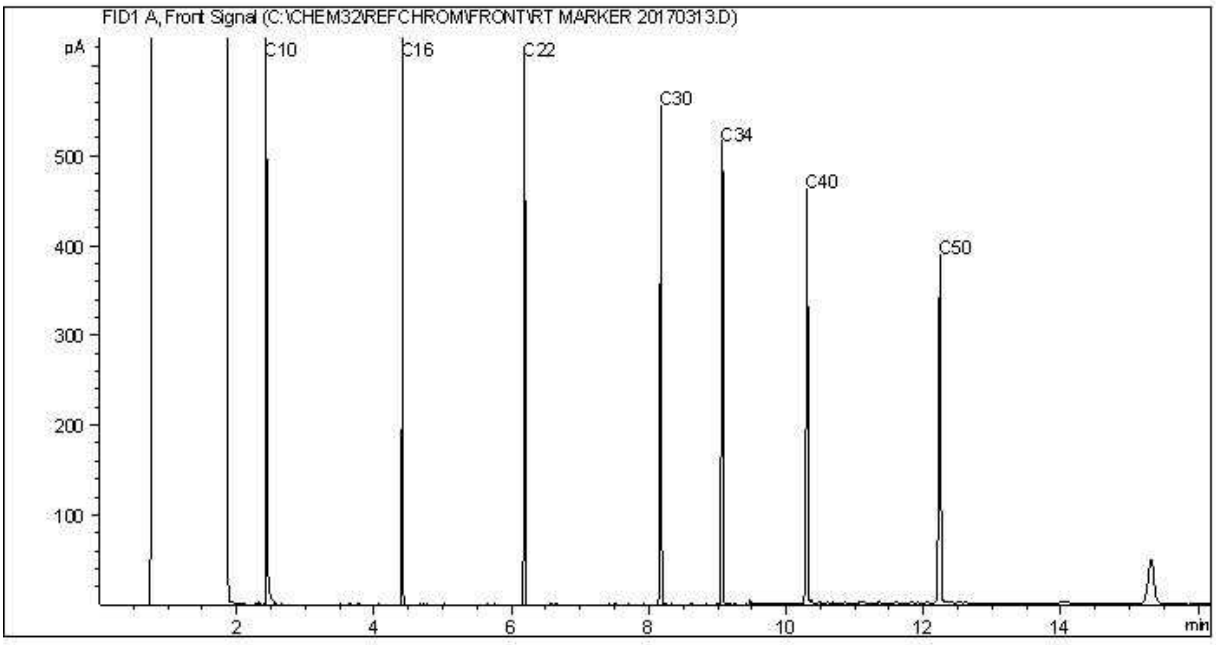
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Carbon Range Distribution - Reference Chromatogram



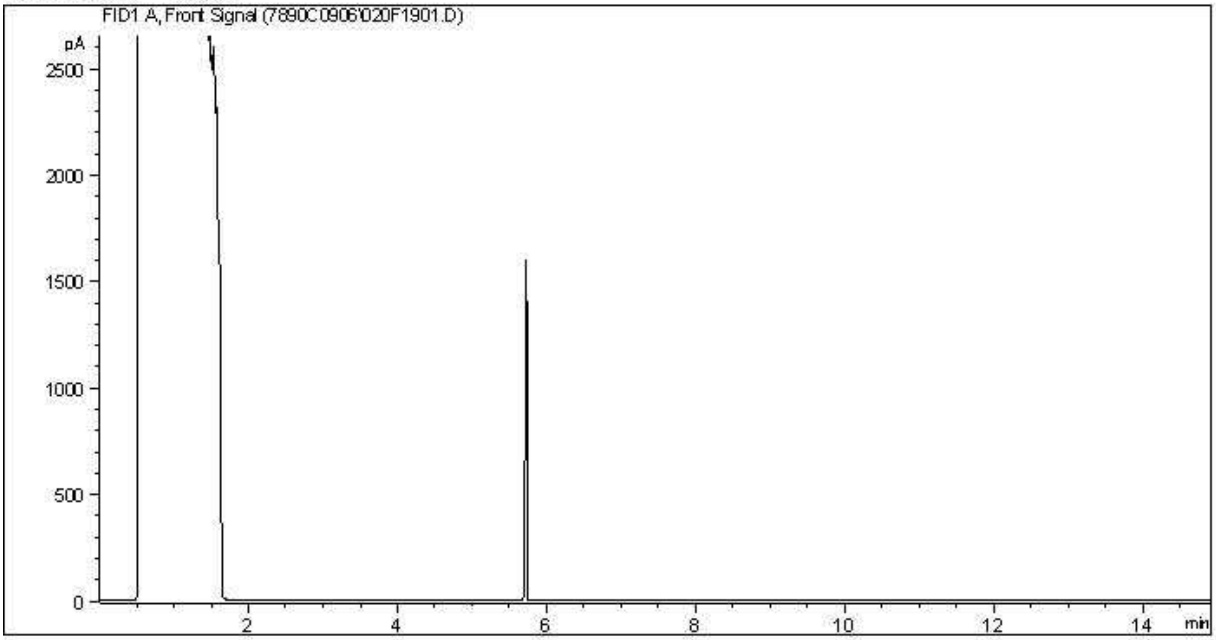
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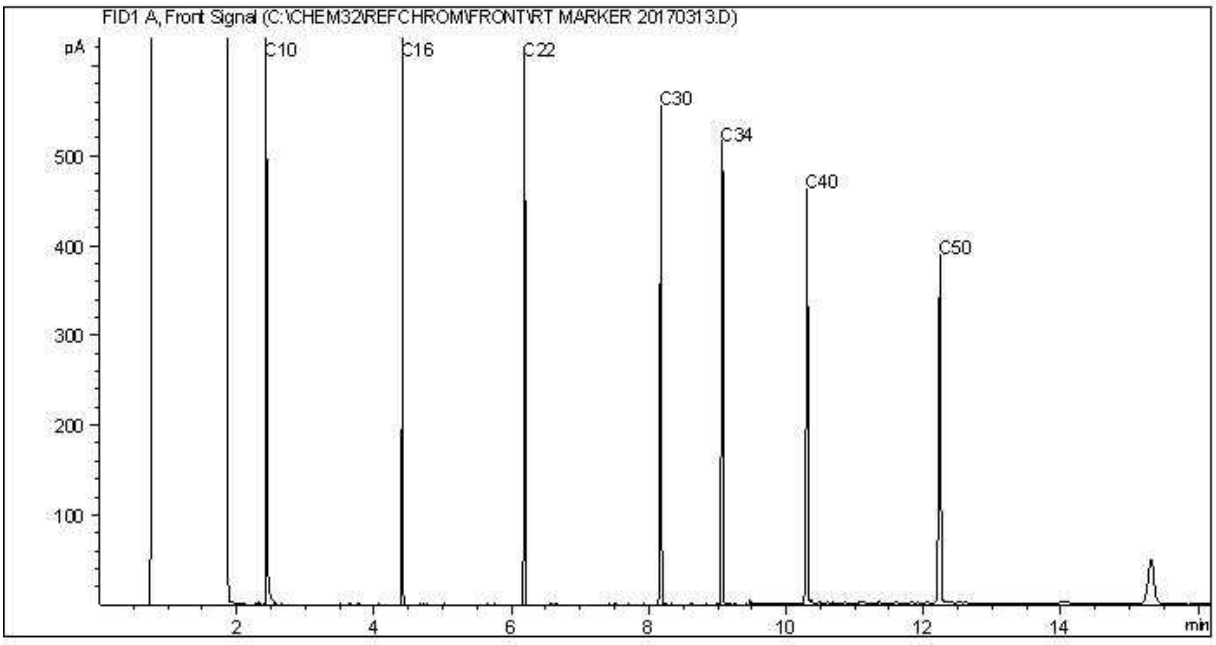
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Carbon Range Distribution - Reference Chromatogram



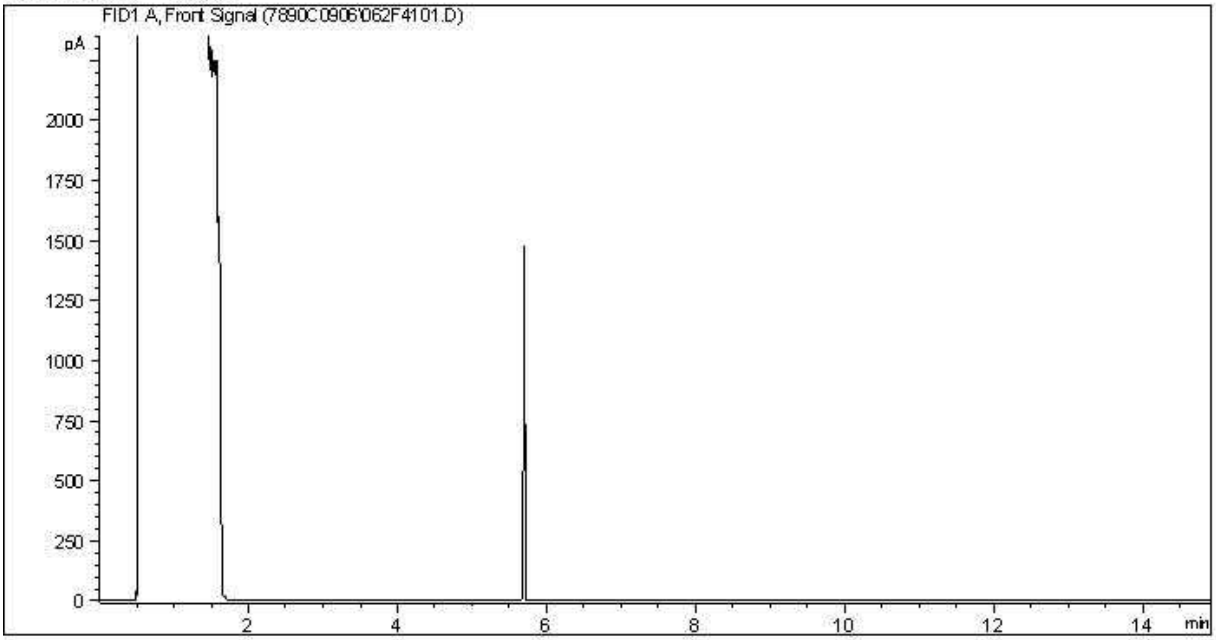
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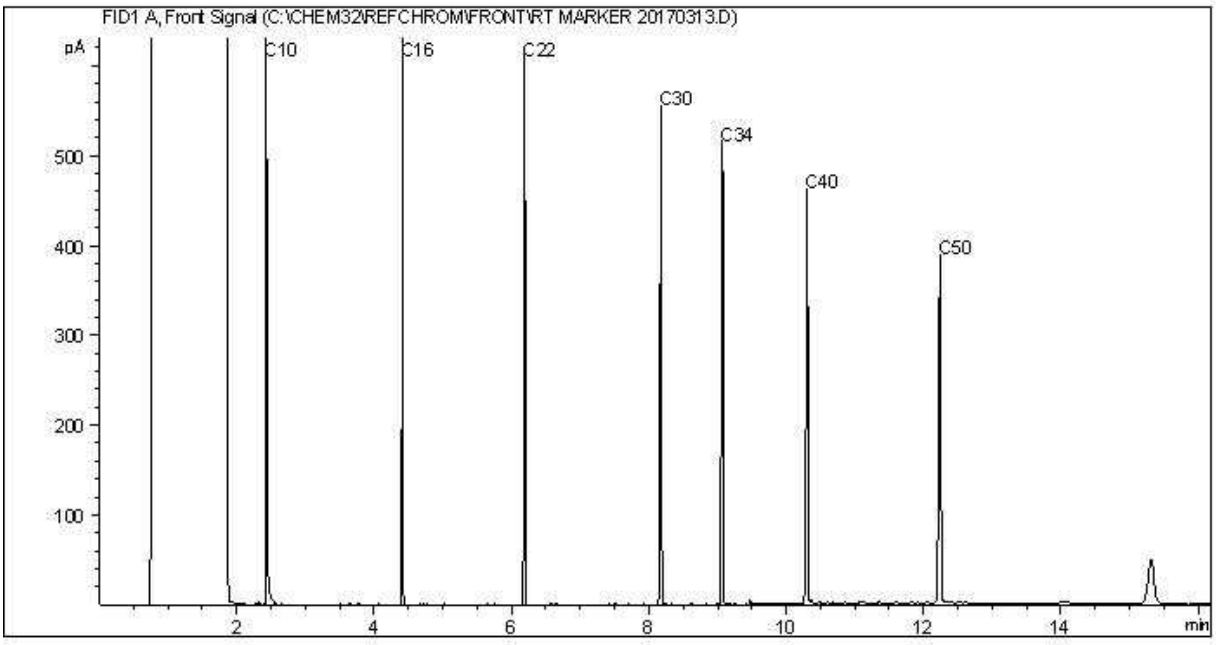
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Carbon Range Distribution - Reference Chromatogram



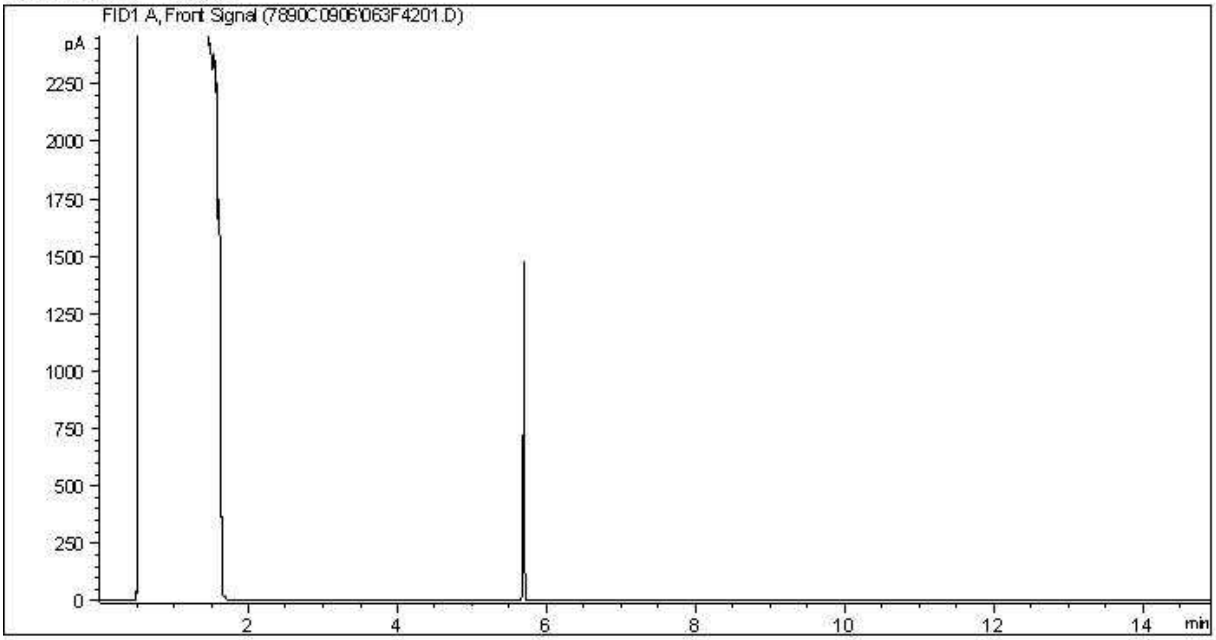
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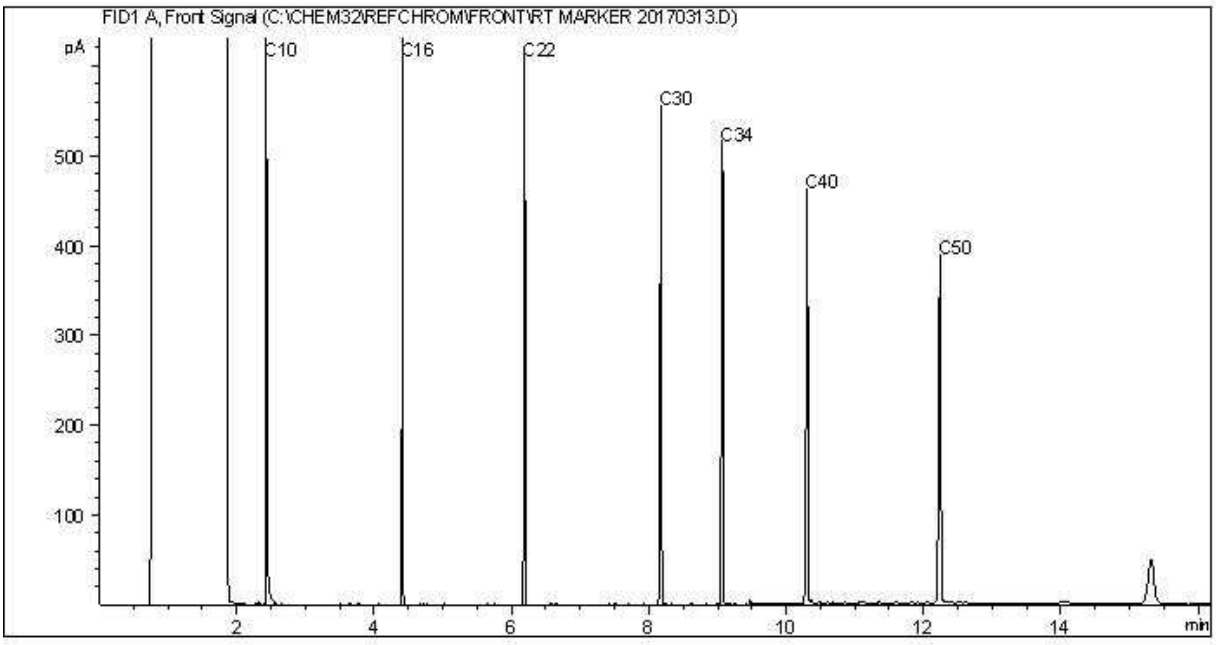
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Carbon Range Distribution - Reference Chromatogram



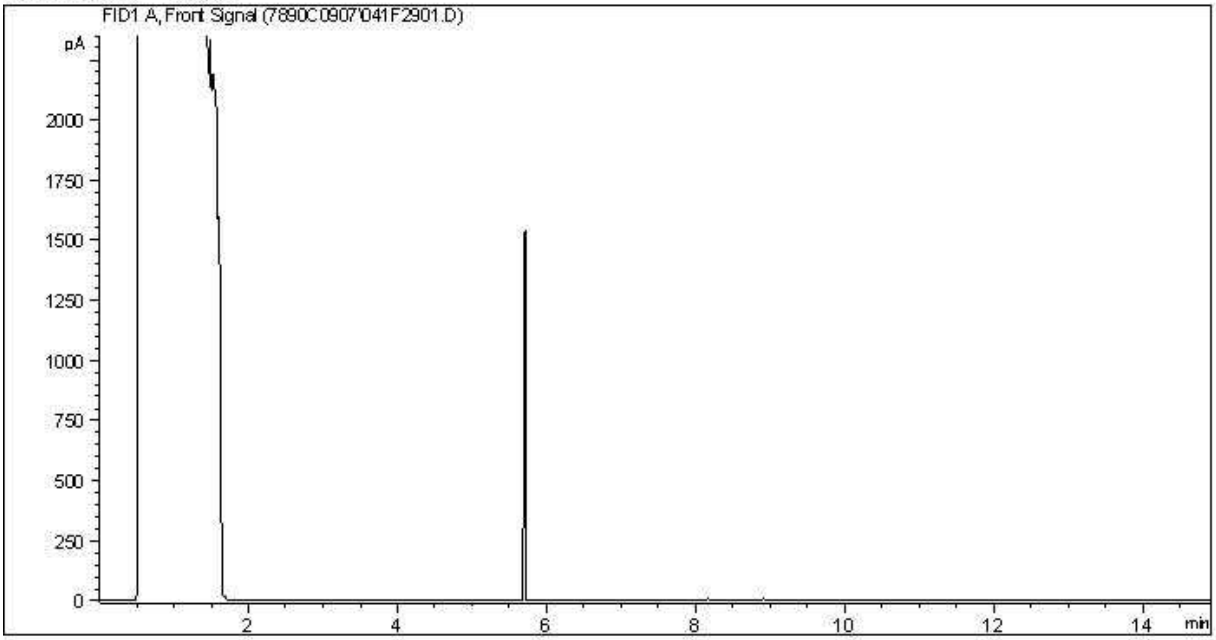
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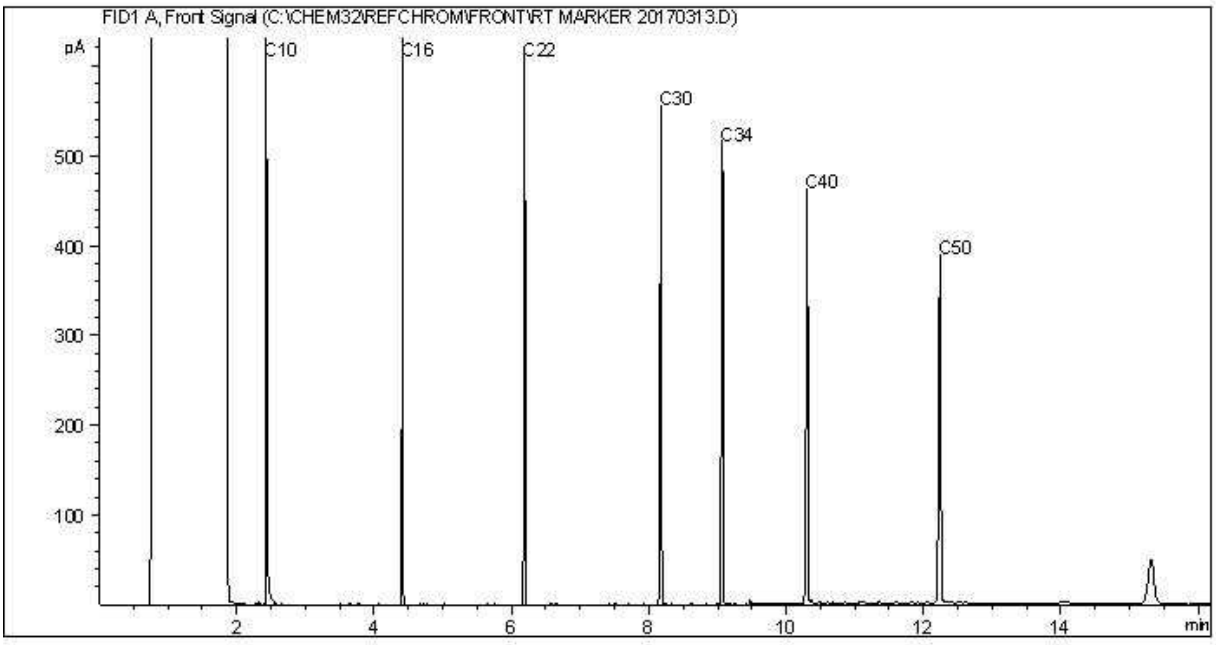
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Carbon Range Distribution - Reference Chromatogram



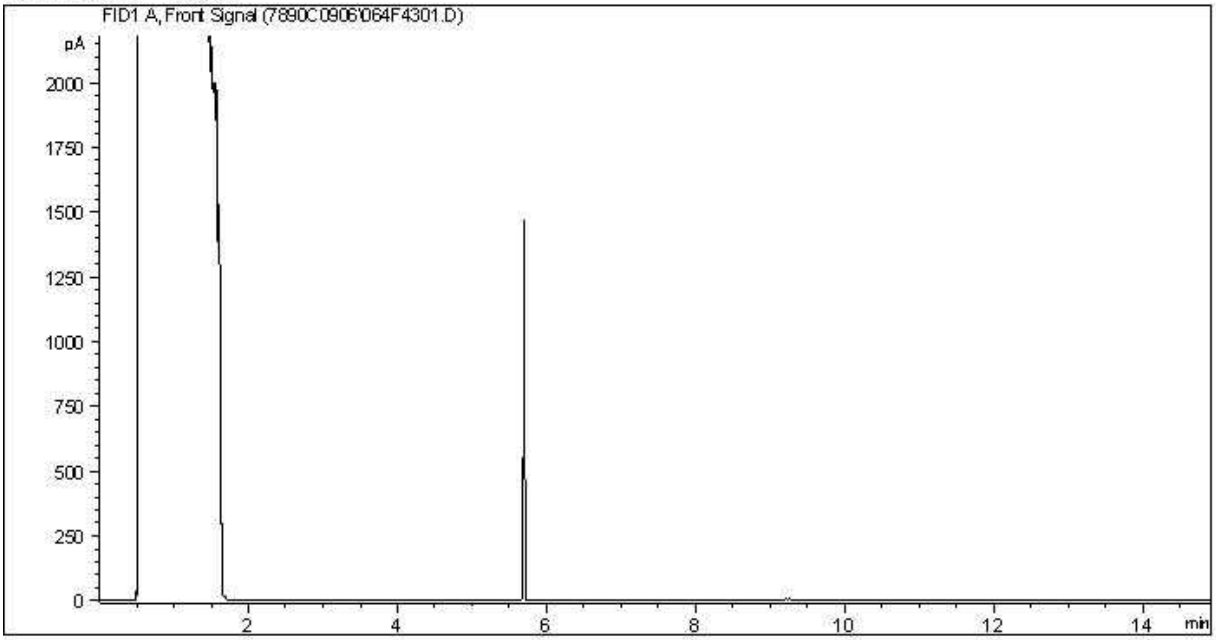
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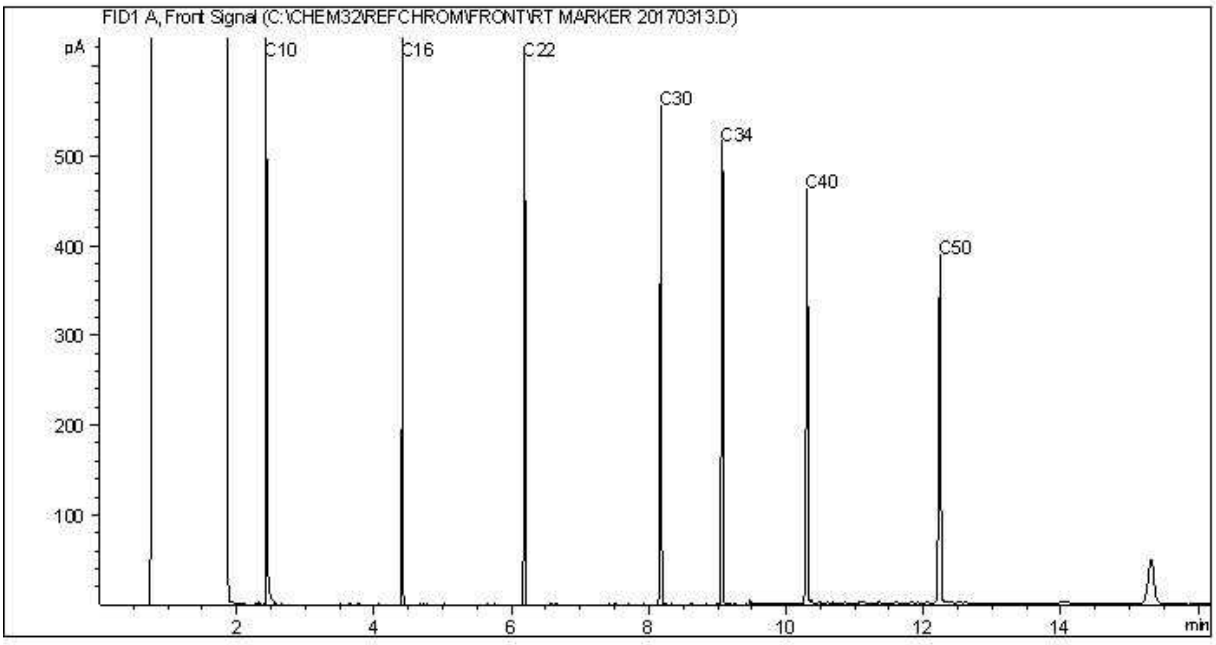
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CCME Hydrocarbons (F2-F4 in soil) Chromatogram

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Carbon Range Distribution - Reference Chromatogram



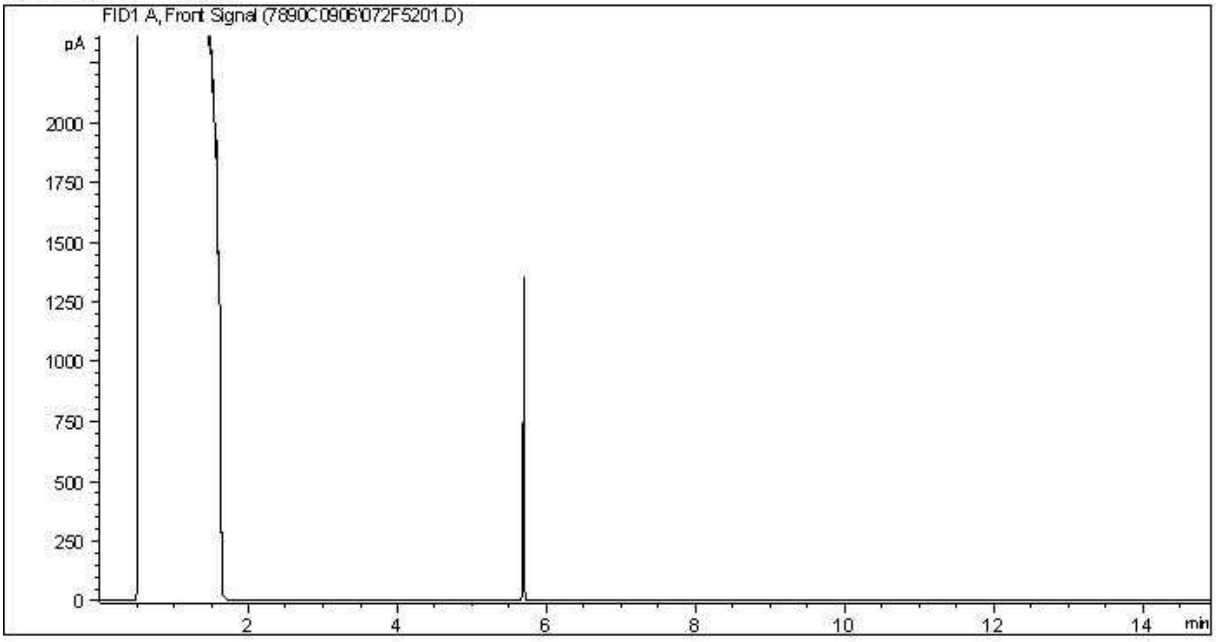
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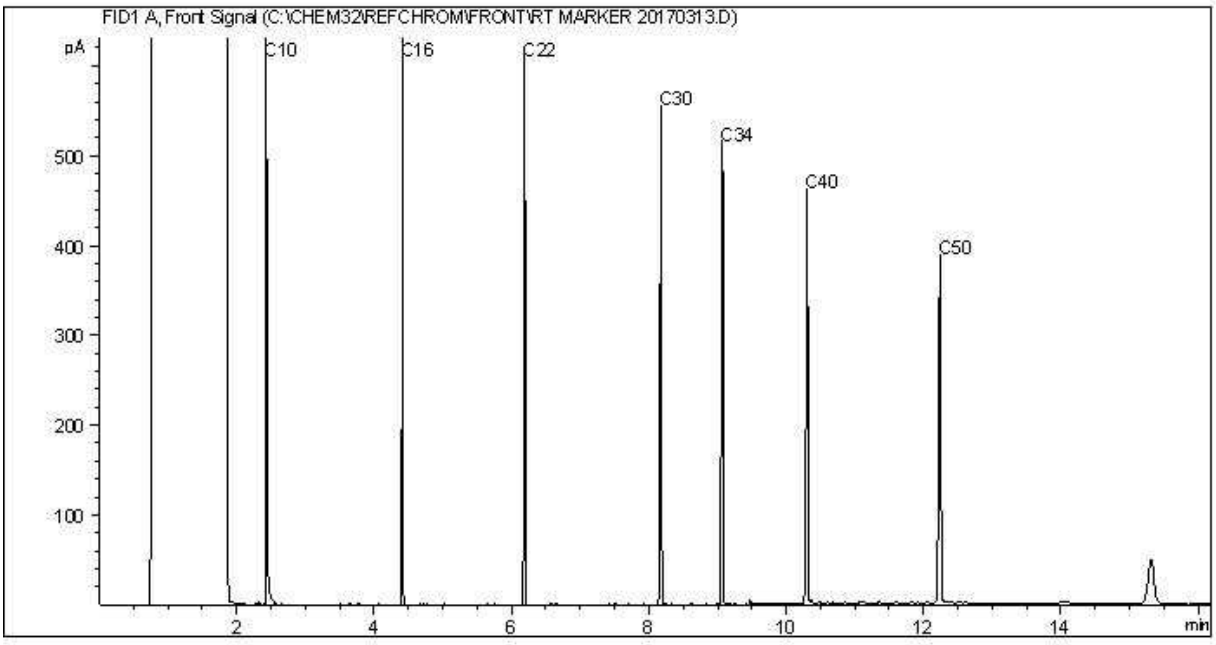
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CCME Hydrocarbons (F2-F4 in soil) Chromatogram

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Carbon Range Distribution - Reference Chromatogram



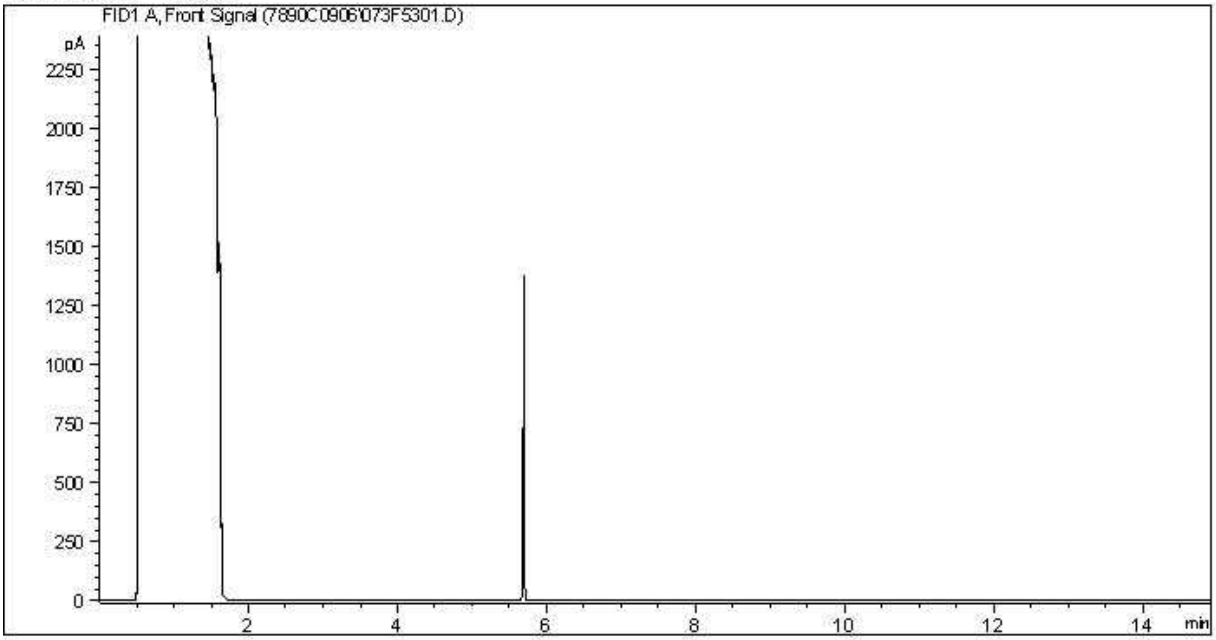
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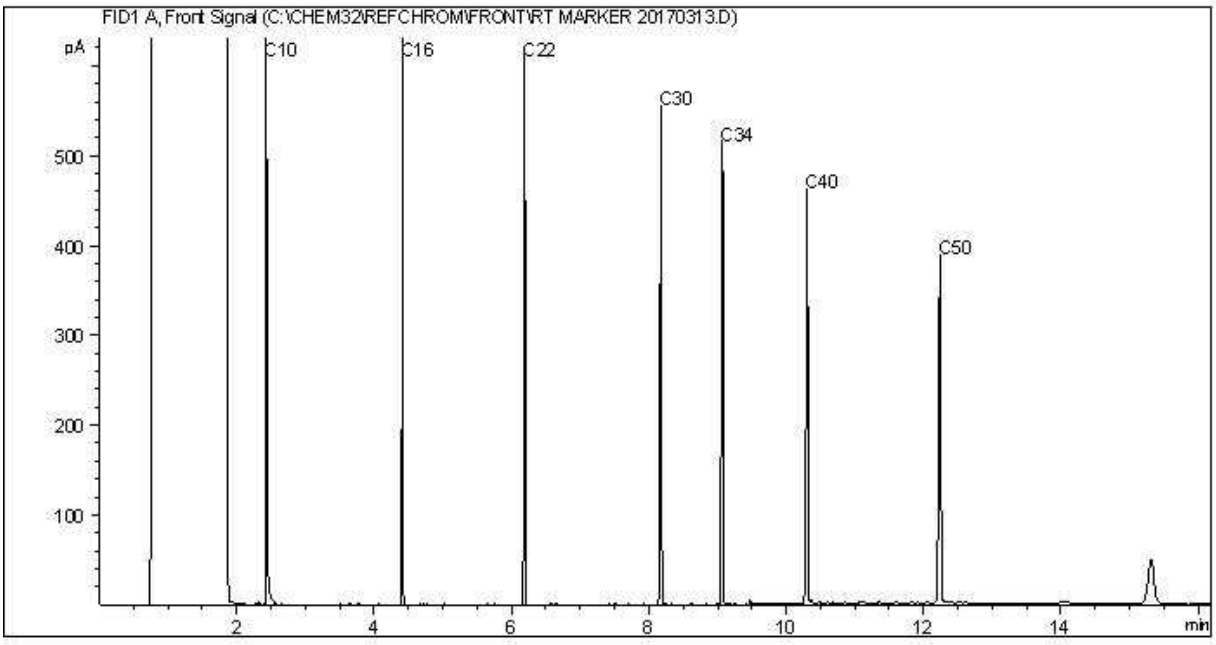
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Carbon Range Distribution - Reference Chromatogram



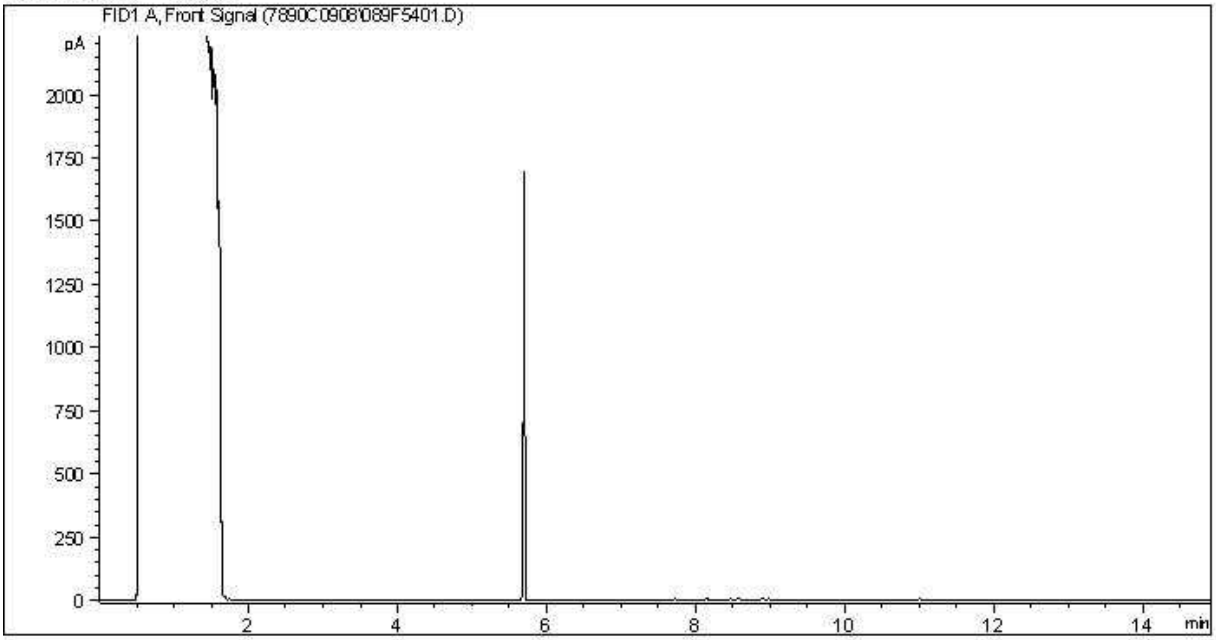
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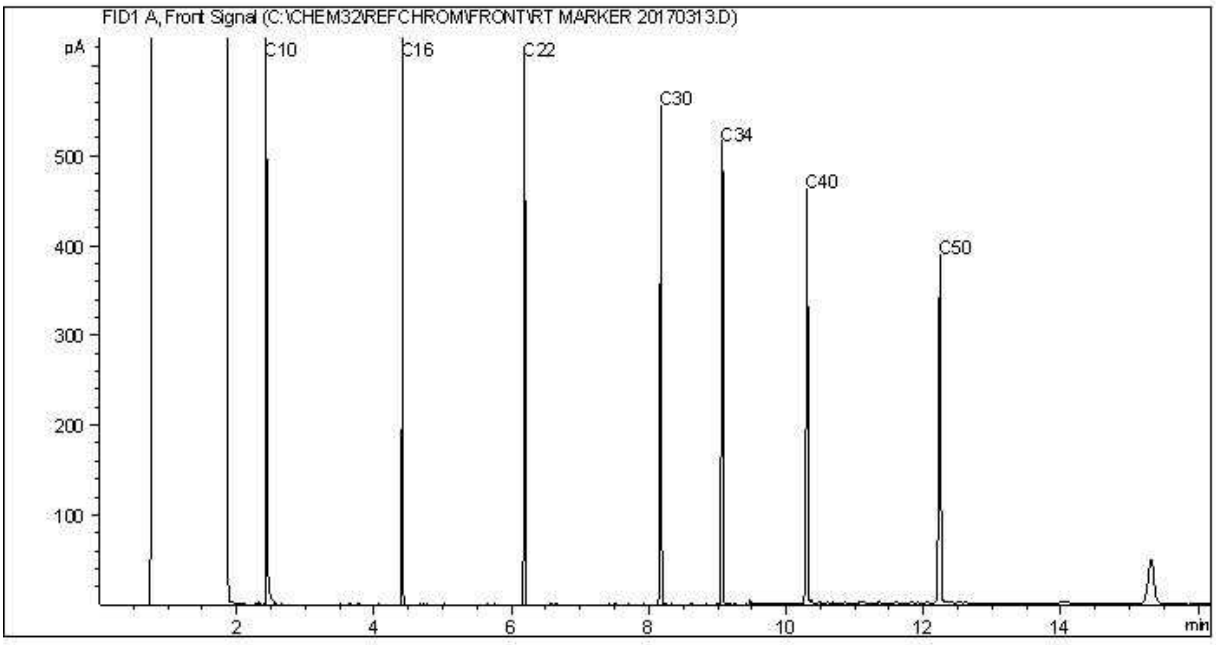
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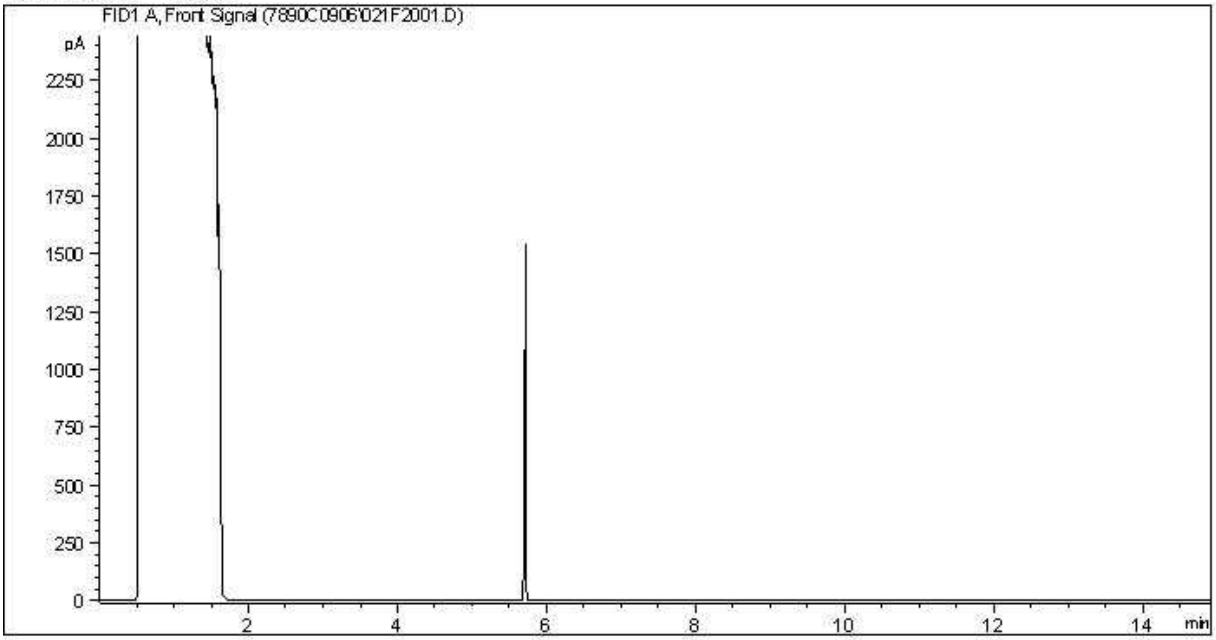
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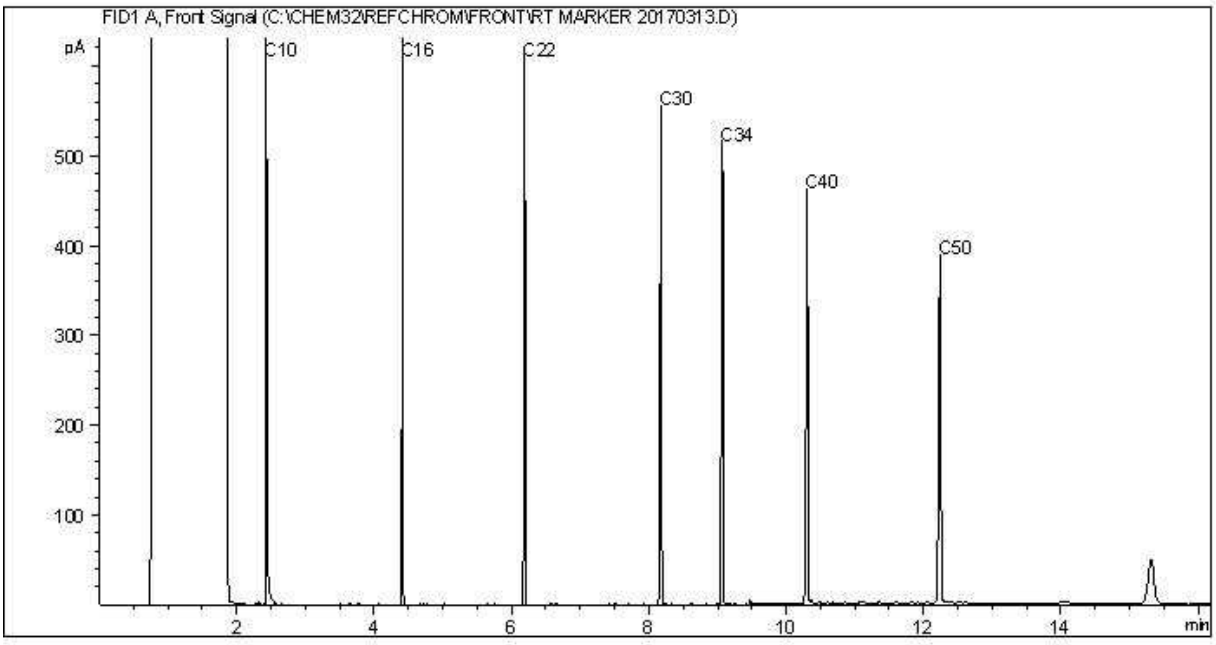
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Instrument: 7890C



Carbon Range Distribution - Reference Chromatogram



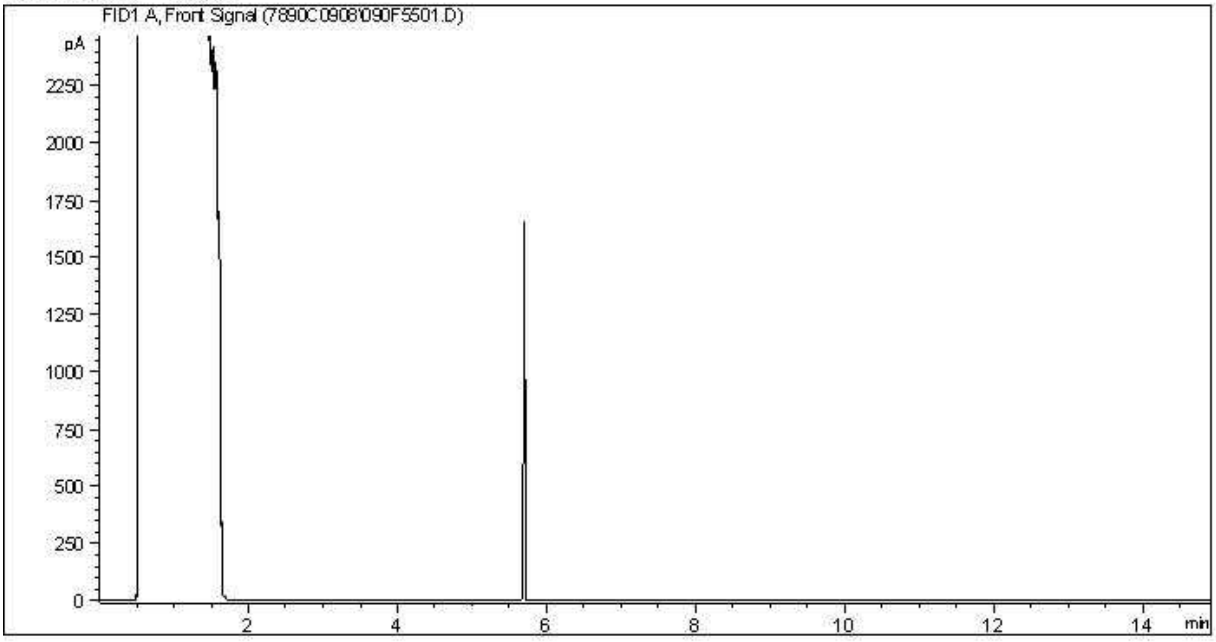
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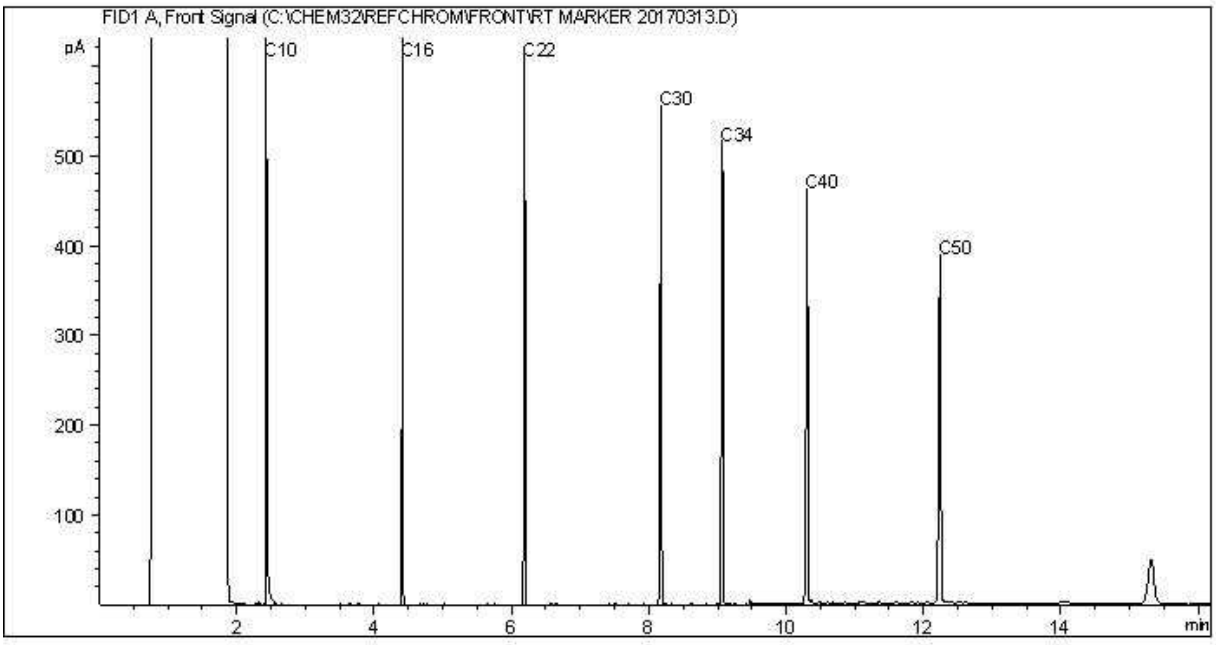
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CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Instrument: 7890C



Carbon Range Distribution - Reference Chromatogram



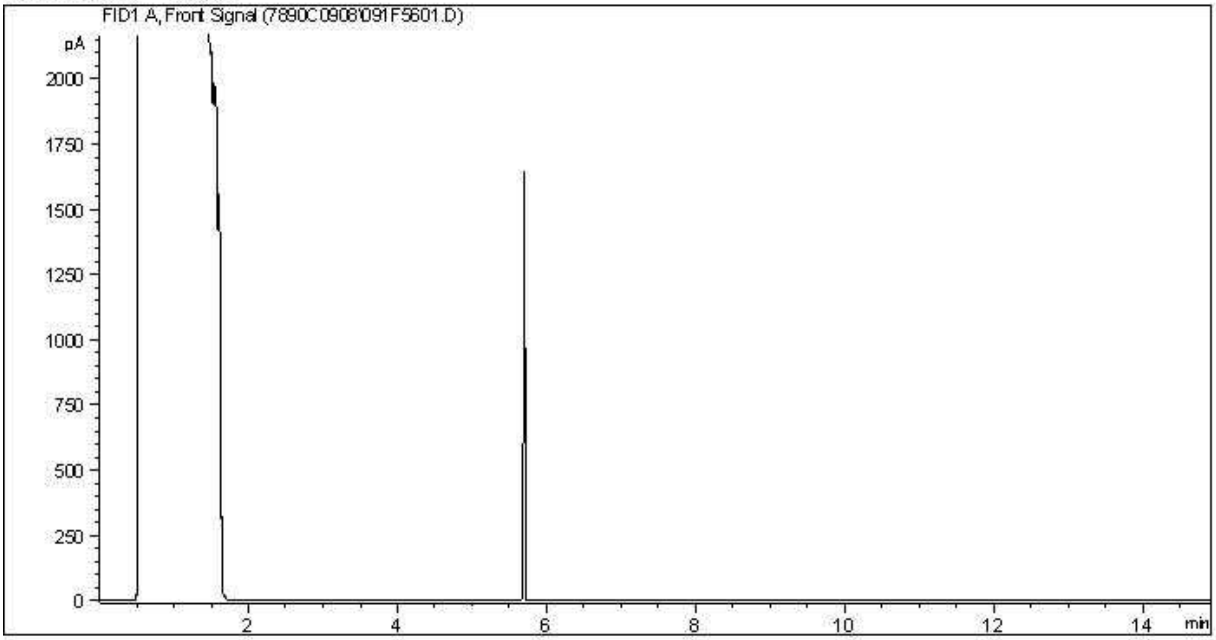
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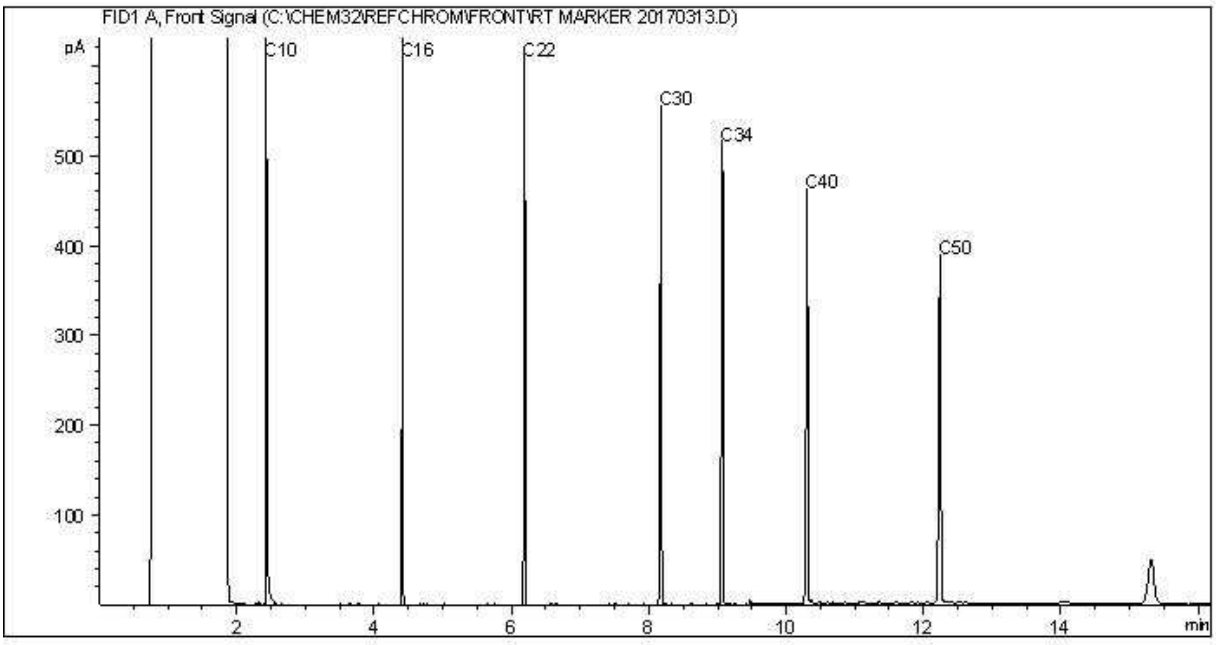
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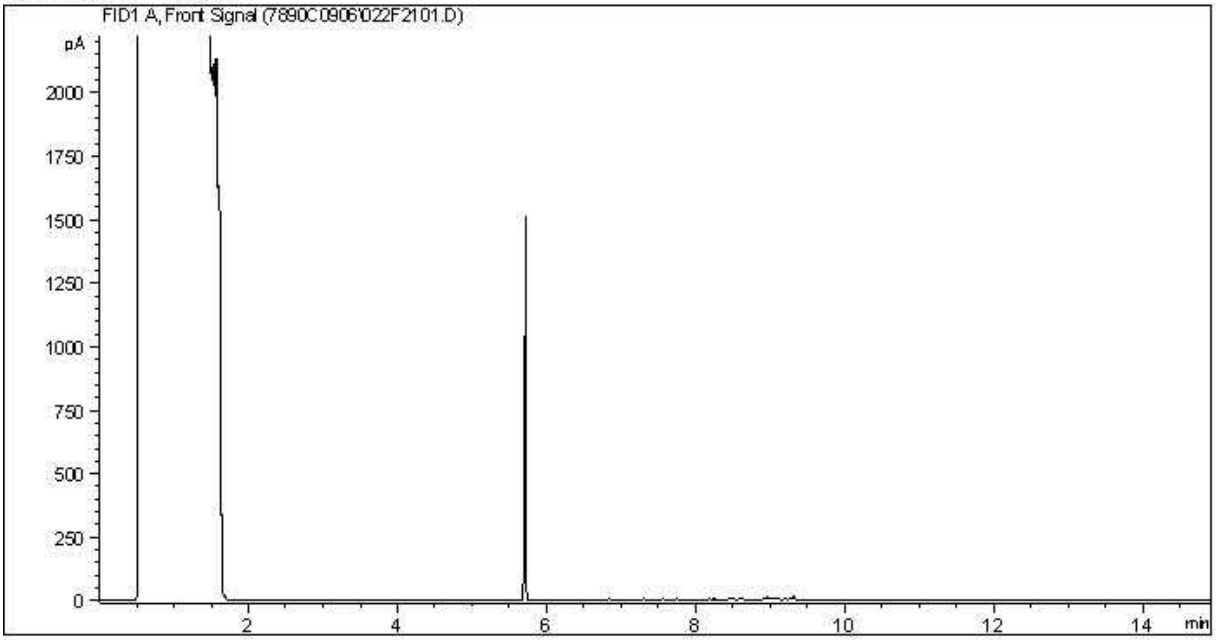
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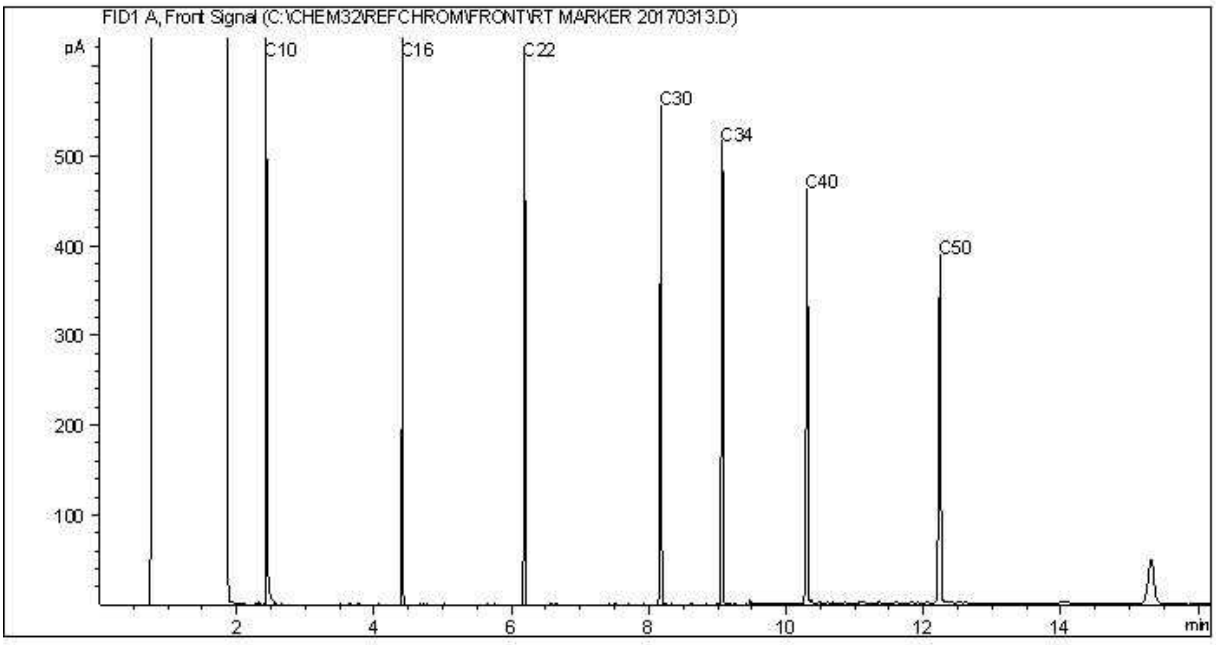
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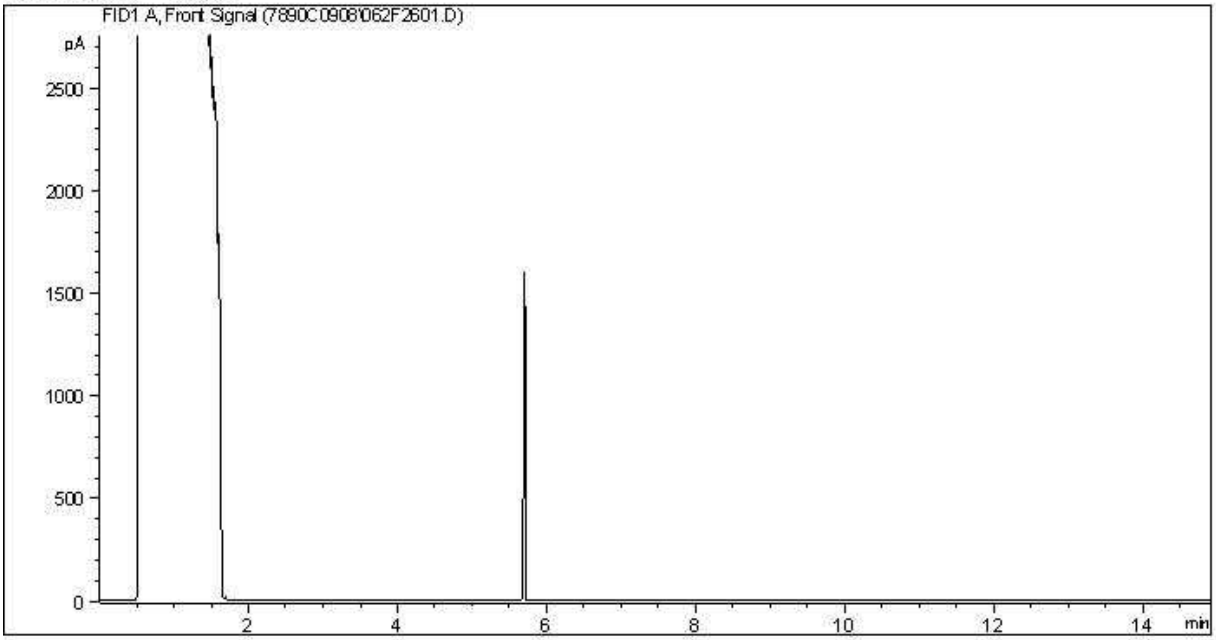
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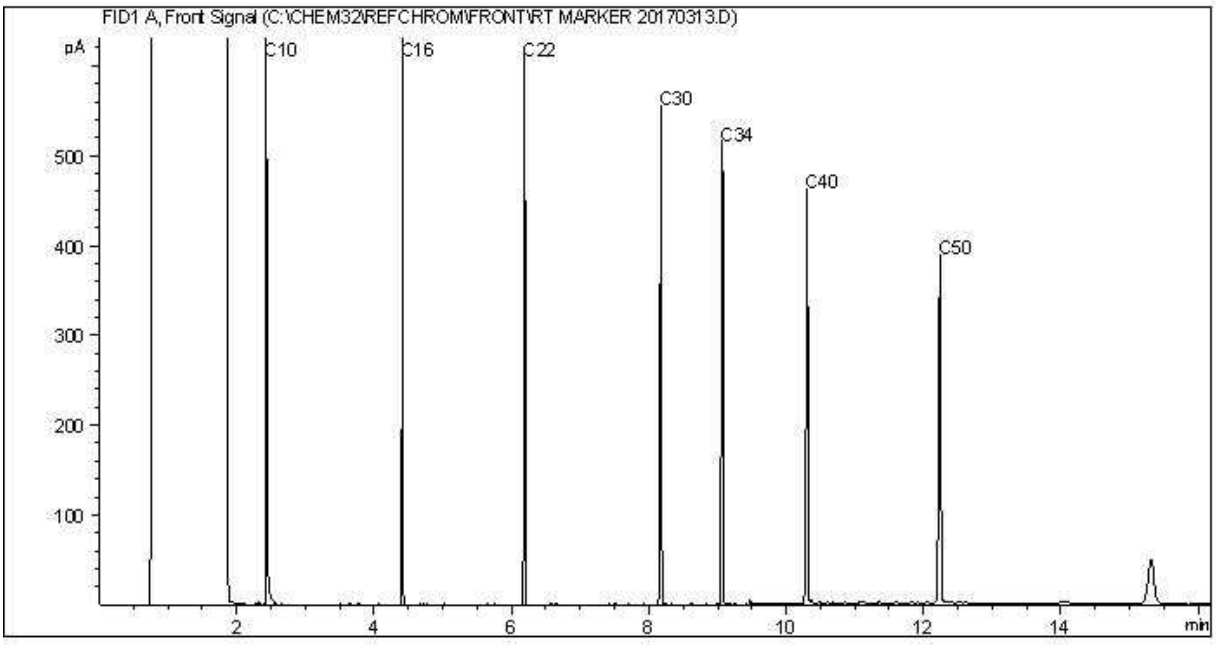
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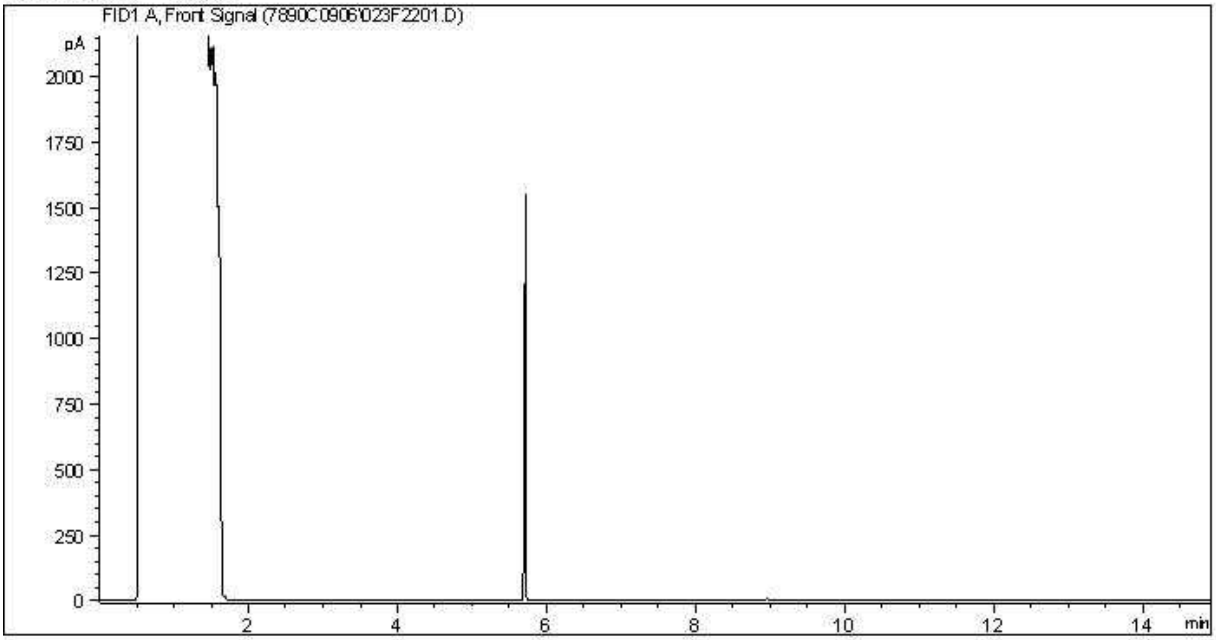
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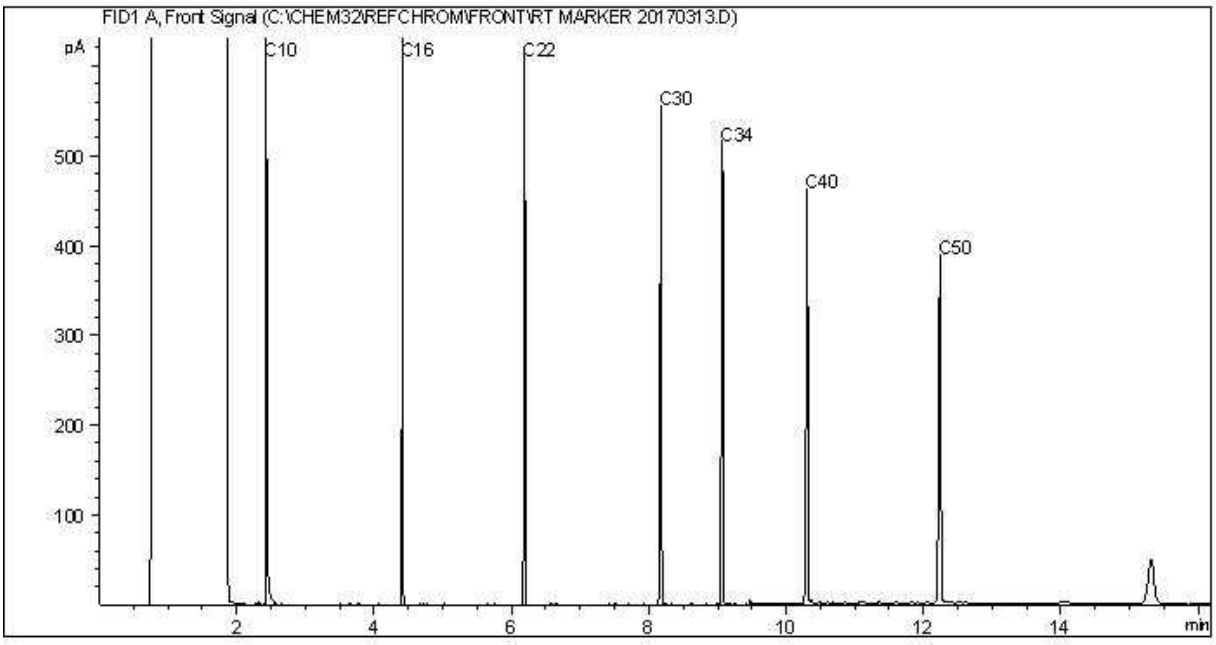
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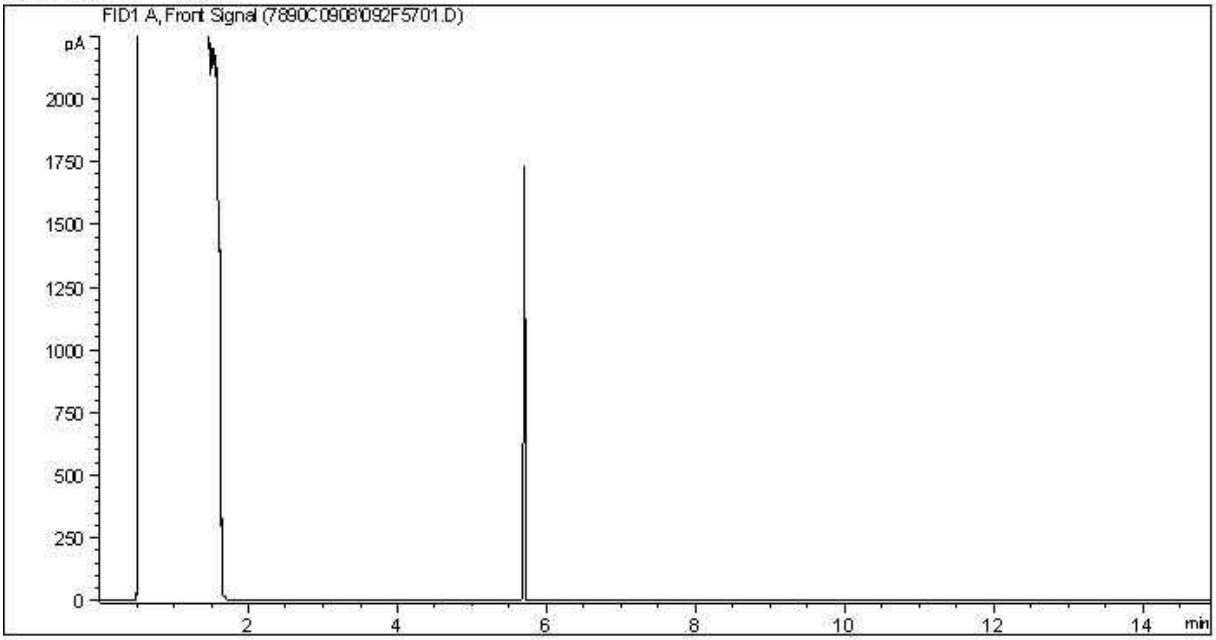
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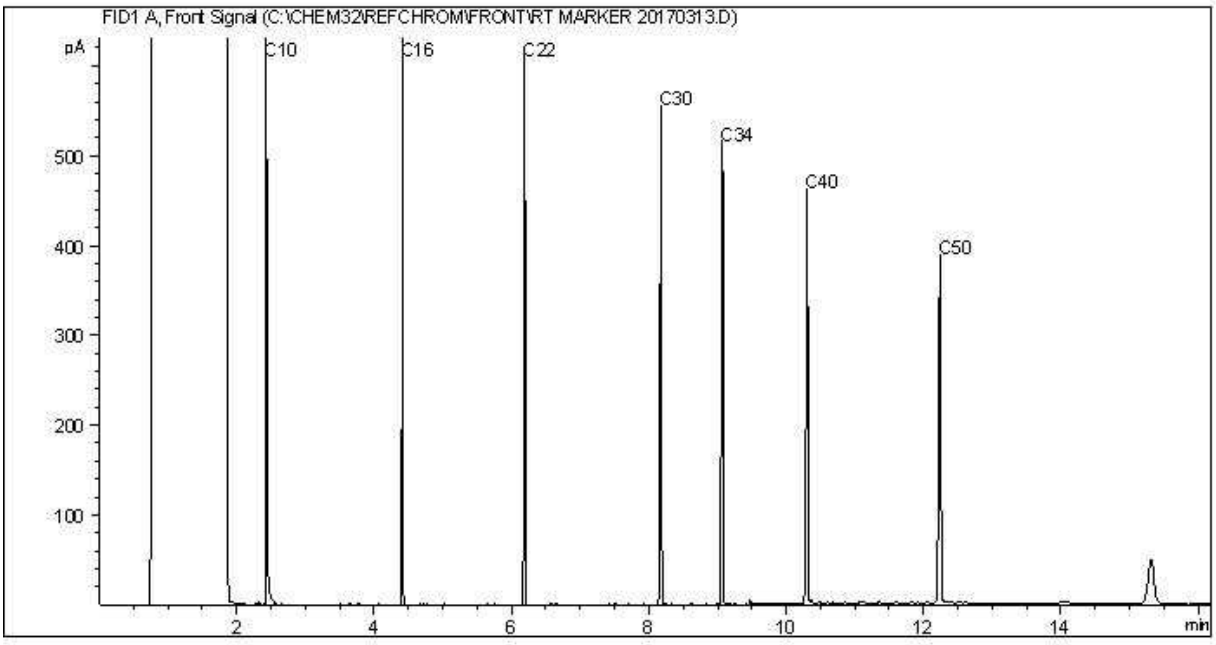
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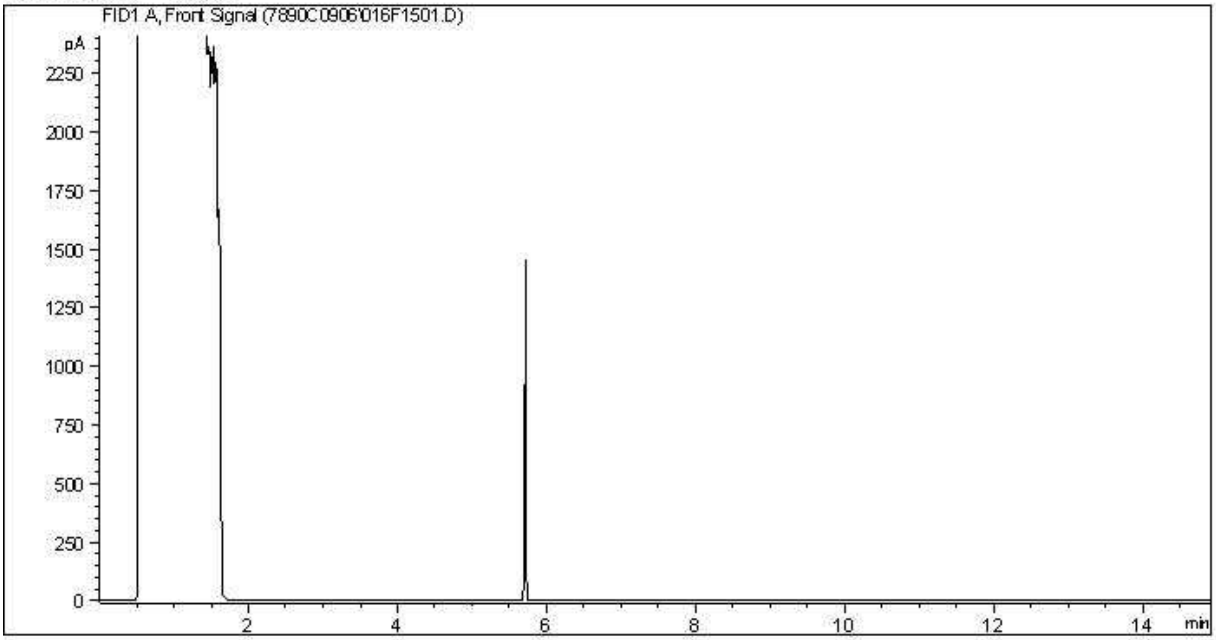
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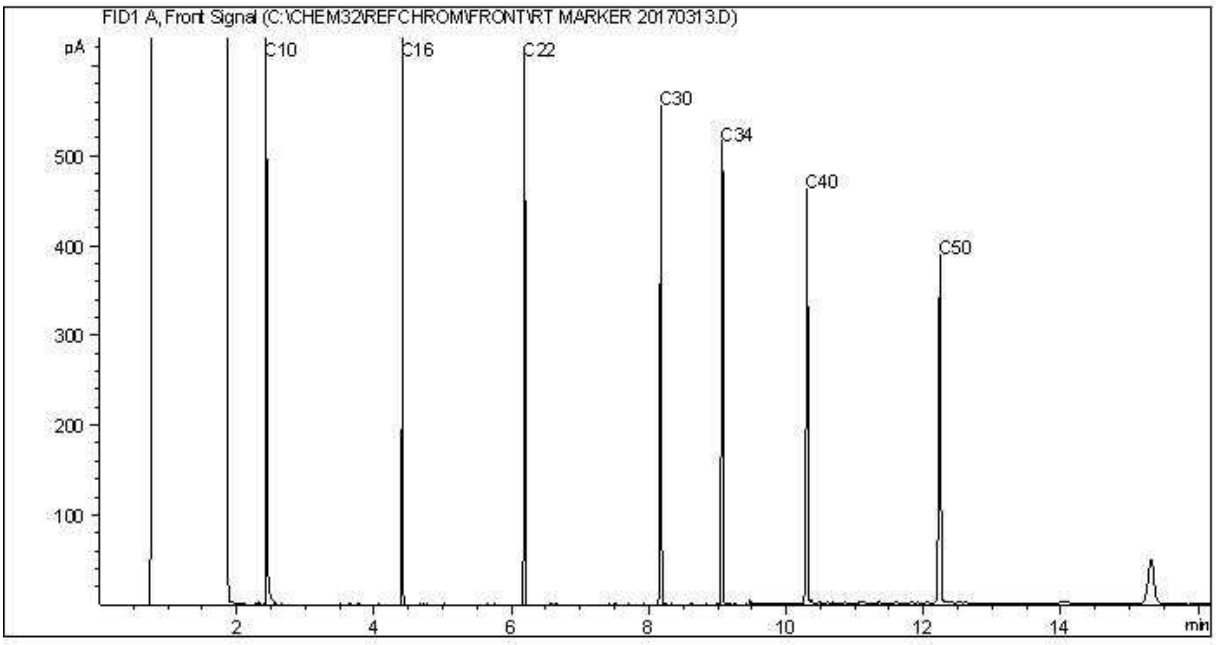
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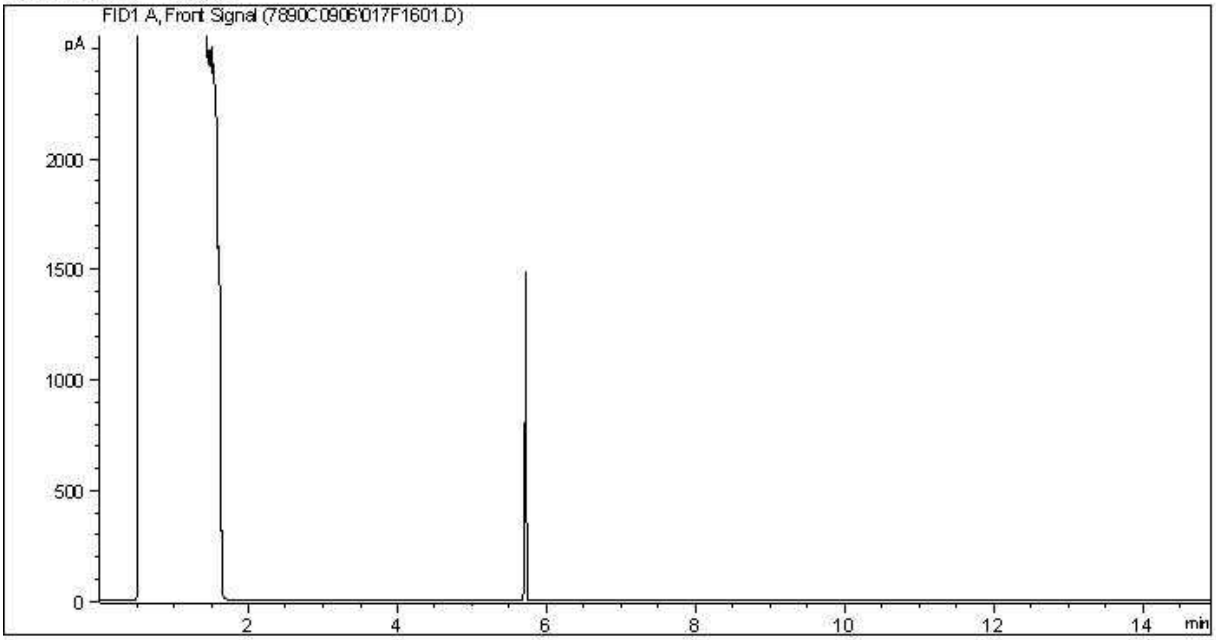
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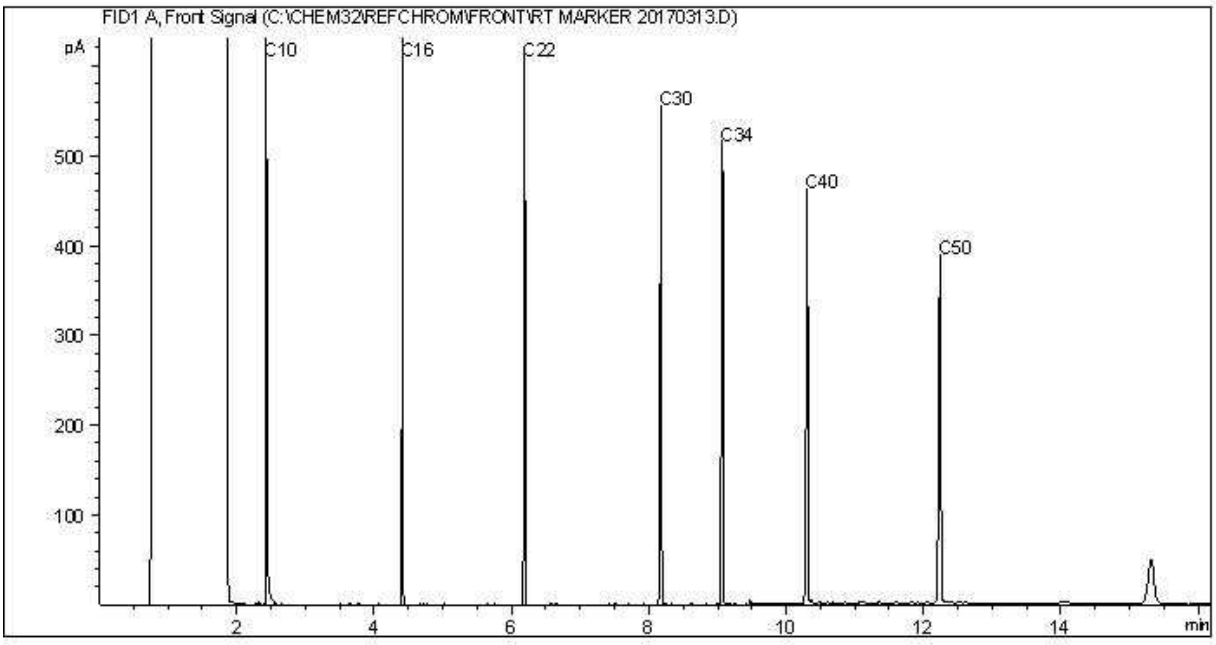
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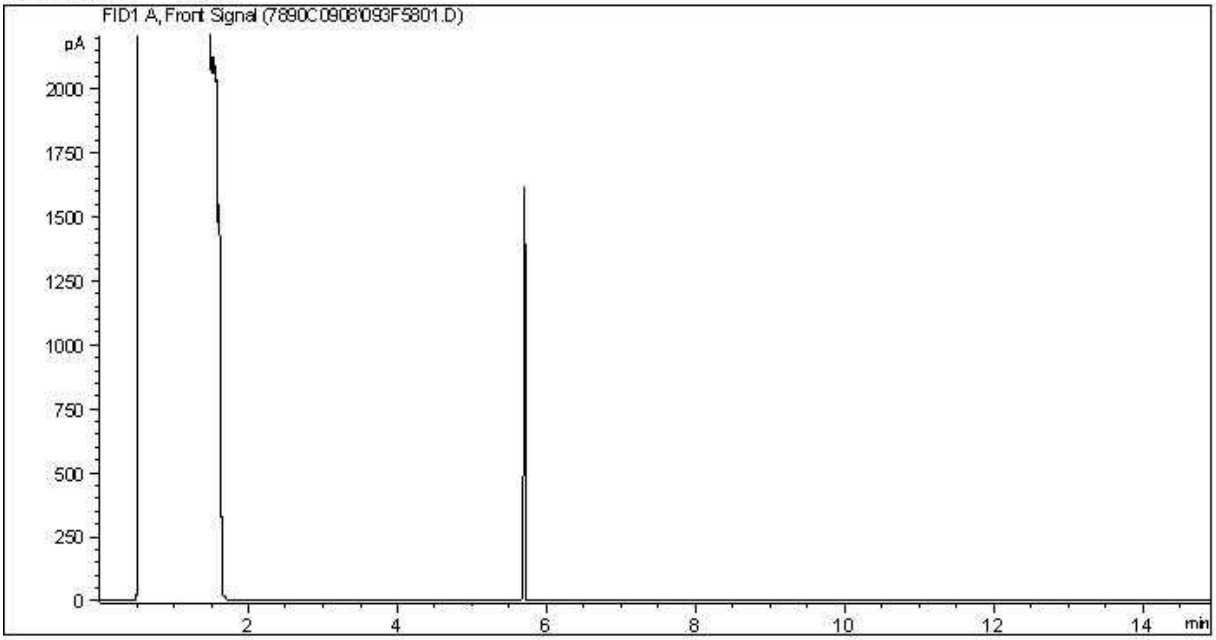
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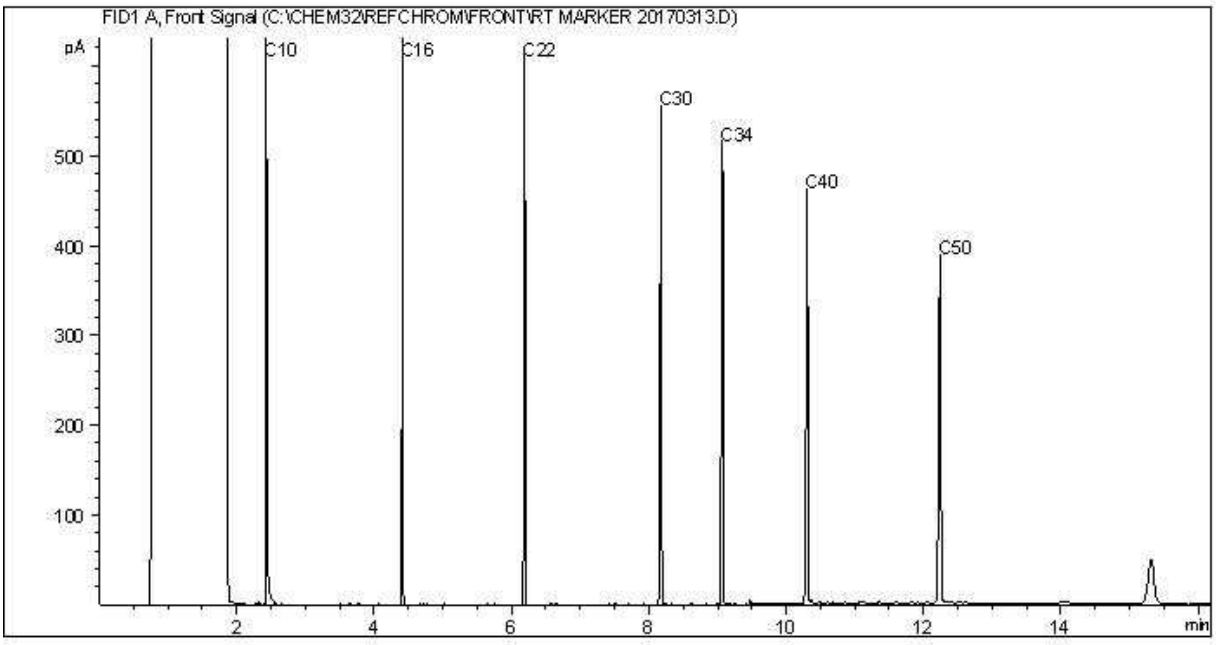
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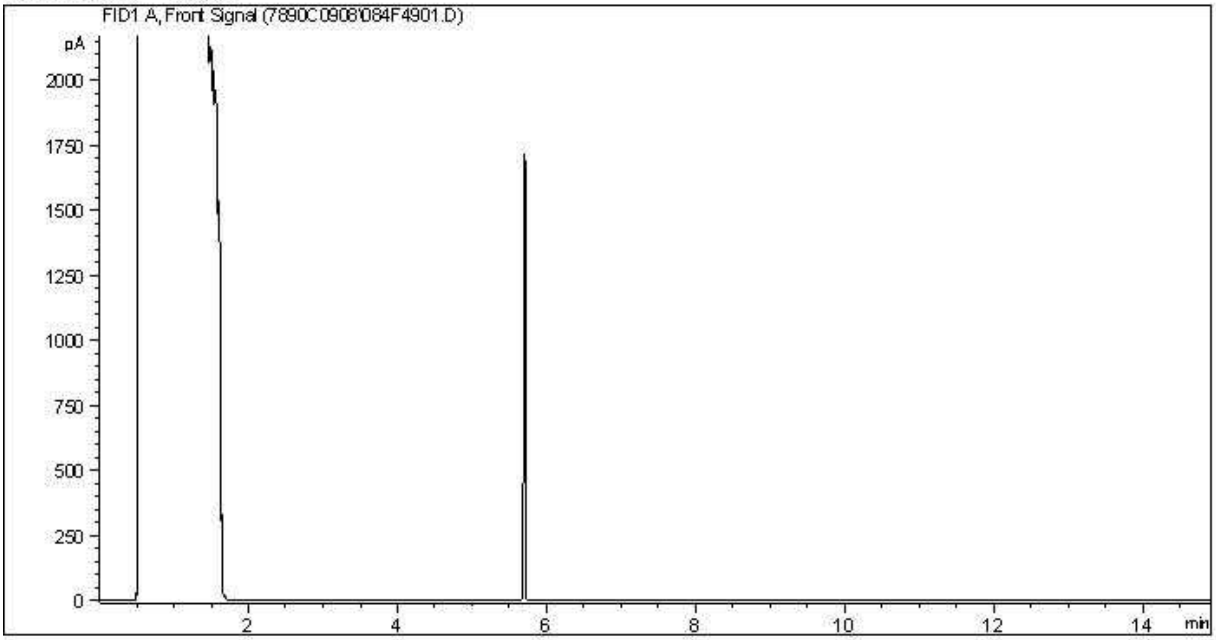
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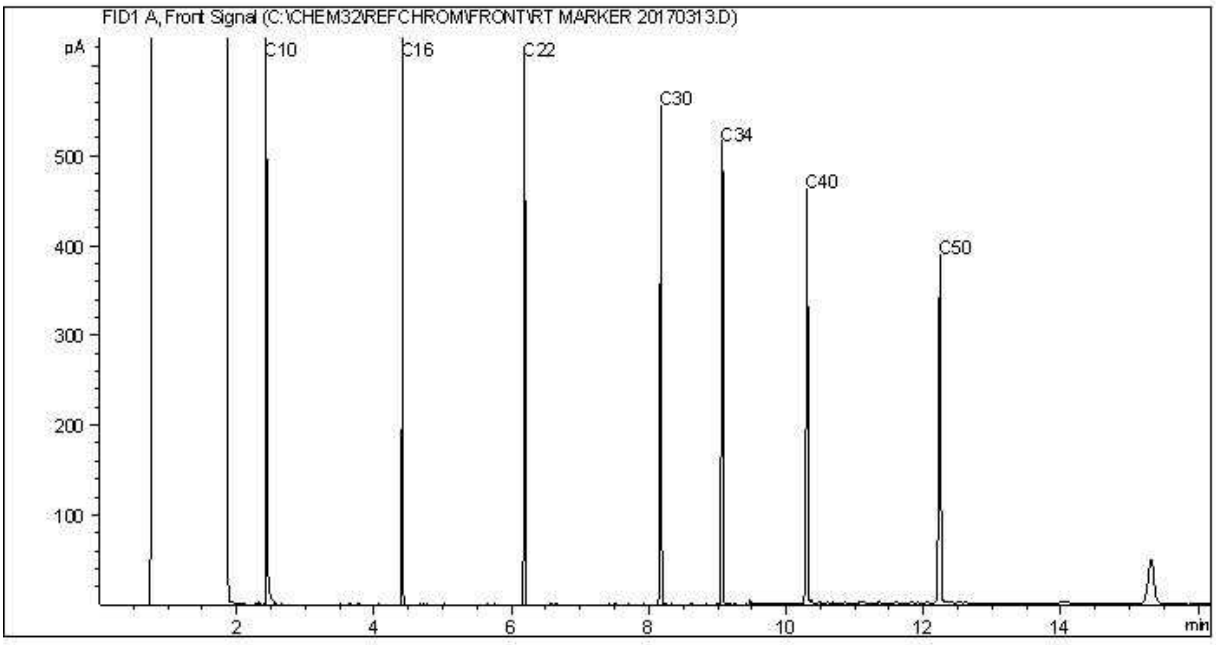
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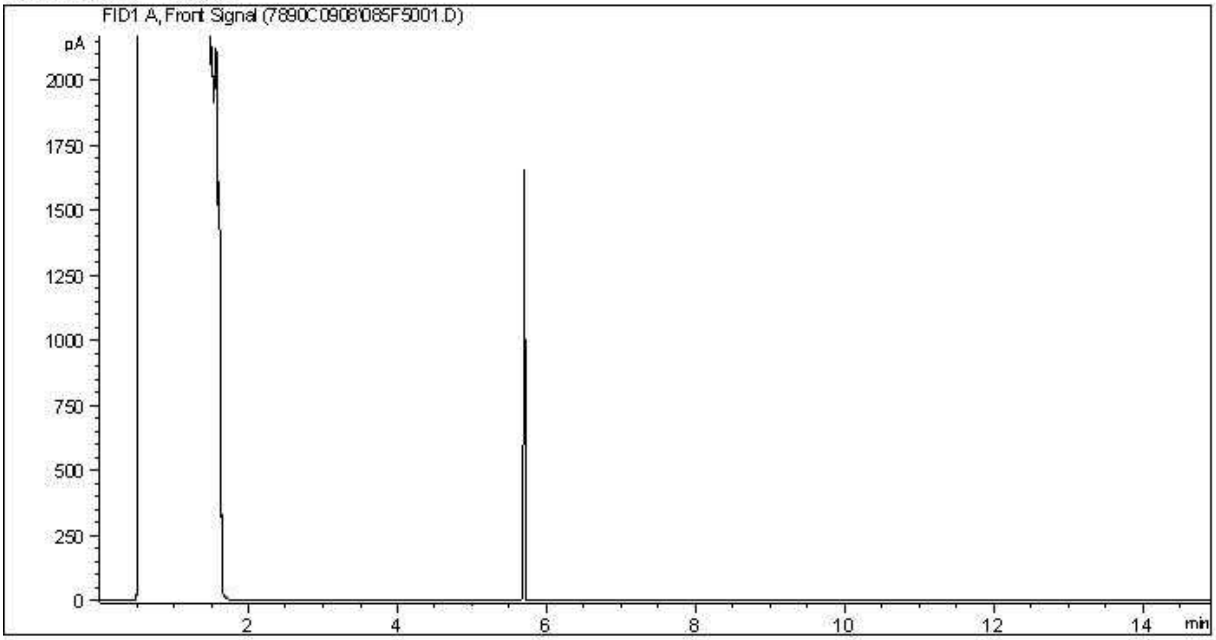
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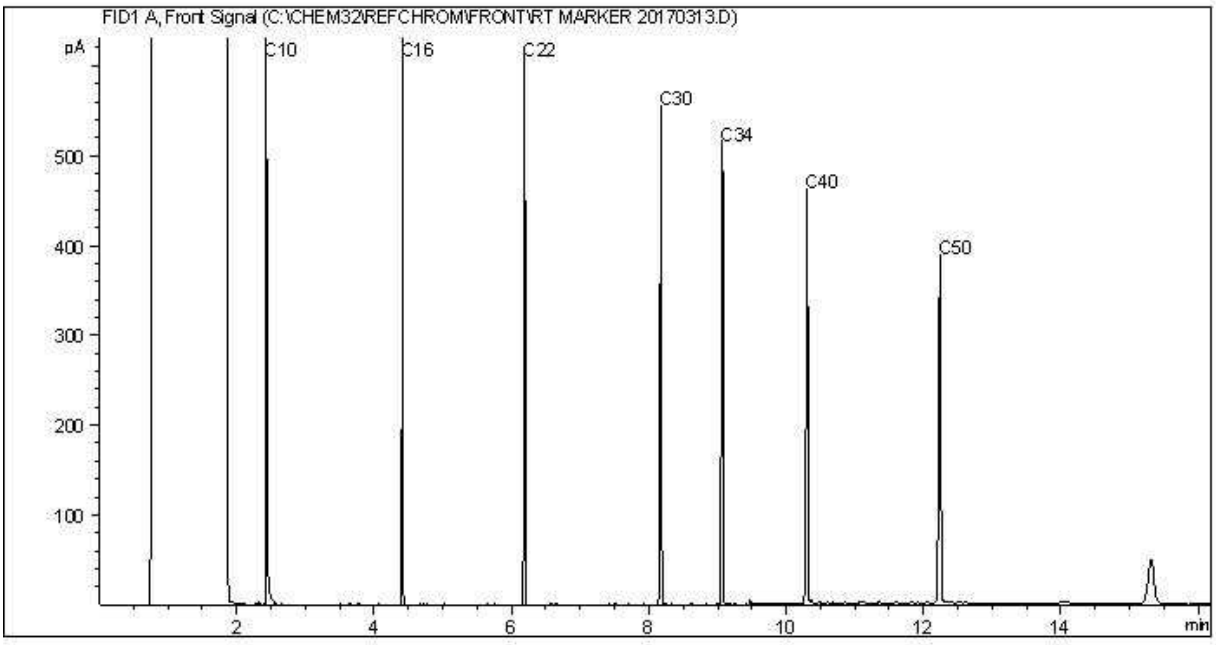
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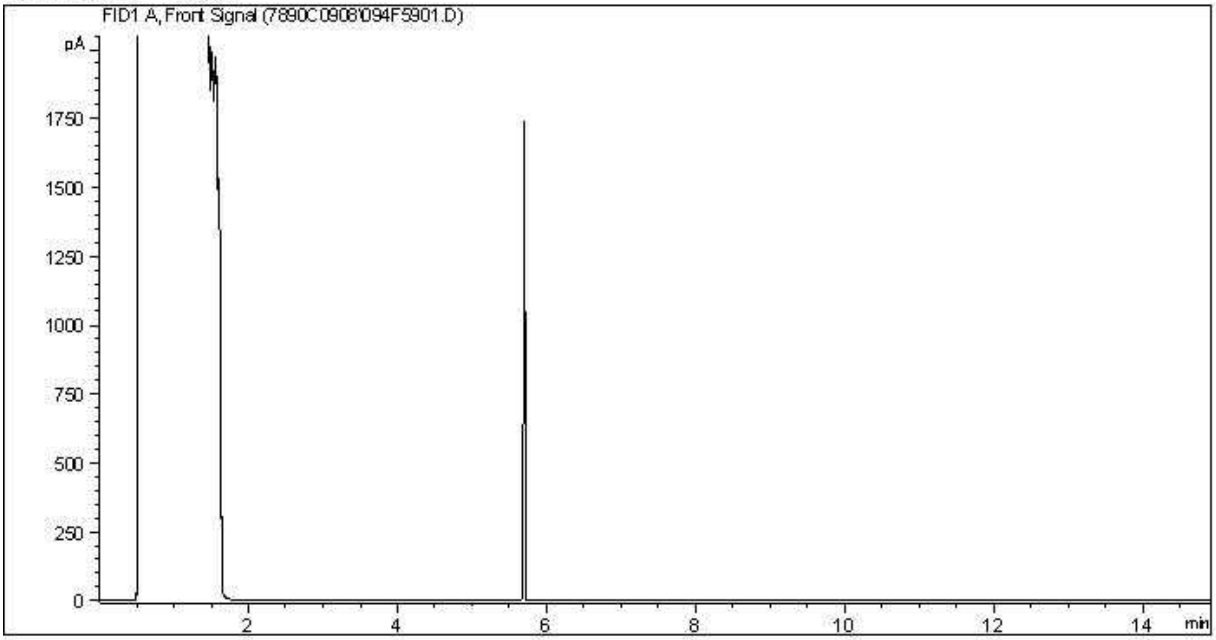
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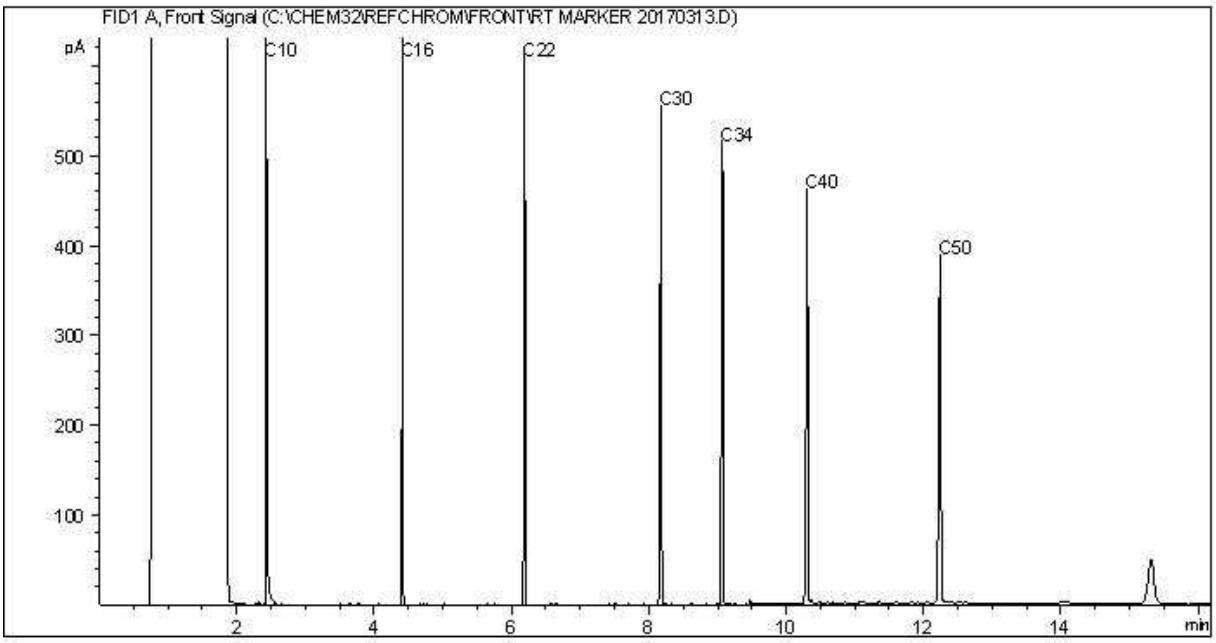
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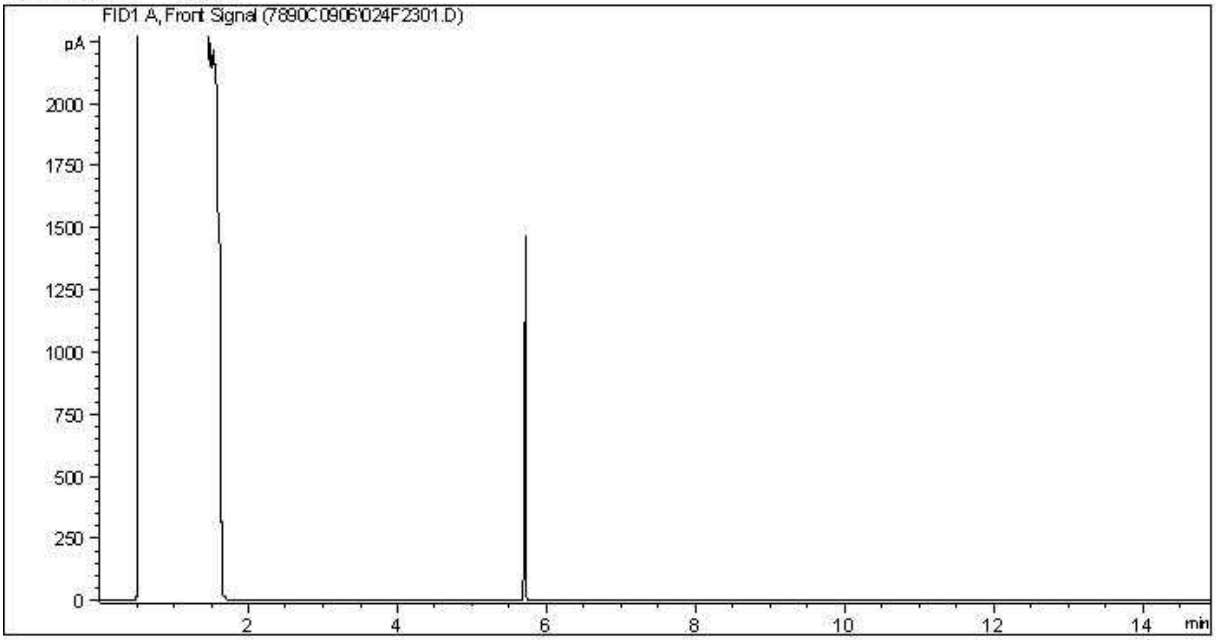
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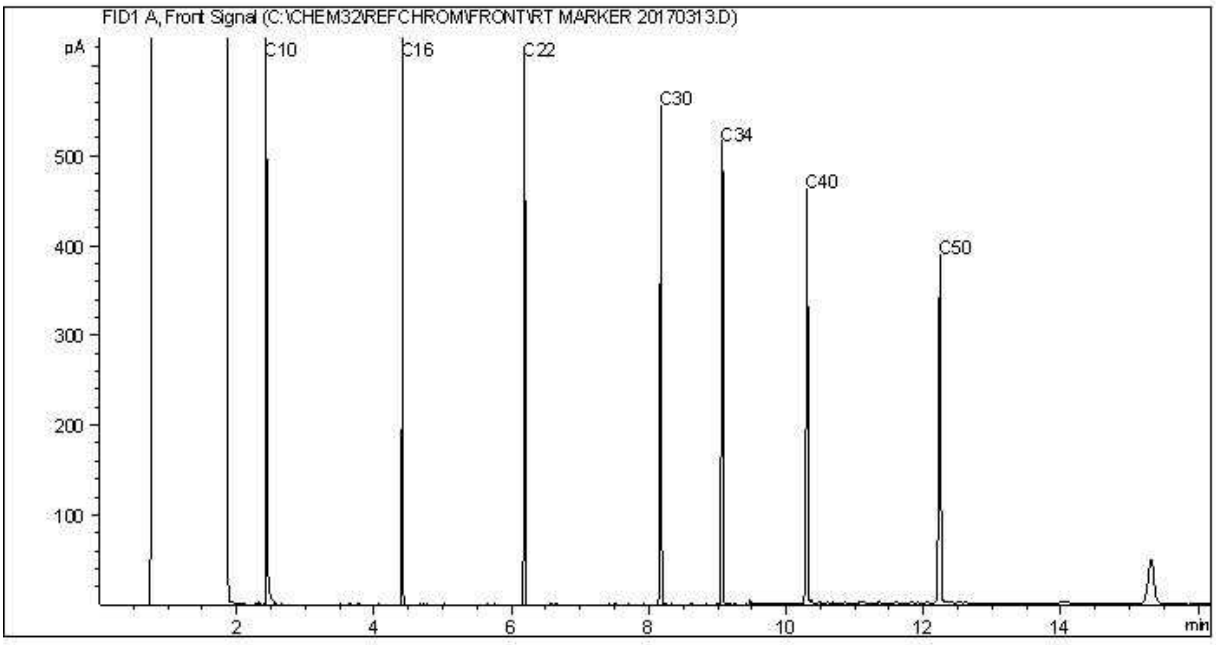
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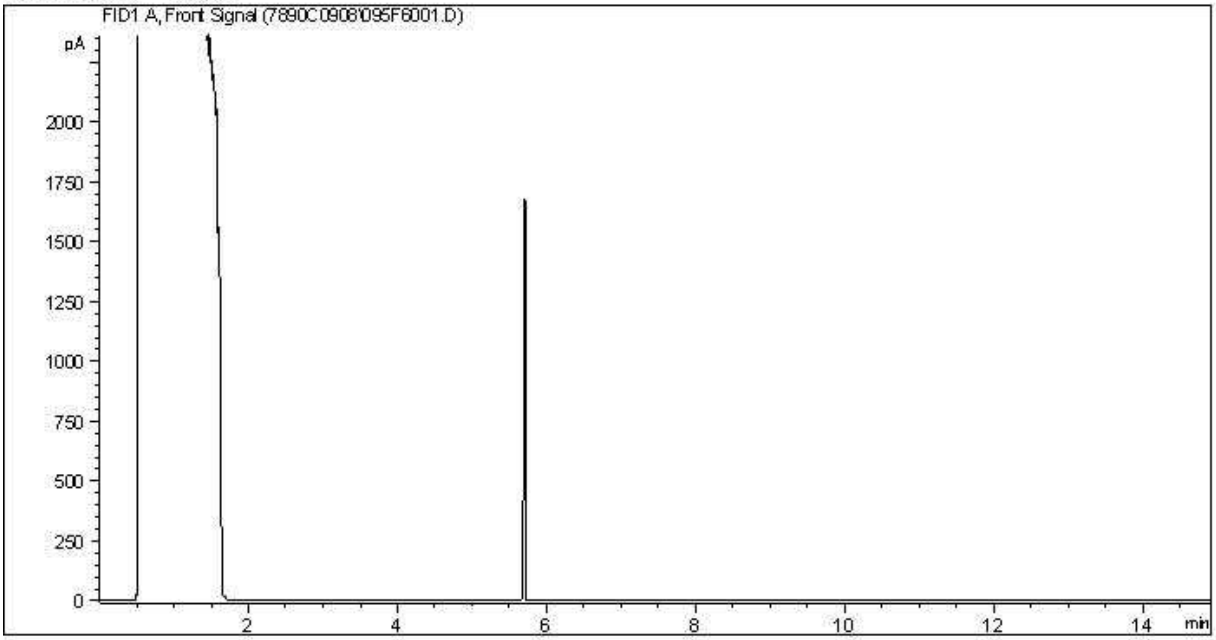
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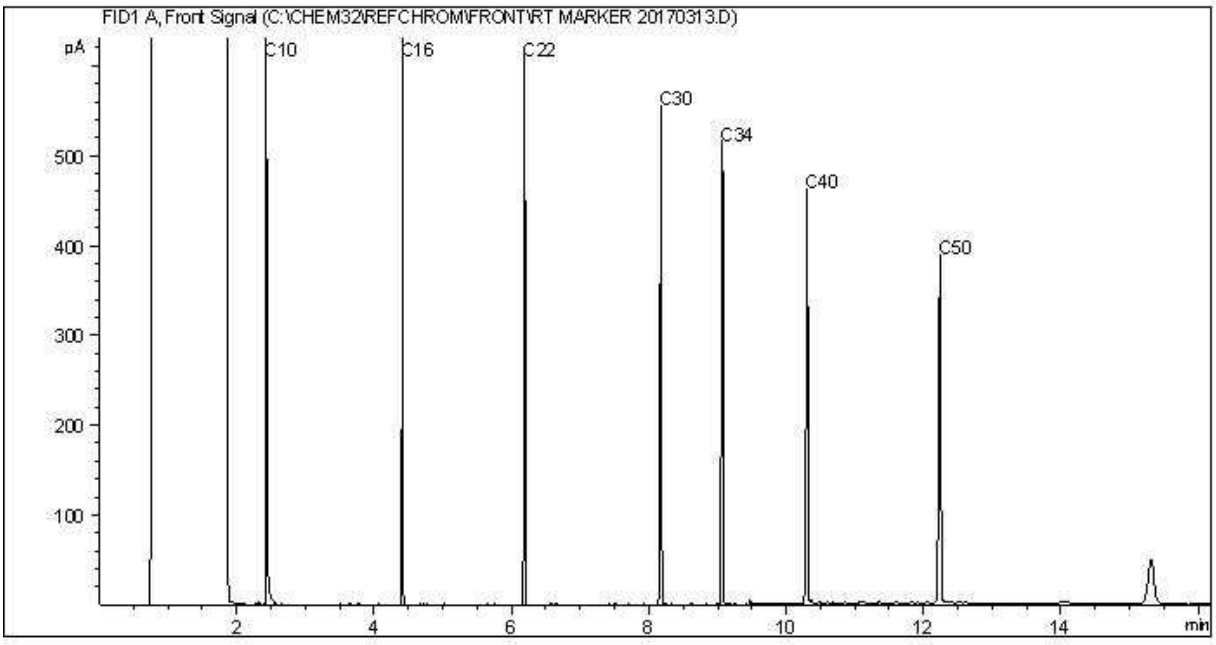
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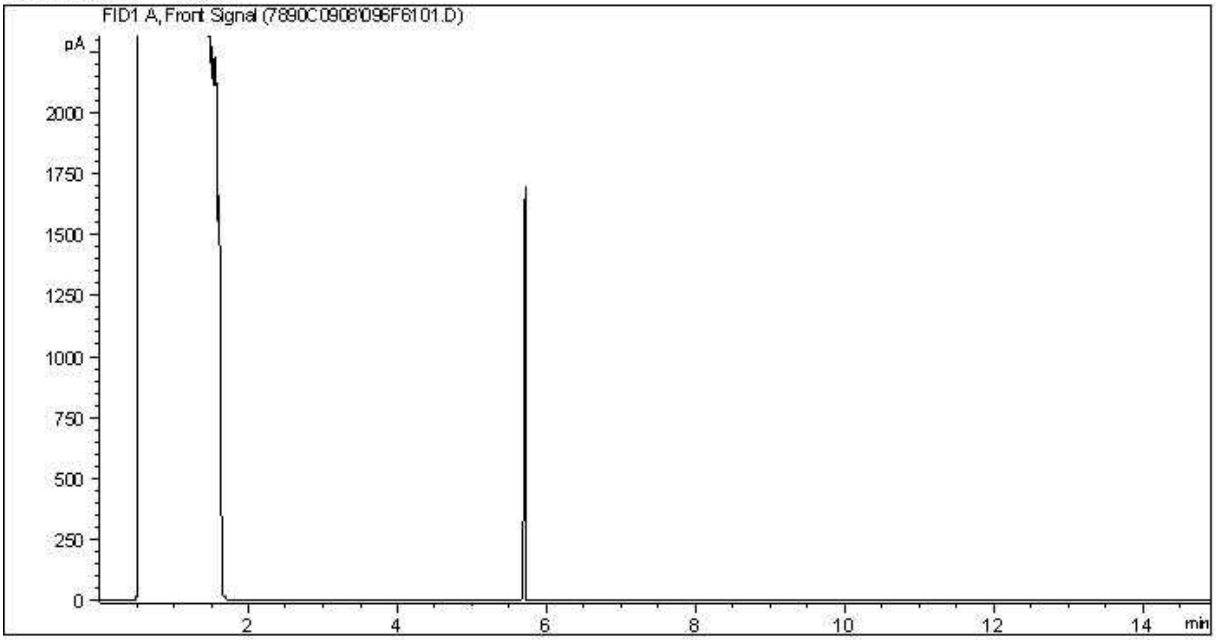
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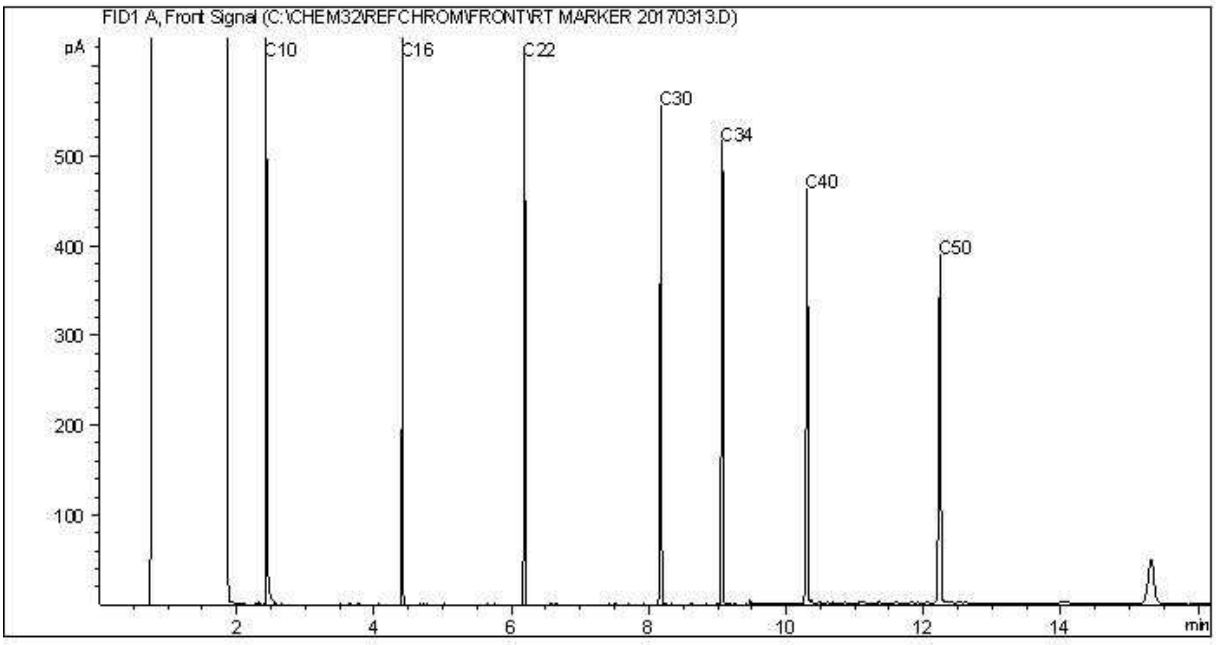
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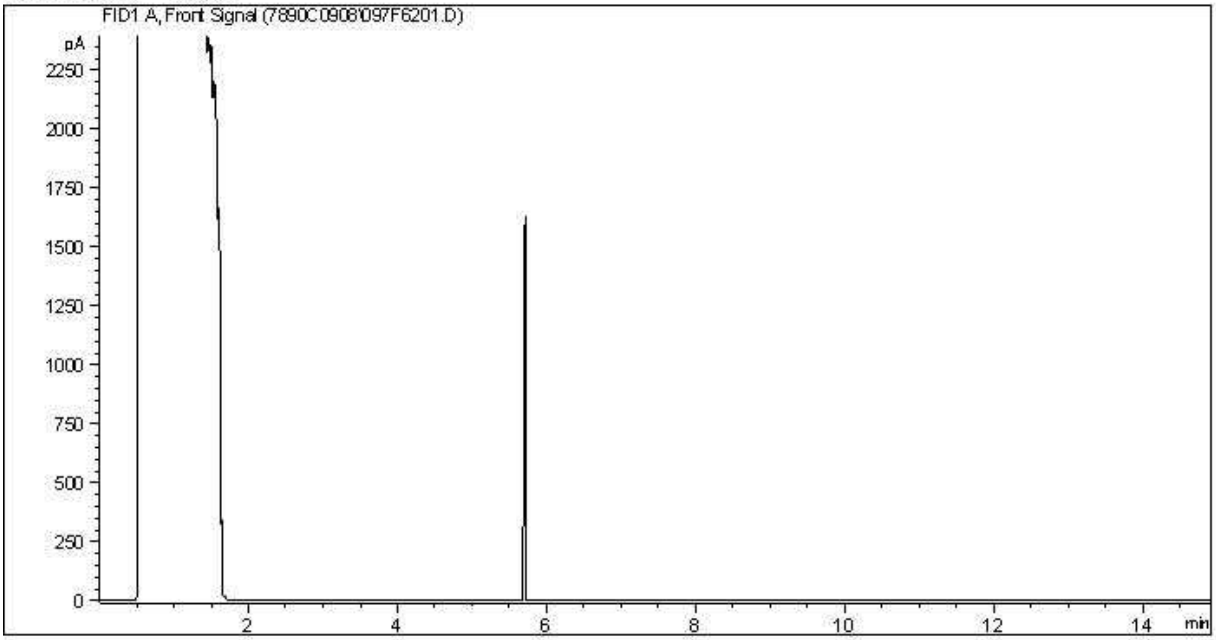
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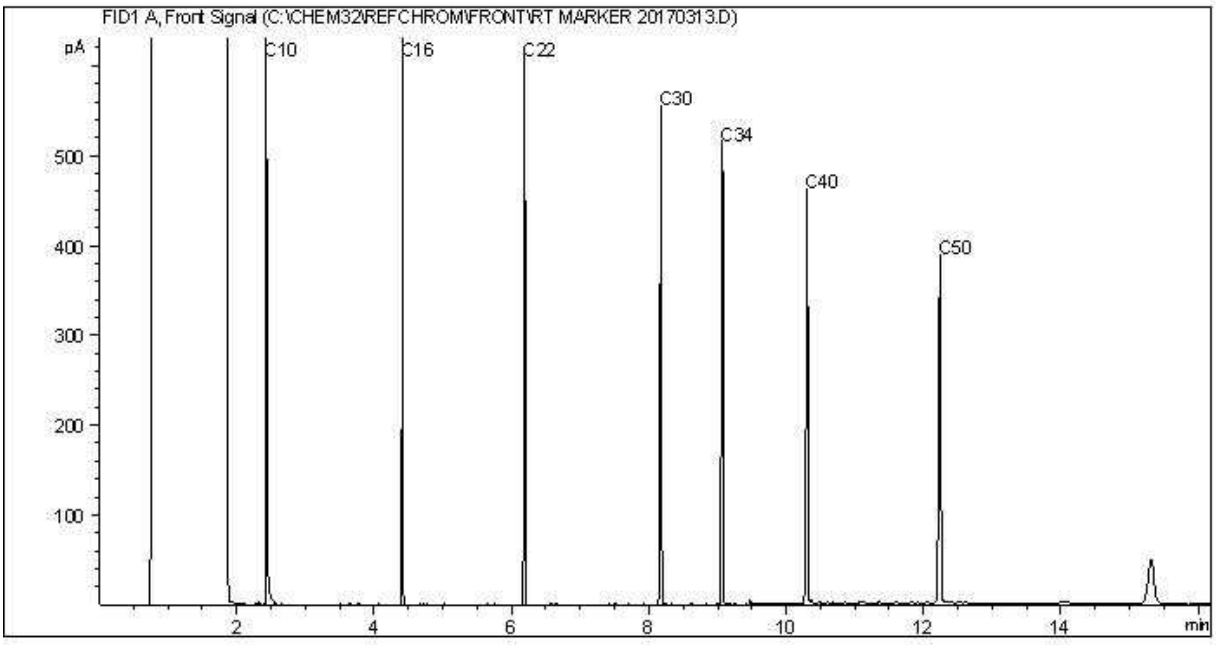
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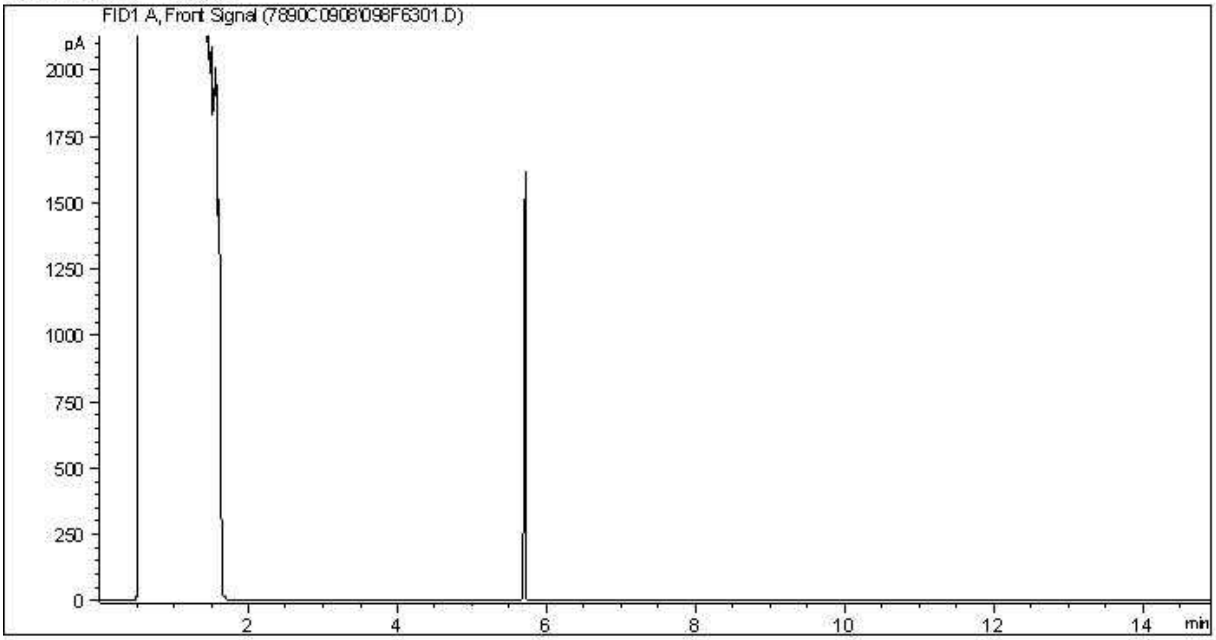
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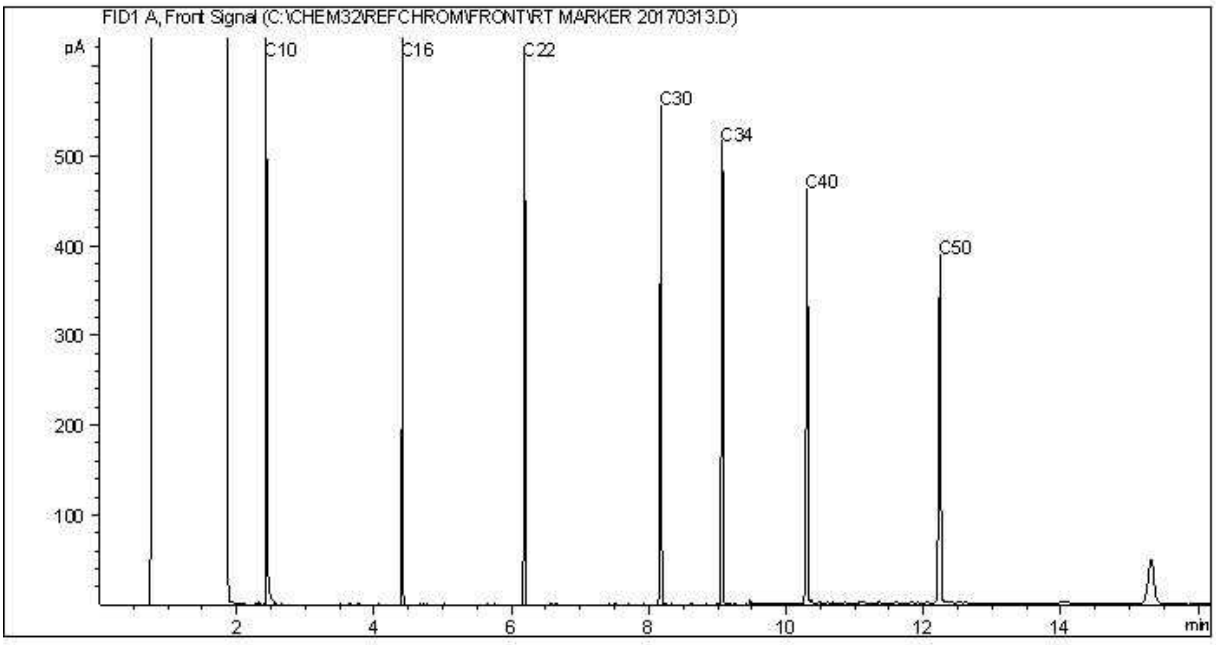
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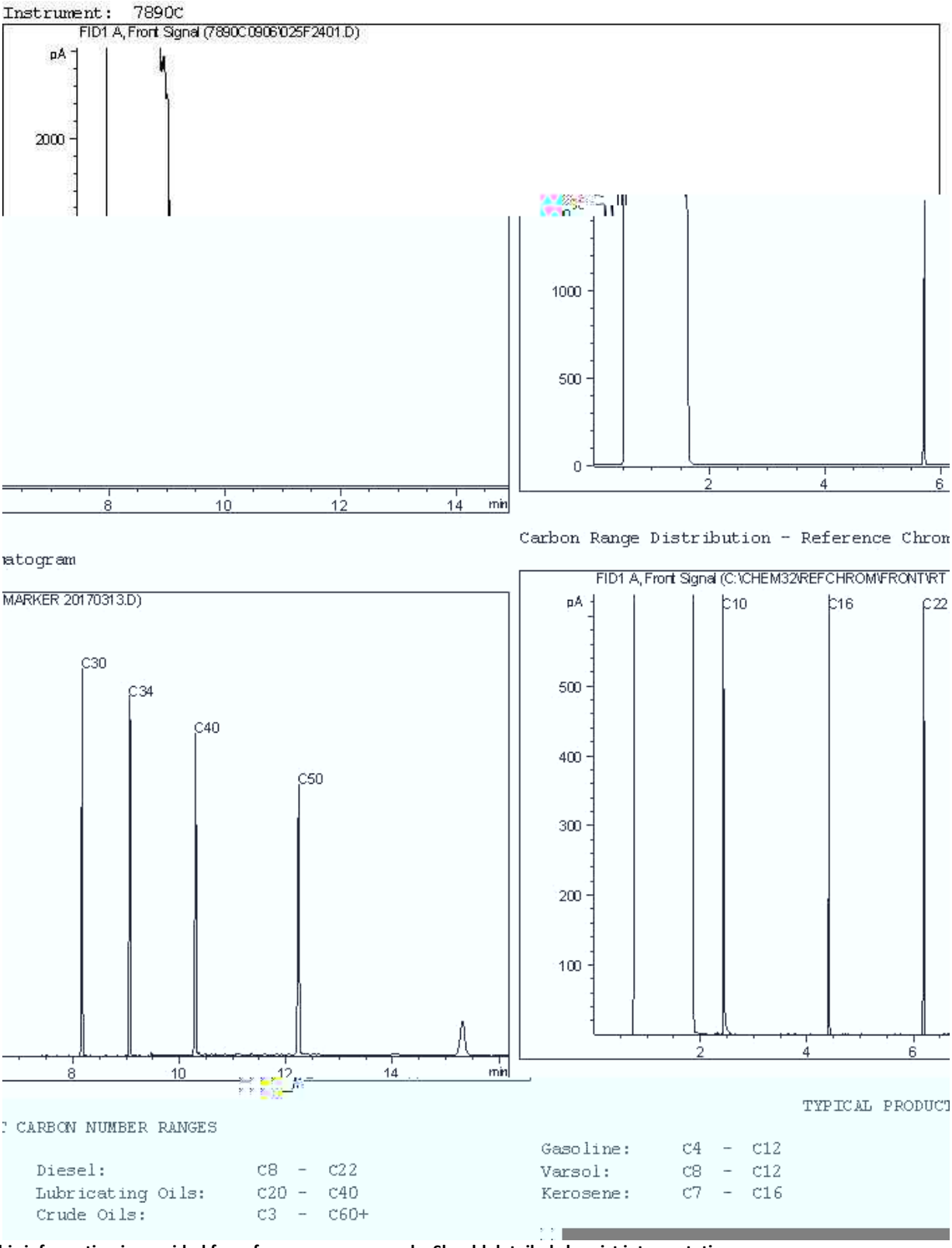
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BV Labs Job #: B973139
Report Date: 2019/12/12
BV Labs Sample: WK3662

ARCADIS Canada Inc
Client Project #: 30000251
Client ID: C1-15B

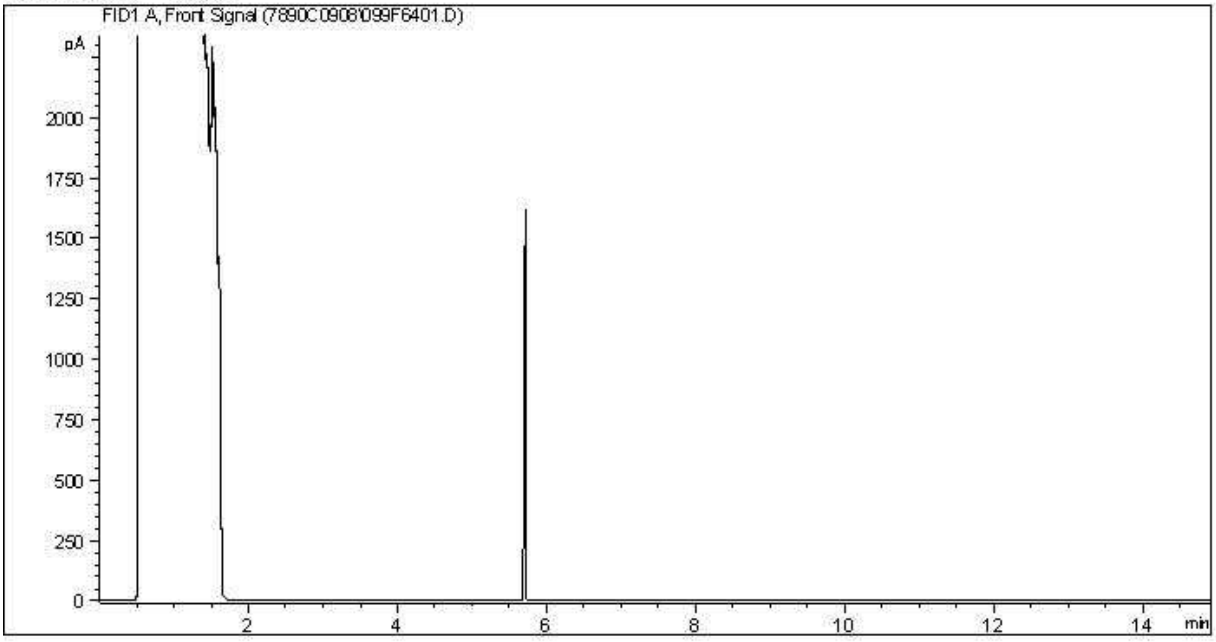
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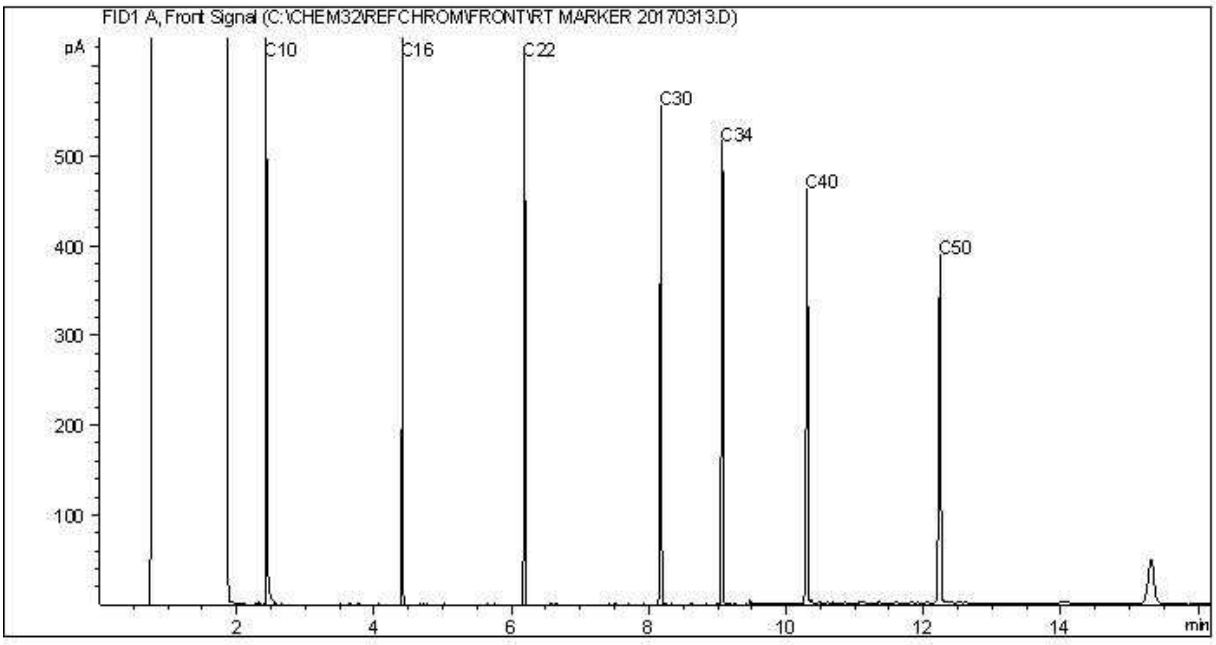
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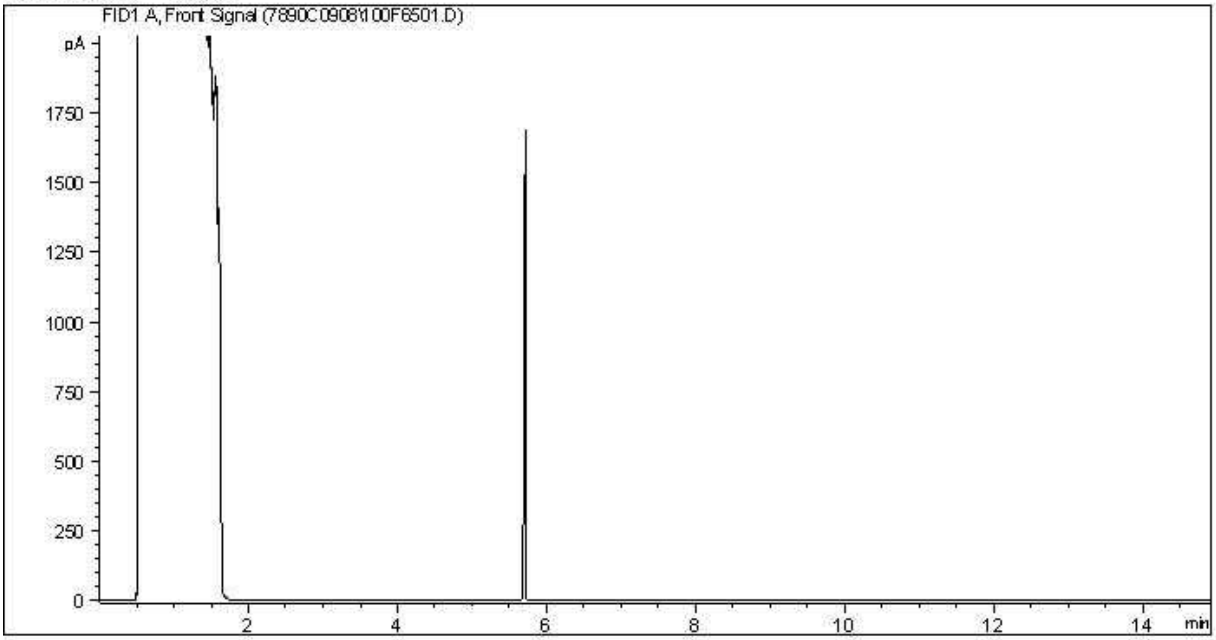
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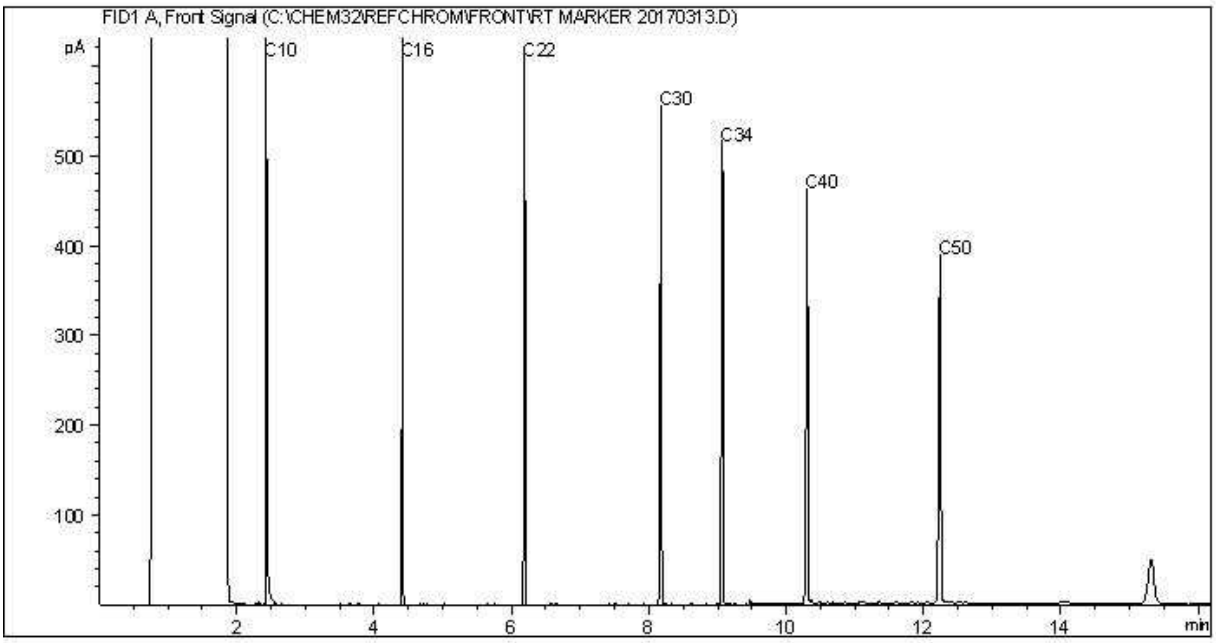
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CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Instrument: 7890C



Carbon Range Distribution - Reference Chromatogram



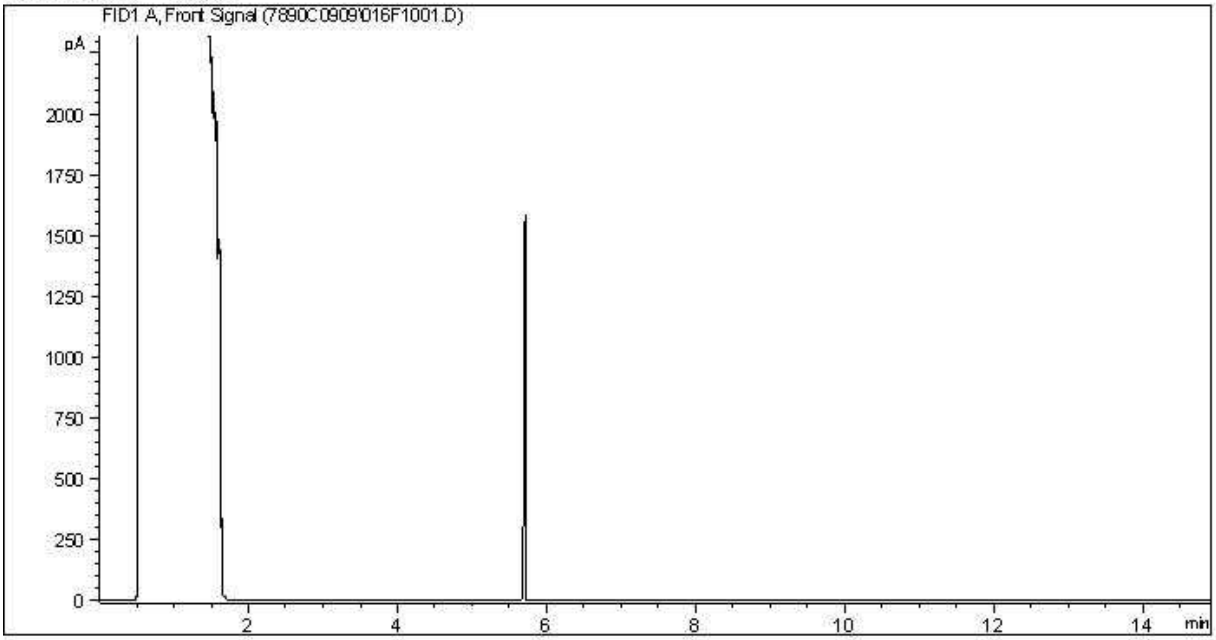
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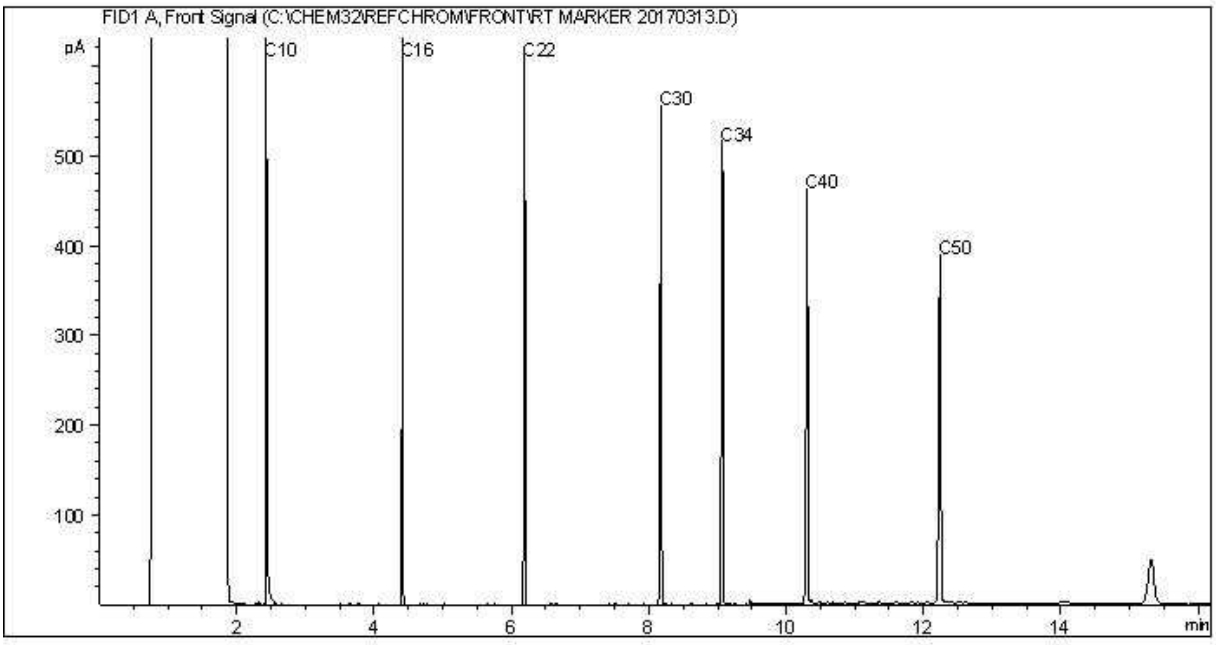
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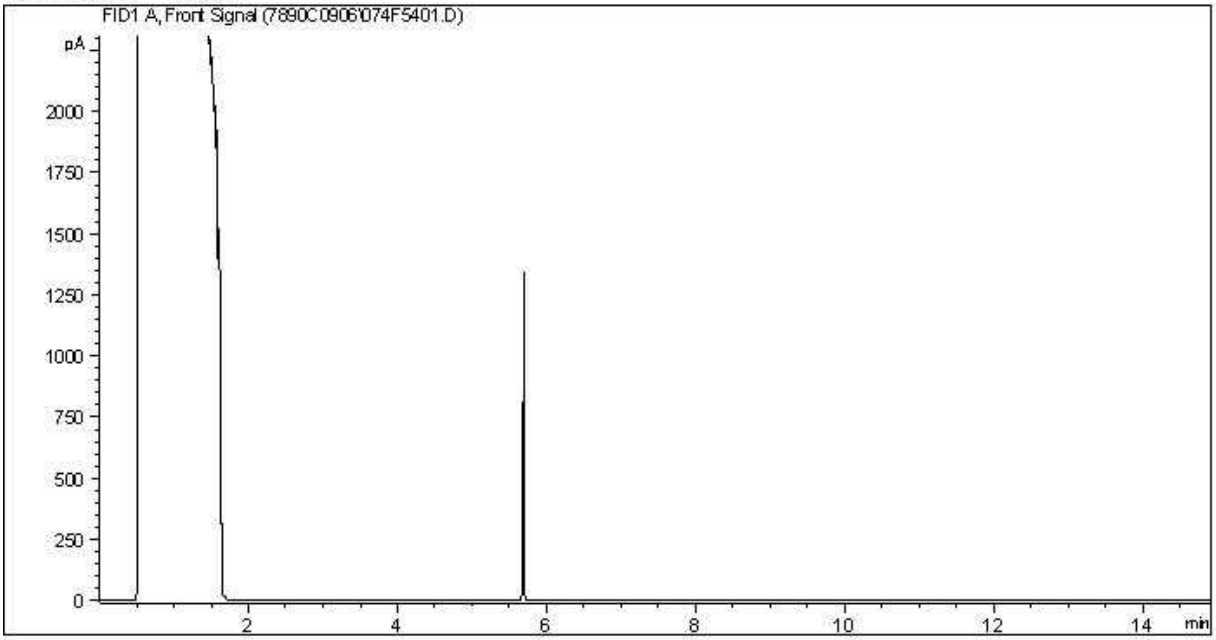
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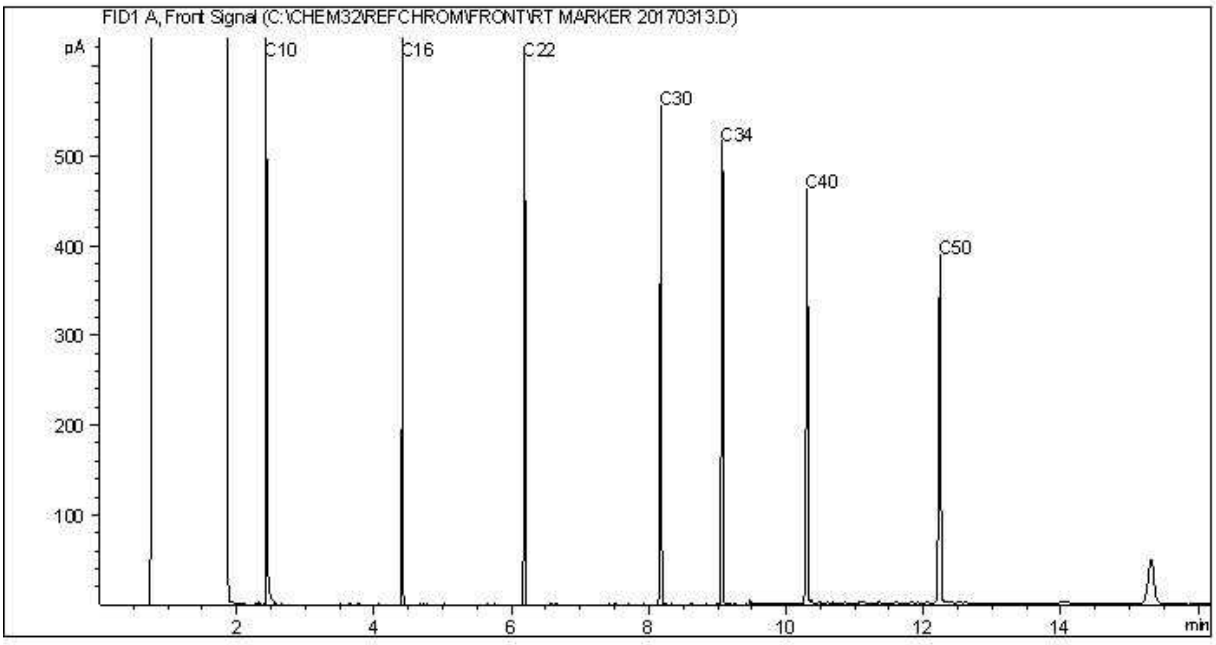
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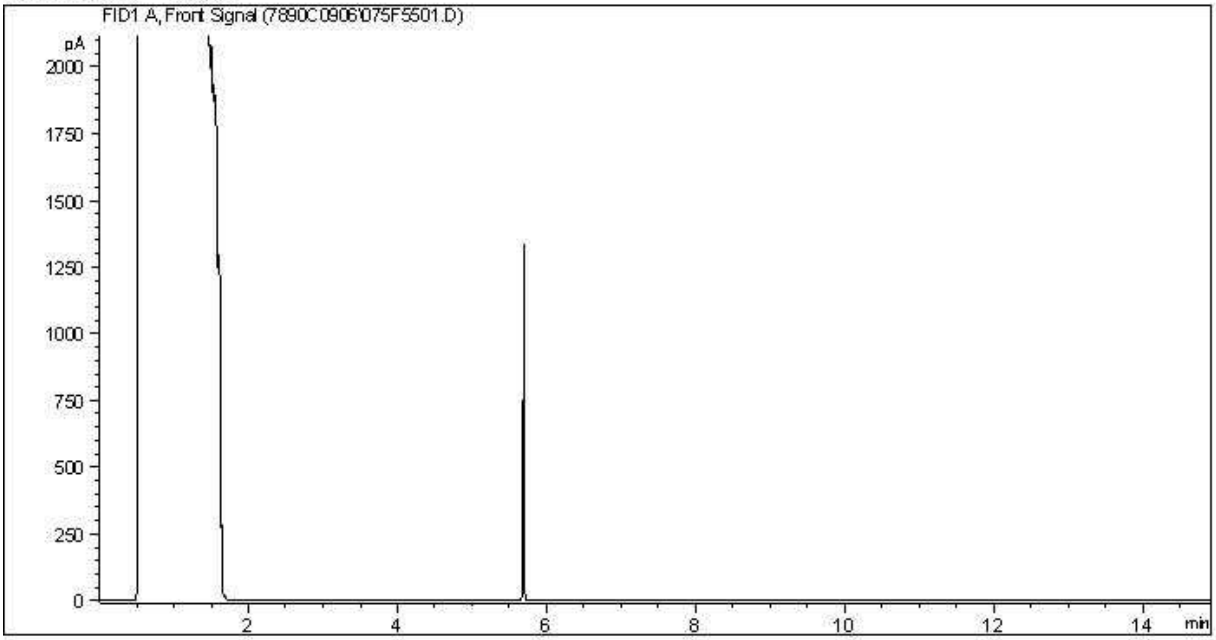
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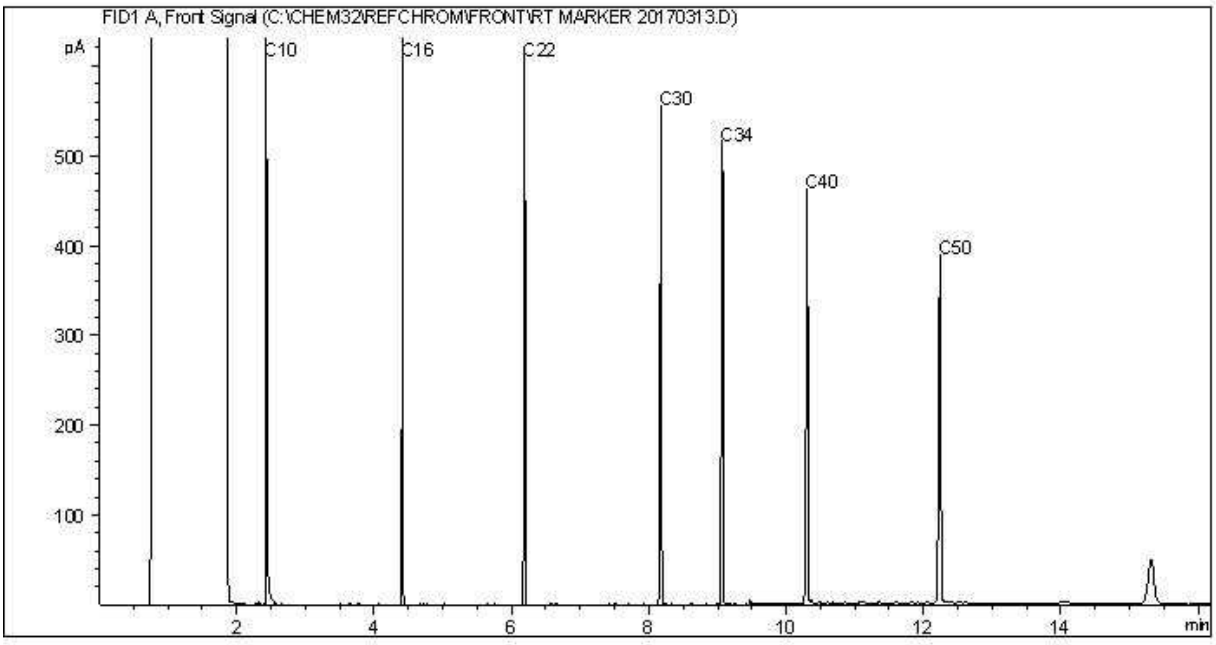
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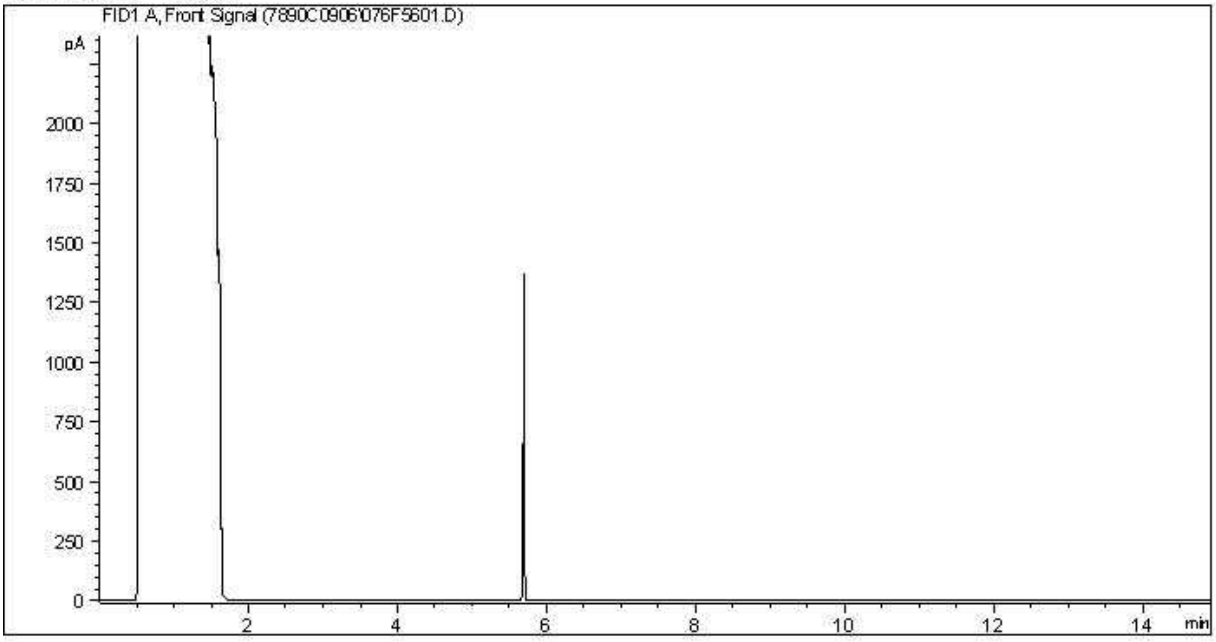
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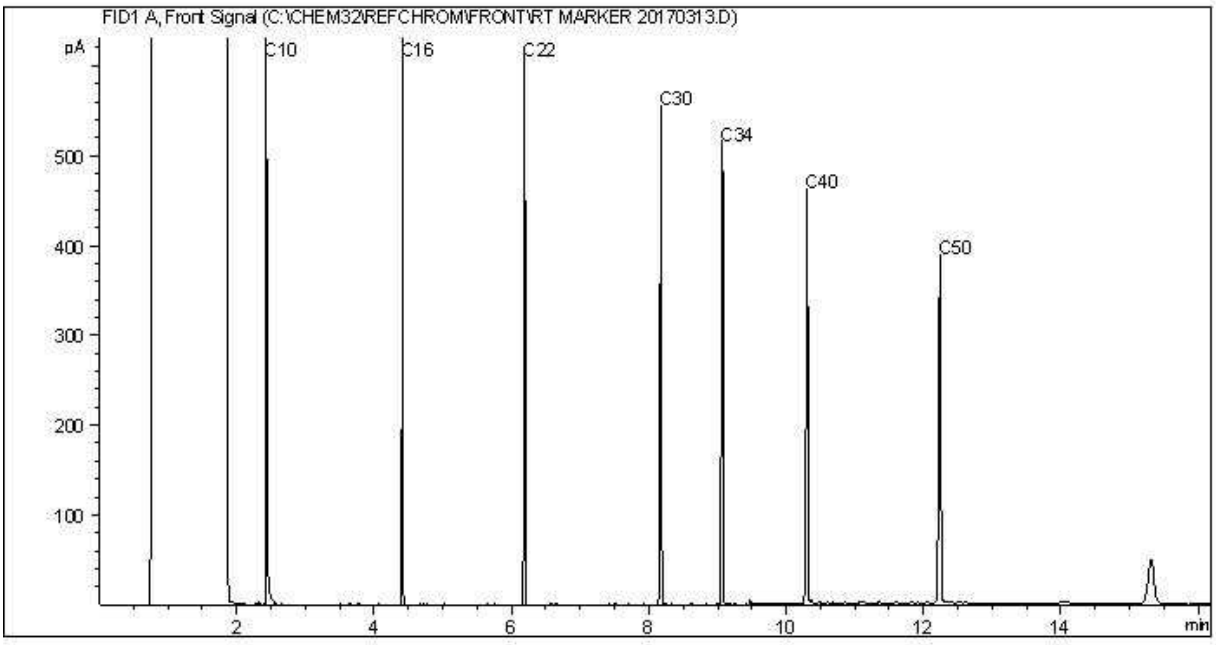
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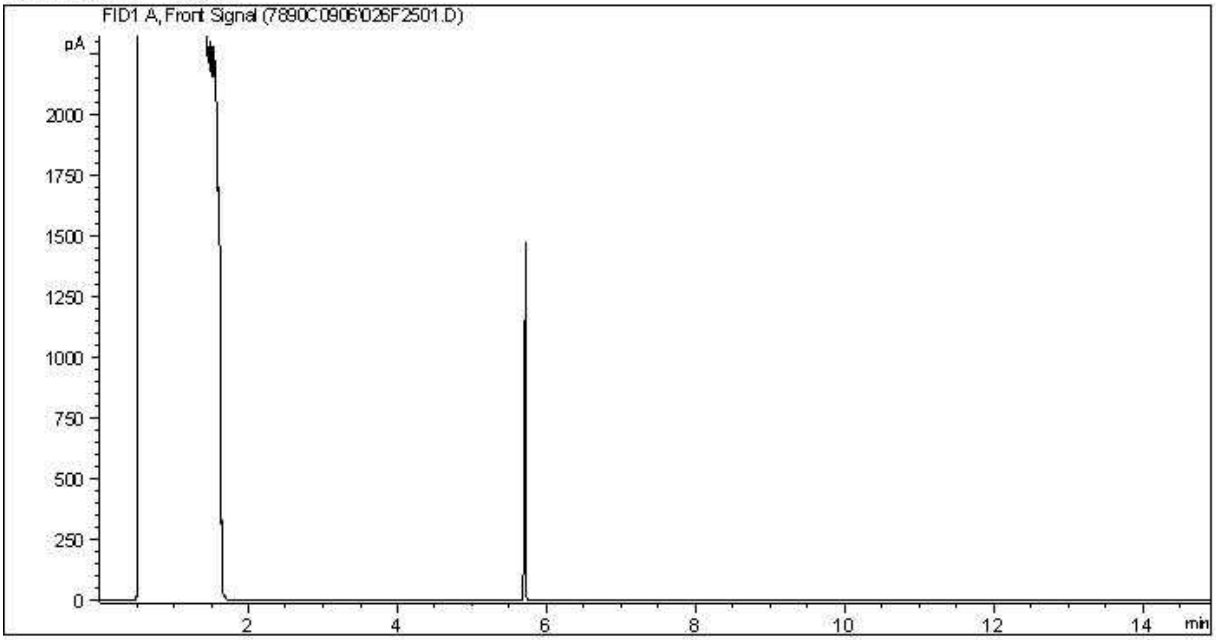
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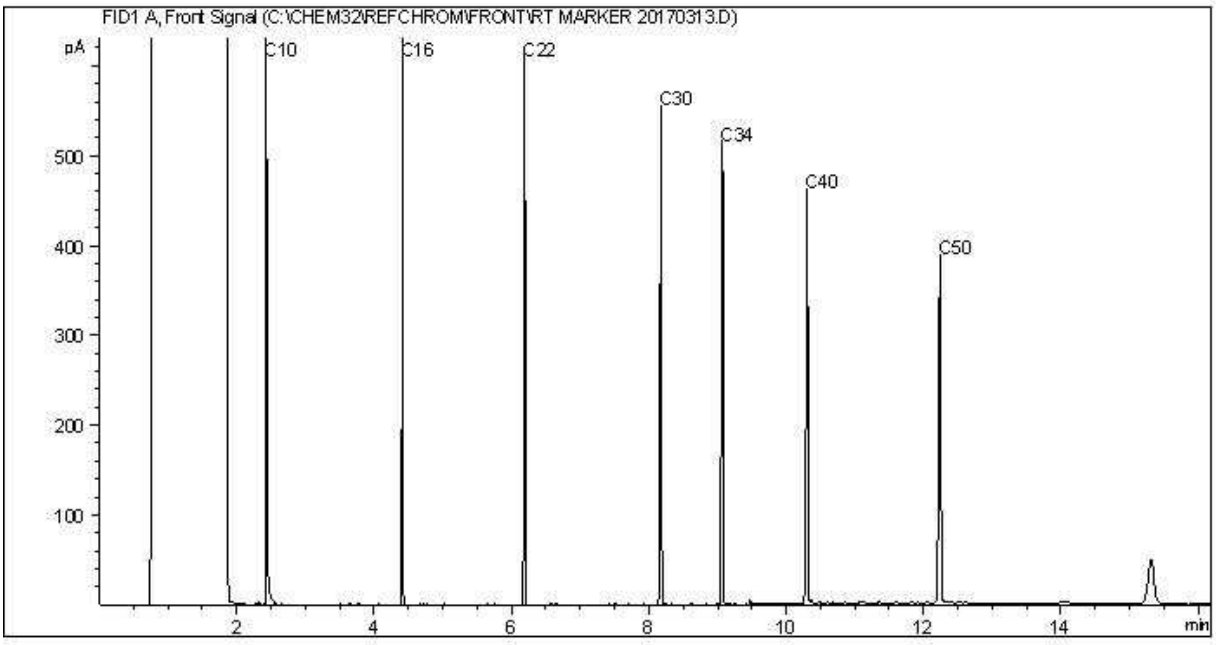
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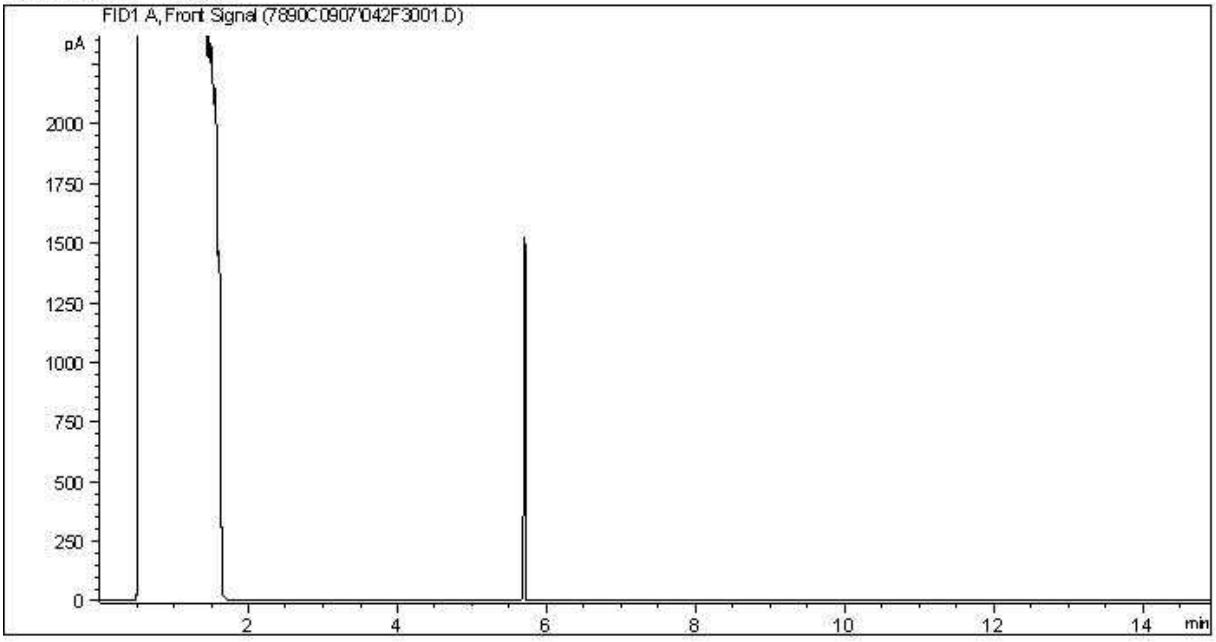
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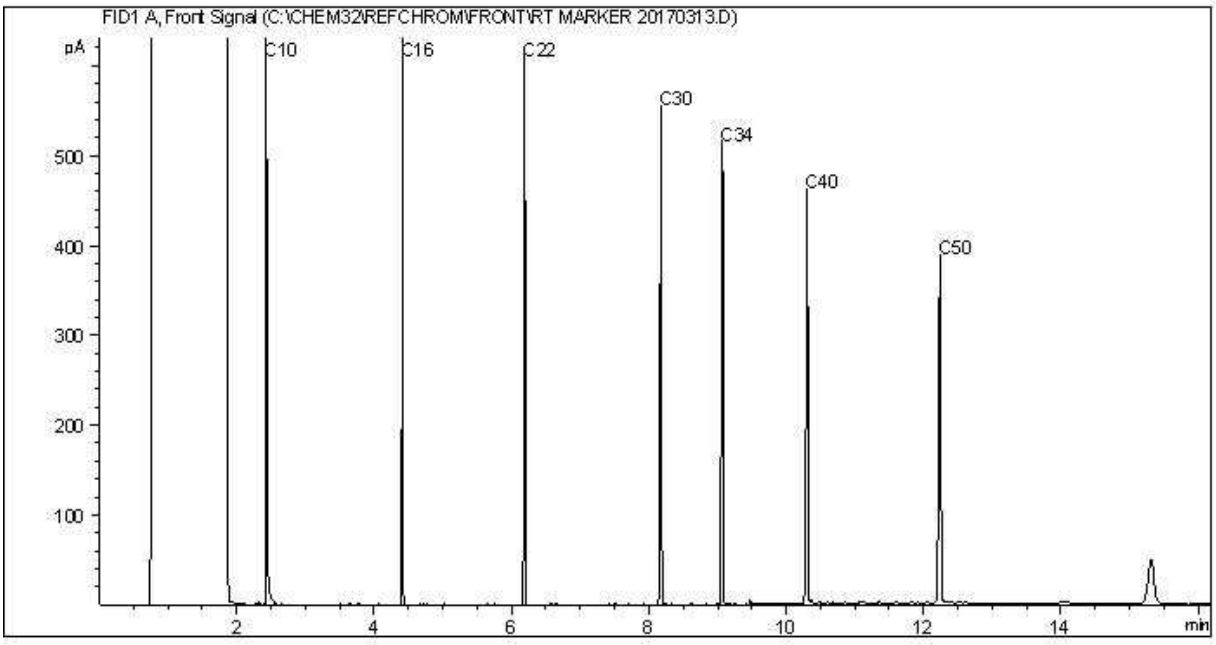
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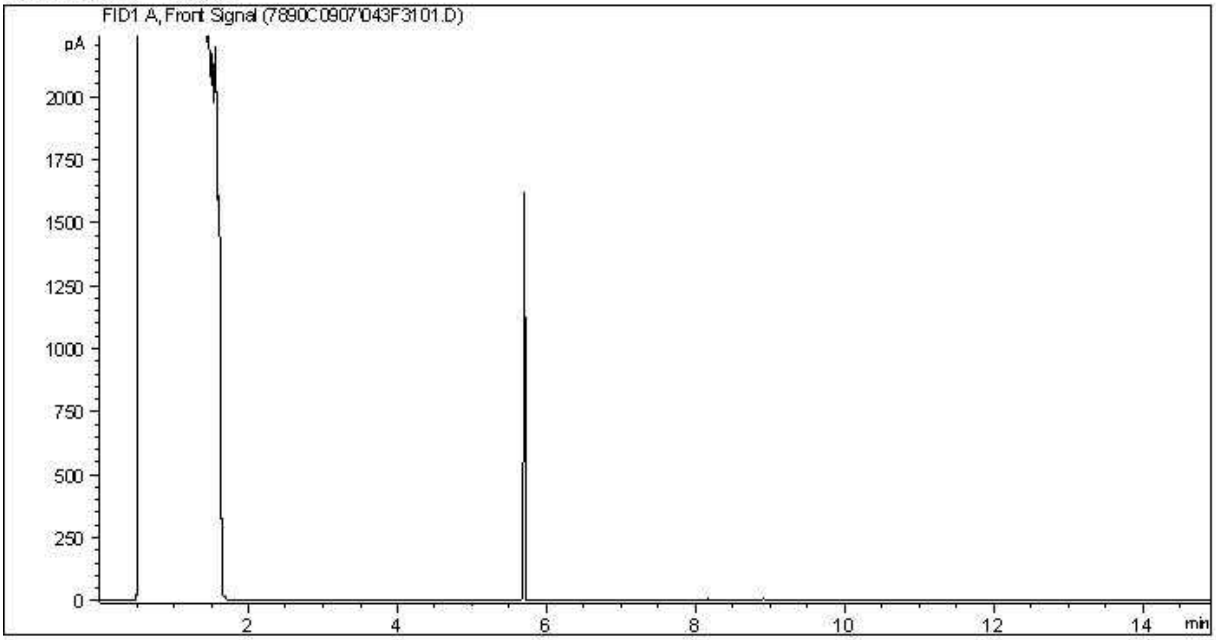
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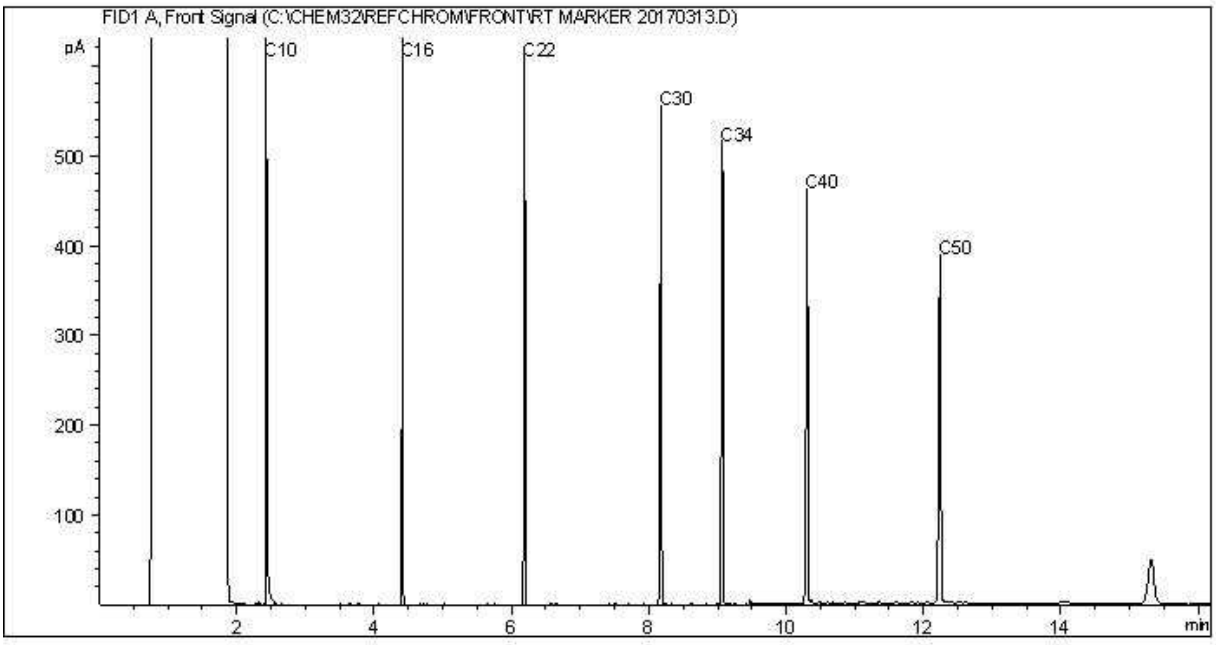
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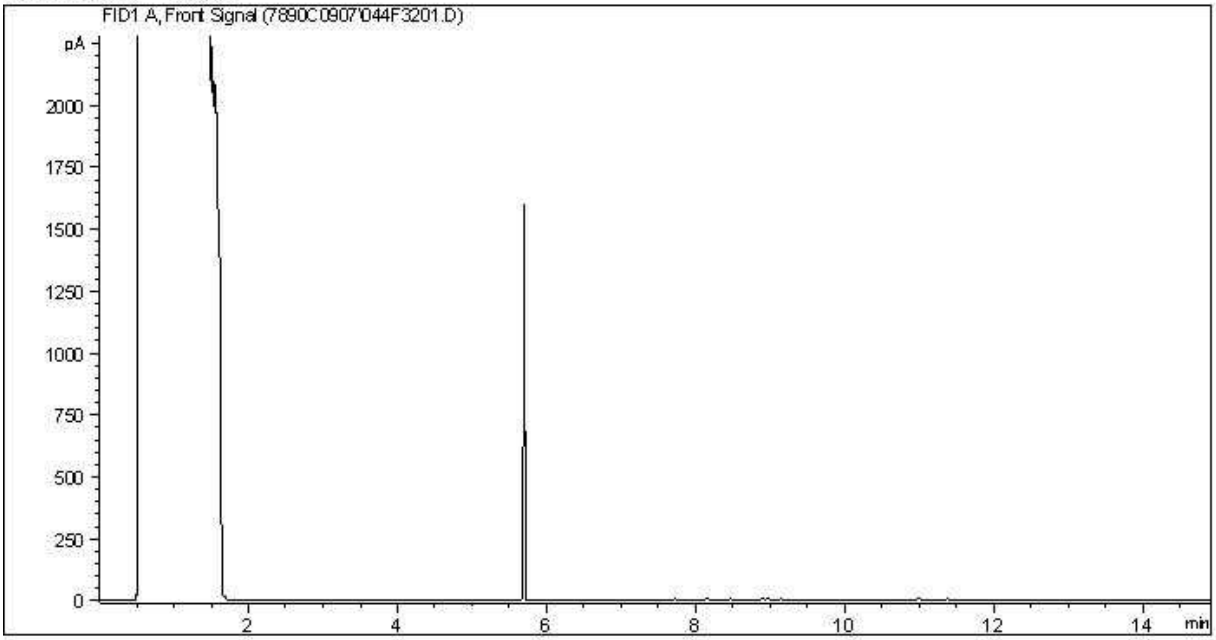
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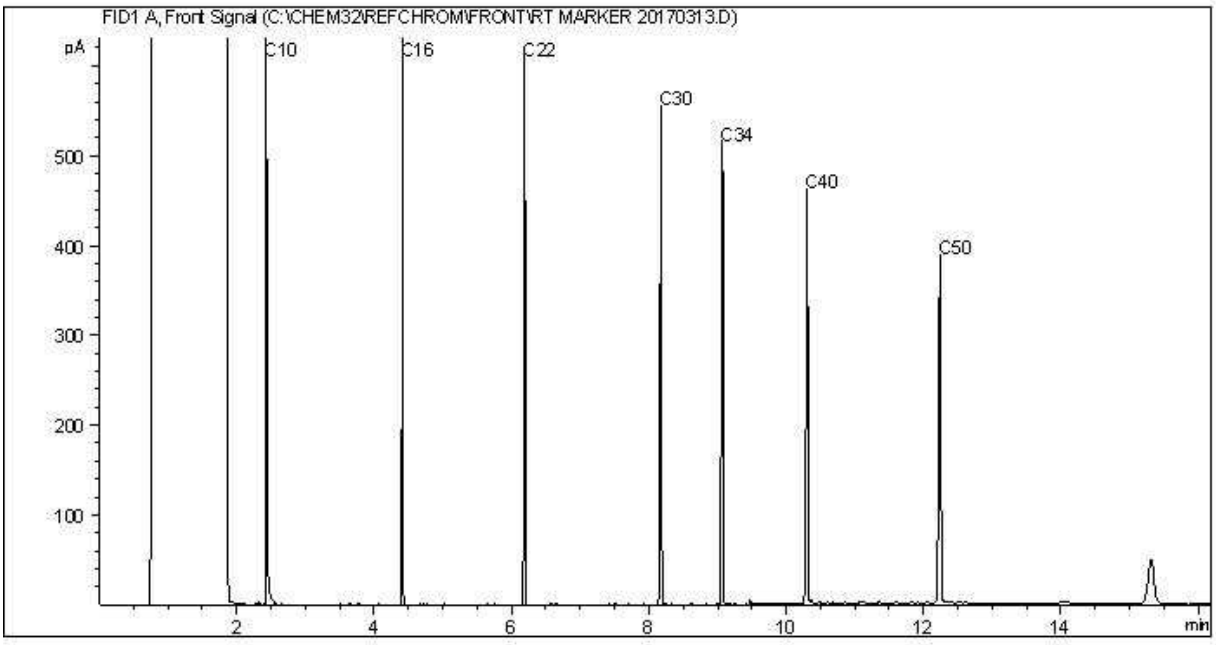
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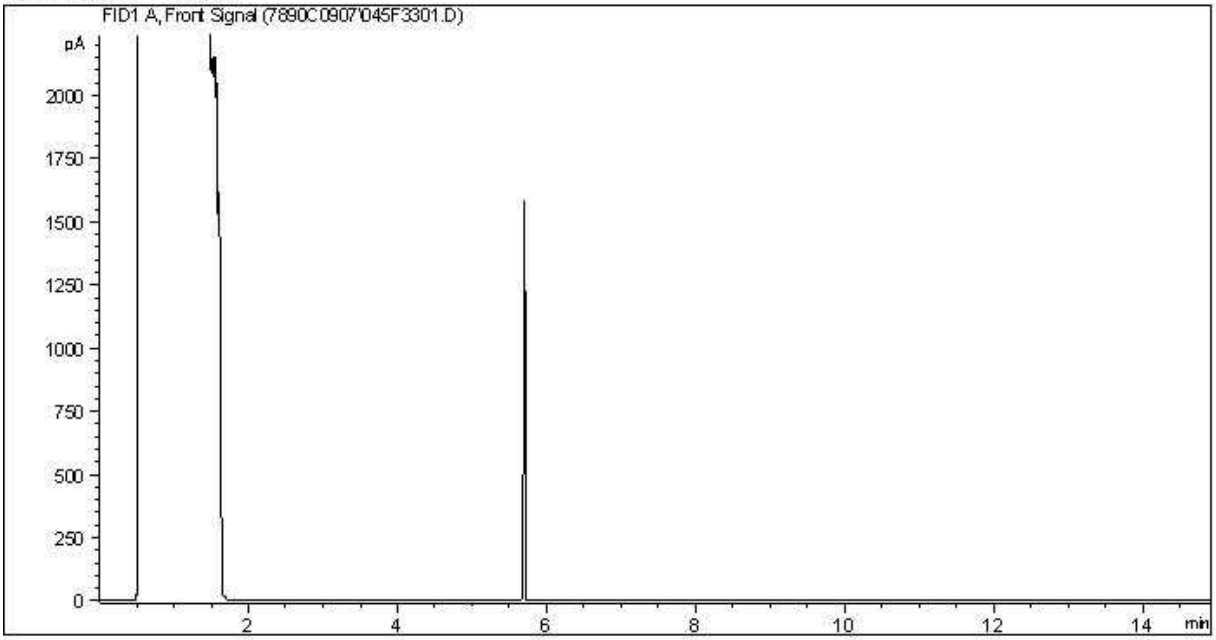
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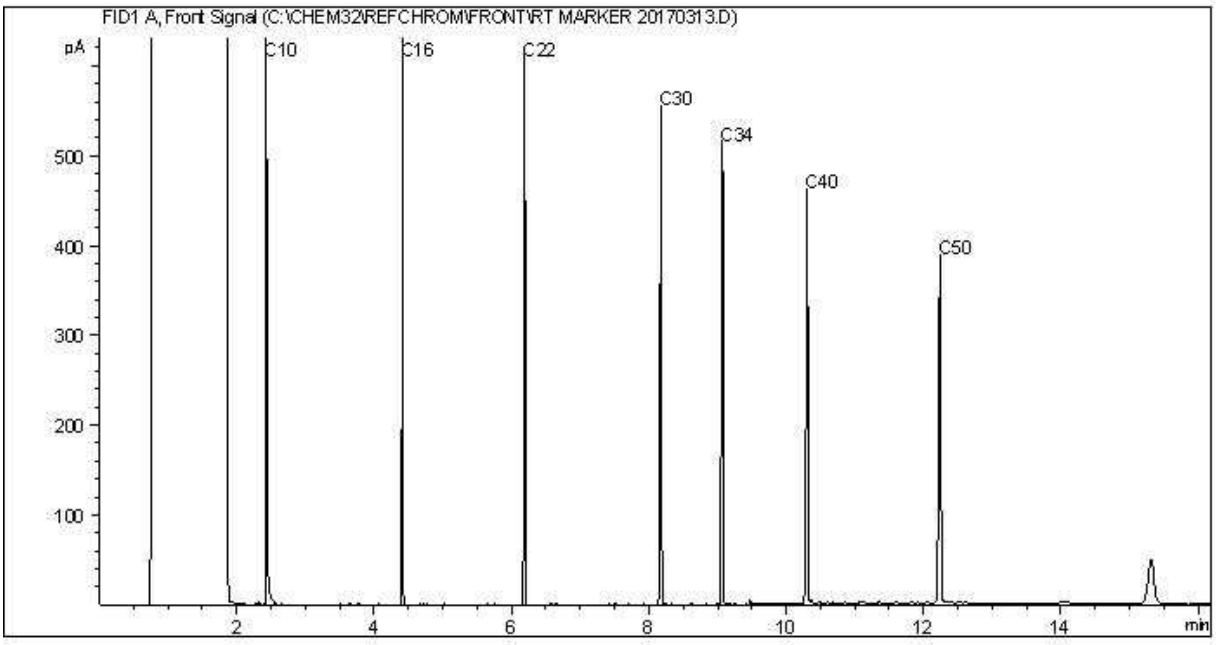
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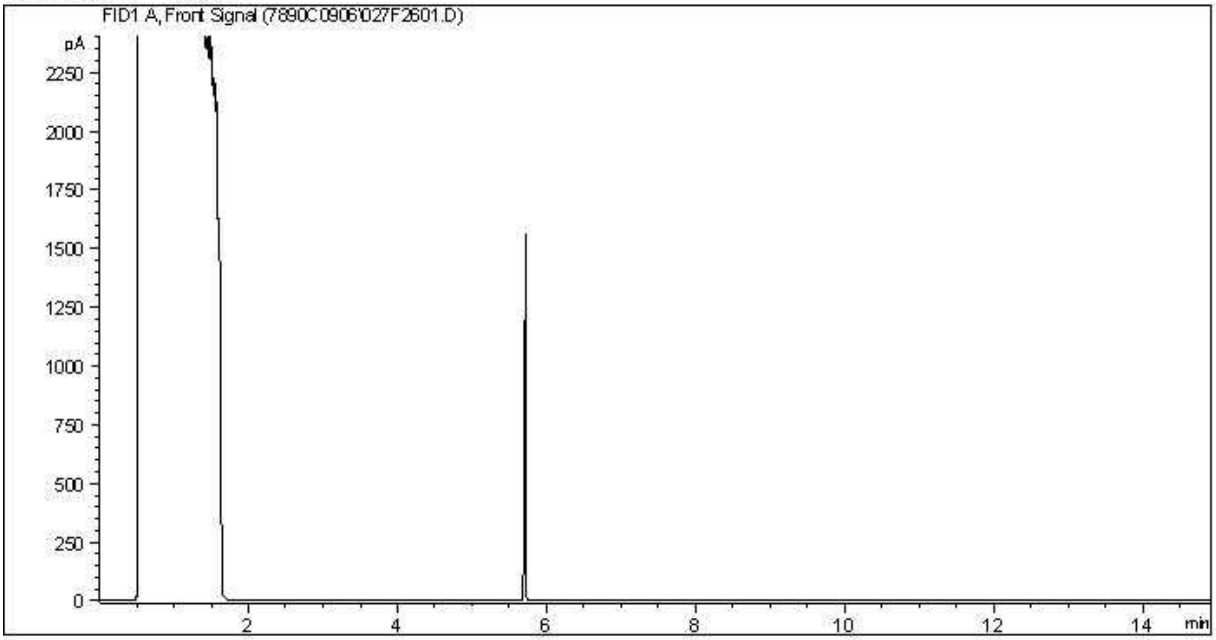
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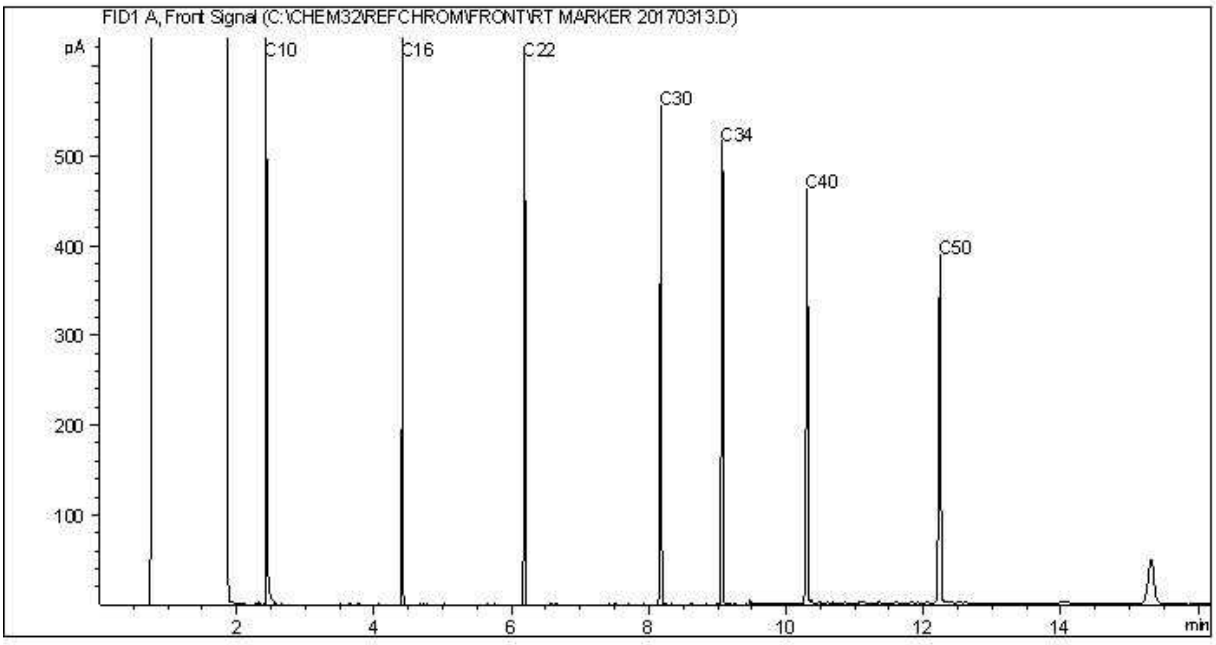
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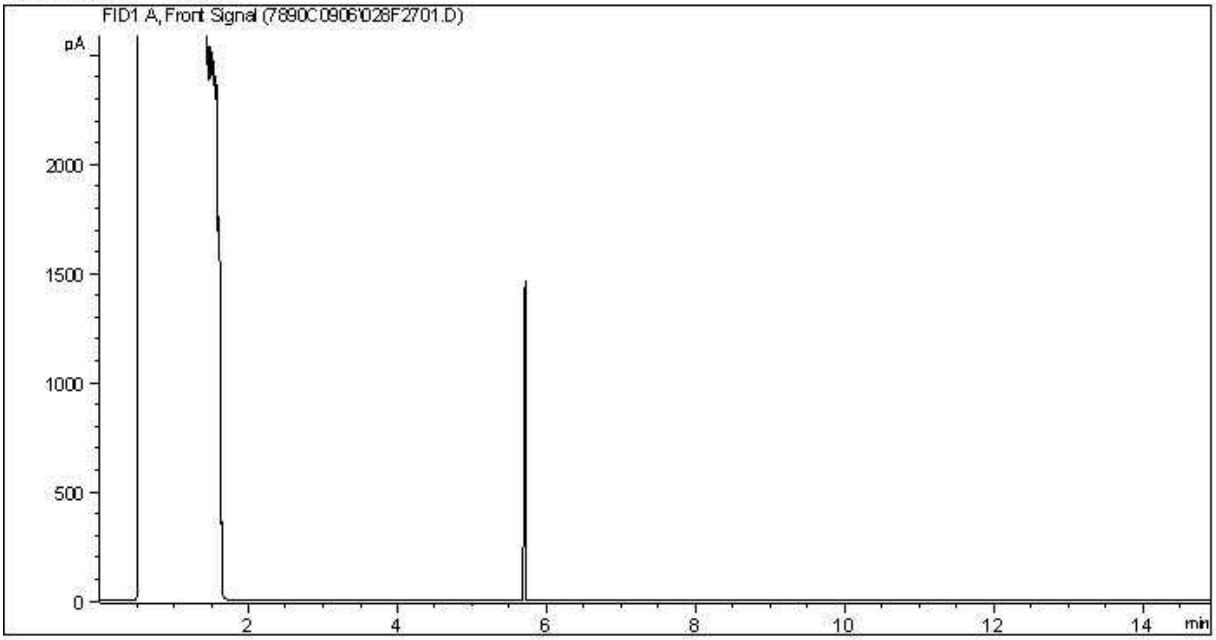
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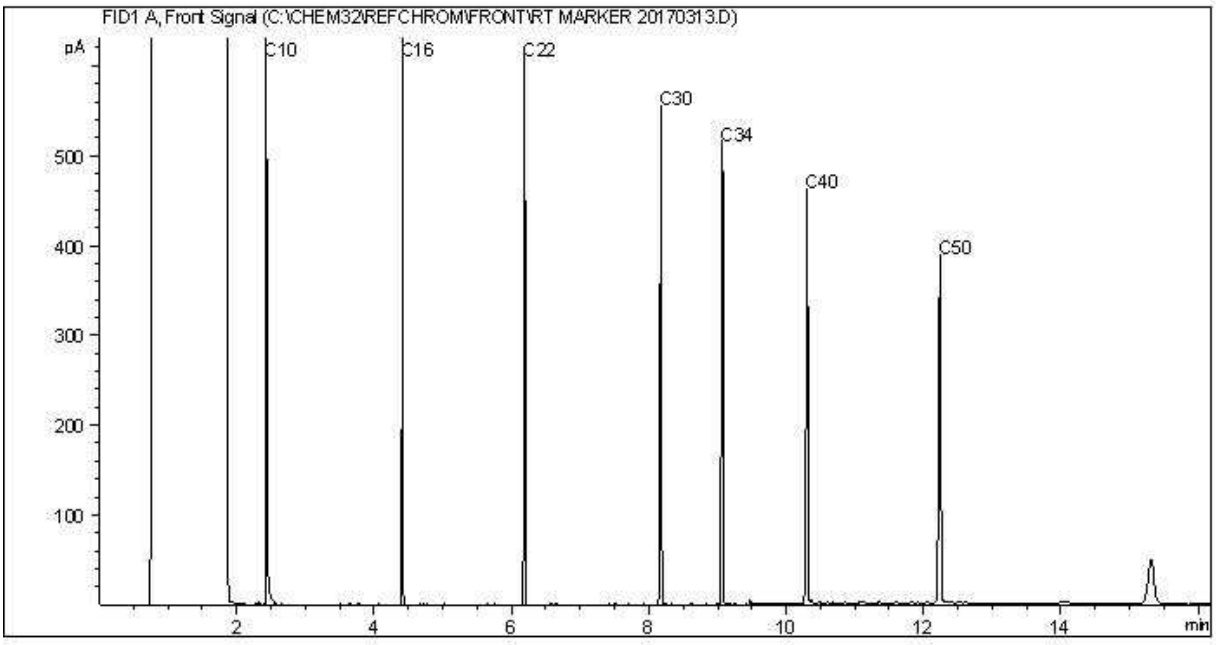
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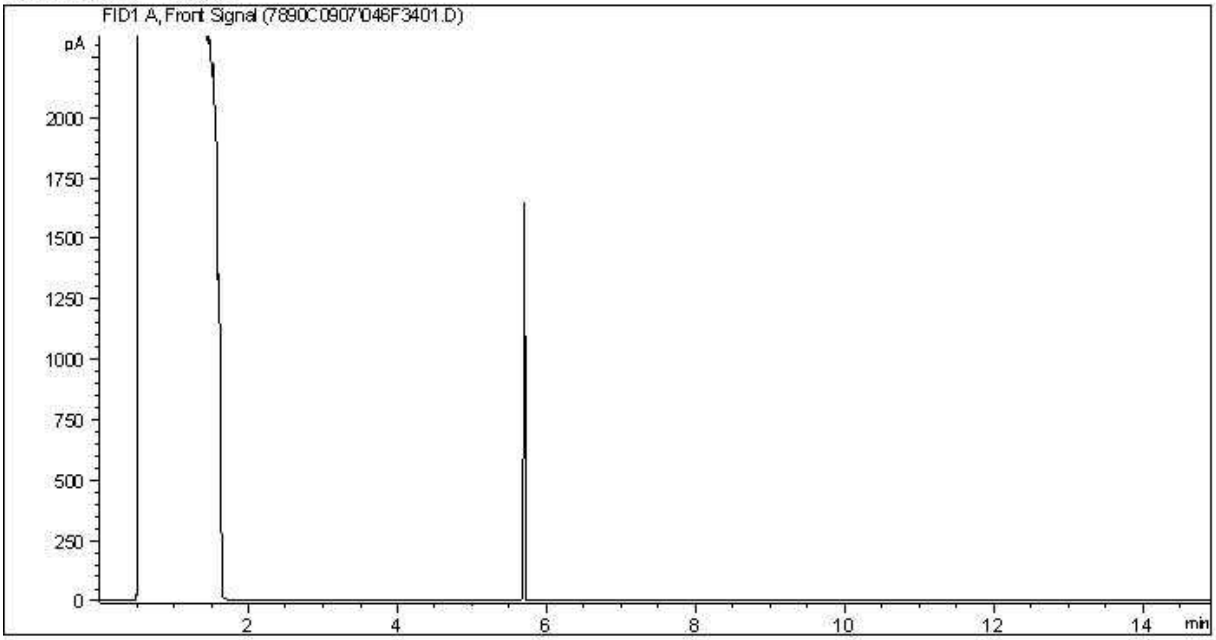
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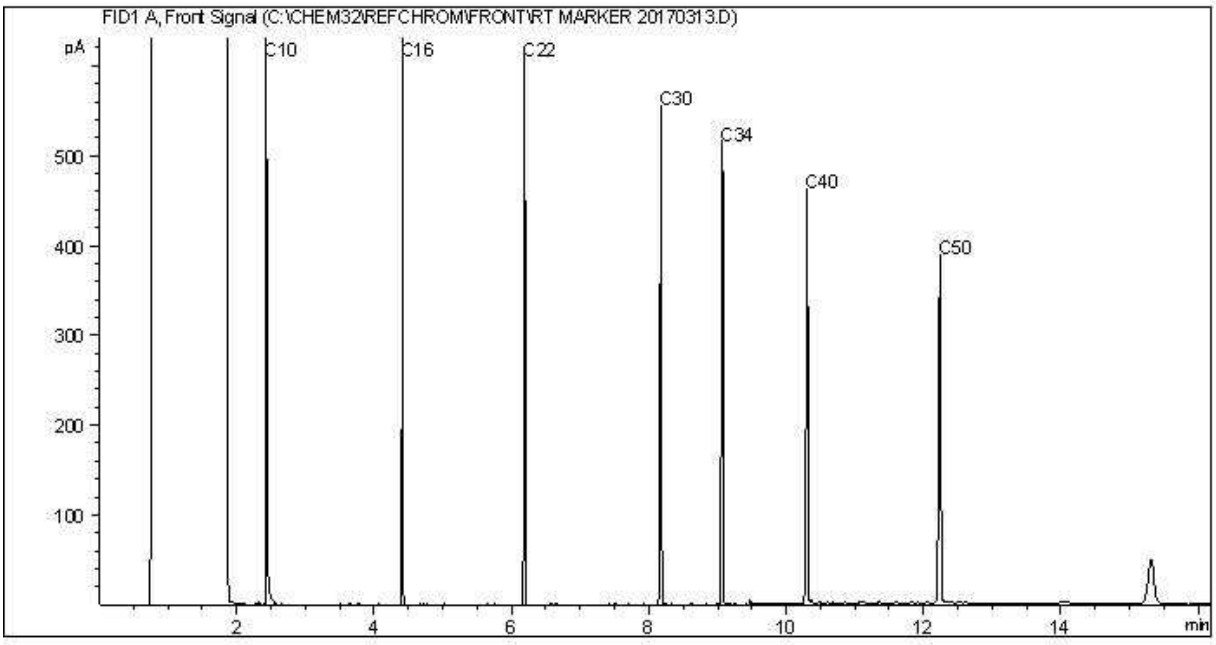
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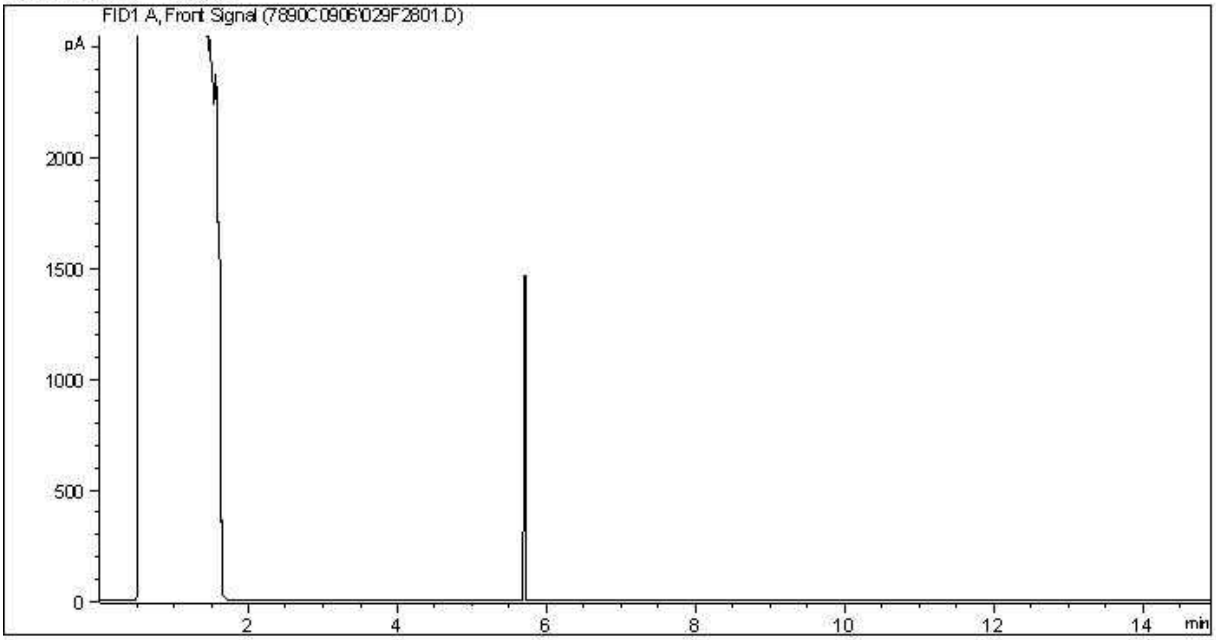
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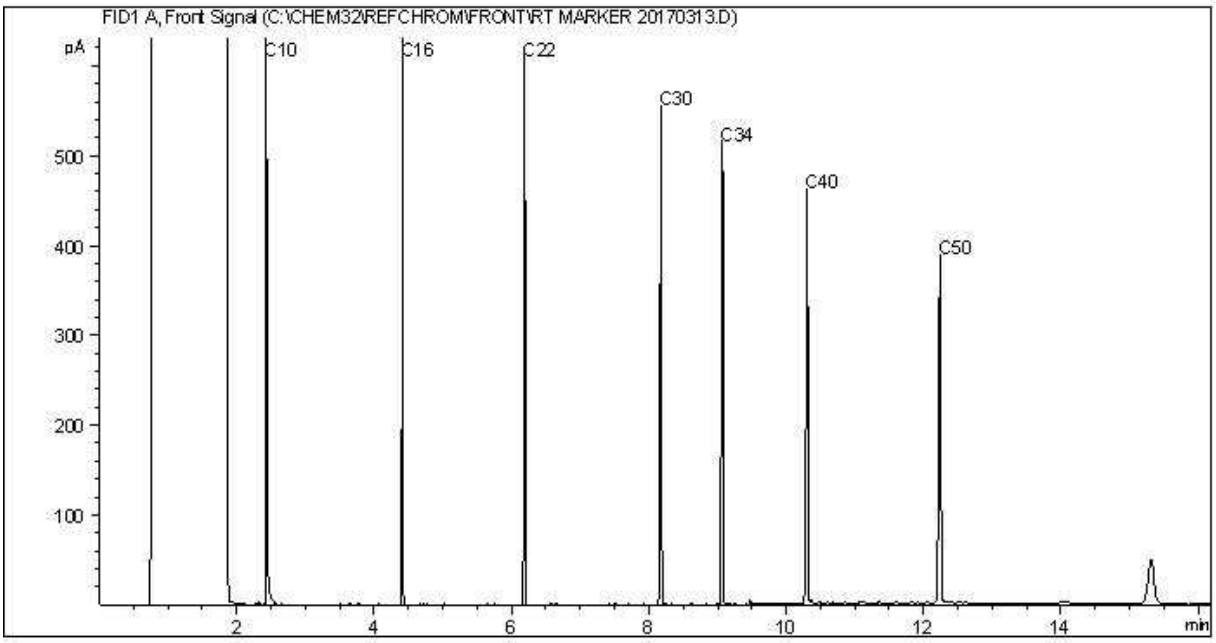
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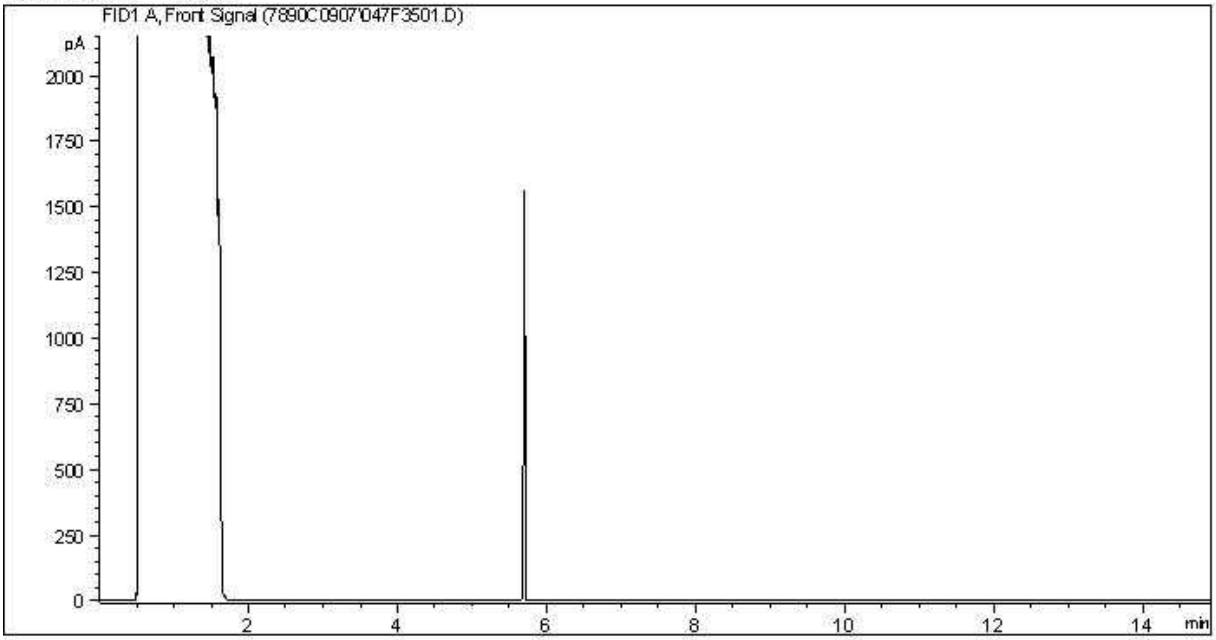
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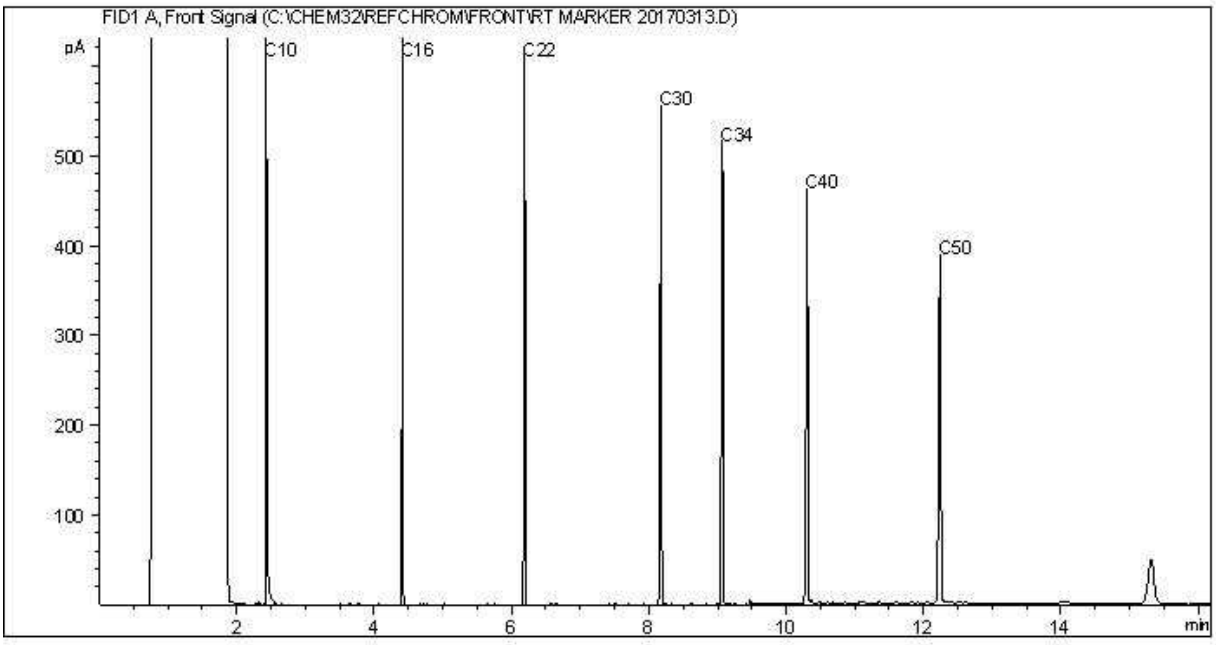
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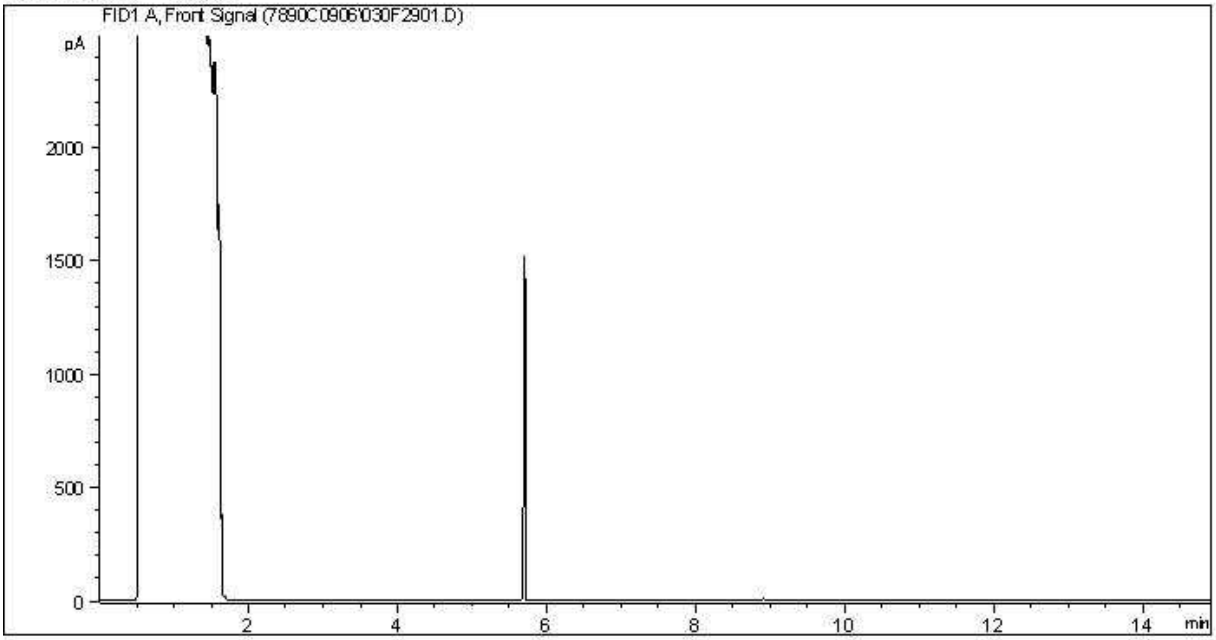
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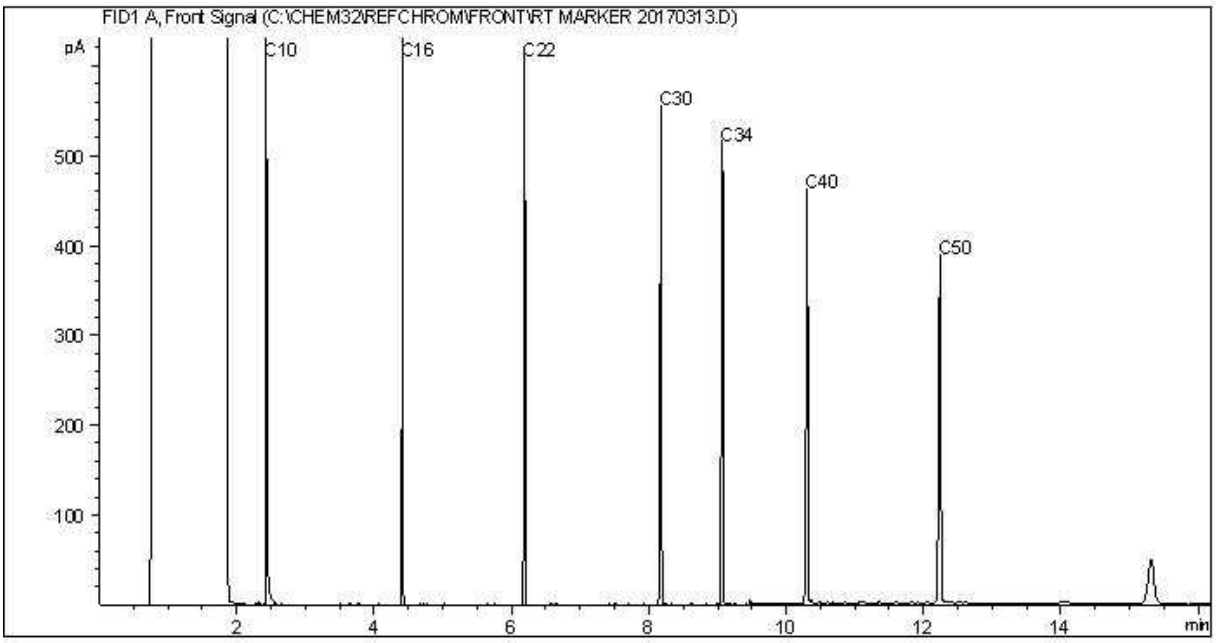
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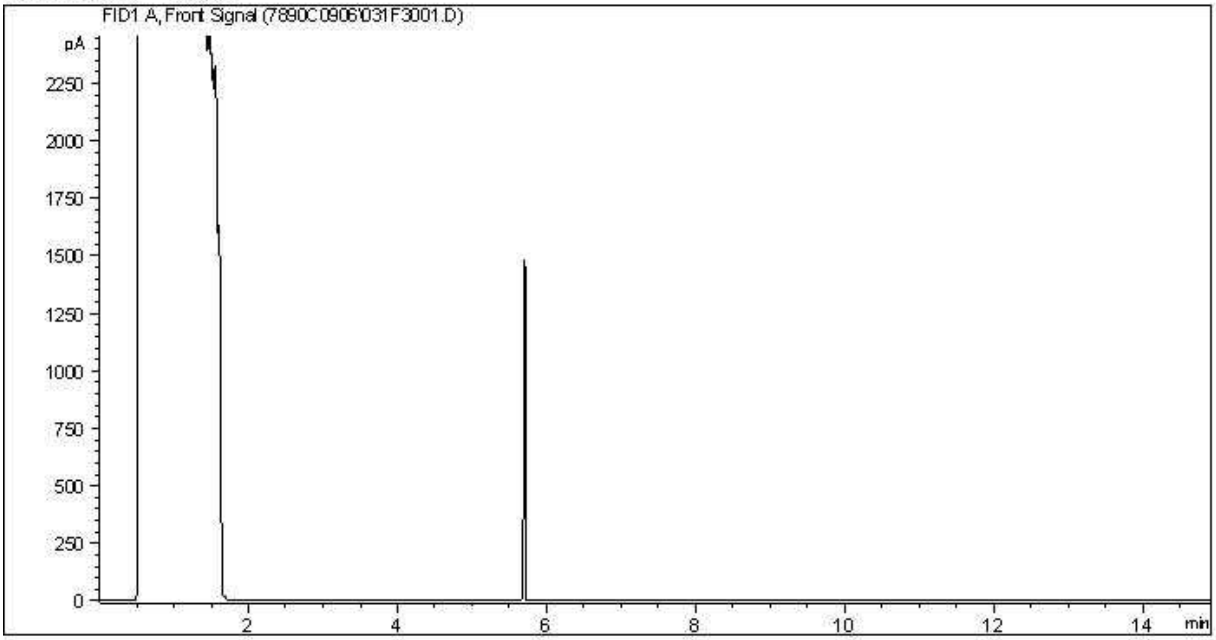
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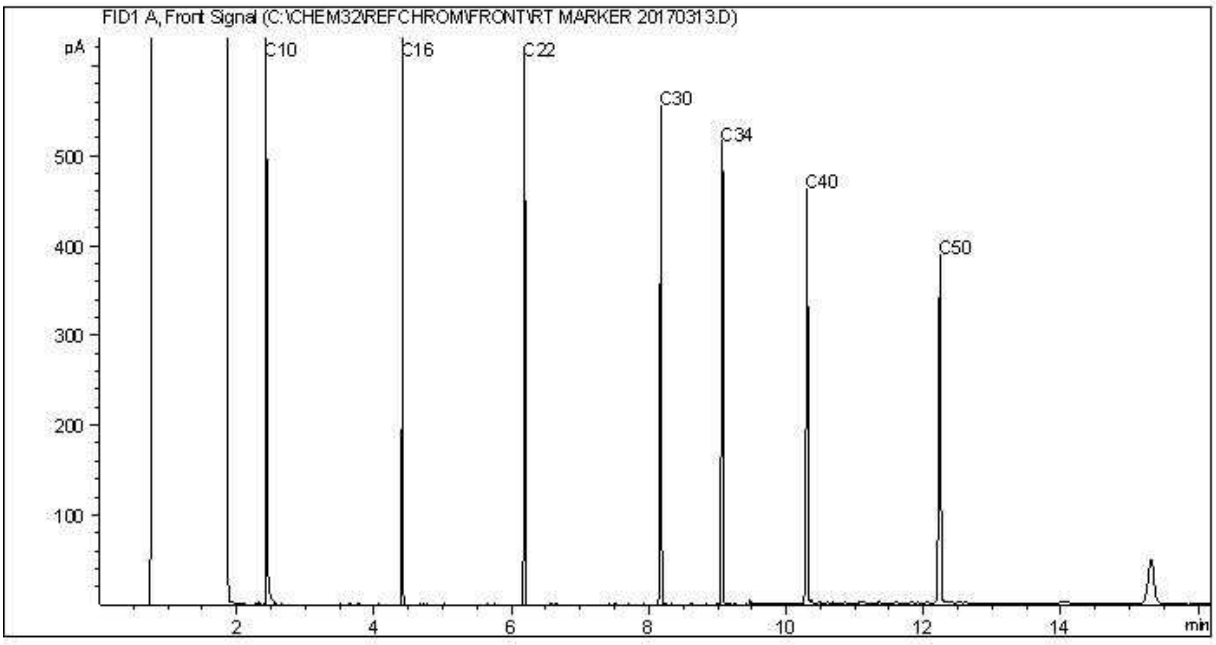
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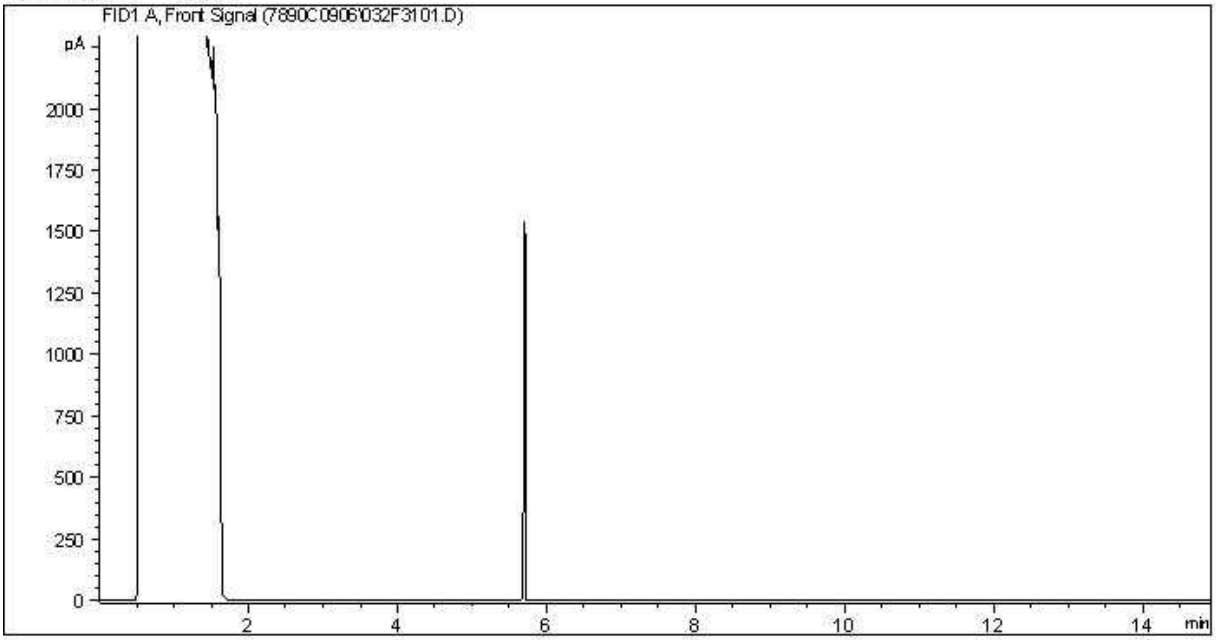
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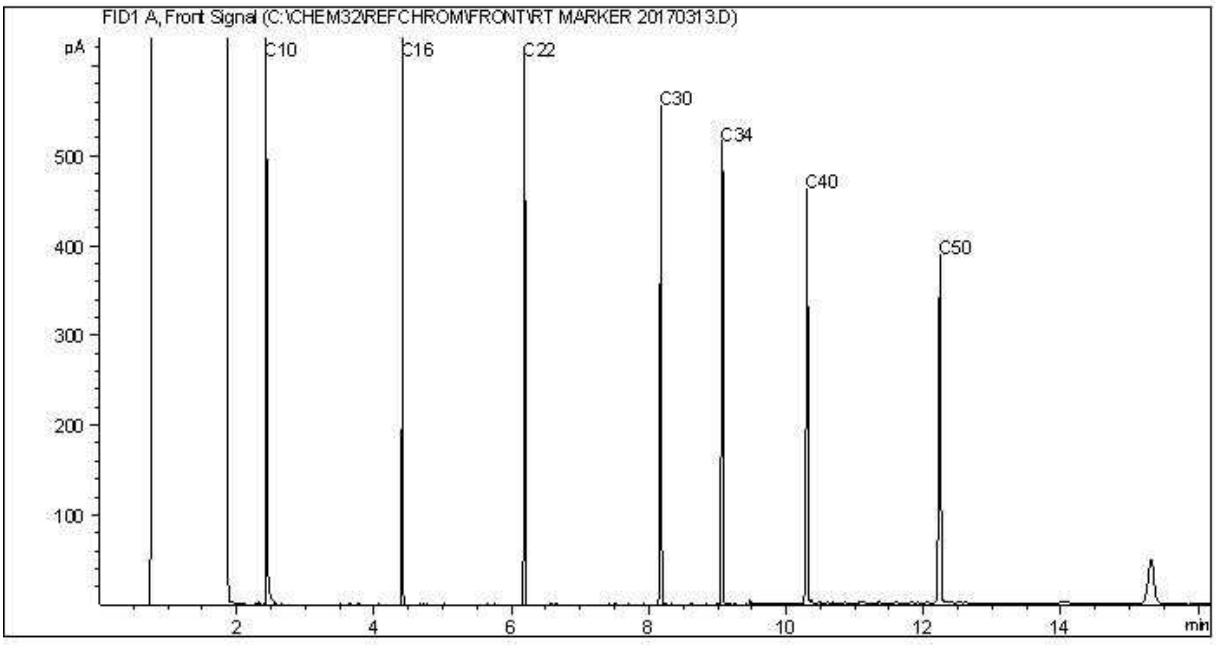
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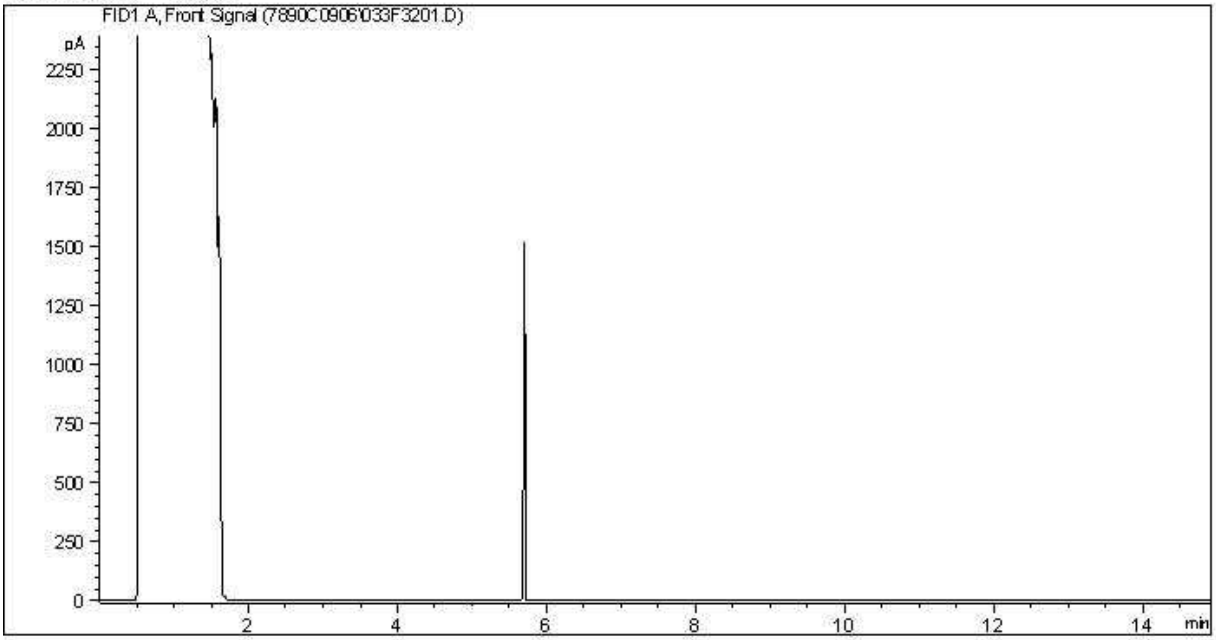
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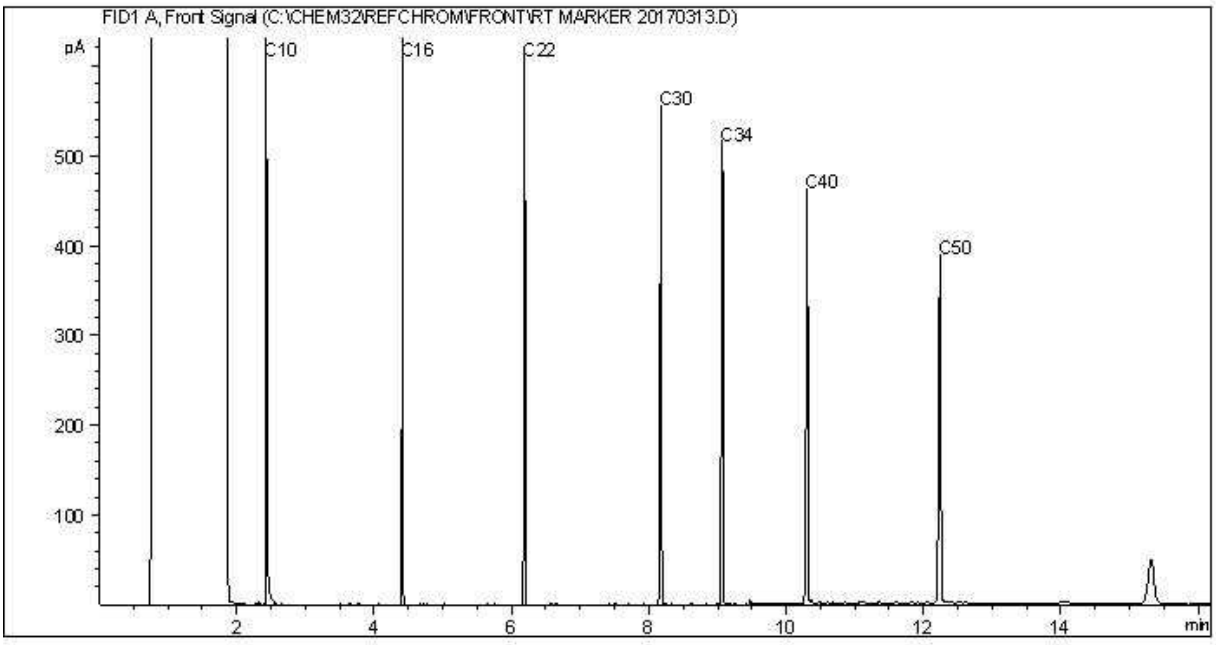
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CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Instrument: 7890C



Carbon Range Distribution - Reference Chromatogram



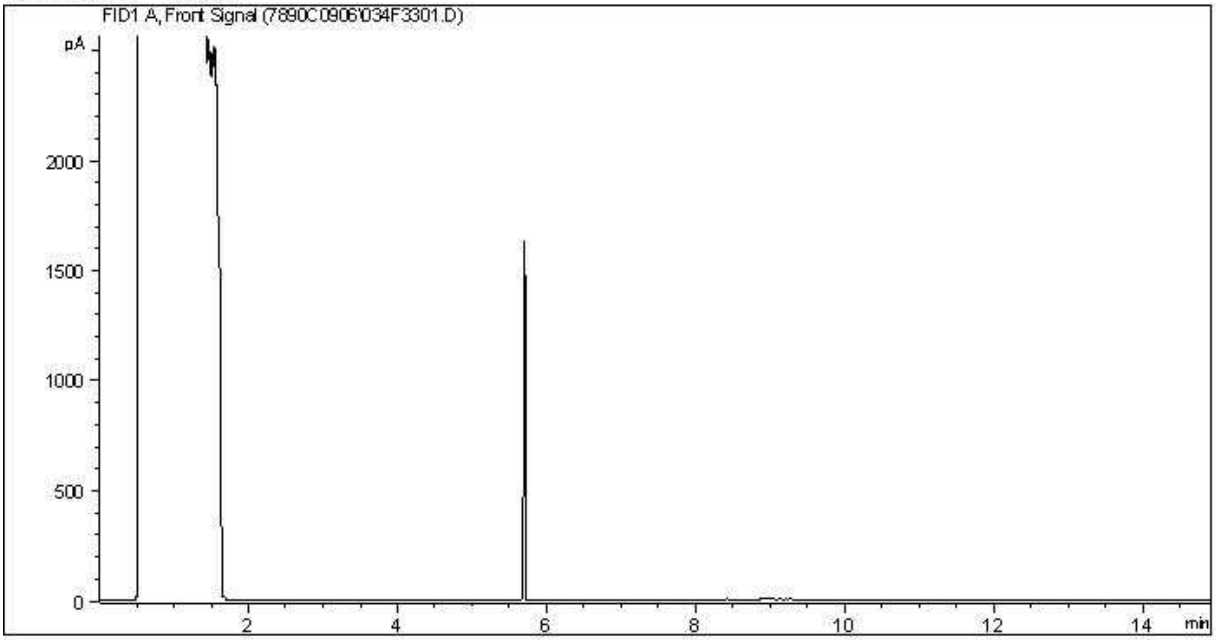
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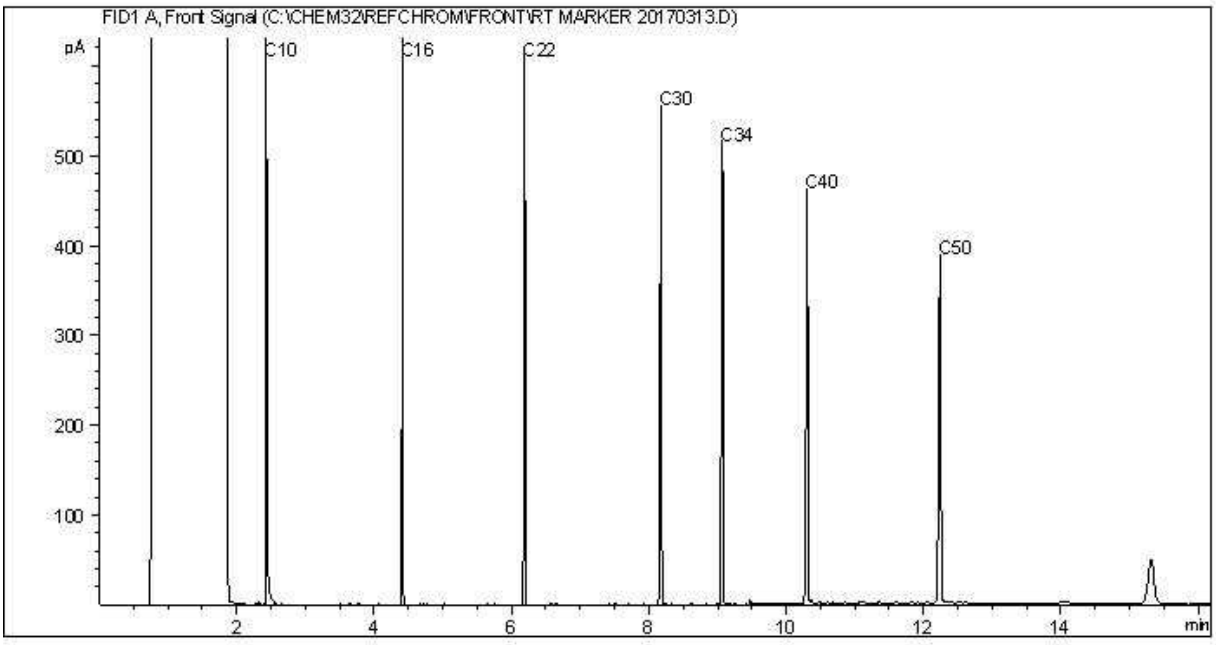
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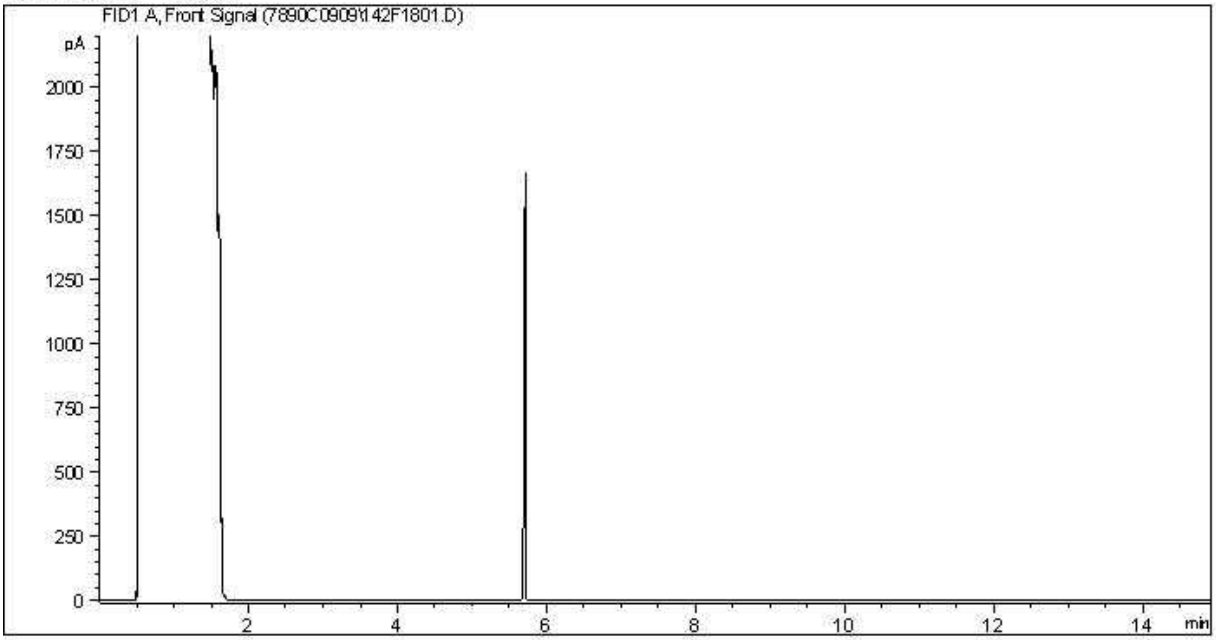
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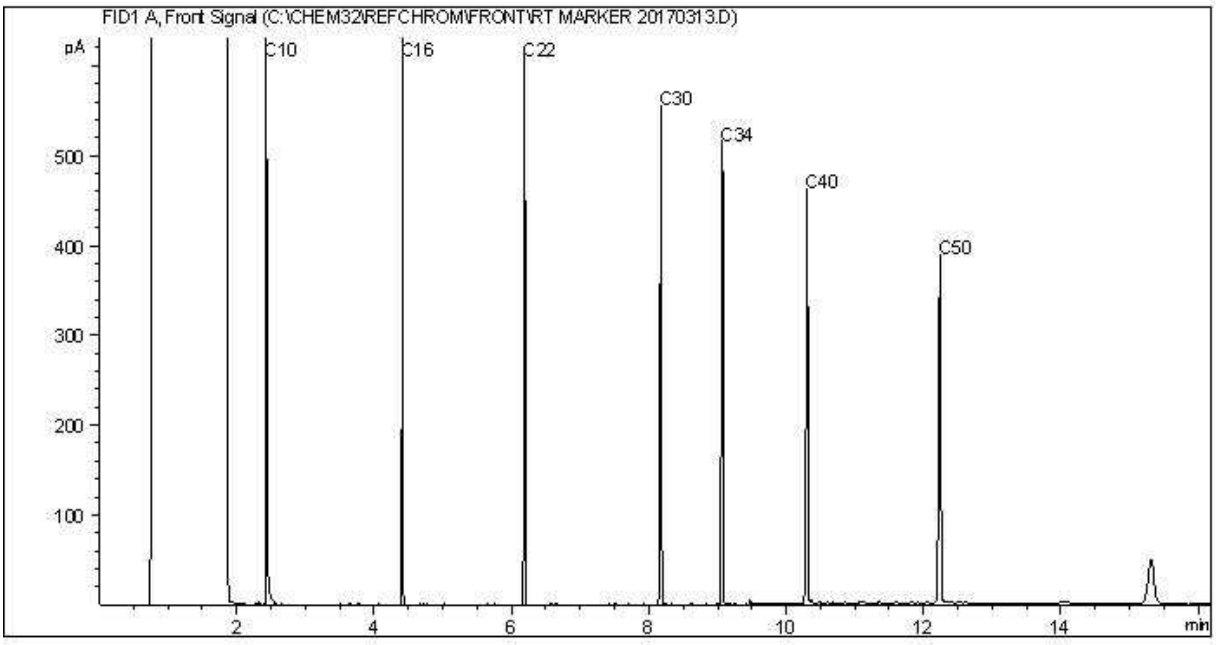
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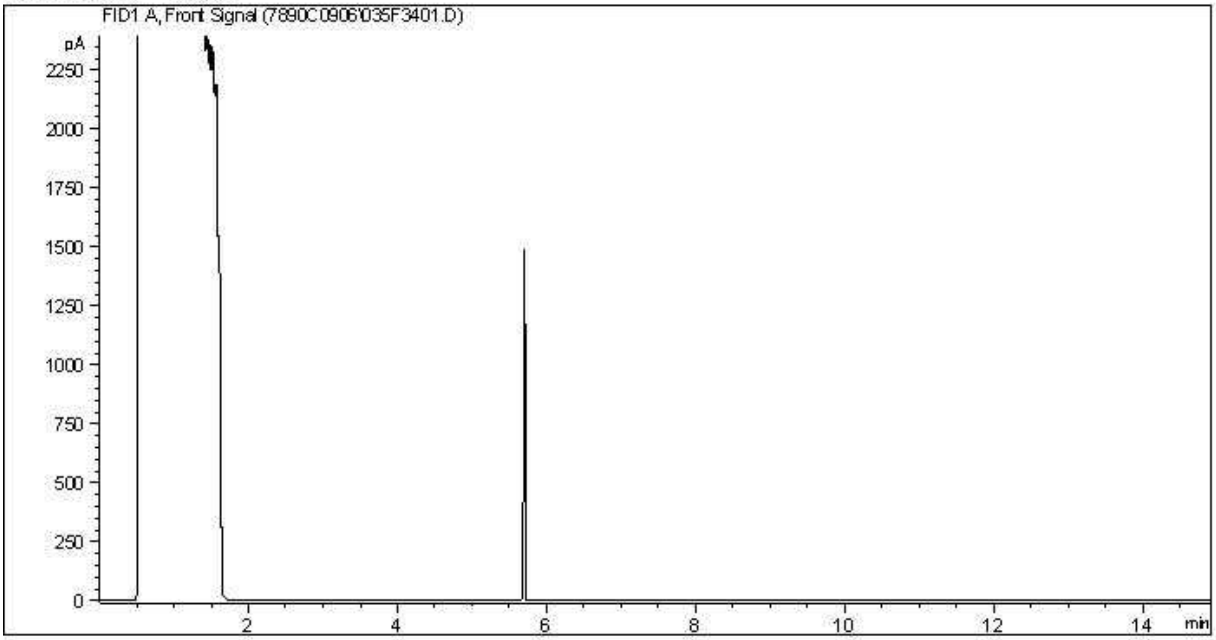
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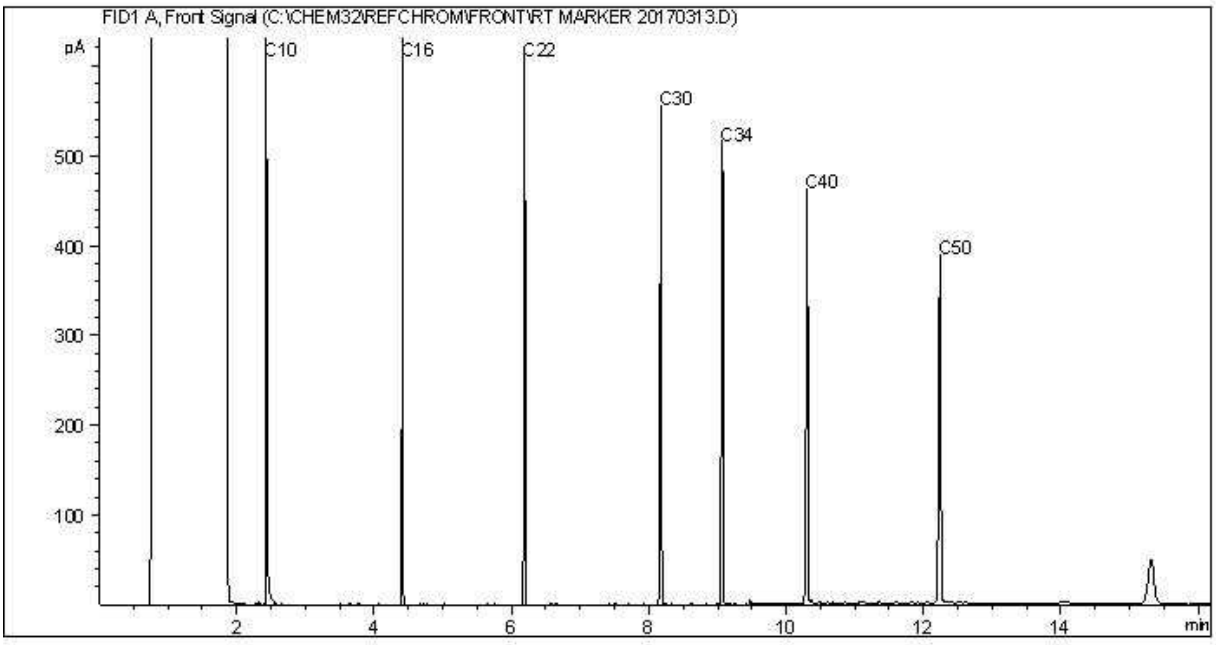
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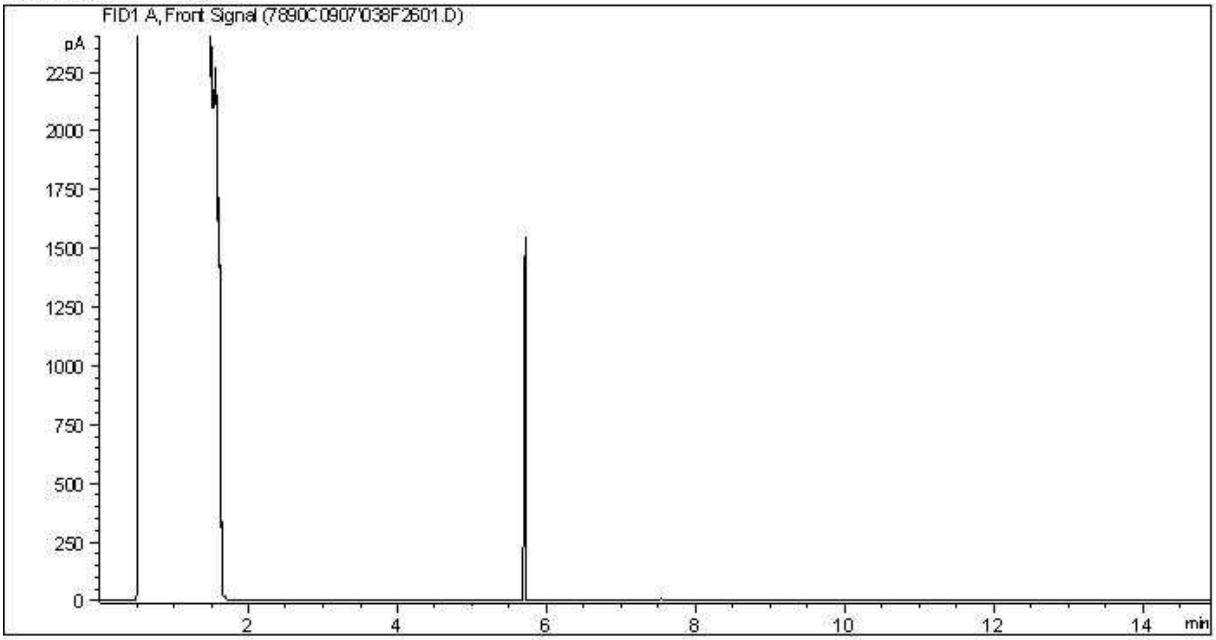
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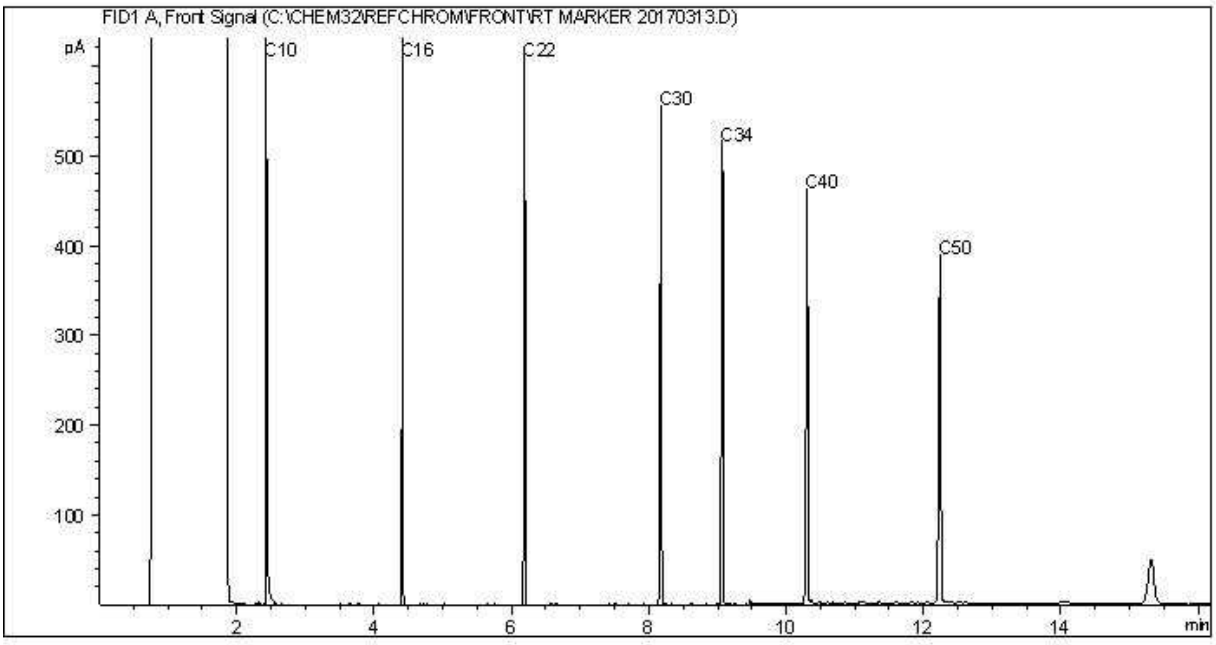
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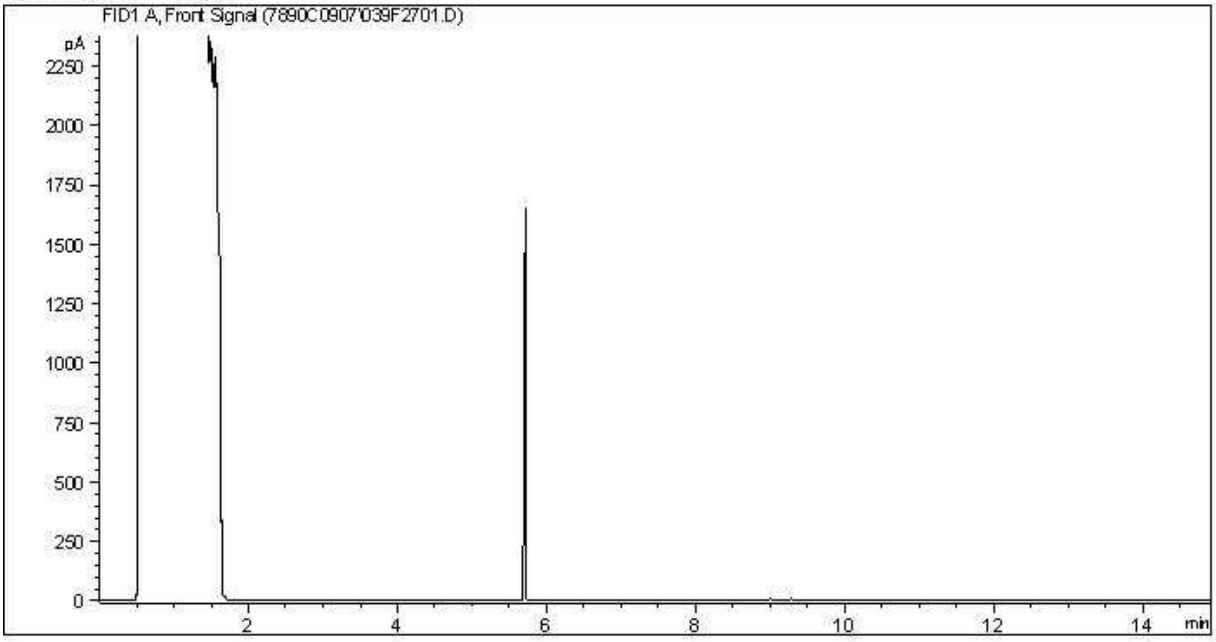
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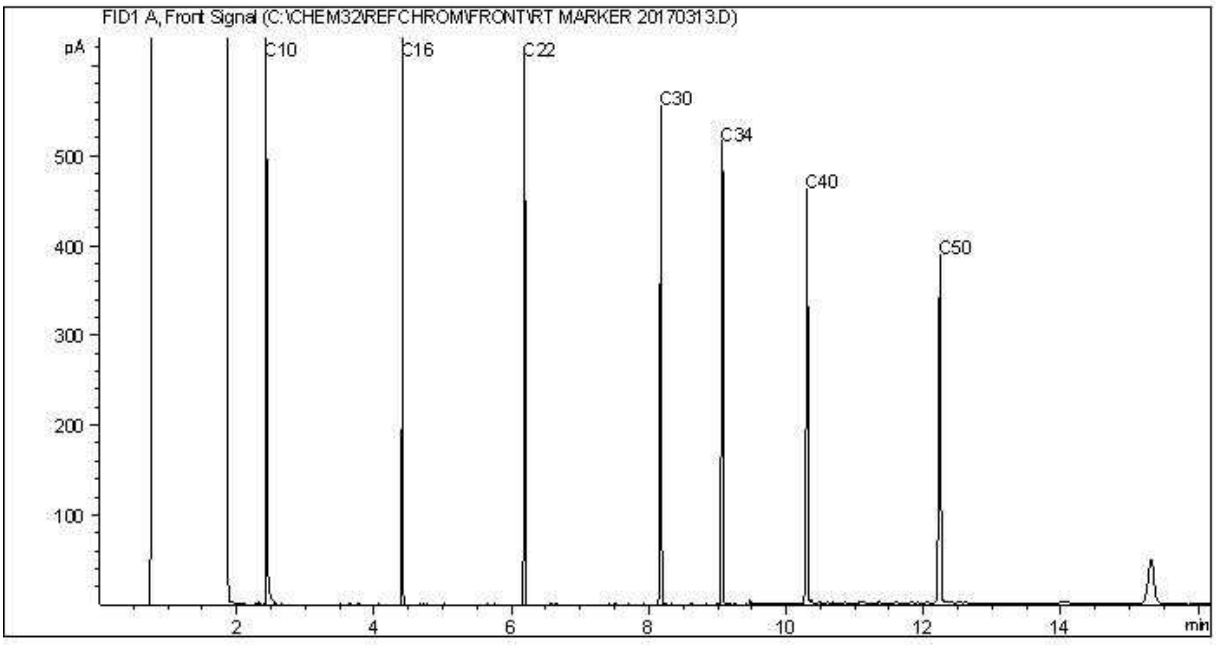
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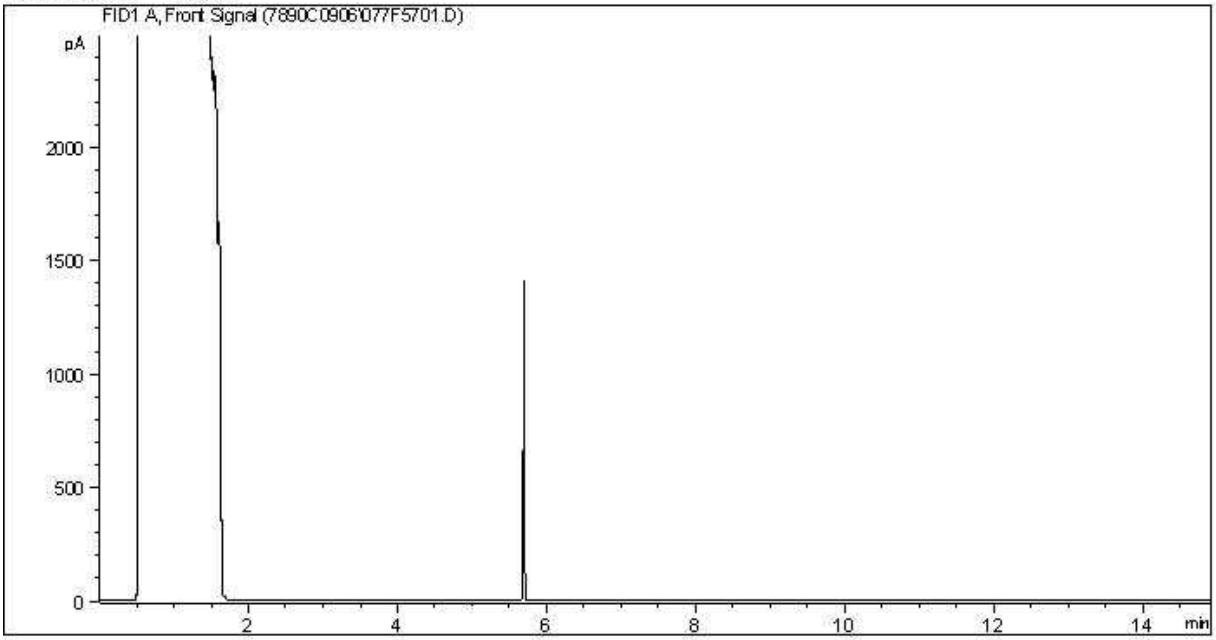
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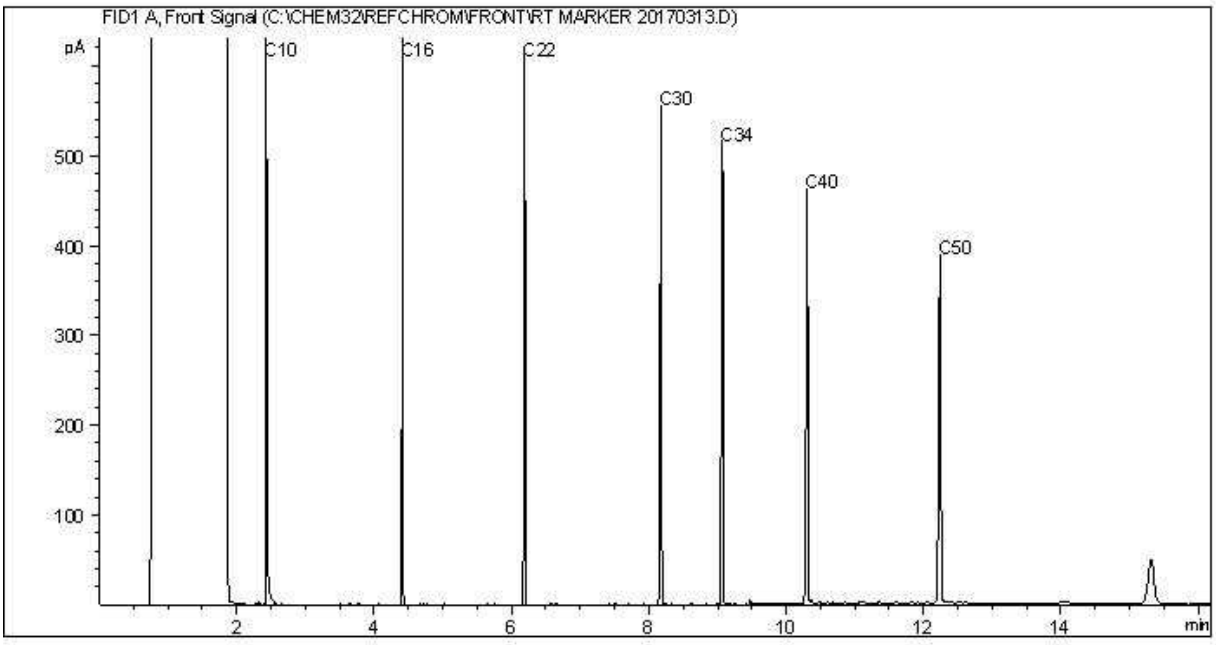
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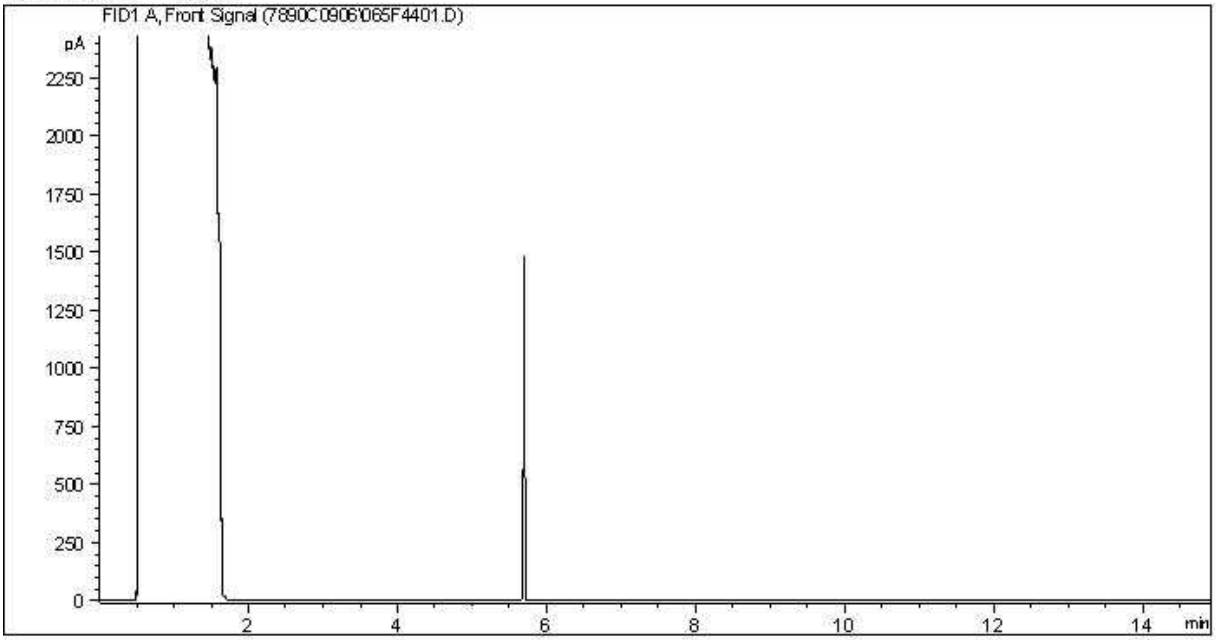
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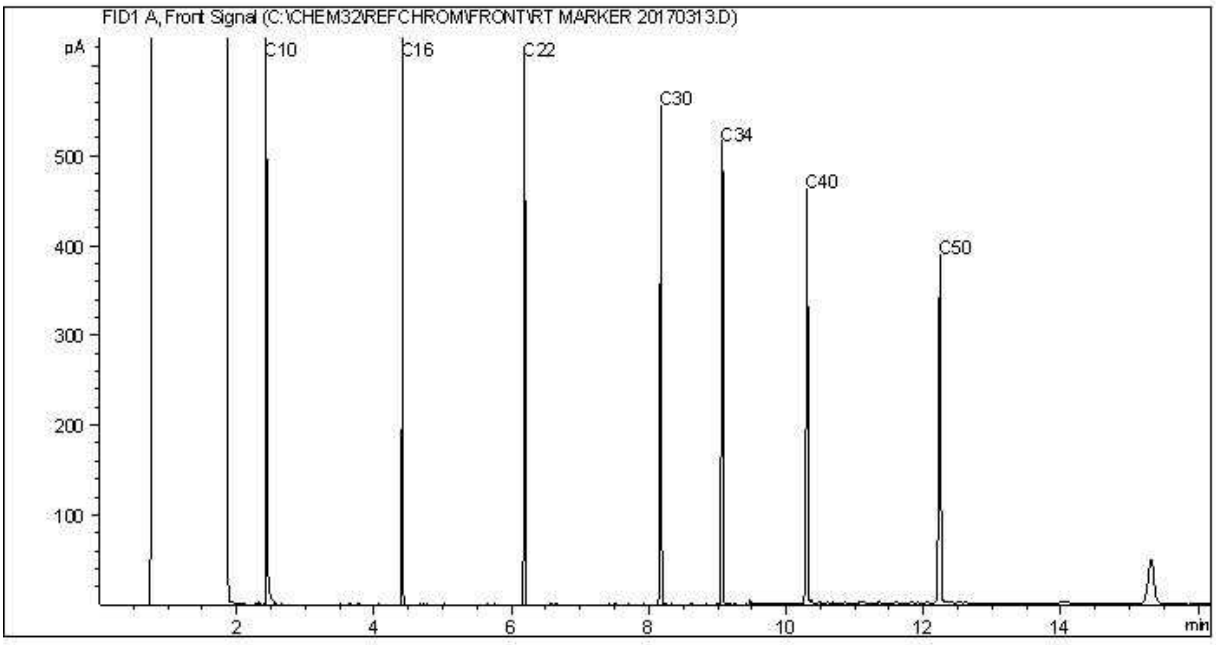
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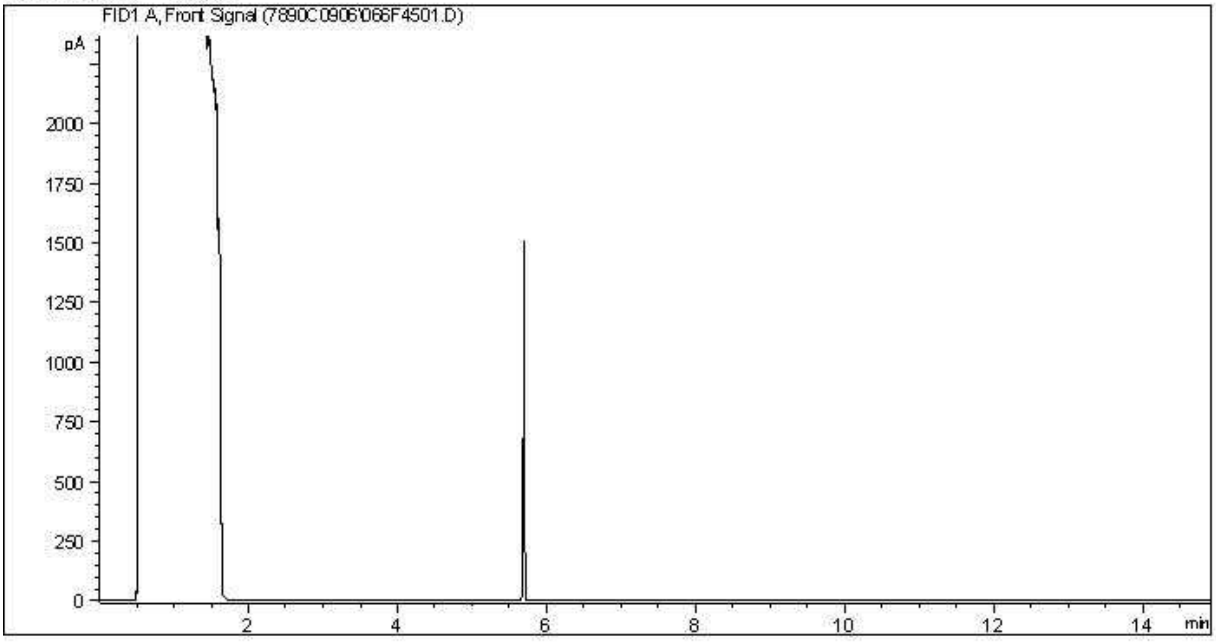
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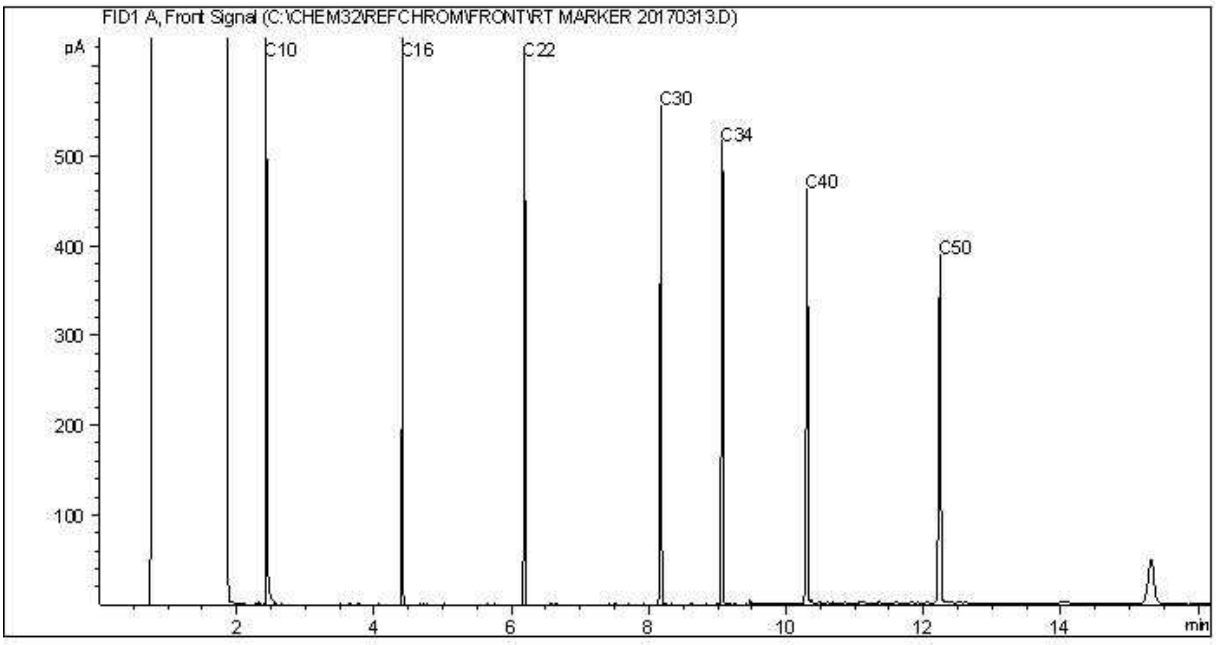
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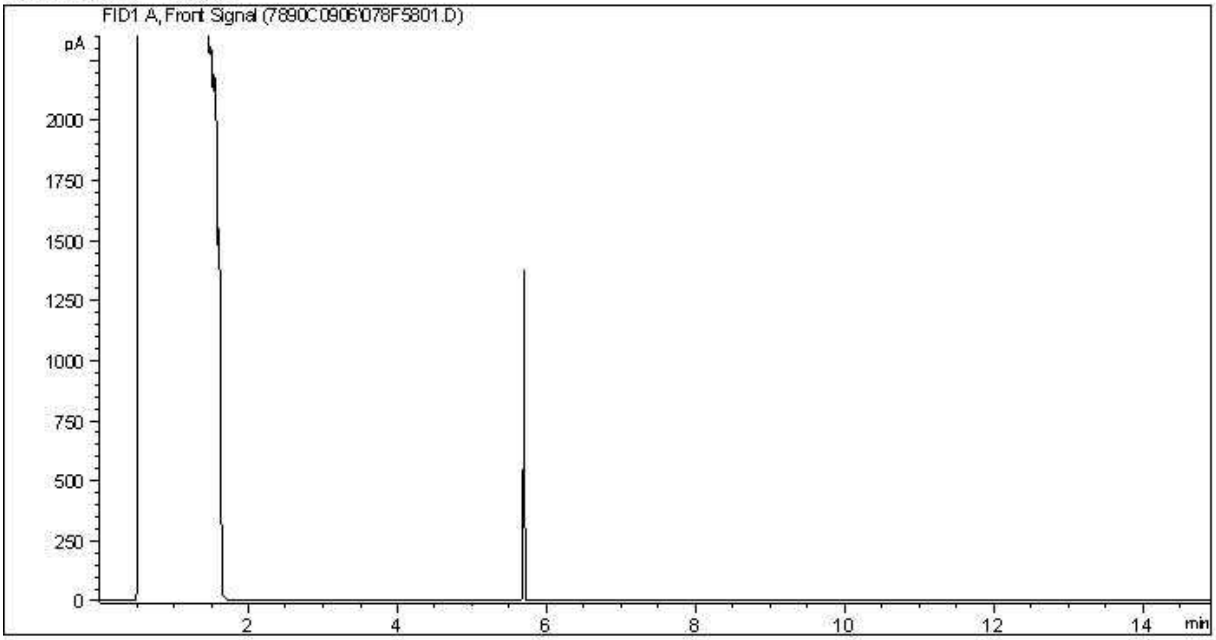
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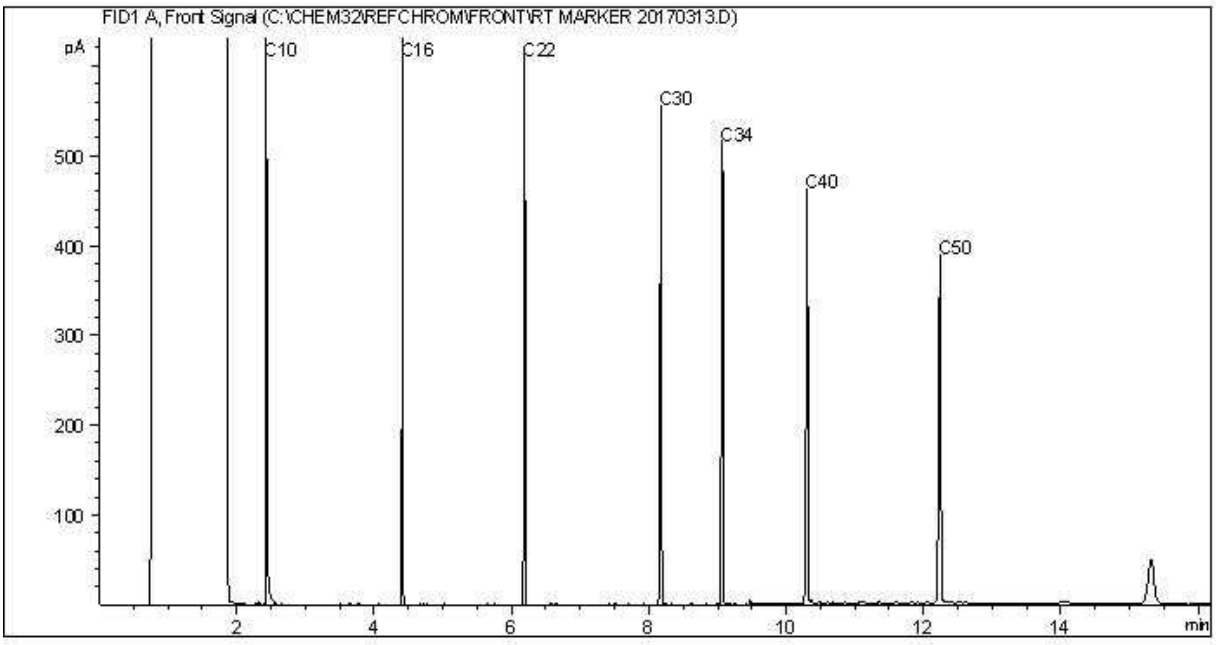
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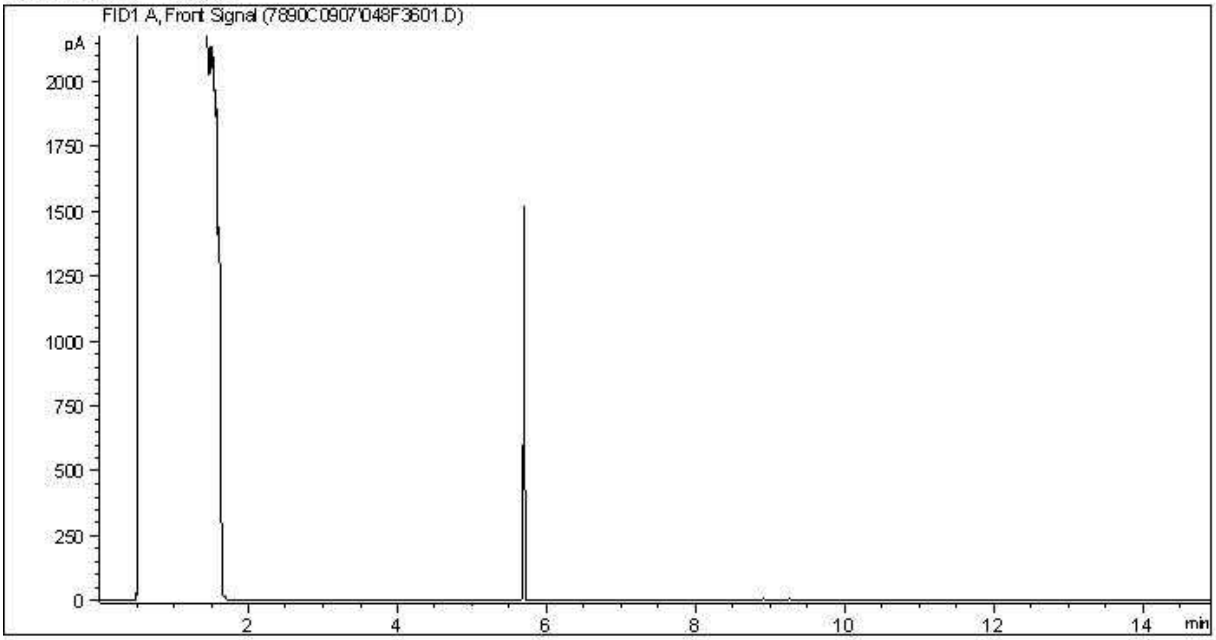
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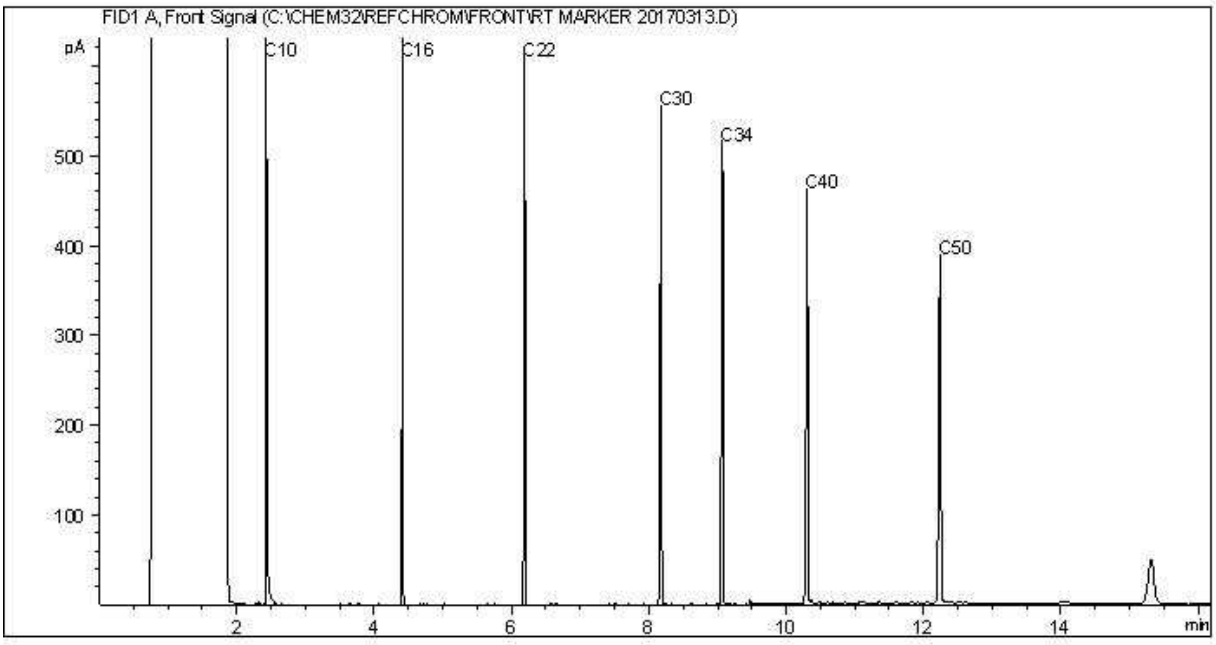
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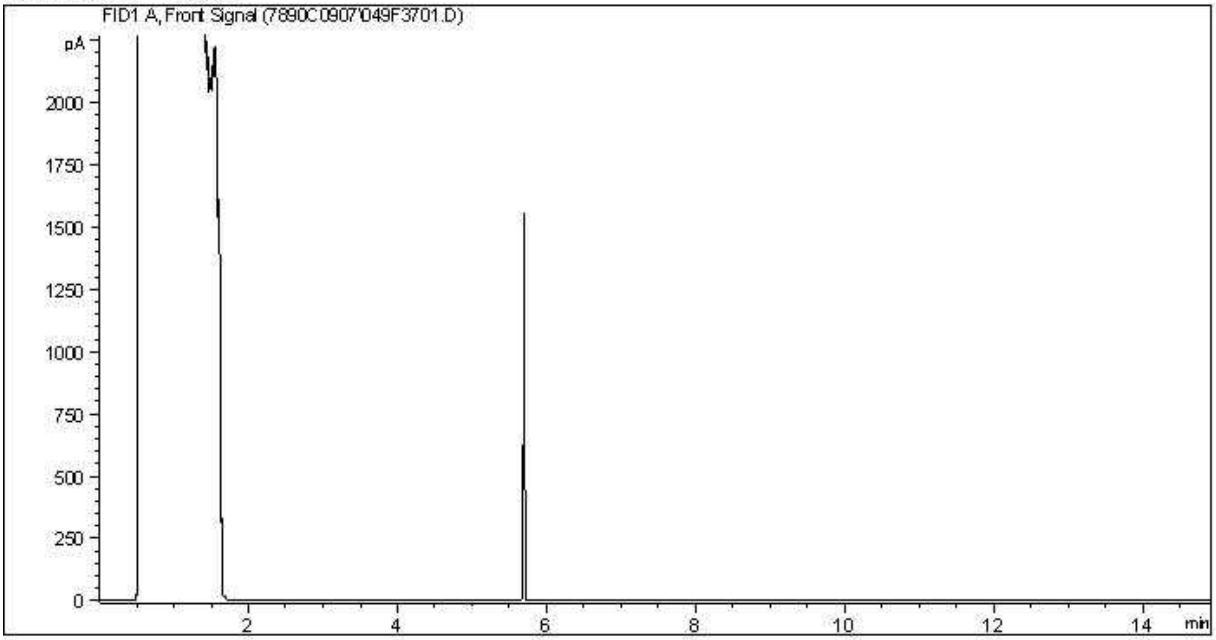
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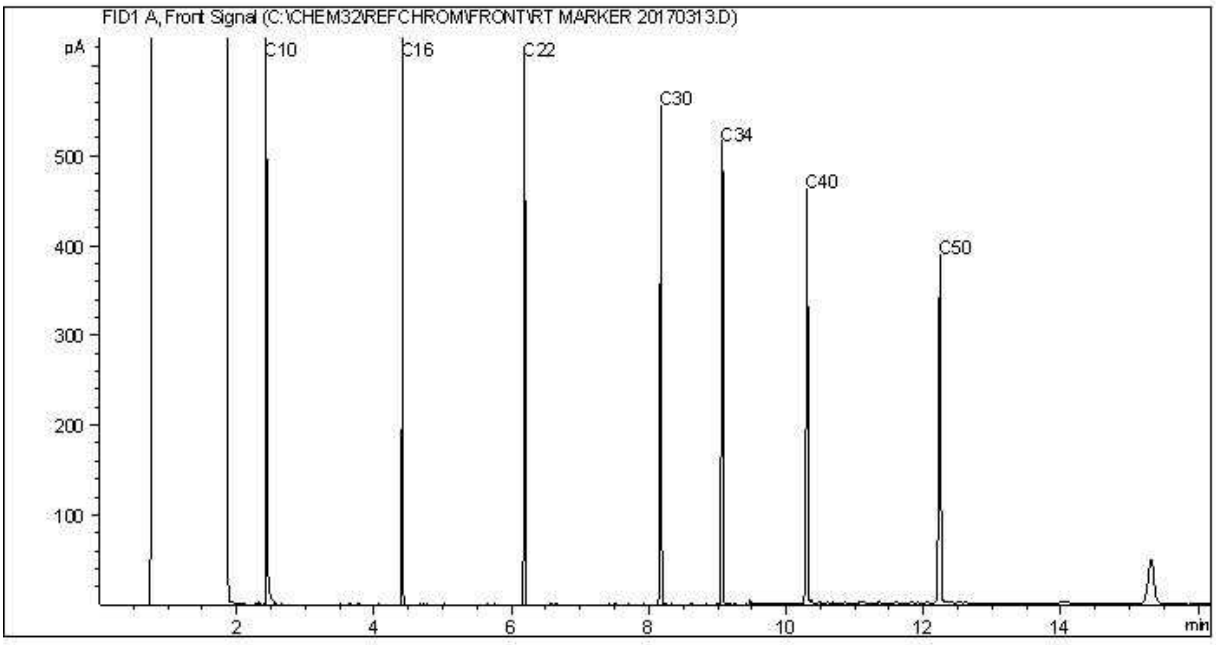
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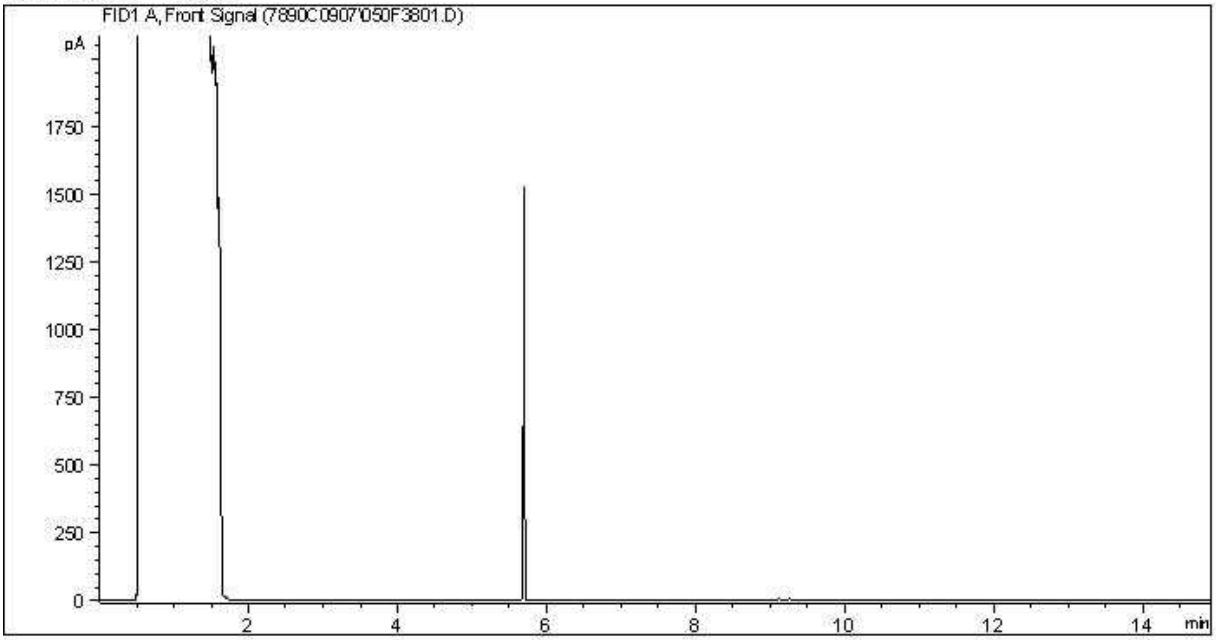
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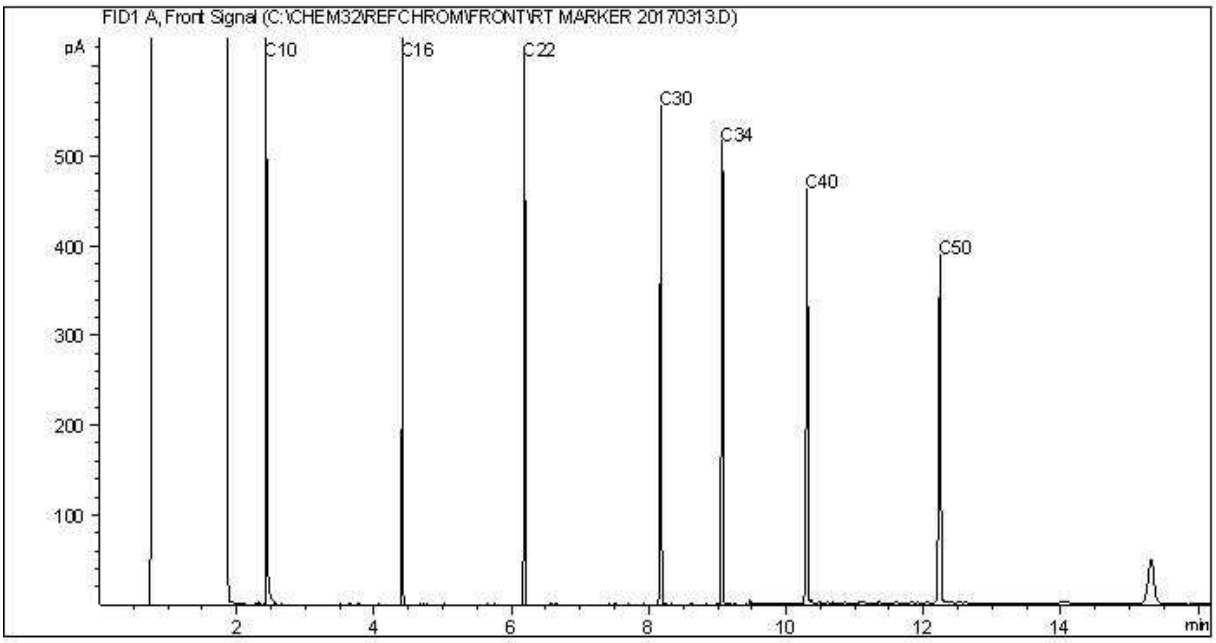
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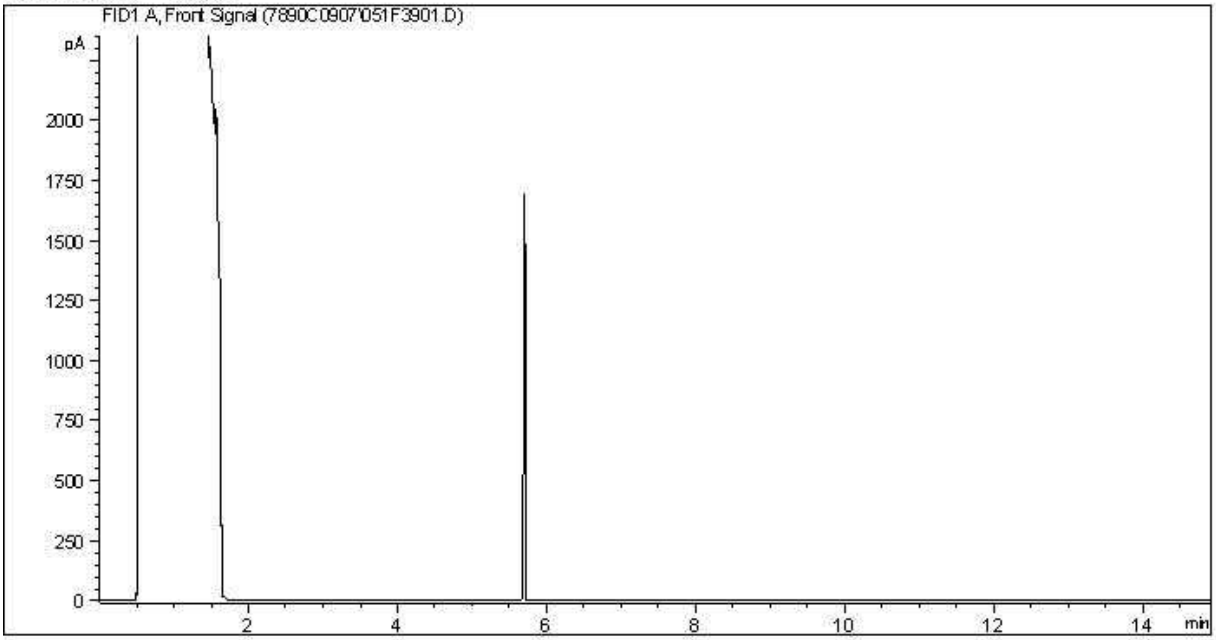
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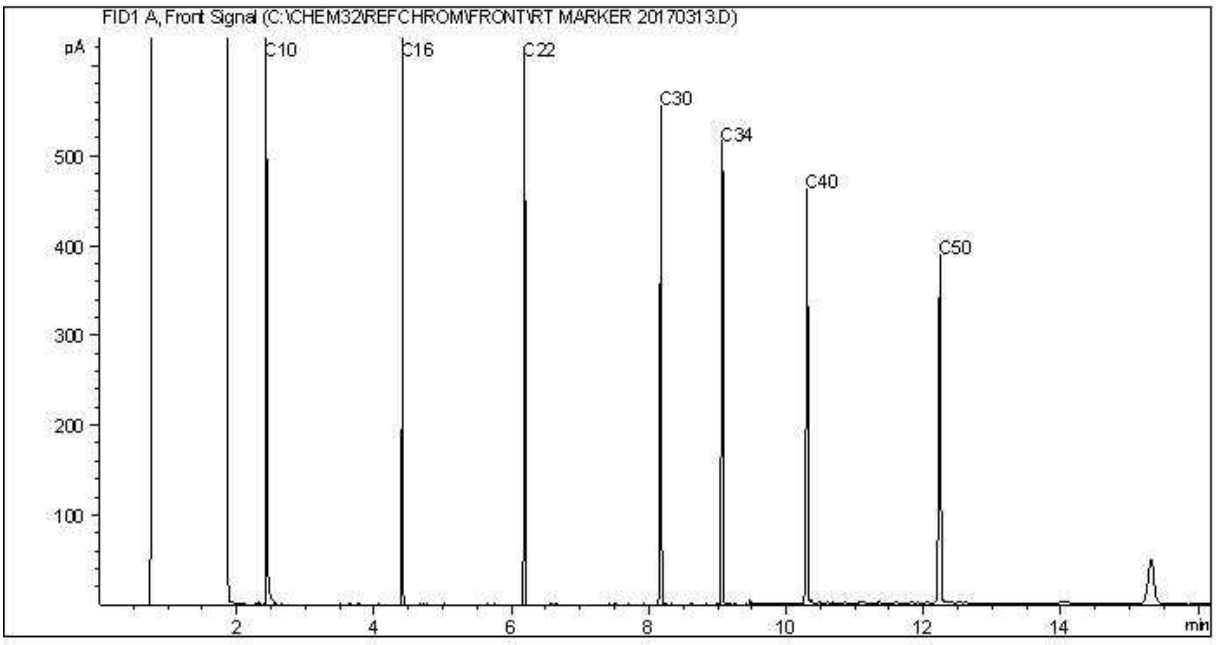
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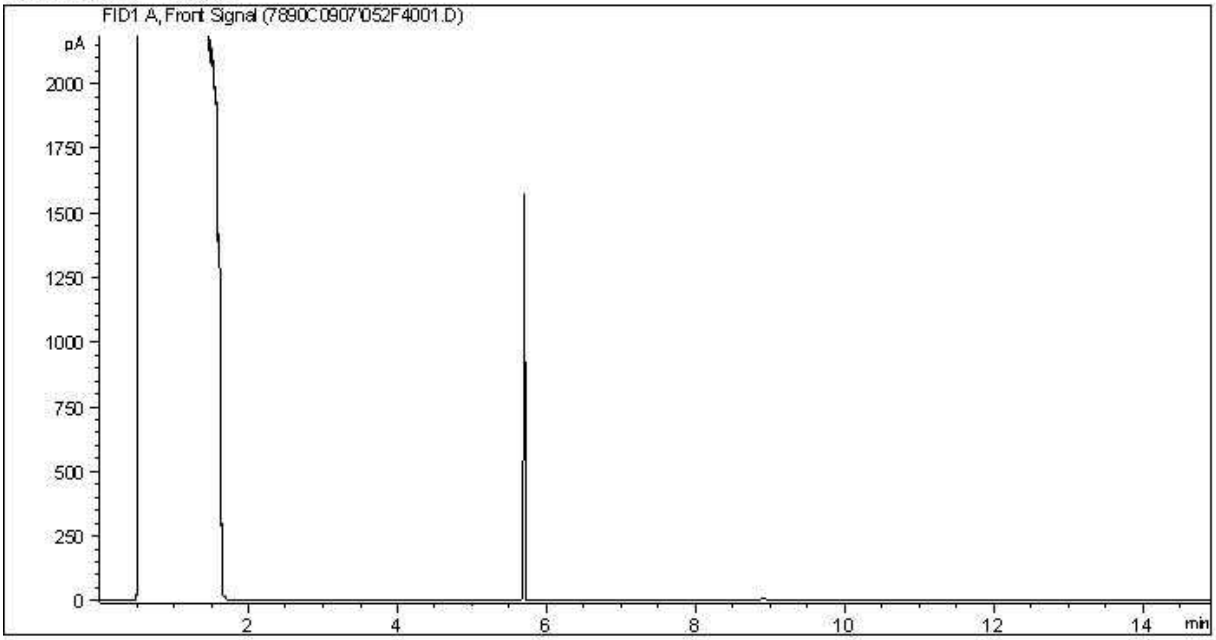
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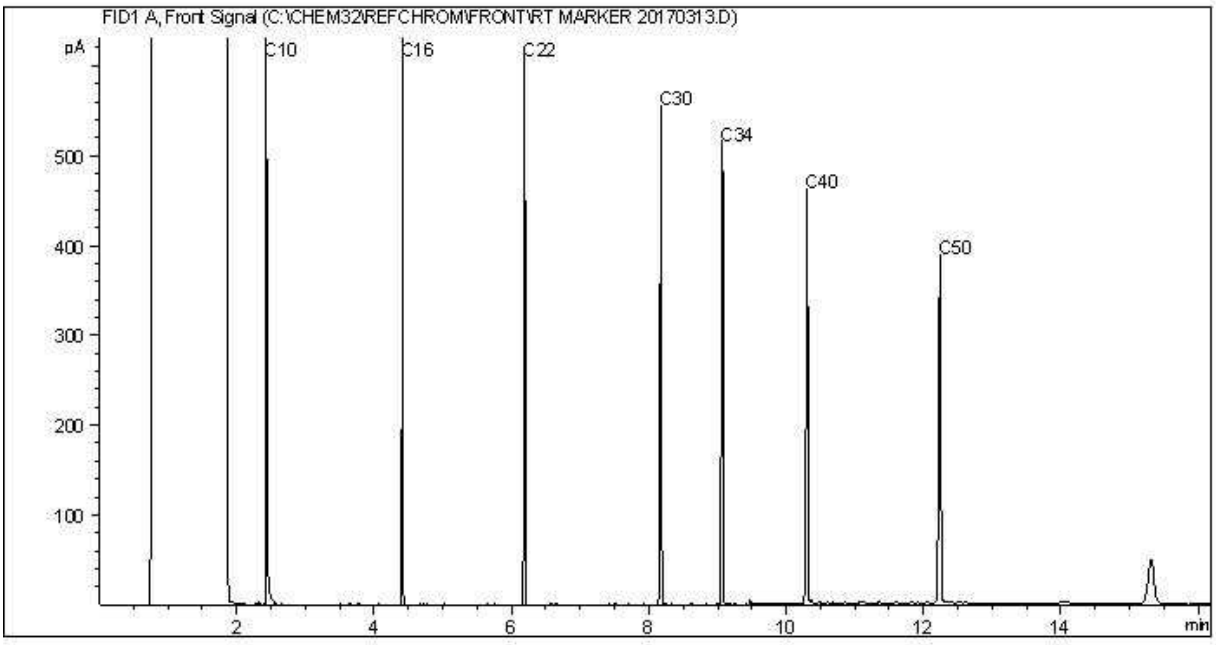
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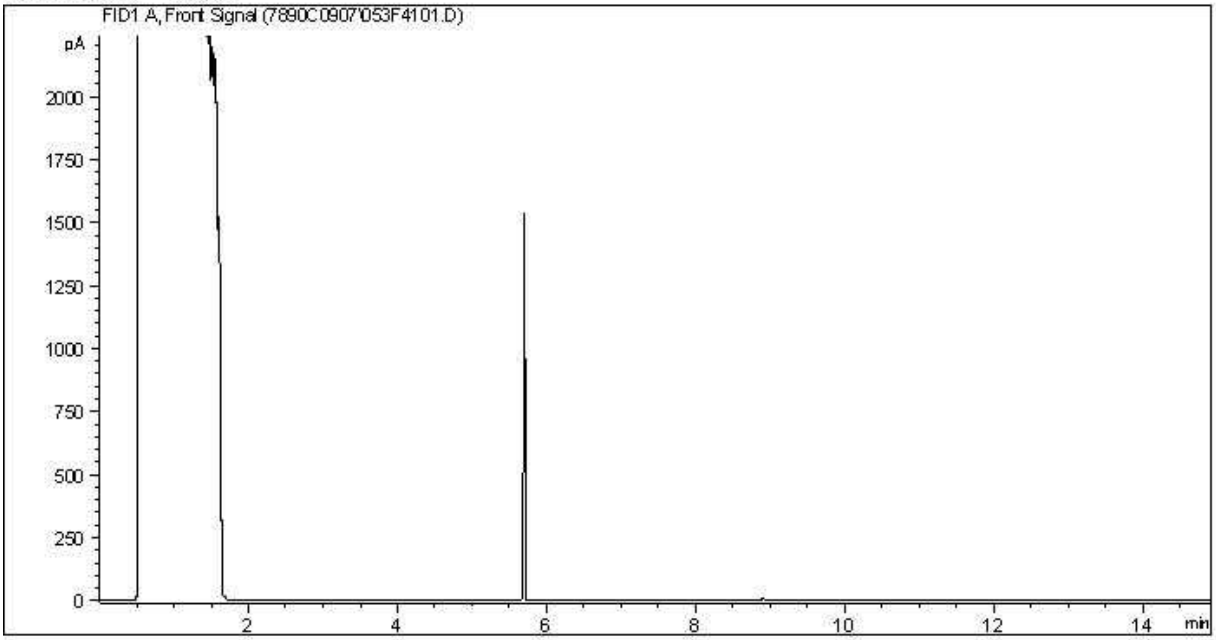
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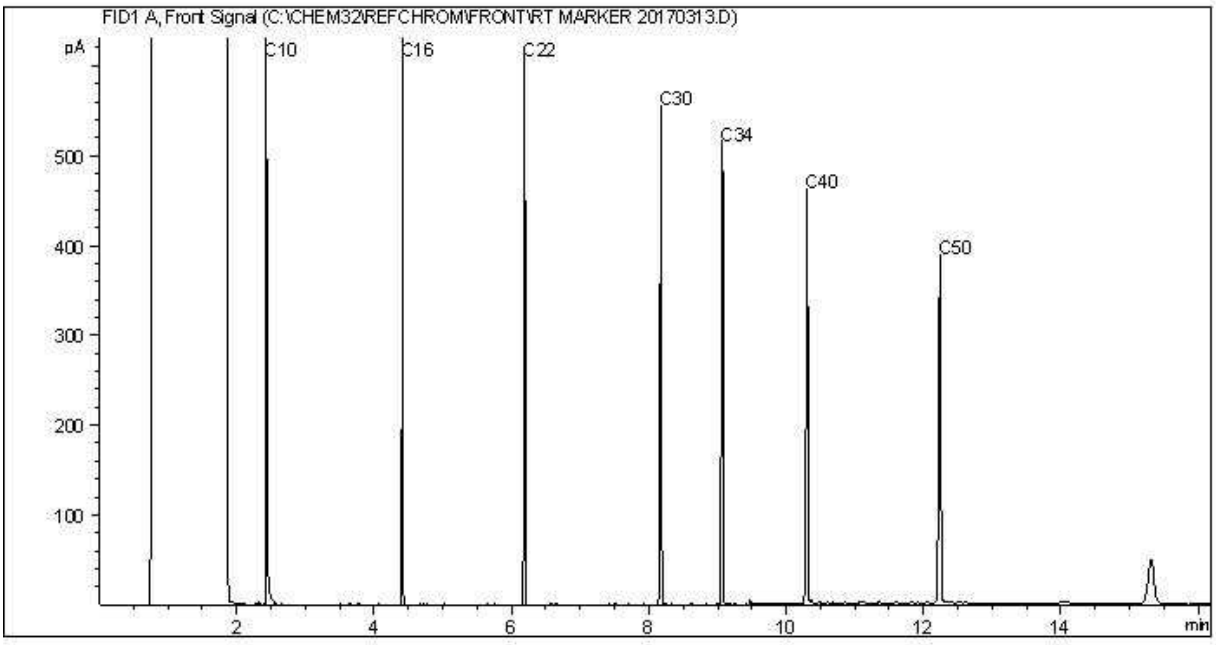
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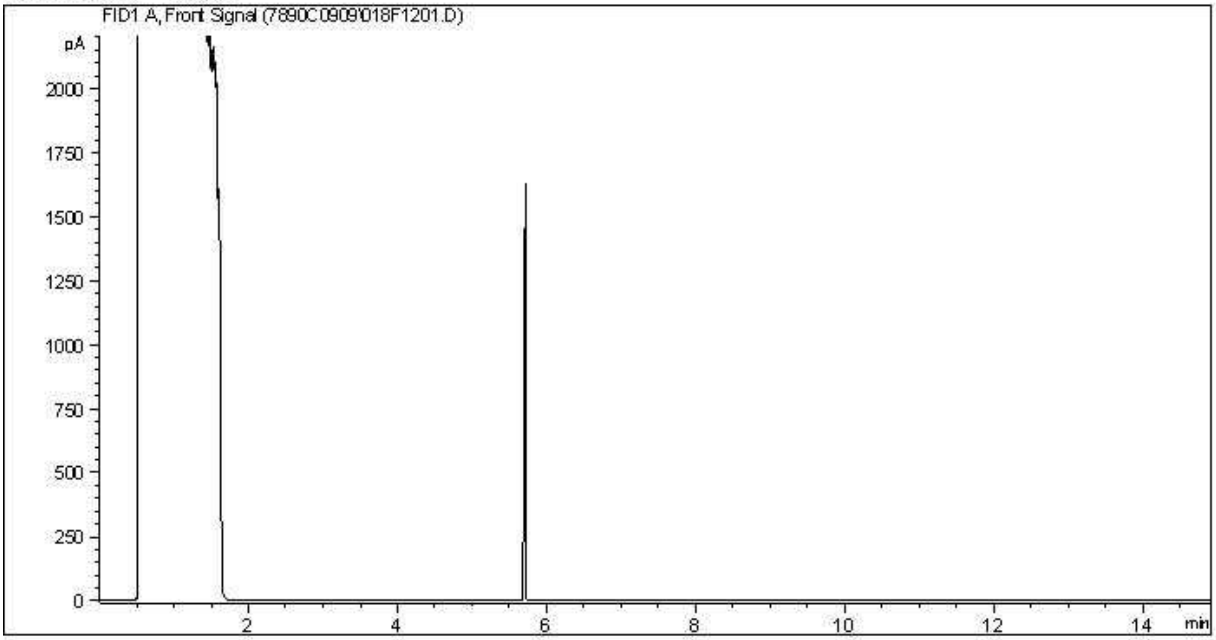
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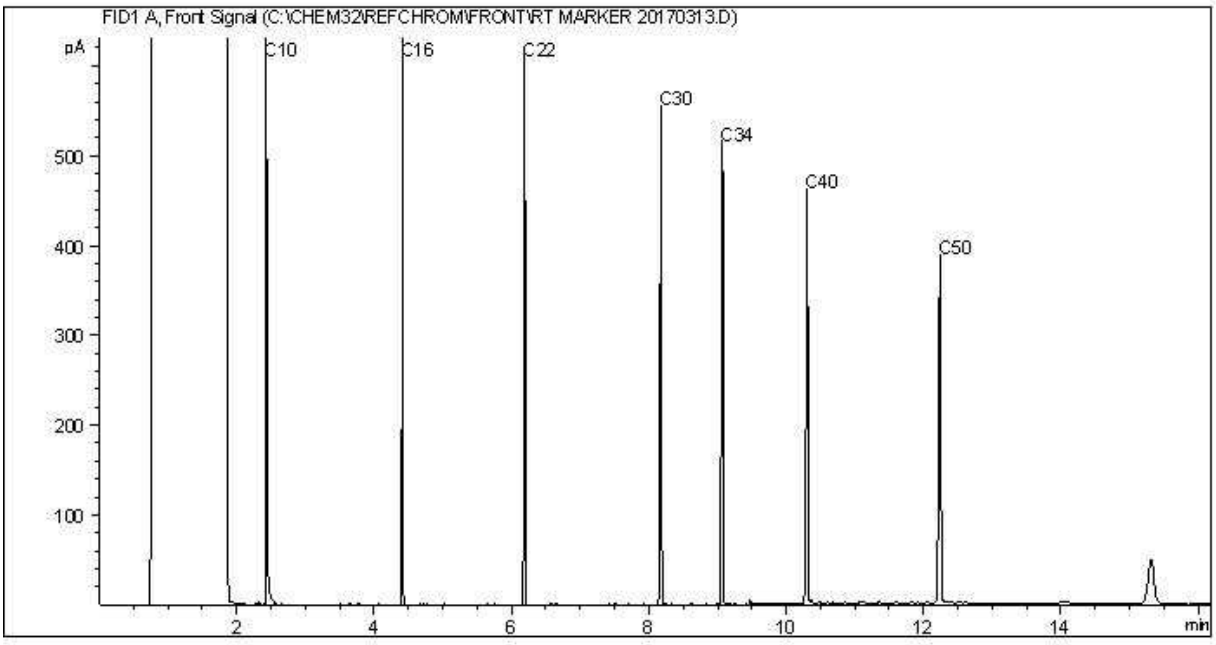
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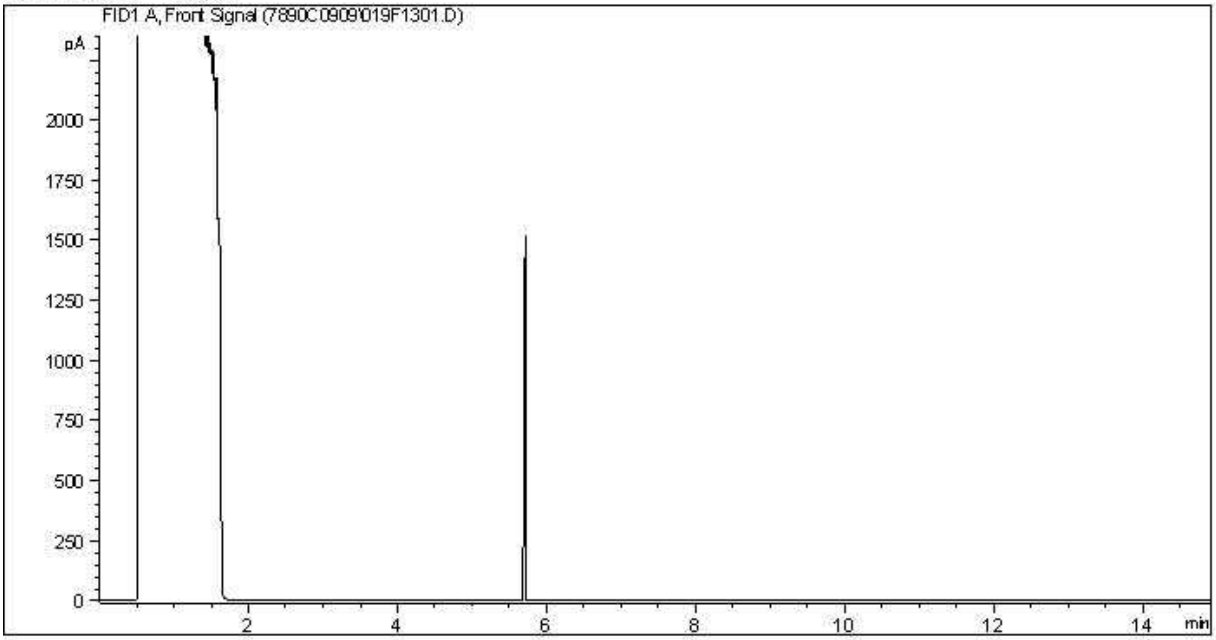
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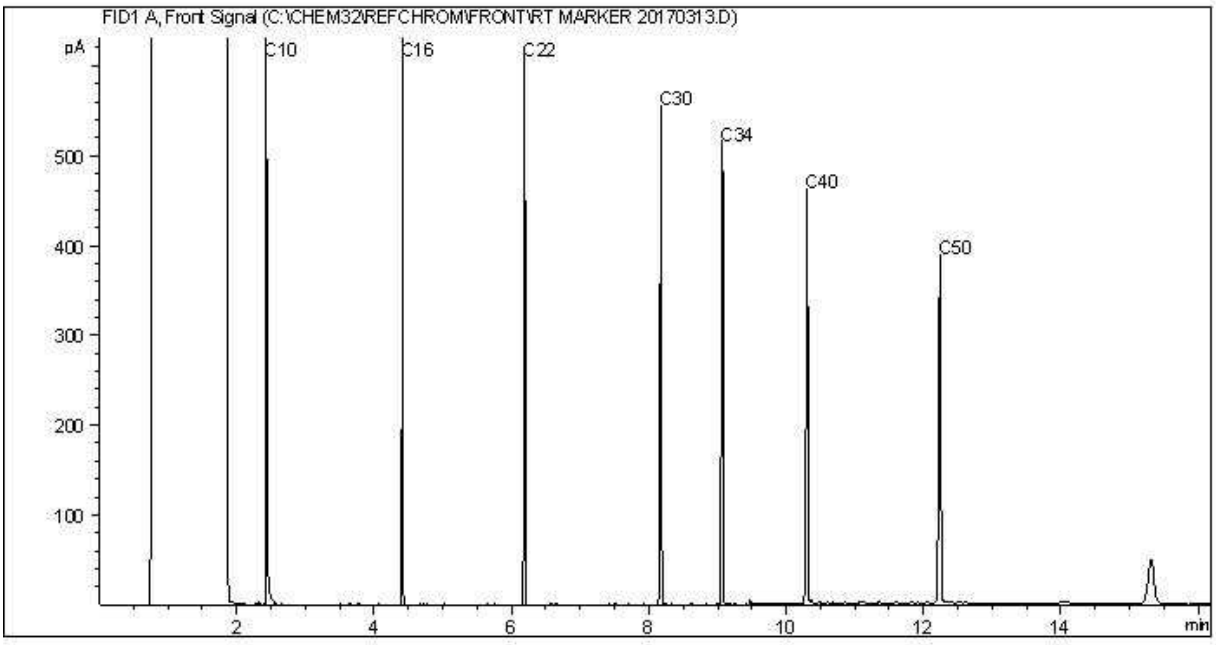
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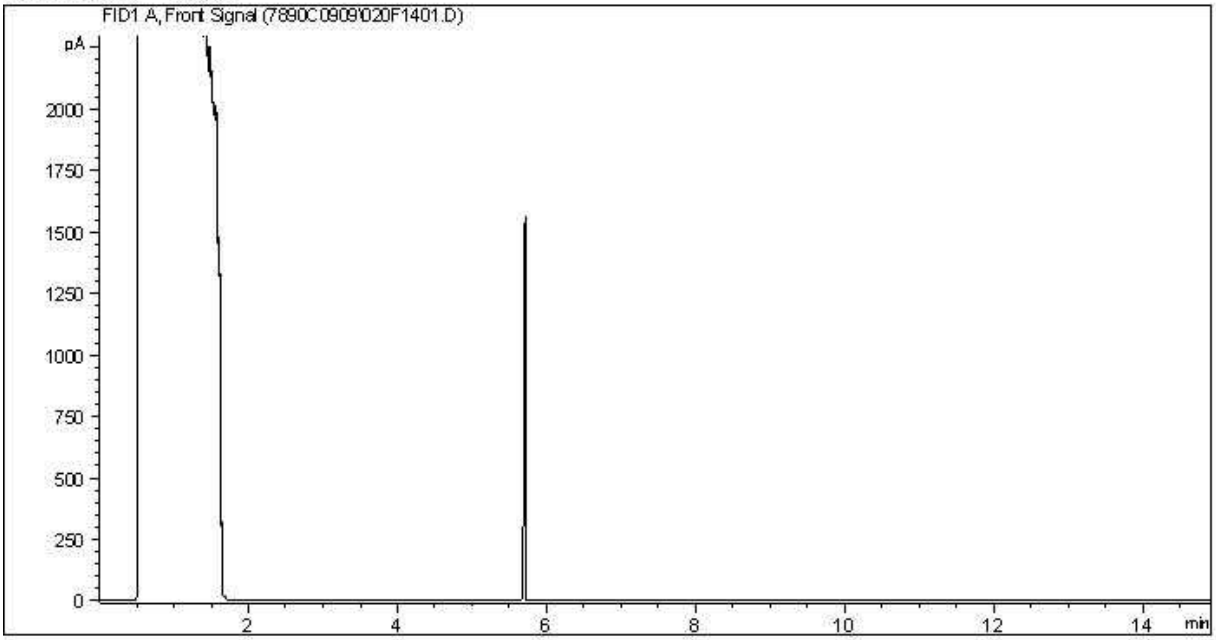
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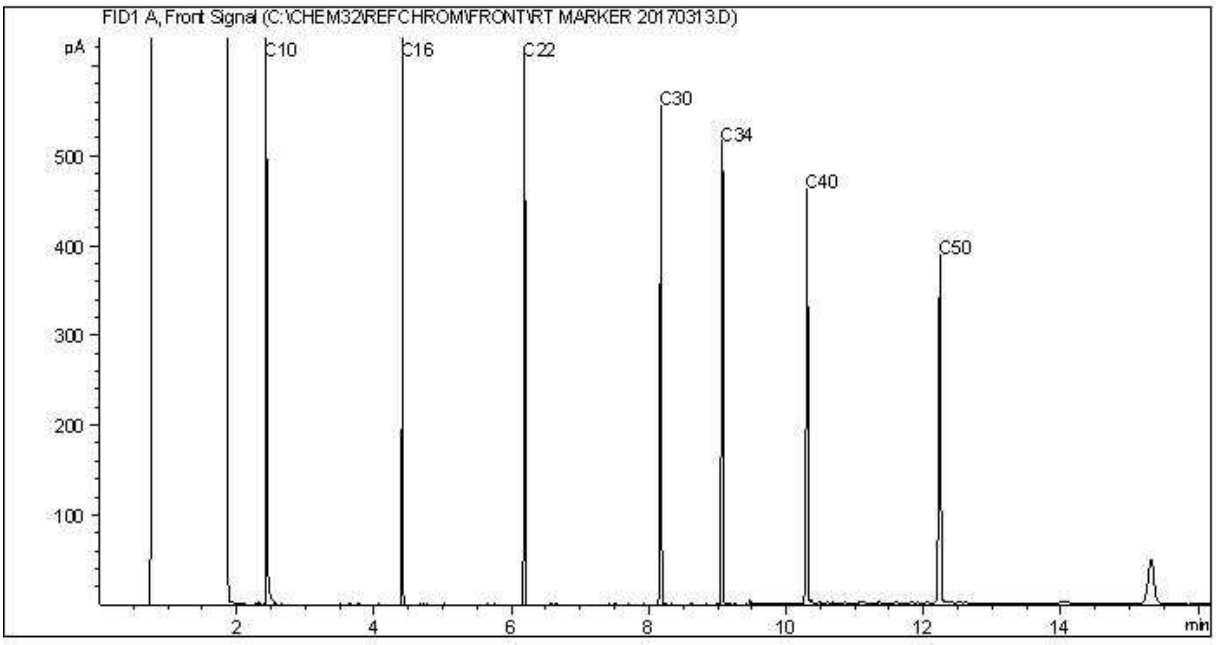
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Carbon Range Distribution - Reference Chromatogram



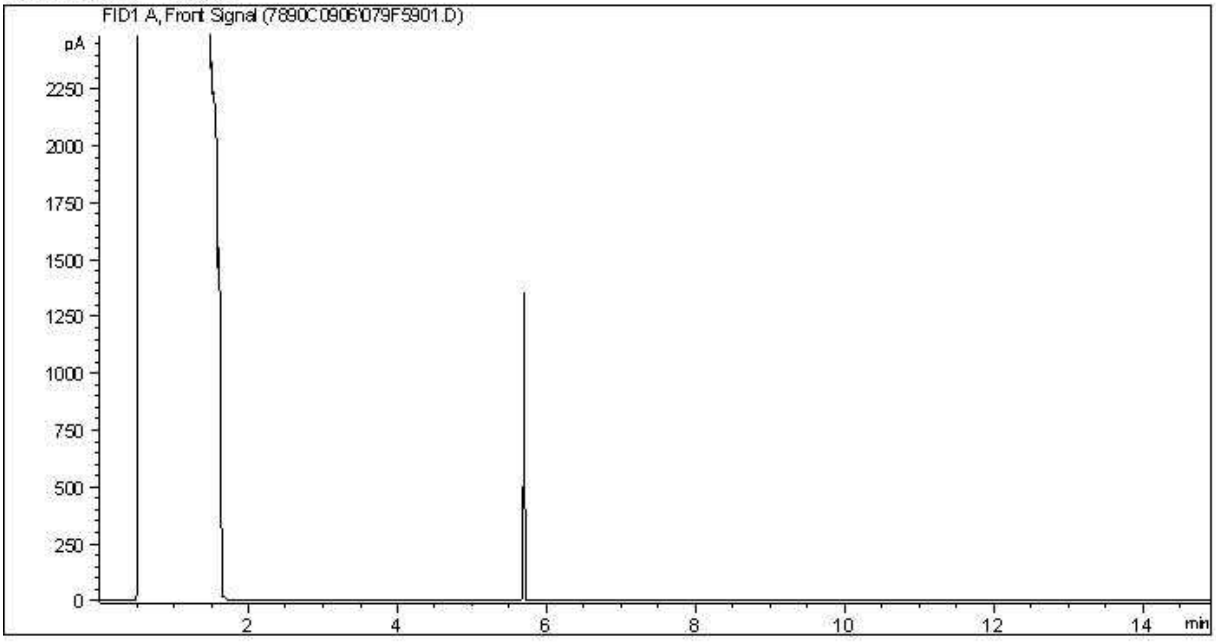
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Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
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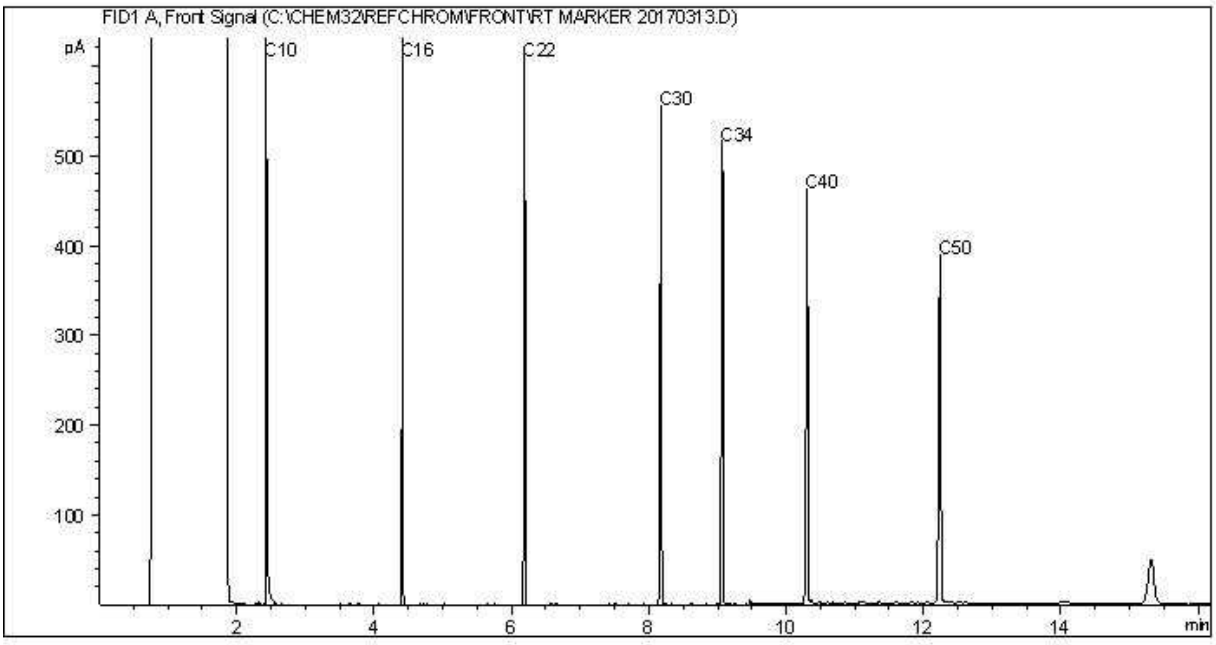
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CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Instrument: 7890C



Carbon Range Distribution - Reference Chromatogram



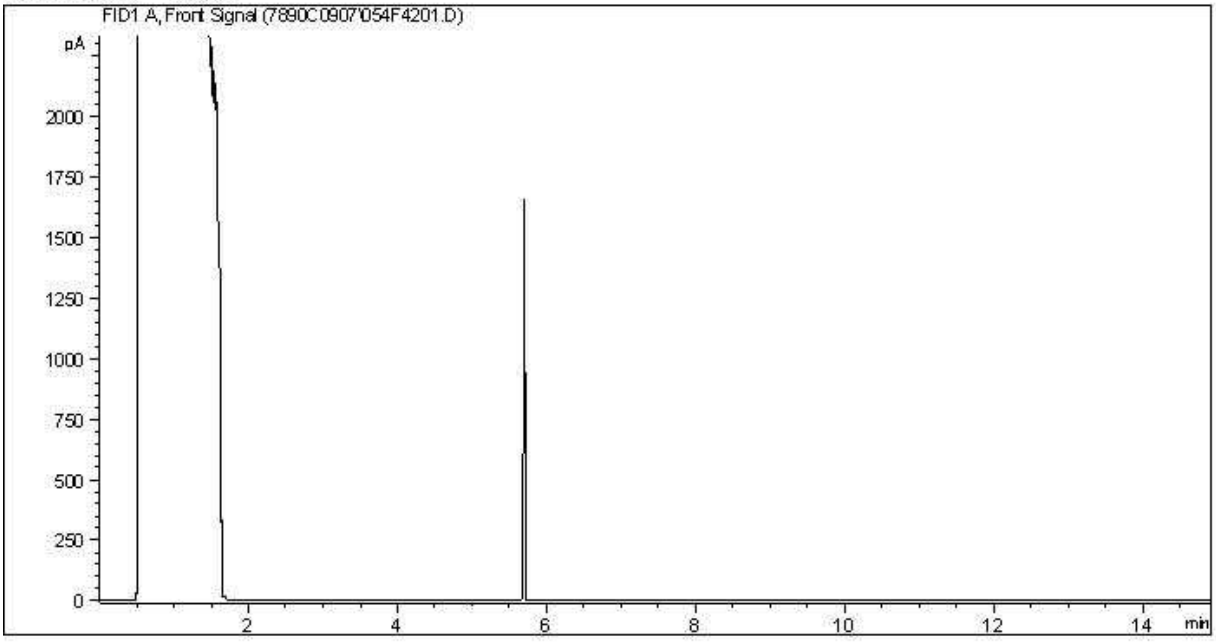
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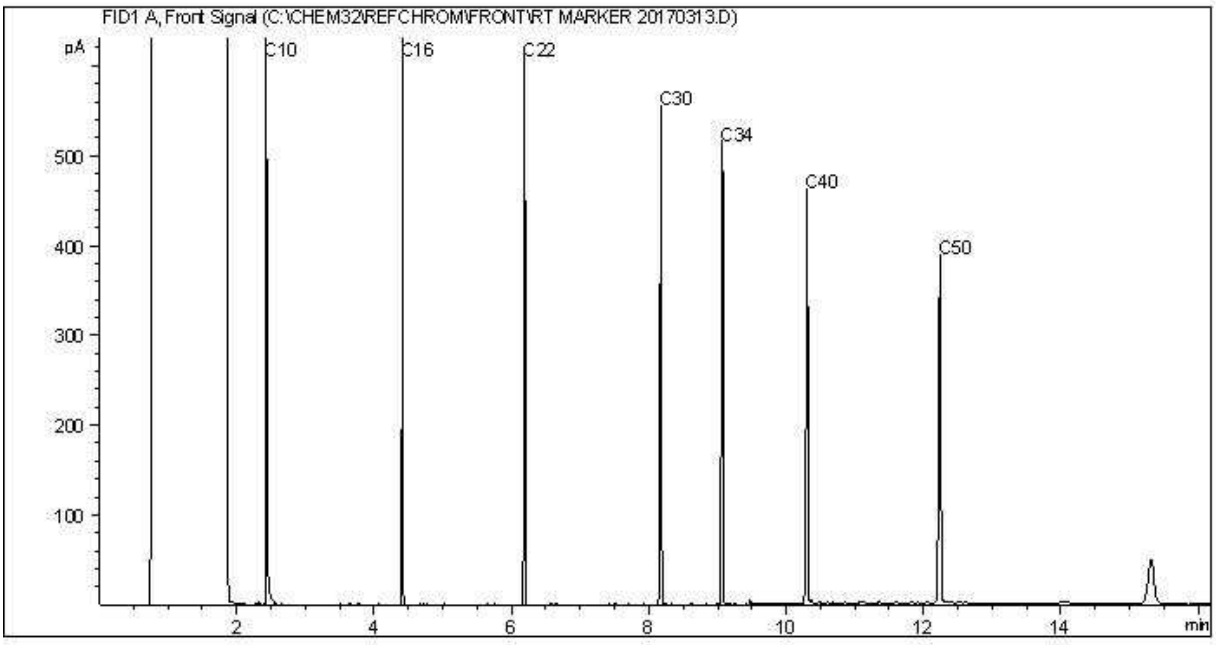
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CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Instrument: 7890C



Carbon Range Distribution - Reference Chromatogram



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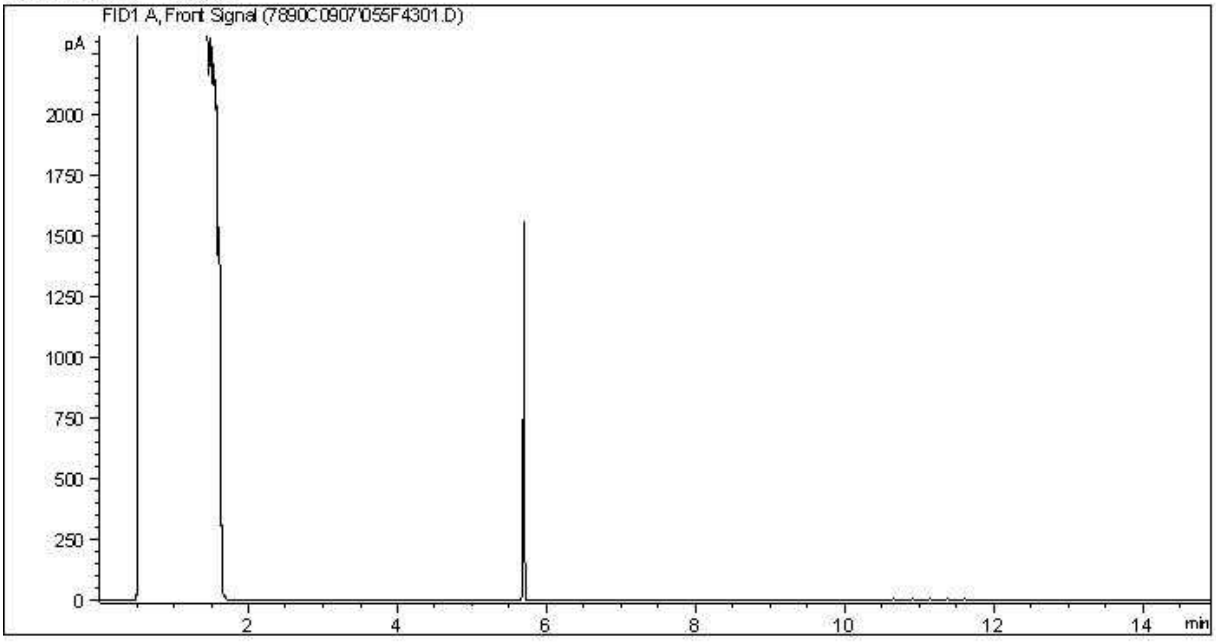
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BV Labs Job #: B973139
Report Date: 2019/12/12
BV Labs Sample: WK3702

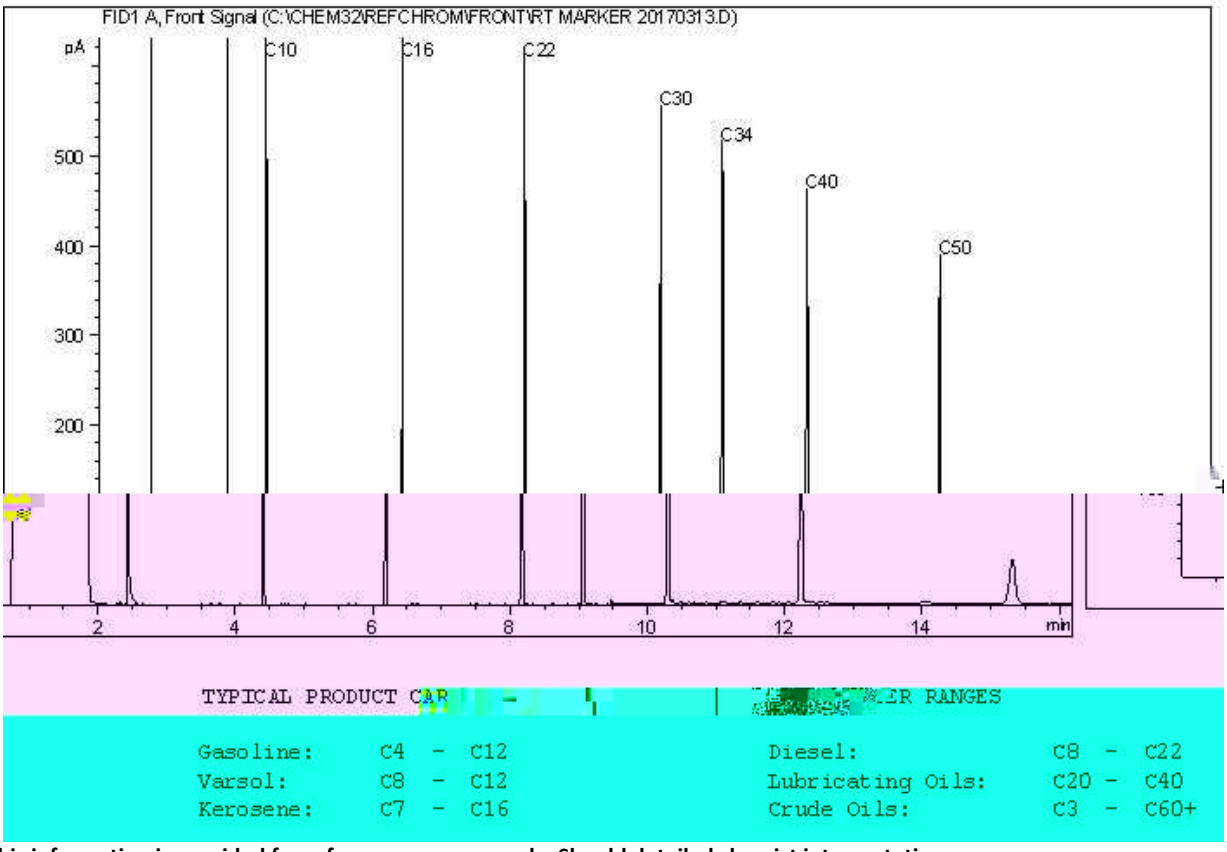
ARCADIS Canada Inc
Client Project #: 30000251
Client ID: C1-35B

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Instrument: 7890C



Carbon Range Distribution - Reference Chromatogram



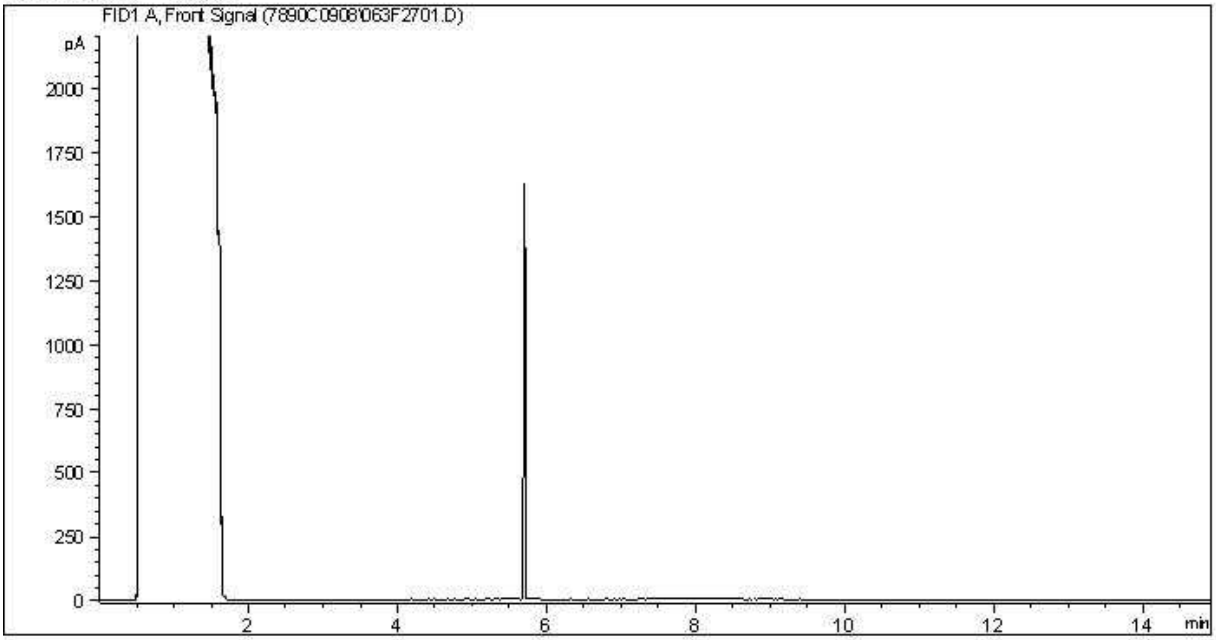
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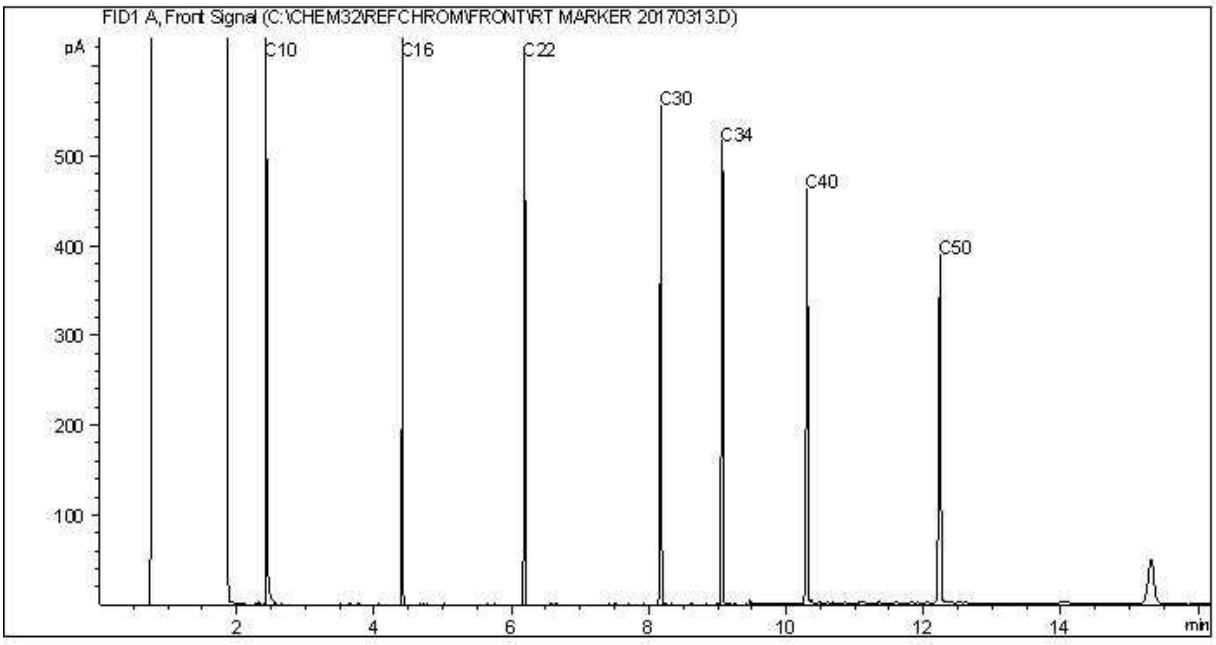
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CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Instrument: 7890C



Carbon Range Distribution - Reference Chromatogram



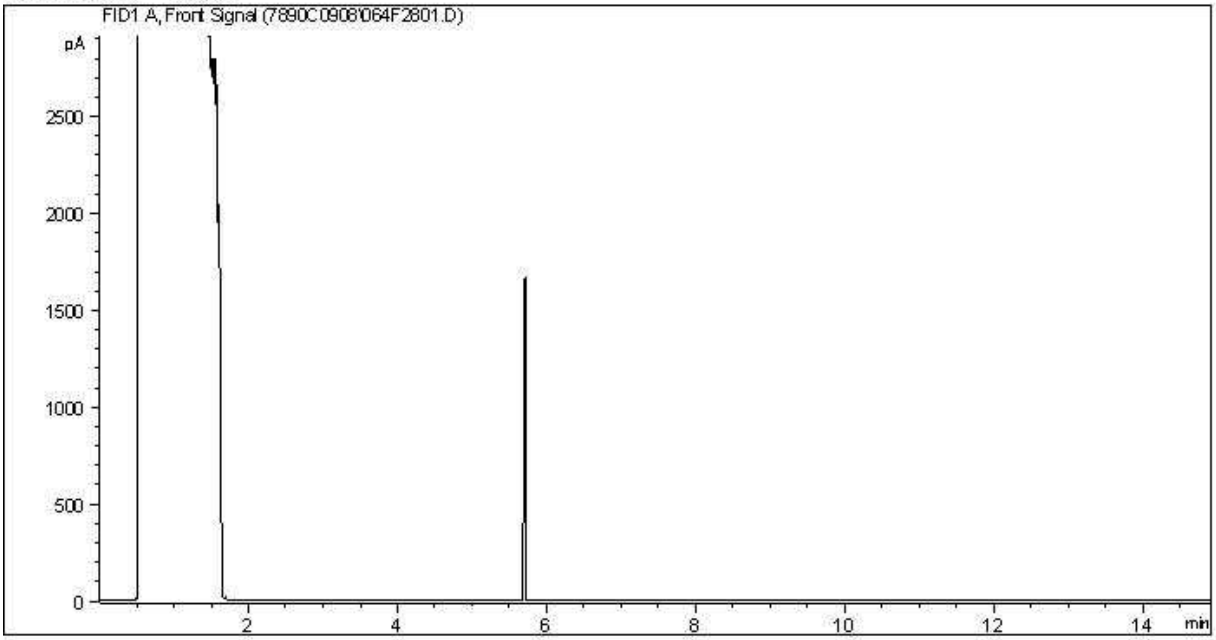
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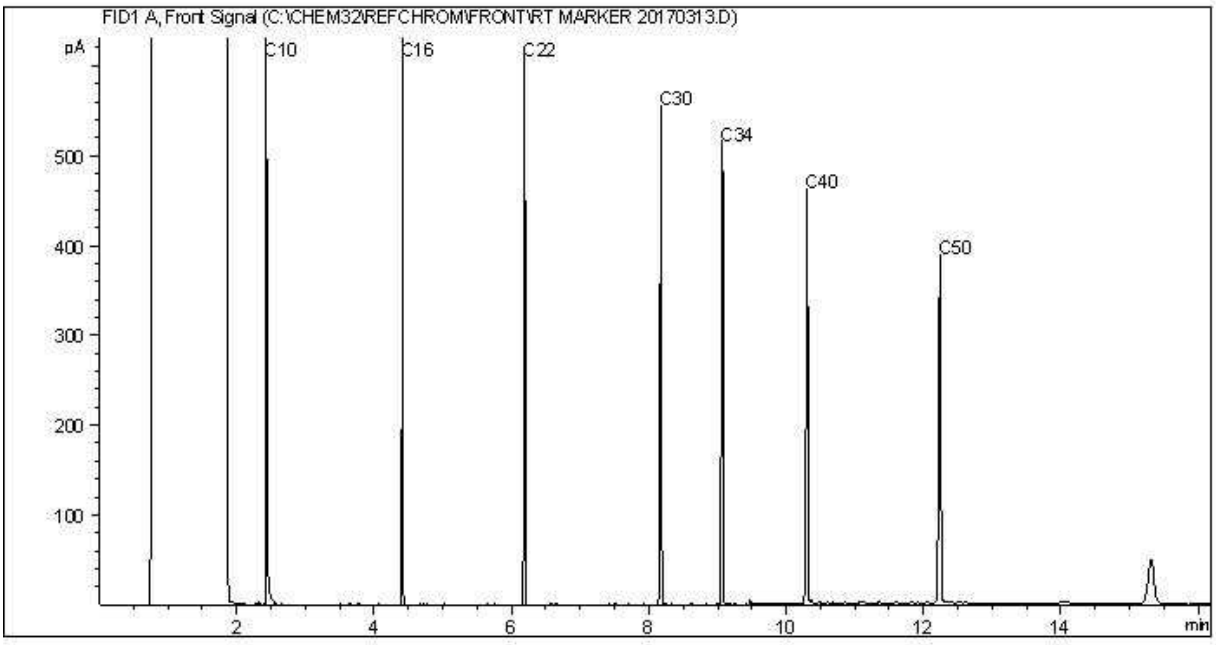
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CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Instrument: 7890C



Carbon Range Distribution - Reference Chromatogram



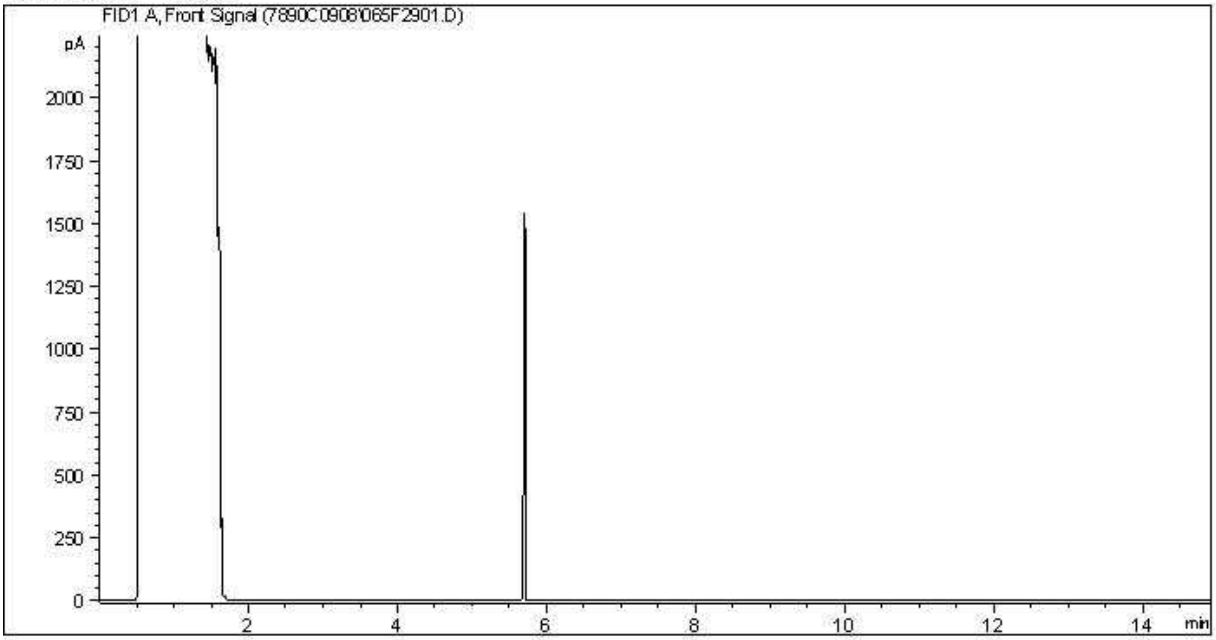
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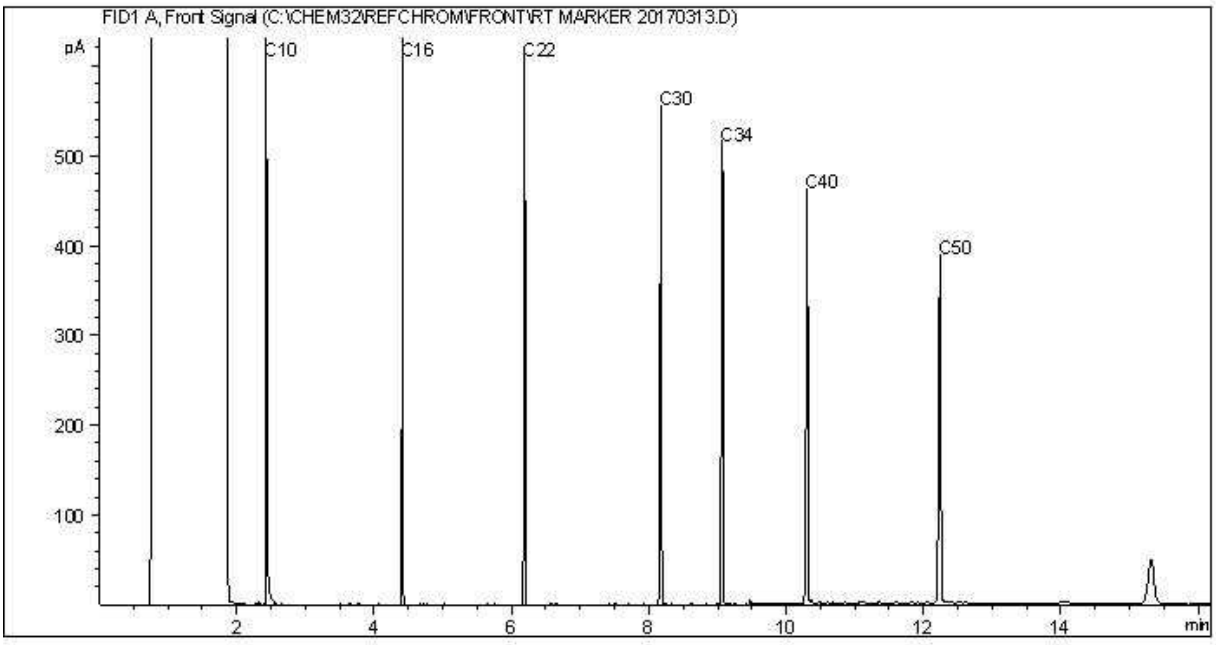
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CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Instrument: 7890C



Carbon Range Distribution - Reference Chromatogram



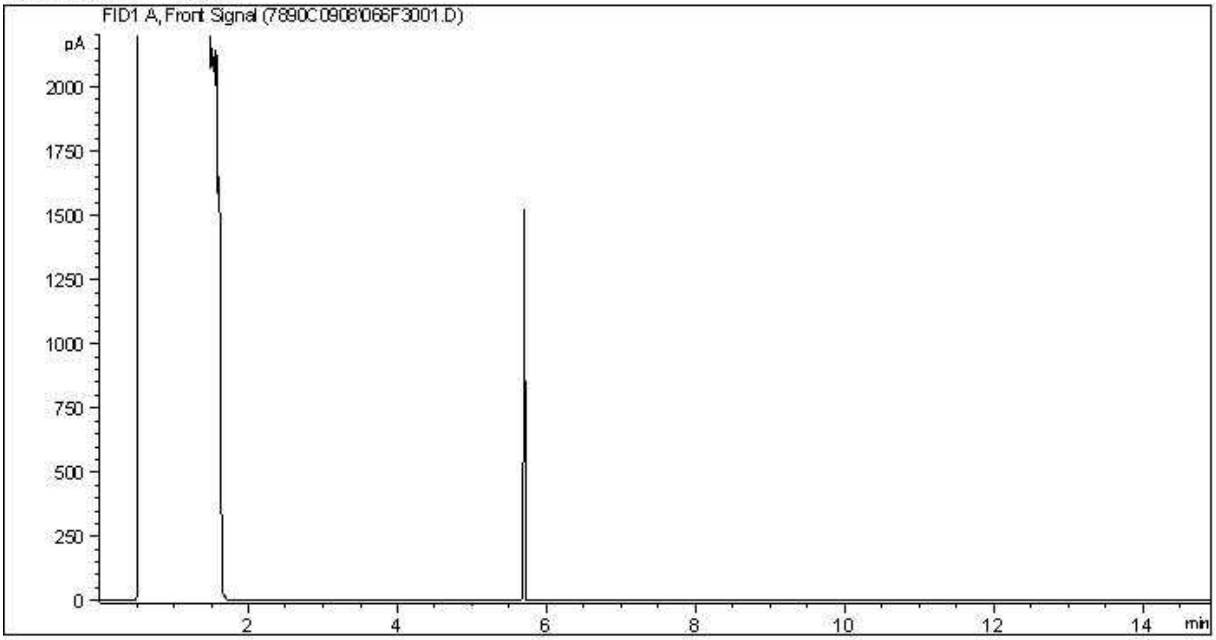
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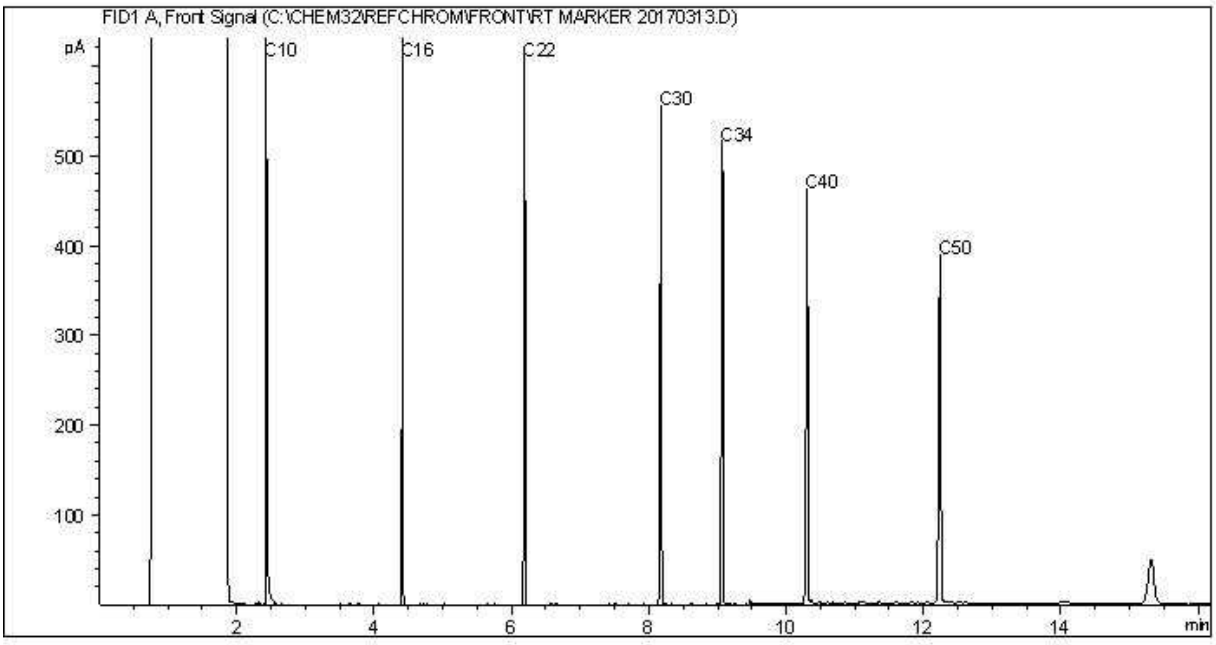
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CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Instrument: 7890C



Carbon Range Distribution - Reference Chromatogram



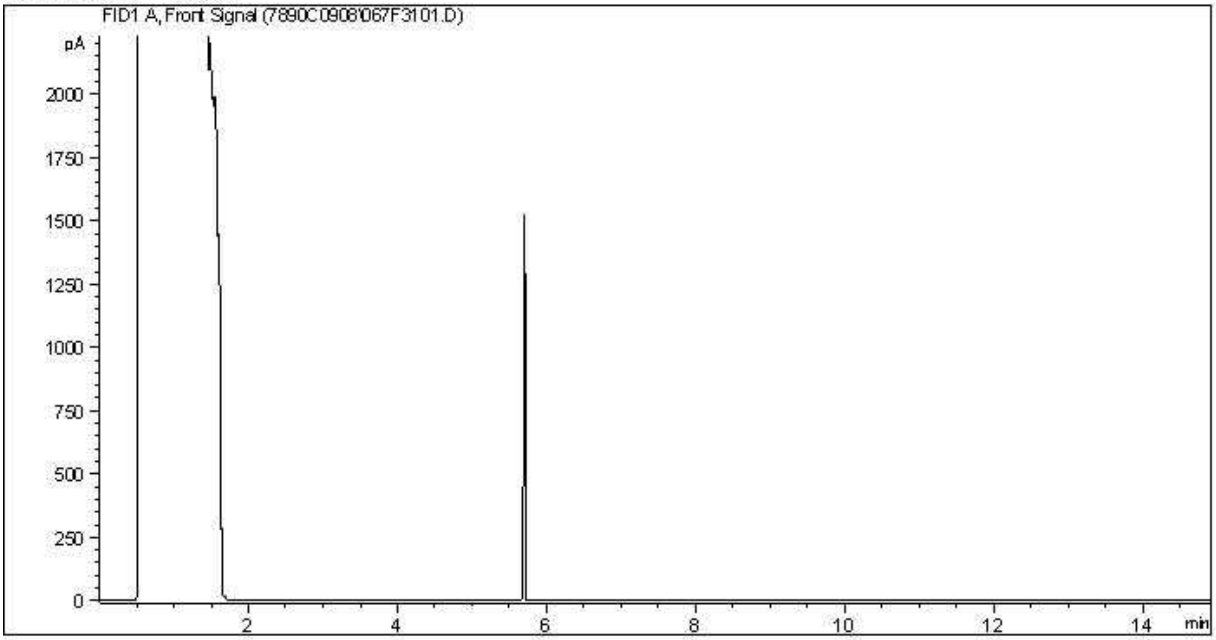
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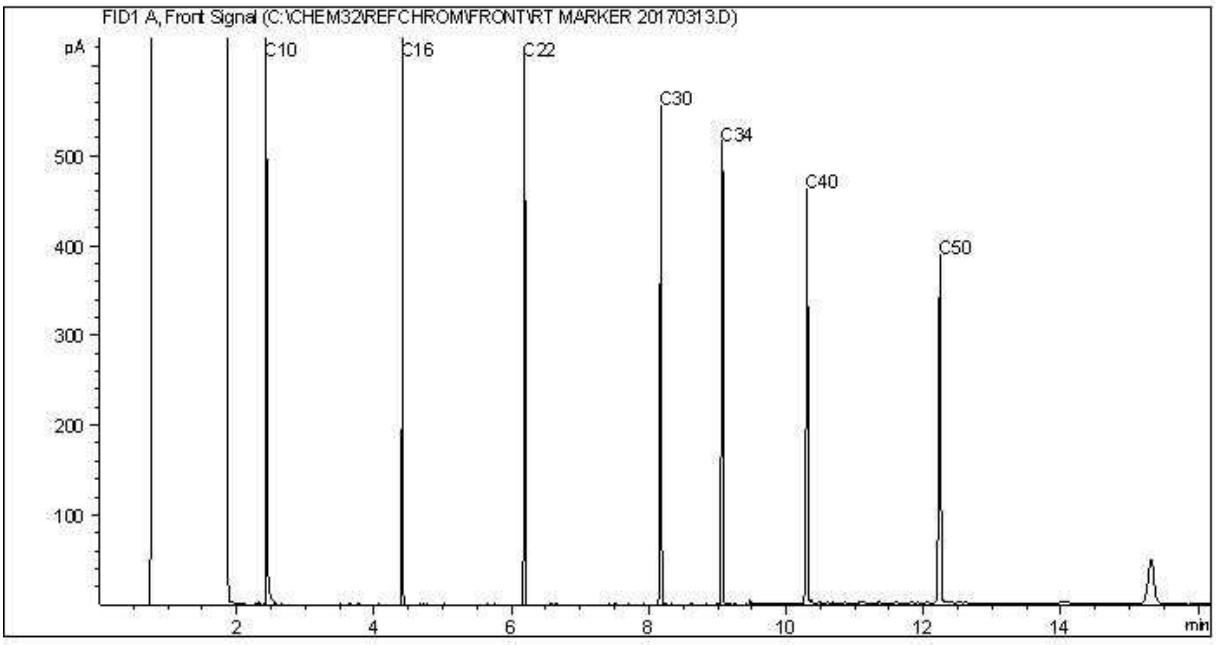
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CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Instrument: 7890C



Carbon Range Distribution - Reference Chromatogram



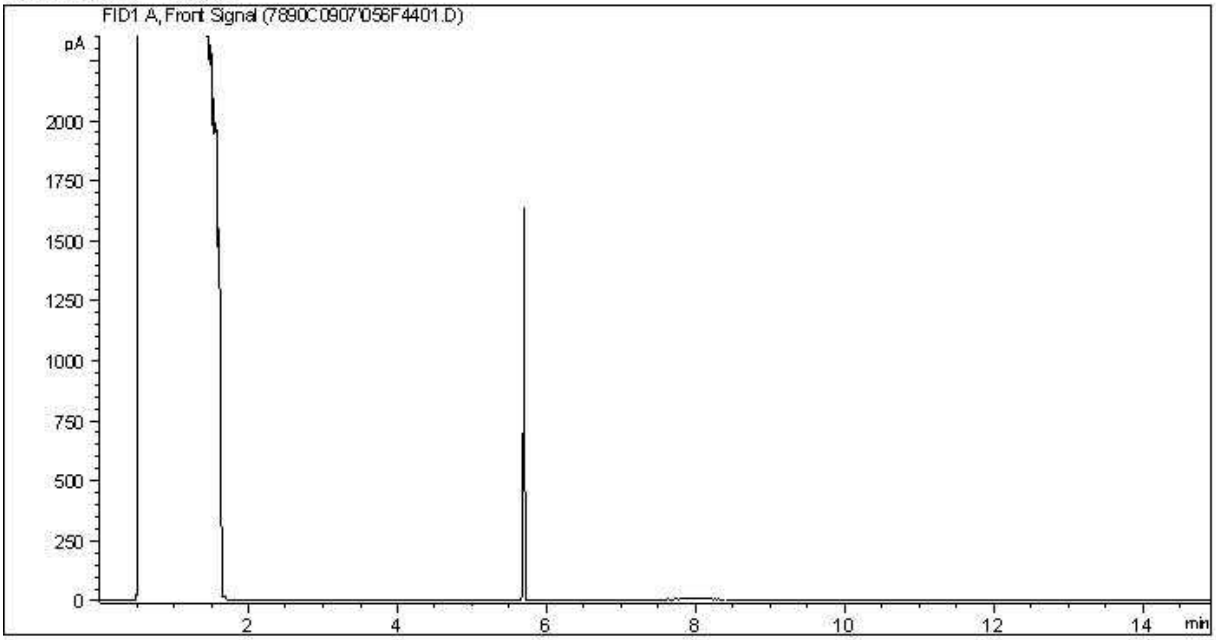
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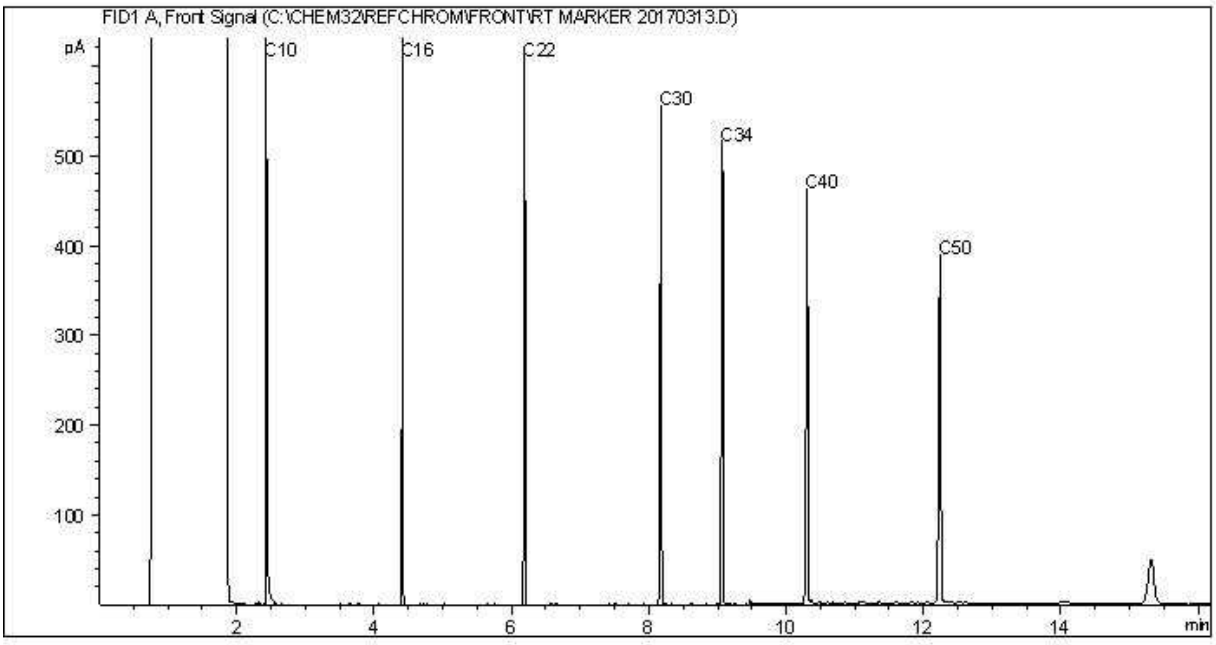
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CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Instrument: 7890C



Carbon Range Distribution - Reference Chromatogram



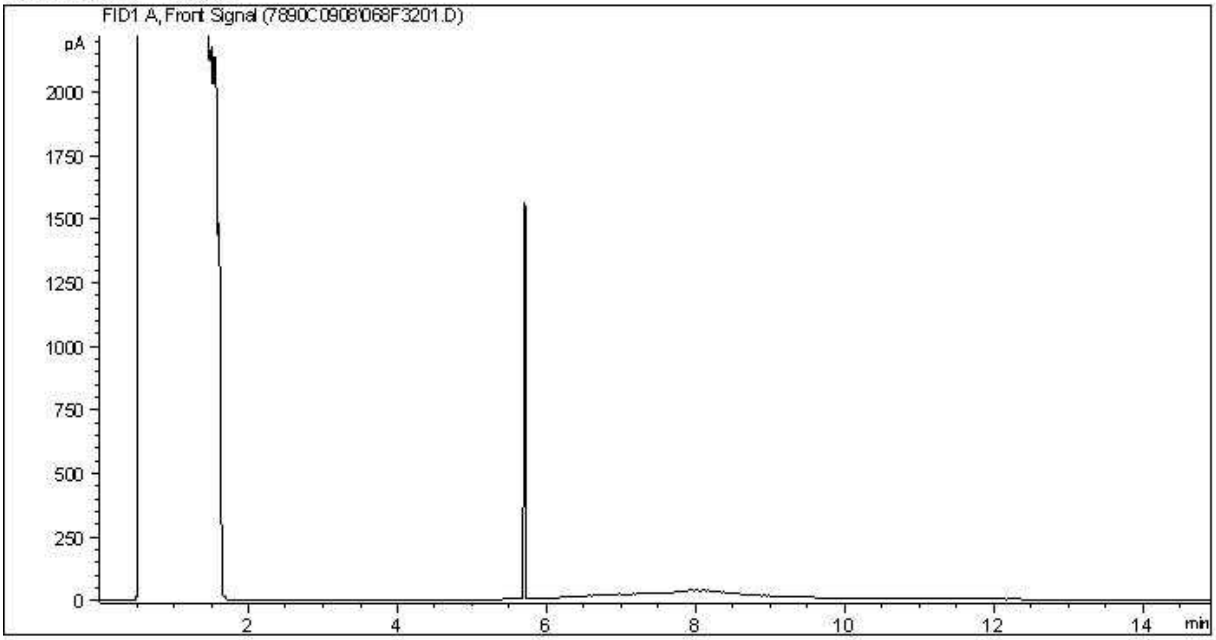
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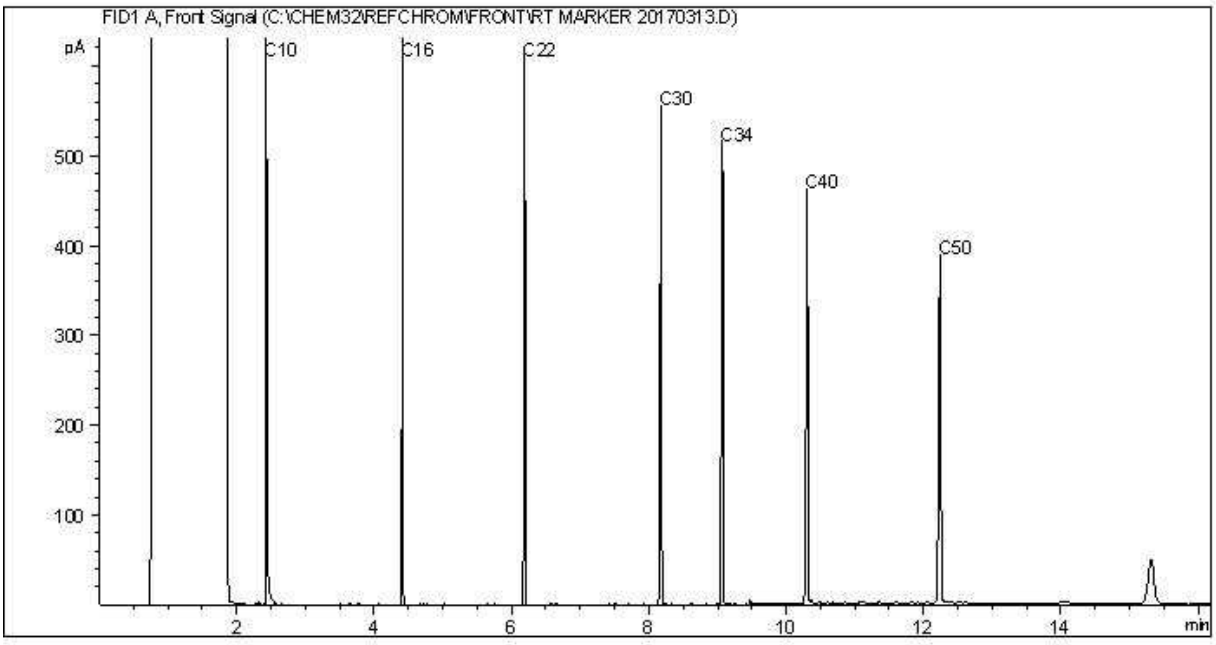
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CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Instrument: 7890C



Carbon Range Distribution - Reference Chromatogram



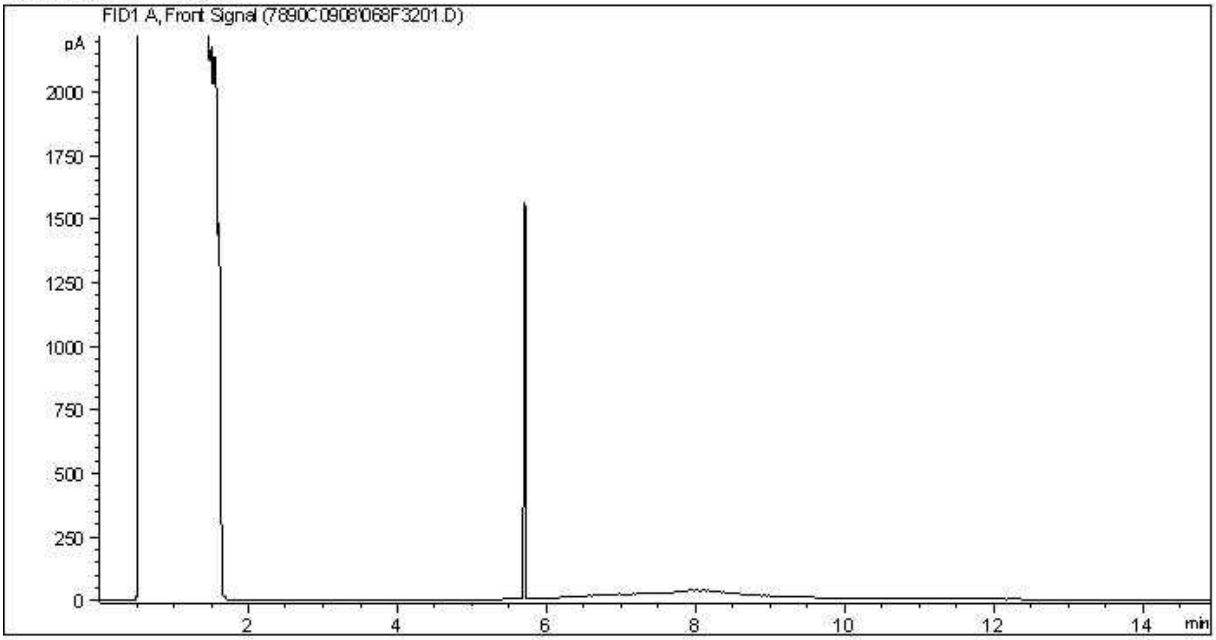
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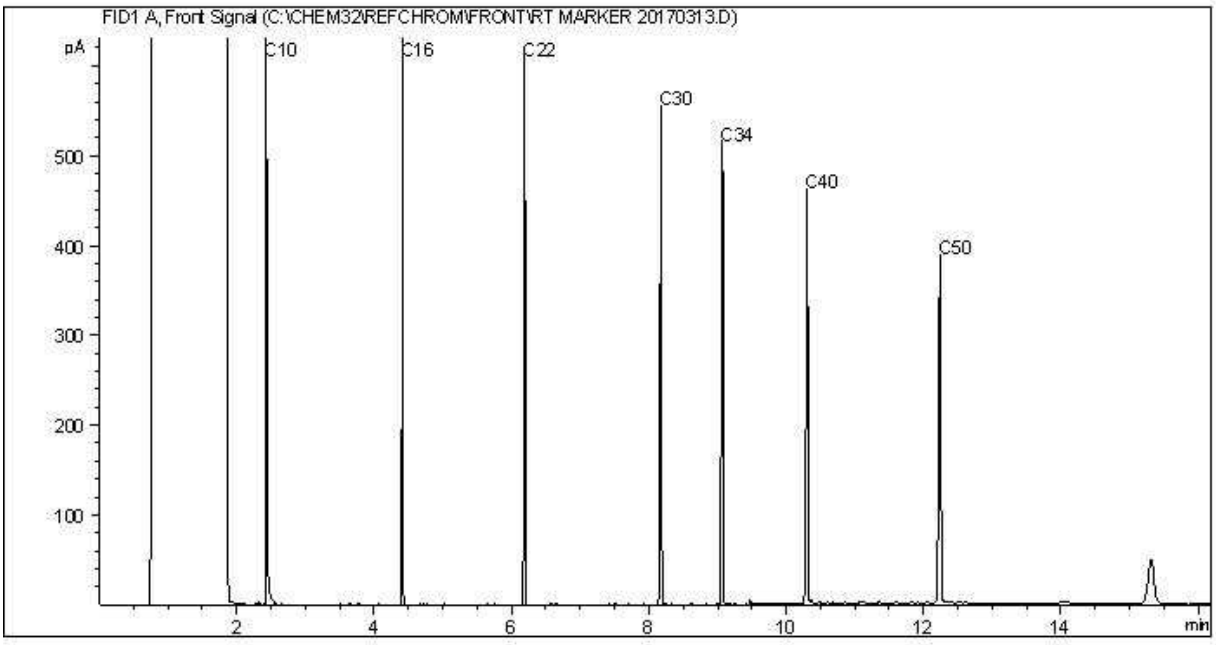
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CCME Hydrocarbons (F2-F4)+F3A/B in soil Chromatogram

Instrument: 7890C



Carbon Range Distribution - Reference Chromatogram



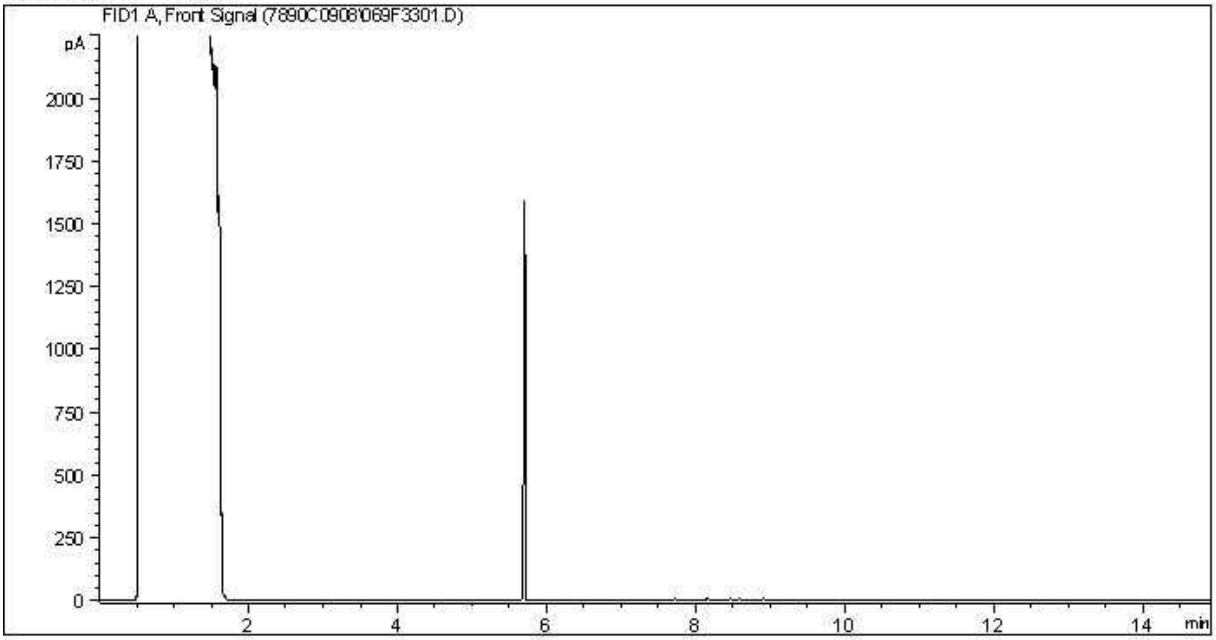
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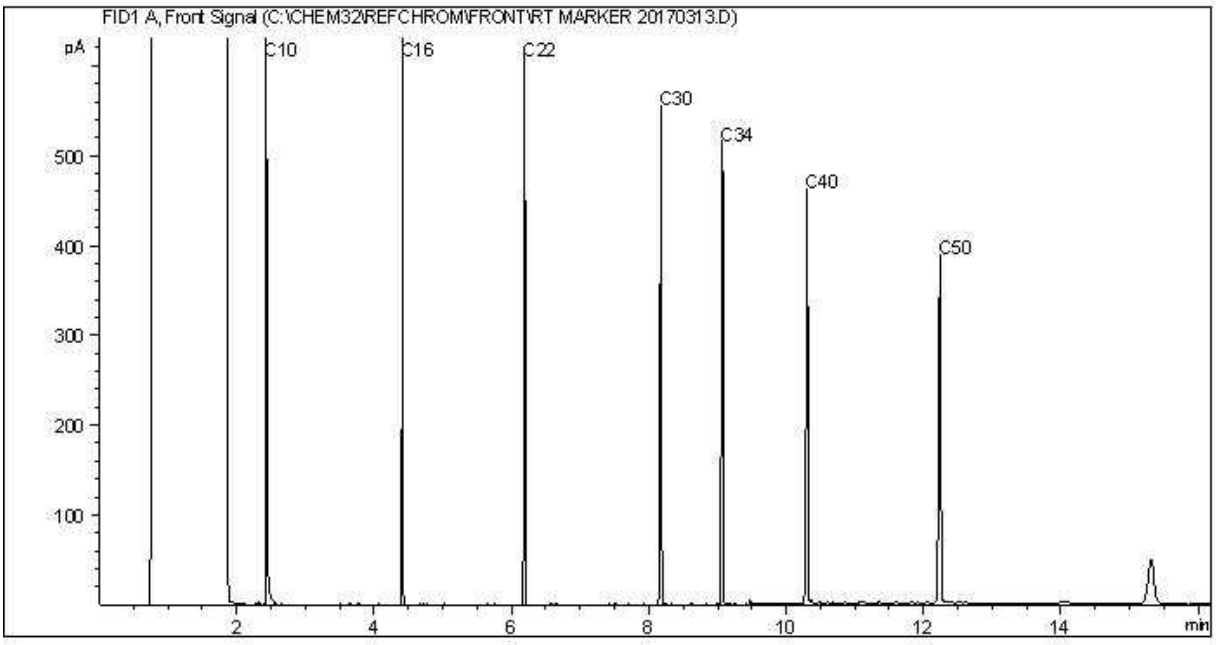
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CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Instrument: 7890C



Carbon Range Distribution - Reference Chromatogram



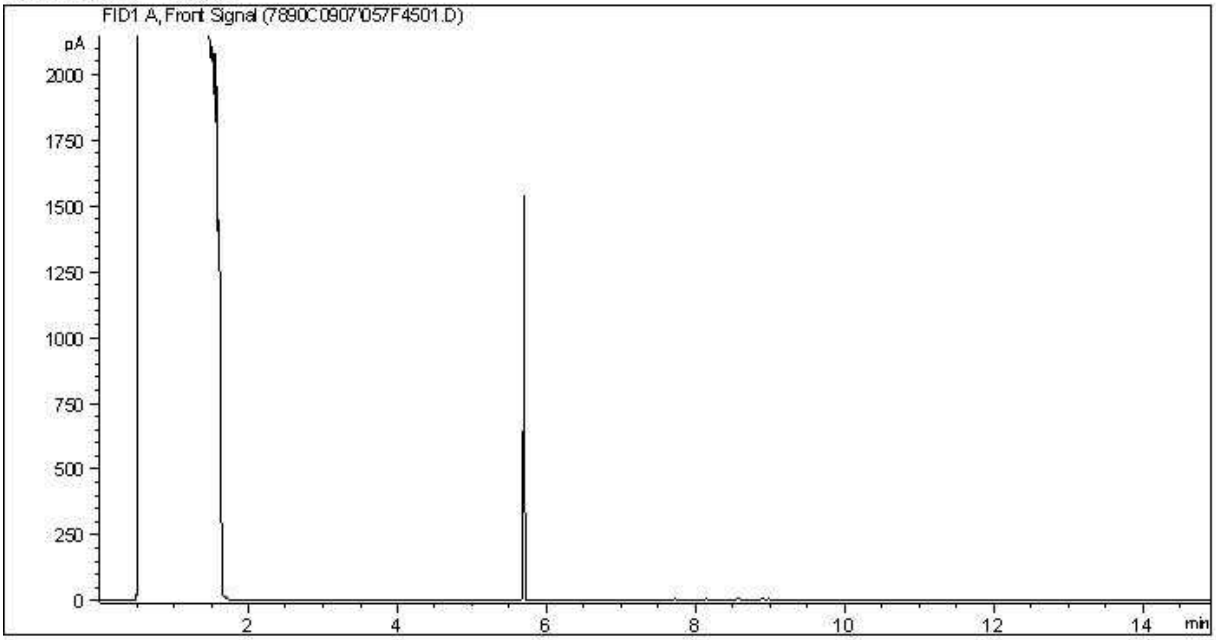
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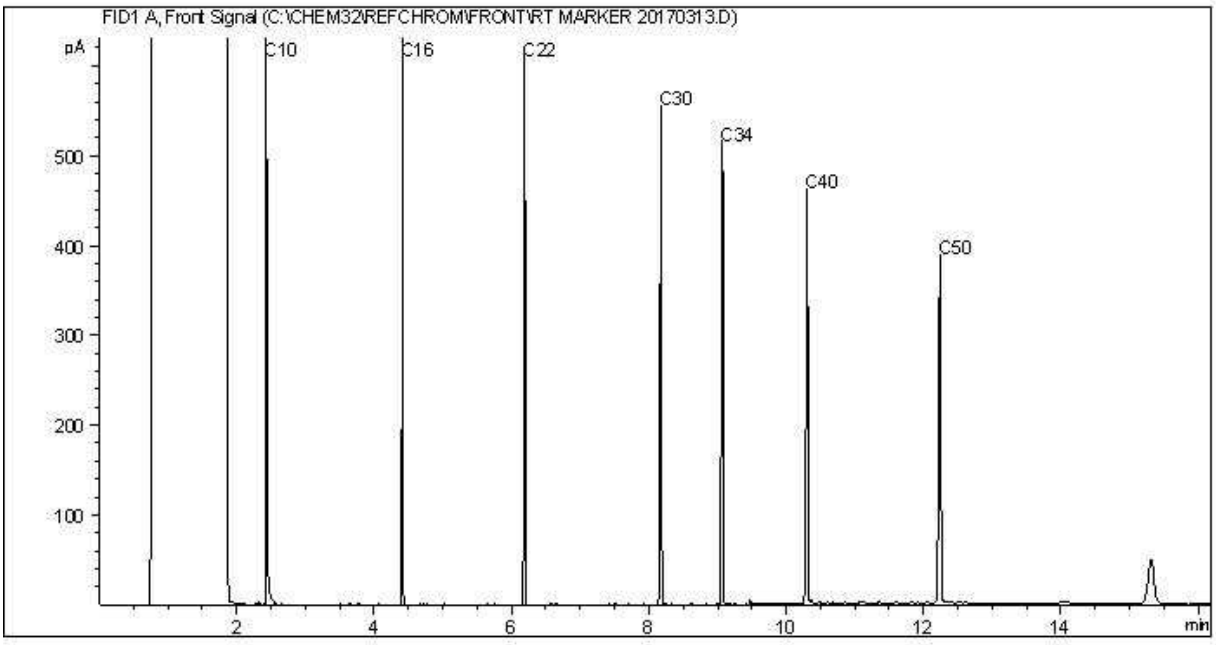
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CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Instrument: 7890C



Carbon Range Distribution - Reference Chromatogram



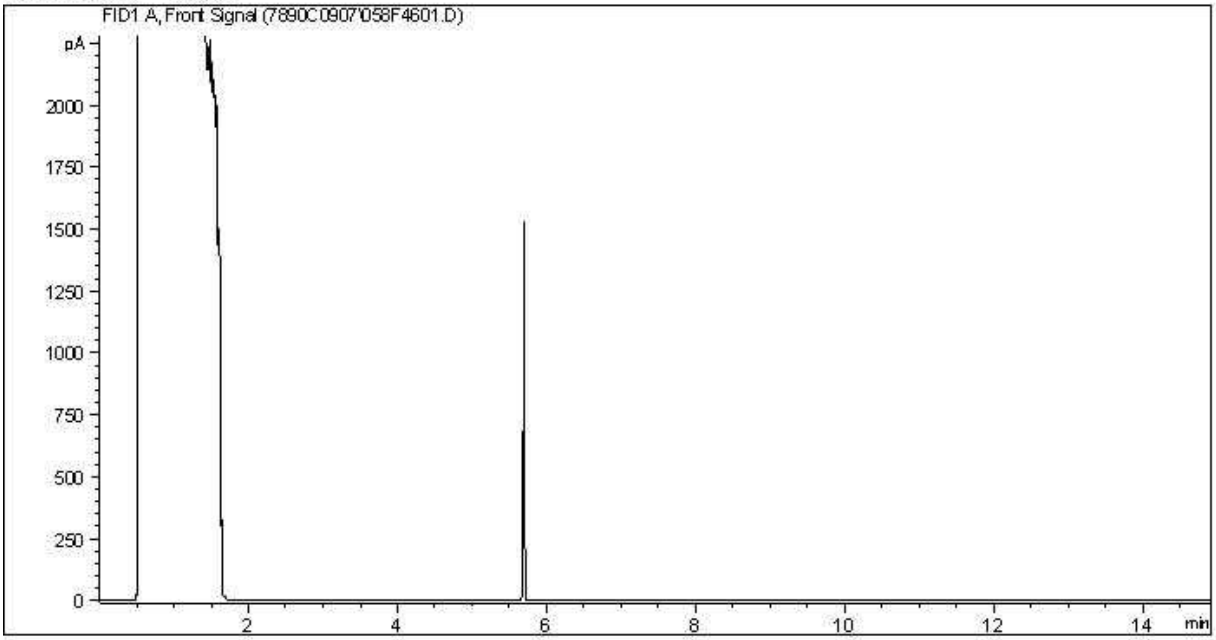
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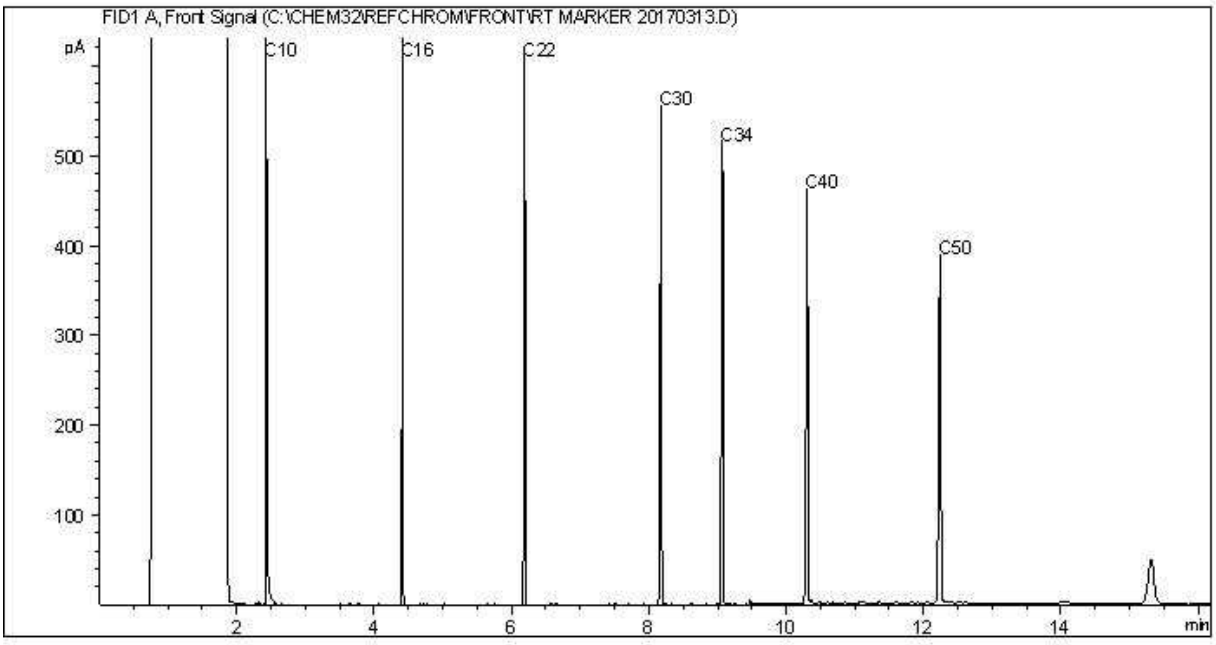
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Carbon Range Distribution - Reference Chromatogram



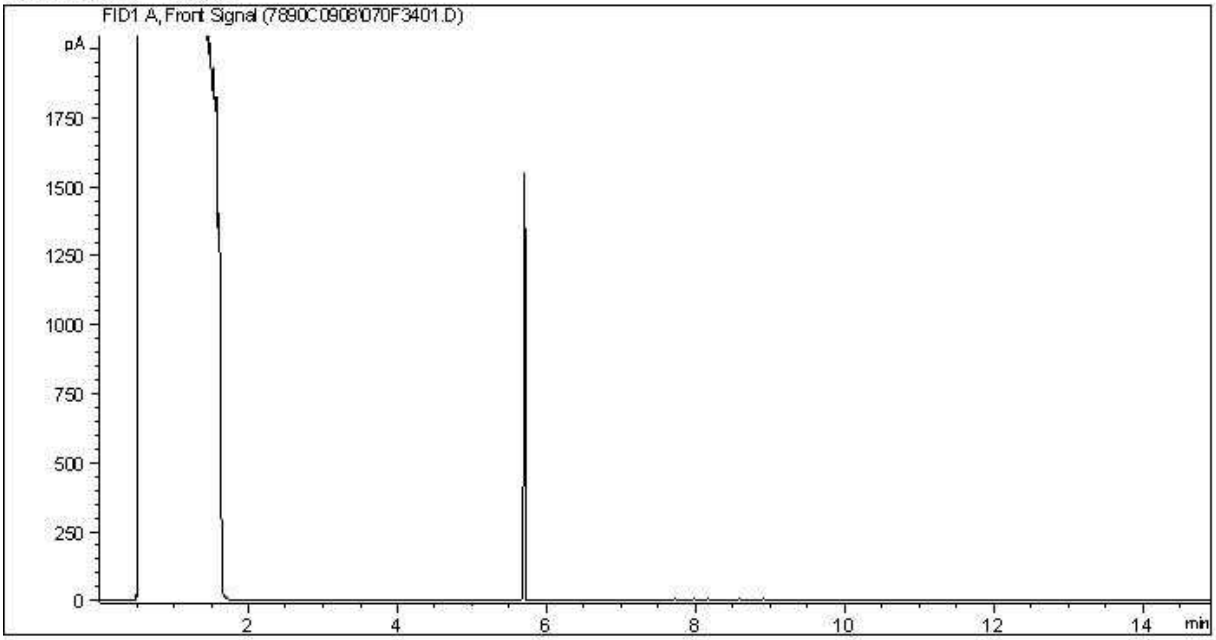
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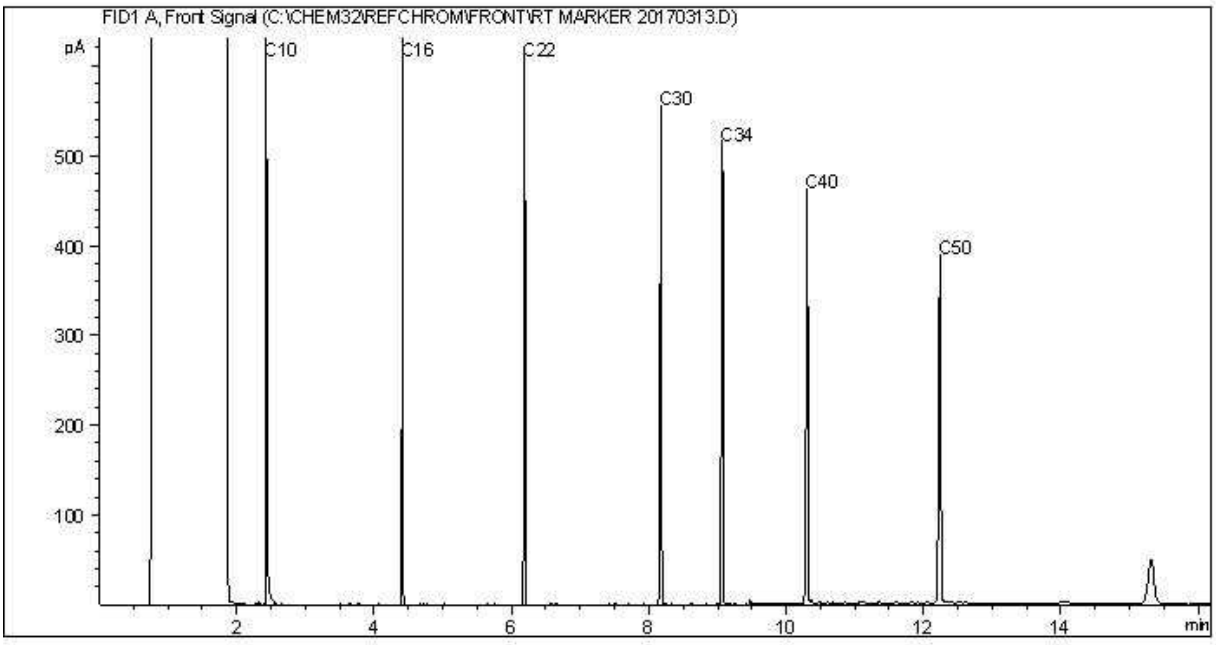
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Carbon Range Distribution - Reference Chromatogram



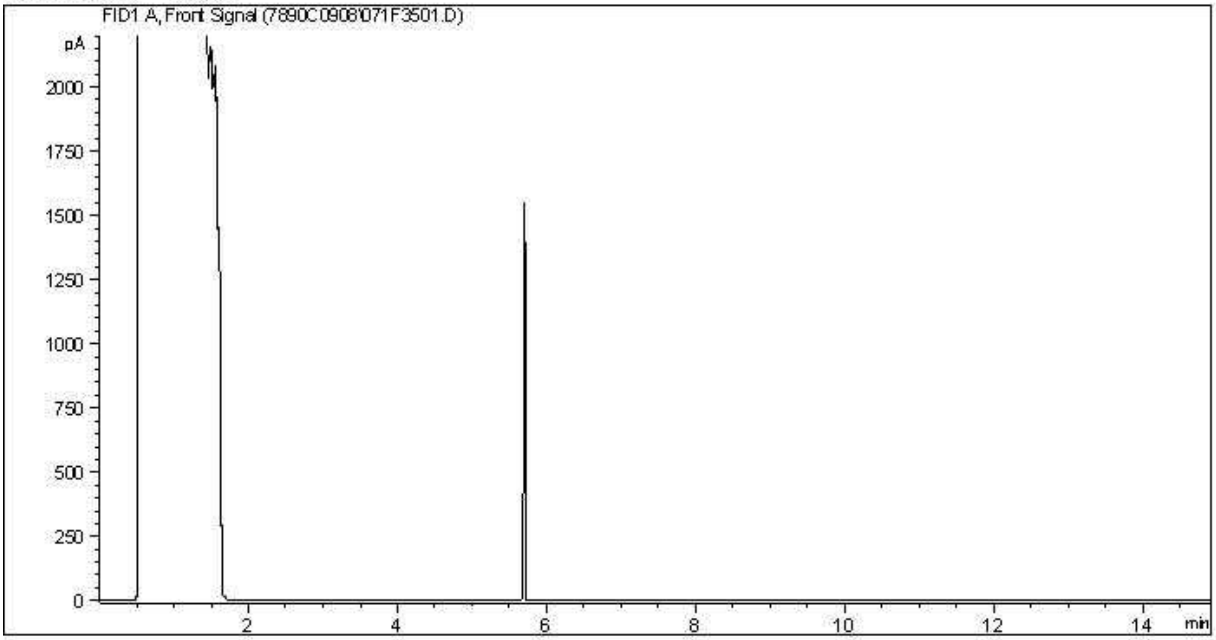
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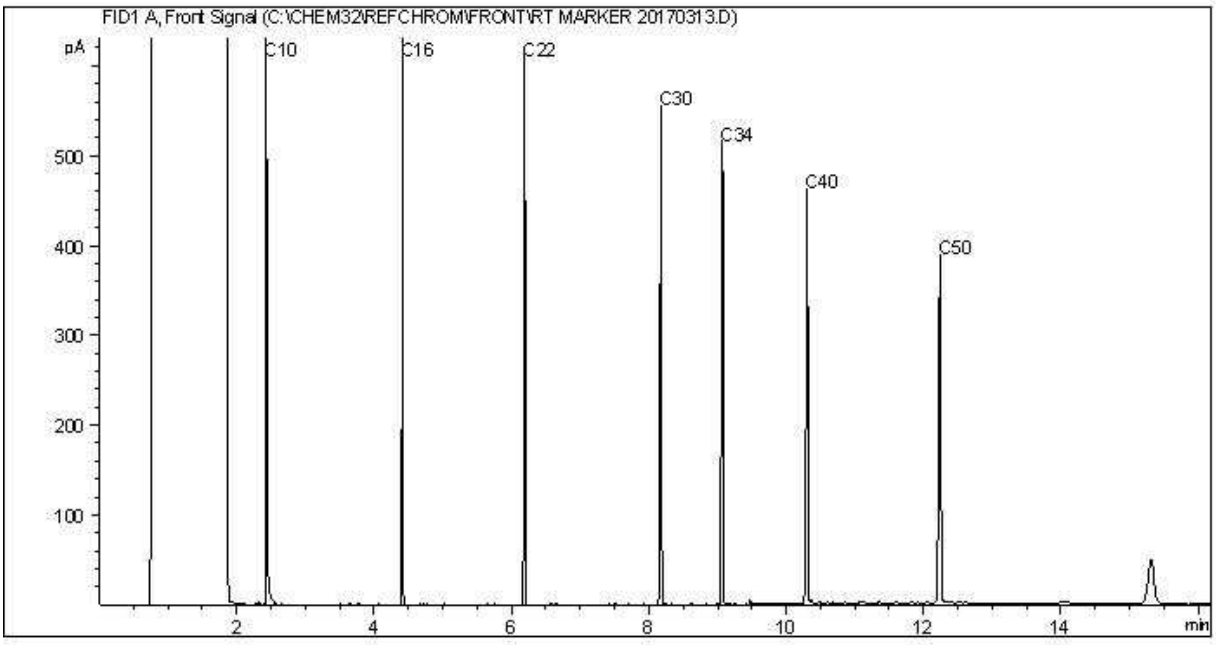
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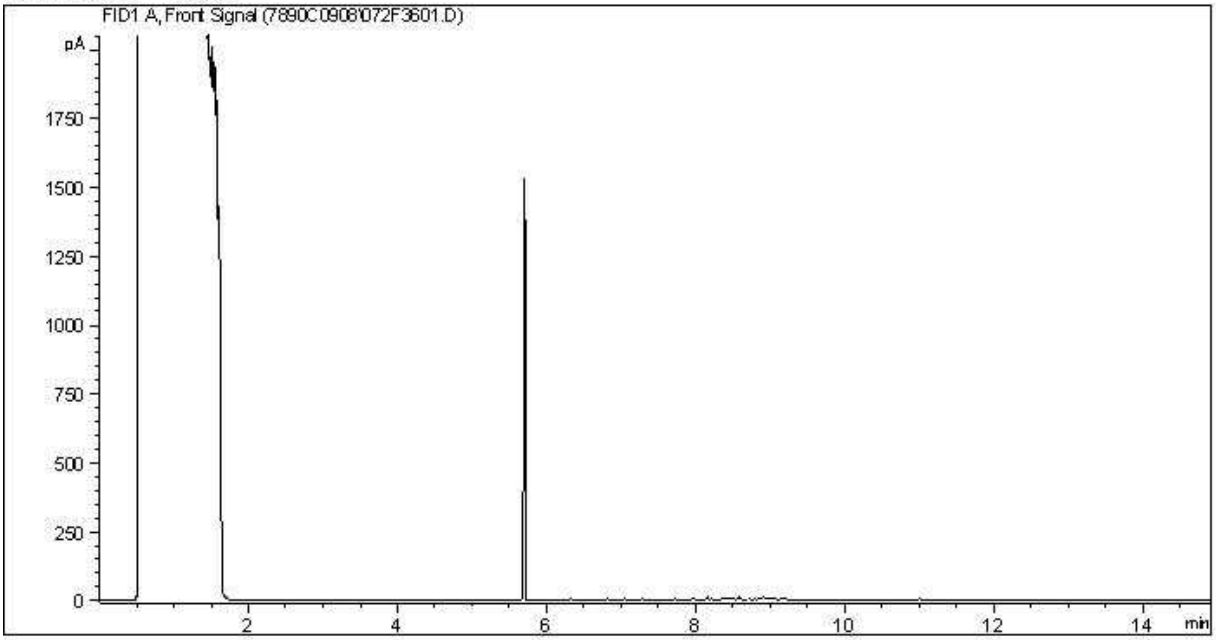
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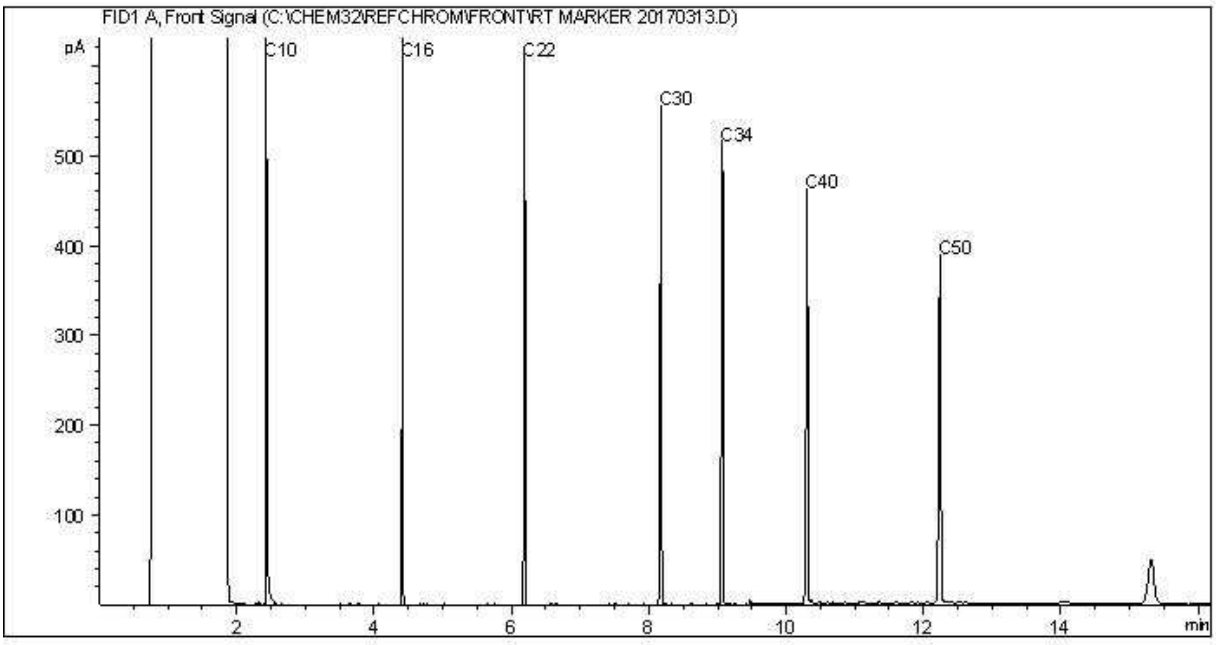
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Carbon Range Distribution - Reference Chromatogram



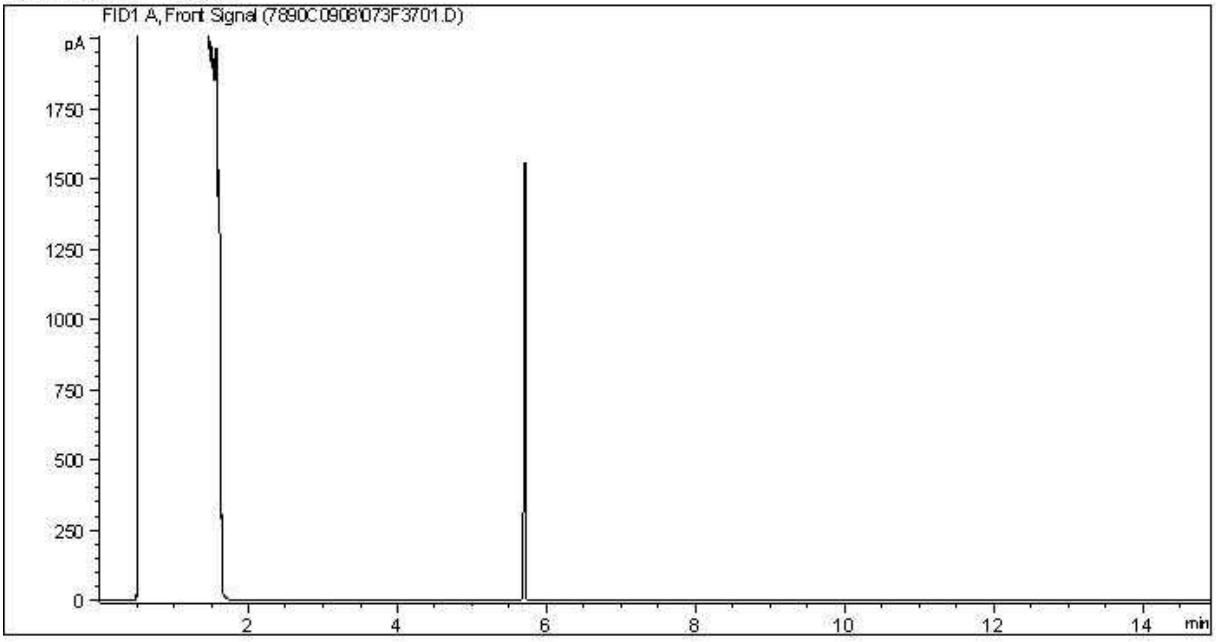
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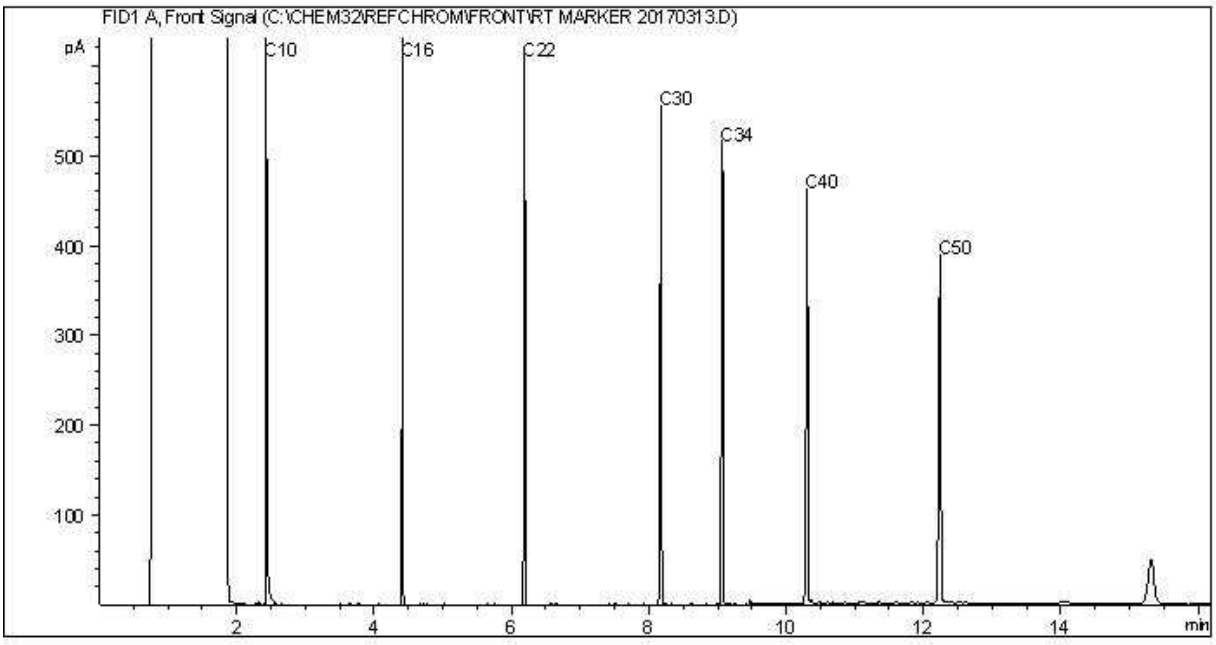
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Carbon Range Distribution - Reference Chromatogram



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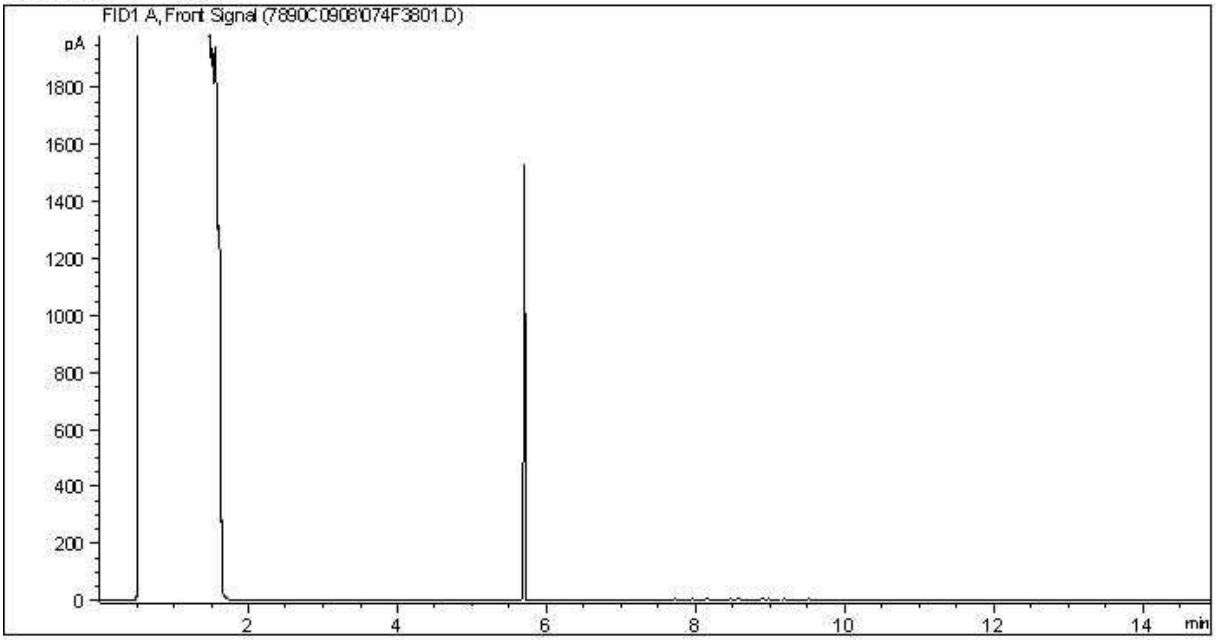
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BV Labs Job #: B973139
Report Date: 2019/12/12
BV Labs Sample: WK3717

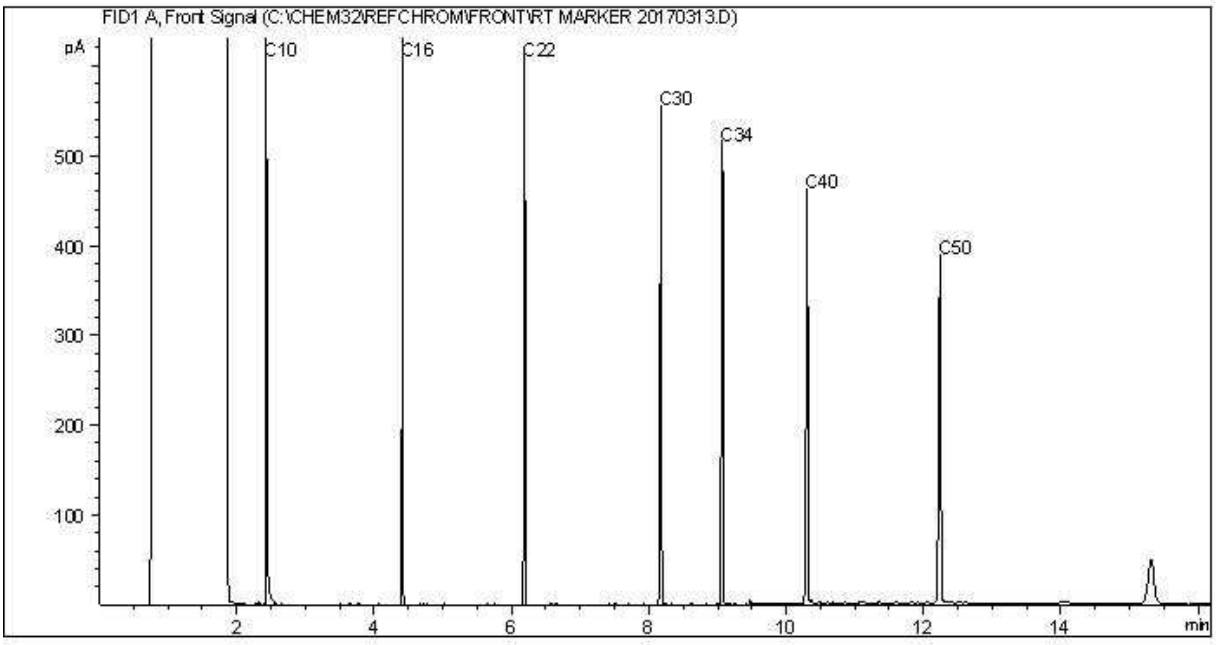
ARCADIS Canada Inc
Client Project #: 30000251
Client ID: MW-08A

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Instrument: 7890C



Carbon Range Distribution - Reference Chromatogram



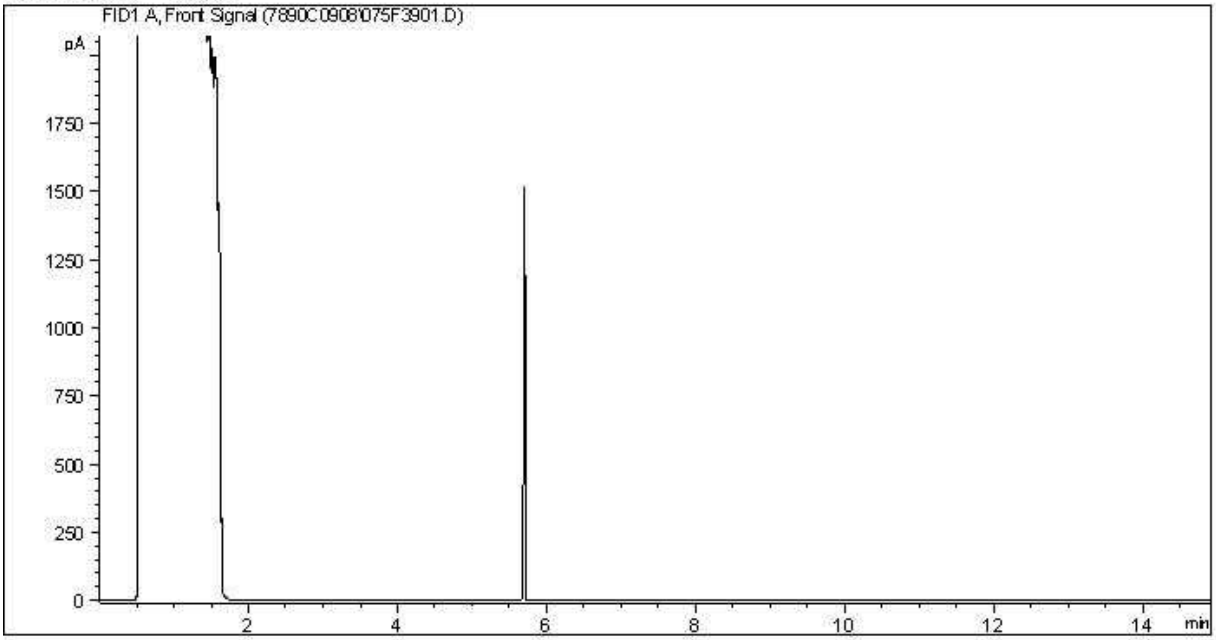
TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

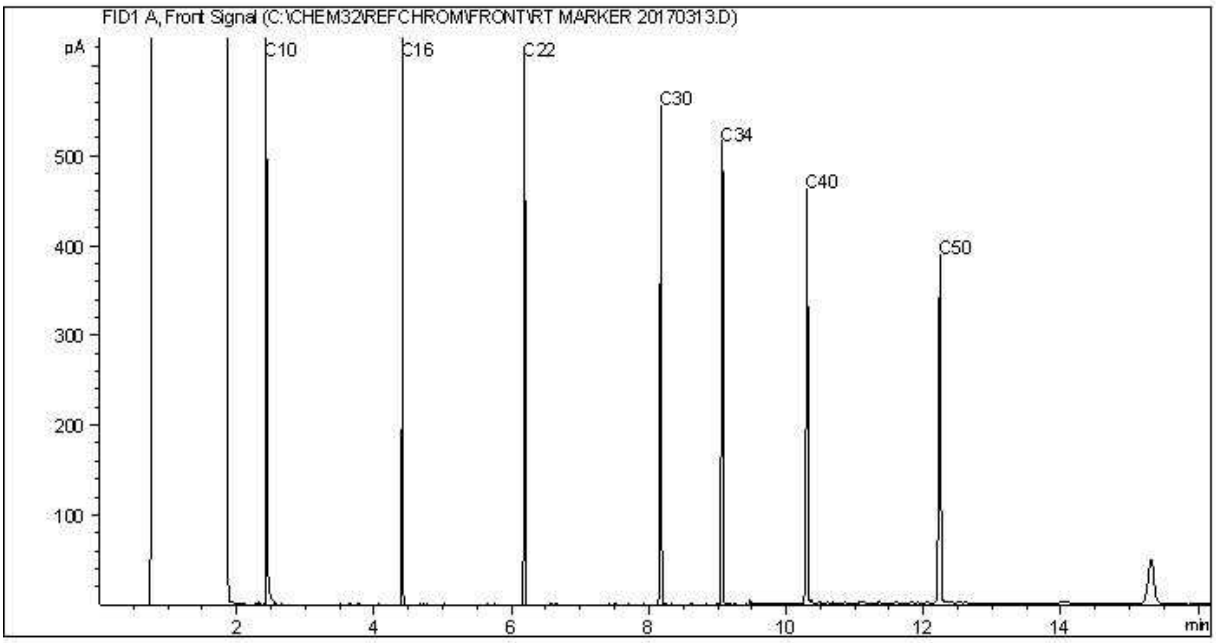
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Instrument: 7890C



Carbon Range Distribution - Reference Chromatogram



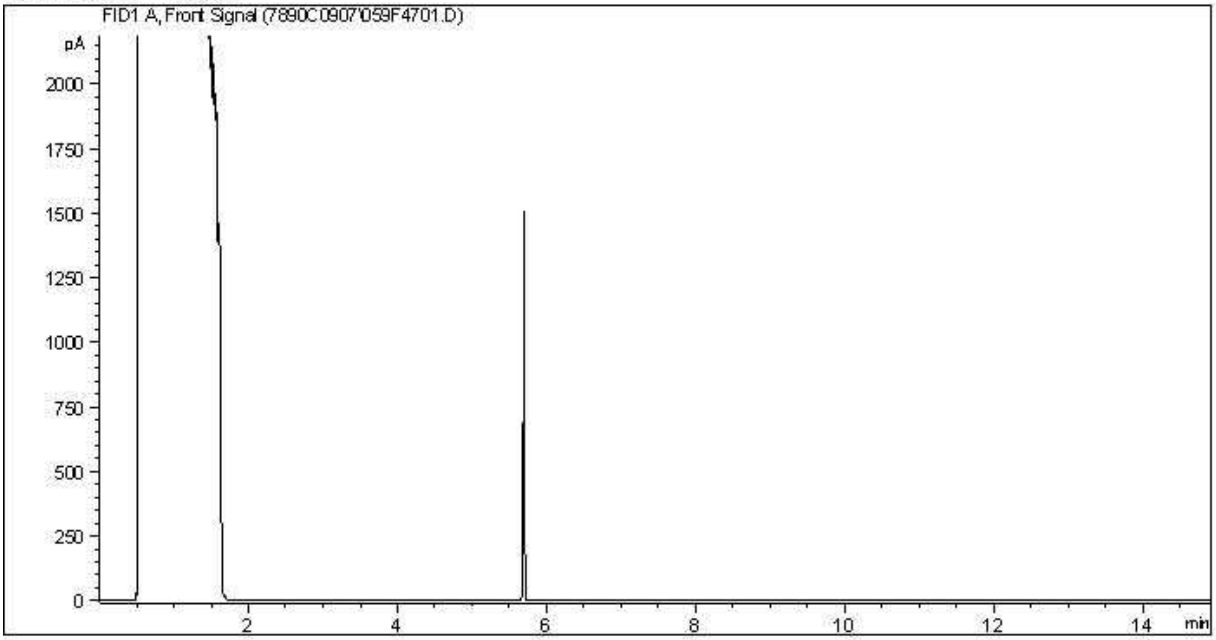
TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

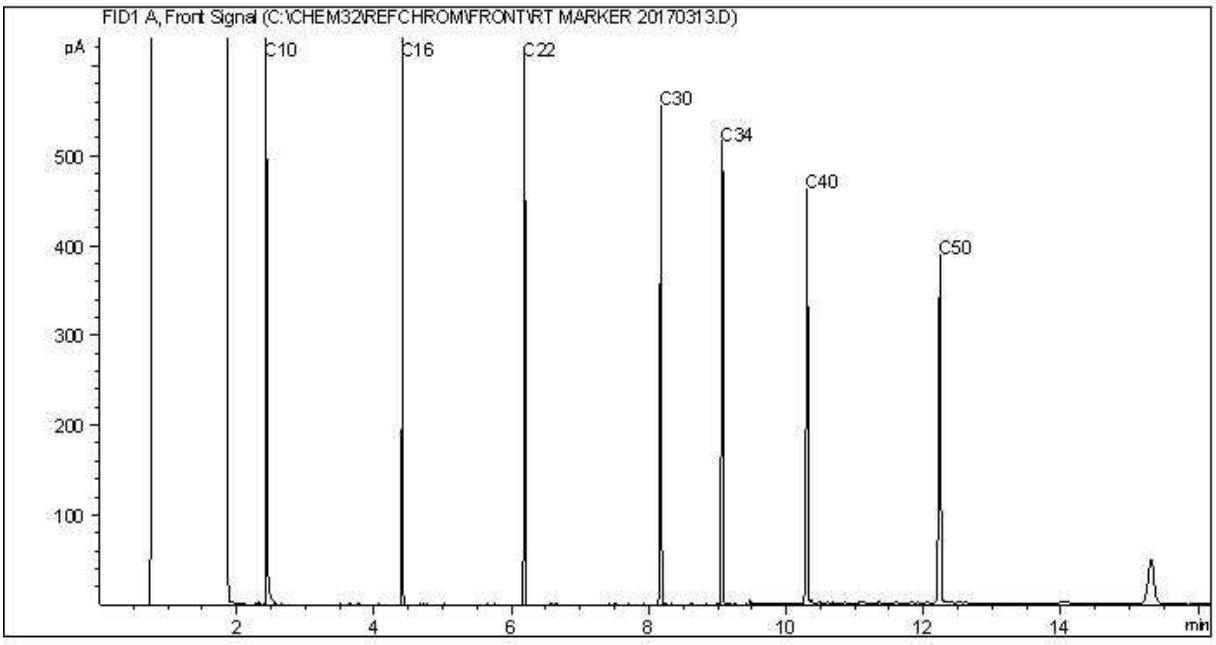
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Instrument: 7890C



Carbon Range Distribution - Reference Chromatogram



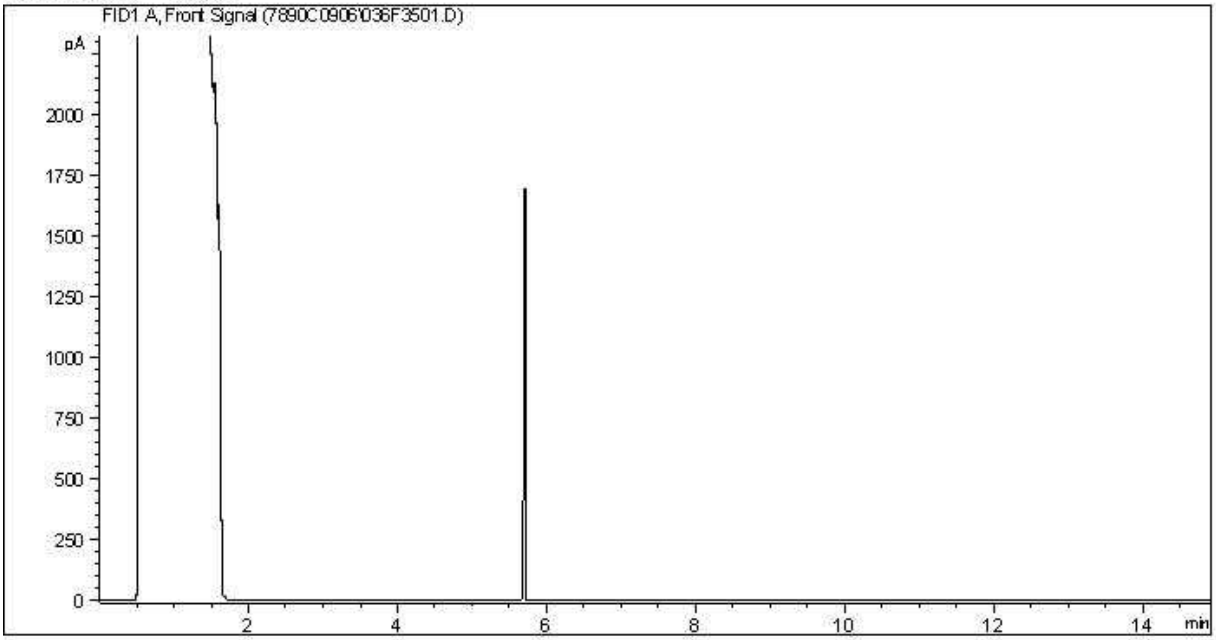
TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

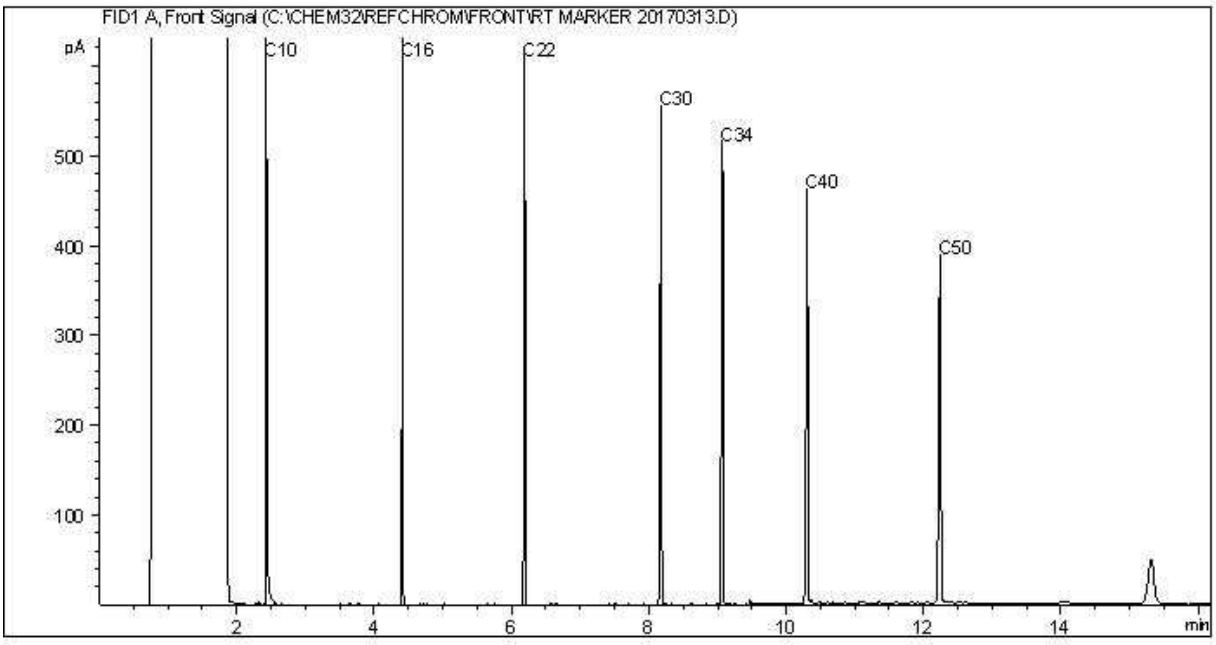
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Instrument: 7890C



Carbon Range Distribution - Reference Chromatogram



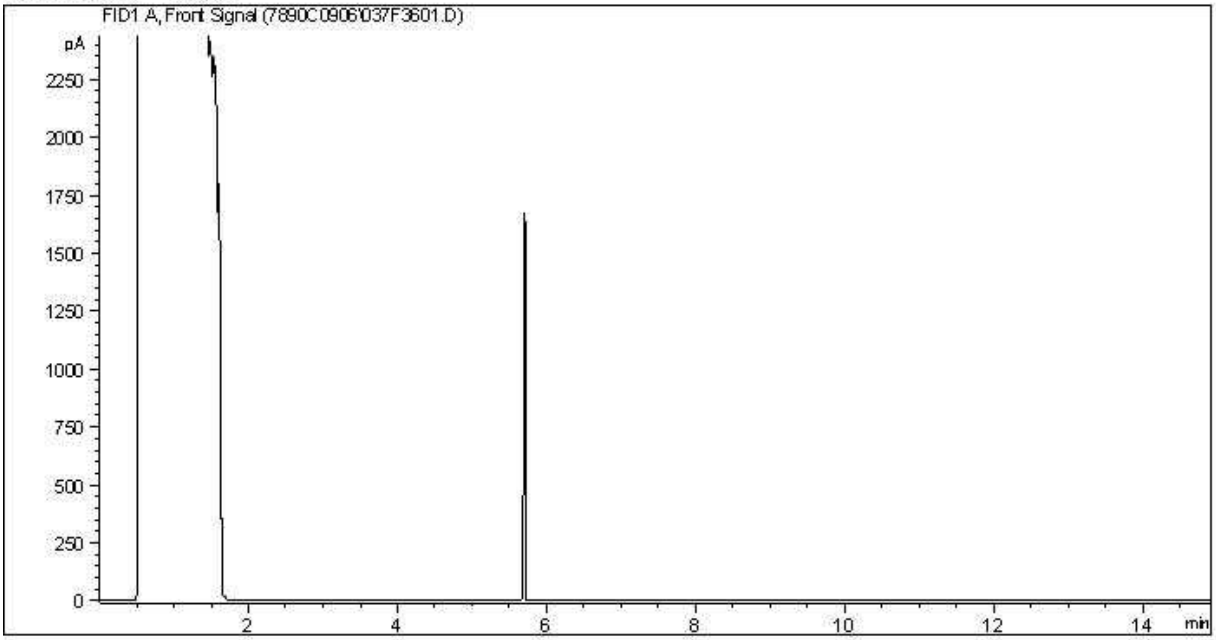
TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

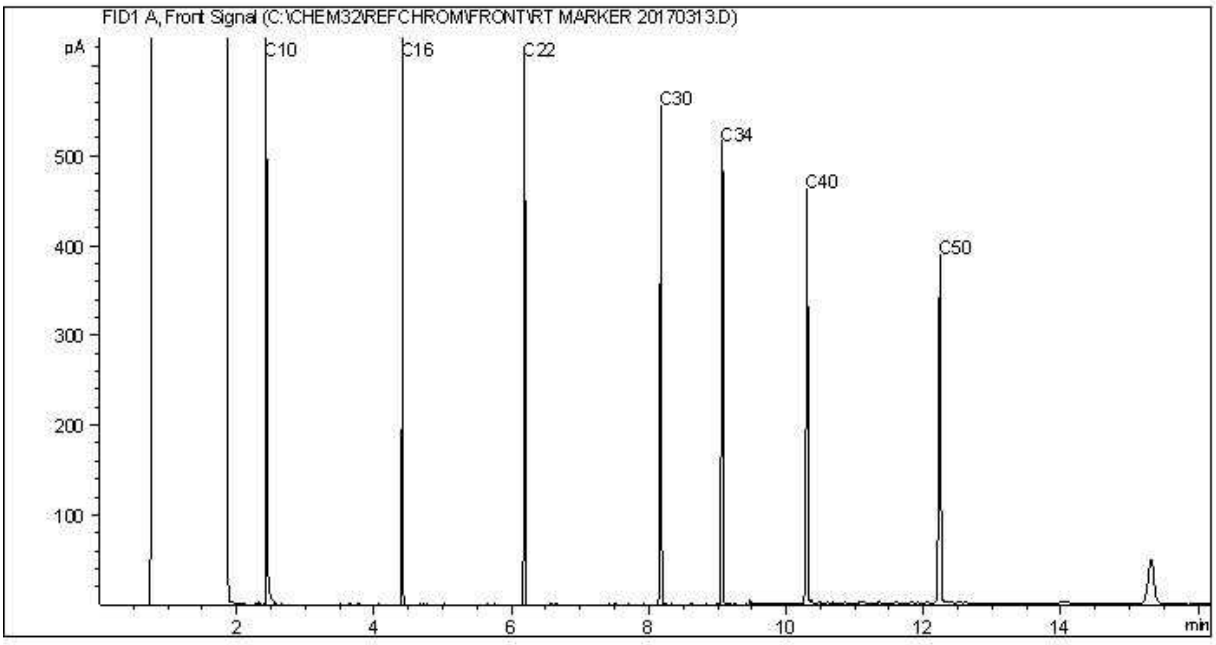
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Instrument: 7890C



Carbon Range Distribution - Reference Chromatogram



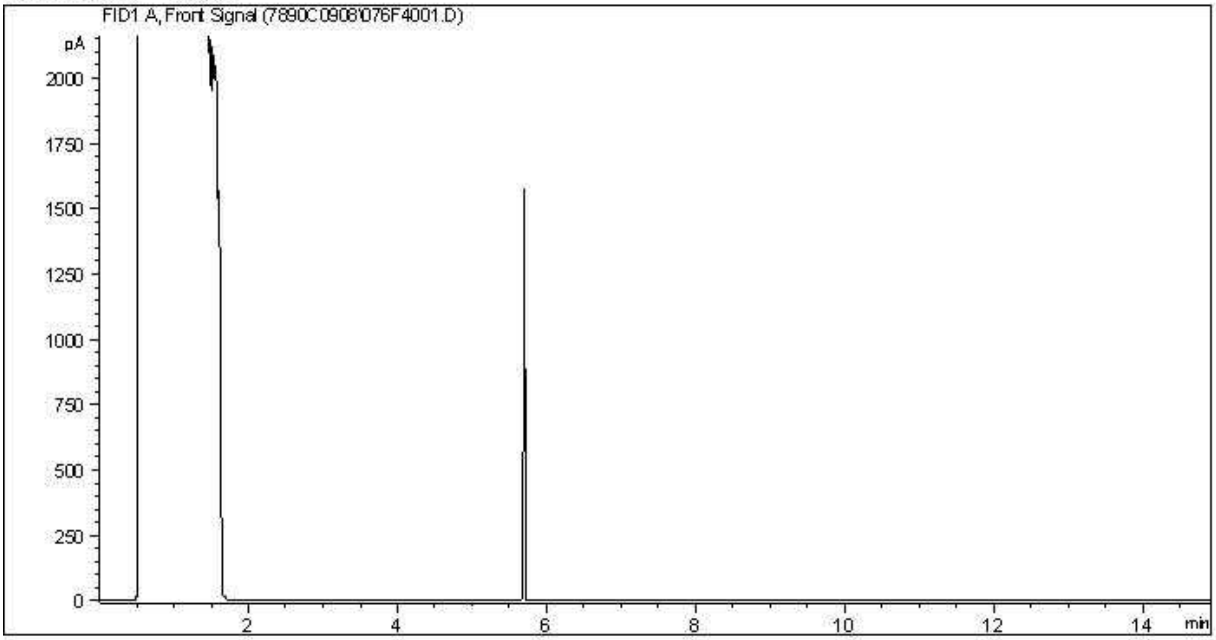
TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

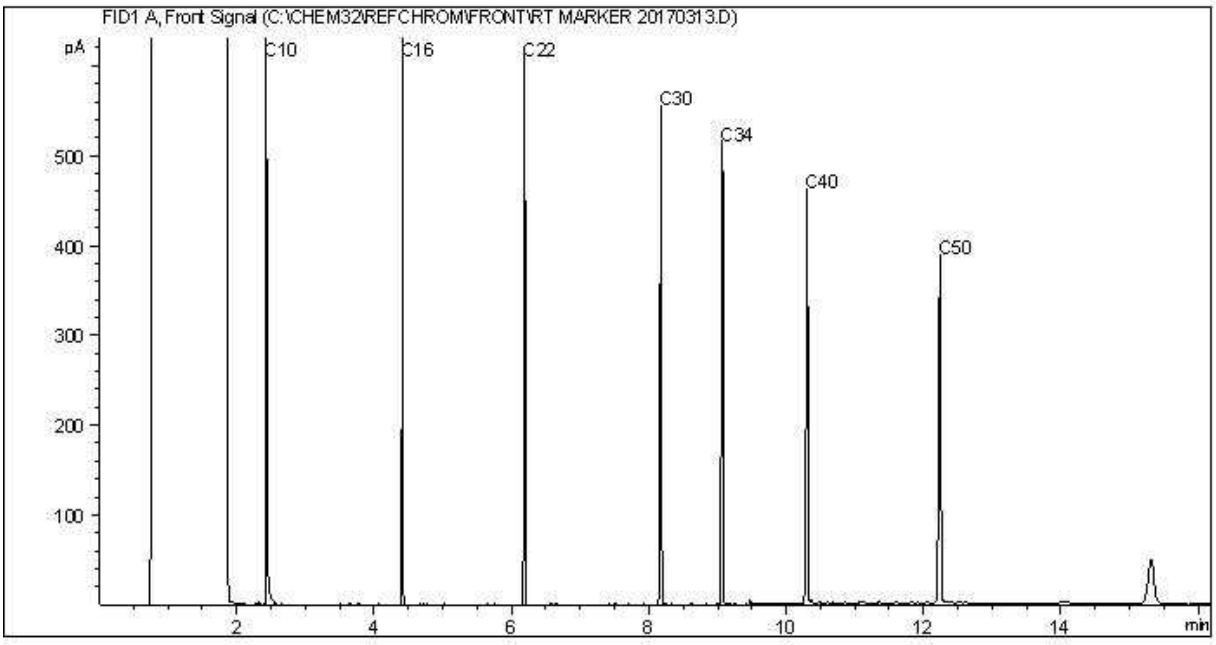
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Instrument: 7890C



Carbon Range Distribution - Reference Chromatogram



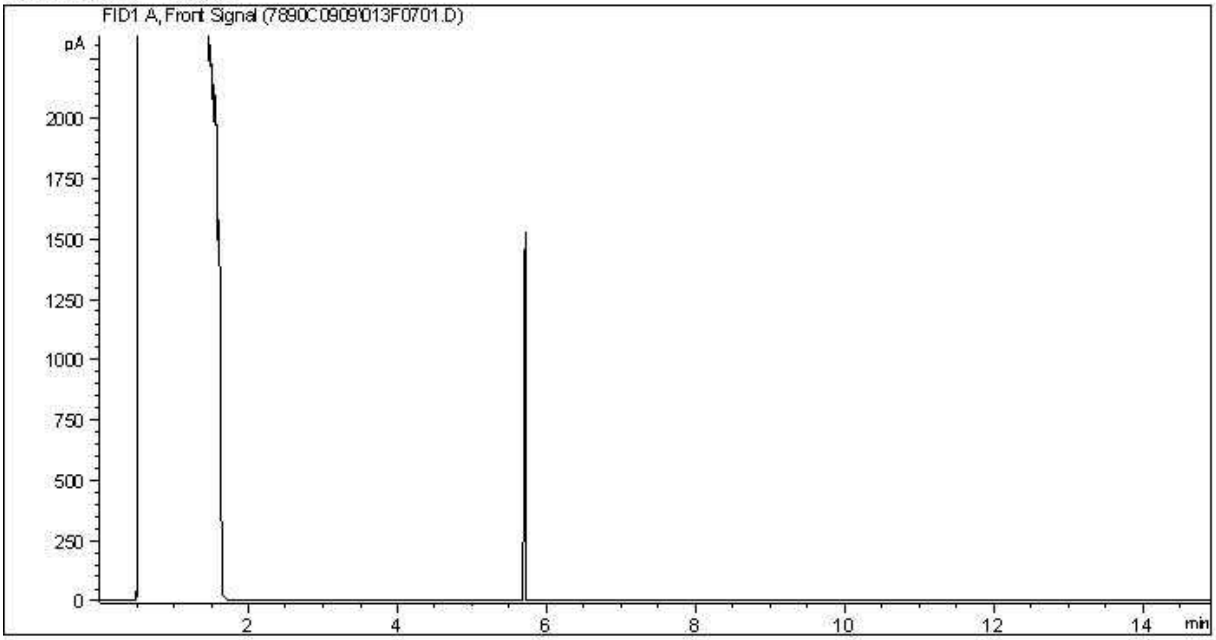
TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

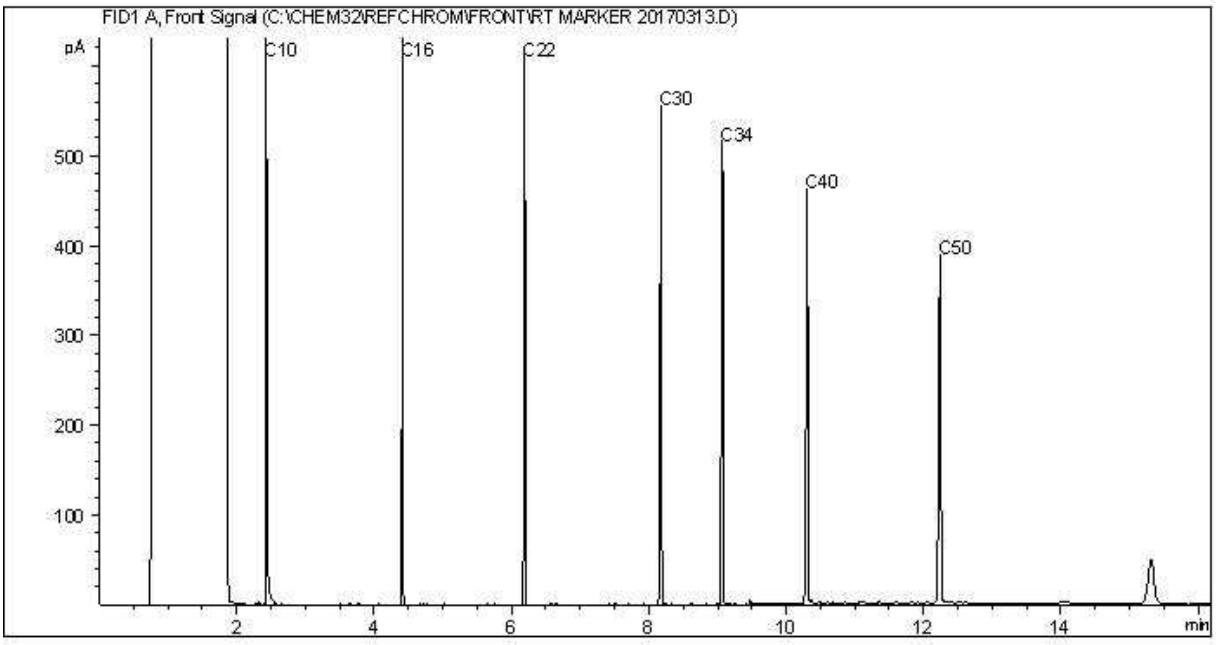
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Instrument: 7890C



Carbon Range Distribution - Reference Chromatogram



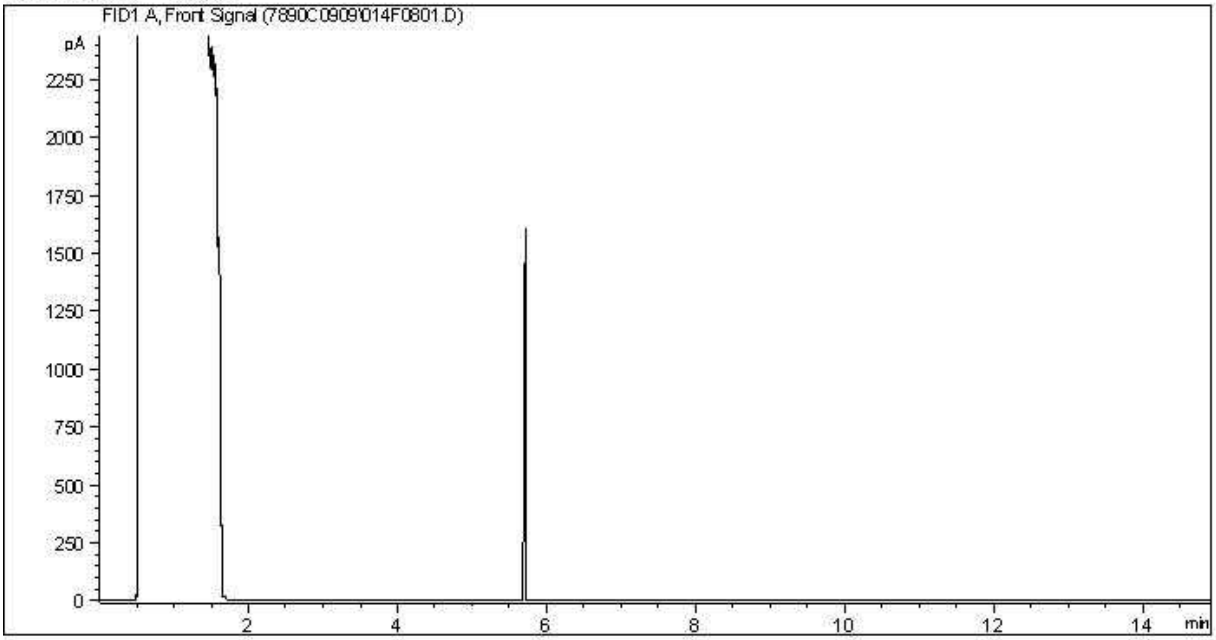
TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

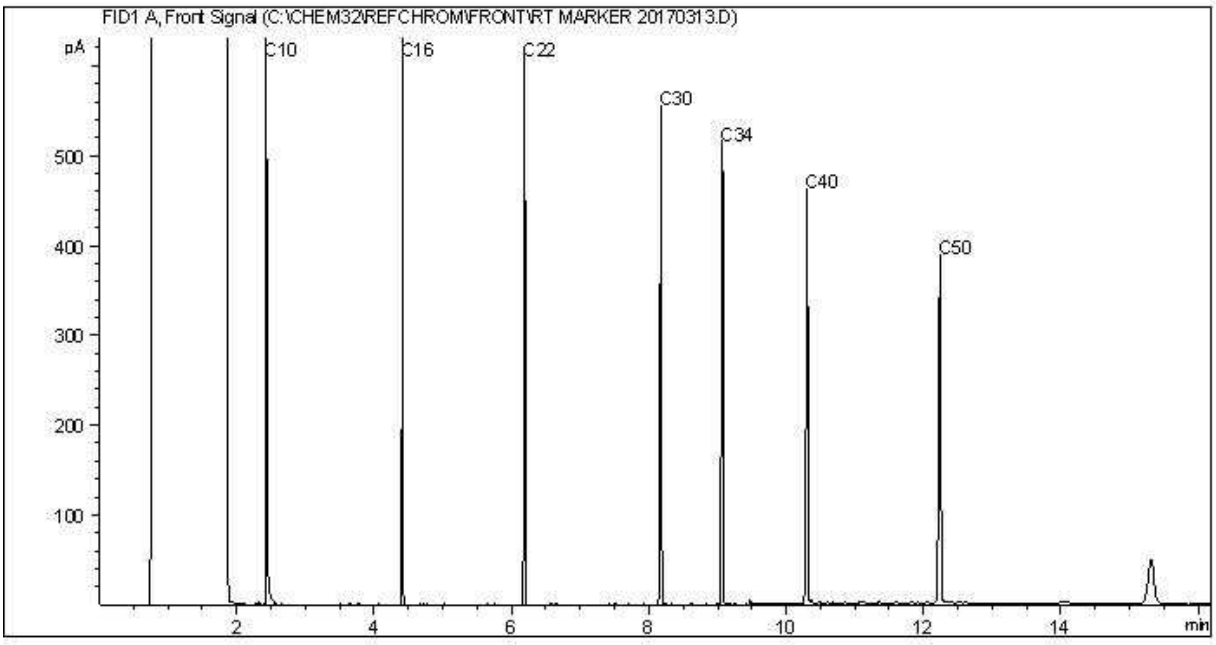
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Instrument: 7890C



Carbon Range Distribution - Reference Chromatogram



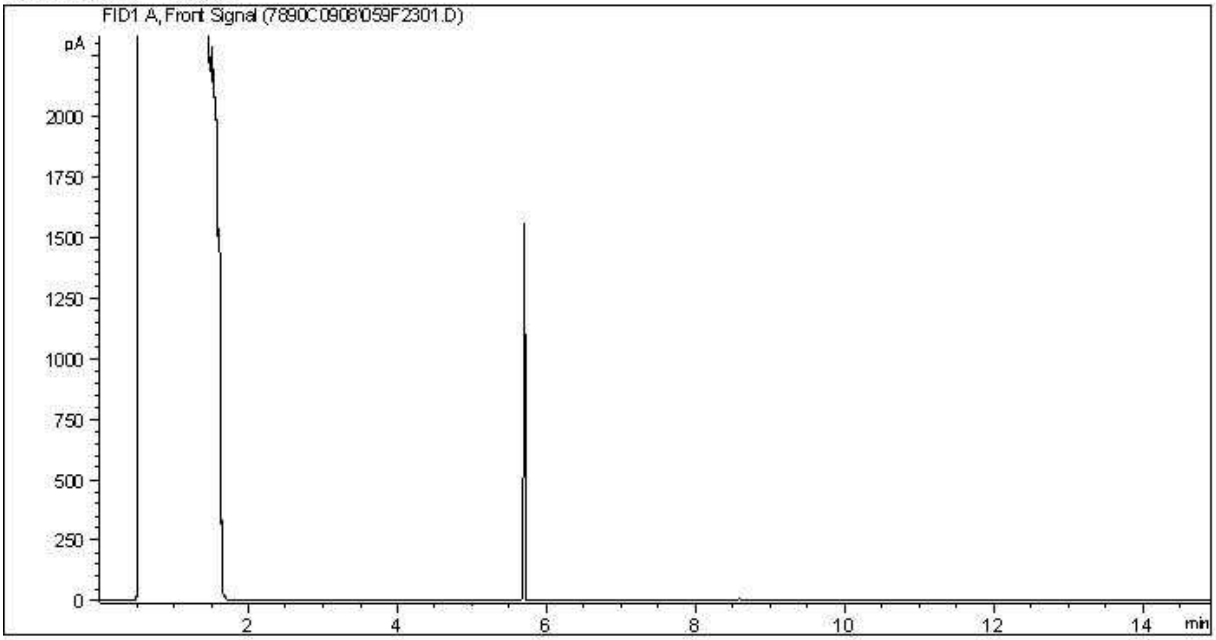
TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

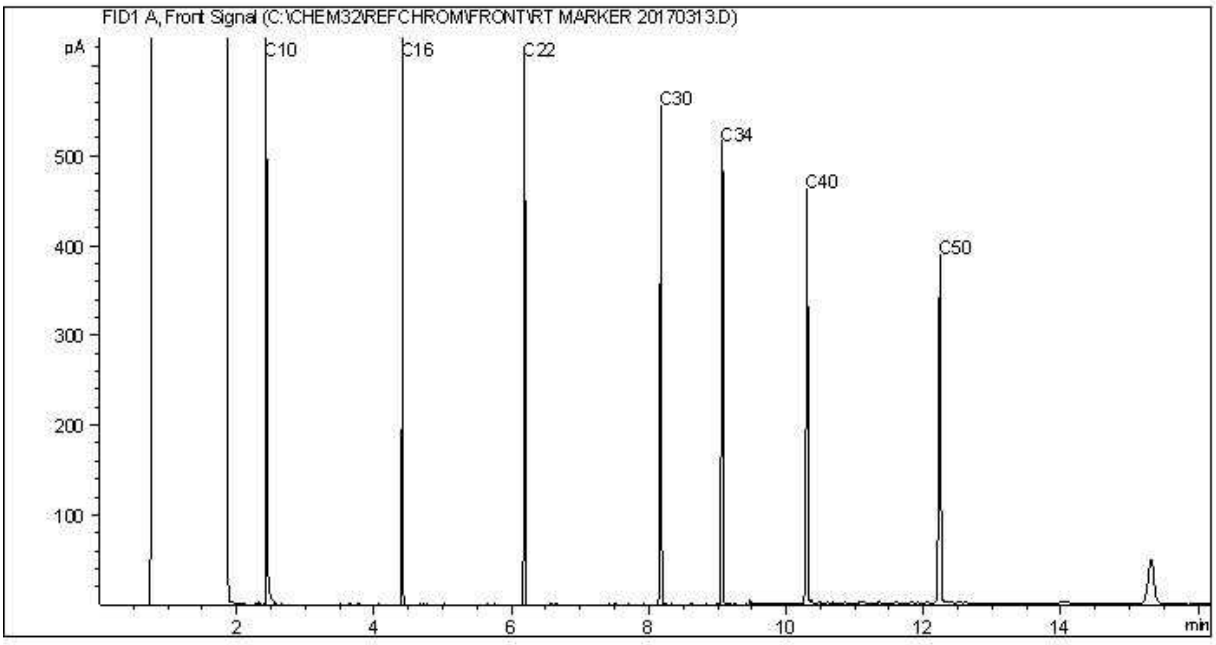
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Instrument: 7890C



Carbon Range Distribution - Reference Chromatogram



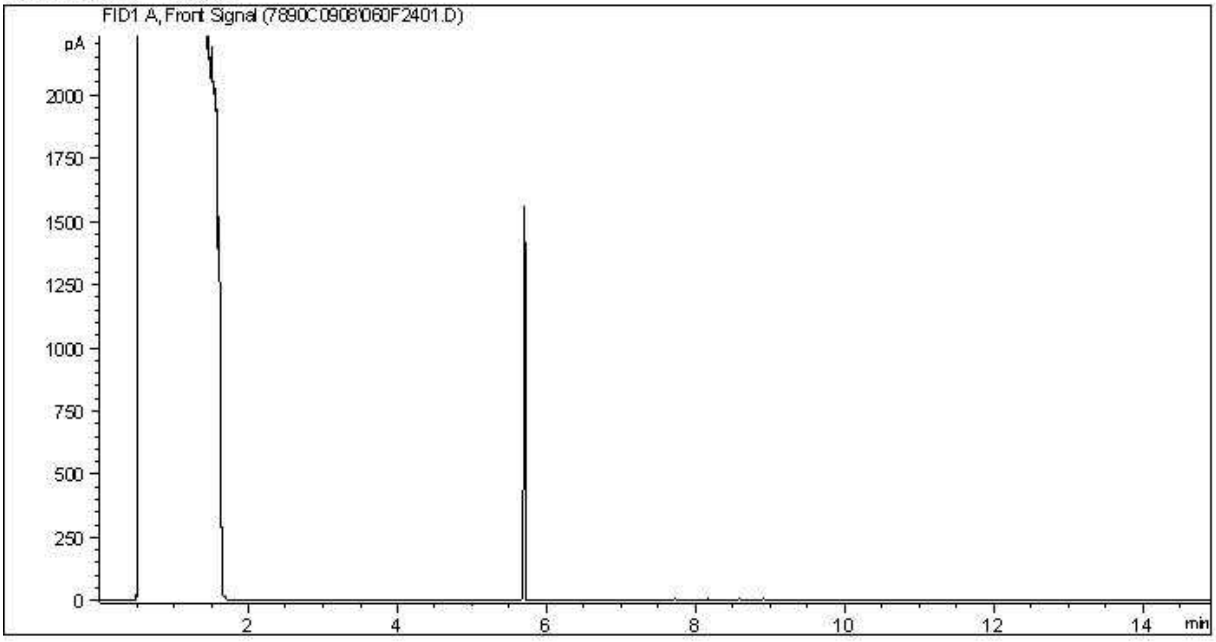
TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

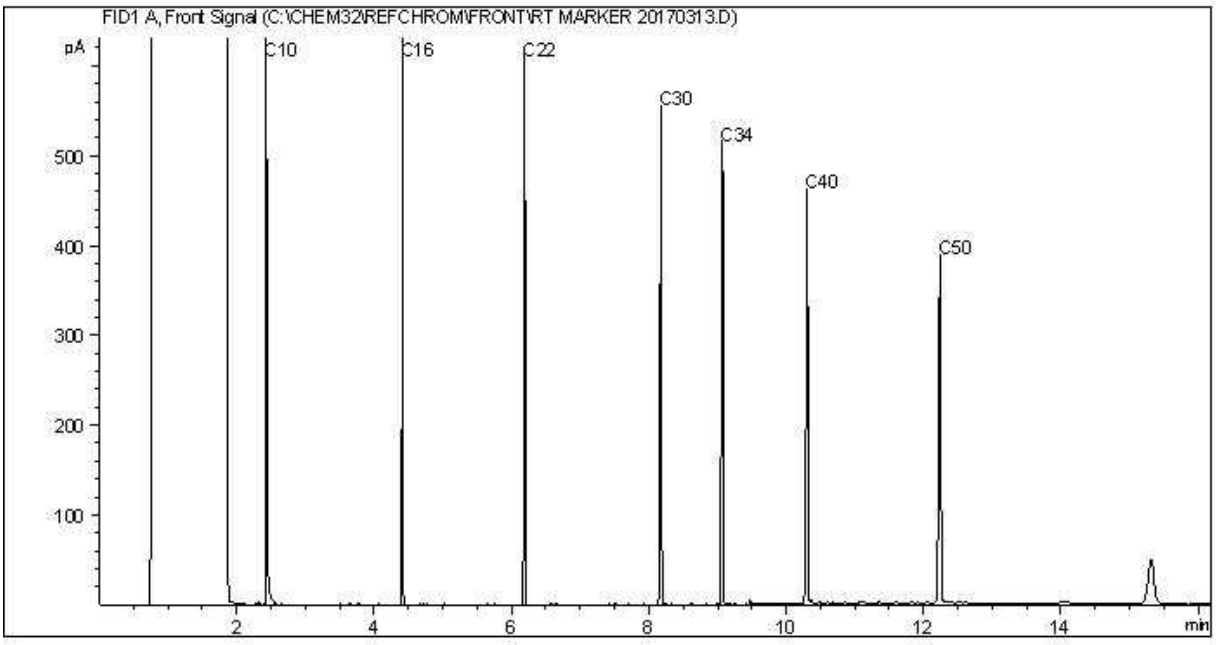
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Instrument: 7890C



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

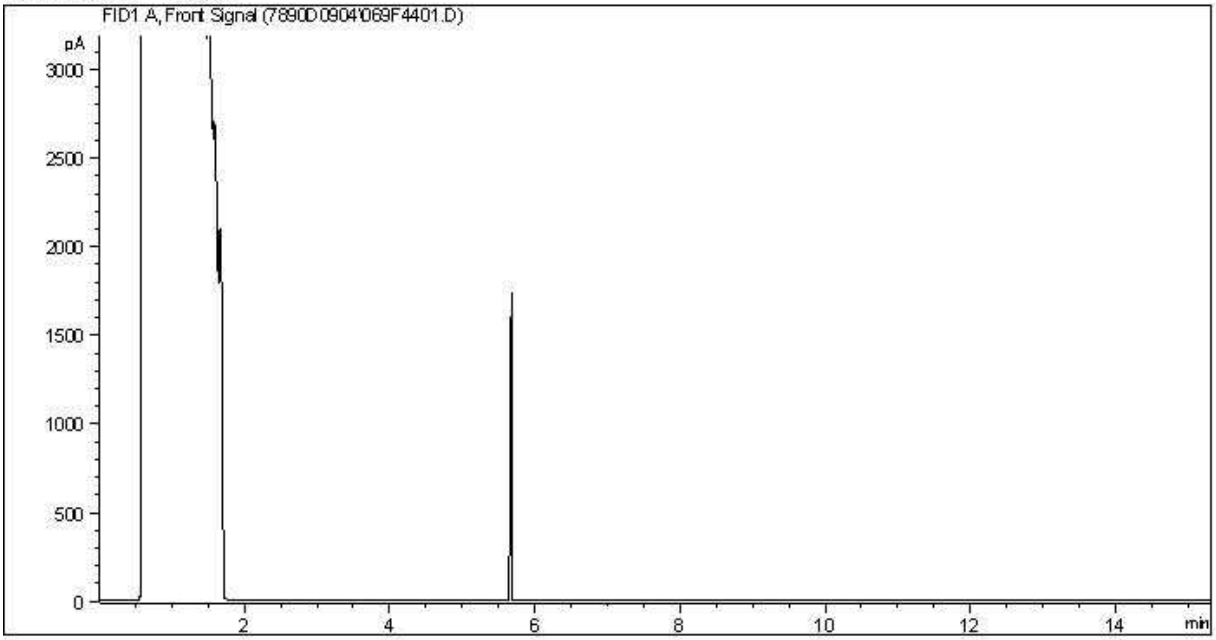
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: B973139
Report Date: 2019/12/12
BV Labs Sample: WK3728

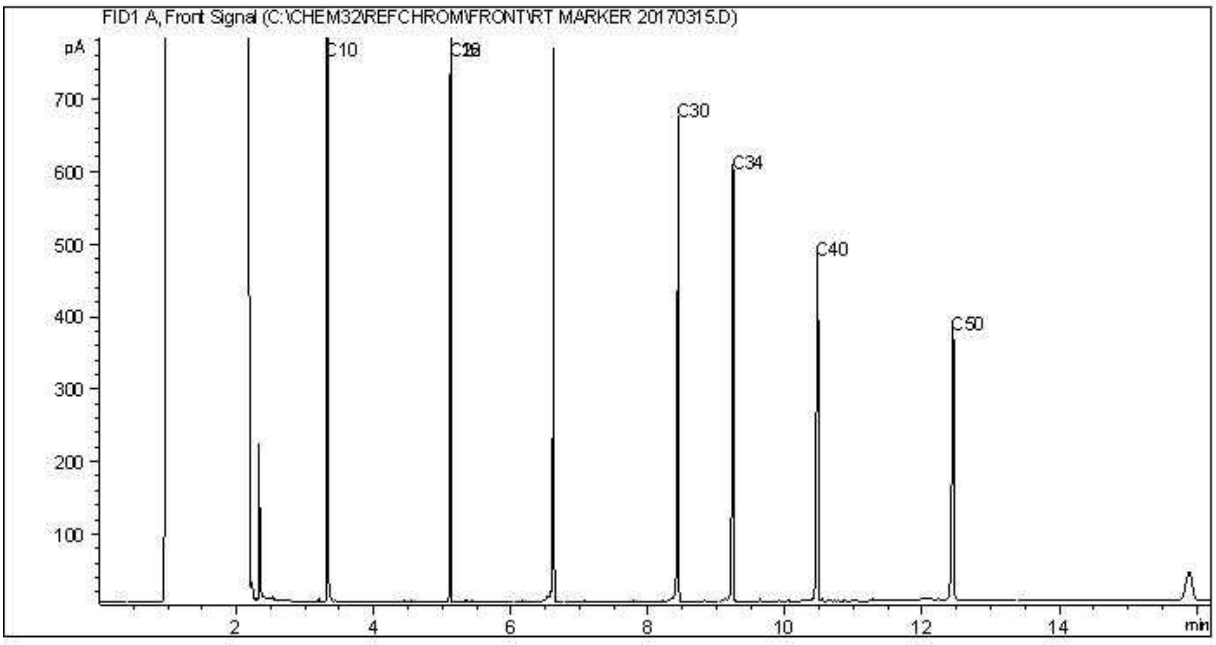
ARCADIS Canada Inc
Client Project #: 30000251
Client ID: TRIP BLANK

CCME Hydrocarbons (F2-F4 in water) Chromatogram

Instrument: 7890D



Carbon Range Distribution - Reference Chromatogram



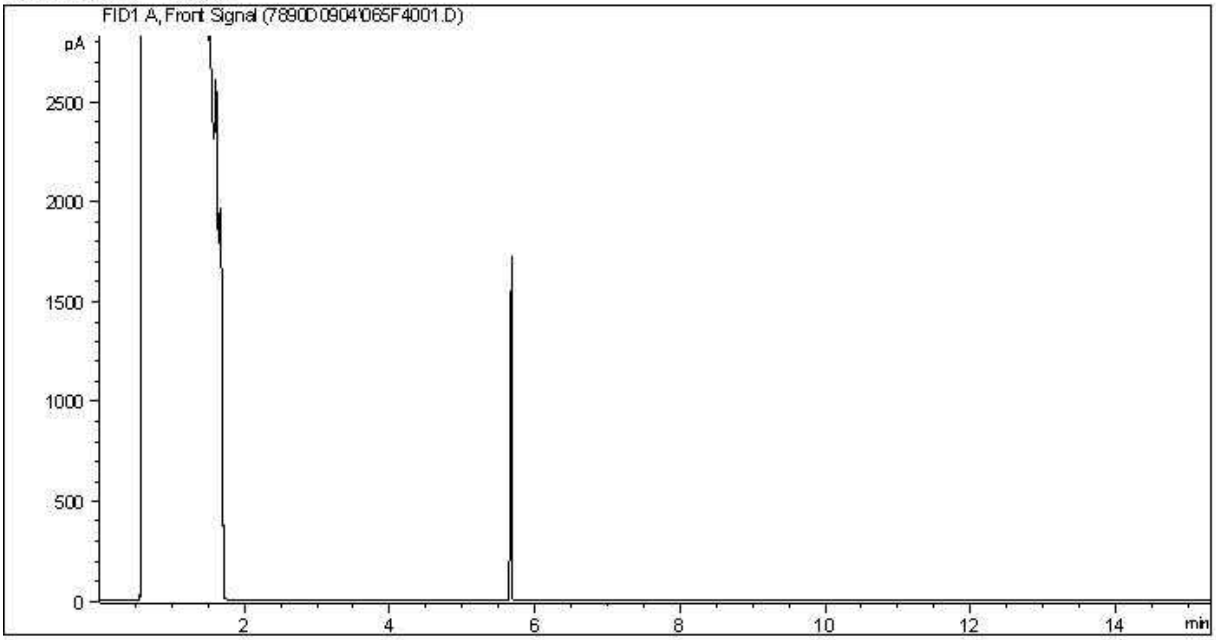
TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

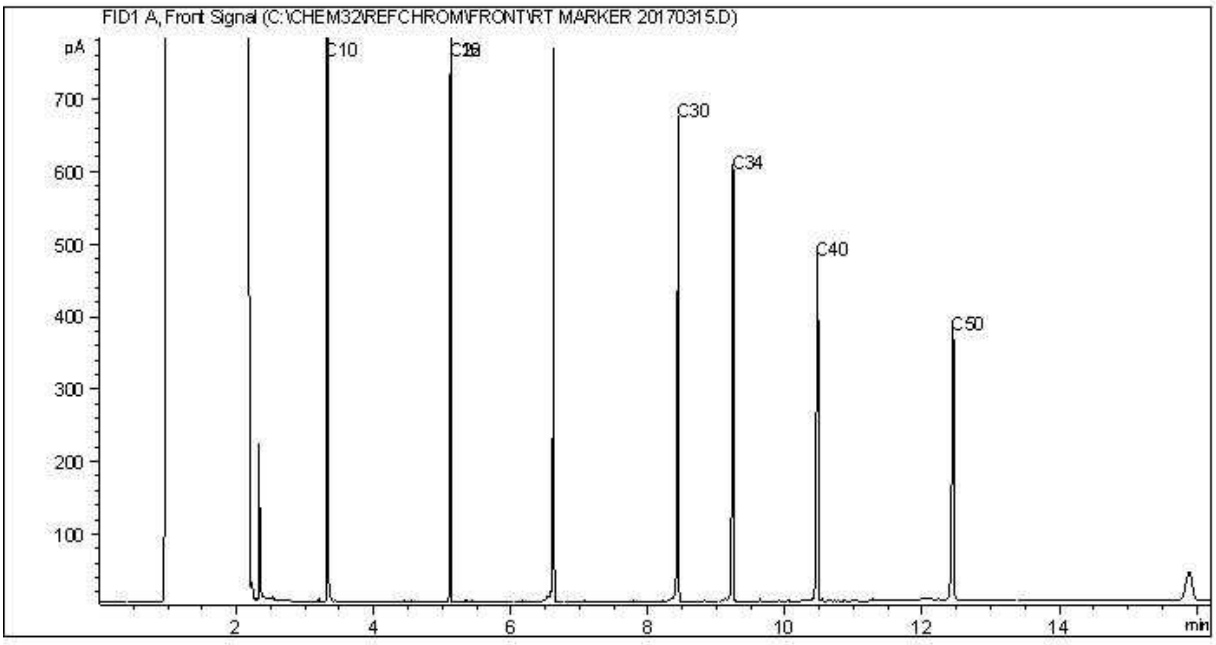
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

CCME Hydrocarbons (F2-F4 in water) Chromatogram

Instrument: 7890D



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

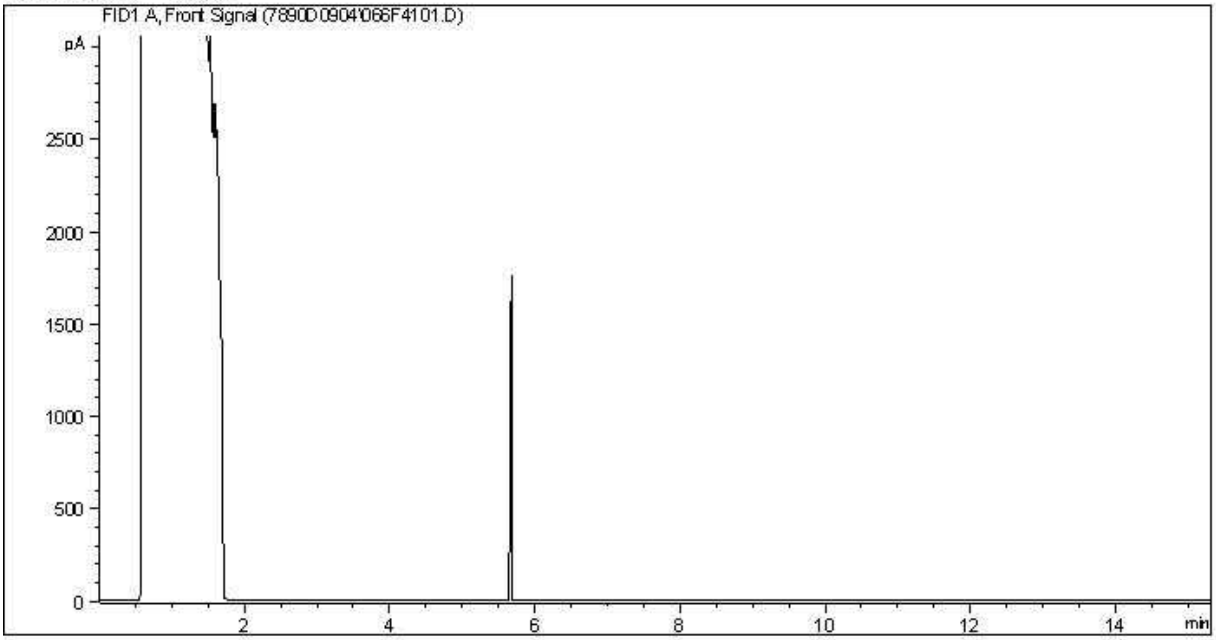
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

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Report Date: 2019/12/12
BV Labs Sample: WK3729 Lab-Dup

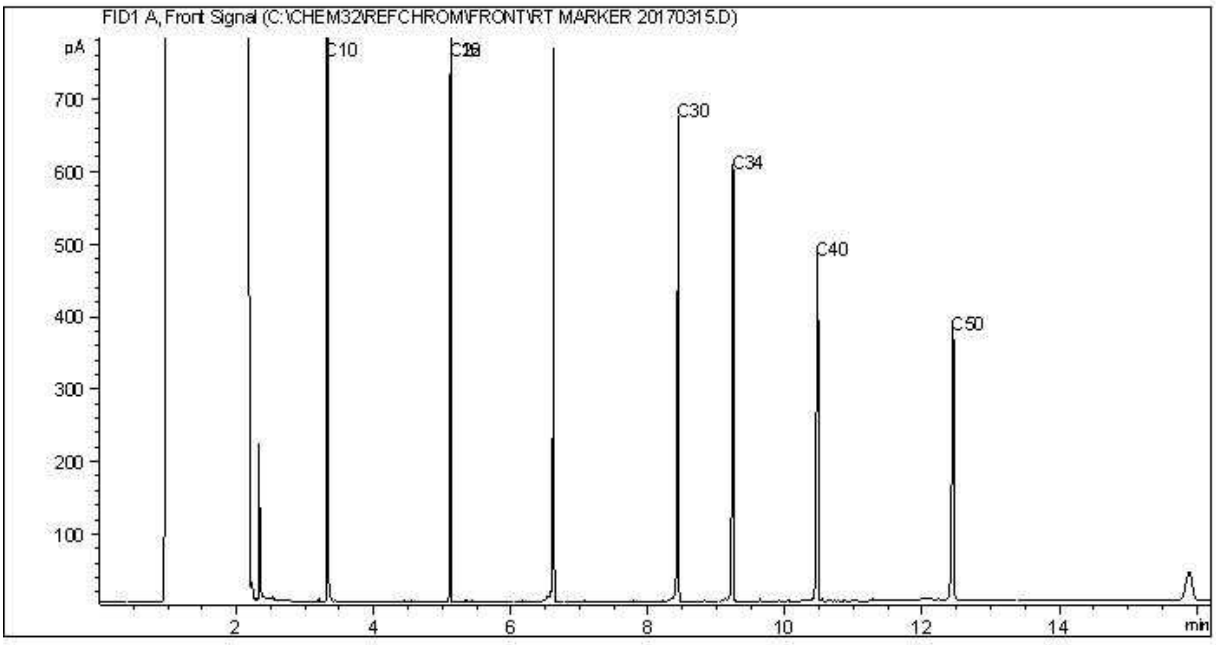
ARCADIS Canada Inc
Client Project #: 30000251
Client ID: TUB-EB

CCME Hydrocarbons (F2-F4 in water) Chromatogram

Instrument: 7890D



Carbon Range Distribution - Reference Chromatogram



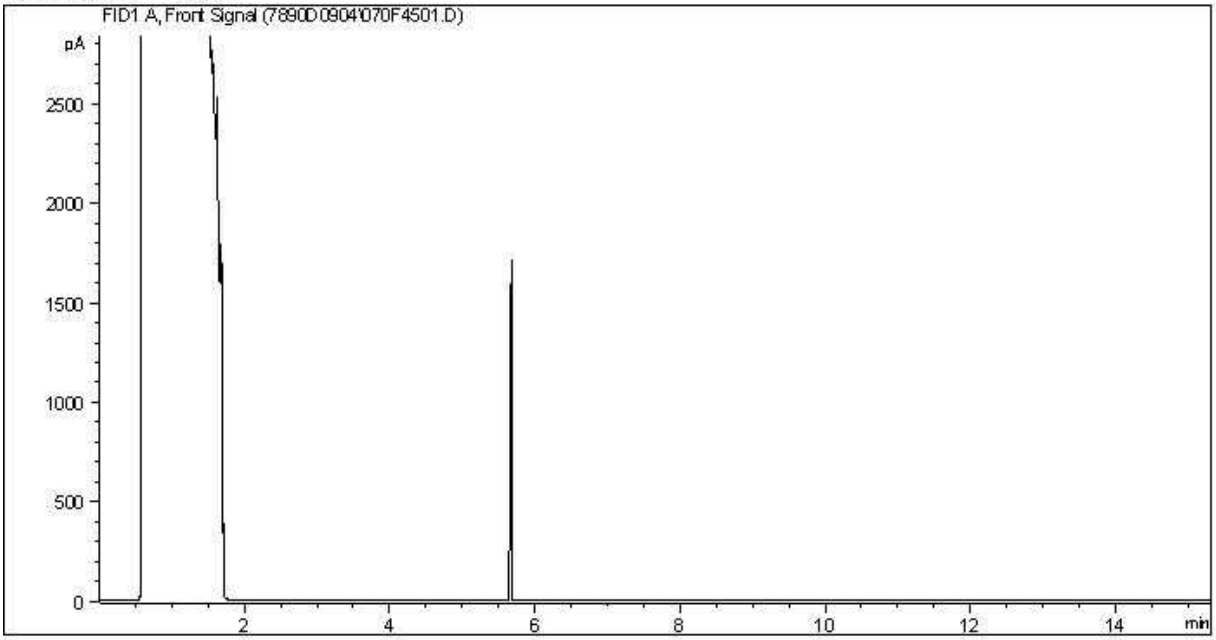
TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

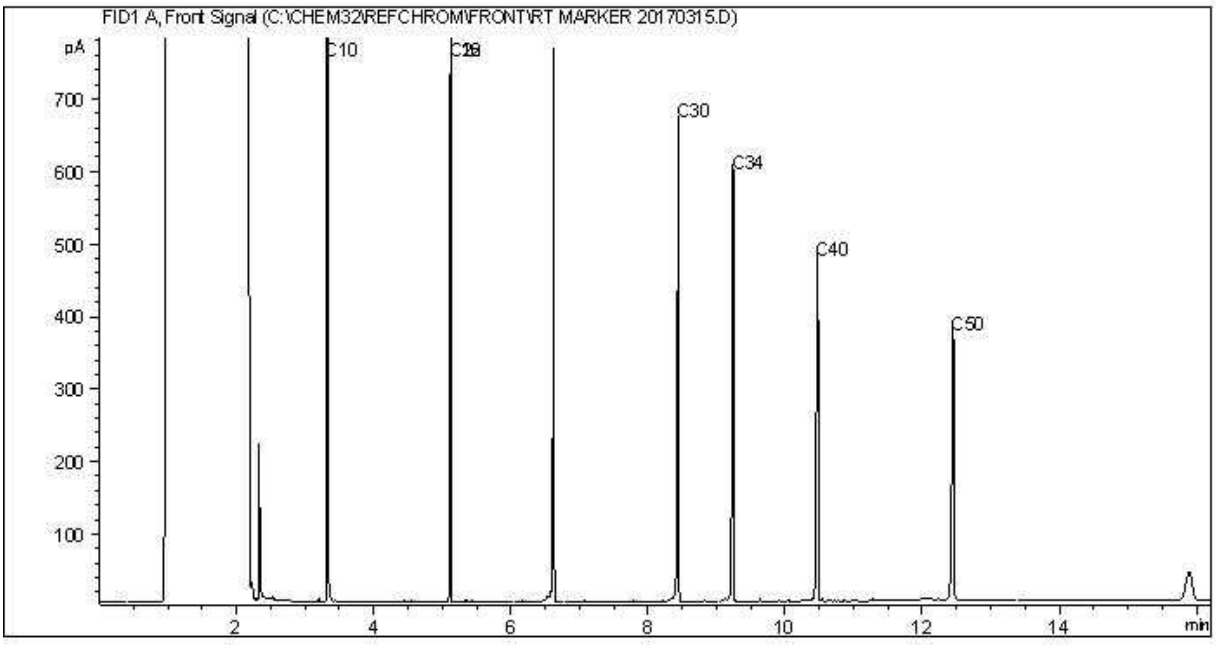
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

CCME Hydrocarbons (F2-F4 in water) Chromatogram

Instrument: 7890D



Carbon Range Distribution - Reference Chromatogram



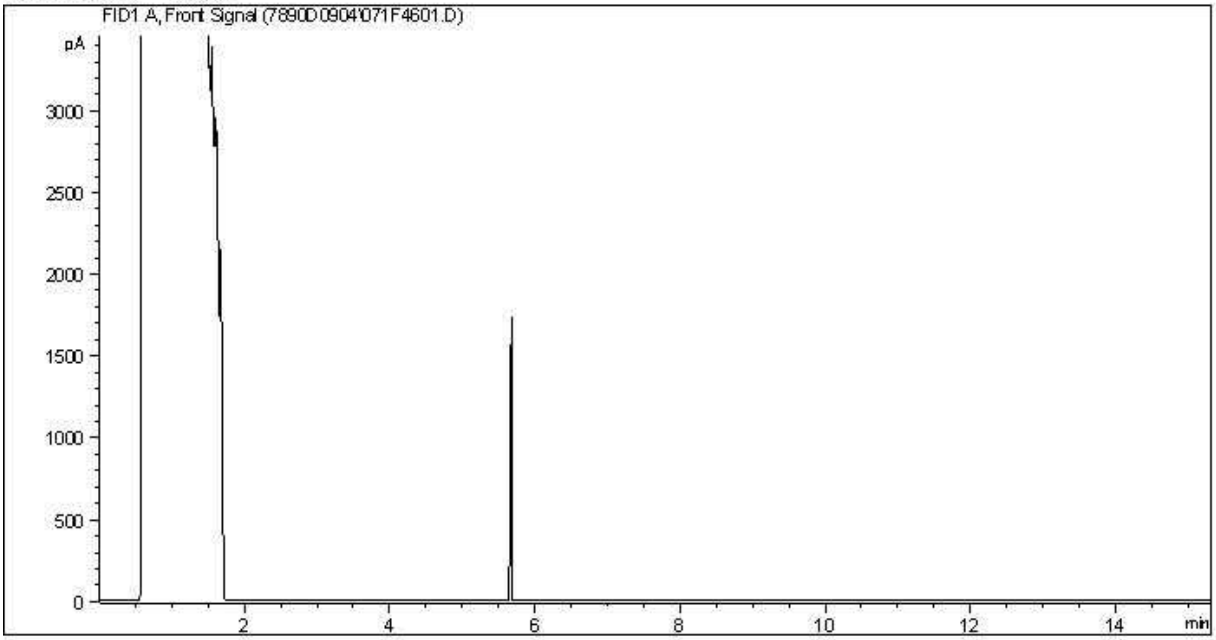
TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

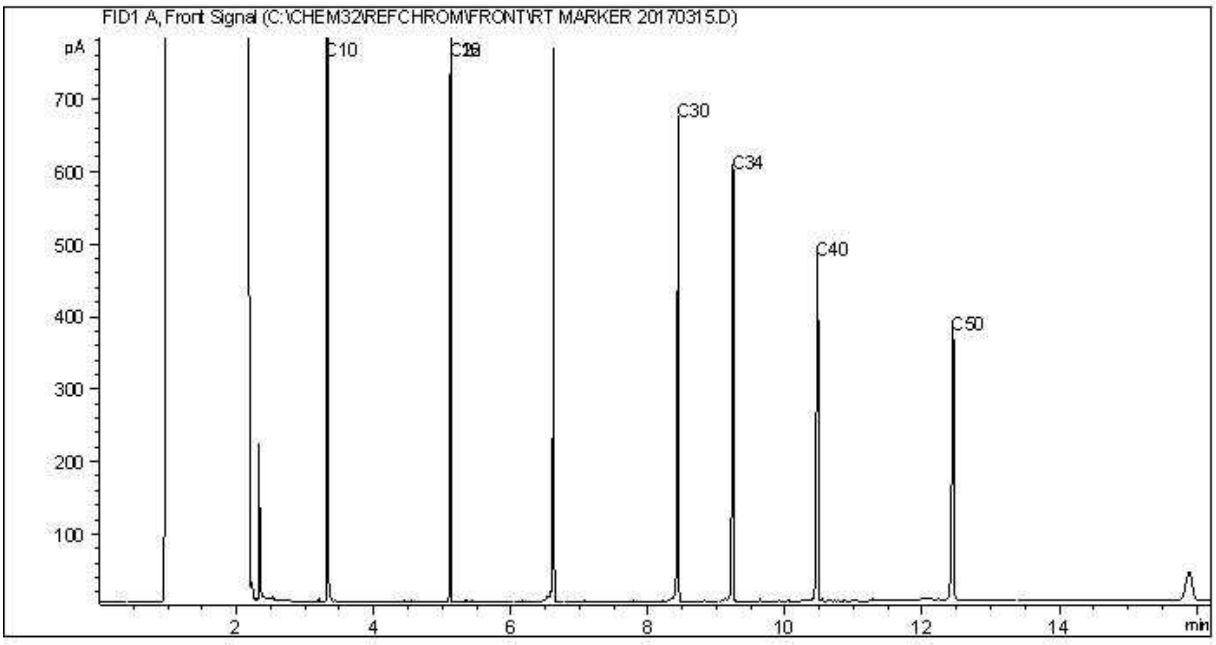
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

CCME Hydrocarbons (F2-F4 in water) Chromatogram

Instrument: 7890D



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

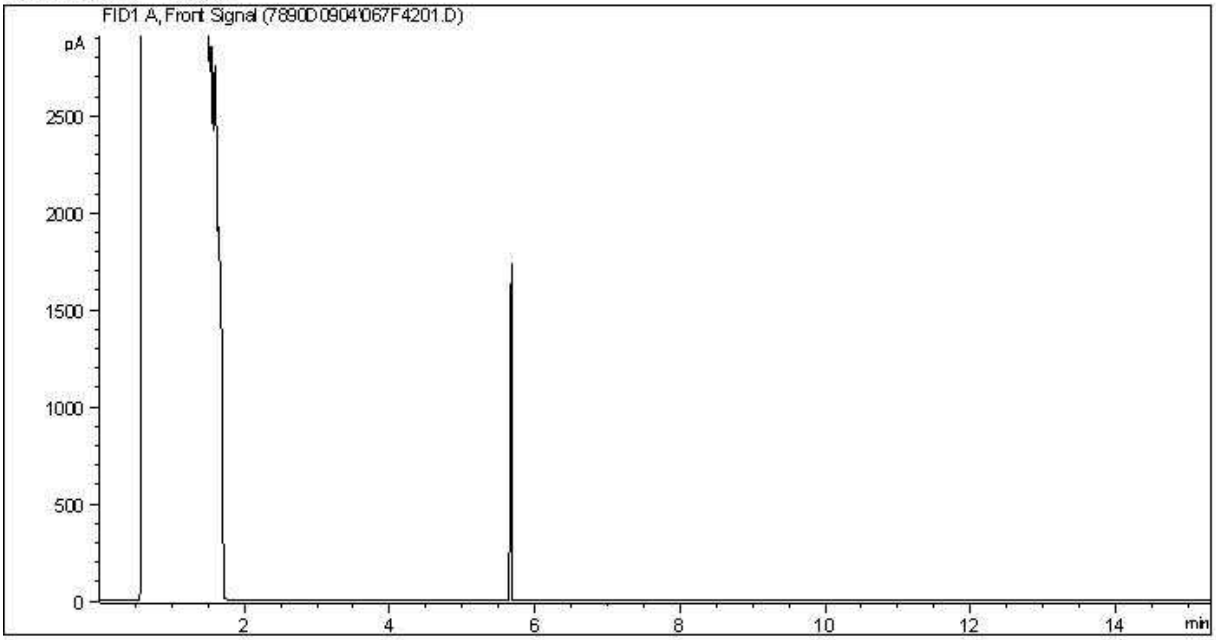
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: B973139
Report Date: 2019/12/12
BV Labs Sample: WK3732

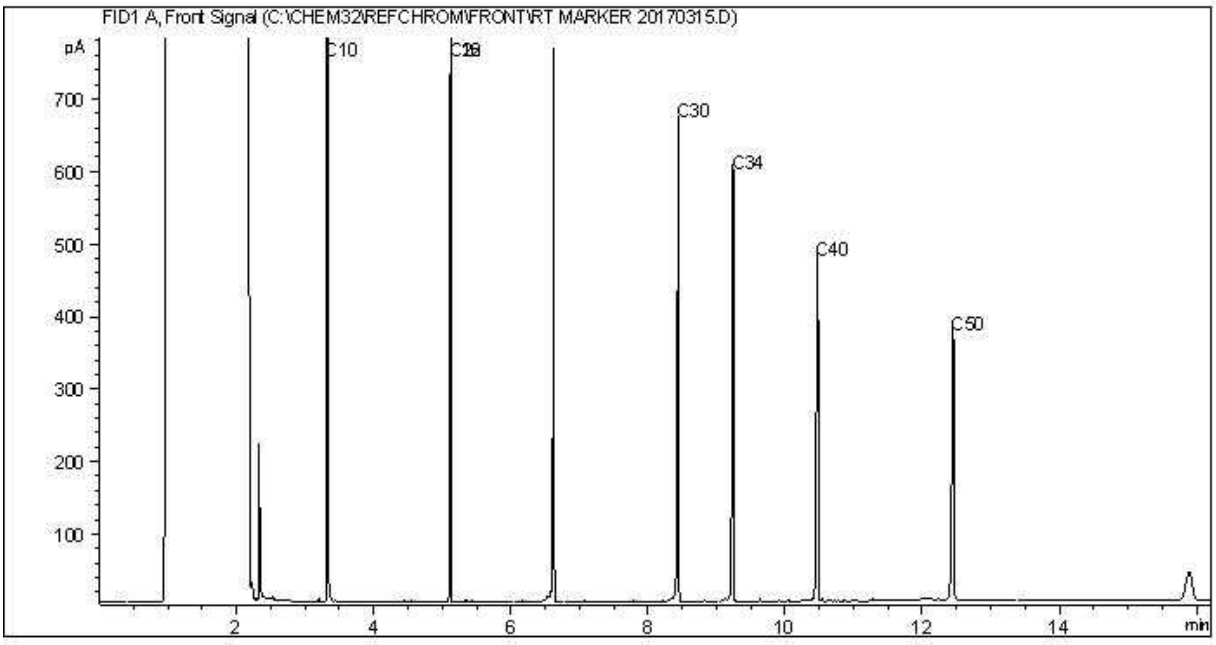
ARCADIS Canada Inc
Client Project #: 30000251
Client ID: MW-04

CCME Hydrocarbons (F2-F4 in water) Chromatogram

Instrument: 7890D



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

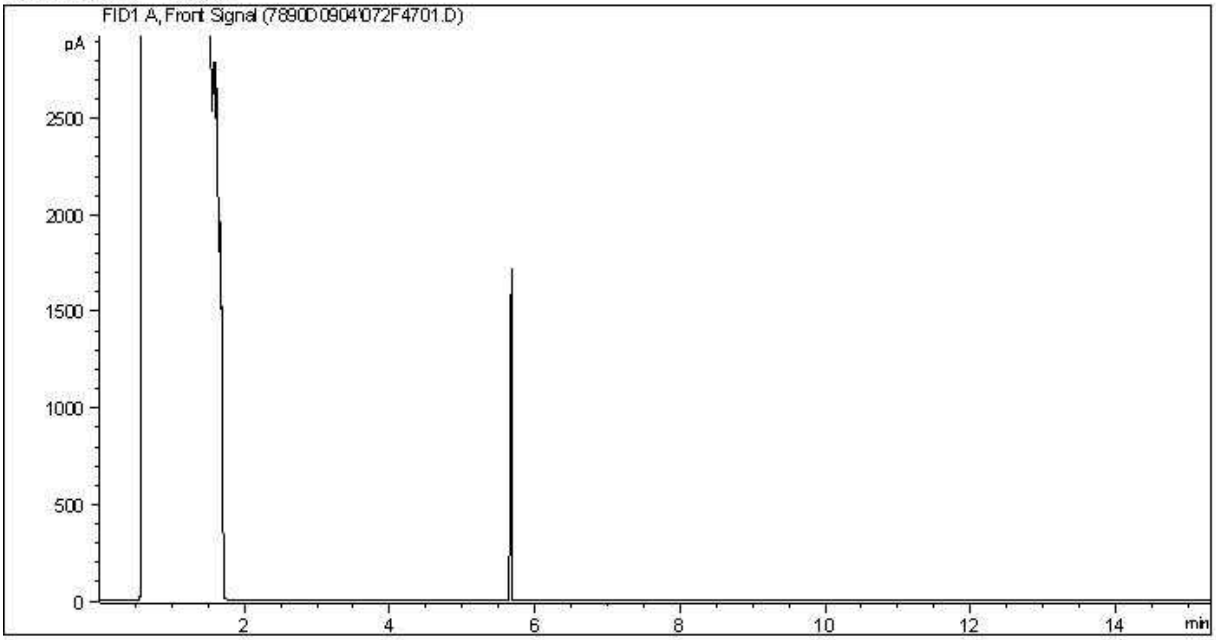
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

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Report Date: 2019/12/12
BV Labs Sample: WK3733

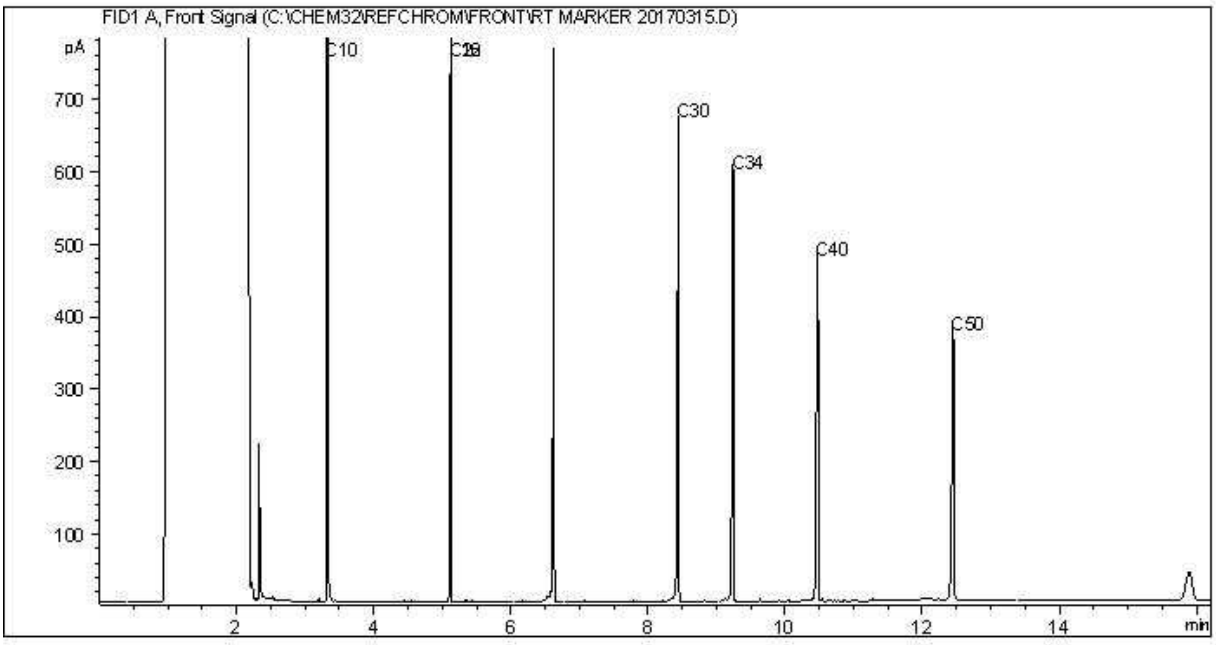
ARCADIS Canada Inc
Client Project #: 30000251
Client ID: MW-09

CCME Hydrocarbons (F2-F4 in water) Chromatogram

Instrument: 7890D



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

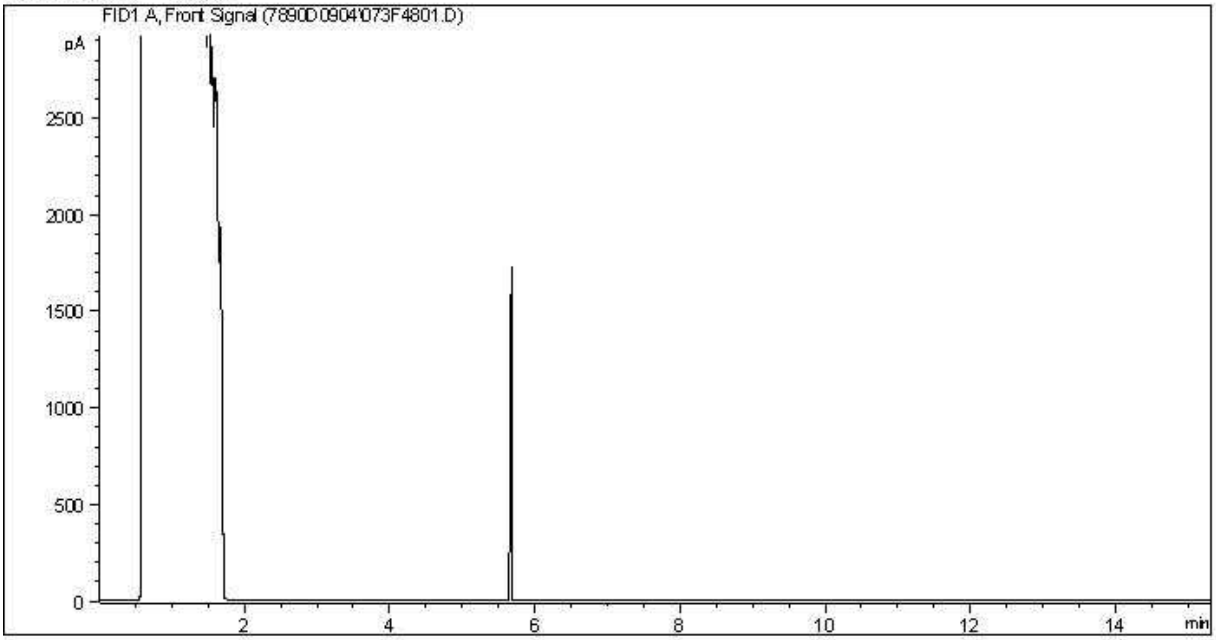
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

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Report Date: 2019/12/12
BV Labs Sample: WK3734

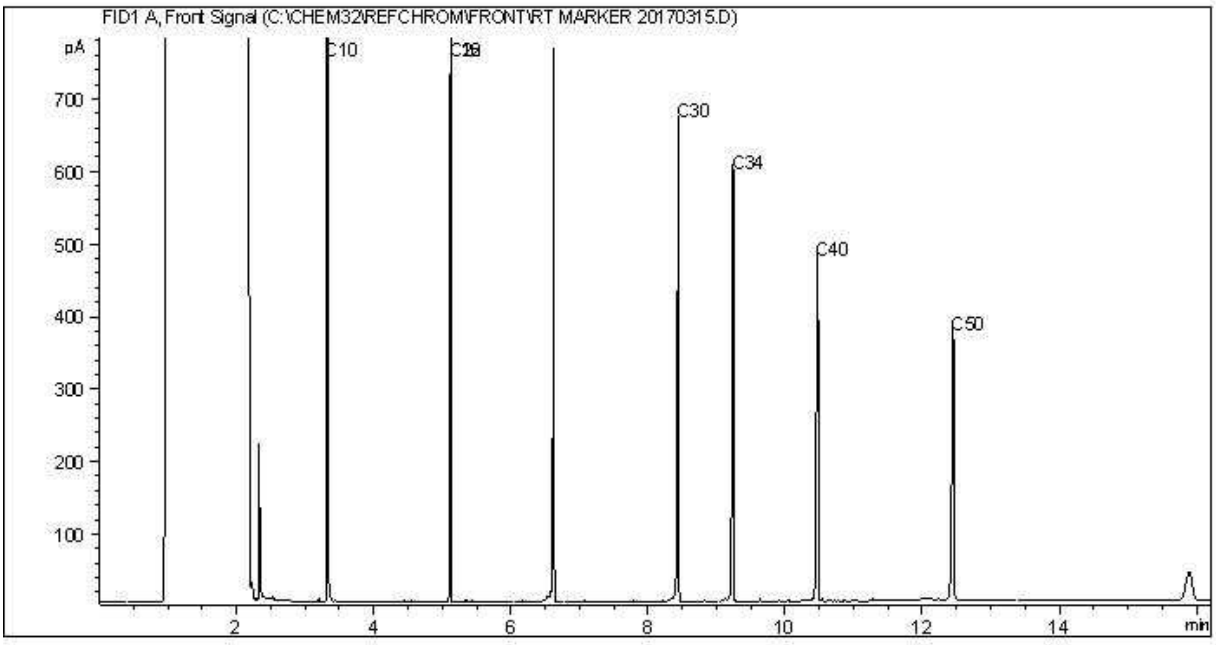
ARCADIS Canada Inc
Client Project #: 30000251
Client ID: MW-10

CCME Hydrocarbons (F2-F4 in water) Chromatogram

Instrument: 7890D



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

APPENDIX C

QA/QC Discussion of Results

QUALITY ASSURANCE/QUALITY CONTROL

A Quality Assurance/Quality Control (QA/QC) program was implemented to monitor the quality of the analytical results. The main objective of this QA/QC program is to ensure that sampling data and analytical results are complete, precise, representative and comparable.

Soil analyses were carried out by Bureau Veritas Laboratories (BV Labs, formerly Maxxam Analytics). The analysis of PHC and inorganic soil parameters listed above were conducted at BV Lab's facility in Edmonton, Alberta, while the analysis of PCB soil parameters were conducted at BV Lab's facility in Calgary, Alberta. Both Alberta laboratories are ISO 17025 certified. All results are presented in the table to this Appendix (Appendix C, Table 1 for soil and Table 2 for groundwater, and Table 3 for field, trip, and equipment blanks).

SHIPPING AND TRANSPORTATION

Samples were kept in coolers and shipped to the BV's depot in Yellowknife, NT, immediately after Arcadis field staff arrived back in Cambridge Bay, NU accompanying the charter aircraft on its return trip.

Sample Temperatures

All BV Lab cooler temperatures were within the acceptable range of less than 10 degree Celsius.

Sample Holding Times

Sample holding times were met for all samples.

Sample Containers

All soil and groundwater samples were collected in the sample containers both supplied and required by the project laboratory.

One of methanol vials for soil sample C1-34B broke during shipment but the lab was still able to proceed with the specified analysis using the second vial. No other sample container issues were encountered.

SAMPLING METHODOLOGIES

Soil

Samples were collected from test pits that had been manually excavated with hand tools (pickaxe and stainless-steel shovel), which were decontaminated between locations using Alconox and distilled water. Each soil sample was collected in one laboratory supplied zip-top plastic bag, two

125 mL glass jars, and two 40 mL clear glass vials with methanol for preservation. All sample containers were pre-sterilized and supplied by the laboratory.

Groundwater

The purging and sampling of each monitoring well was completed using dedicated sampling equipment consisting of 6 mm diameter high density polyethylene (HDPE) tubing. Each well was purged and sampled using dedicated tubing supplies which were removed upon completion of sampling to prevent damage due to freezing. Other sampling equipment, such as the interface probe and the Horiba U-52 multi-parameter meter, were decontaminated between monitoring events using Alconox and distilled water.

Sample Preservation

Soil samples for PHC F1 were preserved with methanol.

Groundwater samples for inorganics were not field preserved and were not field filtered, according to the TOR. Groundwater samples for PHCs were preserved with sodium bisulfate.

SAMPLE METHOD DETECTION LIMITS (MDLS)

Arcadis made all attempts to meet every required DEW Line specific MDL, including contacting the contract laboratory and providing a copy of the TOR Annex I – Dew Line Clean-up for Soil and Minimum MDL Requirements during the bottle order process and again prior to the start of the program. In addition, Arcadis also included a printout of the Minimum MDL Requirements with the chains of custody in each cooler that accompanied the coolers to the contract laboratory. Furthermore, a note was added to each chain of custody stating that special MDLs were required. However, DEW Line Minimum MDLs were not met for all samples. Samples results with MDLs above the DEW Line Minimum MDLs are summaries below.

The MDLs for soil samples C1-1A and C1-2A were raised above the DEW Line Minimum MDLs for PHC F1 results due to the sample weight used for analysis. The raised MDLs of these two samples were also above the ‘baseline mean plus three standard deviations’ value for PHC F1 of 10 mg/kg. As such, these raised MDLs will likely cause the trend line for PHC F1 concentrations at the Borrow Area North landfill to appear increasing once seven monitoring events of data has been collected. However, it should be noted that PHC F1 results for soil samples at the Burrow Area North landfill have been below detectable limits since the first monitoring event was conducted in 2010 and therefore the 2019 PHC F1 results are unlikely to be a primary indicator of potential contaminant migration from the landfill in the future.

The MDLs for soil samples C1-40, C1-43 and MW-01A were raised to 0.05 mg/kg for total PCBs results due to sample dilution or matrix interference; however, the raised MDLs of all 3 samples remained below the site's background average and 'baseline mean plus three standard deviations' value for total PCBs of 0.10 mg/kg. As such, these sample results should be considered as reliable and are unlikely to substantially impact future trend assessment.

The MDLs for soil sample C1-1A were raised for cadmium, cobalt and lead results due to the sample's matrix; however, the raised MDLs remained below the DEW Line Minimum MDLs. As such, these sample results should be considered as reliable and are unlikely to impact future trend assessment.

QA/QC RESULTS SAMPLE FOR FIELD DUPLICATES

All field duplicate samples were given IDs somewhat similar to the IDs used for all other samples in order to prevent the lab from knowing which samples were duplicates. In addition, field duplicate samples were obtained for at least 10% of the soil and groundwater samples collected.

Sampling procedures and laboratory analytical precision are evaluated by calculating the relative percent difference (RPD) for a sample and duplicate pair according the following equation:

$$RPD = | X_1 - X_2 | / X_{avg} \times 100$$

where: x_1 and x_1 are the duplicate concentrations and x_{avg} is the mean of these two values.

The duplicate results were evaluated using criteria developed by Zeiner (1994), which draws from several data validation guidelines developed by the United States Environmental Protection Agency (USEPA).

RPDs are typically calculated only when both results are greater than 5x the laboratory Reliable Detection Limit (RDL) for each sample concentration. This alert criteria results in less uncertainty for concentrations that are very close to the RDL.

As discussed at the 2019 kick-off meeting, DND re-evaluated the acceptance criteria for field duplicates outlined in Section 1.2 in Annex K of the TOR. Accordingly, analyte RPDs less than 40% for water samples or less than 60% for soil samples were considered acceptable for the 2019 program.

Soil samples were compared against their respective duplicate samples. The following provides a summary of the duplicate analysis.

Soil

A total of nine duplicate samples were collected and analyzed at the CAM-1 site. All calculable RPDs for all parent and duplicate soil samples were less than 60%. The analytical results are included in Table 1 in Appendix F following this text. It is Arcadis' opinion that the overall soil sample set should be considered reliable.

It should be noted that the RPD for many of the field duplicate data points were not calculated because one or both results were less than 5 x MDL or below the reportable detection limit. When the field duplicate sample and the parent sample had identical soil sample results, an RPD value was also not assigned.

Large relative percent difference numbers are often a result of low concentrations being measured and due to variation between samples likely due to heterogeneity of the substrate. The Arcadis field assessor alternated the placement of small amounts of sample into the primary and duplicated sampling jars; however, this does not guarantee equal allocation of sample, especially in gravel soils, making the collection of a true soil duplicate difficult. Small amounts of metal may have been collected with soil, despite the efforts to exclude debris by the field assessor.

Arcadis suspects that these discrepancies in concentration of inorganic parameters may also be a result of the use of the laboratory extraction method, which includes first drying the sample, then grinding the sample, and finally sieving the sample. The act of grinding the sample can create disproportionate amounts of metals based on the exact rock type present during the grinding process. The CAM-1 site is especially vulnerable to this, considering some of the collected samples were gravel with very coarse sand at best. A few selected photos are provided below as examples of the types of sample media encountered.

Photo 1 – Sample media at C1-33



Photo 2 – Sample media at C1-15



Groundwater

One duplicate sample (MW-09) was submitted for groundwater at monitoring well MW-04. All calculable RPD parameters between the parent and duplicate groundwater sample results were less than 40%, except for copper, which exhibited an RPD value of exactly 40%.

In the instance of copper, the parent reported a concentration of 0.01 mg/L and the duplicate 0.015 mg/L. It is common to see higher RPD values with low-level detections and lowered laboratory detection limits. In this instance, the laboratory detection limit was 0.0002 mg/L for copper and the DEW Line detection limits are set at 0.005 mg/L for copper. The concentrations detected in both the parent and duplicate sample were less than 5X the Dew Line detection limits, which is 0.025 mg/L and this sample pair would not have qualified for calculation based on the current QA/QC program requirements. However, the RPDs were calculated based on the lowered laboratory detection limits and not the DEW Line detection limits. Additionally, given that the RPD value was equal to the set RPD criterion of 40%, Arcadis considers this to be marginal and does not represent a true exceedance of the RPD criterion. Therefore, Arcadis considers this data set to be accurate and reliable.

The analytical results are included as Table 2 in Appendix C following this text. It is Arcadis' opinion that the overall groundwater sample set should be considered reliable and suitable for reference purposes.

Trip, Field, and Equipment Blanks

One trip blank, one field blank, and two equipment blanks were collected as part of the 2019 QA/QC program. The analytical results are included as Table 3 in Appendix F following this text. The MDLs for all metal and PHC parameters associated with the four blank samples were below the DEW Line Minimum MDLs.

Two sets of equipment blanks were collected. The first set (sample TUB-EB) was collected by pumping laboratory-supplied reverse osmosis distilled (RODI) water, guaranteed to be free of any organic and inorganic contaminants (based on analysis), through new tubing from the same batch that was used to sample the groundwater wells and into laboratory supplied sample containers. The second set (sample SH-BL) was collected by pouring laboratory supplied RODI water over the stainless-steel shovel that was used to dig the test pits and allowing the water to drain into laboratory supplied sample containers.

Equipment Blank TUB-EB

No detectable levels of the selected metals or PHC parameters were measured in equipment blank TUB-EB. As such, the groundwater sampling equipment and techniques employed at the site are not suspected to have impacted groundwater sample results.

Equipment Blank SH-BL

A detectable amount of arsenic, cadmium, chromium, copper, lead, nickel and zinc was measured in equipment blank SH-BL. The detectable concentration of each parameter was between 0.1 and 5 times their respective DEW Line Minimum MDL. However, all detectable concentrations were at least two times less than their respective 'baseline mean plus three standard deviations' values for water samples at the site. As such, these detections are considered minor and are not considered to have substantially impacted any of the analytical sample results.

Field Blank

No detectable levels of the selected metals or PHC parameters were measured in the Field Blank. As such, no form of contamination from bottles, collection methods, the site's atmosphere, or preservatives is suspected to have impacted sample results.

Trip Blank

No detectable levels of the selected metals or PHCs parameters were measured in the Trip Blank. As such, no contamination from within the sample bottles or from volatile compounds is suspected to have impacted sample results.

LABORATORY QA/QC REPORTING

Arcadis reviewed the internal laboratory QA/QC reporting presented in the Certificate of Analysis for both soil and groundwater samples. The following items of note were identified as part of this review.

1. The calculable RPDs for internal laboratory duplicates associated with CAM-1 soil samples were below the lab's quality control limit for all parameters except nine incidences associated with inorganic parameters. As noted previously, discrepancies between the concentration of inorganic parameters in parent and duplicate soil samples are common for the soil types found at the CAM-1 site.
2. All calculable RPDs for the internal laboratory duplicate associated with the CAM-1 groundwater samples were below the laboratory QC limits of 20% and 30% for organic and inorganic parameters respectively.

3. The matrix spike recovery associated with total arsenic for soil sample C1-35B (67%) was below the lab's quality control limit range of 75-125%. Matrix interference was noted as the reason the matrix spike did not fall within the acceptable limits. All other results for the laboratory matrix spikes, spiked blanks, and method blanks were within laboratory QC limits for both soil and groundwater sample batches.

Based on these findings, the internal laboratory QA/QC conducted was deemed acceptable by Arcadis.

LABORATORY ACCREDITATION

The Scope of Accreditation certificates for both BV Labs analytical Calgary and Edmonton laboratories (as issued by the Standards Council of Canada), which were used to analyze samples obtained following from our 2019 CAM-1 field work are located in Appendix F3. Soil samples for PHCs and Inorganics were analyzed at the Edmonton BV facility while PCB analyses was conducted at the Calgary BV facility. Groundwater samples were analyzed at the Edmonton BV facility. All are ISO 17025 certified laboratories.

CONCLUSION

Overall, the results of the quality assurance and quality control measures are considered acceptable and generally fall within the DEW Line criteria outline in the TOR Annex K. As such, Arcadis concluded that both the groundwater and soil data sets should be considered reliable and appropriate for reference purpose

APPENDIX C1

QA/QC Tables

Table 1: Summary of 2019 Soil Duplicate Analytical Data

Summary of 2019 Soil Duplicate Analytical Data																
Sample ID	Location	Year	Depth (cm)	As [mg/kg]	Cd [mg/kg]	Cr [mg/kg]	Co [mg/kg]	Cu [mg/kg]	Pb [mg/kg]	Ni [mg/kg]	Zn [mg/kg]	PCB [mg/kg]	F1 C_6-C_{10} [mg/kg]	F2 C_{10}-C_{16} [mg/kg]	F3 C_{16}-C_{34} [mg/kg]	F4 C_{16}-C_{34} [mg/kg]
DEW Line MDLs				1	0.5	1	1.00	1	1	1	1	0.01	7	4	8	6
MDL (BV Labs)				1	0.05	1	0.50	1	0.5	1	1	0.01-0.05	7	4	8	6
Background				3.3	1	20	5.00	11.3	10	5	15	0.1	10	10	18.9	13.8
MW-07B	MW-07B	2019	40-50	1.6	<0.050	4.1	1.3	3.3	2.9	2.9	5.1	<0.010	<7.0	<4.0	<8.0	<6.0
C1-36				2.4	<0.050	3.1	1.2	3.5	3.7	2.4	6.7	<0.010	<7.0	<4.0	<8.0	<6.0
RPD (Parent and Dup)				--	--	--	--	--	--	--	27.1%	--	--	--	--	--
Aceptable (Y/N)				Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
C1-18A	C1-18A	2019	0-15	<1.0	<0.050	1.5	<0.50	2.2	1.9	<1.0	2.4	<0.010	<7.0	<4.0	11	<6.0
C1-37				<1.0	<0.050	1.3	<0.50	<1.0	1.3	<1.0	2.2	<0.010	<7.0	<4.0	10	<6.0
RPD (Parent and Dup)				--	--	--	--	--	--	--	--	--	--	--	--	--
Aceptable (Y/N)				Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
C1-23A	C1-23A	2019	0-15	25	<0.050	1.6	1.0	3.8	39	1.8	3.8	<0.010	<7.0	<4.0	12	<6.0
C1-38				22	<0.050	1.5	0.97	3.3	32	1.6	3.2	<0.010	<7.0	<4.0	16	<6.0
RPD (Parent and Dup)				12.8%	--	--	--	--	19.7%	--	--	--	--	--	--	--
Aceptable (Y/N)				Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
C1-15A	C1-15A	2019	0-15	1.6	<0.050	1.8	0.65	1.4	2.8	1.1	2.2	<0.010	<7.0	<4.0	<8.0	<6.0
C1-39				1.7	<0.050	2.0	0.77	1.6	3.0	1.6	3.0	<0.010	<7.0	<4.0	<8.0	<6.0
RPD (Parent and Dup)				--	--	--	--	--	6.9%	--	--	--	--	--	--	--
Aceptable (Y/N)				Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
C1-28A	C1-28A	2019	0-15	1.8	<0.050	7.0	2.1	4.3	3.7	5.1	8.2	<0.010	<7.0	<4.0	11	<6.0
C1-40				2.0	<0.050	10	2.9	6.4	4.3	7.1	11	<0.050	<7.0	<4.0	8.5	<6.0
RPD (Parent and Dup)				--	--	35.3%	--	--	15.0%	32.8%	29.2%	--	--	--	--	--
Aceptable (Y/N)				Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Table 1: Summary of 2019 Soil Duplicate Analytical Data

Summary of 2019 Soil Duplicate Analytical Data																
Sample ID	Location	Year	Depth (cm)	As [mg/kg]	Cd [mg/kg]	Cr [mg/kg]	Co [mg/kg]	Cu [mg/kg]	Pb [mg/kg]	Ni [mg/kg]	Zn [mg/kg]	PCB [mg/kg]	F1 C_6-C_{10} [mg/kg]	F2 C_{10}-C_{16} [mg/kg]	F3 C_{16}-C_{34} [mg/kg]	F4 C_{16}-C_{34} [mg/kg]
DEW Line MDLs				1	0.5	1	1.00	1	1	1	1	0.01	7	4	8	6
MDL (BV Labs)				1	0.05	1	0.50	1	0.5	1	1	0.01-0.05	7	4	8	6
C1-32A	C1-32A	2019	0-15	<1.0	<0.050	3.3	0.79	1.7	2.3	1.8	3.4	<0.010	<7.0	<4.0	20	<6.0
C1-41				<1.0	<0.050	3.6	0.90	1.9	2.1	2.2	3.8	<0.010	<7.0	<4.0	15	<6.0
RPD (Parent and Dup)				--	--	--	--	--	--	--	--	--	--	--	--	--
Aceptable (Y/N)				Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
C1-26B	C1-26B	2019	25-35	2.9	<0.050	3.2	0.88	2.2	4.4	1.6	3.1	<0.010	<7.0	<4.0	<8.0	<6.0
C1-42				2.8	<0.050	2.9	0.81	2.0	4.6	1.7	3.2	<0.010	<7.0	<4.0	<8.0	<6.0
RPD (Parent and Dup)				--	--	--	--	--	4.4%	--	--	--	--	--	--	--
Aceptable (Y/N)				Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
MW-06B	MW-06B	2019	40-50	1.7	<0.050	2.9	1.1	1.8	2.7	1.8	4.1	<0.010	<7.0	<4.0	<8.0	<6.0
C1-43				1.9	<0.050	4.3	1.3	2.1	3.2	2.2	4.5	<0.050	<7.0	<4.0	<8.0	<6.0
RPD (Parent and Dup)				--	--	--	--	--	16.9%	--	--	--	--	--	--	--
Aceptable (Y/N)				Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
MW-06A	MW-06A	2019	0-15	1.9	<0.050	2.6	0.90	2.3	3.6	1.7	6.3	<0.010	<7.0	<4.0	25	<6.0
C1-44				1.8	<0.050	2.3	0.85	2.5	4.0	1.6	6.7	<0.010	<7.0	<4.0	24	<6.0
RPD (Parent and Dup)				--	--	--	--	--	10.5%	--	6.2%	--	--	--	--	--
Aceptable (Y/N)				Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Notes:

-- Not calculated (nc) - meets criteria (note that RPDs calculated only when both samples are greater than 5x MDL)

Y Meets Criteria (RPD ≤ 60% for soil)

N Does not meet criteria

Table 2: Summary of 2019 Groundwater Duplicate Analytical Data

Summary of 2019 Groundwater Duplicate Analytical Data														
Sample ID	Location	Year	As [mg/L]	Cd [mg/L]	Cr [mg/L]	Co [mg/L]	Cu [mg/L]	Pb [mg/L]	Ni [mg/L]	Zn [mg/L]	F1 C_6-C_{10} [mg/L]	F2 C_{10}-C_{16} [mg/L]	F3 C_{16}-C_{34} [mg/L]	F4 C_{16}-C_{34} [mg/L]
DEW Line MDLs			0.001	0.0001	0.001	0.0005	0.005	0.0001	0.001	0.001	0.025	0.1	0.1	0.1
MDL (BV Labs)			0.00020	0.000020	0.0010	0.00030	0.00020	0.00010	0.00050	0.0030	0.025	0.1	0.1	0.1
MW-04	MW-04	2019	0.0037	0.000026	0.11	0.0020	0.010	0.0024	0.062	0.0048	<0.025	<0.10	<0.10	<0.10
MW-09			0.0048	0.000025	0.14	0.0024	0.015	0.0031	0.078	0.0066	<0.025	<0.10	<0.10	<0.10
RPD (Parent and Dup)			25.9%	--	24.0%	18.2%	40.0%	25.5%	22.9%	--	--	--	--	--
Aceptable (Y/N)			Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y

Notes:

-- Not calculated (nc) - meets criteria (note that RPDs calculated only when both samples are greater than 5x MDL)
Y Meets Criteria (≤40% RPD for groundwater)
N Does not meet criteria

Table 3: Field, Trip, and Equipment Blanks QA/QC Comparison

Summary of 2019 Field, Trip and Equipment Blanks													
Sample ID	Year	As [mg/L]	Cd [mg/L]	Cr [mg/L]	Co [mg/L]	Cu [mg/L]	Pb [mg/L]	Ni [mg/L]	Zn [mg/L]	F1 C_6-C_{10} [mg/L]	F2 C_{10}-C_{16} [mg/L]	F3 C_{16}-C_{34} [mg/L]	F4 C_{16}-C_{34} [mg/L]
DEW Line MDLs		0.001	0.0001	0.001	0.0005	0.005	0.0001	0.001	0.001	0.025	0.1	0.1	0.1
MDL (BV Labs)		0.0002	0.00002	0.0003	0.0002	0.0002	0.003	0.001	0.0002	0.025	0.1	0.1	0.1
MW-10 (Field Blank)	2019	<0.00020	<0.000020	<0.0010	<0.00030	<0.00020	<0.00010	<0.00050	<0.0030	<0.025	<0.10	<0.10	<0.10
Aceptable? (Y/N)		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Trip Blank		<0.00020	<0.000020	<0.0010	<0.00030	<0.00020	<0.00010	<0.00050	<0.0030	<0.025	<0.10	<0.10	<0.10
Aceptable? (Y/N)		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
TUB-EB (Equip. Blank)		<0.00020	<0.000020	<0.0010	<0.00030	<0.00020	<0.00010	<0.00050	<0.0030	<0.025	<0.10	<0.10	<0.10
Aceptable? (Y/N)		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
SH-BL (Equip. Blank)		0.00020	0.000440	0.010	<0.00030	0.0011	0.0014	0.0014	0.0038	<0.025	<0.10	<0.10	<0.10
Aceptable? (Y/N)		N	N	N	Y	N	N	N	N	Y	Y	Y	Y

Notes:

-- Not calculated - meets criteira

Y Meets Criteria (i.e., concentration is below MDL)

N Does not meet criteria

APPENDIX C2

Chains of Custody

Bureau Veritas Laboratories
4000 19st N.E, Calgary, Alberta Canada T2E 6P8 Tel:(403) 291-3077 Toll-free:800-563-6266 Fax:(403) 291-9468 www.bvlabs.com

15837(7)

Chain Of Custody Record

Page 1 of 11

INVOICE TO:		Report Information		Project Information		Laboratory Use Only	
Company Name	#3269 ARCADIS Canada Inc	Company Name		Quotation #	B60371	BV Labs Job #	Bottle Order #:
Contact Name	Elliott Holden	Contact Name	Samd	P.O. #		B973139	591656
Address	1050 Morrison Drive Suite 201 Ottawa ON K2H 8K7	Address		Project #	30000251	Chain Of Custody Record	Project Manager
Phone	(613) 721-0555 Ext: 237 Fax: (613) 721-0029	Phone	Fax:	Project Name		C#591656-01-01	Parminder Virk
Email	Jacob.Holden@arcadis.com	Email	troy.austring@arcadis.com	Site #	CAM-1		
				Sampled By	RF		

Regulatory Criteria

Notify P.Virk for specific detection limits. See enclosed.

Special Instructions

Metals: Report only As, Cu, Cr, Cd, Cu, Pb, Ni, Zn

PHC's: only Report F1, F2, F3, F4 (NO BTEX)

Analysis Requested

Regulated Drinking Water? (Y/N)

Metals Field Filtered? (Y/N)

BTEX

F1-F4, Cr, Cu, Zn

Total As, Cd, Pb, Ni, Cu

PCBs

Turnaround Time (TAT) Required

Please provide advance notice for rush projects

Regular (Standard) TAT (will be applied if Rush TAT is not specified) X

Standard TAT = 5-7 Working days for most tests.

Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (applies to entire submission)

Date Required: Time Required:

Rush Confirmation Number (call lab for #)

Required

Consigned MDL's

For regulated drinking water samples - please use the Drinking Water Chain of Custody Form

Samples must be kept cool (< 10°C) from time of sampling until delivery to BV Labs

	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	# of Bottles	Comments
1	C1-1A	Aug 27/19	925	Soil	5	
2	C1-1B		925		5	
3	C1-2A		915		5	Received in Yellowknife
4	C1-2B		915		5	By: J. MERCIER 2:00PM
5	C1-3A		955		5	AUG 29 2019
6	C1-3B		955		5	Temp: AC ITR
7	C1-4A		935		5	ice - yes
8	C1-4B		935		5	cs - yes
9	C1-5A		940		5	
10	C1-5B		940		5	

Sample Barcode Label

Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
	Aug 28/19	1500	JESSICA LEE	20190830	10:40	

Lab Use Only

Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
	See ACTR	Yes No

* RELINQUISHED BY: (S
Ryan Pitch

* UNLESS OTHERWISE AGREE
FOR VIEWING AT WWW.BVLA
* IT IS THE RESPONSIBILITY O

TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BV LABS' STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE BS.COM/TERMS-AND-CONDITIONS.

F THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: BV Labs Yellow: Client

Bureau Veritas Laboratories
4000 19st N.E, Calgary, Alberta Canada T2E 6P8 Tel:(403) 291-3077 Toll-free:800-563-6266 Fax:(403) 291-9468 www.bvlabs.com

Chain Of Custody Record

INVOICE TO:		Report Information		Project Information		Laboratory Use Only	
Company Name	#3269 ARCADIS Canada Inc	Company Name		Quotation #	B60371	BV Labs Job #	Bottle Order #:
Contact Name	Elliott Holden	Contact Name		P.O. #		B973139	591656
Address	1050 Morrison Drive Suite 201 Ottawa ON K2H 8K7	Address	Same	Project #	30000251	Chain Of Custody Record	Project Manager
Phone	(613) 721-0555 Ext: 237 Fax: (613) 721-0029	Phone	Fax:	Project Name		C#591656-02-01	Parminder Virk
Email	Jacob.Holden@arcadis.com	Email		Site #	CAM-1		
				Sampled By	RR		

Regulatory Criteria: See #1

Special Instructions: See #1

Note: For regulated drinking water samples - please use the Drinking Water Chain of Custody Form

Samples must be kept cool (< 10°C) from time of sampling until delivery to BV Labs

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Regulated Drinking Water ? (Y / N)	Metals Field Filtered ? (Y / N)	F1-F4	Metals	PCBs	# of Bottles	Comments
1		CI-6A	Aug 27/19	1130	Soil			X	X	X	5	
2		CI-6B		1130				X	X	X	5	
3		CI-7A		1040				X	X	X	5	Received in Yellowknife
4		CI-7B		1040				X	X	X	5	By: J. MERCIER 2:30PM
5		CI-8A		1100				X	X	X	5	Aug 29 2019
6		CI-8B		1100				X	X	X	5	Temp: AC / TR /
7		CI-9A		1115				X	X	X	5	
8		CI-9B		1115				X	X	X	5	
9		CI-10A	Aug 26/19	1350				X	X	X	5	
10		CI-10A		1350				X	X	X	5	

Turnaround Time (TAT) Required

Please provide advance notice for rush projects

Regular (Standard) TAT [X]

(will be applied if Rush TAT is not specified)

Standard TAT = 5-7 Working days for most tests.

Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)

Date Required: _____ Time Required: _____

Rush Confirmation Number _____ *(call lab for #)*

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Ryan Fletcher	Aug 28/19	1500	JESSICA LEE	20190830	10:40	

Lab Use Only

Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
[ ]	See ACTR	[ ] Yes [ ] No

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* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

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Chain Of Custody Record

INVOICE TO:		Report Information		Project Information		Laboratory Use Only	
Company Name	#3269 ARCADIS Canada Inc	Company Name	Same as #1	Quotation #	B60371	BV Labs Job #	Bottle Order #:
Contact Name	Elliott Holden	Contact Name		P.O. #		B973139	591656
Address	1050 Morrison Drive Suite 201 Ottawa ON K2H 8K7	Address		Project #	30000251	Chain Of Custody Record	Project Manager
Phone	(613) 721-0555 Ext: 237 Fax: (613) 721-0029	Phone	Fax:	Project Name		C#591656-03-01	Parminder Virk
Email	Jacob.Holden@arcadis.com	Email		Site #	CAM-1		
				Sampled By	RP		

Regulatory Criteria	Special Instructions
See #1	See #1

Note: For regulated drinking water samples - please use the Drinking Water Chain of Custody Form

Samples must be kept cool (< 10°C) from time of sampling until delivery to BV Labs

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Regulated Drinking Water ? (Y / N)	Metals Field Filtered ? (Y / N)	Analysis Requested: F1-F4	Metals	PCBs	# of Bottles	Comments
1		C1 - 11A	Aug 26/19	1400	Soil			X	X	X	5	
2		C1 - 11B		1400				X	X	X	5	Received in Yellowknife
3		C1 - 12A		1410				X	X	X	5	By: [illegible] 2:00pm
4		C1 - 12B		1410				X	X	X	5	AUG 29 2019
5		C1 - 13A		1420				X	X	X	5	
6		C1 - 13B		1420				X	X	X	5	Temp: AC TR
7		C1 - 14A		1110				X	X	X	5	
8		C1 - 14B		1110				X	X	X	5	
9		C1 - 15A		1100				X	X	X	5	
10		C1 - 15B		1100				X	X	X	5	

Turnaround Time (TAT) Required

Please provide advance notice for rush projects

Regular (Standard) TAT X

(will be applied if Rush TAT is not specified)

Standard TAT = 5-7 Working days for most tests.

Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)

Date Required: _____ Time Required: _____

Rush Confirmation Number _____ *(call lab for #)*

RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
R Evan Fletcher	Aug 28/19	1500	JESSICA LEE	20190830	10:40	

Lab Use Only		
Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
		Yes / No

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Chain Of Custody Record

INVOICE TO:		Report Information		Project Information		Laboratory Use Only	
Company Name	#3269 ARCADIS Canada Inc	Company Name	Same as #1	Quotation #	B60371	BV Labs Job #	Bottle Order #:
Contact Name	Elliott Holden	Contact Name		P.O. #		B973139	591656
Address	1050 Morrison Drive Suite 201 Ottawa ON K2H 8K7	Address		Project #	30000251	Chain Of Custody Record	Project Manager
Phone	(613) 721-0555 Ext: 237 Fax: (613) 721-0029	Phone	Fax:	Project Name		C#591656-04-01	Parminder Virk
Email	Jacob.Holden@arcadis.com	Email		Site #	CAM-1		
				Sampled By	RF		

Regulatory Criteria: Same as #1

Special Instructions: Same as #1

Note: For regulated drinking water samples - please use the Drinking Water Chain of Custody Form

Samples must be kept cool (< 10°C) from time of sampling until delivery to BV Labs

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Regulated Drinking Water ? (Y / N)	Metals Field Filtered ? (Y / N)	F1-F4	Metals	PCBs	# of Bottles	Comments
1		CI-16A	Aug 26/19	1130	Soil			X	X	X	5	
2		CI-16B		1130				X	X	X	5	
3		CI-17A		1140				X	X	X	5	Received in Yellowknife
4		CI-17B		1140				X	X	X	5	By: J. Morgan
5		CI-18A		1150				X	X	X	5	2:00 PM
6		CI-18B		1150				X	X	X	5	Aug 29 2019
7		CI-19A		1630				X	X	X	5	Temp: Ac / TR
8		CI-19B		1630				X	X	X	5	
9		CI-20A		1620				X	X	X	5	
10		CI-20B		1620				X	X	X	5	

Turnaround Time (TAT) Required

Please provide advance notice for rush projects

Regular (Standard) TAT [X]

(will be applied if Rush TAT is not specified)

Standard TAT = 5-7 Working days for most tests.

Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)

Date Required: _____ Time Required: _____

Rush Confirmation Number _____ *(call lab for #)*

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Ryan Fletcher	Aug 28/19	1500	JESSICA LEE	20190830	10:40	

Lab Use Only: Time Sensitive [ ] | Temperature (°C) on Receipt: see ACTR | Custody Seal Intact on Cooler? [ ] Yes [ ] No

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Chain Of Custody Record

INVOICE TO:		Report Information		Project Information		Laboratory Use Only	
Company Name	#3269 ARCADIS Canada Inc	Company Name		Quotation #	BG0371	BV Labs Job #	Bottle Order #:
Contact Name	Elliott Holden	Contact Name	Same as #1	P.O. #		B973139	591656
Address	1050 Morrison Drive Suite 201	Address		Project #	30000251	Chain Of Custody Record	Project Manager
	Ottawa ON K2H 8K7			Project Name		C#591656-05-01	Parminder Virk
Phone	(613) 721-0555 Ext: 237 Fax: (613) 721-0029	Phone	Fax:	Site #	CAM-1		
Email	Jacob.Holden@arcadis.com	Email		Sampled By	RF		

Regulatory Criteria: Same as #1

Special Instructions: Same as #1

Note: For regulated drinking water samples - please use the Drinking Water Chain of Custody Form

Samples must be kept cool (< 10°C) from time of sampling until delivery to BV Labs

Turnaround Time (TAT) Required

Please provide advance notice for rush projects

Regular (Standard) TAT X
(will be applied if Rush TAT is not specified)
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: _____ Time Required: _____
Rush Confirmation Number _____ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Regulated Drinking Water ? (Y / N)	Metals Field Filtered ? (Y / N)	Analysis Requested: F1-F4	Metals	PCBs	# of Bottles	Comments
1		C1-21A	Aug 26/19	1615	Soil			X	X	X	5	
2		C1-21B		1615				X	X	X	5	
3		C1-22A		1600				X	X	X	5	Received in Yellowknife
4		C1-22B		1600				X	X	X	5	By: J. Mercado
5		C1-23A		1500				X	X	X	5	2:02 pm
6		C1-23B		1500				X	X	X	5	AUG 29 2019
7		C1-24A		1535				X	X	X	5	Temp: AC / TR
8		C1-24B		1535				X	X	X	5	
9		C1-25A		1525				X	X	X	5	
10		C1-25B		1525				X	X	X	5	

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Lab Use Only: Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
Ryan Fletcher	Aug 28/19	1500	JESSICA LEE	20190830	10:40			see ACTR	Yes / No

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BV LABS' STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVLABS.COM/TERMS-AND-CONDITIONS.

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Chain Of Custody Record

INVOICE TO:		Report Information		Project Information		Laboratory Use Only	
Company Name	#3269 ARCADIS Canada Inc	Company Name	Same as #1	Quotation #	BE00371	BV Labs Job #	Bottle Order #:
Contact Name	Elliott Holden	Contact Name		P.O. #		B973139	591656
Address	1050 Morrison Drive Suite 201 Ottawa ON K2H 8K7	Address		Project #	30000251	Chain Of Custody Record	Project Manager
Phone	(613) 721-0555 Ext: 237 Fax: (613) 721-0029	Phone	Fax:	Project Name		C#591656-06-01	Parminder Virk
Email	Jacob.Holden@arcadis.com	Email		Site #	CAM-1		
				Sampled By	RF		

Regulatory Criteria: Same as #1

Special Instructions: Same as #1

Note: For regulated drinking water samples - please use the Drinking Water Chain of Custody Form

Samples must be kept cool (< 10ºC) from time of sampling until delivery to BV Labs

Turnaround Time (TAT) Required

Please provide advance notice for rush projects

Regular (Standard) TAT X
(will be applied if Rush TAT is not specified)
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: _____ Time Required: _____
Rush Confirmation Number _____ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Regulated Drinking Water ? (Y / N)	Metals Field Filtered ? (Y / N)	F1-F4	Metals	PCBs	# of Bottles	Comments
1		C1-26A	Aug26/19	1518	Soil			X	X	X	5	
2		C1-26B		1510				X	X	X	5	
3		C1-27A		1000				X	X	X	5	
4		C1-27B		1000				X	X	X	5	Received in Yellowknife
5		C1-28A		915				X	X	X	5	By: J.MERCADO 2:00 PM
6		C1-28B		915				X	X	X	5	AUG 29 2019
7		C1-29A		940				X	X	X	5	
8		C1-29B		940				X	X	X	5	temp AC TR
9		C1-30A		925				X	X	X	5	
10		C1-30B		925				X	X	X	5	

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Ryan Fletcher	Aug 28/19	1500	JESSICA LEE	20190829	10:40	

Lab Use Only

Time Sensitive	Temperature (ºC) on Receipt	Custody Seal Intact on Cooler?
☐	See ACTR	☐ Yes ☐ No

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Chain Of Custody Record

INVOICE TO:		Report Information		Project Information		Laboratory Use Only	
Company Name	#3269 ARCADIS Canada Inc	Company Name		Quotation #	B60372	BV Labs Job #	Bottle Order #:
Contact Name	Elliott Holden	Contact Name	Same as #1	P.O. #		B973139	591656
Address	1050 Morrison Drive Suite 201 Ottawa ON K2H 8K7	Address		Project #	30000251	Chain Of Custody Record	Project Manager
Phone	(613) 721-0555 Ext: 237 Fax: (613) 721-0029	Phone	Fax:	Project Name		C#591656-07-01	Parminder Virk
Email	Jacob.Holden@arcadis.com	Email		Site #	CAM-1		
				Sampled By	RF		

Regulatory Criteria	Special Instructions
Same as #1	Same as #1

Note: For regulated drinking water samples - please use the Drinking Water Chain of Custody Form

Samples must be kept cool (< 10°C) from time of sampling until delivery to BV Labs

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Regulated Drinking Water ? (Y / N)	Metals Field Filtered ? (Y / N)	PHCs	metals	PCBs	# of Bottles	Comments
1		CI-31A	Aug 26/19	930	Soil			X	X	X	5	
2		CI-31B		930				X	X	X	5	
3		CI-32A		1825				X	X	X	5	
4		CI-32B		1825				X	X	X	5	Received in Yellowknife
5		CI-33A		1855				X	X	X	5	By: J Marcoux 2:00 PM
6		CI-33B		1855				X	X	X	5	AUG 29 2019
7		CI-34A		1910				X	X	X	5	Temp: AC / TP
8		CI-34B		1910				X	X	X	5	
9		CI-35A		1840				X	X	X	5	
10		CI-35B		1840				X	X	X	5	

Turnaround Time (TAT) Required

Please provide advance notice for rush projects

Regular (Standard) TAT ☒

(will be applied if Rush TAT is not specified)

Standard TAT = 5-7 Working days for most tests.

Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)

Date Required: _____ Time Required: _____ ☐

Rush Confirmation Number _____ *(call lab for #)*

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Ryan Fletcher	Aug 28/19	1500	JESSICA LEE	20190830	10:40	

Lab Use Only: Time Sensitive ☐ | Temperature (°C) on Receipt see ACTE | Custody Seal Intact on Cooler? ☐ Yes ☐ No

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Chain Of Custody Record

INVOICE TO:		Report Information		Project Information		Laboratory Use Only	
Company Name	#3269 ARCADIS Canada Inc	Company Name	Same as 1	Quotation #	B60372	BV Labs Job #	Bottle Order #:
Contact Name	Elliott Holden	Contact Name		P.O. #		B973139	591656
Address	1050 Morrison Drive Suite 201 Ottawa ON K2H 8K7	Address		Project #	30000251	Chain Of Custody Record	Project Manager
Phone	(613) 721-0555 Ext: 237 Fax: (613) 721-0029	Phone	Fax:	Project Name		C#591656-08-01	Parminder Virk
Email	Jacob.Holden@arcadis.com	Email		Site #	CAM-1		
				Sampled By	RF		

Regulatory Criteria	Special Instructions
Same as 1	Same as 1

Note: For regulated drinking water samples - please use the Drinking Water Chain of Custody Form

Samples must be kept cool (< 10°C) from time of sampling until delivery to BV Labs

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Regulated Drinking Water ? (Y / N)	Metals Field Filtered ? (Y / N)	F1-F4	Metals	PCB's	# of Bottles	Comments
1		MW-01A	Aug27/19	1450	Soil			X	X	X	5	
2		MW-01B		1450				X	X	X	5	
3		MW-02A		1515				X	X	X	5	Received in Yellowknife By: JMcLeod 2:00 PM AUG 29 2019
4		MW-02B		1515				X	X	X	5	
5		MW-03A		1505				X	X	X	5	
6		MW-03B		1505				X	X	X	5	Temp: AC TR
7		MW-04A		1525				X	X	X	5	
8		MW-04B		1525				X	X	X	5	
9		MW-05A		1330				X	X	X	5	
10		MW-05B		1330				X	X	X	5	

Turnaround Time (TAT) Required

Please provide advance notice for rush projects

Regular (Standard) TAT [X]
(will be applied if Rush TAT is not specified)
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: _____ Time Required: _____
Rush Confirmation Number _____ *(call lab for #)*

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Lab Use Only: Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
Ryan Fletcher	Aug28/19	1500	JESSICA LEE	20190830	10:40			See ACTR	Yes / No

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White: BV Labs Yellow: Client

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4000 19st N.E, Calgary, Alberta Canada T2E 6P8 Tel:(403) 291-3077 Toll-free:800-563-6266 Fax:(403) 291-9468 www.bvlabs.com

Chain Of Custody Record

INVOICE TO:		Report Information		Project Information		Laboratory Use Only	
Company Name	#3269 ARCADIS Canada Inc	Company Name		Quotation #	B60372	BV Labs Job #	Bottle Order #:
Contact Name	Elliott Holden	Contact Name	Same as 1	P.O. #		B973139	591656
Address	1050 Morrison Drive Suite 201	Address		Project #	30000251	Chain Of Custody Record	Project Manager
	Ottawa ON K2H 8K7			Project Name		C#591656-09-01	Parminder Virk
Phone	(613) 721-0555 Ext: 237 Fax: (613) 721-0029	Phone	Fax:	Site #	CAM-1		
Email	Jacob.Holden@arcadis.com	Email		Sampled By	RF		

Regulatory Criteria	Special Instructions
Same as 1	Same as 1

Note: For regulated drinking water samples - please use the Drinking Water Chain of Custody Form

Samples must be kept cool (< 10°C) from time of sampling until delivery to BV Labs

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Regulated Drinking Water ? (Y / N)	Metals Field Filtered ? (Y / N)	Analysis Requested: F1-F4	Metals	PCBs	# of Bottles	Comments
1		MW-06A	Aug 27/19	1300	Soil			X	X	X	5	
2		MW-06B		1300				X	X	X	5	
3		MW-07A		1315				X	X	X	5	Received in Yellowknife
4		MW-07B		1315				X	X	X	5	By: J.MERCADO 2:00 PM
5		MW-08A		1310				X	X	X	5	AUG 29 2019
6		MW-08B		1310				X	X	X	5	Temp: ACTR
7		CI-36	Aug 27/19	1300				X	X	X	5	
8		CI-37	Aug 26/19	1115				X	X	X	5	
9		CI-38	Aug 26/19	1515				X	X	X	5	
10		CI-39	Aug 26/19	1115				X	X	X	5	

Turnaround Time (TAT) Required

Please provide advance notice for rush projects

Regular (Standard) TAT [X]
(will be applied if Rush TAT is not specified)
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: _____ Time Required: _____
Rush Confirmation Number _____ *(call lab for #)*

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Lab Use Only: Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
Ryan Fletcher	Aug 28/19	1500	JESSICA LEE	20190830	10:40			See ACTR	Yes / No

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BV LABS' STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVLABS.COM/TERMS-AND-CONDITIONS.

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: BV Labs Yellow: Client

Bureau Veritas Laboratories
4000 19st N.E, Calgary, Alberta Canada T2E 6P8 Tel:(403) 291-3077 Toll-free:800-563-6266 Fax:(403) 291-9468 www.bvlabs.com

Chain Of Custody Record

INVOICE TO:		Report Information		Project Information		Laboratory Use Only	
Company Name	#3269 ARCADIS Canada Inc	Company Name		Quotation #	B60372	BV Labs Job #	Bottle Order #:
Contact Name	Elliott Holden	Contact Name		P.O. #		B973139	591656
Address	1050 Morrison Drive Suite 201 Ottawa ON K2H 8K7	Address	Same as #1	Project #	30000251	Chain Of Custody Record	Project Manager
				Project Name			
Phone	(613) 721-0555 Ext: 237 Fax: (613) 721-0029	Phone	Fax:	Site #	CAM-1	C#591656-10-01	Parminder Virk
Email	Jacob.Holden@arcadis.com	Email		Sampled By	RE		

Bureau Veritas Laboratories
4000 19st N.E, Calgary, Alberta Canada T2E 6P8 Tel:(403) 291-3077 Toll-free:800-563-6266 Fax:(403) 291-9468 www.bvlabs.com

Chain Of Custody Record

INVOICE TO:

Company Name: #3269 ARCADIS Canada Inc
Contact Name: Elliott Holden
Address: 1050 Morrison Drive Suite 201, Ottawa ON K2H 8K7
Phone: (613) 721-0555 Ext: 237 Fax: (613) 721-0029
Email: Jacob.Holden@arcadis.com

Report Information

Company Name:
Contact Name:
Address: Same as 1
Phone: Fax:
Email:

Project Information

Quotation #: B60371
P.O. #:
Project #: 30000251
Project Name:
Site #: CAM-1
Sampled By: RE

Laboratory Use Only

BV Labs Job #: B973139
Bottle Order #: 591656
Chain Of Custody Record: C#591656-11-01
Project Manager: Parminder Virk

Regulatory Criteria: Same as #1

Special Instructions: Same as #1

Note: For regulated drinking water samples - please use the Drinking Water Chain of Custody Form

Samples must be kept cool (< 10°C) from time of sampling until delivery to BV Labs

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Regulated Drinking Water ? (Y / N)	Metals Field Filtered ? (Y / N)	F1-F4	Metals	# of Bottles	Comments
1		Trip Blank	Aug26/19	—	GW		N	X	X	5	
2		TUB-EB	Aug26/19	900	GW		N	X	X	5	
3		SH-BL	Aug26/19	915	GW		N	X	X	5	
4		MW-03	Aug27/19	1950	GW		N	X	X	5	
5		MW-04	Aug27/19	1900	GW		N	X	X	5	
6		MW-09	Aug27/19	1915	GW		N	X	X	5	
7		MW-10	Aug27/19	1930	GW		N	X	X	5	
8											
9											
10											

Not Filtered
Not Preserved

Received in Yellowknife
By: [signature]
2:30PM
AUG 29 2019

Temp: A/C / TR /

Turnaround Time (TAT) Required

Please provide advance notice for rush projects

Regular (Standard) TAT
(will be applied if Rush TAT is not specified)
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: Time Required:
Rush Confirmation Number: *(call lab for #)*

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Lab Use Only: Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
Ryan Fletcher	Aug29/19	1500	JESSICA LEE	2019/08/30	10:40		☐	See ACTR	☐ Yes ☐ No

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BV LABS' STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVLABS.COM/TERMS-AND-CONDITIONS.

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: BV Labs Yellow: Client

APPENDIX C3

BV Laboratory Accreditation

CERTIFICATE OF ACCREDITATION

Standards Council of Canada
Conseil canadien des normes

CERTIFICAT D'ACCRÉDITATION

Bureau Veritas Canada (2019) Inc.

Petroleum Technology Center

6744 - 50 Street NW, Edmonton, AB, T6B 3M9 and Edmonton Environmental,
9331 48 Street NW, Edmonton, AB, T6B 2R4, Canada

having been assessed by the Standards Council of Canada (SCC) and found to conform with the requirements of ISO/IEC 17025:2017 and the conditions for accreditation established by SCC is hereby recognized as an

ayant fait l'objet d'une évaluation du Conseil canadien des normes (CCN), et ayant été trouvé conforme aux exigences énoncées dans ISO/IEC 17025:2017 et aux conditions d'accréditation établies par le CCN, est de ce fait reconnu comme étant un

ACCREDITED TESTING LABORATORY

LABORATOIRE D'ESSAIS ACCRÉDITÉ

for the specific tests or types of tests listed in the scope of accreditation approved by SCC and found on the SCC website at www.scc.ca.

pour les essais ou types d'essais énumérés dans la portée d'accréditation approuvée par le CCN et figurant dans le site Web du CCN au www.ccn.ca.

Accredited laboratory number: / Numéro de laboratoire accrédité : 160

SCC file number: / Dossier du CCN nº : 15229

Initial accreditation date: / Date de la première accréditation : 1995-03-06

.....

Vice-President – Accreditation Services / Vice-président – Services d'accréditation

Issued on: / Délivré le : 2019-06-07

The validity of this certificate, including the date of last re-accreditation and its expiry can be confirmed by the accompanying Scope of Accreditation document in the Directory of Accredited Laboratories on the SCC website at www.scc.ca.

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017. The accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF communiqué dated April 2017).

Pour vérifier la validité du présent certificat, y compris la date de la dernière réaccréditation et la date d'expiration du certificat, consulter la portée d'accréditation qui se trouve dans le répertoire des laboratoires accrédités dans le site Web du CCN au www.ccn.ca.

Ce laboratoire est accrédité conformément à la Norme internationale reconnue ISO/IEC 17025:2017. Cette accréditation démontre la compétence technique d'un organisme pour une portée définie et l'exploitation d'un système de management de la qualité de laboratoire (cf. communiqué conjoint ISO-ILAC-IAF date de avril 2017).

This certificate is the property of the Standards Council of Canada (SCC) and must be returned on request; reproduction is prohibited except on written approval of SCC.
Ce certificat est la propriété du Conseil canadien des normes (CCN) et doit lui être remis sur demande; toute reproduction est interdite sans l'autorisation écrite du CCN.

Canada

CERTIFICATE OF ACCREDITATION

Standards Council of Canada
Conseil canadien des normes

CERTIFICAT D'ACCRÉDITATION

Bureau Veritas Canada (2019) Inc.

Calgary Laboratory

2021 – 41st Avenue, N.E., Calgary, Alberta, T2E 6P2, Canada

having been assessed by the Standards Council of Canada (SCC) and found to conform with the requirements of ISO/IEC 17025:2005 and the conditions for accreditation established by SCC is hereby recognized as an

ACCREDITED TESTING LABORATORY

for the specific tests or types of tests listed in the scope of accreditation approved by SCC and found on the SCC website at www.scc.ca.

ayant fait l'objet d'une évaluation du Conseil canadien des normes (CCN), et ayant été trouvé conforme aux exigences énoncées dans ISO/IEC 17025:2005 et aux conditions d'accréditation établies par le CCN, est de ce fait reconnu comme étant un

LABORATOIRE D'ESSAIS ACCRÉDITÉ

pour les essais ou types d'essais énumérés dans la portée d'accréditation approuvée par le CCN et figurant dans le site Web du CCN au www.ccn.ca.

Accredited laboratory number: / Numéro de laboratoire accrédité : 836

SCC file number: / Dossier du CCN nº : 151043

Initial accreditation date: / Date de la première accréditation : 2016-08-30

.....

Vice-President – Accreditation Services / Vice-président – Services d'accréditation

Issued on: / Délivré le : 2019-06-07

The validity of this certificate, including the date of last re-accreditation and its expiry can be confirmed by the accompanying Scope of Accreditation document in the Directory of Accredited Laboratories on the SCC website at www.scc.ca.

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. The accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF communiqué dated April 2017).

Pour vérifier la validité du présent certificat, y compris la date de la dernière réaccréditation et la date d'expiration du certificat, consulter la portée d'accréditation qui se trouve dans le répertoire des laboratoires accrédités dans le site Web du CCN au www.ccn.ca.

Ce laboratoire est accrédité conformément à la Norme internationale reconnue ISO/IEC 17025:2005. Cette accréditation démontre la compétence technique d'un organisme pour une portée définie et l'exploitation d'un système de management de la qualité de laboratoire (cf. communiqué conjoint ISO-ILAC-IAF date de avril 2017).

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Canada

APPENDIX D

Soil and Groundwater Trend Analysis Graphs

APPENDIX D1

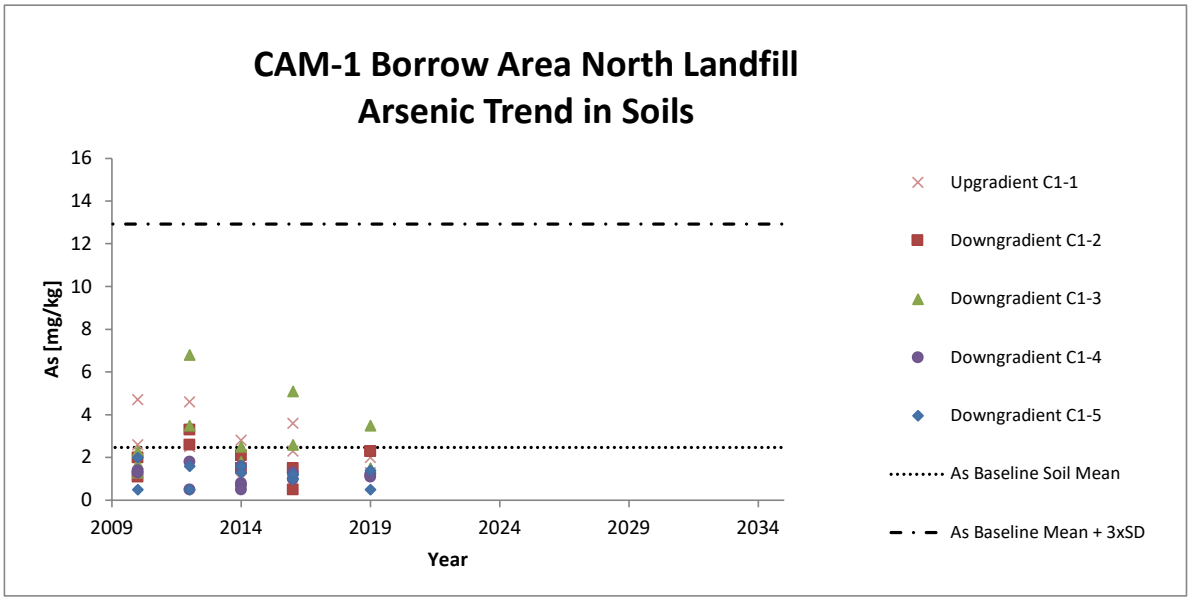
CAM-1 Borrow Area North Landfill – Trends in Soil Inorganics, PCBs and PHCs

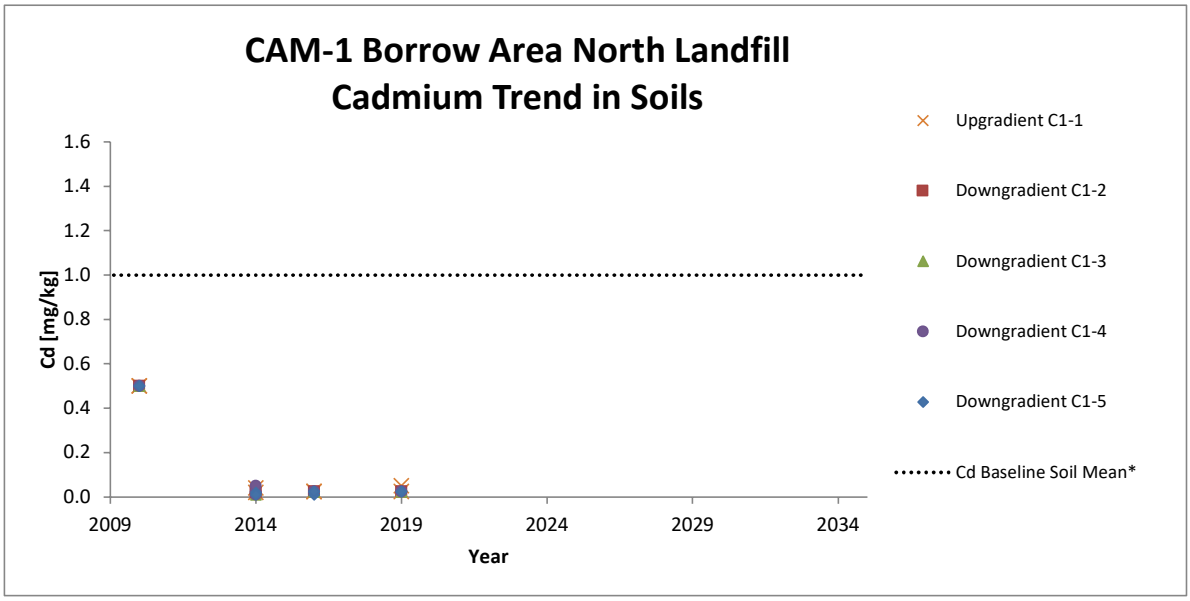
CAM-1 Borrow Area North Landfill Trends in Soil Inorganics, PCBs and PHCs

Link To: Table of Contents

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.





* Cd baseline arithmetic mean is equal to the baseline detection limit

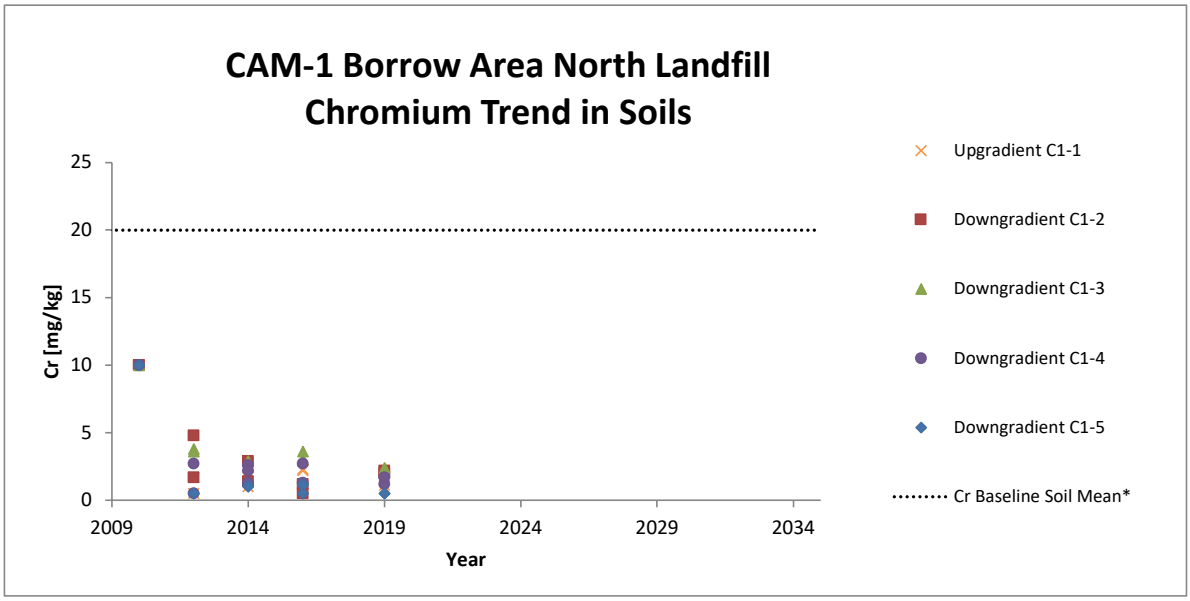
* Cd baseline standard deviation = 0

CAM-1 Borrow Area North Landfill Trends in Soil Inorganics, PCBs and PHCs

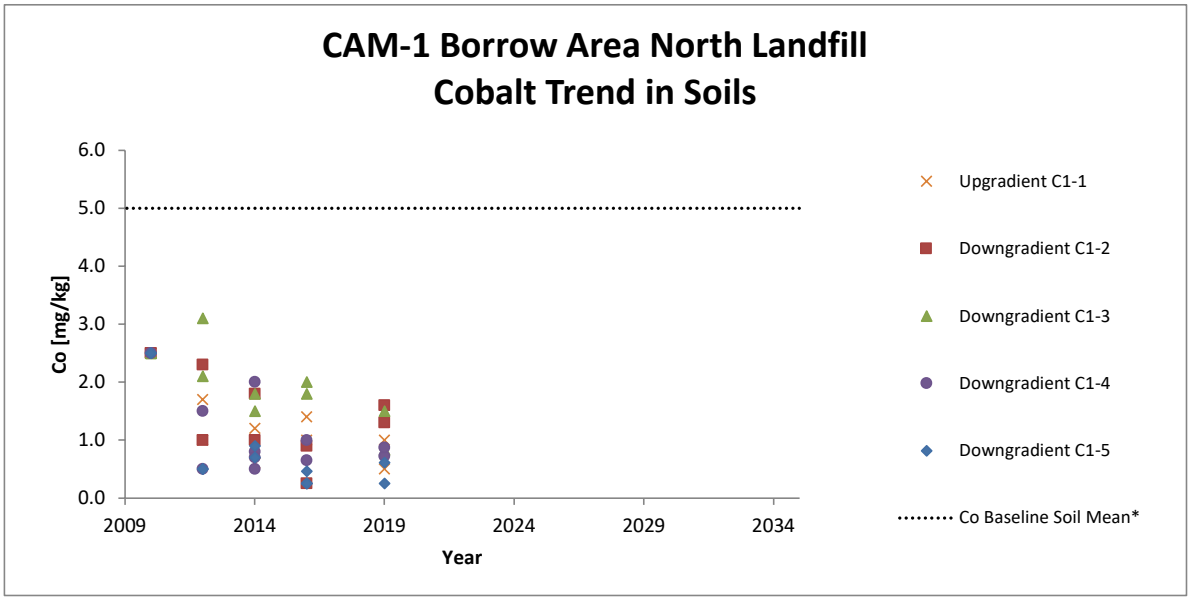
Link To: Table of Contents

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



* Cr baseline arithmetic mean is equal to the baseline detection limit
* Cr baseline standard deviation = 0



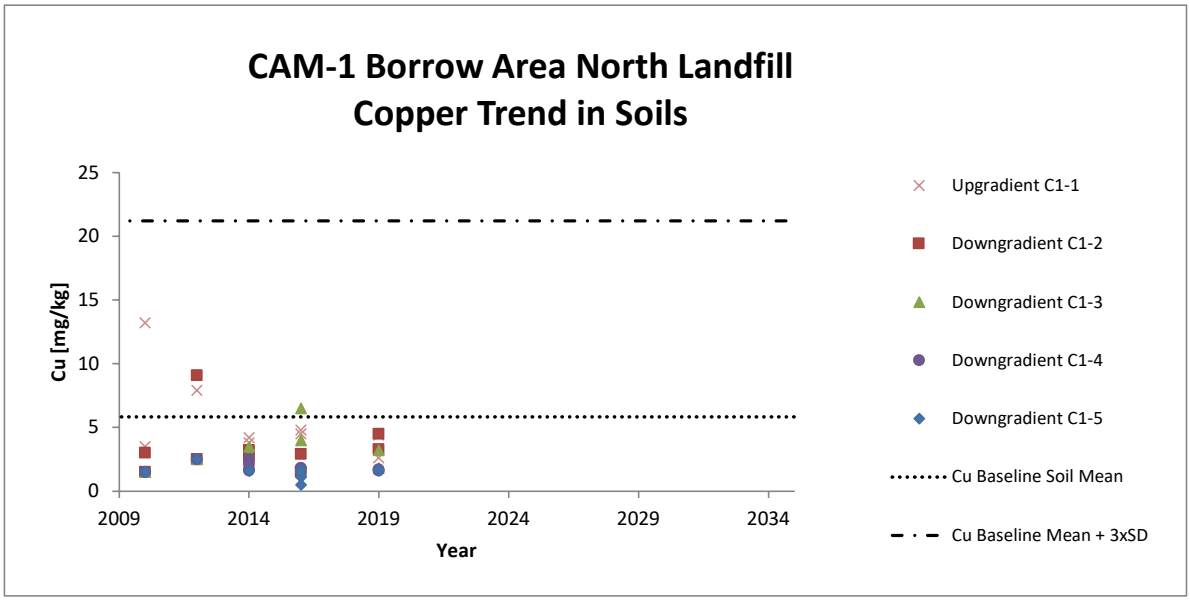
* Co baseline arithmetic mean is equal to the baseline detection limit
* Co baseline standard deviation = 0

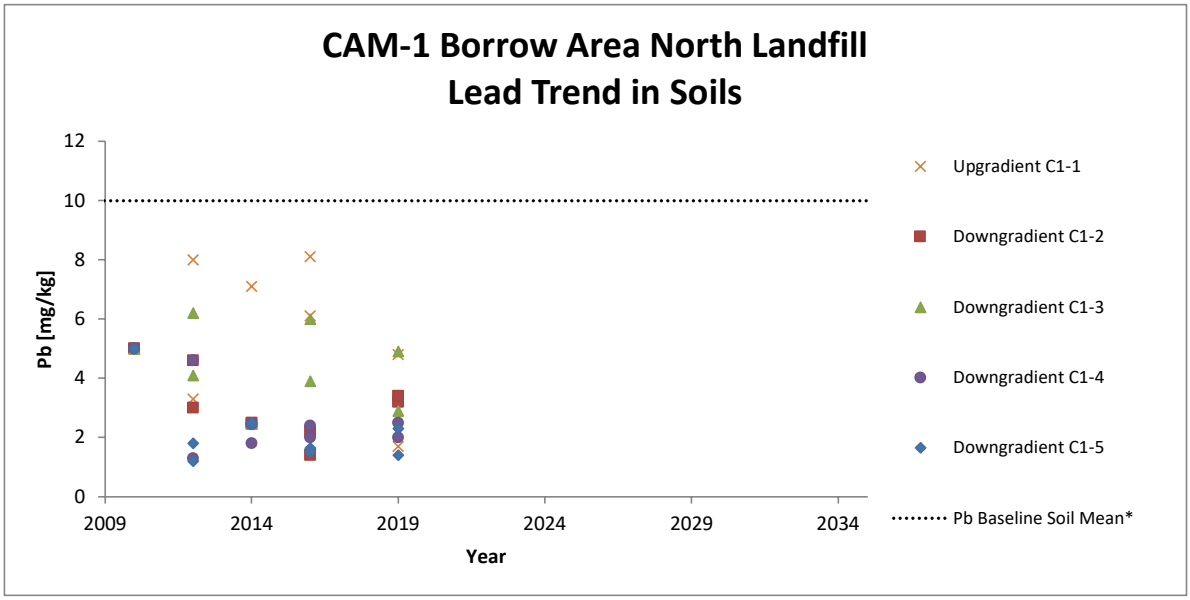
CAM-1 Borrow Area North Landfill Trends in Soil Inorganics, PCBs and PHCs

Link To: Table of Contents

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

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* Pb baseline arithmetic mean is equal to the baseline detection limit

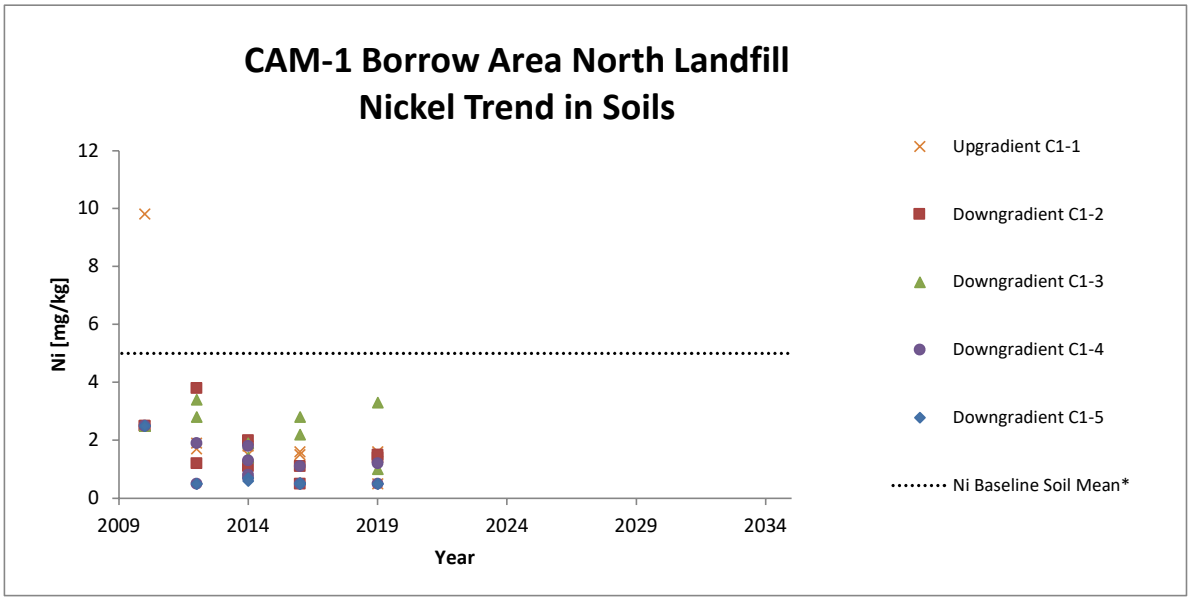
* Pb baseline standard deviation = 0

CAM-1 Borrow Area North Landfill Trends in Soil Inorganics, PCBs and PHCs

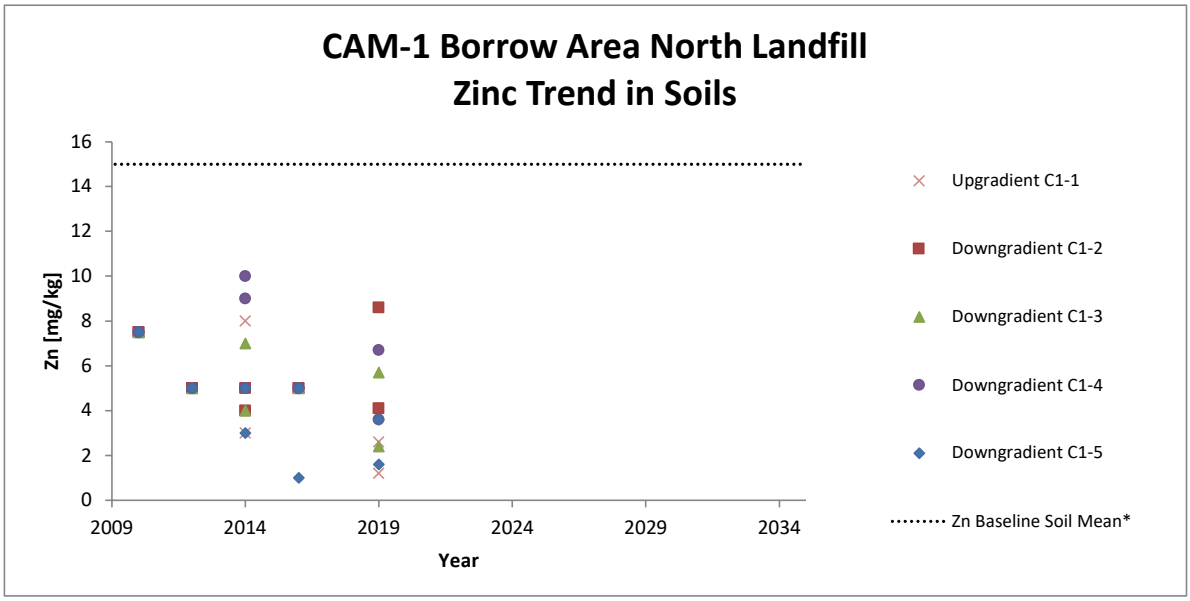
Link To: Table of Contents

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



* Ni baseline arithmetic mean is equal to the baseline detection limit
* Ni baseline standard deviation = 0



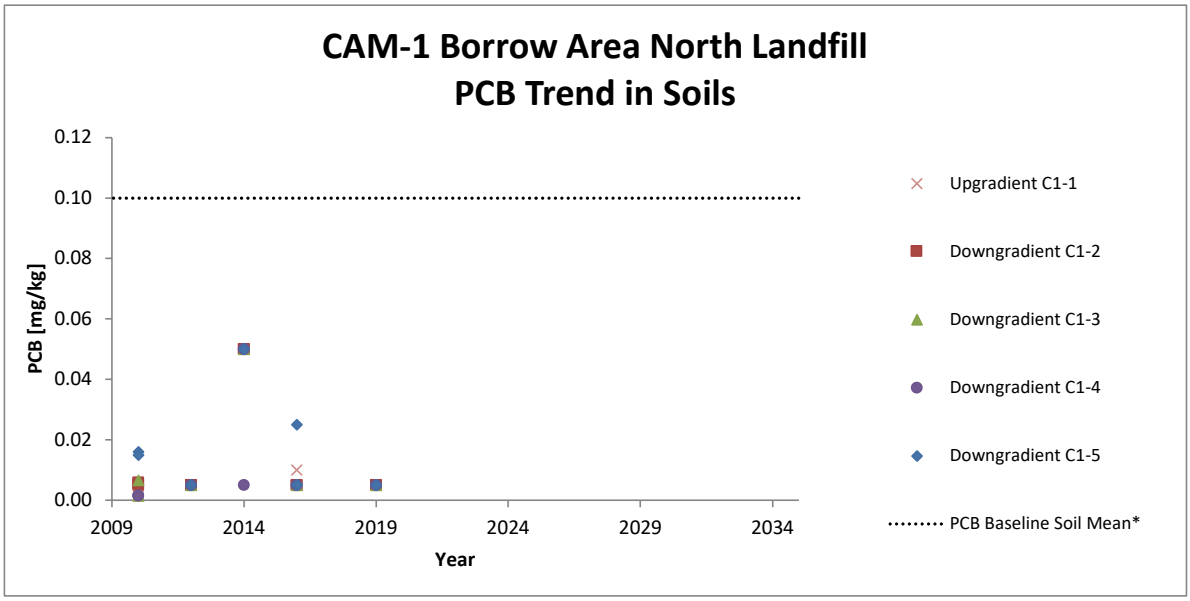
* Zn baseline arithmetic mean is equal to the baseline detection limit
* Zn baseline standard deviation = 0

CAM-1 Borrow Area North Landfill Trends in Soil Inorganics, PCBs and PHCs

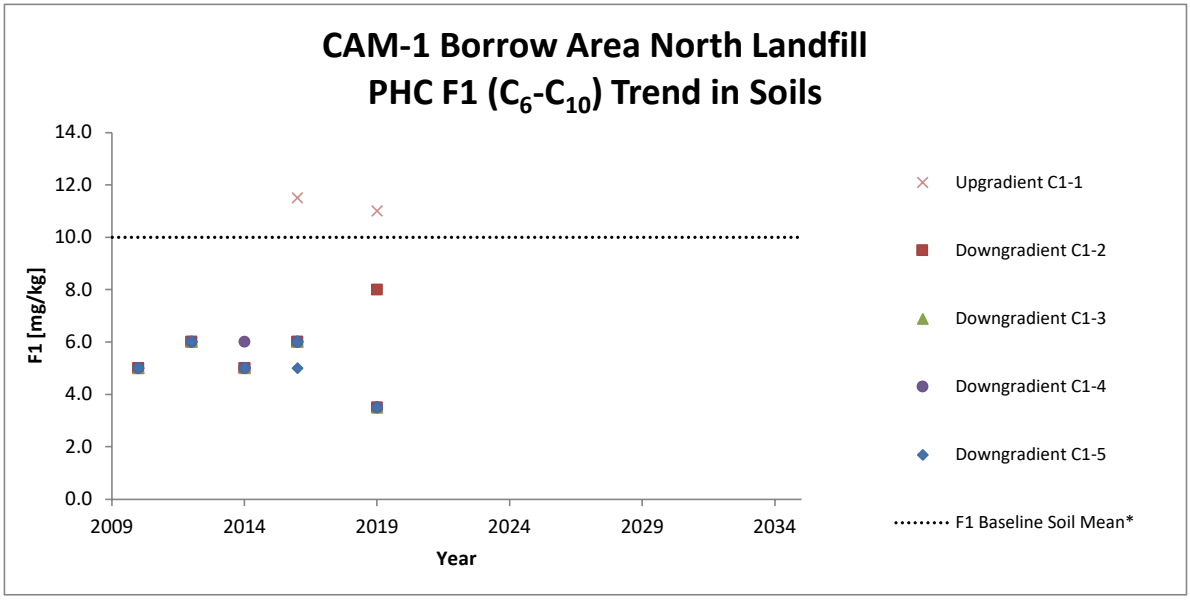
Link To: Table of Contents

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



* PCB baseline arithmetic mean is equal to the baseline detection limit
* PCB baseline standard deviation = 0



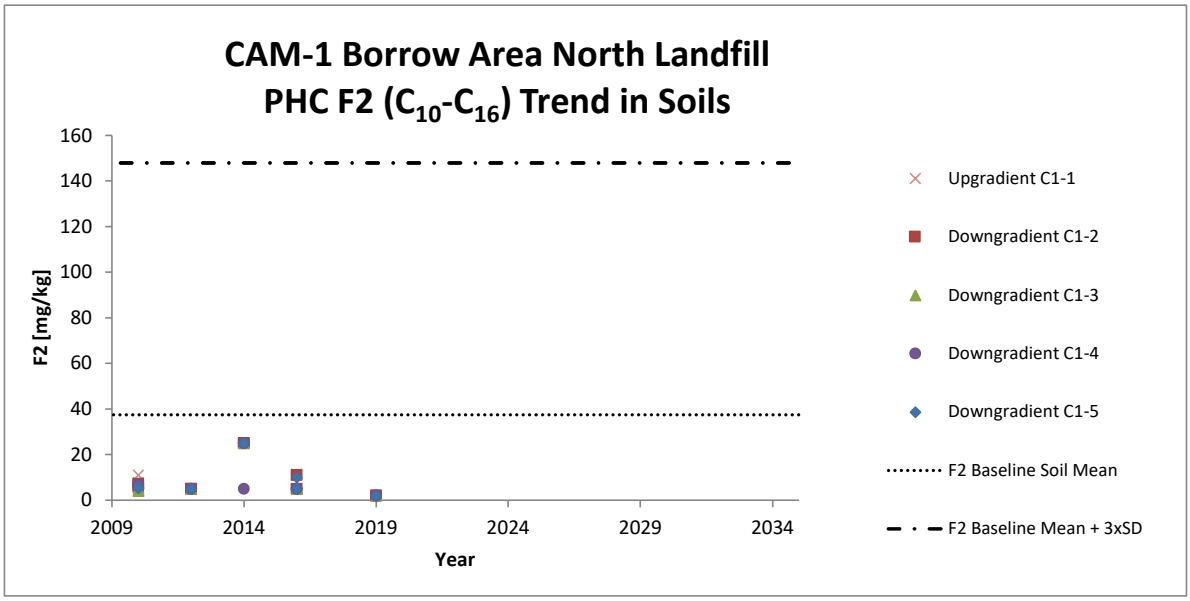
* F1 baseline arithmetic mean is equal to the baseline detection limit
* F1 baseline standard deviation = 0

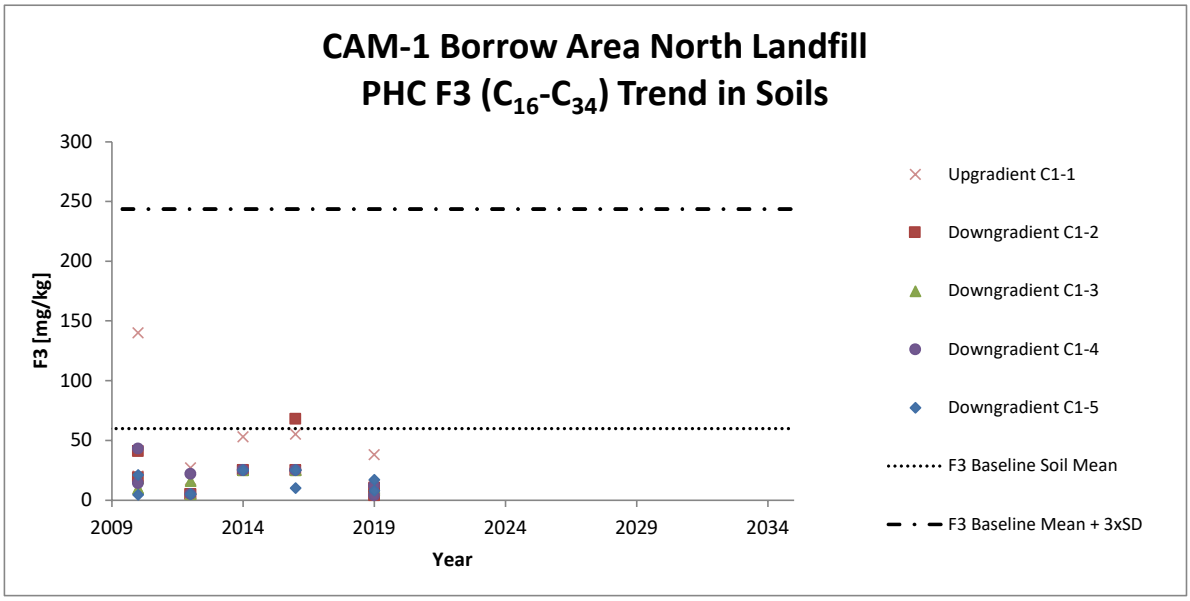
CAM-1 Borrow Area North Landfill Trends in Soil Inorganics, PCBs and PHCs

Link To: Table of Contents

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



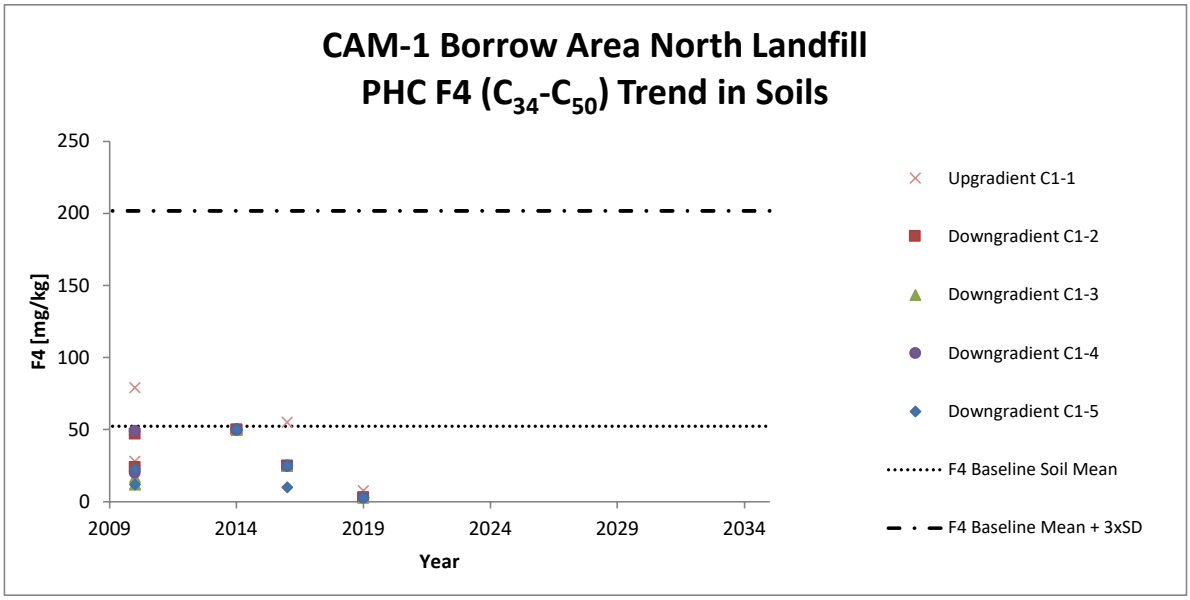


CAM-1 Borrow Area North Landfill Trends in Soil Inorganics, PCBs and PHCs

Link To: Table of Contents

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



APPENDIX D2

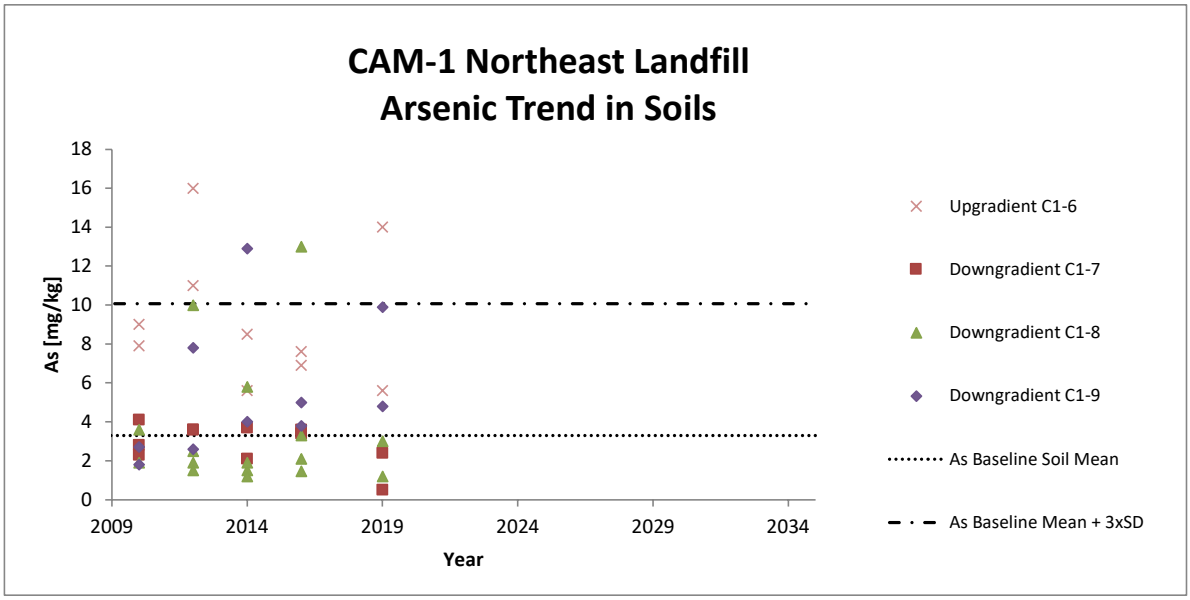
CAM-1 Northeast Landfill – Trends in Soil Inorganics, PCBs and PHCs

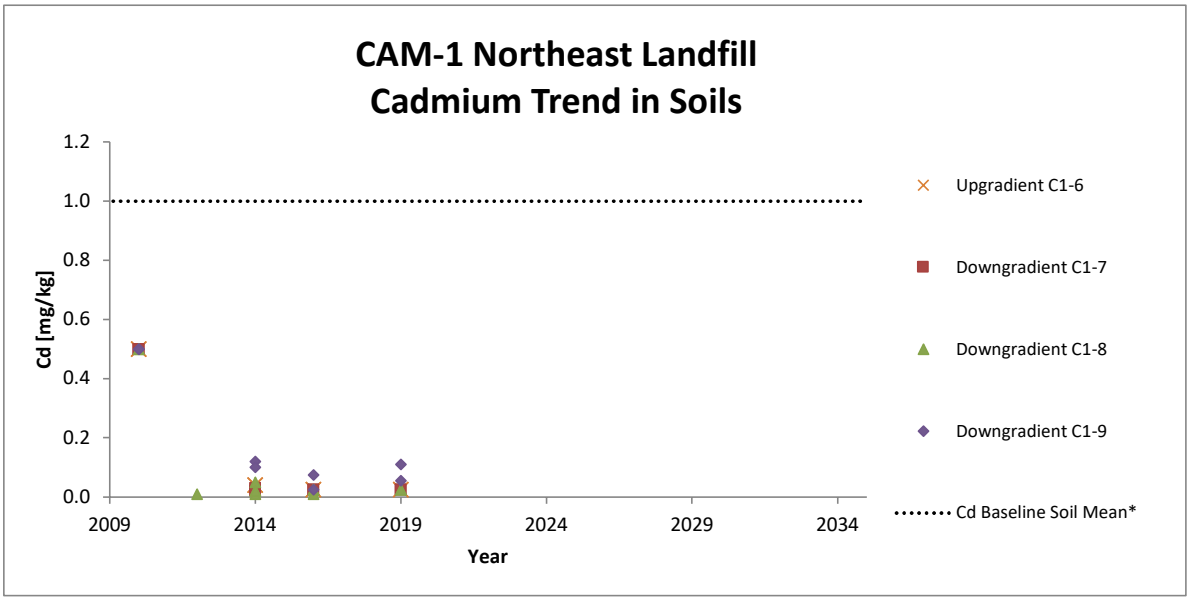
CAM-1 Northeast Landfill Trends in Soil Inorganics, PCBs and PHCs

Link To: Table of Contents

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.





* Cd baseline arithmetic mean is equal to the baseline detection limit

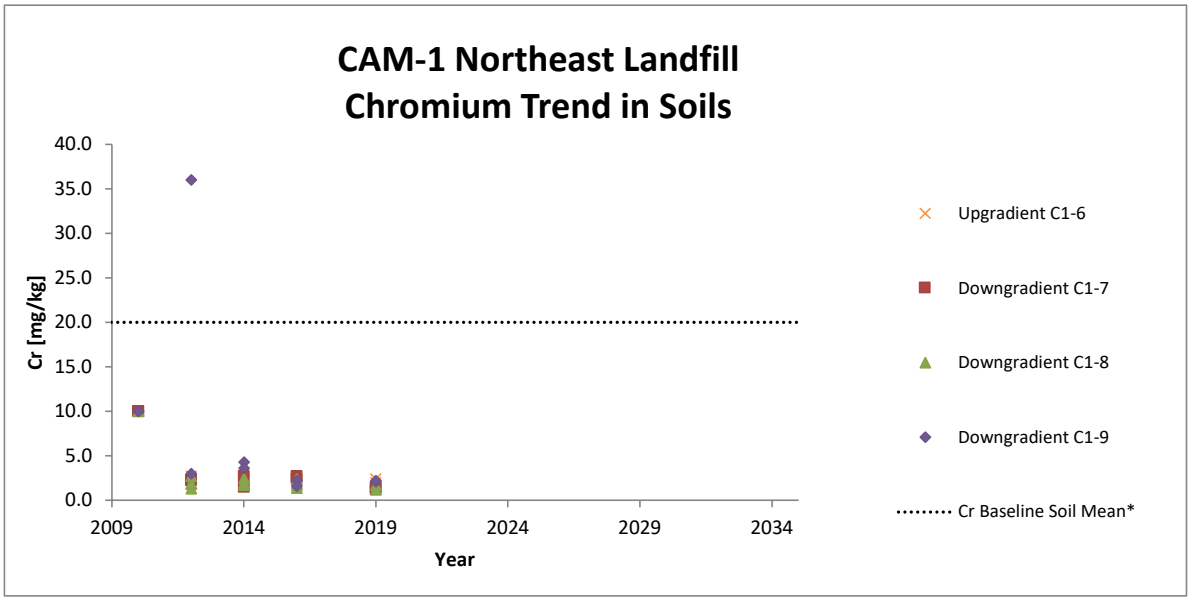
* Cd baseline standard deviation = 0

CAM-1 Northeast Landfill Trends in Soil Inorganics, PCBs and PHCs

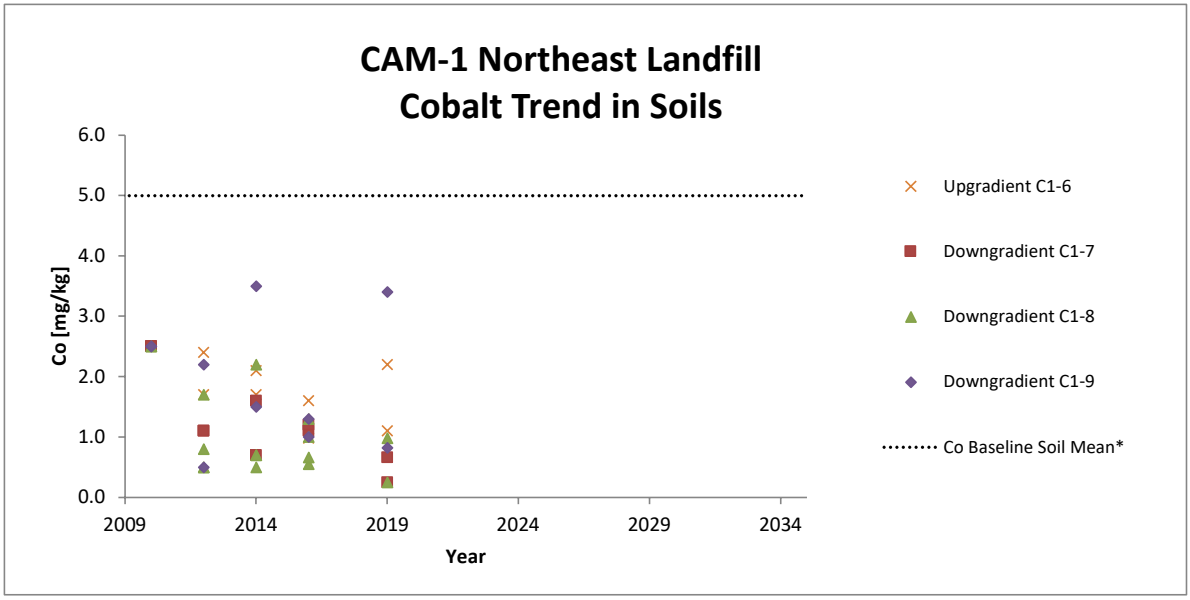
Link To: Table of Contents

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Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



* Cr baseline arithmetic mean is equal to the baseline detection limit
* Cr baseline standard deviation = 0



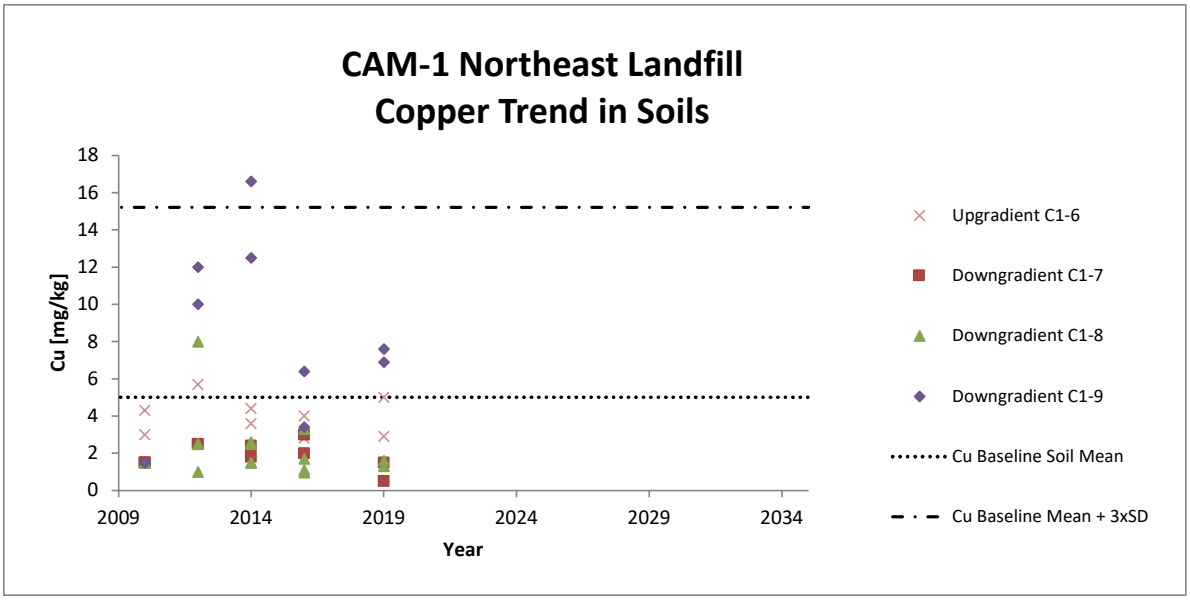
* Co baseline arithmetic mean is equal to the baseline detection limit
* Co baseline standard deviation = 0

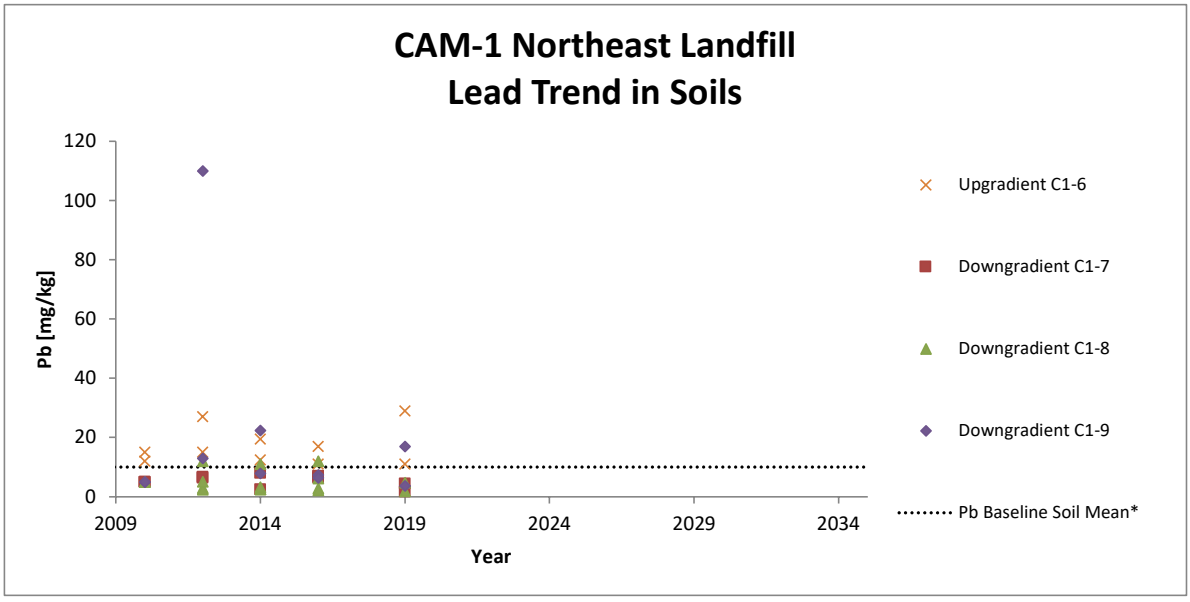
CAM-1 Northeast Landfill Trends in Soil Inorganics, PCBs and PHCs

Link To: Table of Contents

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.





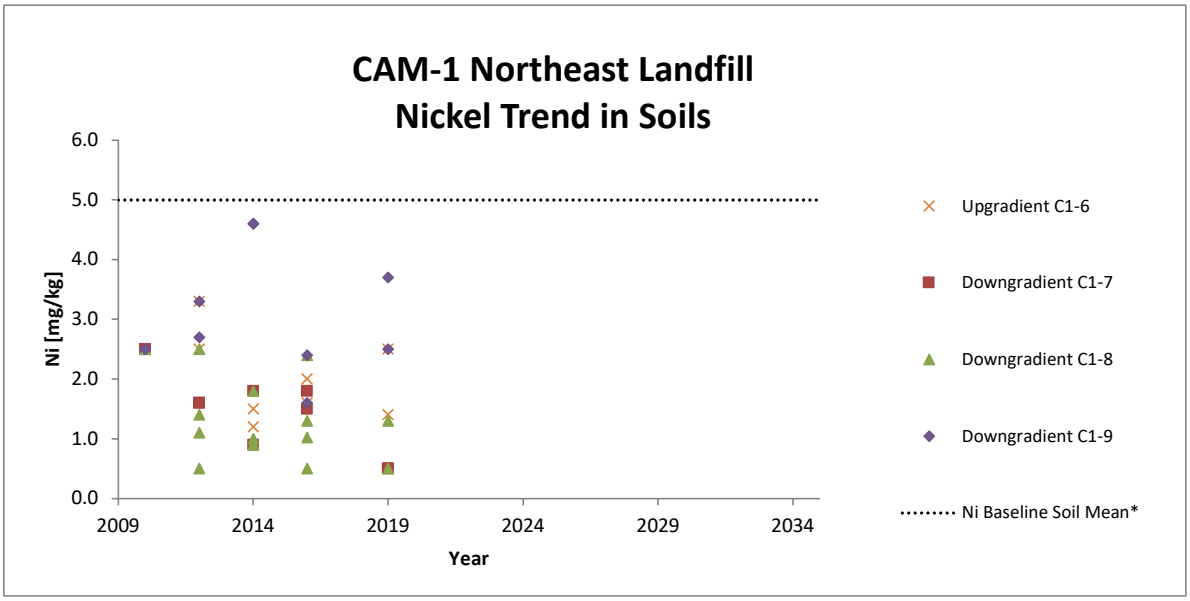
* Pb baseline arithmetic mean is equal to the baseline detection limit
* Pb baseline standard deviation = 0

CAM-1 Northeast Landfill Trends in Soil Inorganics, PCBs and PHCs

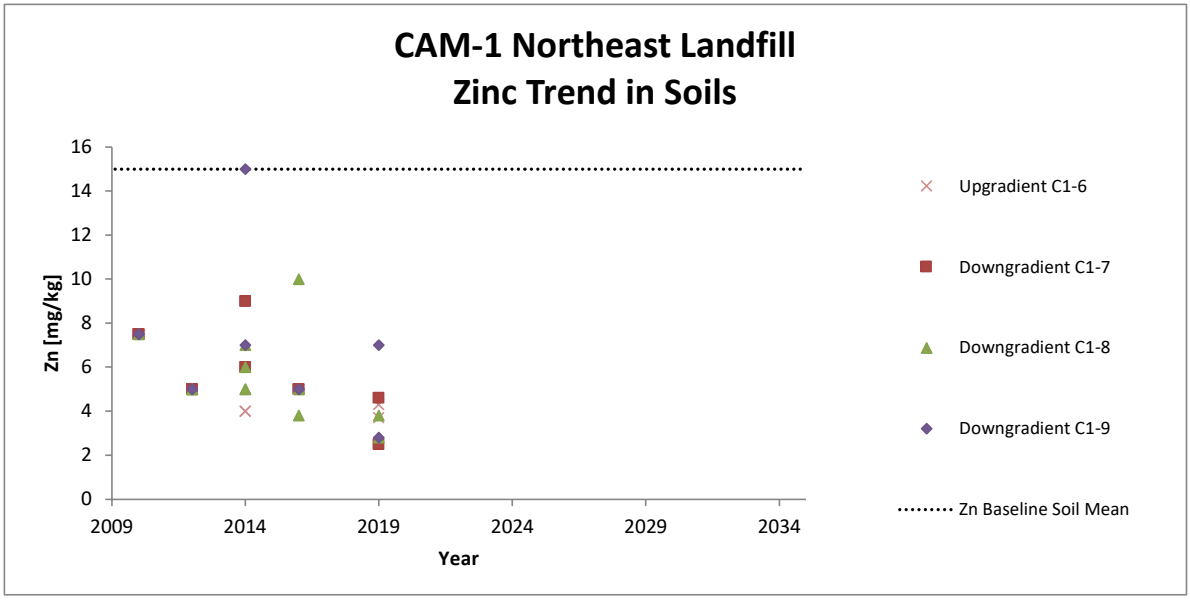
Link To: Table of Contents

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



* Ni baseline arithmetic mean is equal to the baseline detection limit
* Ni baseline standard deviation = 0



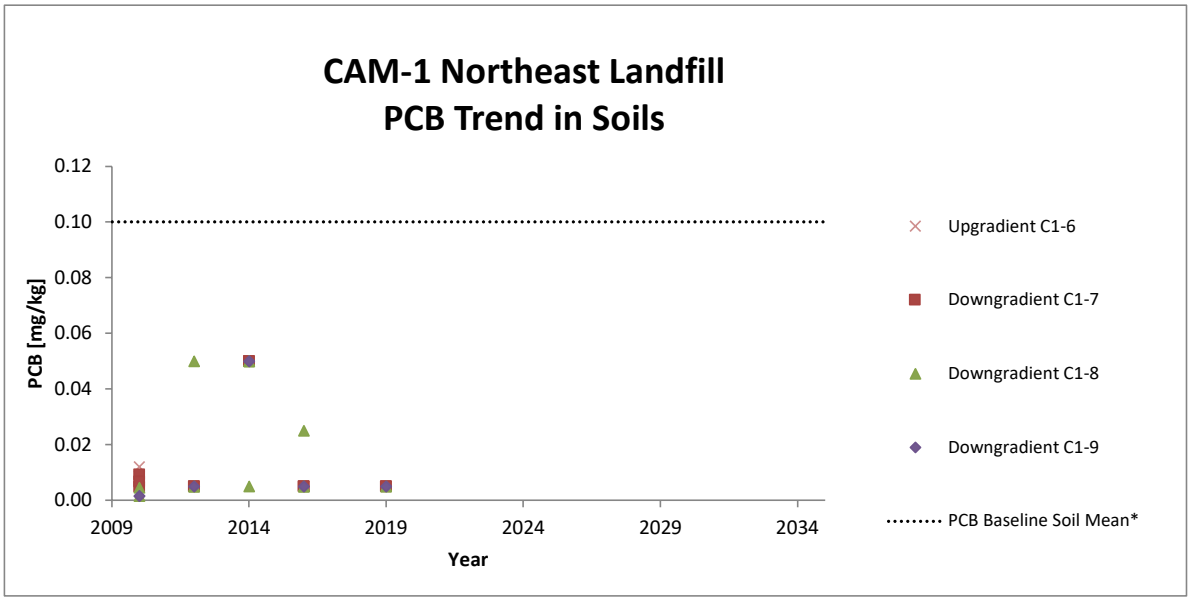
* Zn baseline arithmetic mean is equal to the baseline detection limit
* Zn baseline standard deviation = 0

CAM-1 Northeast Landfill Trends in Soil Inorganics, PCBs and PHCs

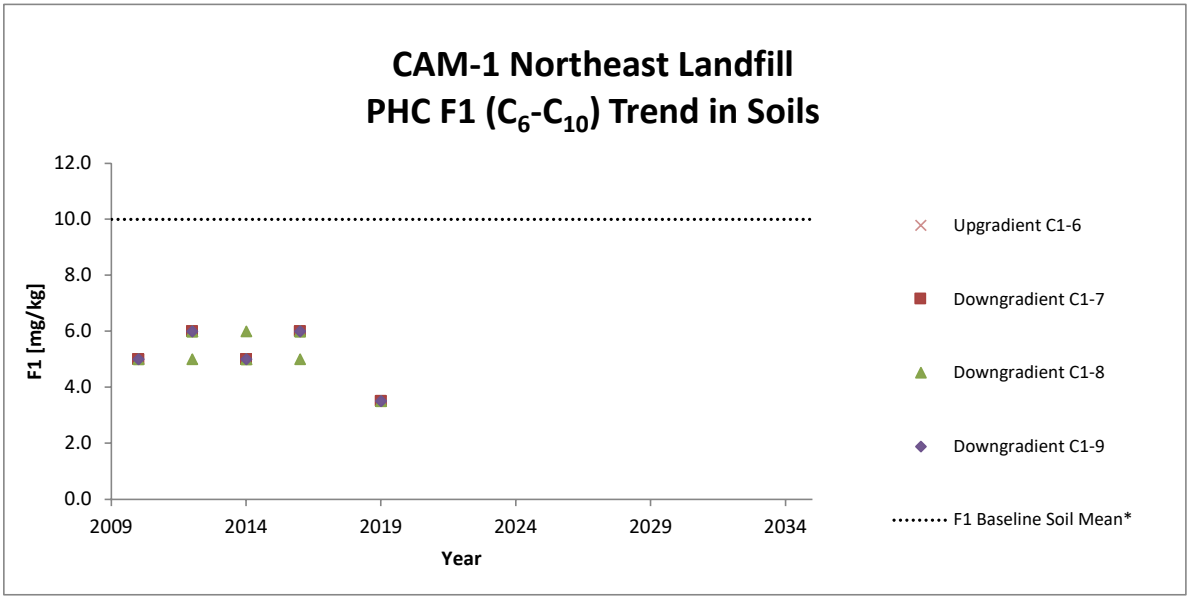
Link To: Table of Contents

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



* PCB baseline arithmetic mean is equal to the baseline detection limit
* PCB baseline standard deviation = 0



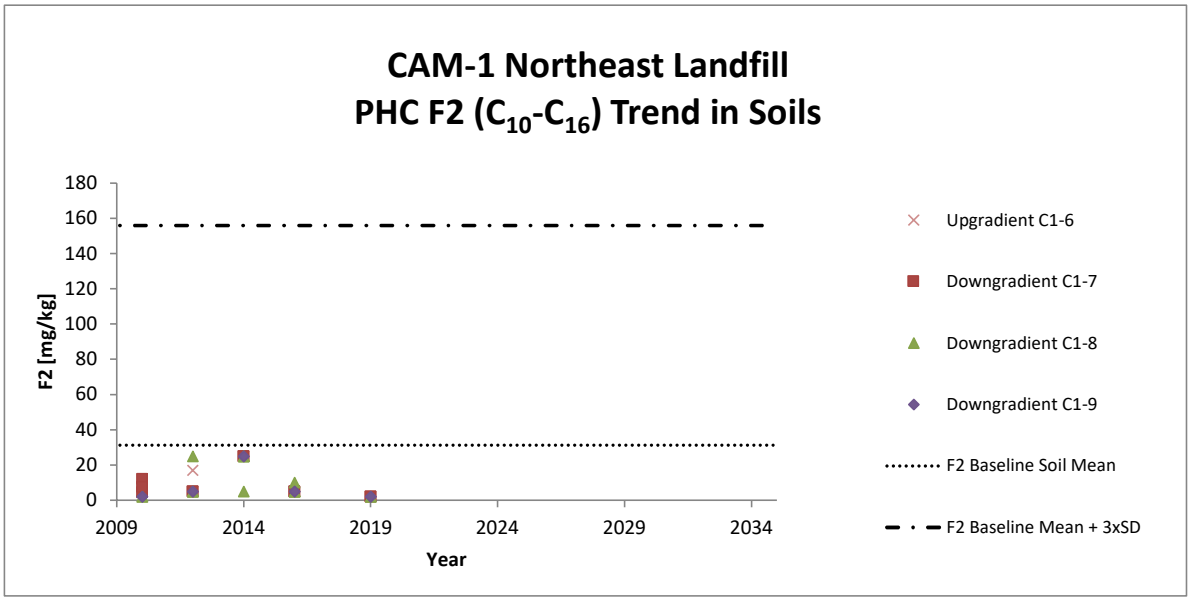
* F1 baseline arithmetic mean is equal to the baseline detection limit
* F1 baseline standard deviation = 0

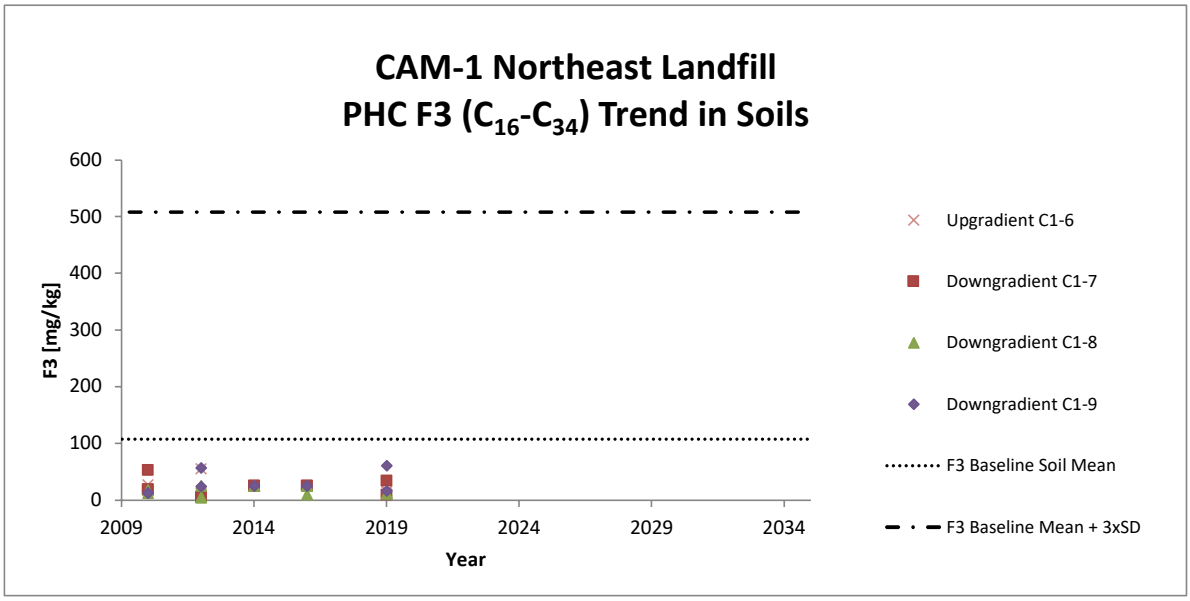
CAM-1 Northeast Landfill Trends in Soil Inorganics, PCBs and PHCs

Link To: Table of Contents

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



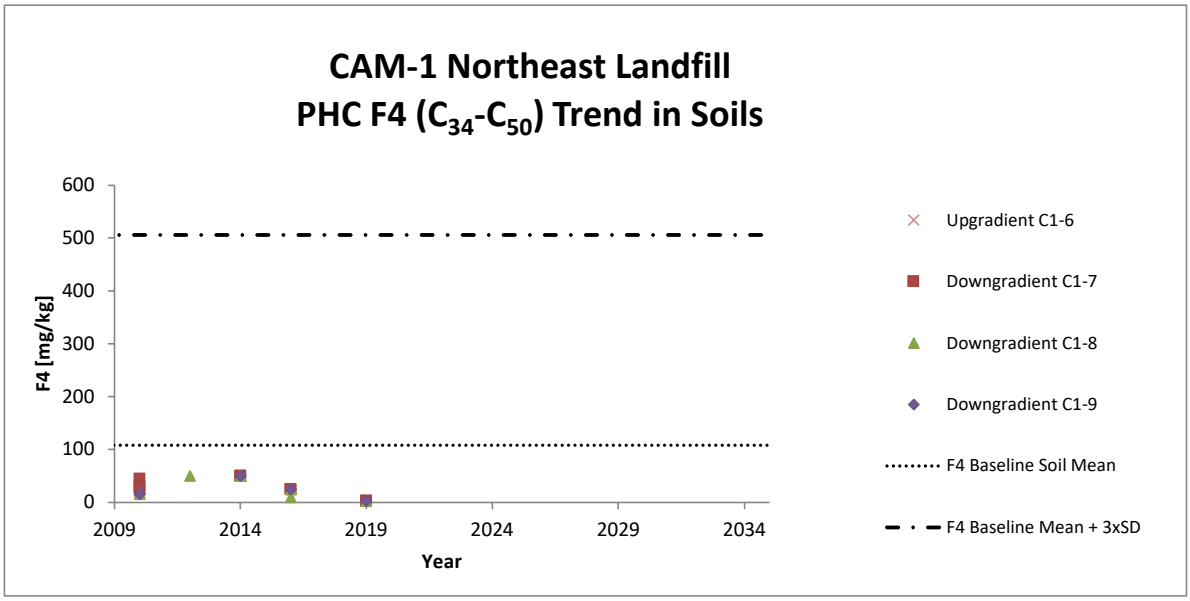


CAM-1 Northeast Landfill Trends in Soil Inorganics, PCBs and PHCs

Link To: Table of Contents

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



APPENDIX D3

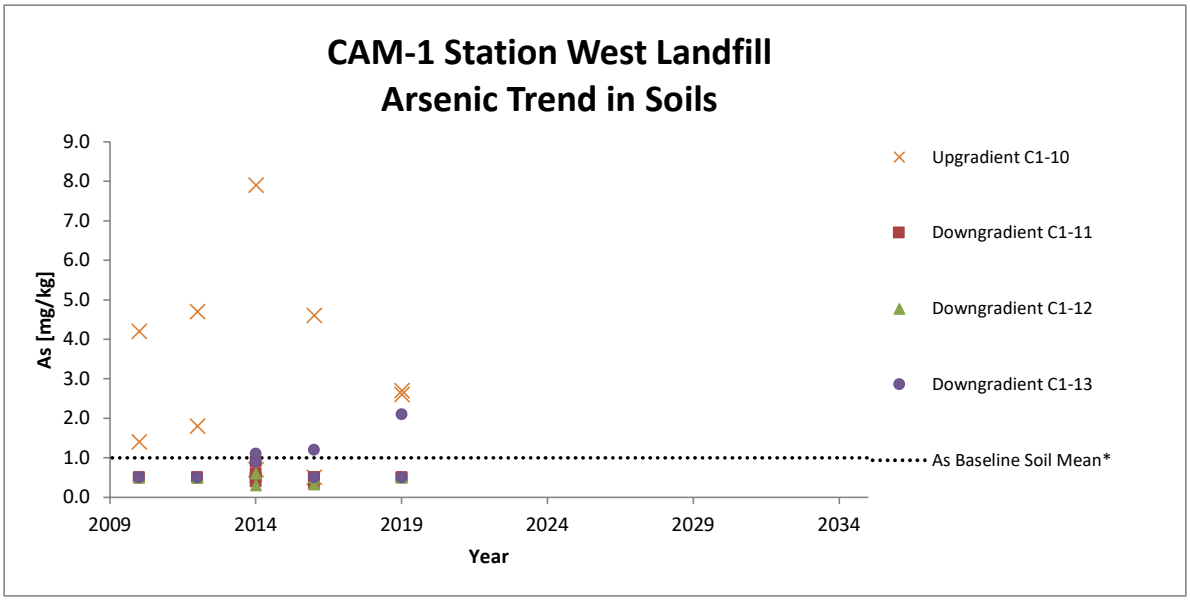
CAM-1 Station West Landfill – Trends in Soil Inorganics, PCBs and PHCs

CAM-1 Station West Landfill Trends in Soil Inorganics, PCBs and PHCs

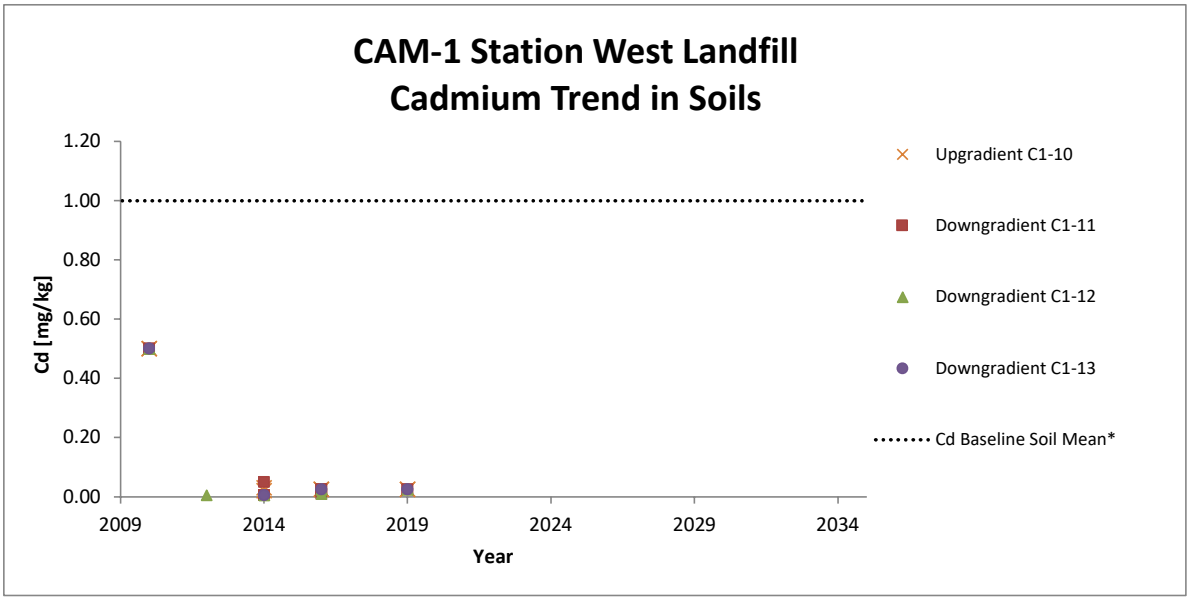
Link To: Table of Contents

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



* As baseline arithmetic mean is equal to the baseline detection limit
* As baseline standard deviation = 0



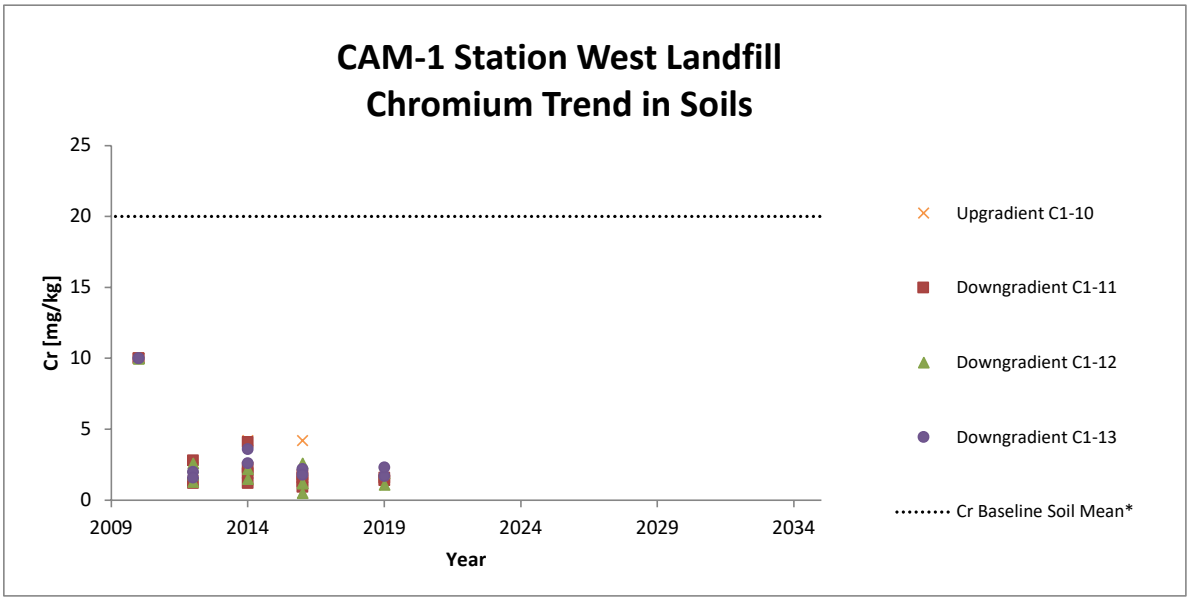
* Cd baseline arithmetic mean is equal to the baseline detection limit
* Cd baseline standard deviation = 0

CAM-1 Station West Landfill Trends in Soil Inorganics, PCBs and PHCs

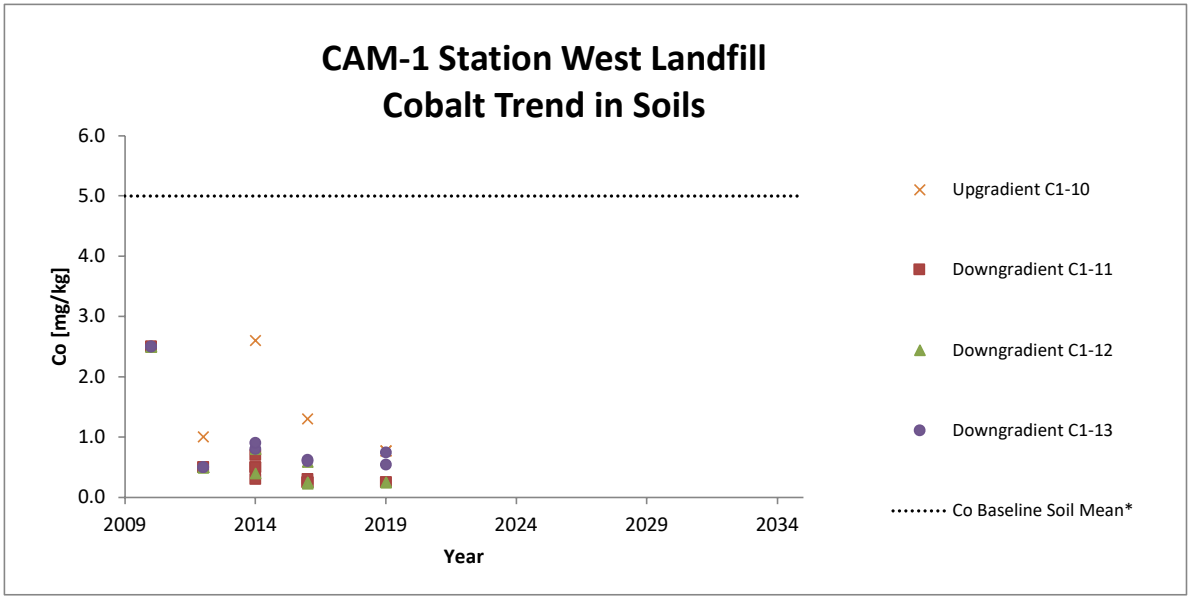
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Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



* Cr baseline arithmetic mean is equal to the baseline detection limit
* Cr baseline standard deviation = 0



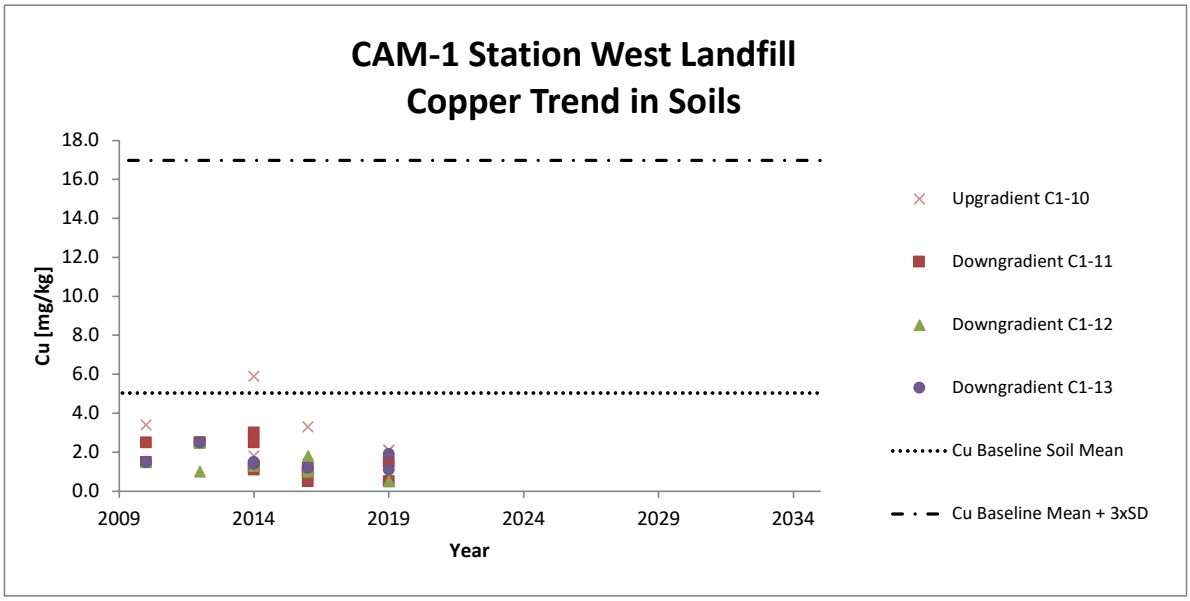
* Co baseline arithmetic mean is equal to the baseline detection limit
* Co baseline standard deviation = 0

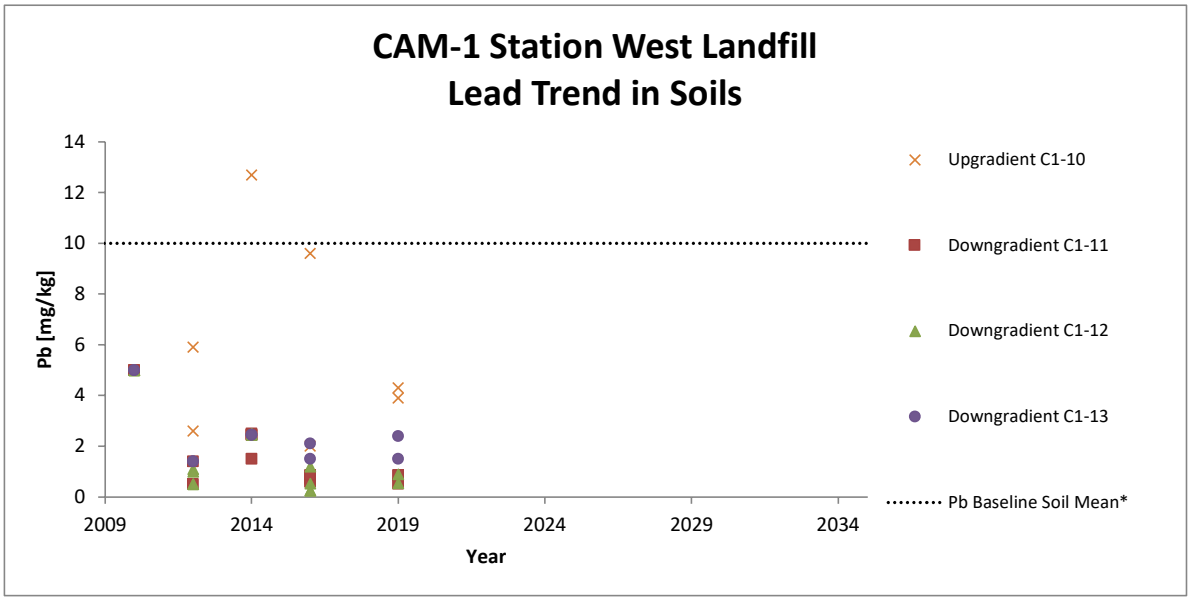
CAM-1 Station West Landfill Trends in Soil Inorganics, PCBs and PHCs

Link To: Table of Contents

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.





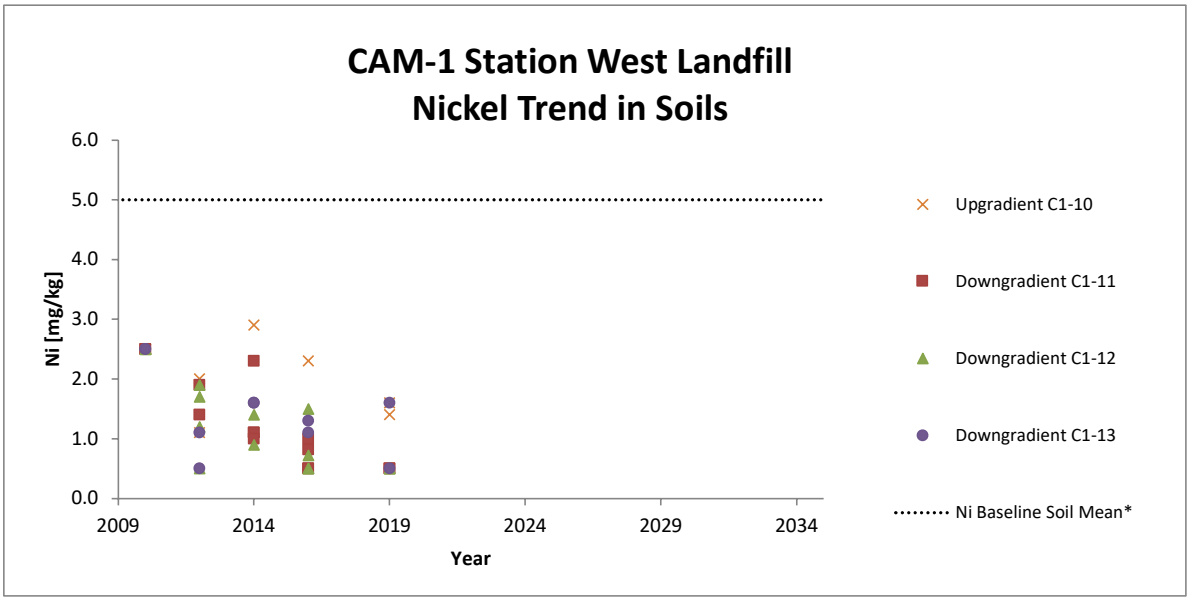
* Pb baseline arithmetic mean is equal to the baseline detection limit
* Pb baseline standard deviation = 0

CAM-1 Station West Landfill Trends in Soil Inorganics, PCBs and PHCs

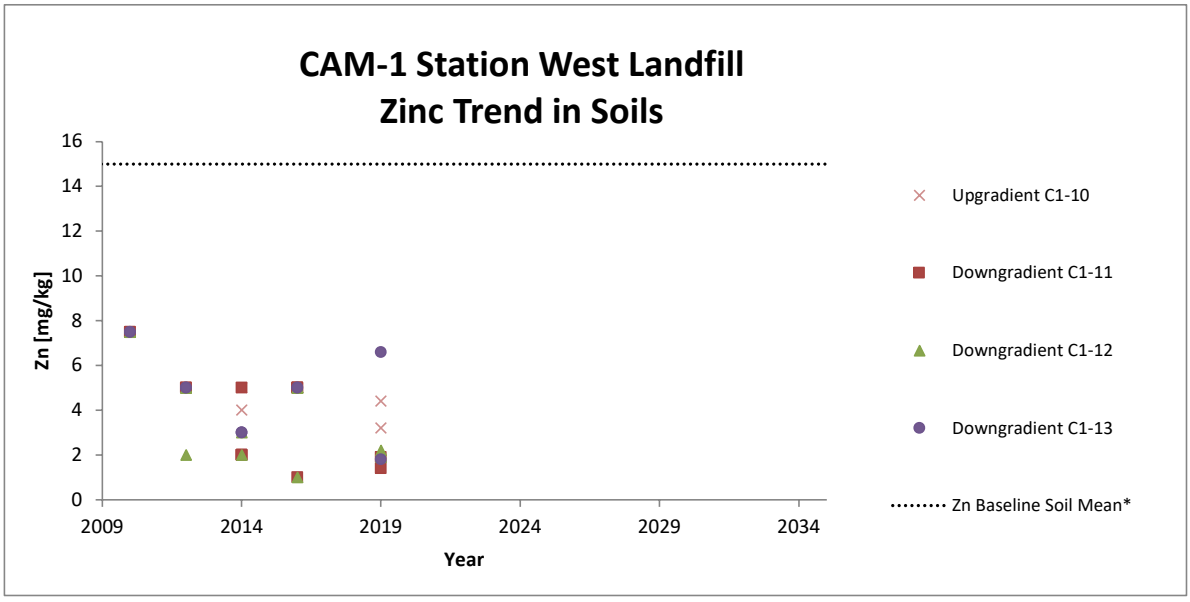
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Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



* Ni baseline arithmetic mean is equal to the baseline detection limit
* Ni baseline standard deviation = 0



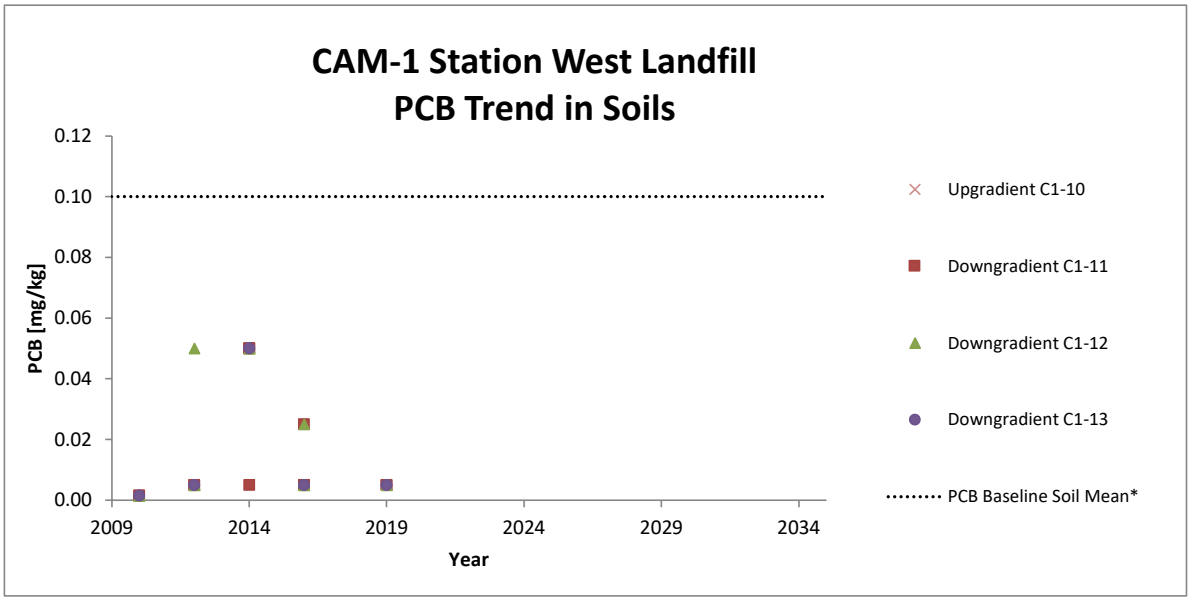
* Zn baseline arithmetic mean is equal to the baseline detection limit
* Zn baseline standard deviation = 0

CAM-1 Station West Landfill Trends in Soil Inorganics, PCBs and PHCs

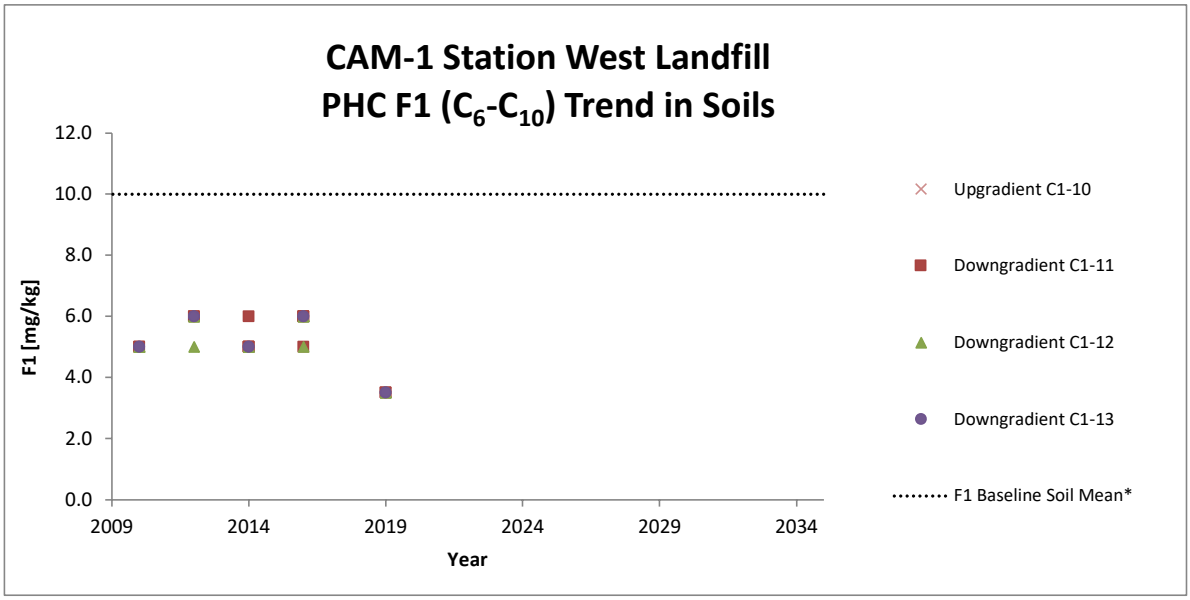
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Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



* PCB baseline arithmetic mean is equal to the baseline detection limit
* PCB baseline standard deviation = 0



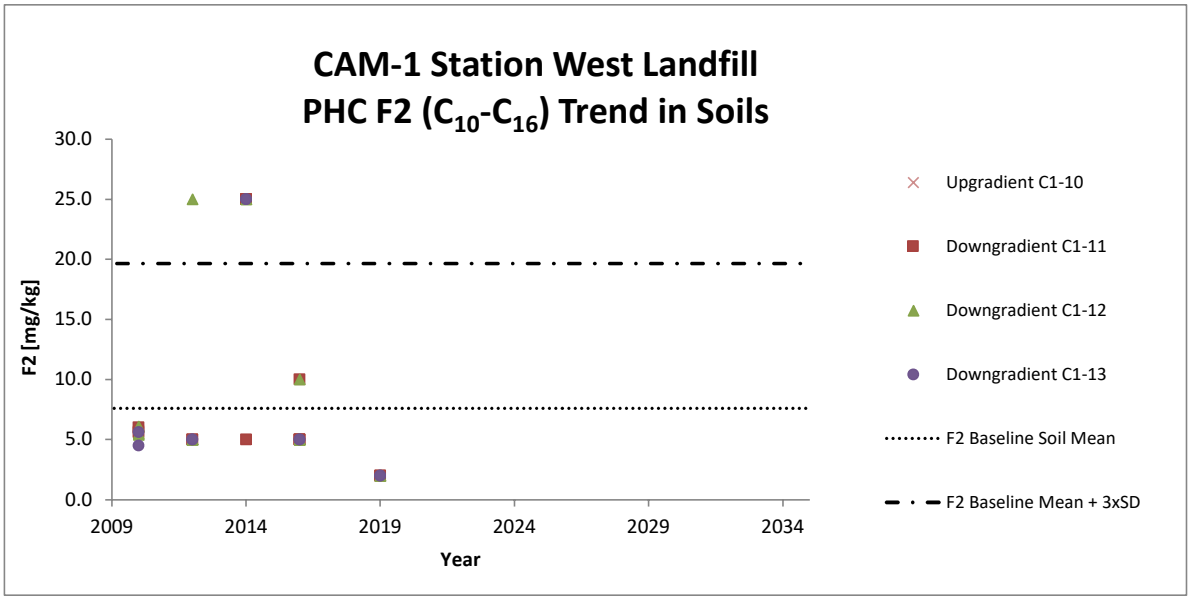
* F1 baseline arithmetic mean is equal to the baseline detection limit
* F1 baseline standard deviation = 0

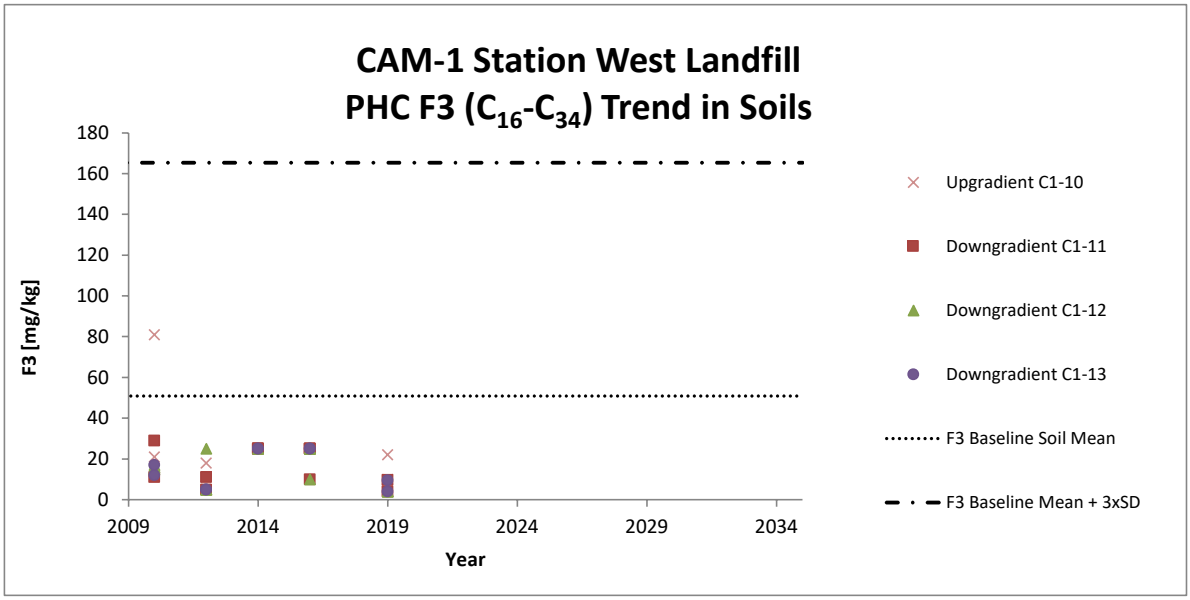
CAM-1 Station West Landfill Trends in Soil Inorganics, PCBs and PHCs

Link To: Table of Contents

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



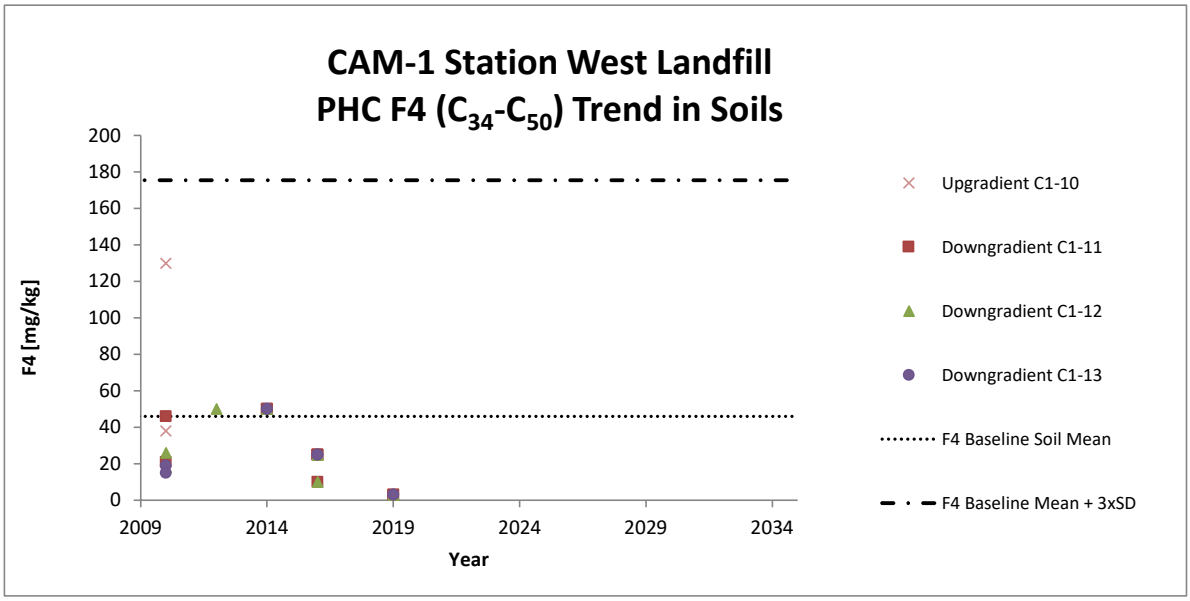


CAM-1 Station West Landfill Trends in Soil Inorganics, PCBs and PHCs

Link To: Table of Contents

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



APPENDIX D4

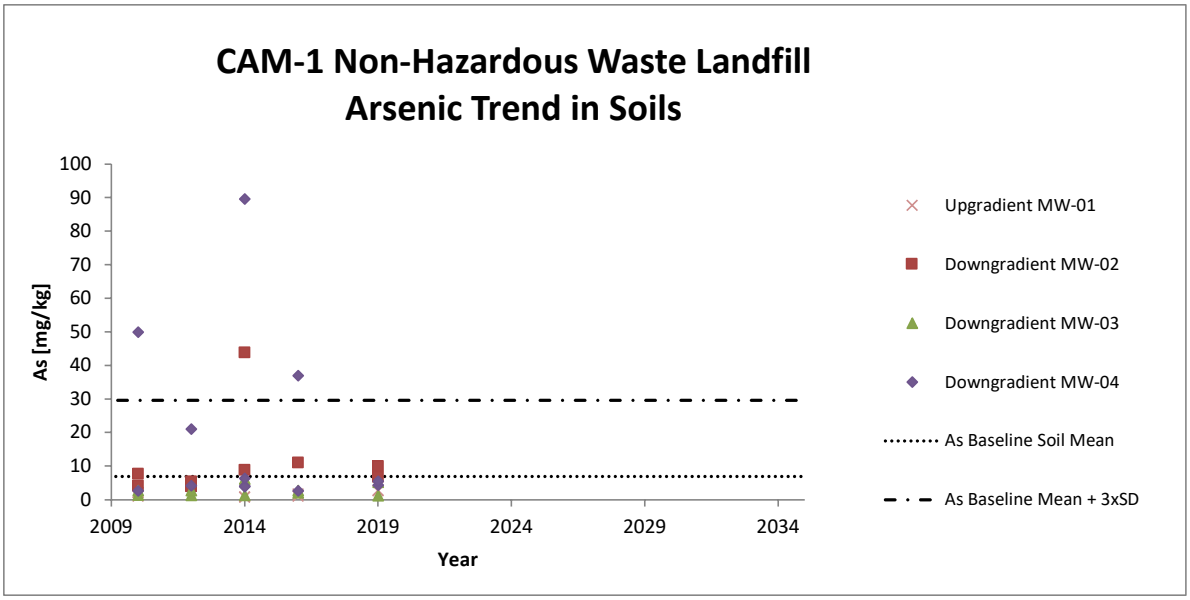
CAM-1 Non-Hazardous Waste Landfill – Trends in Soil Inorganics, PCBs and PHCs

CAM-1 Non-Hazardous Waste Landfill Trends in Soil Inorganics, PCBs and PHCs

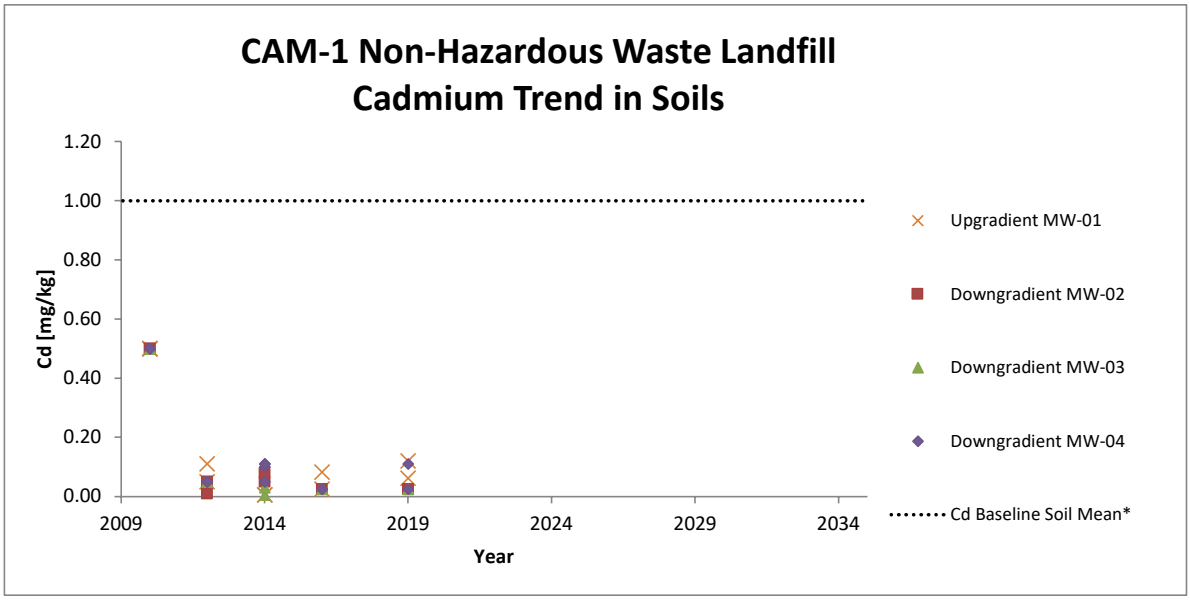
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Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



Arsenic in the form of arsenate is naturally elevated in soil at CAM-1, up to concentrations of 40 mg/kg (ESG, 2003; I. Koch et al, 2005).



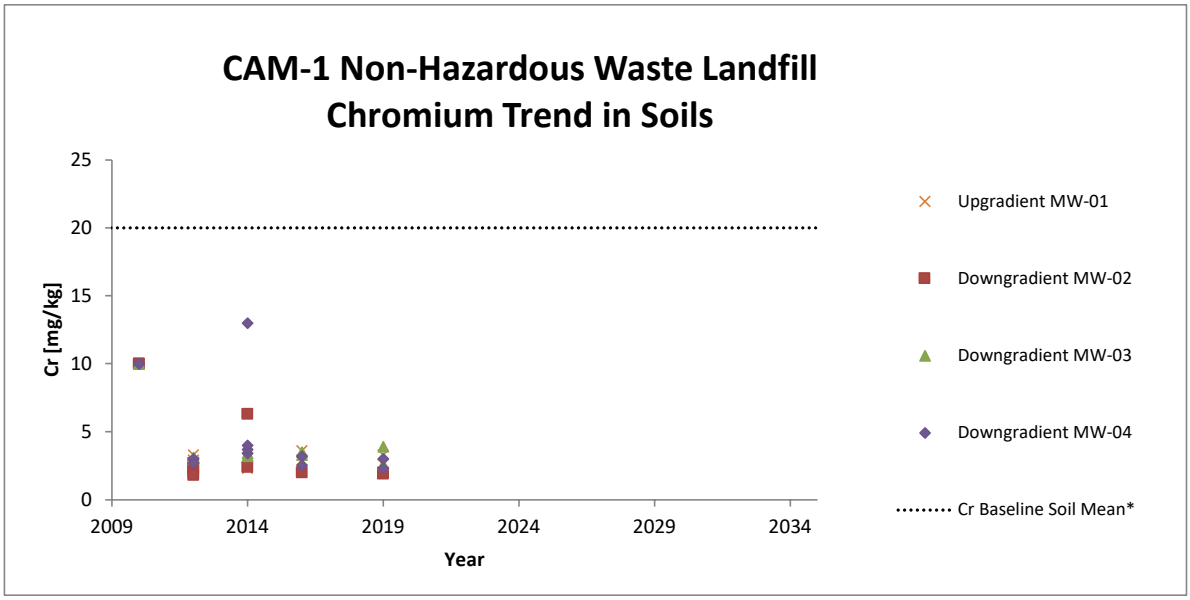
* Cd baseline arithmetic mean is equal to the baseline detection limit
* Cd baseline standard deviation = 0

CAM-1 Non-Hazardous Waste Landfill Trends in Soil Inorganics, PCBs and PHCs

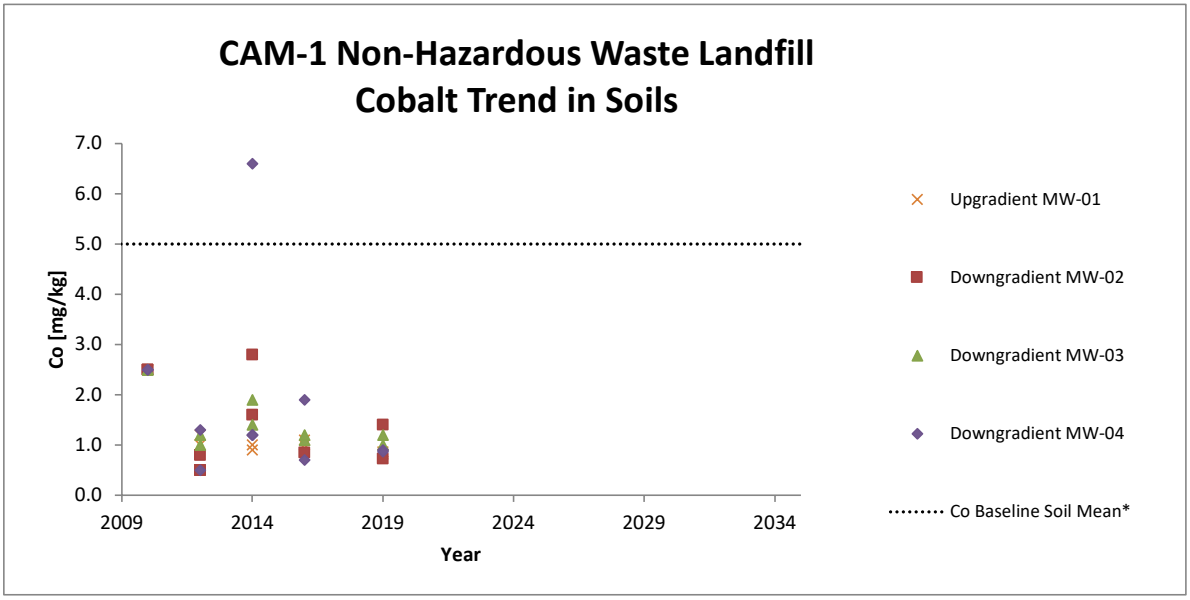
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Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



* Cr baseline arithmetic mean is equal to the baseline detection limit
* Cr baseline standard deviation = 0



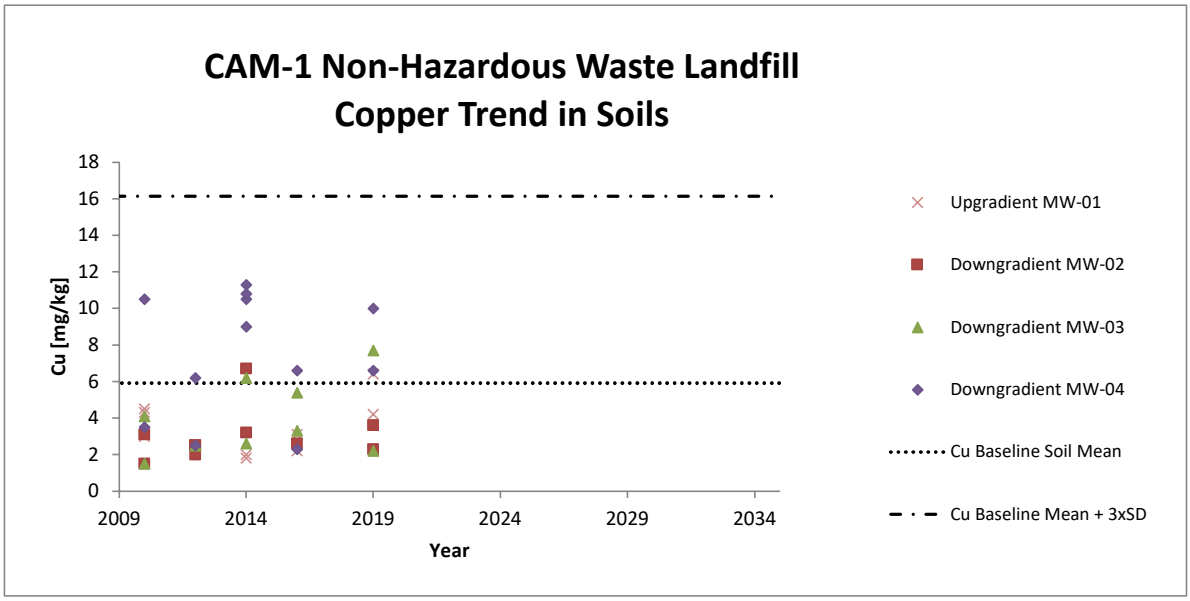
* Co baseline arithmetic mean is equal to the baseline detection limit
* Co baseline standard deviation = 0

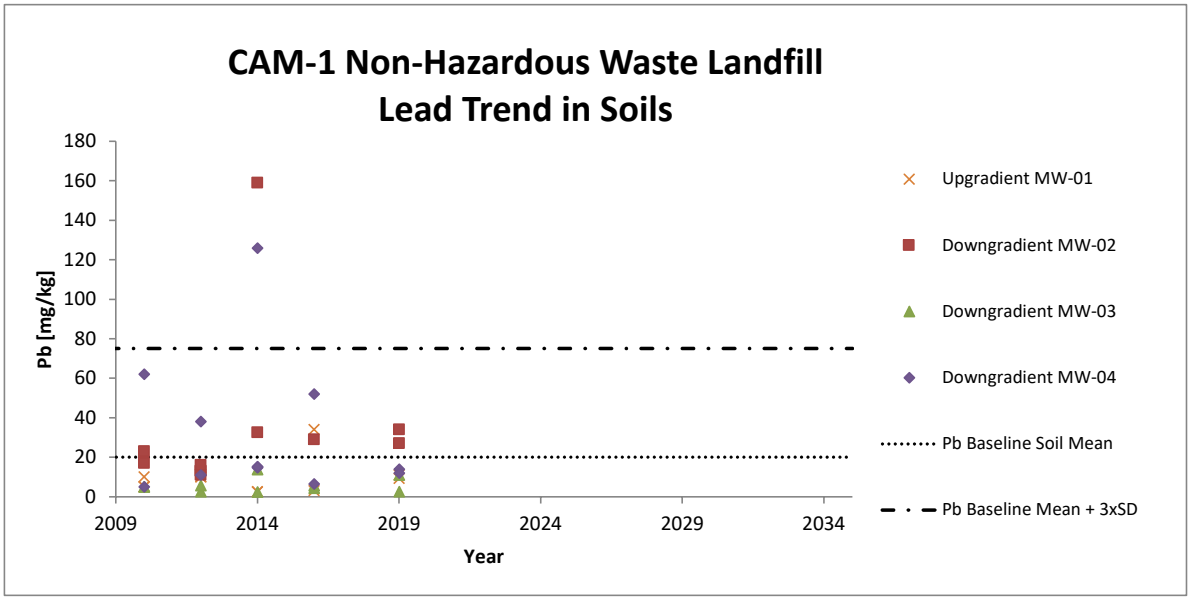
CAM-1 Non-Hazardous Waste Landfill Trends in Soil Inorganics, PCBs and PHCs

Link To: Table of Contents

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



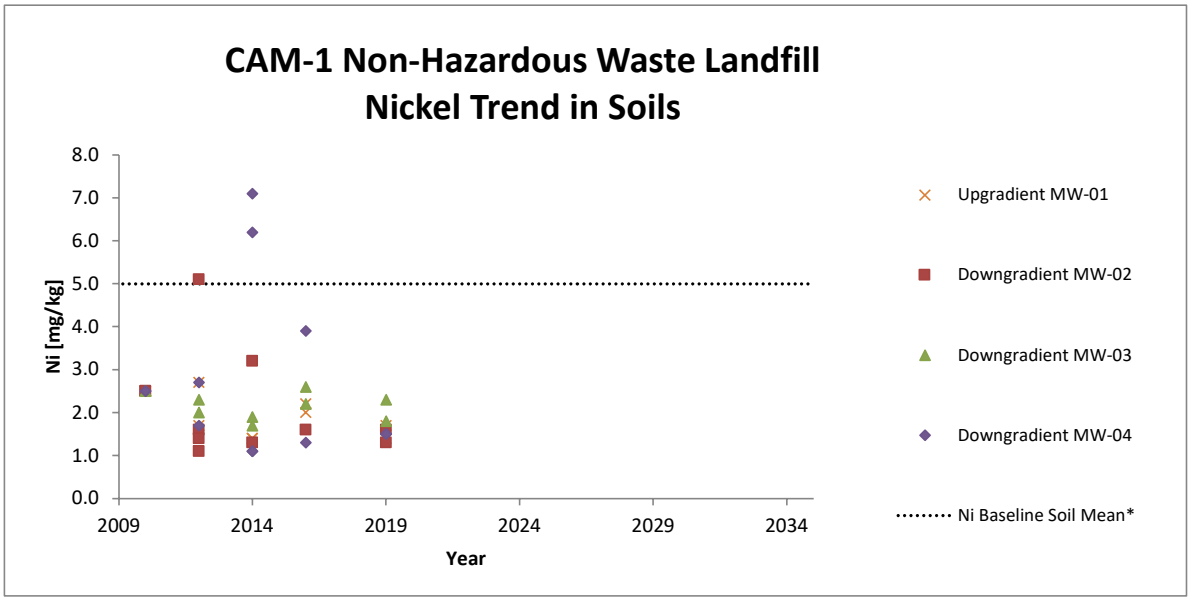


CAM-1 Non-Hazardous Waste Landfill Trends in Soil Inorganics, PCBs and PHCs

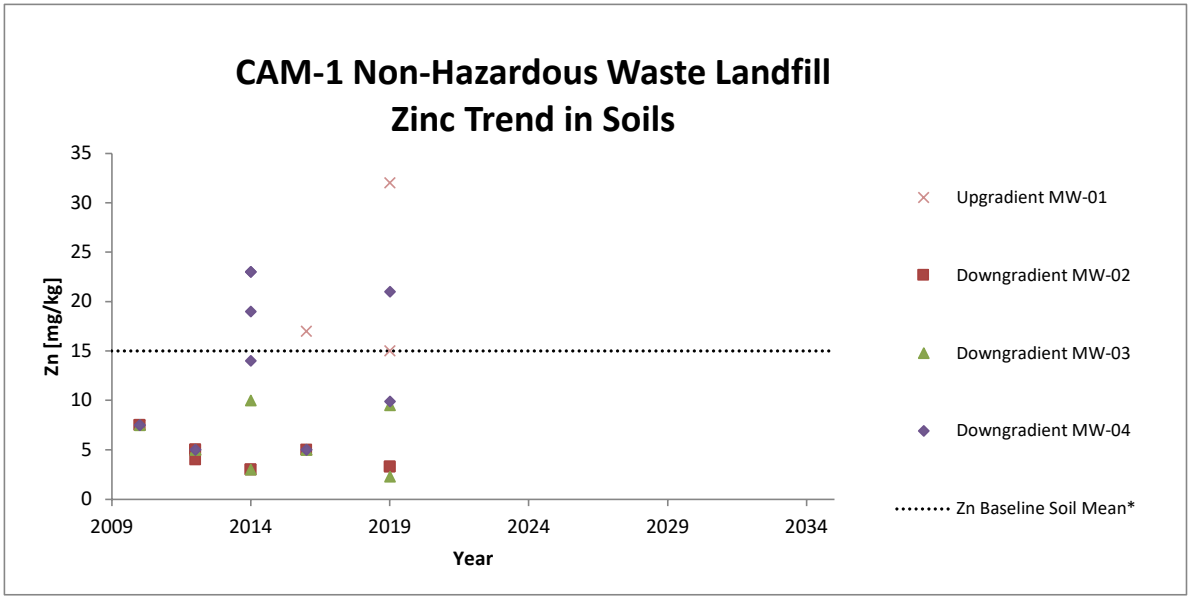
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Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



* Ni baseline arithmetic mean is equal to the baseline detection limit
* Ni baseline standard deviation = 0



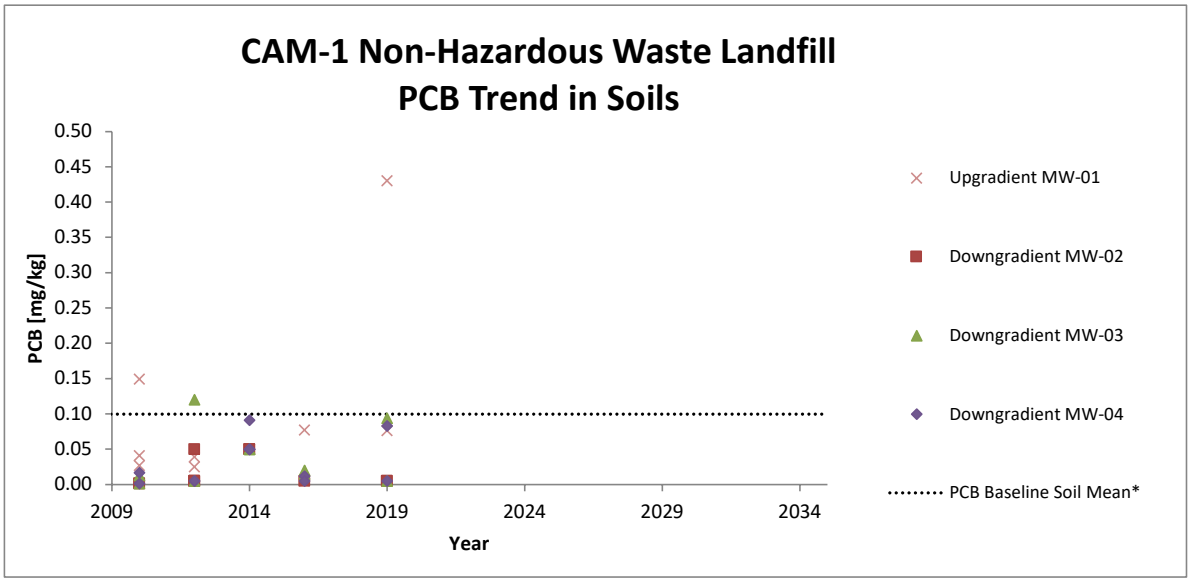
* Zn baseline arithmetic mean is equal to the baseline detection limit
* Zn baseline standard deviation = 0

CAM-1 Non-Hazardous Waste Landfill Trends in Soil Inorganics, PCBs and PHCs

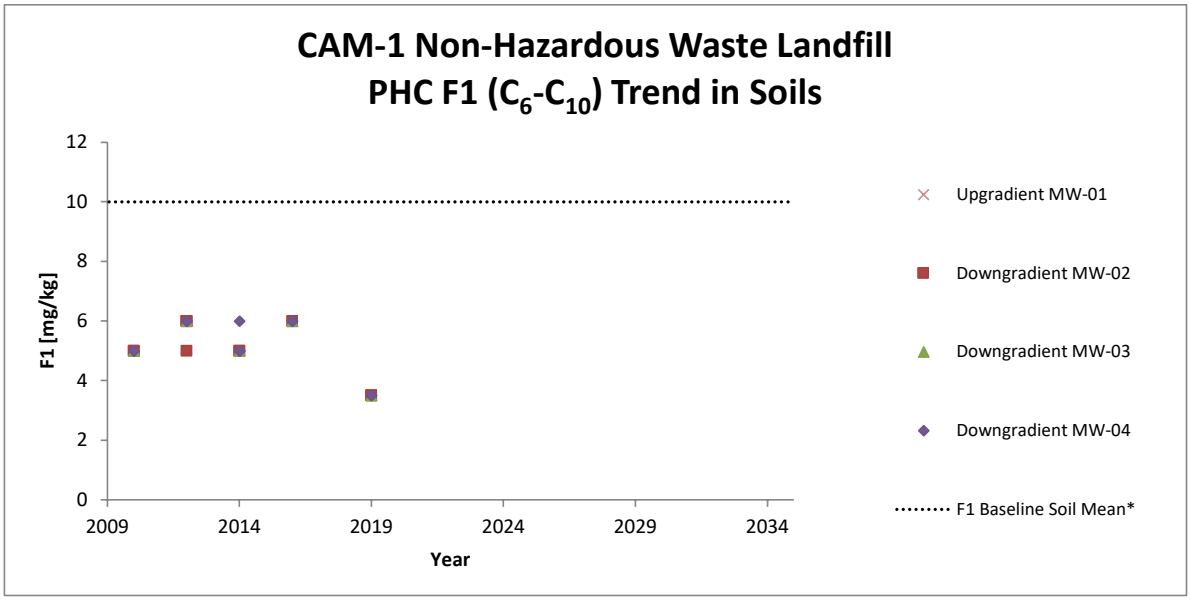
Link To: Table of Contents

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



* PCB baseline arithmetic mean is equal to the baseline detection limit
* PCB baseline standard deviation = 0



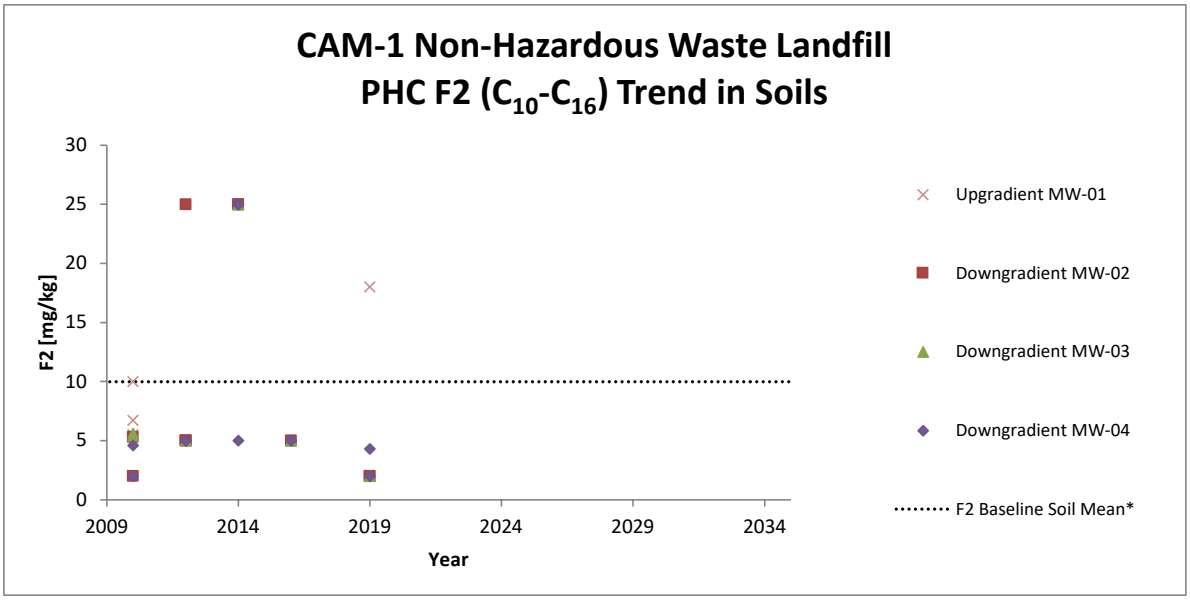
* F1 baseline arithmetic mean is equal to the baseline detection limit
* F1 baseline standard deviation = 0

CAM-1 Non-Hazardous Waste Landfill Trends in Soil Inorganics, PCBs and PHCs

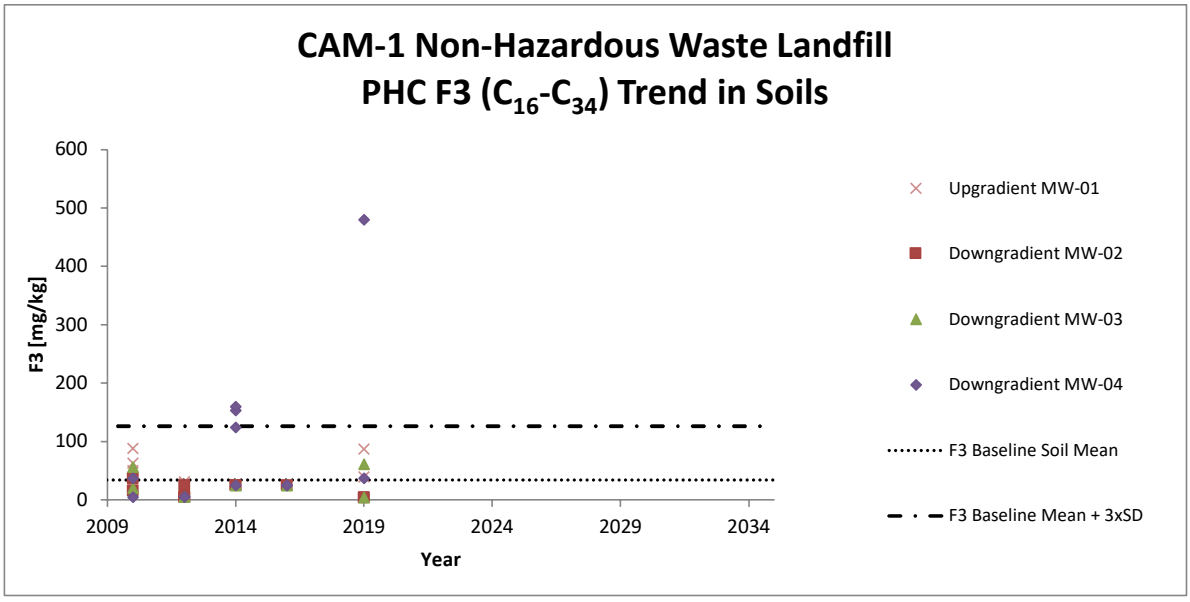
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Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



* F2 baseline arithmetic mean is equal to the baseline detection limit
* F2 baseline standard deviation = 0

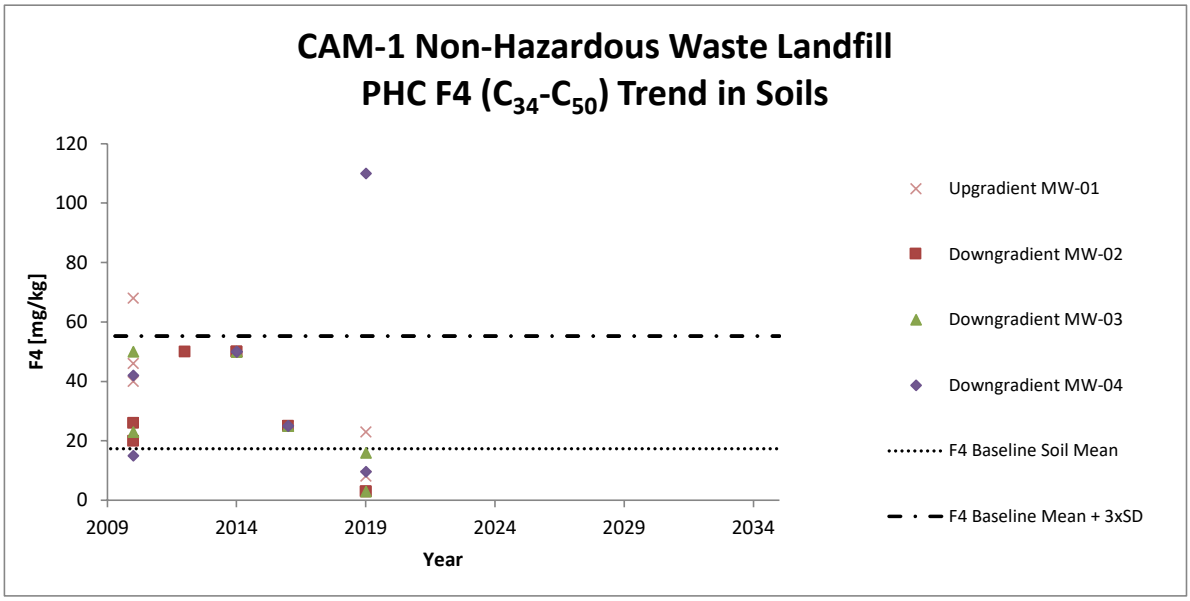


CAM-1 Non-Hazardous Waste Landfill Trends in Soil Inorganics, PCBs and PHCs

Link To: Table of Contents

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



APPENDIX D5

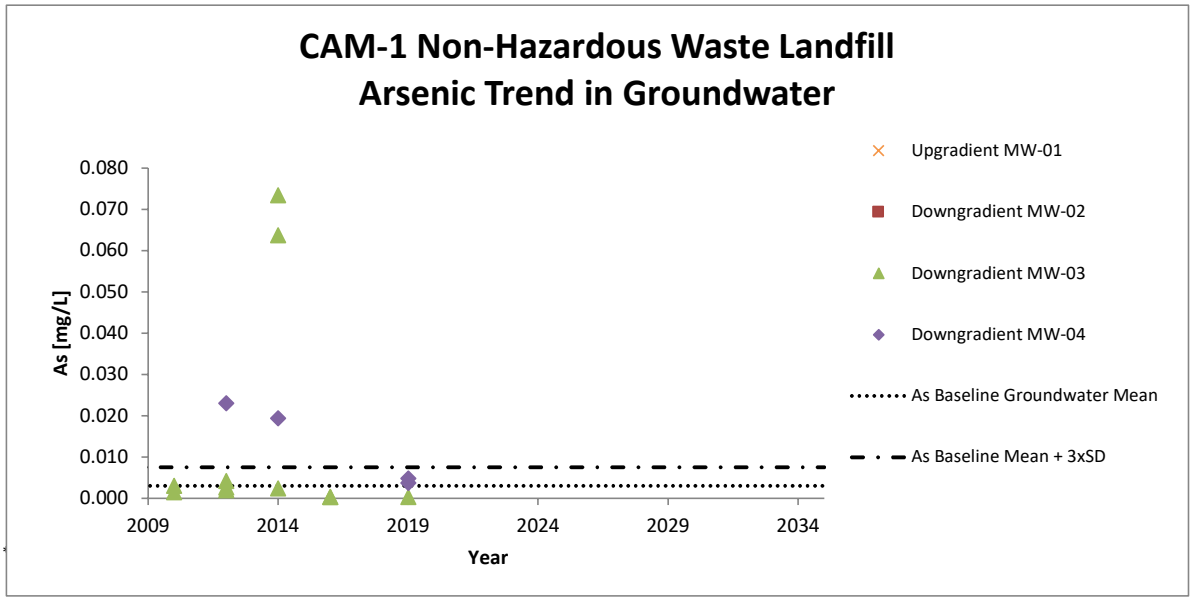
CAM-1 Non-Hazardous Waste Landfill – Trends in Groundwater Inorganics and PHCs

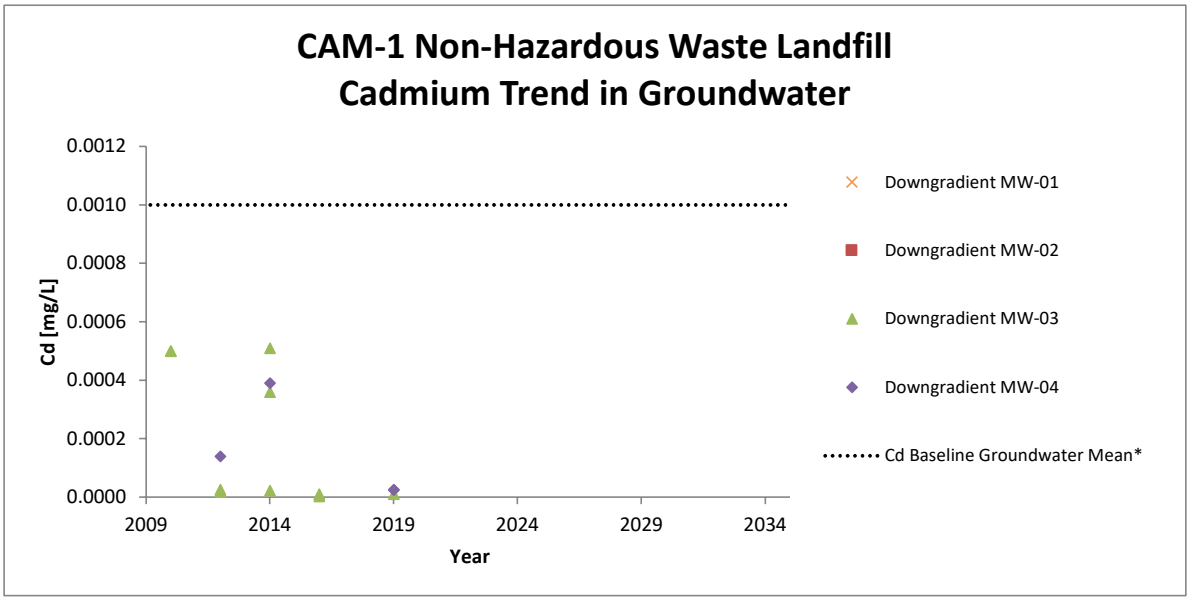
CAM-1 Non-Hazardous Waste Landfill Trends in Groundwater Inorganics and PHCs

Link To: Table of Contents

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.





* Cd baseline arithmetic mean is equal to the baseline detection limit

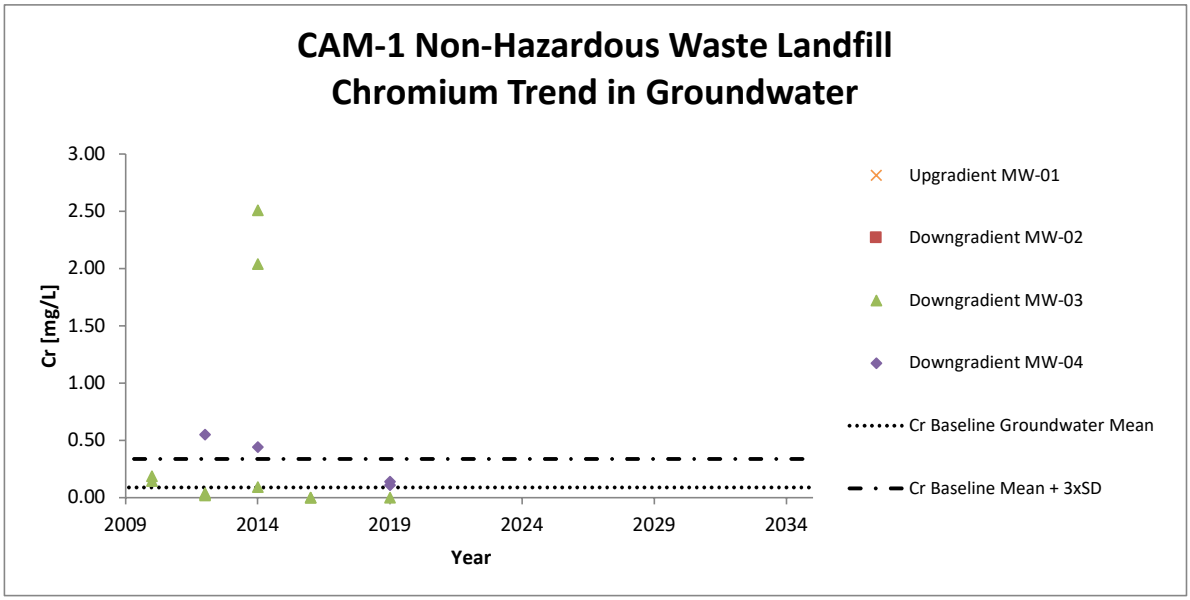
* Cd baseline standard deviation = 0

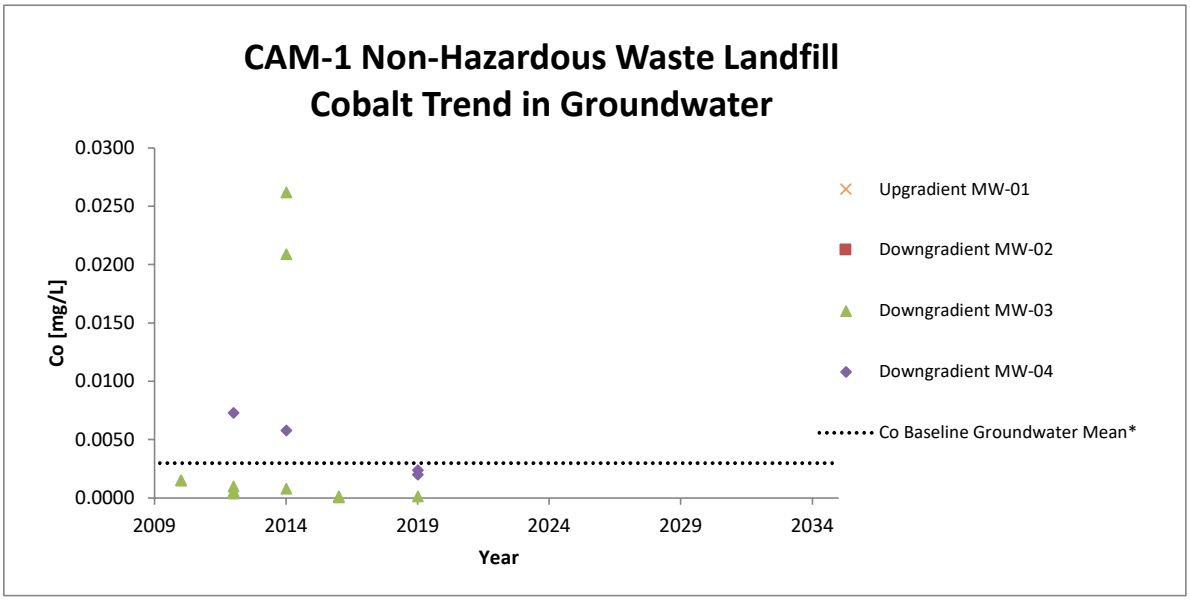
CAM-1 Non-Hazardous Waste Landfill Trends in Groundwater Inorganics and PHCs

Link To: Table of Contents

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.





* Co baseline arithmetic mean is equal to the baseline detection limit

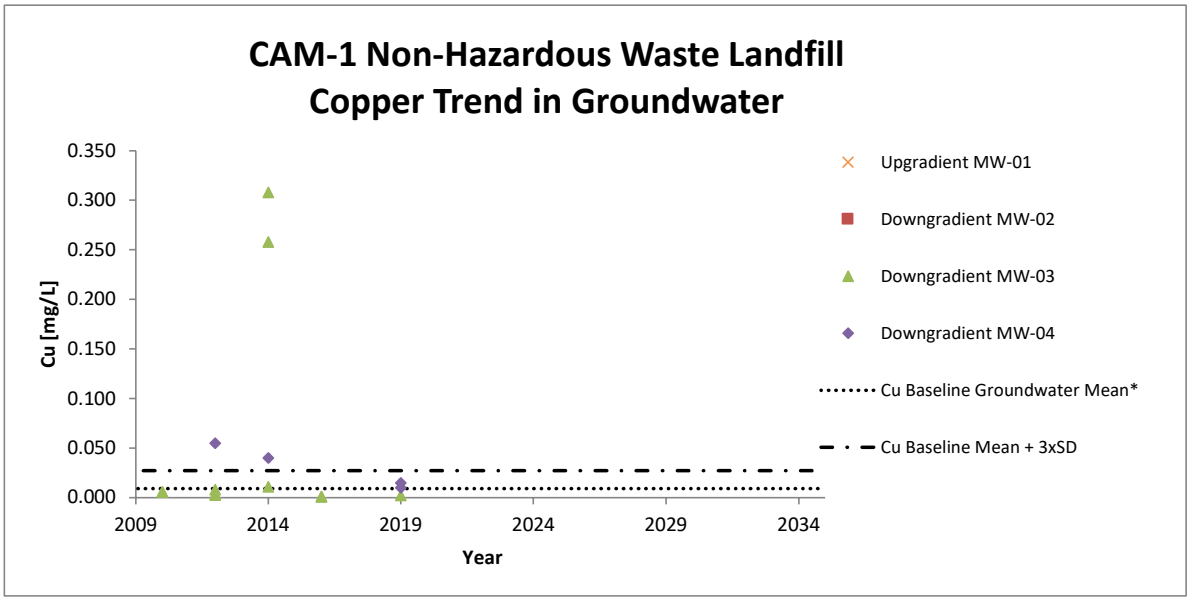
* Co baseline standard deviation = 0

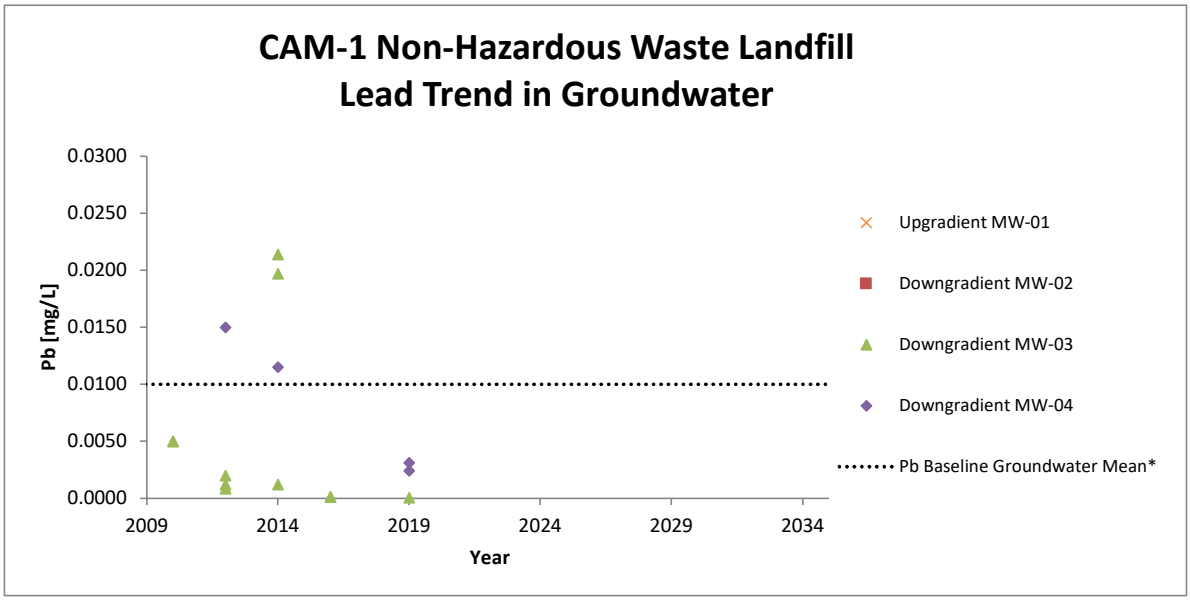
CAM-1 Non-Hazardous Waste Landfill Trends in Groundwater Inorganics and PHCs

Link To: Table of Contents

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.





* Pb baseline arithmetic mean is equal to the baseline detection limit

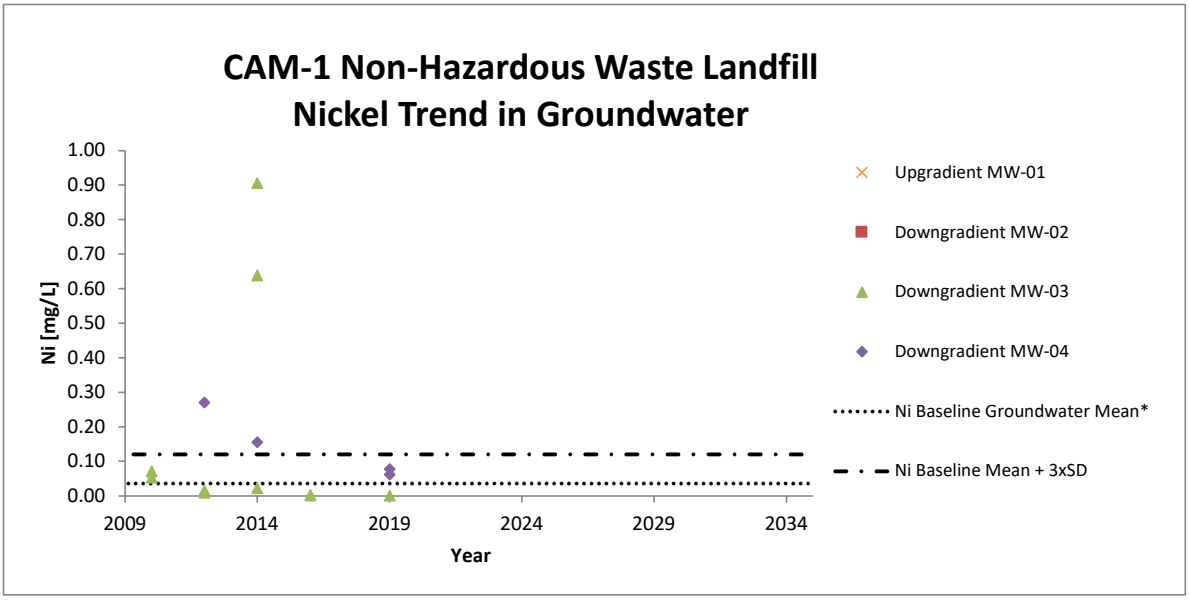
* Pb baseline standard deviation = 0

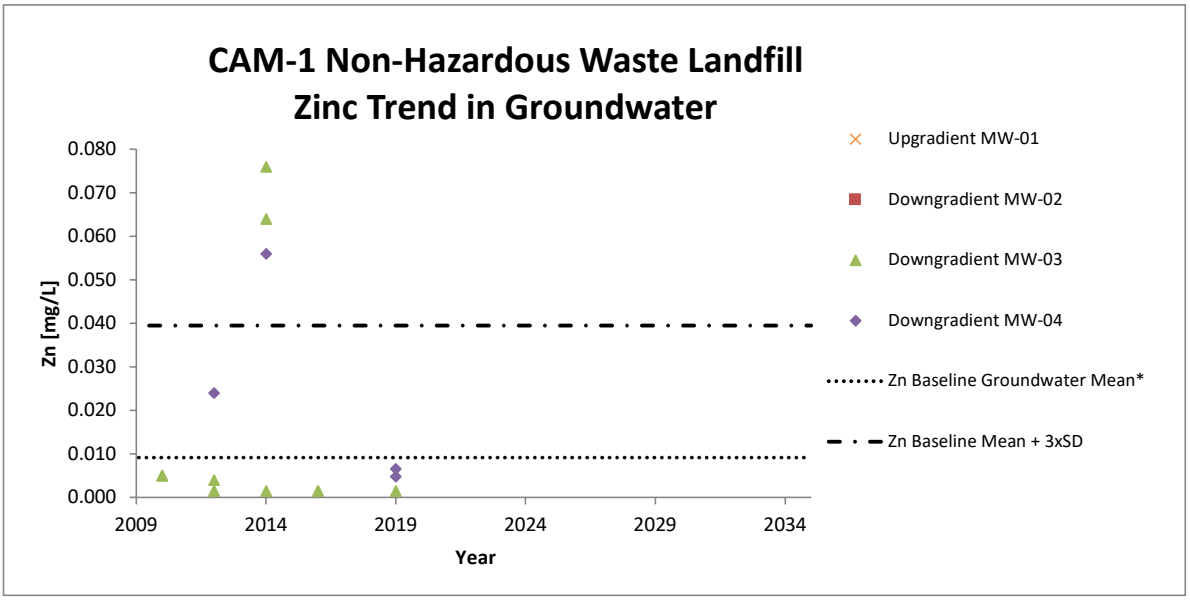
CAM-1 Non-Hazardous Waste Landfill Trends in Groundwater Inorganics and PHCs

Link To: Table of Contents

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



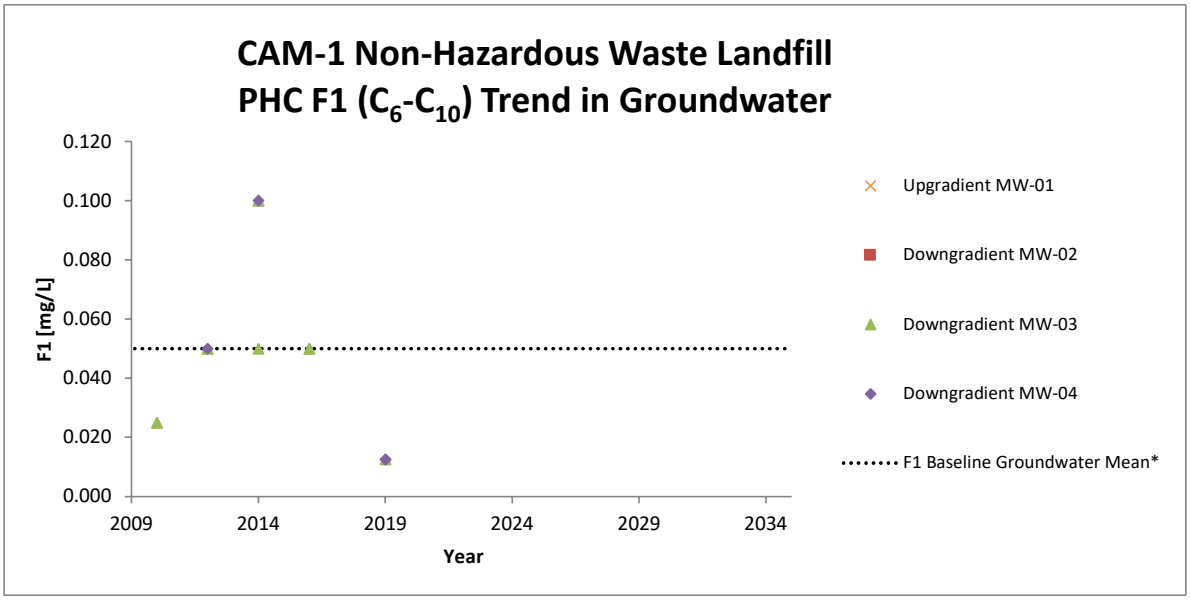


CAM-1 Non-Hazardous Waste Landfill Trends in Groundwater Inorganics and PHCs

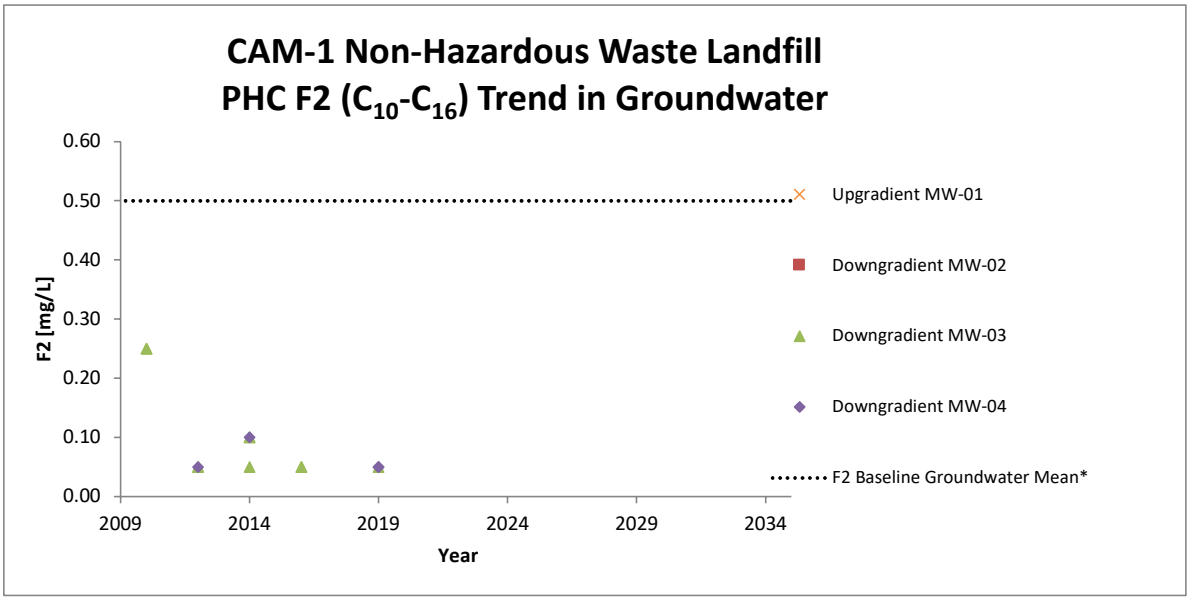
Link To: Table of Contents

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



* F1 baseline arithmetic mean is equal to the baseline detection limit
* F1 baseline standard deviation = 0



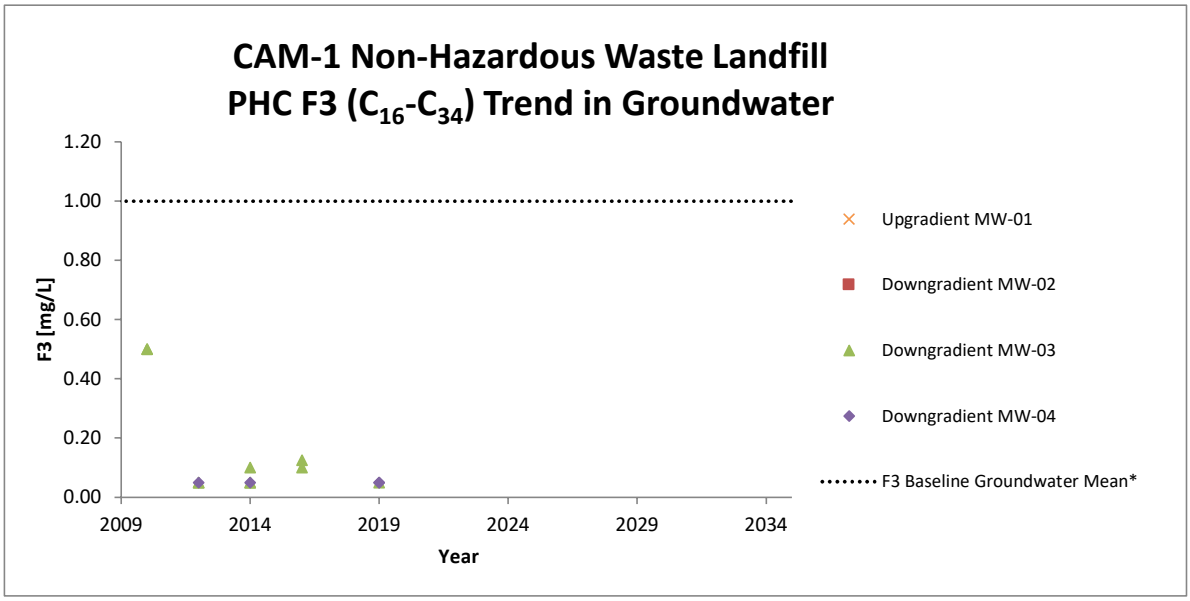
* F2 baseline arithmetic mean is equal to the baseline detection limit
* F2 baseline standard deviation = 0

CAM-1 Non-Hazardous Waste Landfill Trends in Groundwater Inorganics and PHCs

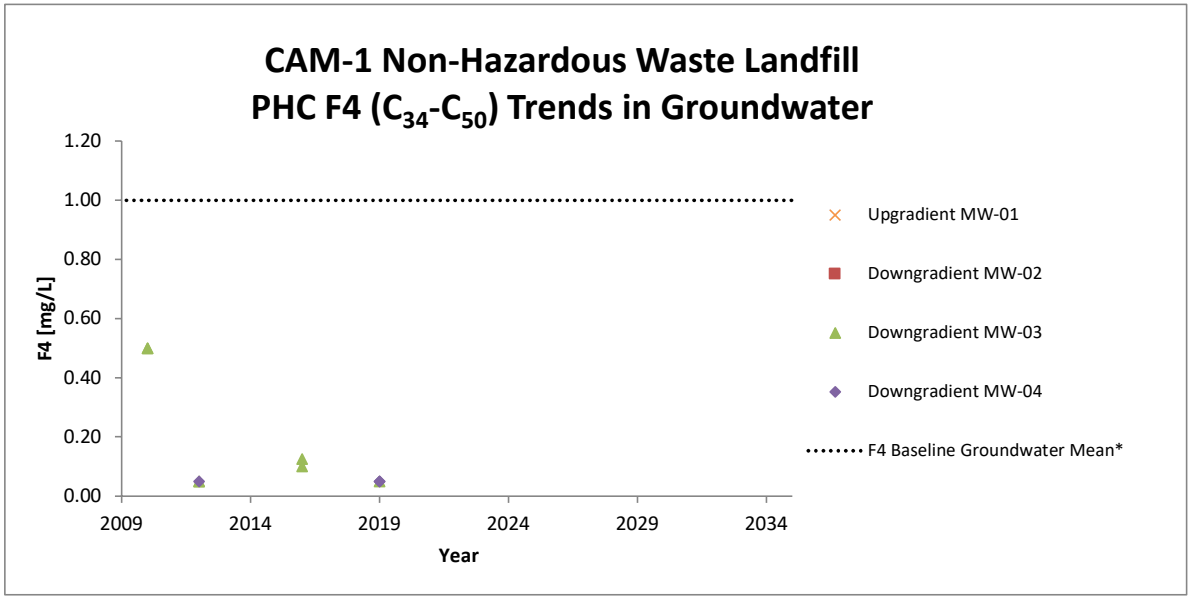
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Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



* F3 baseline arithmetic mean is equal to the baseline detection limit
* F3 baseline standard deviation = 0



* F4 baseline arithmetic mean is equal to the baseline detection limit
* F4baseline standard deviation = 0

APPENDIX D6

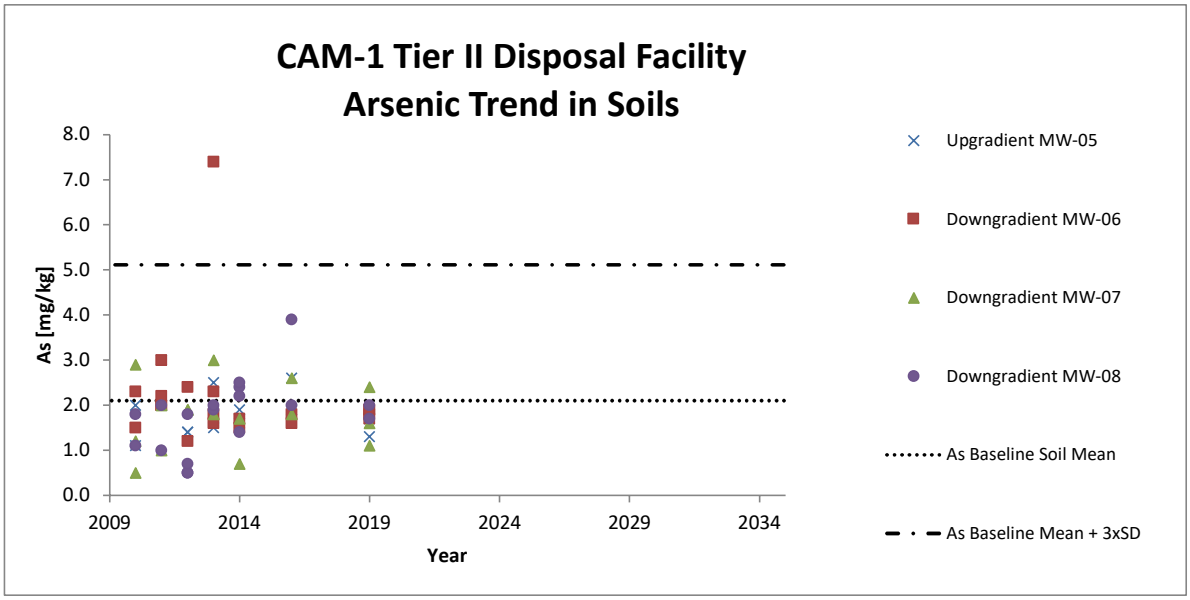
CAM-1 Tier II Soil Disposal Facility – Trends in Soil Inorganics, PCBs and PHCs

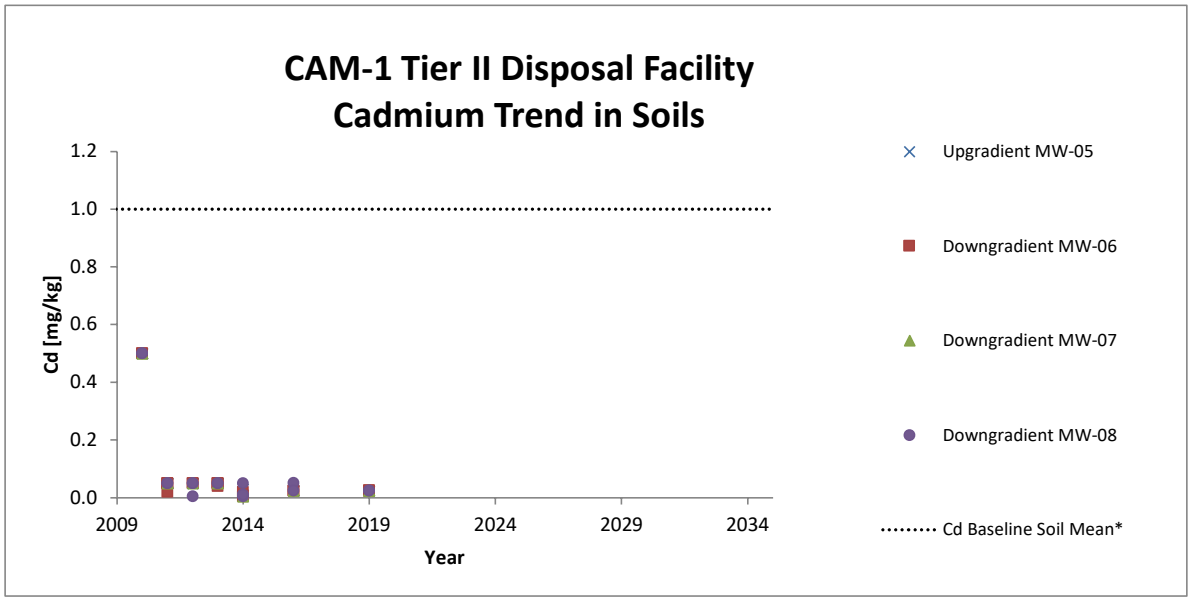
CAM-1 Tier II Disposal Facility Trends in Soil Inorganics, PCBs and PHCs

Link To: Table of Contents

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

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* Cd baseline arithmetic mean is equal to the baseline detection limit

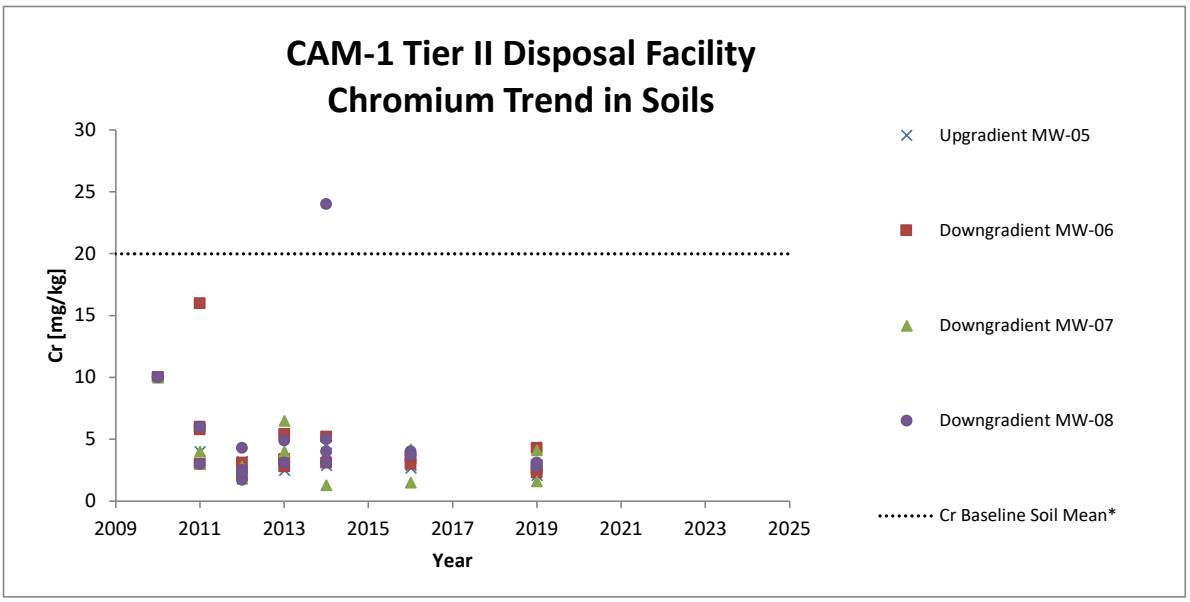
* Cd baseline standard deviation = 0

CAM-1 Tier II Disposal Facility Trends in Soil Inorganics, PCBs and PHCs

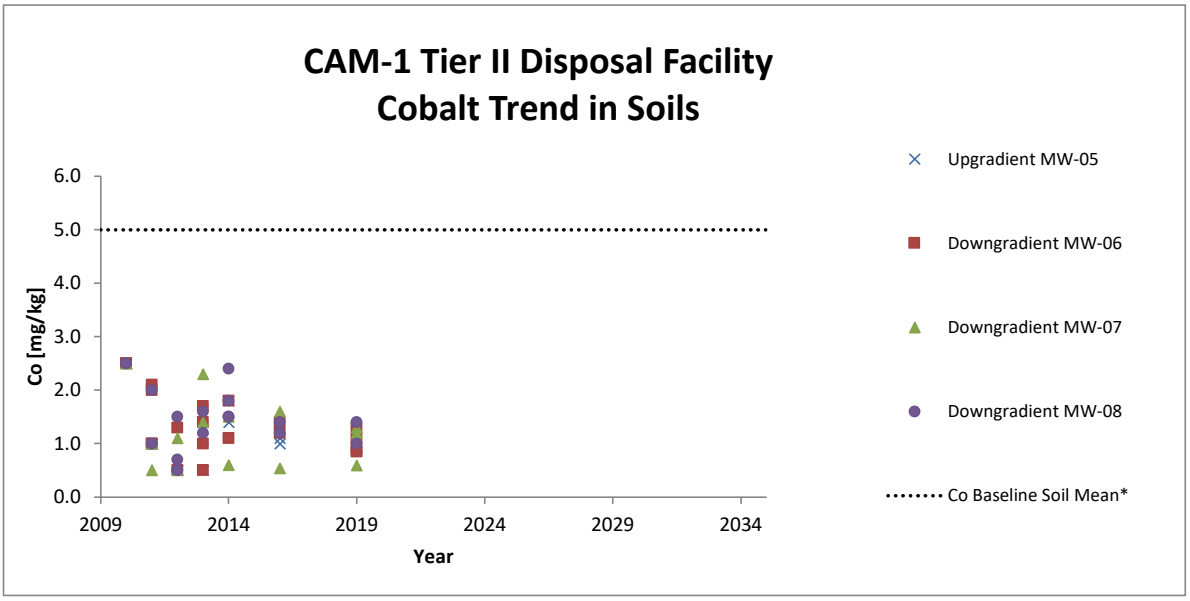
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Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



* Cr baseline arithmetic mean is equal to the baseline detection limit
* Cr baseline standard deviation = 0



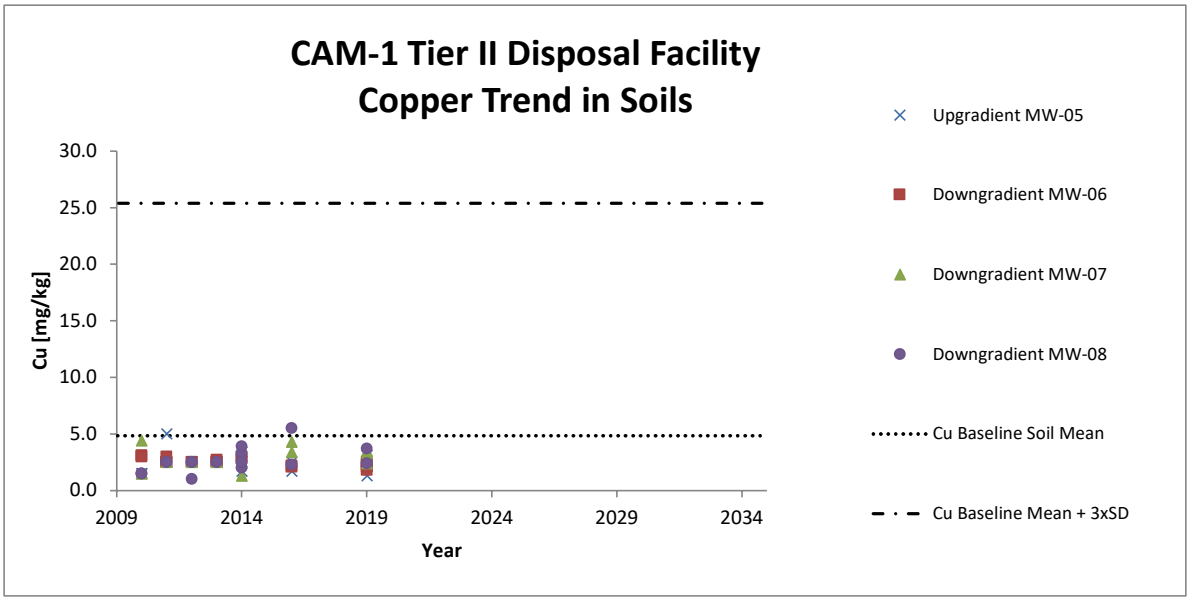
* Co baseline arithmetic mean is equal to the baseline detection limit
* Co baseline standard deviation = 0

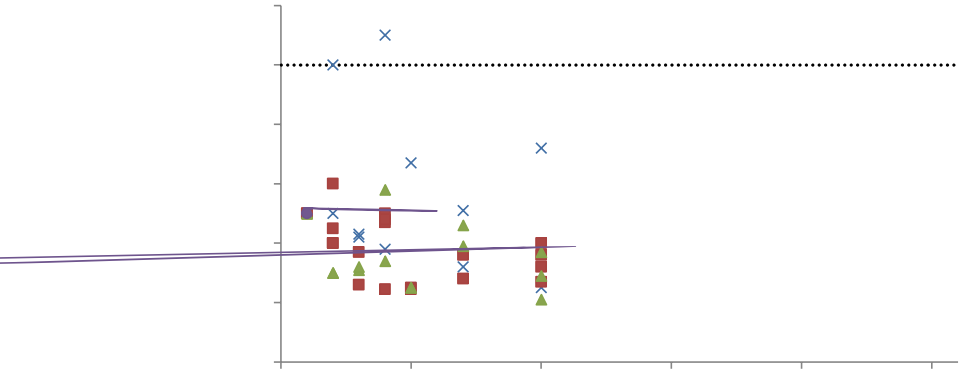
CAM-1 Tier II Disposal Facility Trends in Soil Inorganics, PCBs and PHCs

Link To: Table of Contents

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.





* Pb baseline arithmetic mean is equal to the baseline detection limit

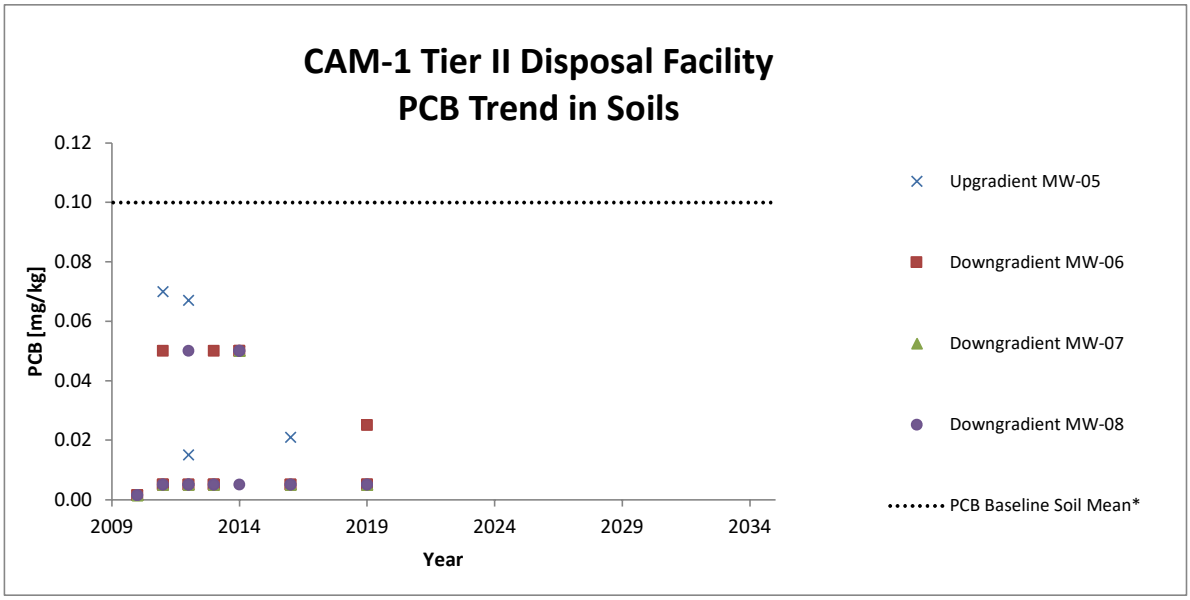
* Pb baseline standard deviation = 0

CAM-1 Tier II Disposal Facility Trends in Soil Inorganics, PCBs and PHCs

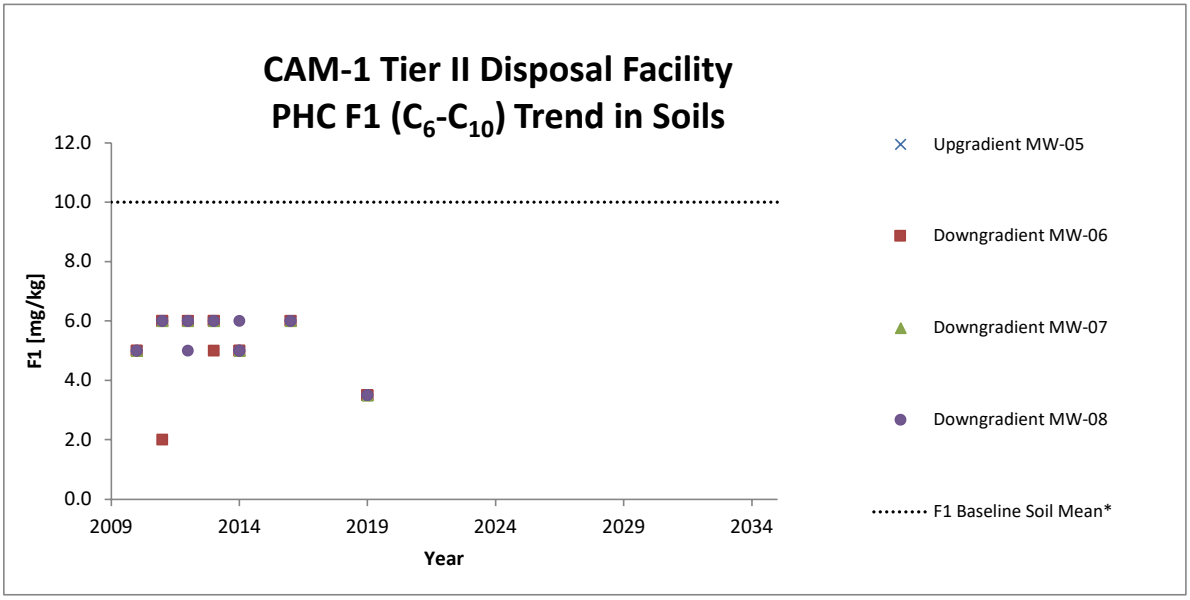
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Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



* PCB baseline arithmetic mean is equal to the baseline detection limit
* PCB baseline standard deviation = 0



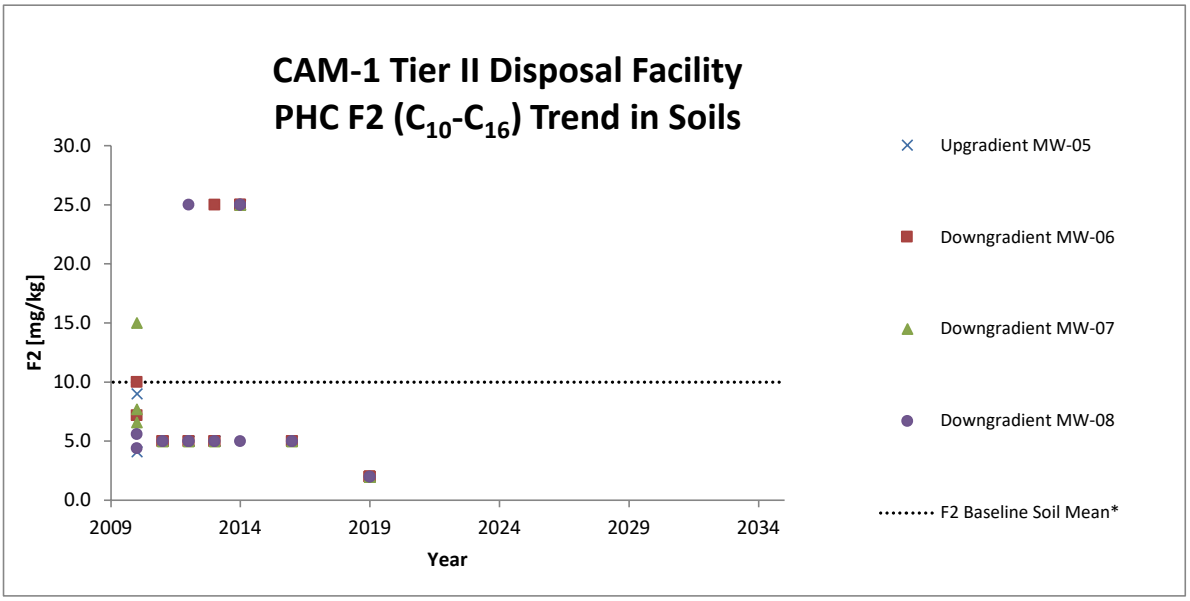
* F1 baseline arithmetic mean is equal to the baseline detection limit
* F1 baseline standard deviation = 0

CAM-1 Tier II Disposal Facility Trends in Soil Inorganics, PCBs and PHCs

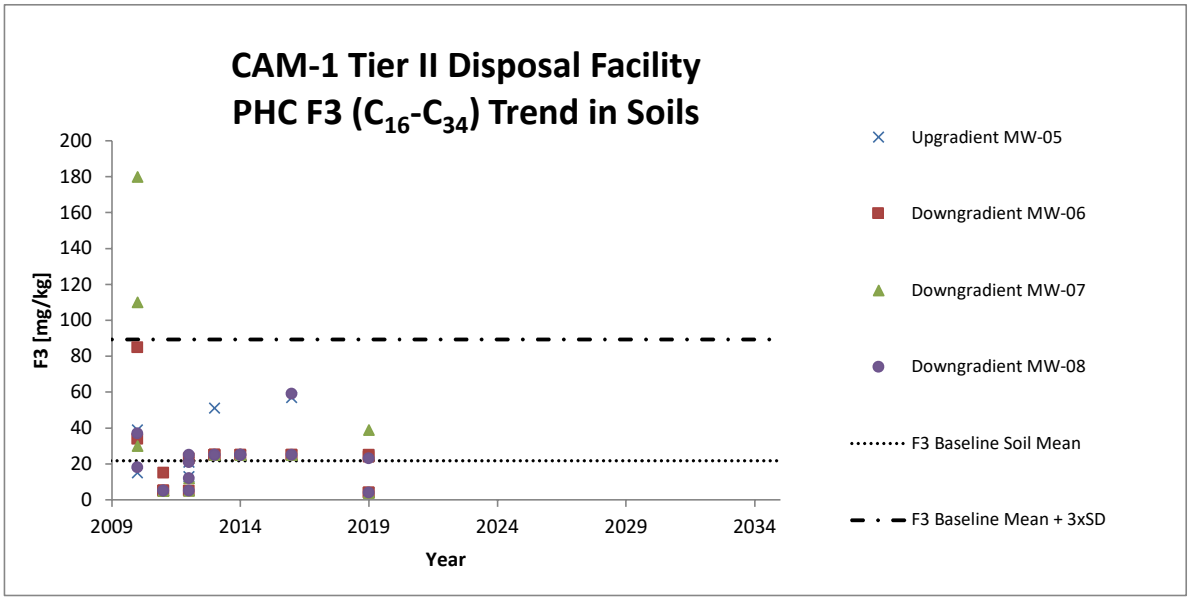
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Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



* F2 baseline arithmetic mean is equal to the baseline detection limit
* F2 baseline standard deviation = 0

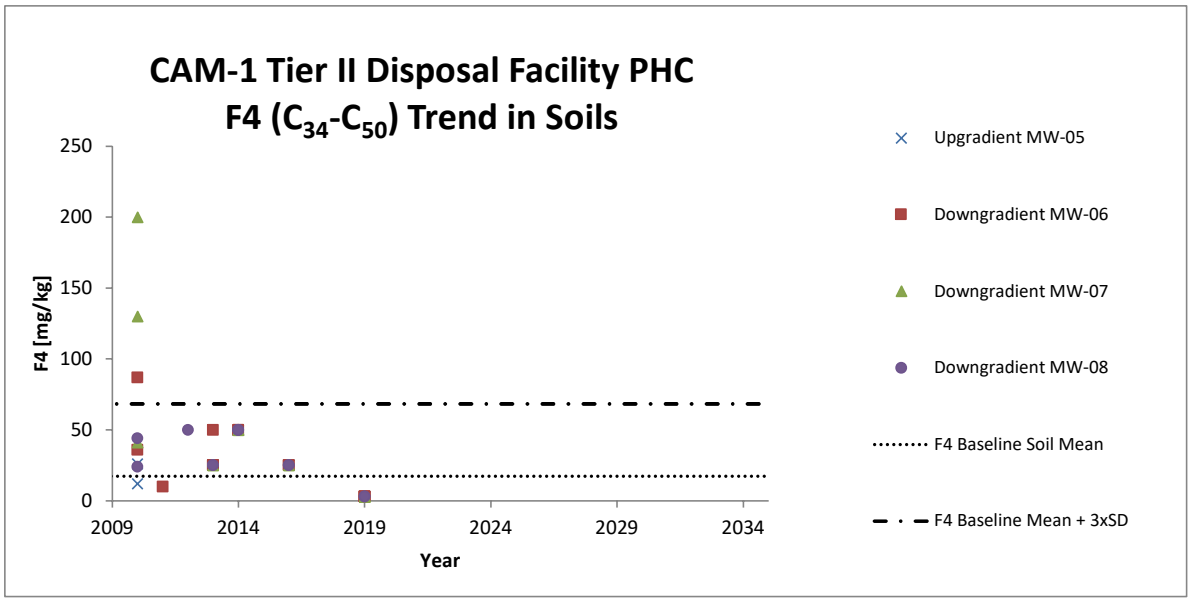


CAM-1 Tier II Disposal Facility Trends in Soil Inorganics, PCBs and PHCs

Link To: Table of Contents

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



APPENDIX D7

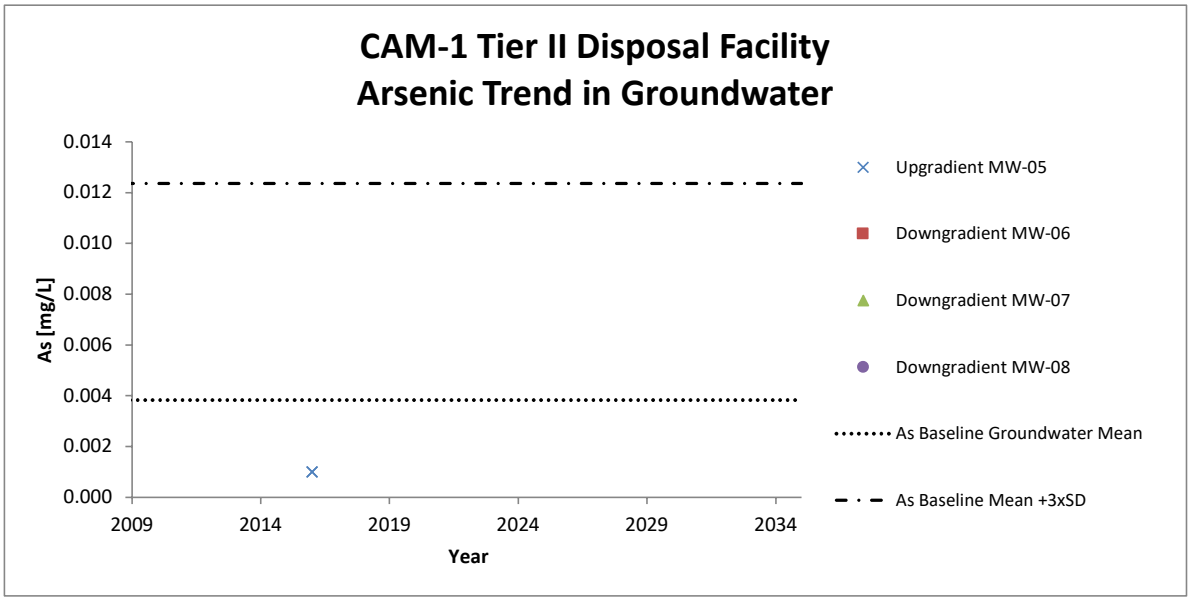
CAM-1 Tier II Soil Disposal Facility – Trends in Groundwater Parameters

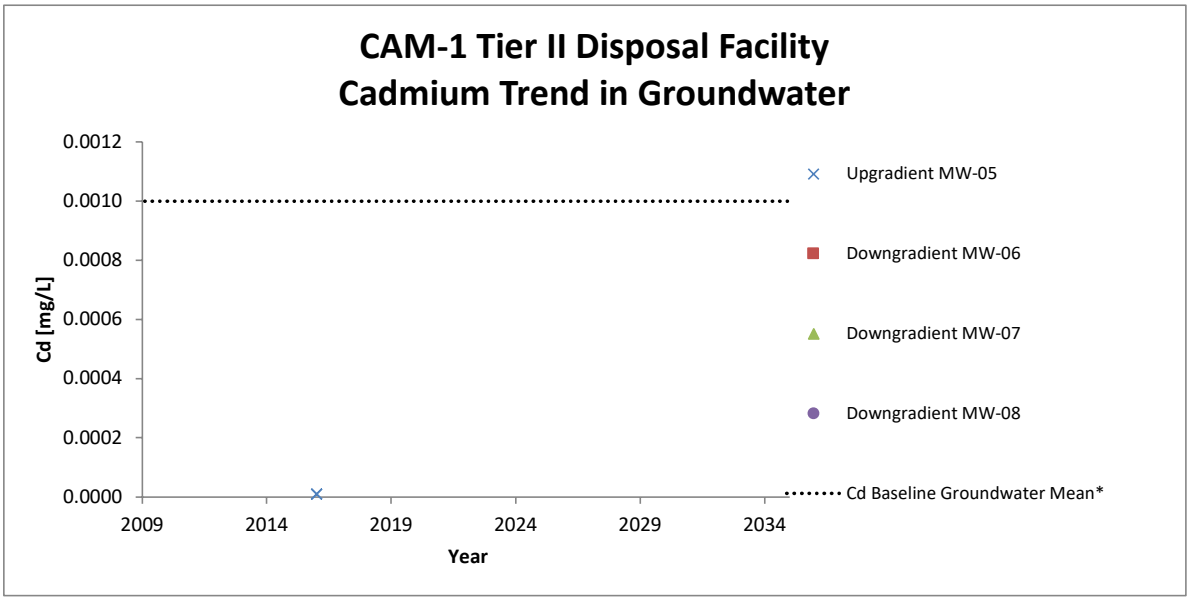
CAM-1 Tier II Disposal Facility Trends in Groundwater Inorganics and PHCs

Link To: Table of Contents

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.





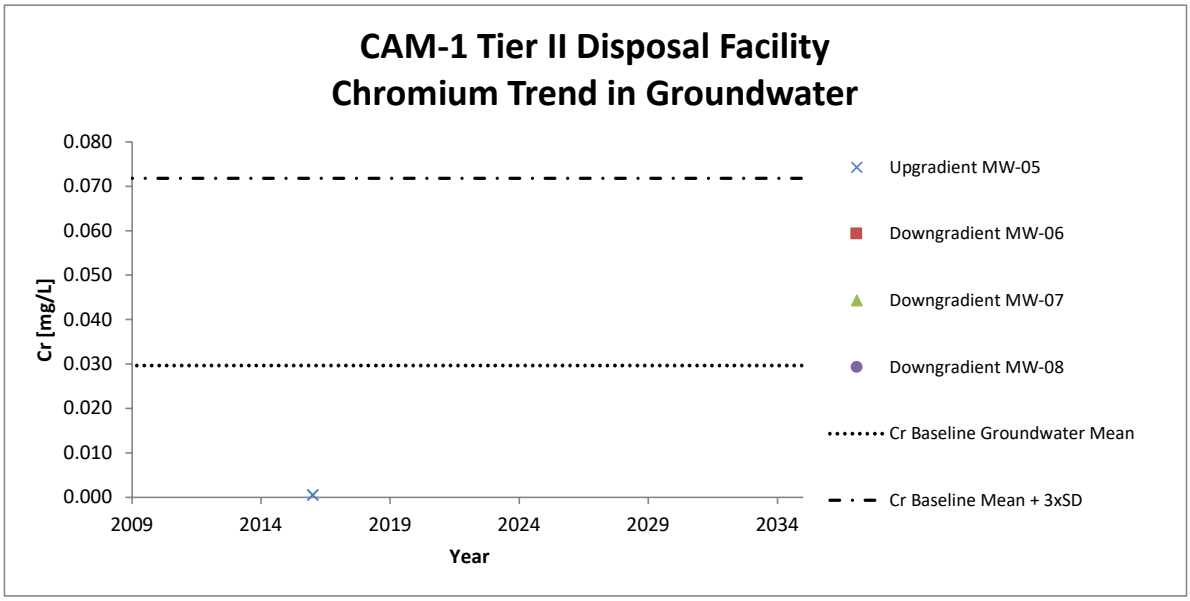
* Cd baseline arithmetic mean is equal to the baseline detection limit
* Cd baseline standard deviation = 0

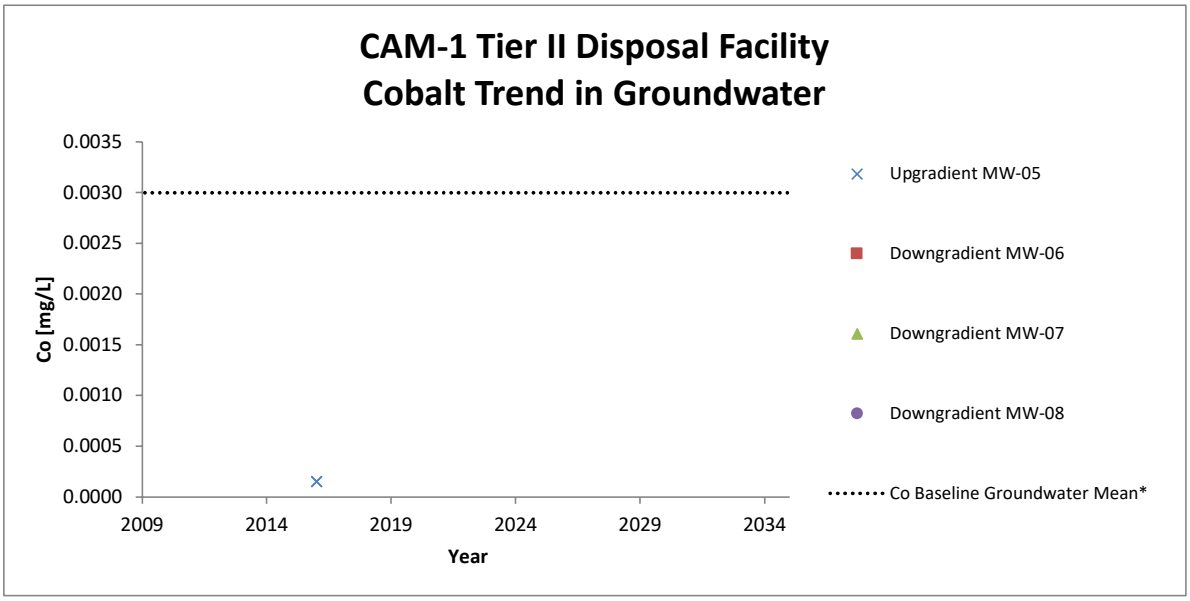
CAM-1 Tier II Disposal Facility Trends in Groundwater Inorganics and PHCs

Link To: Table of Contents

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.





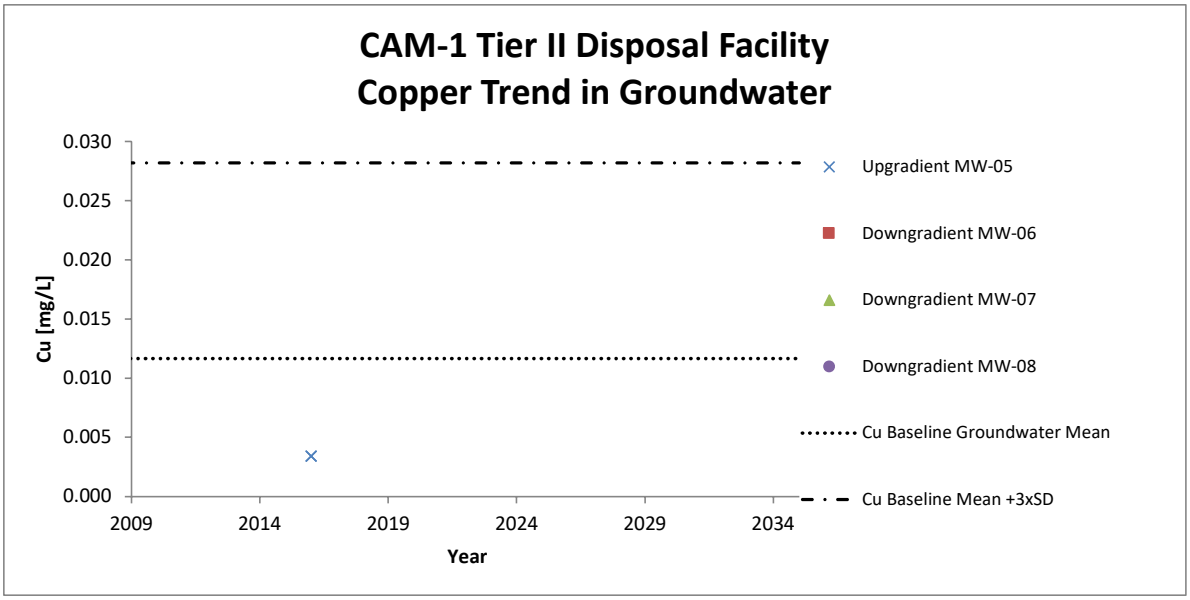
* Co baseline arithmetic mean is equal to the baseline detection limit
* Co baseline standard deviation = 0

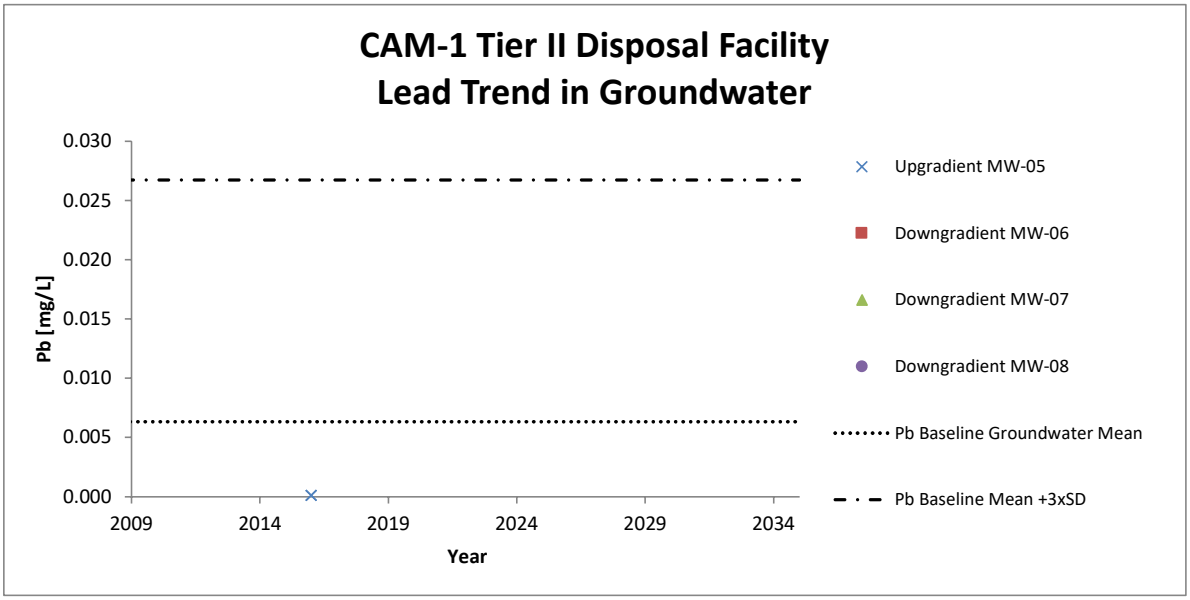
CAM-1 Tier II Disposal Facility Trends in Groundwater Inorganics and PHCs

Link To: Table of Contents

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



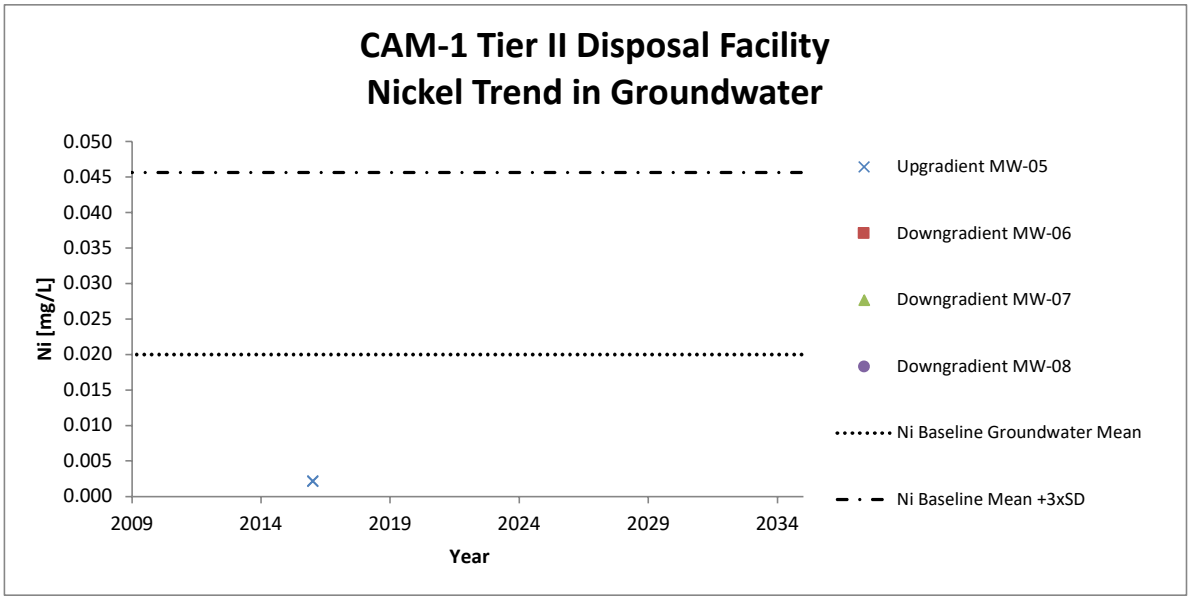


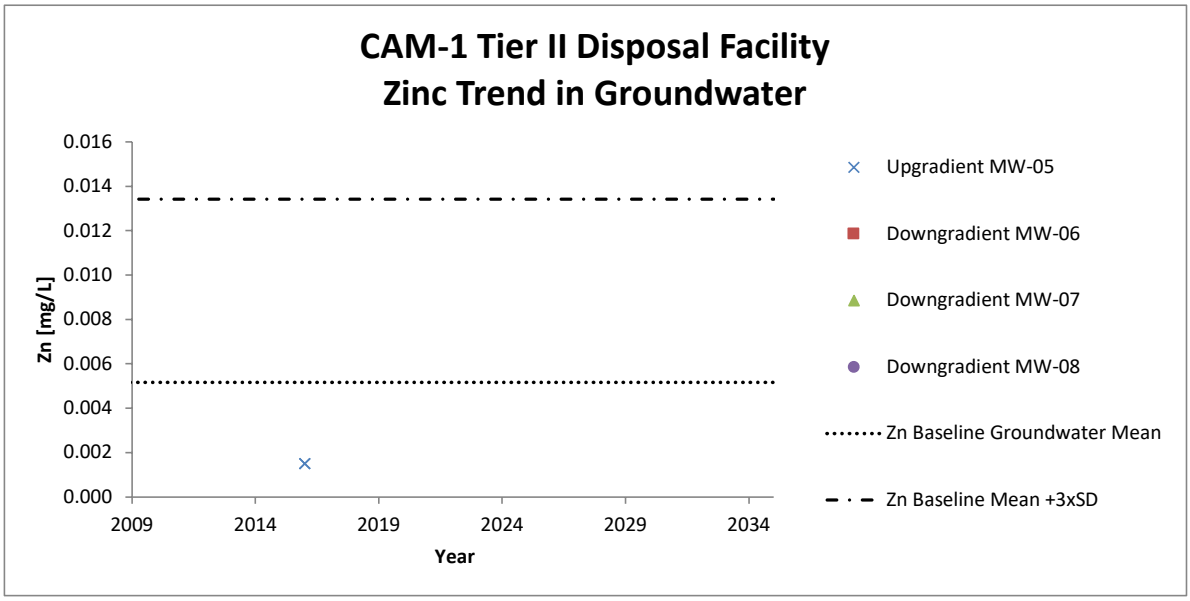
CAM-1 Tier II Disposal Facility Trends in Groundwater Inorganics and PHCs

Link To: Table of Contents

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

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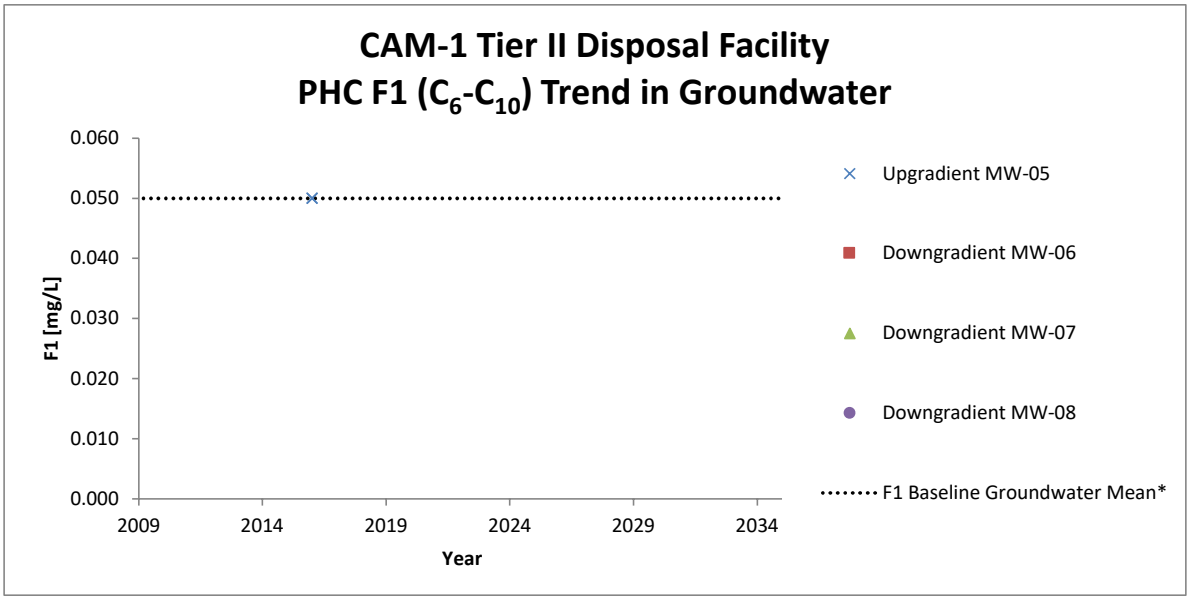


CAM-1 Tier II Disposal Facility Trends in Groundwater Inorganics and PHCs

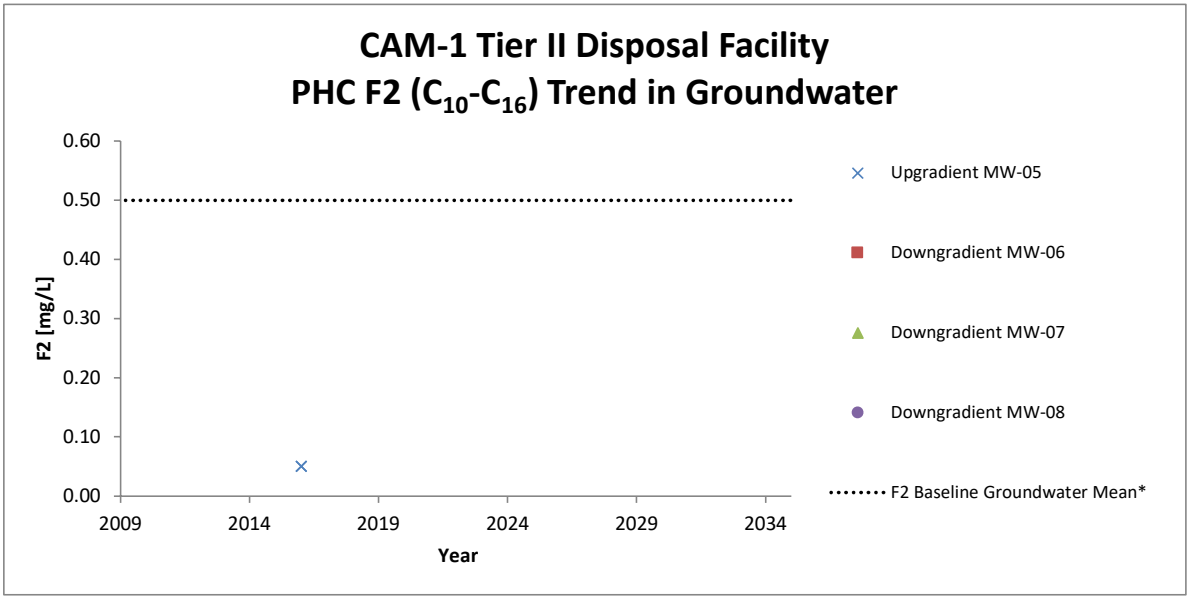
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Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



* F1 baseline arithmetic mean is equal to the baseline detection limit
* F1 baseline standard deviation = 0



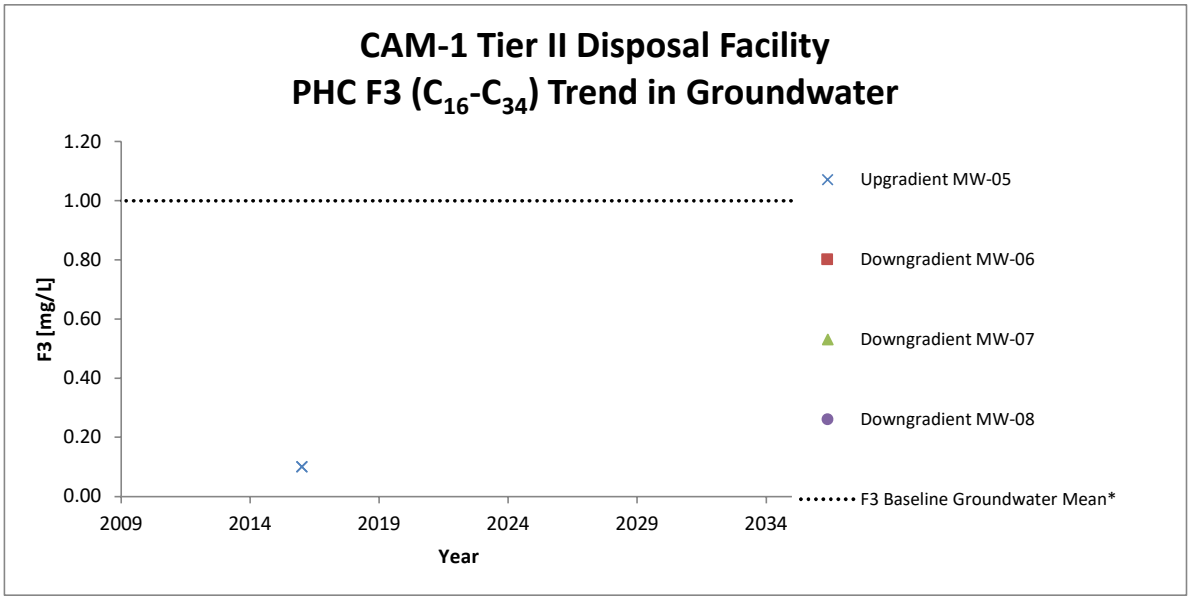
* F2 baseline arithmetic mean is equal to the baseline detection limit
* F2 baseline standard deviation = 0

CAM-1 Tier II Disposal Facility Trends in Groundwater Inorganics and PHCs

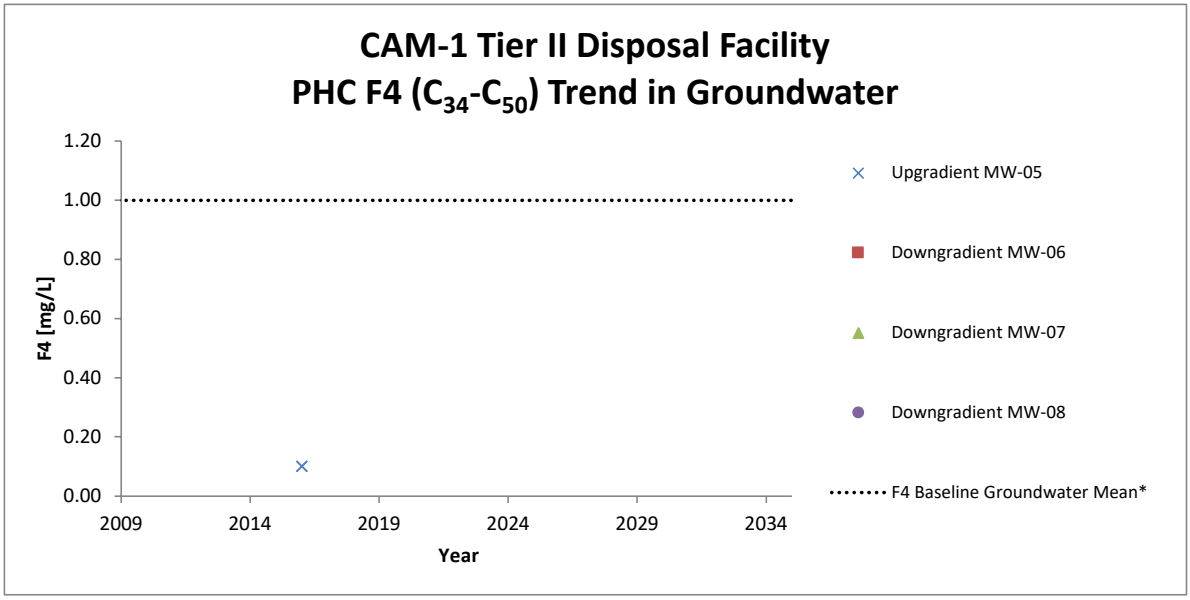
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Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



* F3 baseline arithmetic mean is equal to the baseline detection limit
* F3 baseline standard deviation = 0



* F4 baseline arithmetic mean is equal to the baseline detection limit
* F4baseline standard deviation = 0

APPENDIX D8

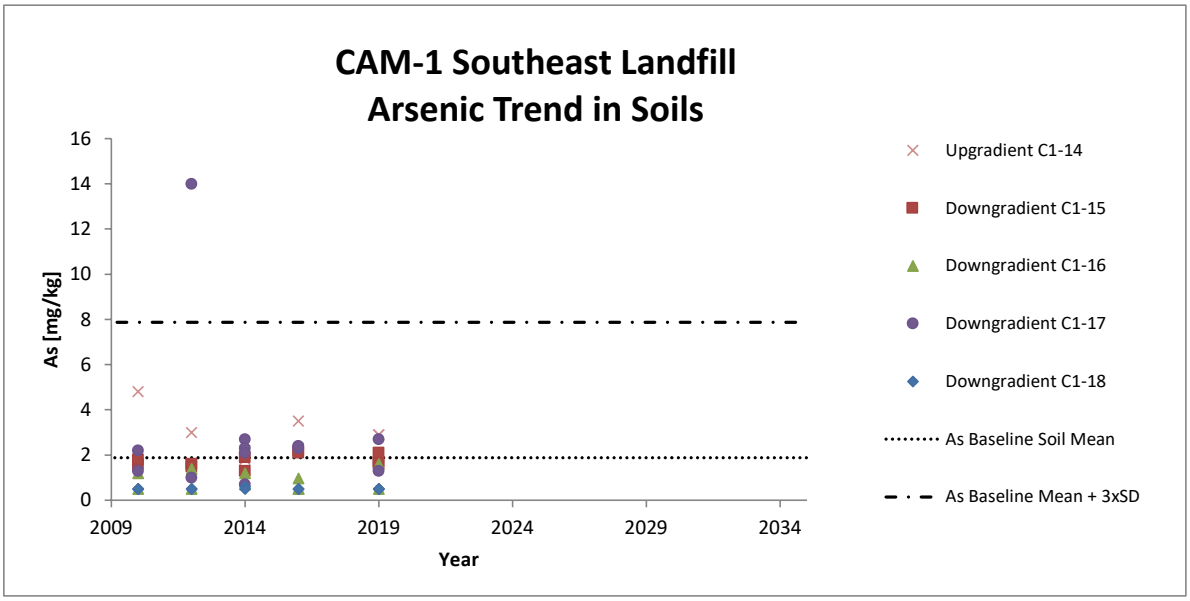
CAM-1 Southeast Landfill – Trends in Soil Inorganics, PCBs and PHCs

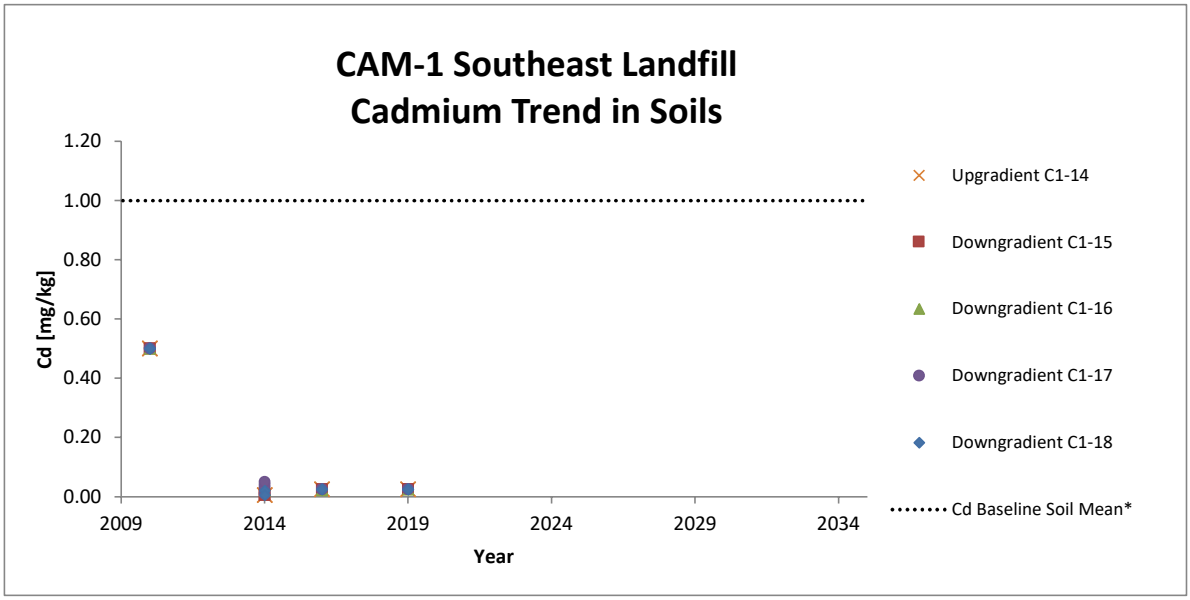
CAM-1 Southeast Landfill Trends in Soil Inorganics, PCBs and PHCs

Link To: Table of Contents

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.





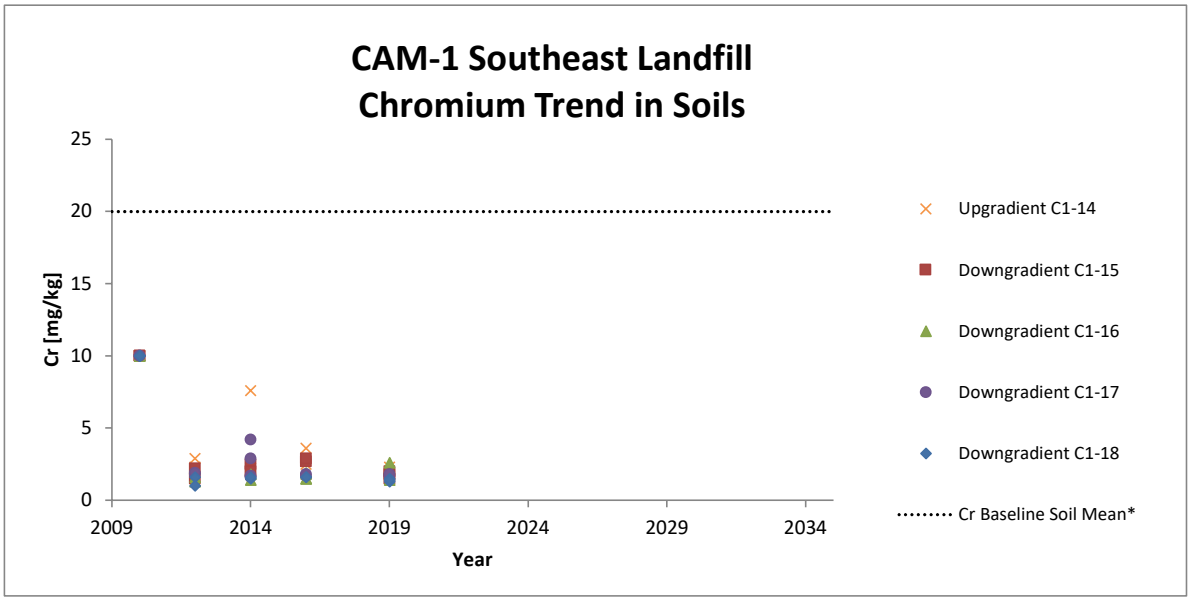
* Cd baseline arithmetic mean is equal to the baseline detection limit
* Cd baseline standard deviation = 0

CAM-1 Southeast Landfill Trends in Soil Inorganics, PCBs and PHCs

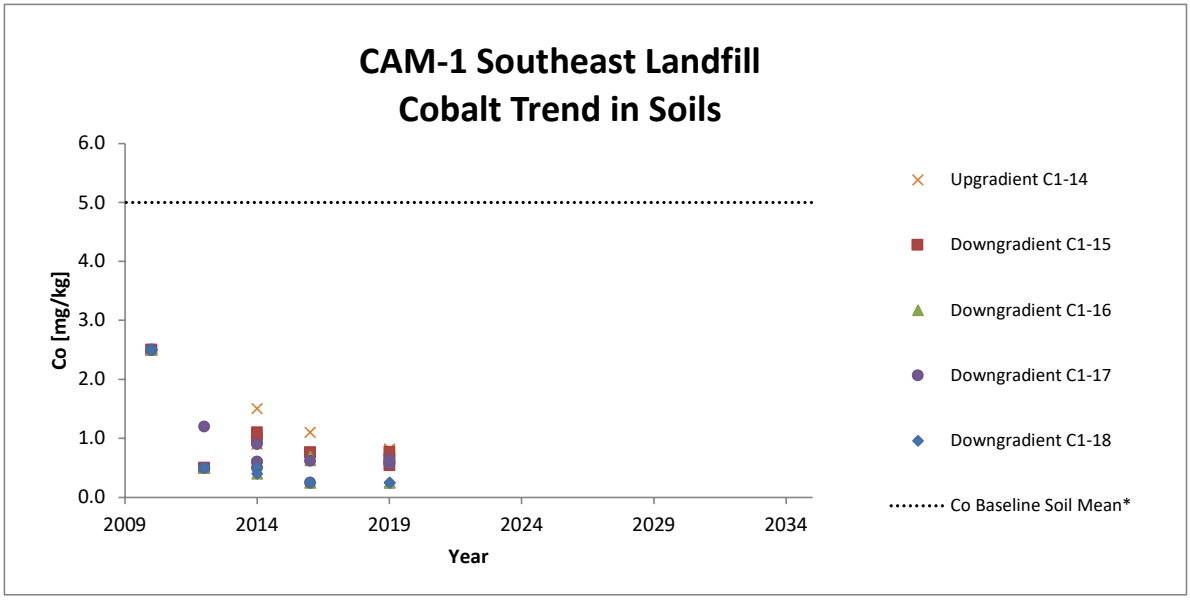
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Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



* Cr baseline arithmetic mean is equal to the baseline detection limit
* Cr baseline standard deviation = 0



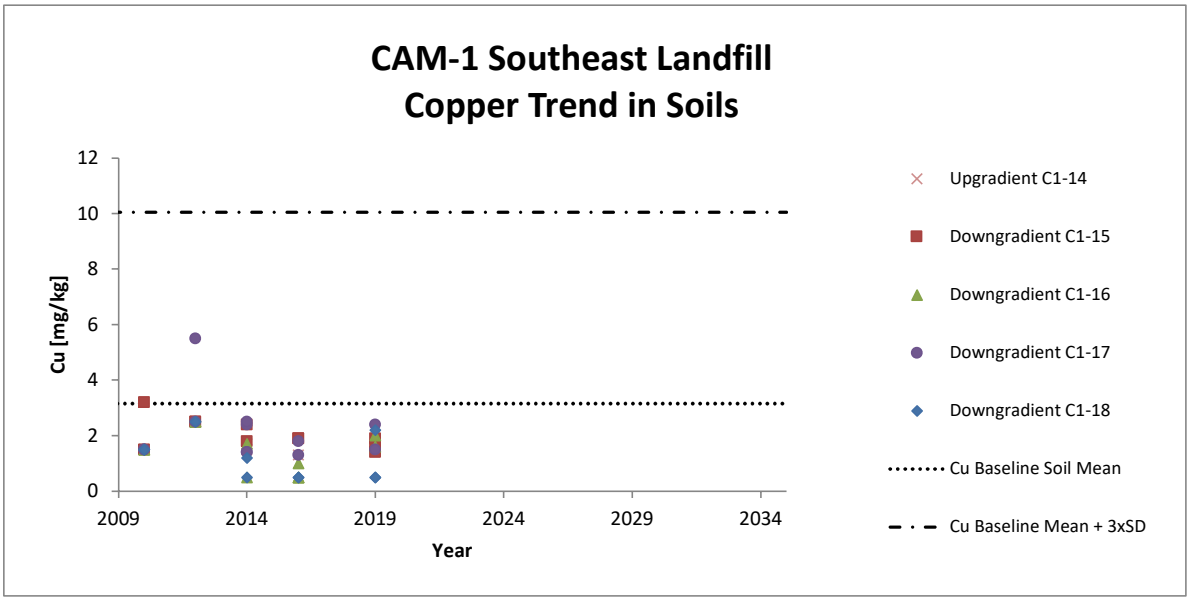
* Co baseline arithmetic mean is equal to the baseline detection limit
* Co baseline standard deviation = 0

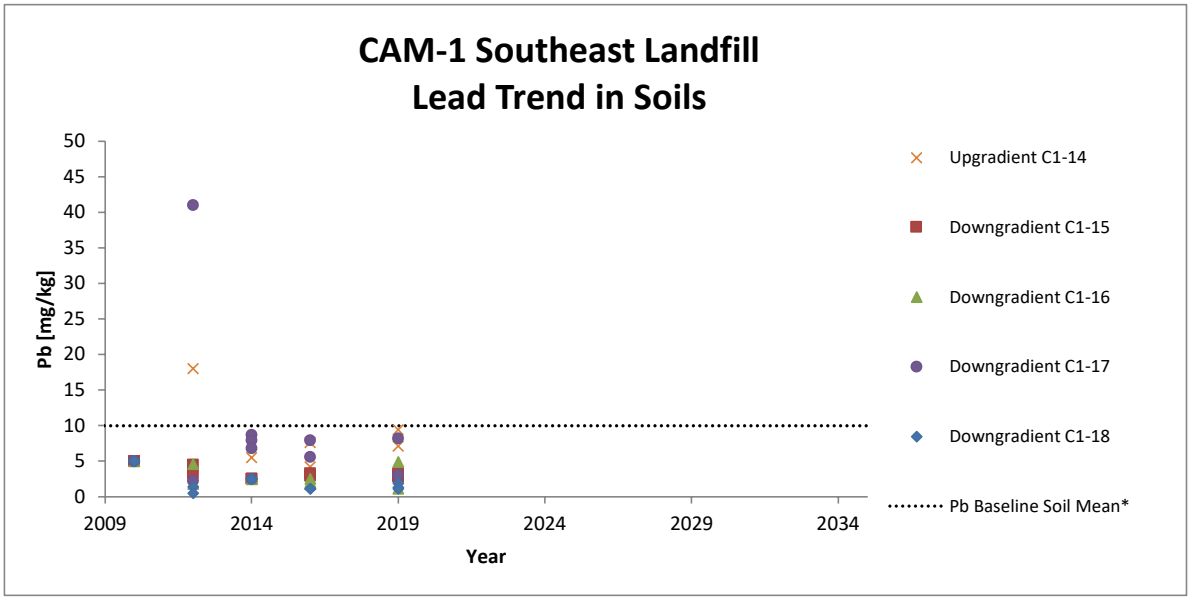
CAM-1 Southeast Landfill Trends in Soil Inorganics, PCBs and PHCs

Link To: Table of Contents

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.





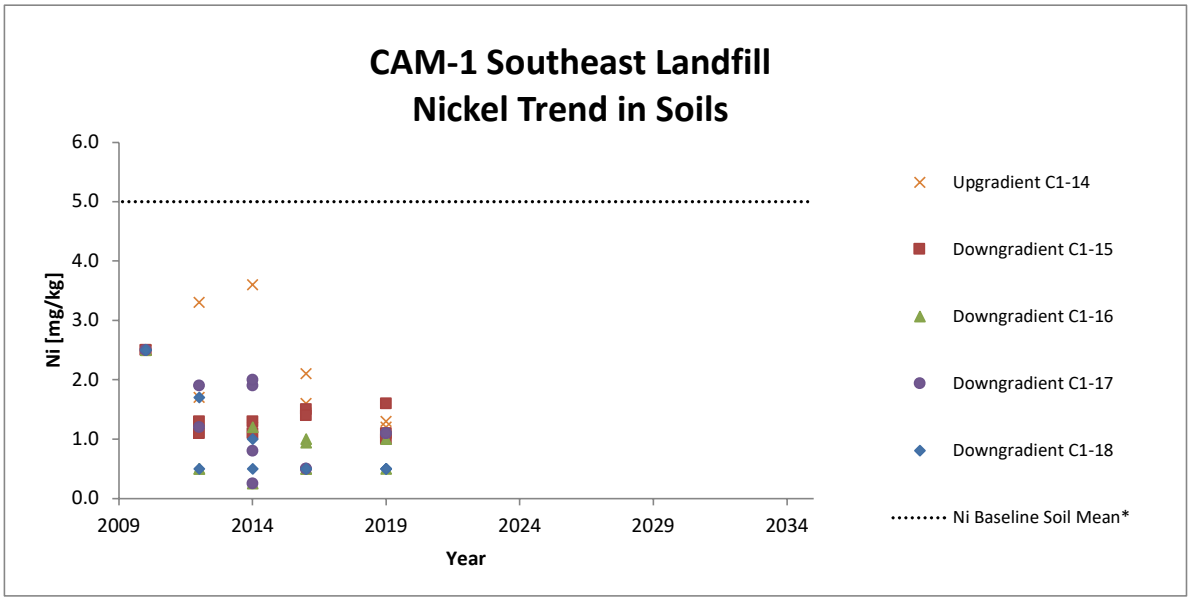
* Pb baseline arithmetic mean is equal to the baseline detection limit
* Pb baseline standard deviation = 0

CAM-1 Southeast Landfill Trends in Soil Inorganics, PCBs and PHCs

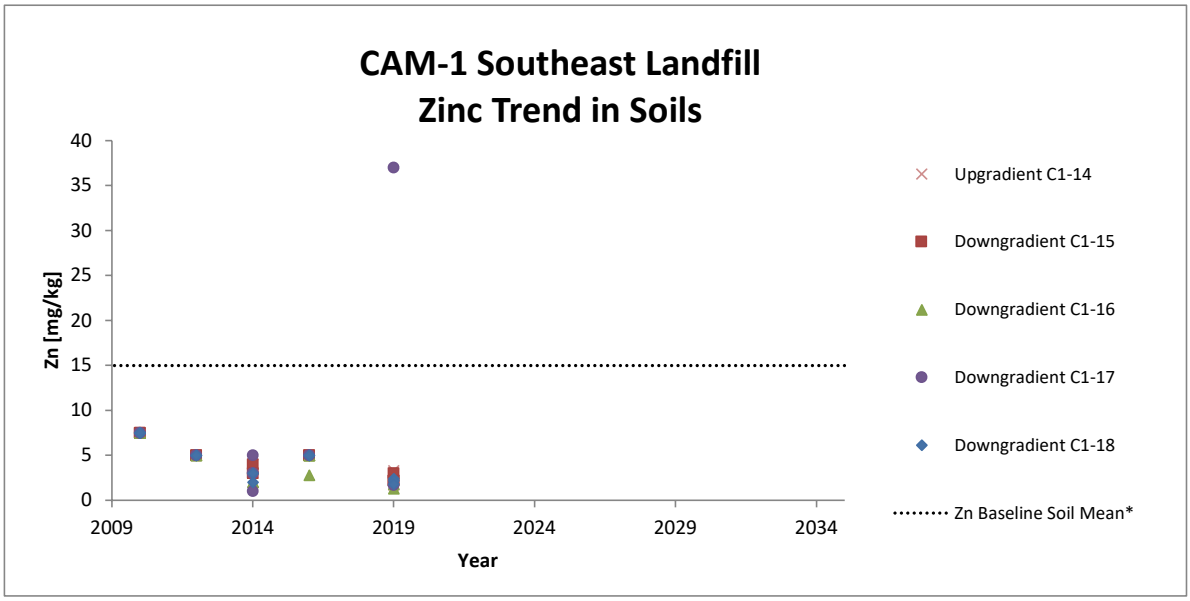
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Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



* Ni baseline arithmetic mean is equal to the baseline detection limit
* Ni baseline standard deviation = 0



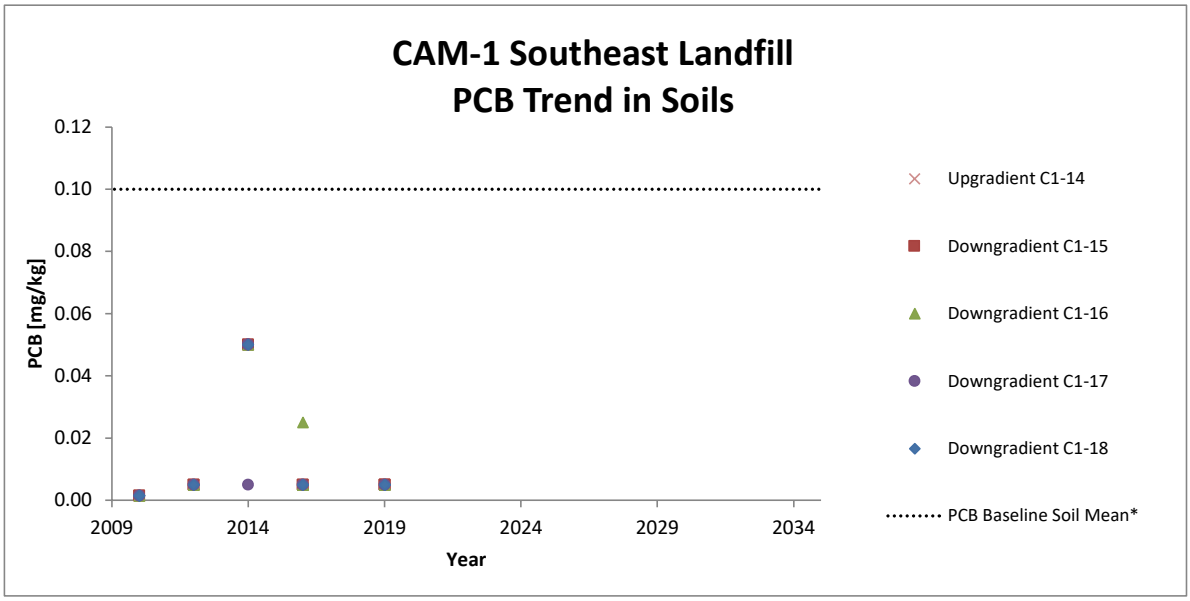
* Zn baseline arithmetic mean is equal to the baseline detection limit
* Zn baseline standard deviation = 0

CAM-1 Southeast Landfill Trends in Soil Inorganics, PCBs and PHCs

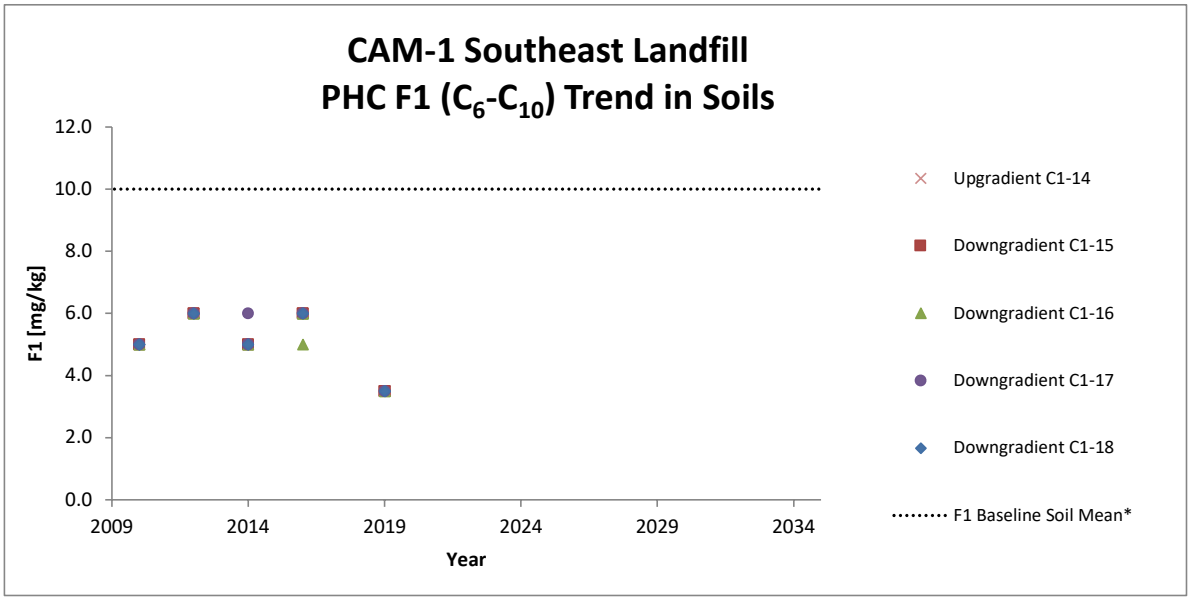
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Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



* PCB baseline arithmetic mean is equal to the baseline detection limit
* PCB baseline standard deviation = 0



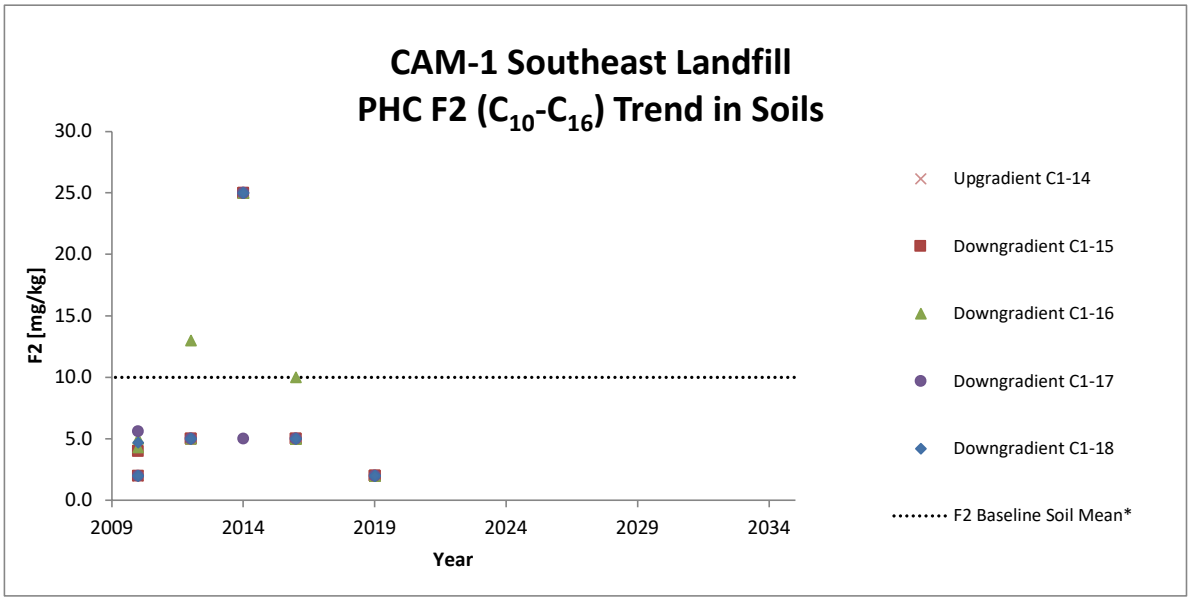
* F1 baseline arithmetic mean is equal to the baseline detection limit
* F1 baseline standard deviation = 0

CAM-1 Southeast Landfill Trends in Soil Inorganics, PCBs and PHCs

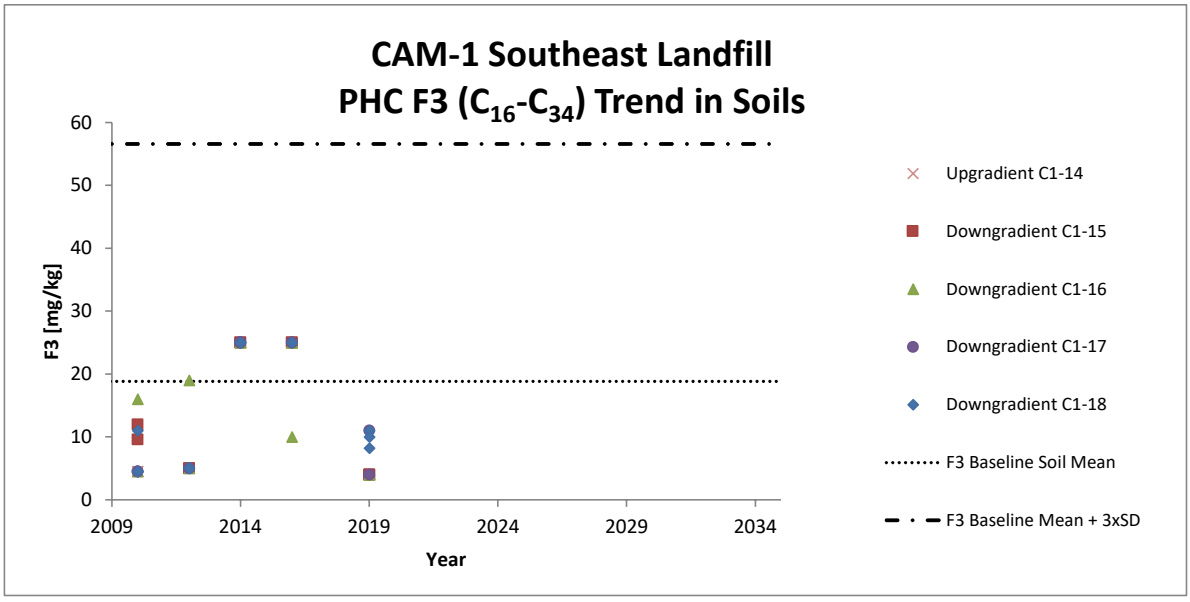
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Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



* F2 baseline arithmetic mean is equal to the baseline detection limit
* F2 baseline standard deviation = 0

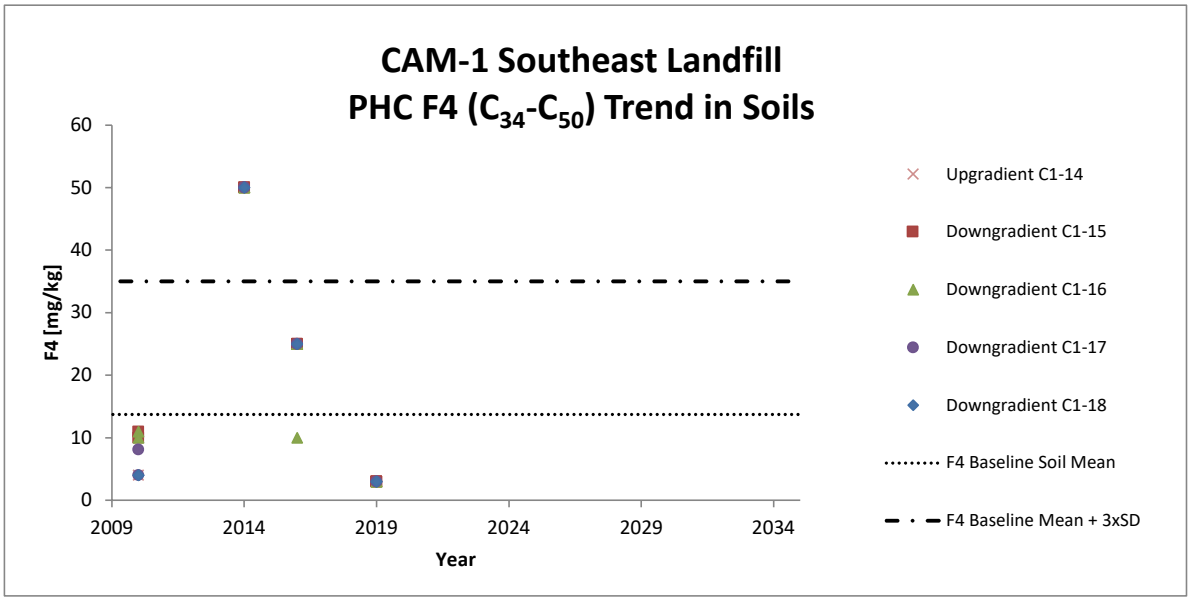


CAM-1 Southeast Landfill Trends in Soil Inorganics, PCBs and PHCs

Link To: Table of Contents

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



APPENDIX D9

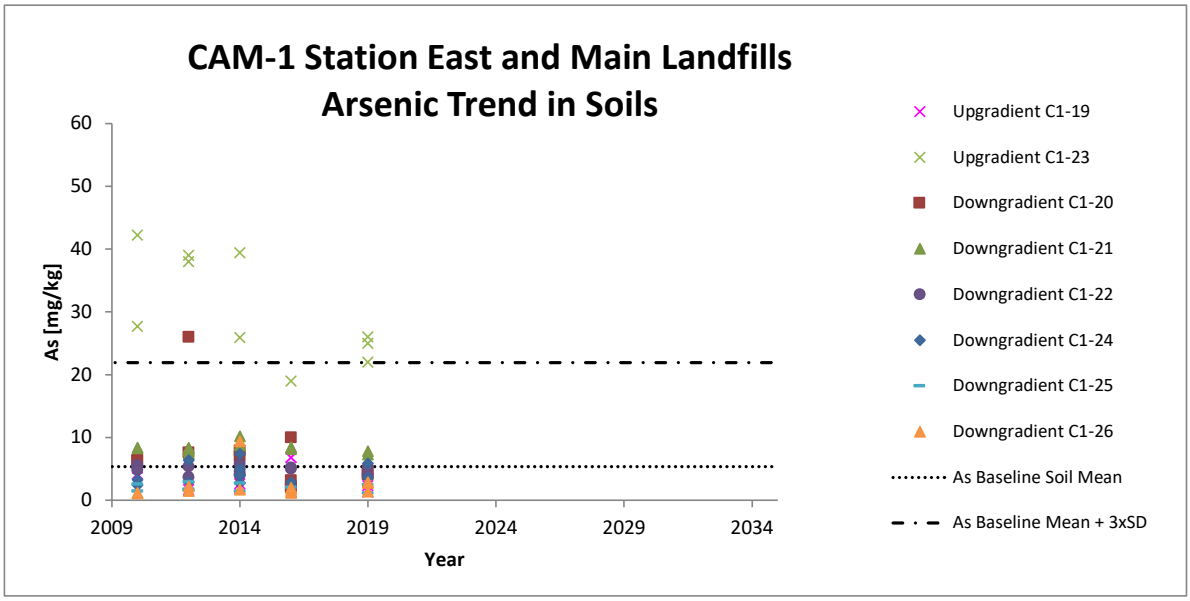
CAM-1 Main and Station East Landfills – Trends in Soil Inorganics, PCBs and PHCs

CAM-1 Station East and Main Landfills Trends in Soil Inorganics, PCBs and PHCs

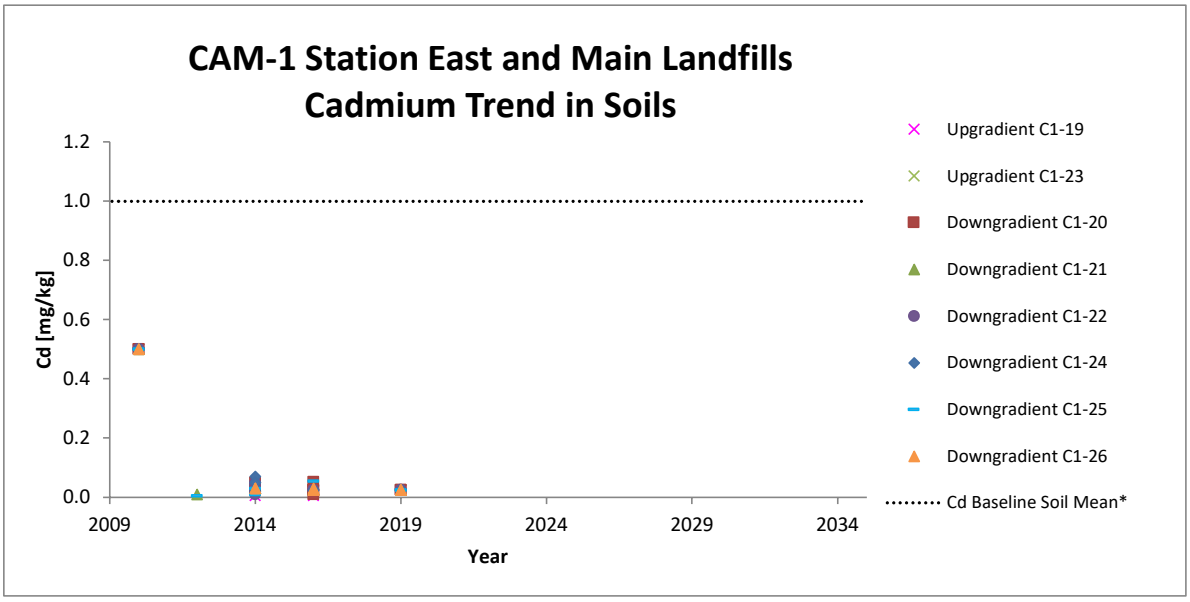
Link To: Table of Contents

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



Arsenic in the form of arsenate is naturally elevated in soil at CAM-1, up to concentrations of 40 mg/kg (ESG, 2003; I. Koch et al, 2005).



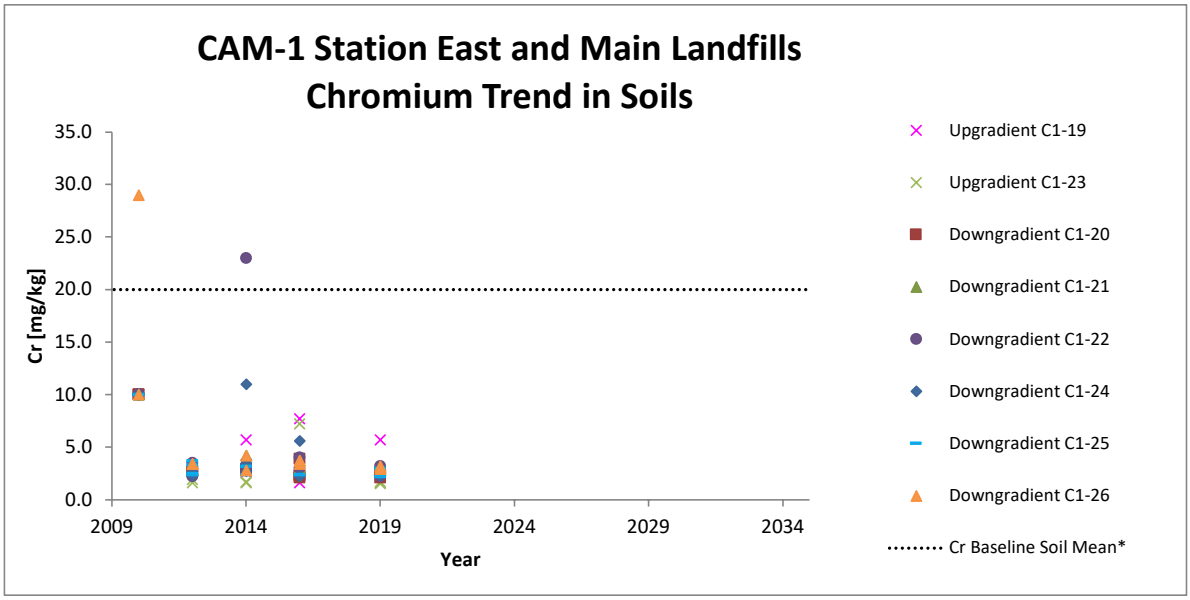
* Cd baseline arithmetic mean is equal to the baseline detection limit
* Cd baseline standard deviation = 0

CAM-1 Station East and Main Landfills Trends in Soil Inorganics, PCBs and PHCs

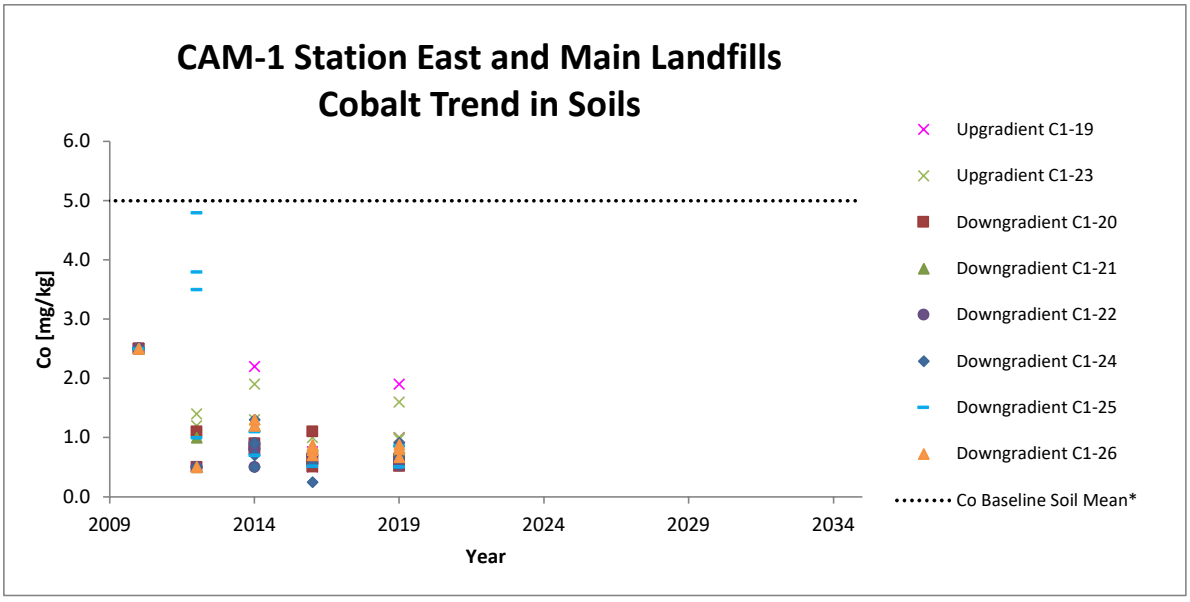
Link To: Table of Contents

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



* Cr baseline arithmetic mean is equal to the baseline detection limit
* Cr baseline standard deviation = 0



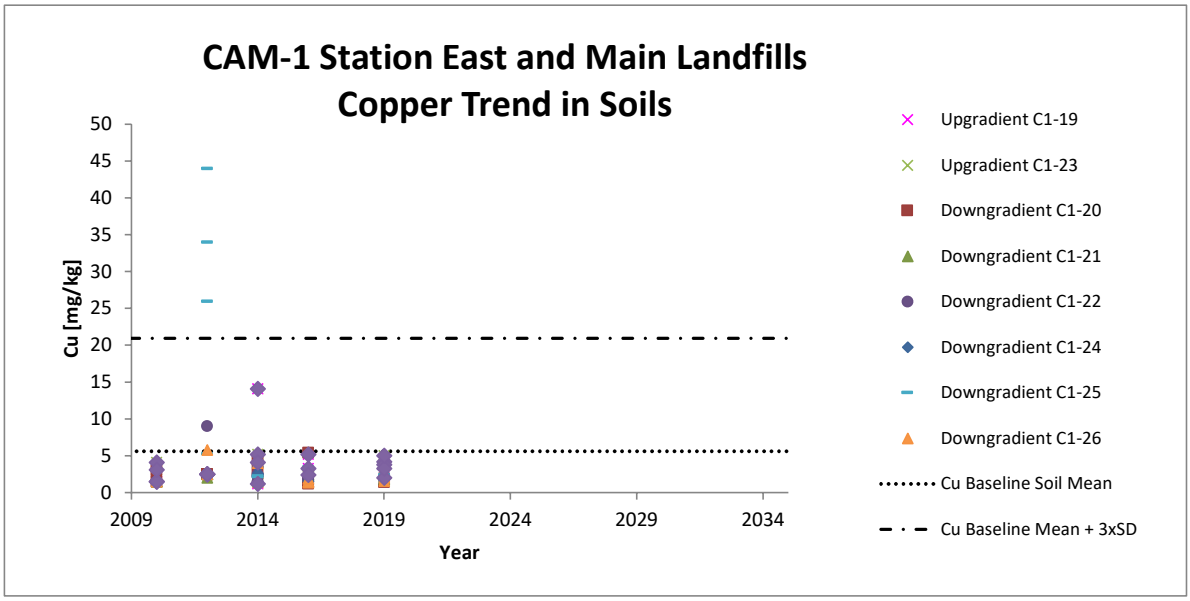
* Co baseline arithmetic mean is equal to the baseline detection limit
* Co baseline standard deviation = 0

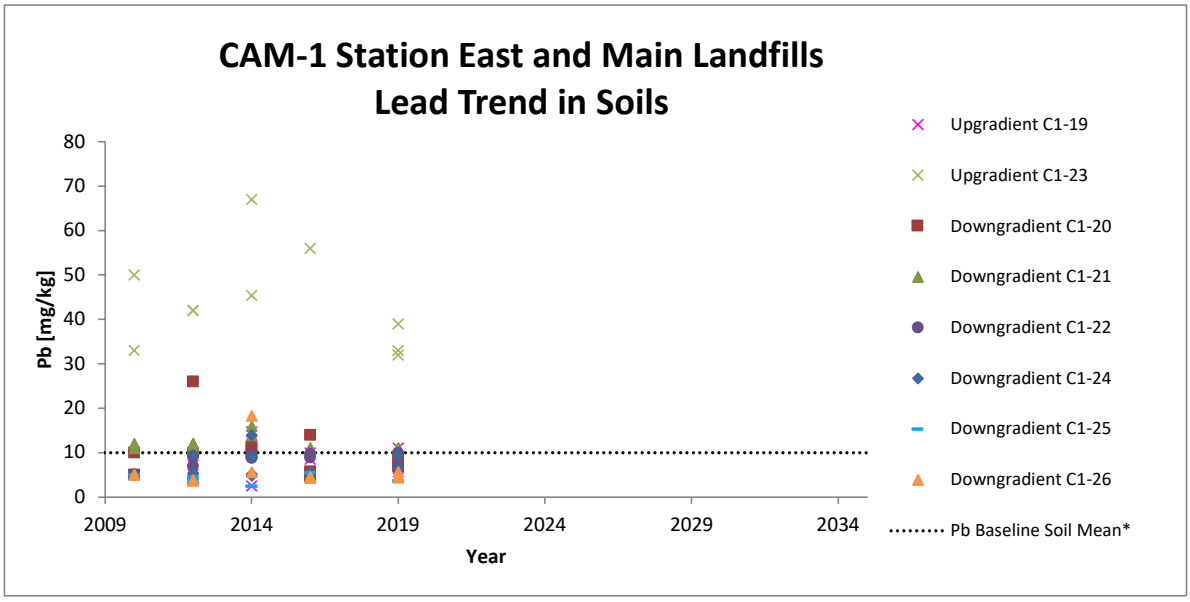
CAM-1 Station East and Main Landfills Trends in Soil Inorganics, PCBs and PHCs

Link To: Table of Contents

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.





* Pb baseline arithmetic mean is equal to the baseline detection limit

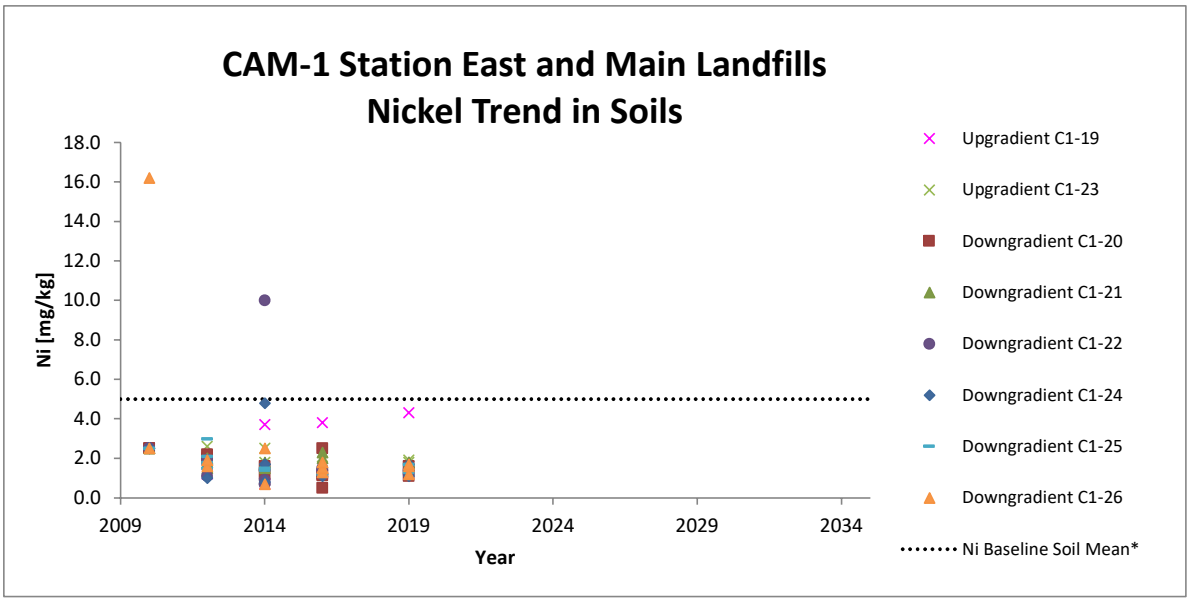
* Pb baseline standard deviation = 0

CAM-1 Station East and Main Landfills Trends in Soil Inorganics, PCBs and PHCs

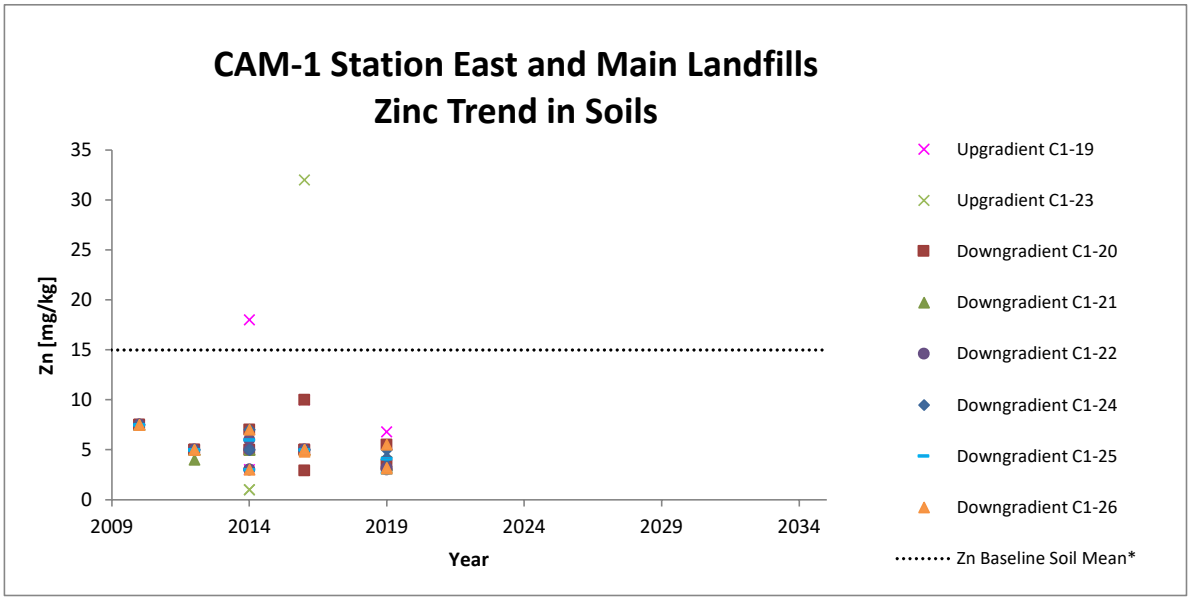
Link To: Table of Contents

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



* Ni baseline arithmetic mean is equal to the baseline detection limit
* Ni baseline standard deviation = 0



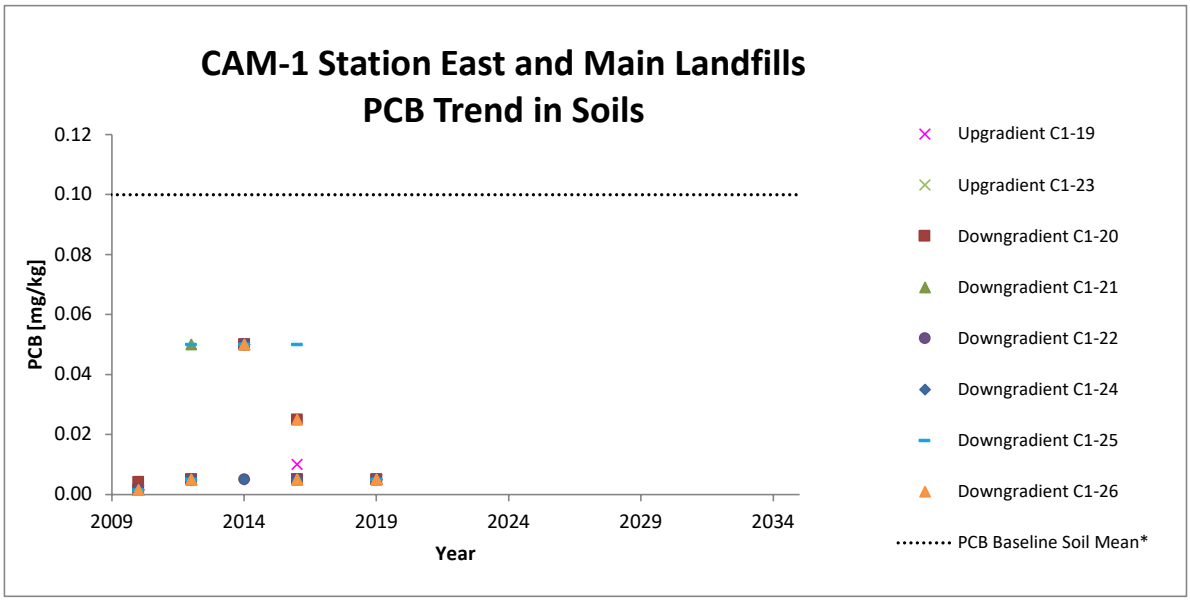
* Zn baseline arithmetic mean is equal to the baseline detection limit
* Zn baseline standard deviation = 0

CAM-1 Station East and Main Landfills Trends in Soil Inorganics, PCBs and PHCs

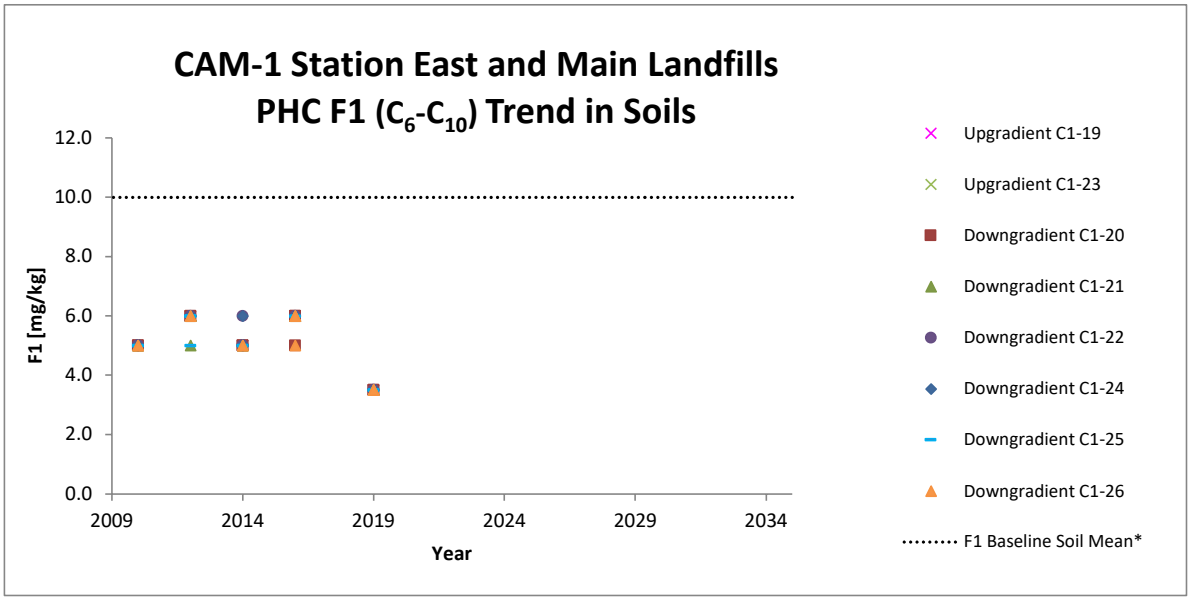
Link To: Table of Contents

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



* PCB baseline arithmetic mean is equal to the baseline detection limit
* PCB baseline standard deviation = 0



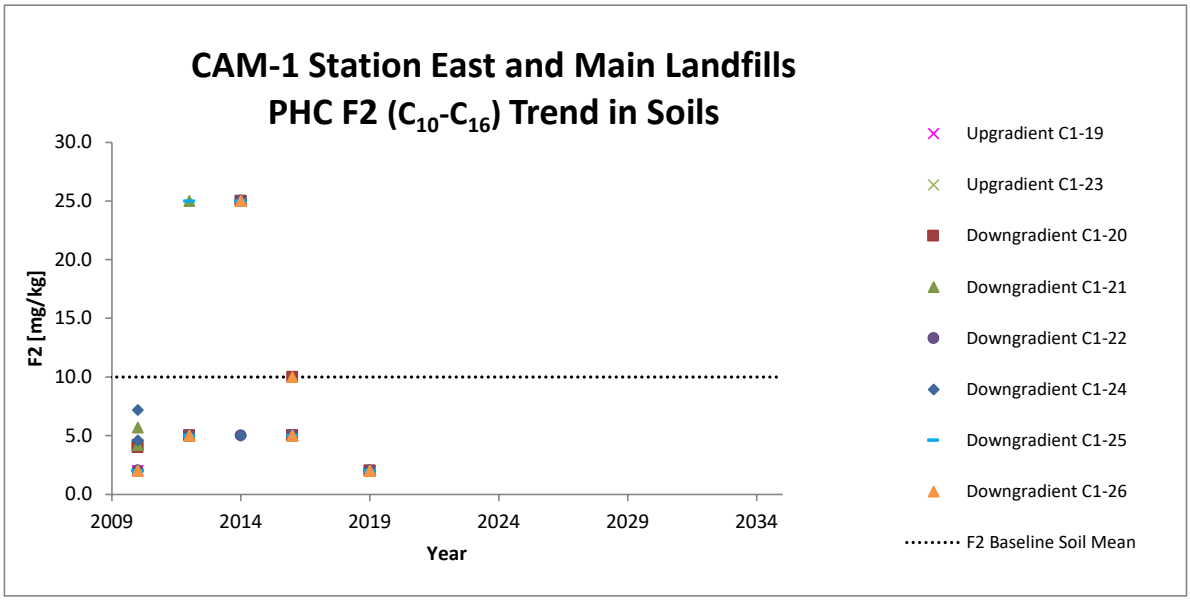
* F1 baseline arithmetic mean is equal to the baseline detection limit
* F1 baseline standard deviation = 0

CAM-1 Station East and Main Landfills Trends in Soil Inorganics, PCBs and PHCs

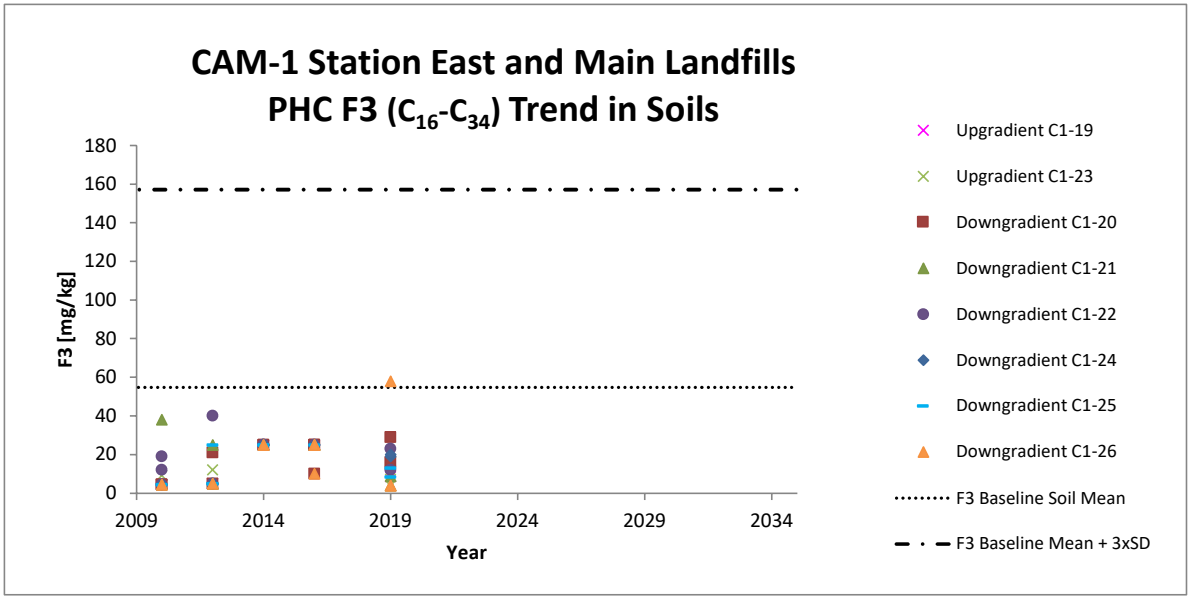
Link To: Table of Contents

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



* F2 baseline arithmetic mean is equal to the baseline detection limit
* F2 baseline standard deviation = 0

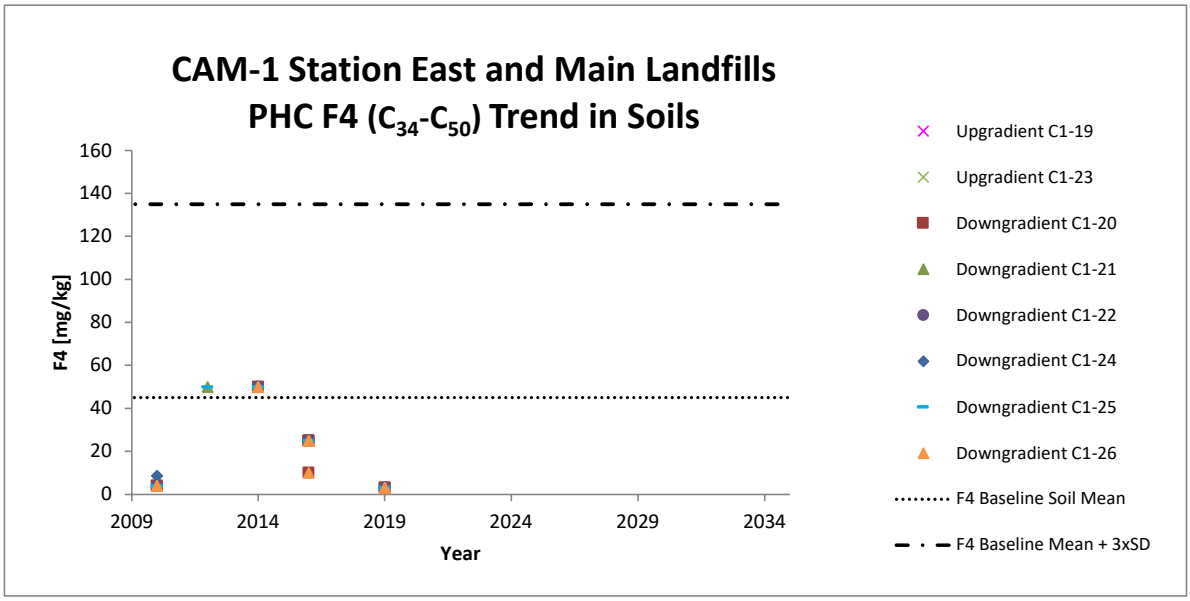


CAM-1 Station East and Main Landfills Trends in Soil Inorganics, PCBs and PHCs

Link To: Table of Contents

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



APPENDIX D10

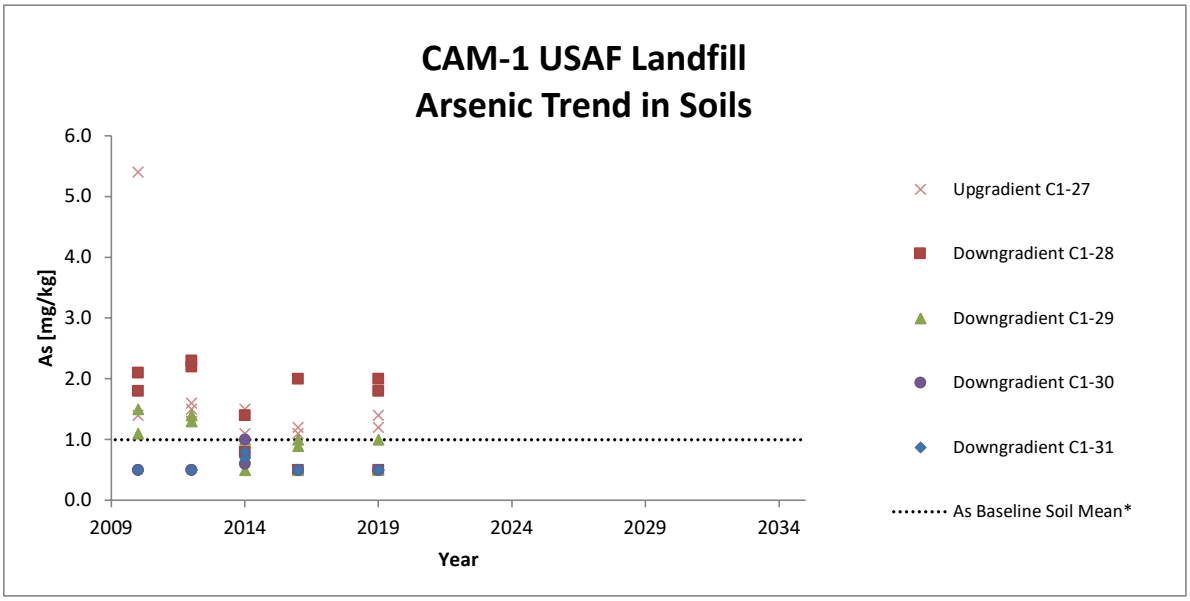
CAM-1 USAF – Trends in Soil Inorganics, PCBs and PHCs

CAM-1 USAF Landfill Trends in Soil Inorganics, PCBs and PHCs

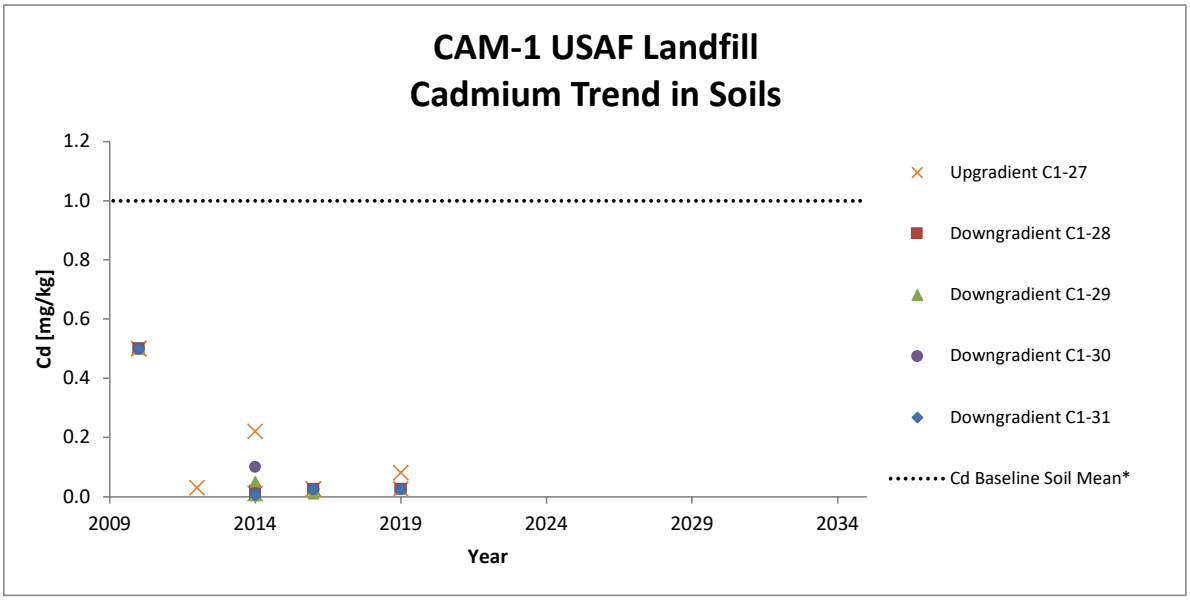
Link To: Table of Contents

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



* As baseline arithmetic mean is equal to the baseline detection limit
* As baseline standard deviation = 0



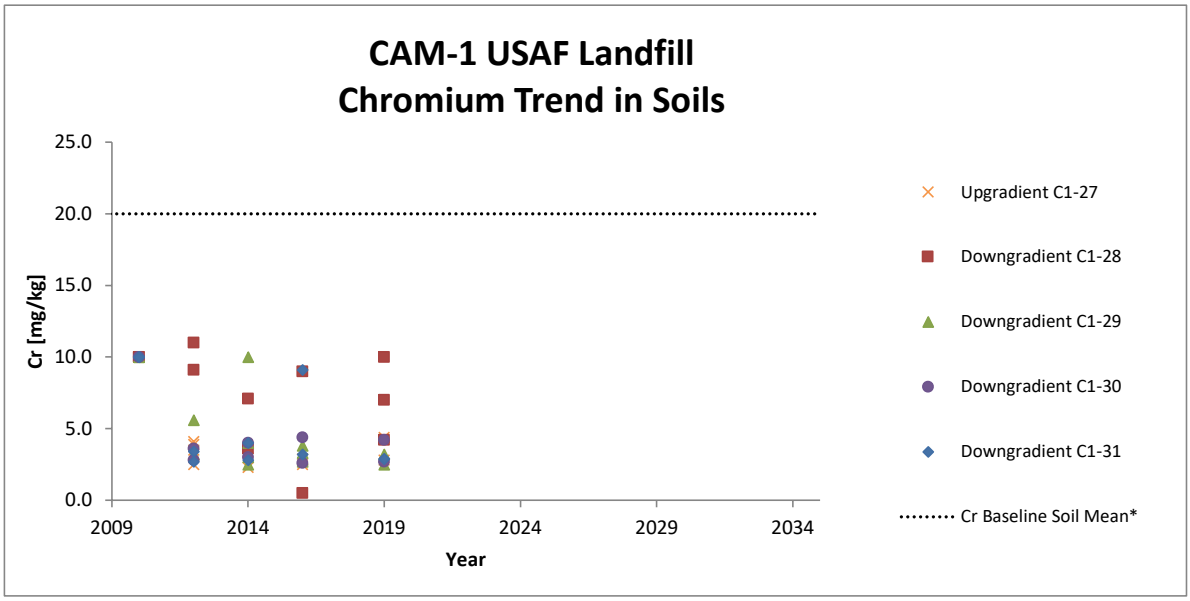
* Cd baseline arithmetic mean is equal to the baseline detection limit
* Cd baseline standard deviation = 0

CAM-1 USAF Landfill Trends in Soil Inorganics, PCBs and PHCs

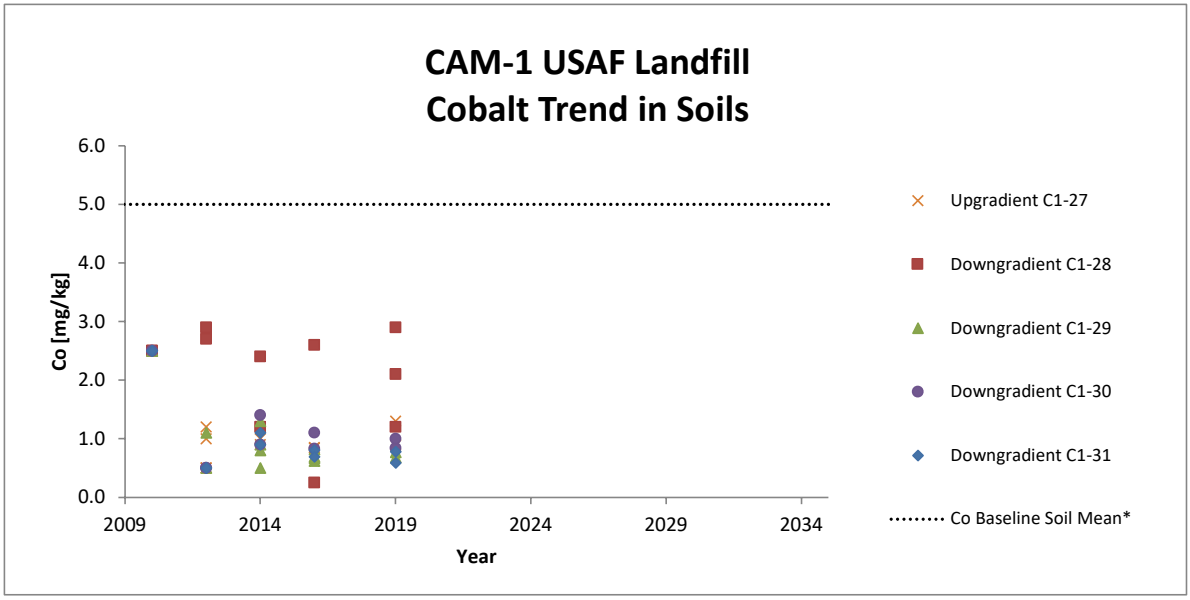
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Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



* Cr baseline arithmetic mean is equal to the baseline detection limit
* Cr baseline standard deviation = 0



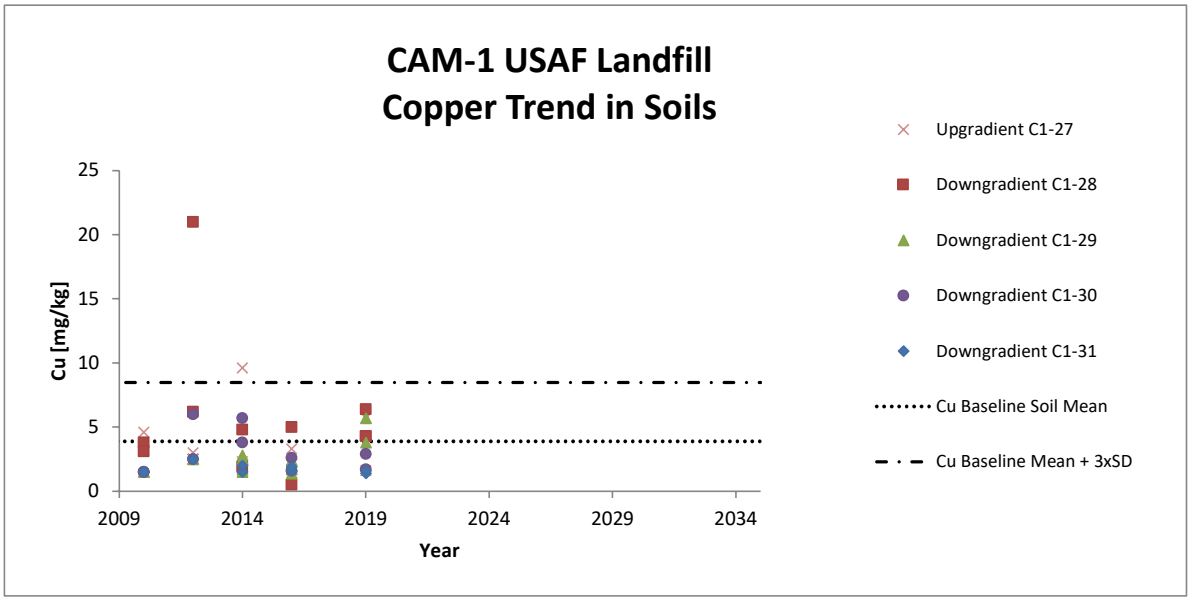
* Co baseline arithmetic mean is equal to the baseline detection limit
* Co baseline standard deviation = 0

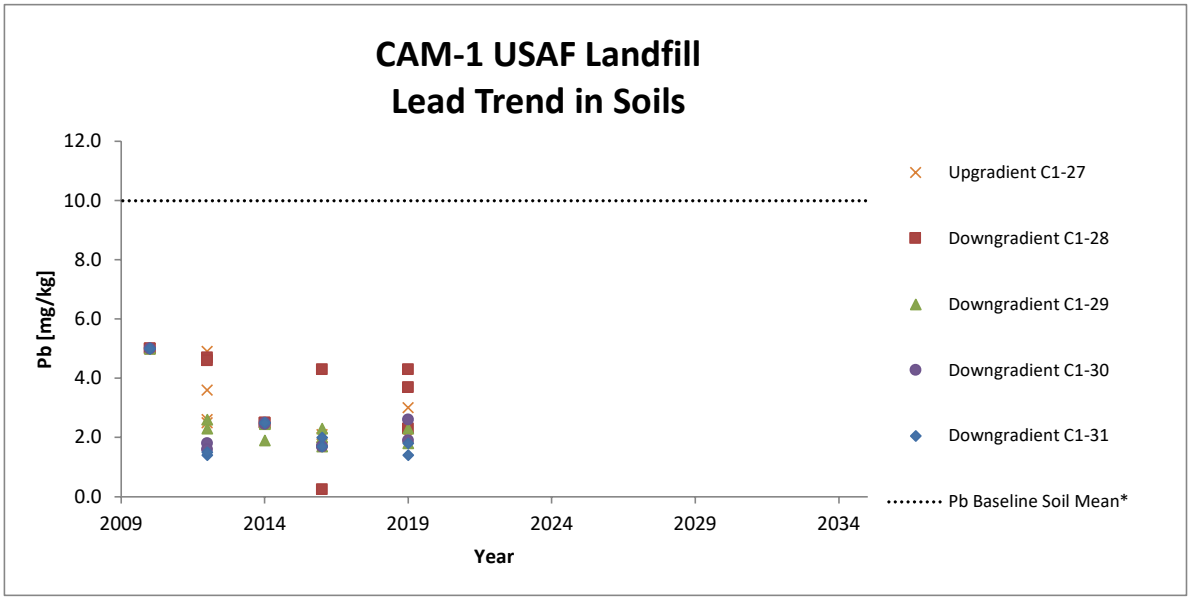
CAM-1 USAF Landfill Trends in Soil Inorganics, PCBs and PHCs

Link To: Table of Contents

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.





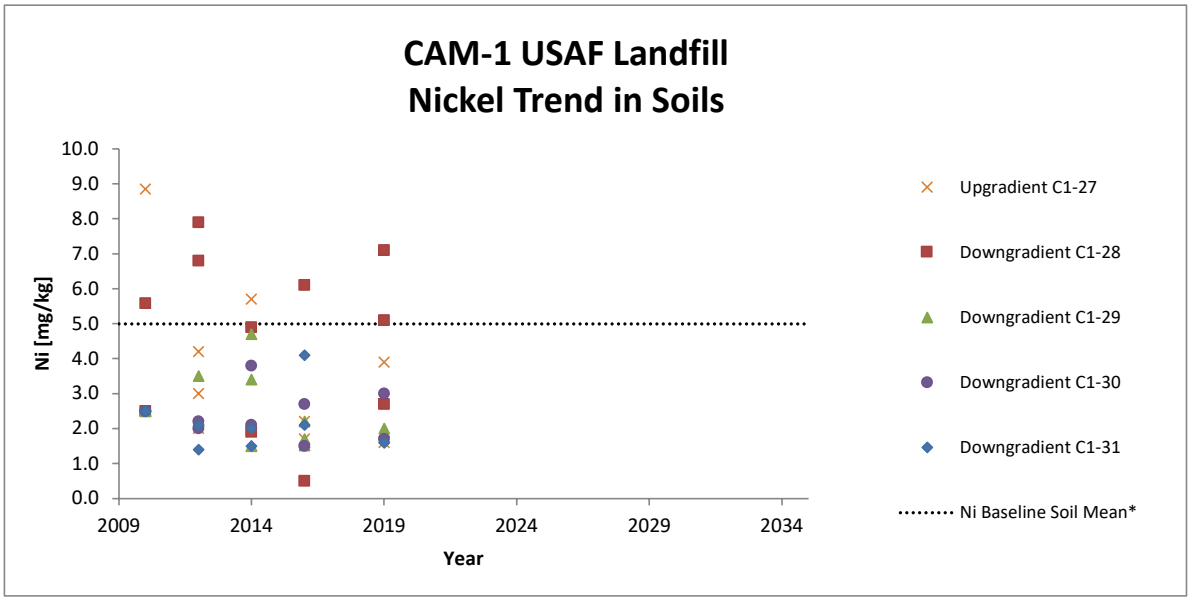
* Pb baseline arithmetic mean is equal to the baseline detection limit
* Pb baseline standard deviation = 0

CAM-1 USAF Landfill Trends in Soil Inorganics, PCBs and PHCs

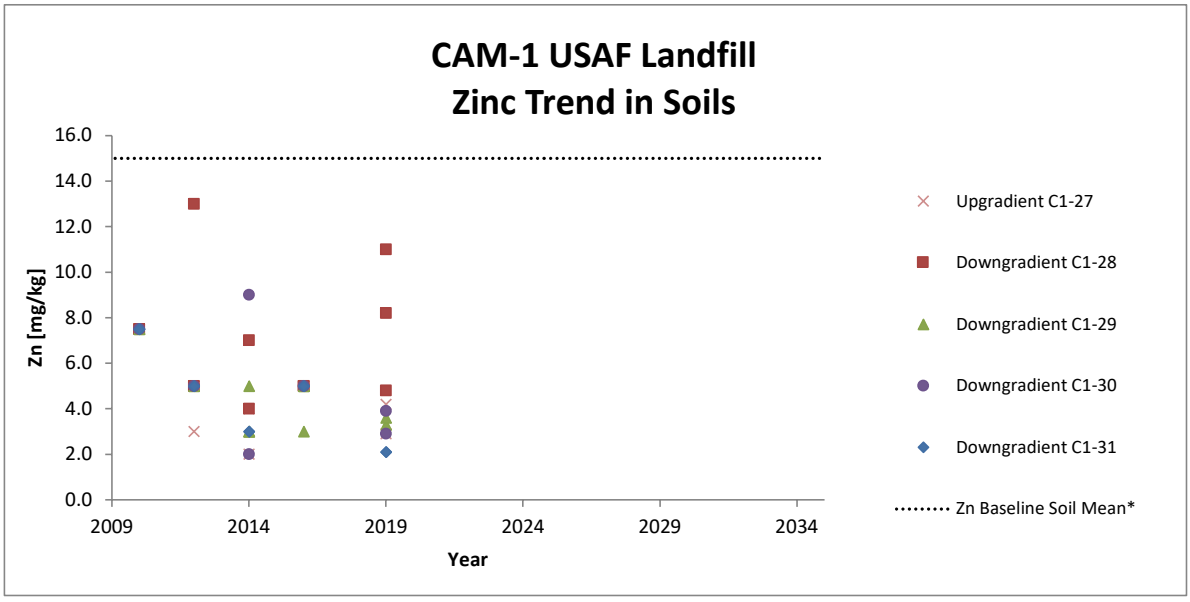
Link To: Table of Contents

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



* Ni baseline arithmetic mean is equal to the baseline detection limit
* Ni baseline standard deviation = 0



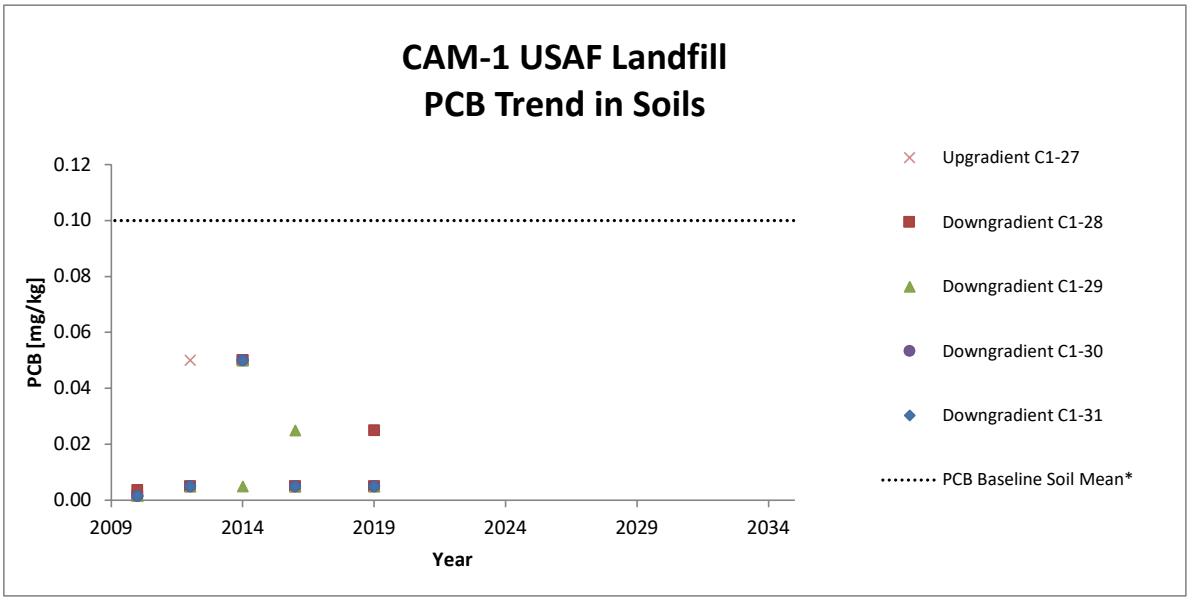
* Zn baseline arithmetic mean is equal to the baseline detection limit
* Zn baseline standard deviation = 0

CAM-1 USAF Landfill Trends in Soil Inorganics, PCBs and PHCs

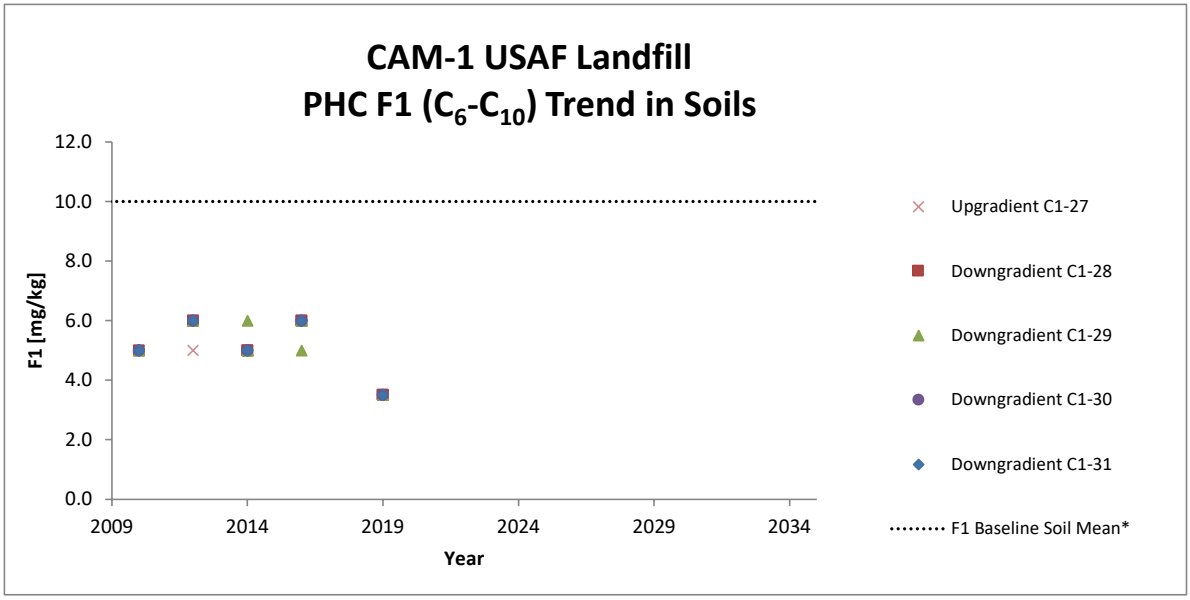
Link To: Table of Contents

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



* PCB baseline arithmetic mean is equal to the baseline detection limit
* PCB baseline standard deviation = 0



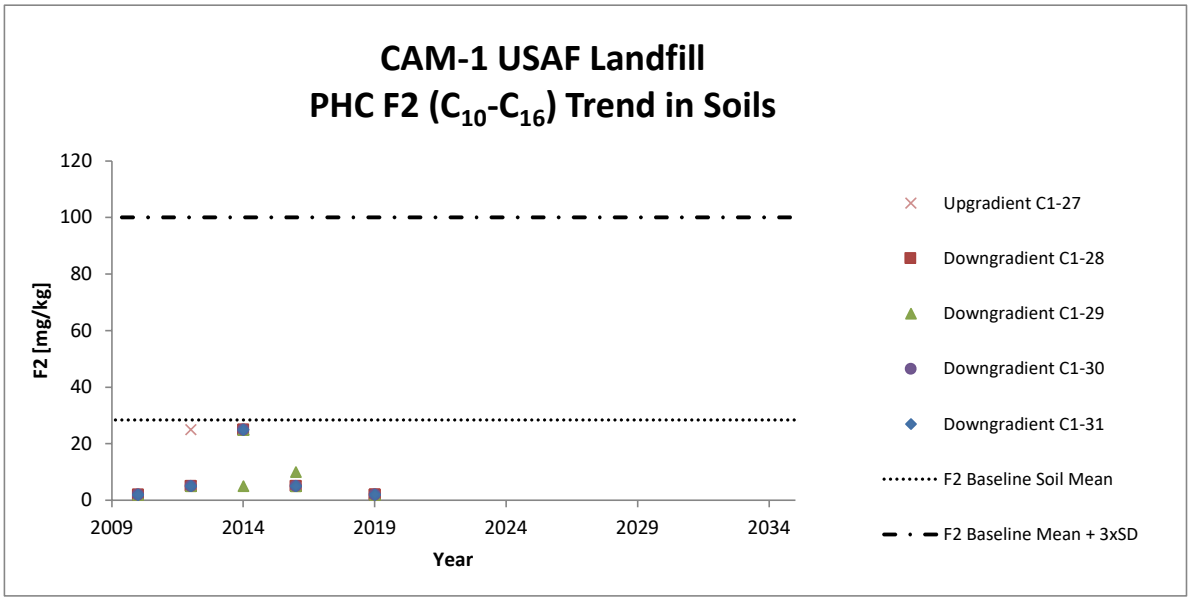
* F1 baseline arithmetic mean is equal to the baseline detection limit
* F1 baseline standard deviation = 0

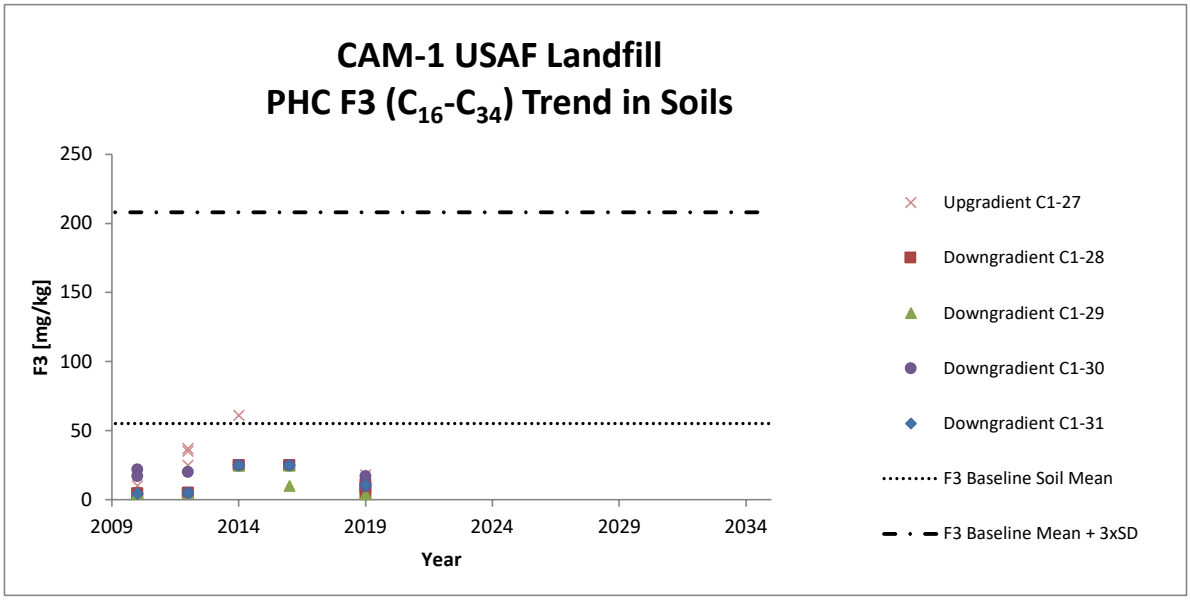
CAM-1 USAF Landfill Trends in Soil Inorganics, PCBs and PHCs

Link To: Table of Contents

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



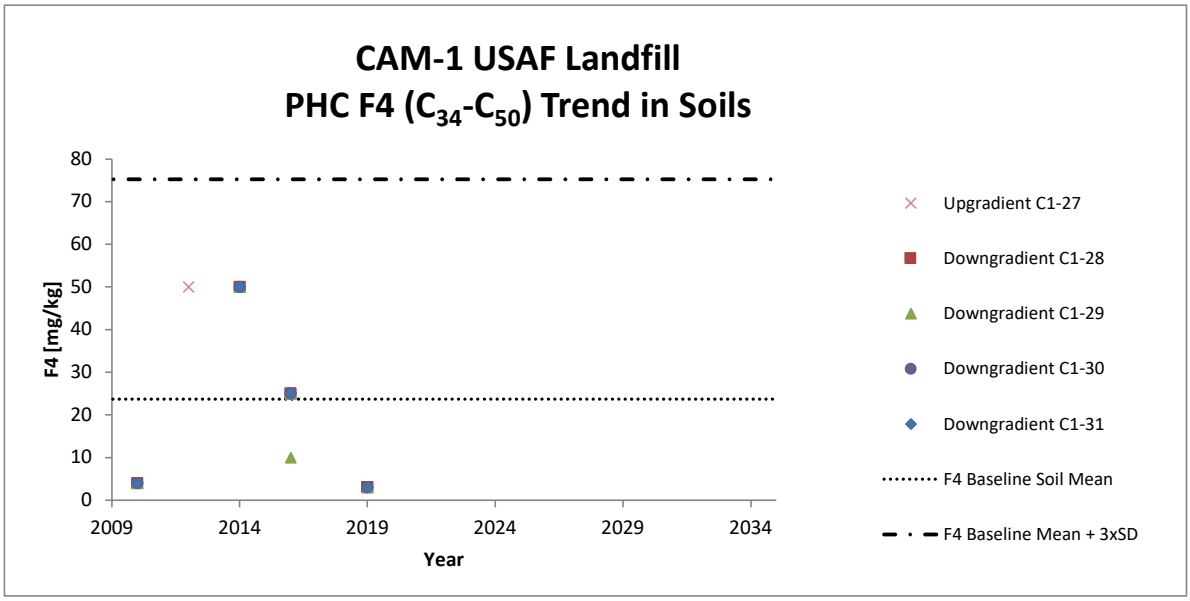


CAM-1 USAF Landfill Trends in Soil Inorganics, PCBs and PHCs

Link To: Table of Contents

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



APPENDIX D11

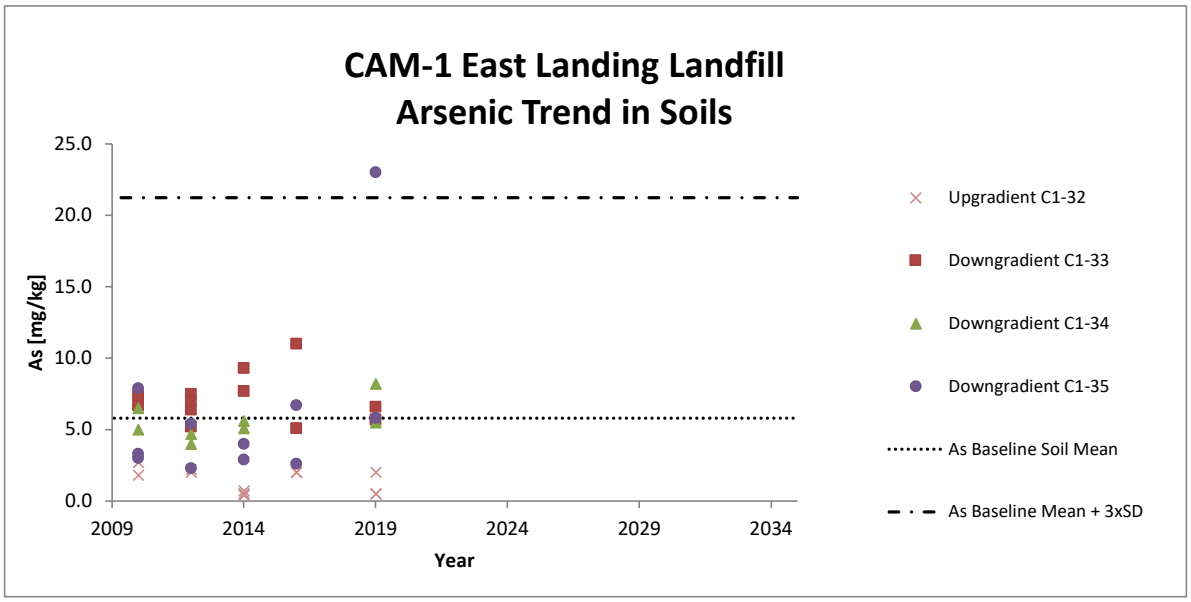
CAM-1 East Landing Landfill – Trends in Soil Inorganics, PCBs and PHCs

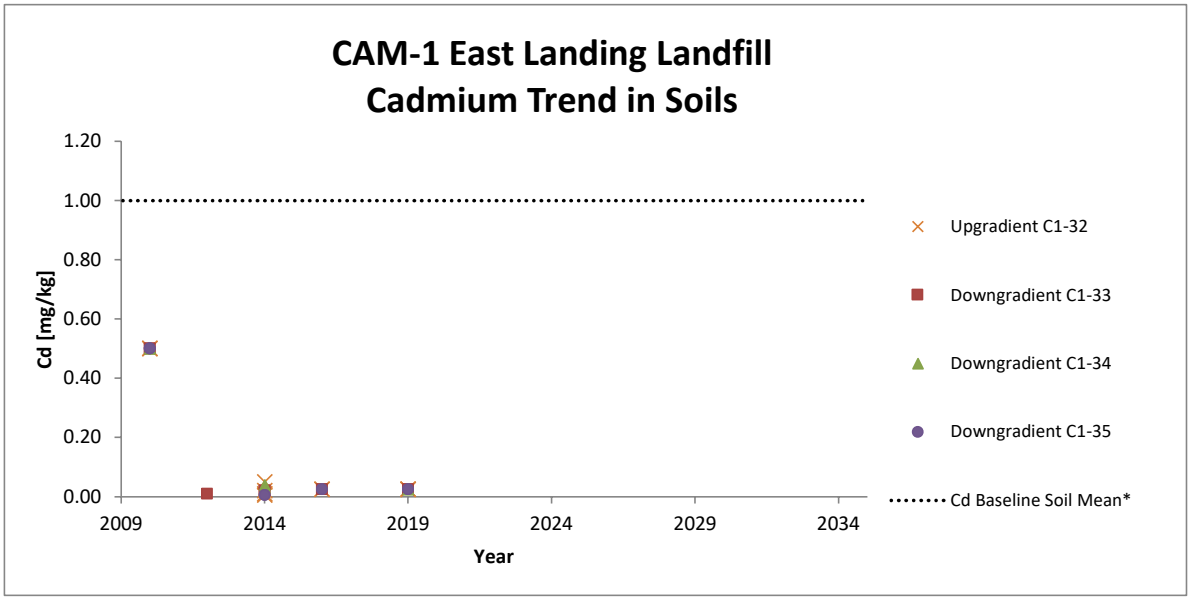
CAM-1 East Landing Landfill Trends in Soil Inorganics, PCBs and PHCs

Link To: Table of Contents

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.





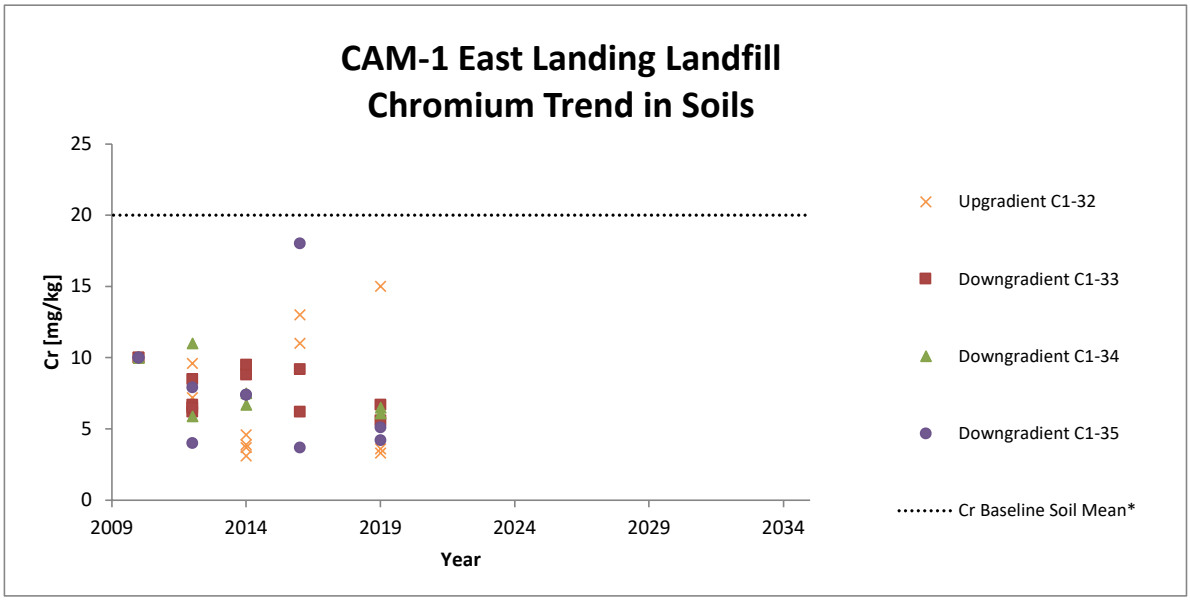
* Cd baseline arithmetic mean is equal to the baseline detection limit
* Cd baseline standard deviation = 0

CAM-1 East Landing Landfill Trends in Soil Inorganics, PCBs and PHCs

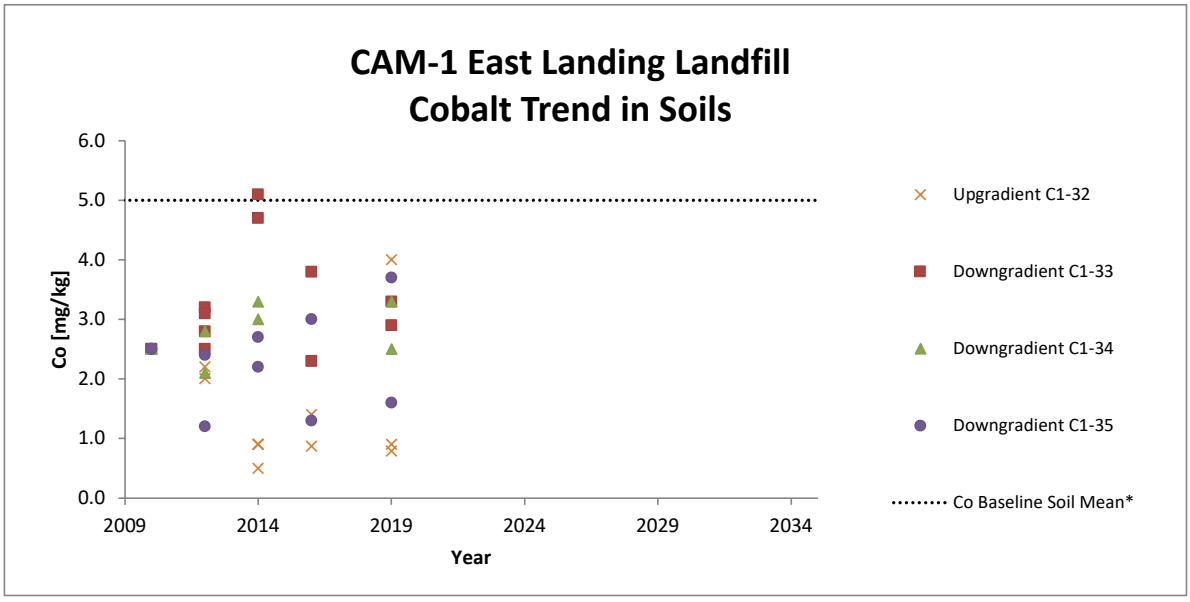
Link To: Table of Contents

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



* Cr baseline arithmetic mean is equal to the baseline detection limit
* Cr baseline standard deviation = 0



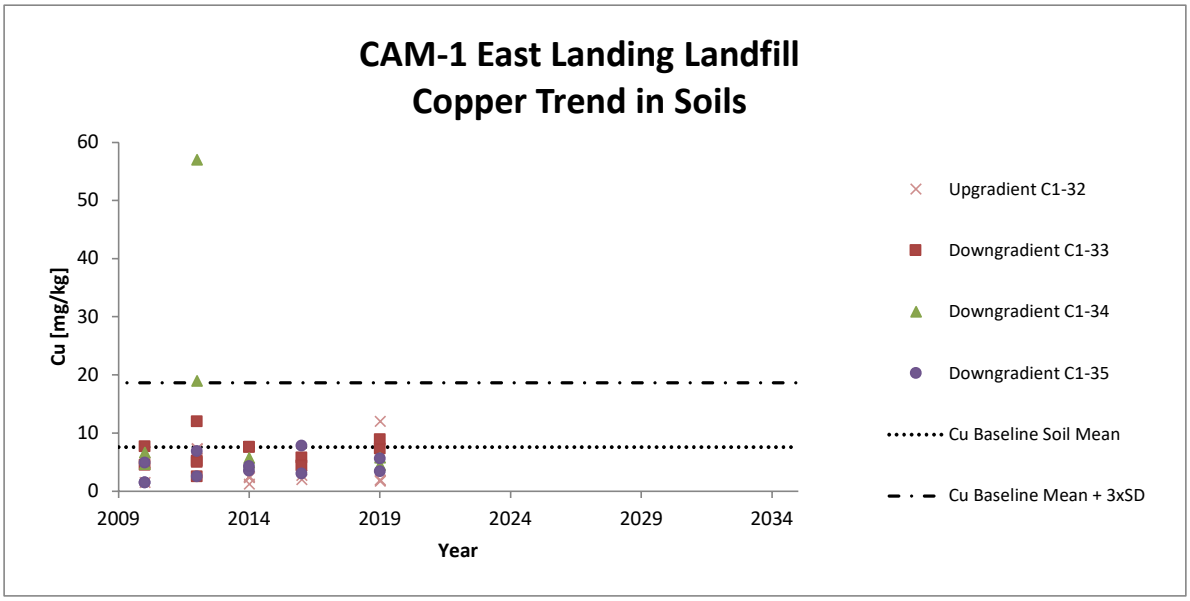
* Co baseline arithmetic mean is equal to the baseline detection limit
* Co baseline standard deviation = 0

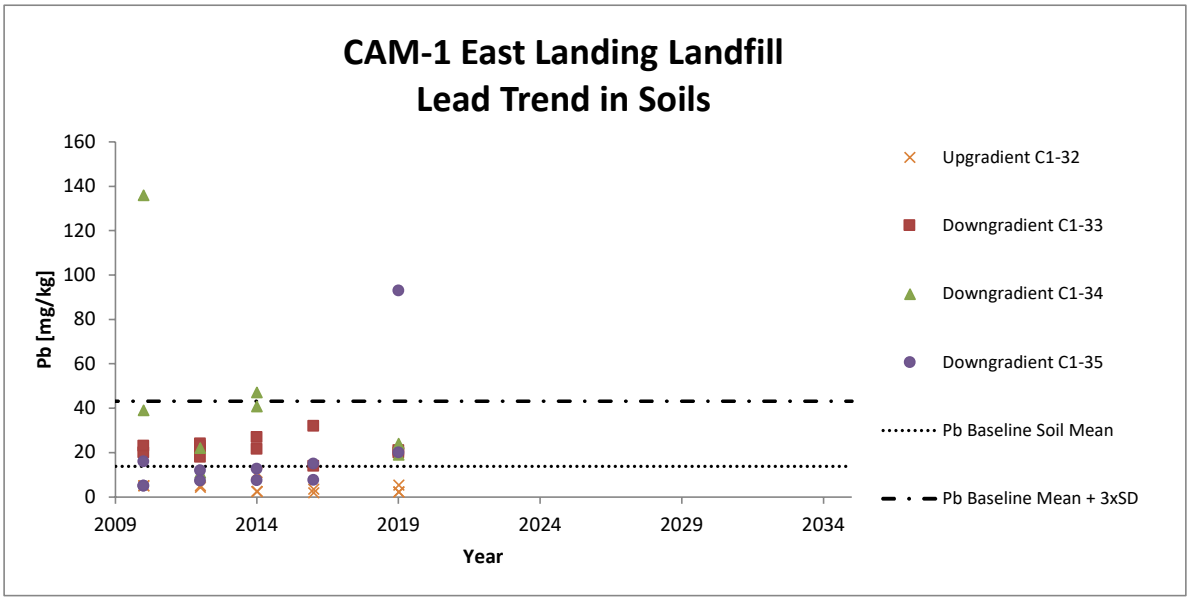
CAM-1 East Landing Landfill Trends in Soil Inorganics, PCBs and PHCs

Link To: Table of Contents

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



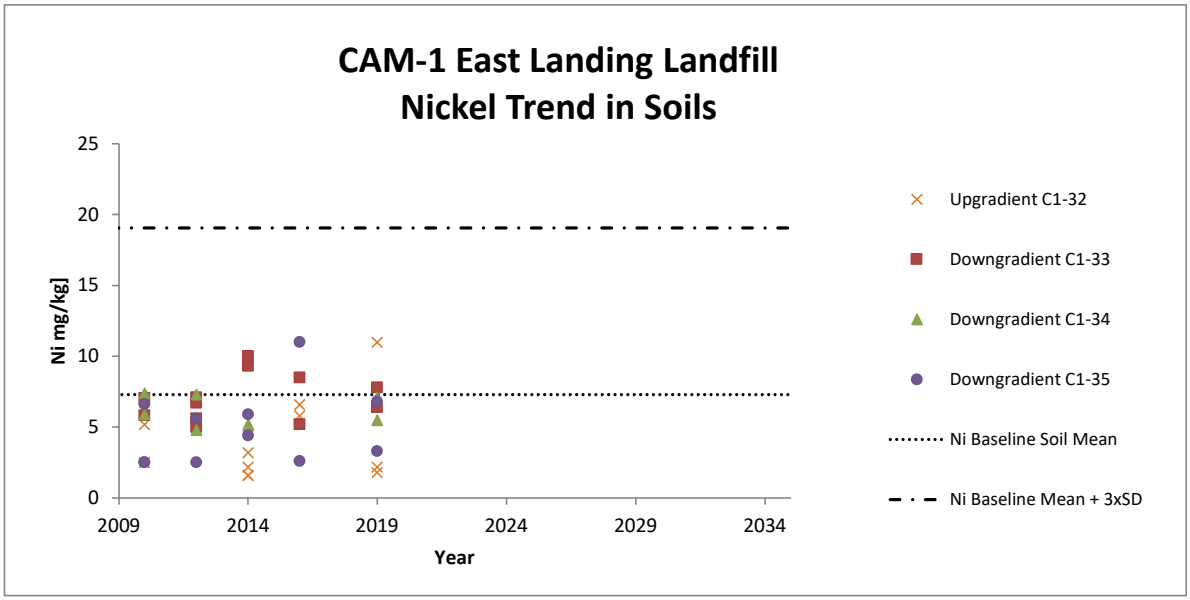


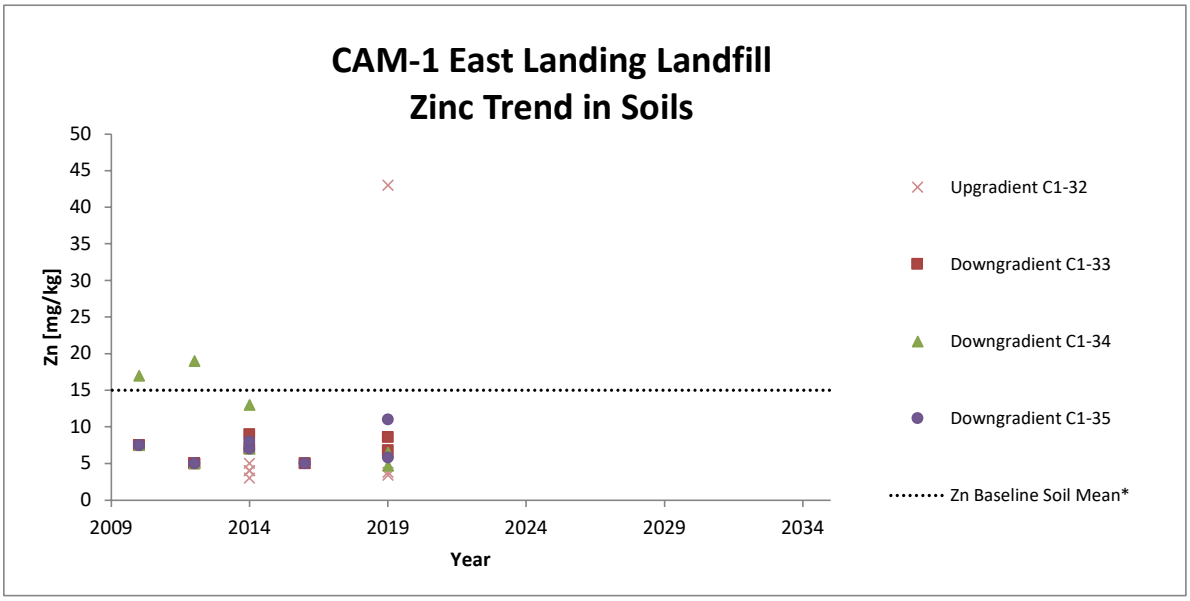
CAM-1 East Landing Landfill Trends in Soil Inorganics, PCBs and PHCs

Link To: Table of Contents

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.





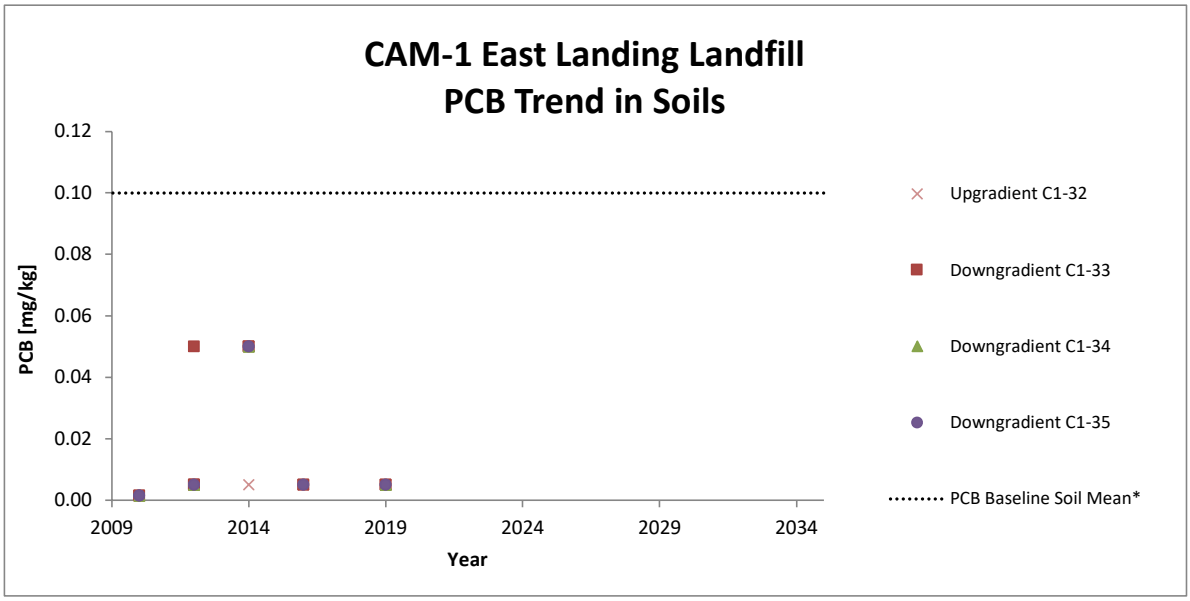
* Zn baseline arithmetic mean is equal to the baseline detection limit
* Zn baseline standard deviation = 0

CAM-1 East Landing Landfill Trends in Soil Inorganics, PCBs and PHCs

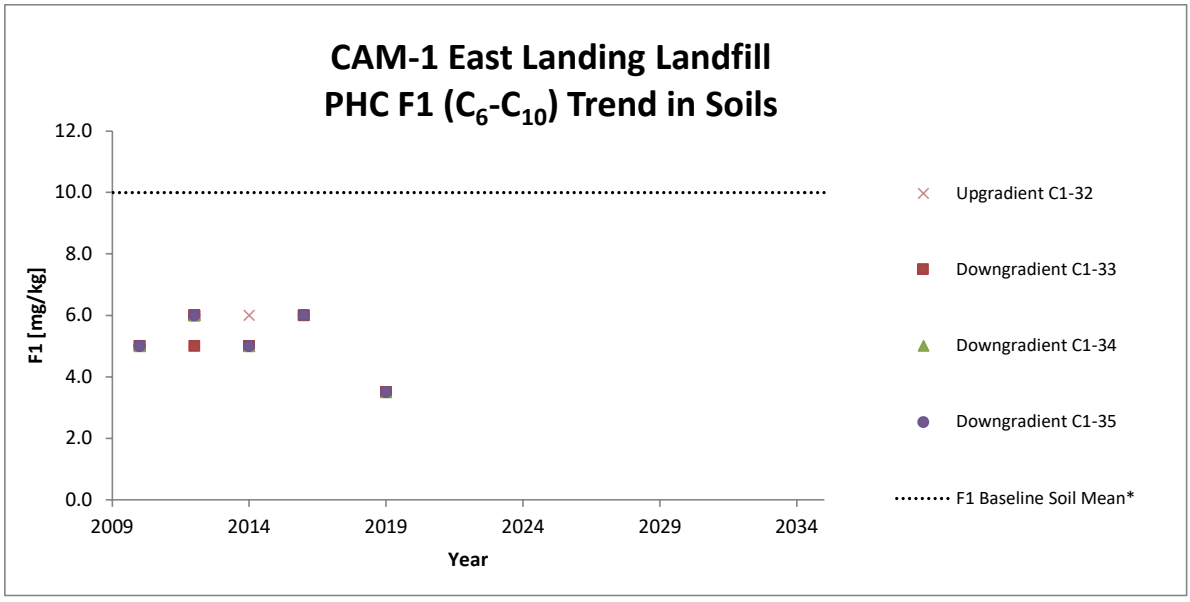
Link To: Table of Contents

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



* PCB baseline arithmetic mean is equal to the baseline detection limit
* PCB baseline standard deviation = 0



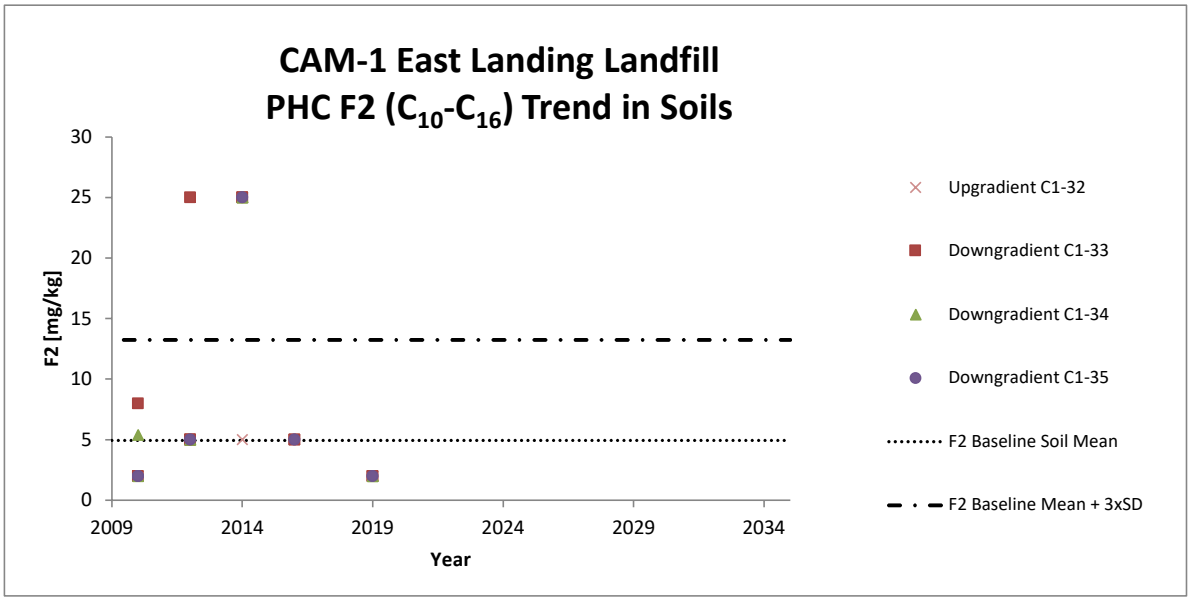
* F1 baseline arithmetic mean is equal to the baseline detection limit
* F1 baseline standard deviation = 0

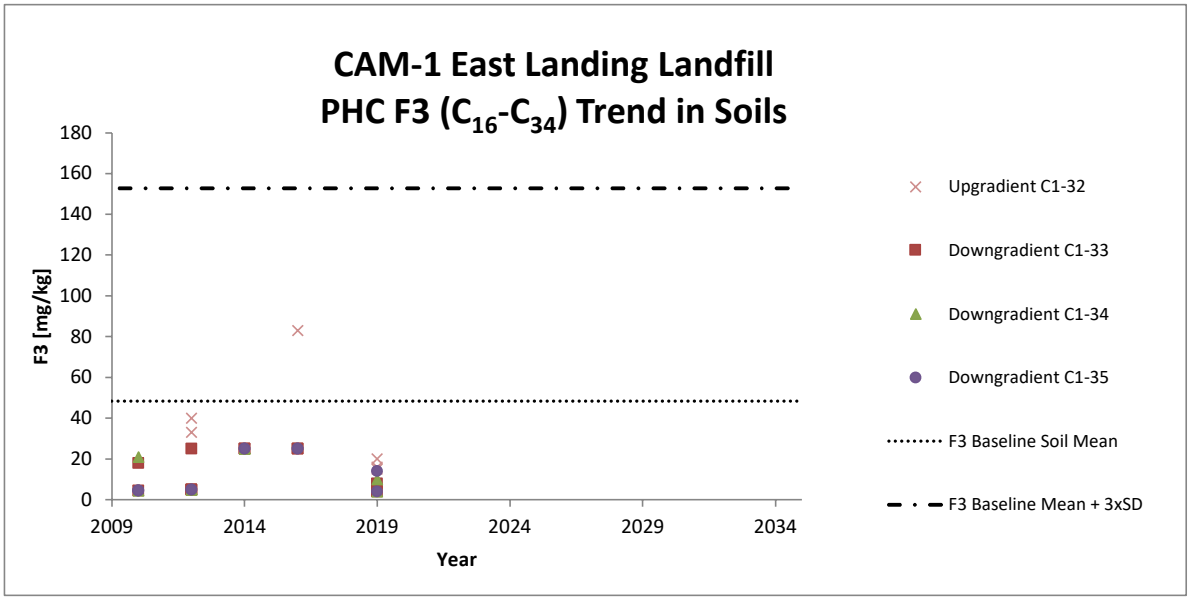
CAM-1 East Landing Landfill Trends in Soil Inorganics, PCBs and PHCs

Link To: Table of Contents

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



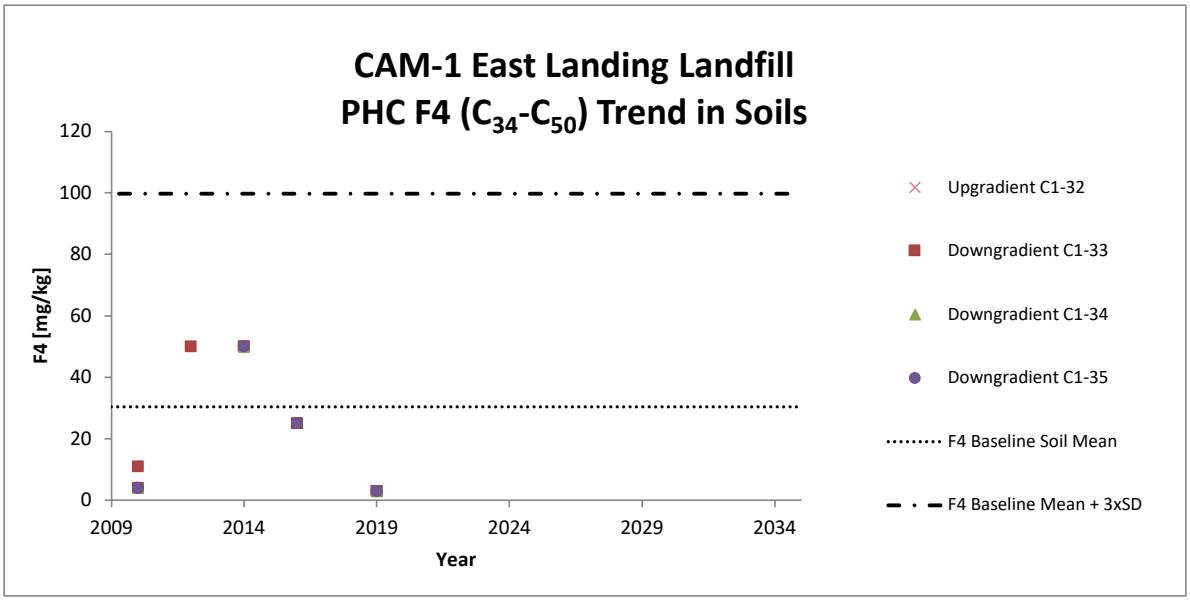


CAM-1 East Landing Landfill Trends in Soil Inorganics, PCBs and PHCs

Link To: Table of Contents

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



APPENDIX E

Thermistor Inspection Reports

ANNEX M: Thermistor Inspection Template

Inspector Name:	Ryan Fletcher	Inspection Date:	Aug. 28, 2019
Inspector Signature:		*Previous Inspection Date:	11-Aug-16

Thermistor Information

*Site Name:	CAM-1	*Landfill:	Tier II Soil Disposal Facility
*Thermistor #:	**VT-1**	Inclination:	✓ Vertical □ Inclined
*Northing:	7620734	*Easting:	389089
*Installation Date:	2009	*Year 1 Monitoring Date:	2009
Datalogger Model #:	RX-16	Datalogger Cable Model:	☑ USB □ Serial Port
Datalogger Serial #:	07060015	Datalogger Cable Too Short?:	□ Y ☑ N
*Elevation (masl):	35.9	Extension Cable Required (m):	☑ N/A

Thermistor Inspection	Good	Needs Maintenance	Details
Casing Integrity	☑	□	
Cover/Lid Integrity	☑	□	
Datalogger Functionality	☑	□	
Cable Functionality	☑	□	
Bead Functionality	☑	□	

Lock	Yes	No	N/A	Details
Was casing found locked upon arrival?	☑	□		
Was a poorly functioning lock removed?	□	☑		Spec. lock in place
Was a new 7000PS-KA3 lock put in place?	□	☑	□	If no, model: 7000PS-KA3

Batteries		Yes	No	N/A	Details	
Batteries Found In Datalogger	Was datalogger functional upon arrival?	☑	□			
	Battery models:				Main: ULB-15	Auxiliary: ULB-1
	Battery installation date:				No sticker	
	Battery levels:				Main: 11.34	Auxiliary: 13.87
	Memory battery best before date:				No sticker	(Refer to yellow label above COM plug)
Battery Replacement	Were batteries replaced?	☑	□		If yes, models:	ULB-15, ULB-1
	New battery levels:			□	Main: 11.34	Auxiliary: 13.14
	Was desiccant replaced?	☑	□			
Final Status	Expected life of batteries in datalogger:				Years: 7	Replace by: Jun-26
	Was datalogger functional upon departure?	☑	□		If no, brought south for repairs?	□ Y □ N

Computer Connectivity	Yes	No
Does red status light on black internal data logger glow bright red when laptop attached?	☑	□

Manual Ground Temperature Readings

Bead	ohms	°C
1	12774	4.9
2	14458	2.4
3	15924	0.5
4	16974	-0.7
5	17922	-1.8
6	19268	-3.2
7	20140	-4.0
8	21020	-4.8

Bead	ohms	°C
9	21960	-5.6
10	22800	-6.4
11	23770	-7.1
12	24240	-7.5
13	24710	-7.9
14	25370	-8.3
15	25860	-8.7
16	26110	-8.9

Datalogger Programming and Maintenance

Data collection frequency: 48 hours
Data collection time: 12:00
Maintenance requirements: None

*Pre-populate this information before field program using previous reports

ANNEX M: Thermistor Inspection Template

Inspector Name:	Ryan Fletcher	Inspection Date:	Aug. 28, 2019
Inspector Signature:		*Previous Inspection Date:	11-Aug-16

Thermistor Information

*Site Name:	CAM-1	*Landfill:	Tier II Soil Disposal Facility
*Thermistor #:	**VT-2**	Inclination:	✓ Vertical □ Inclined
*Northing:	7620759.5	*Easting:	389105.5
*Installation Date:	2009	*Year 1 Monitoring Date:	2009
Datalogger Model #:	RX-16	Datalogger Cable Model:	☑ USB □ Serial Port
Datalogger Serial #:	07050030	Datalogger Cable Too Short?:	□ Y ☑ N
*Elevation (masl):	36.5	Extension Cable Required (m):	☑ N/A

Thermistor Inspection	Good	Needs Maintenance	Details
Casing Integrity	☑	□	
Cover/Lid Integrity	☑	□	
Datalogger Functionality	☑	□	
Cable Functionality	☑	□	
Bead Functionality	☑	□	

Lock	Yes	No	N/A	Details
Was casing found locked upon arrival?	☑	□		
Was a poorly functioning lock removed?	□	☑		Spec. lock in place
Was a new 7000PS-KA3 lock put in place?	□	☑	□	If no, model: 7000PS-KA3

Batteries		Yes	No	N/A	Details	
Batteries Found In Datalogger	Was datalogger functional upon arrival?	☑	□			
	Battery models:				Main: ULB-15	Auxiliary: ULB-1
	Battery installation date:				No sticker	
	Battery levels:				Main: 11.34	Auxiliary: 12.9
	Memory battery best before date:				No sticker	(Refer to yellow label above COM plug)
Battery Replacement	Were batteries replaced?	☑	□		If yes, models:	ULB-15, ULB-1
	New battery levels:			□	Main: 11.34	Auxiliary: 13.14
	Was desiccant replaced?	☑	□			
Final Status	Expected life of batteries in datalogger:				Years: 7	Replace by: Jun-26
	Was datalogger functional upon departure?	☑	□		If no, brought south for repairs?	□ Y □ N

Computer Connectivity	Yes	No
Does red status light on black internal data logger glow bright red when laptop attached?	☑	□

Manual Ground Temperature Readings

Bead	ohms	°C
1	8072	14.4
2	8941	12.2
3	8932	12.3
4	9233	11.6
5	9792	10.3
6	11694	6.7
7	12801	4.9
8	14448	2.4

Bead	ohms	°C
9	16094	0.3
10	17074	-0.8
11	18120	-2.0
12	19080	-3.7
13	20570	-4.4
14	21700	-5.0
15	22650	-6.2
16	23250	-6.7

Datalogger Programming and Maintenance

Data collection frequency: 48 hours
Data collection time: 12:00
Maintenance requirements: None

*Pre-populate this information before field program using previous reports

ANNEX M: Thermistor Inspection Template

Inspector Name:	Ryan Fletcher	Inspection Date:	Aug. 28, 2019
Inspector Signature:		*Previous Inspection Date:	11-Aug-16

Thermistor Information

*Site Name:	CAM-1	*Landfill:	Tier II Soil Disposal Facility
*Thermistor #:	**VT-3**	Inclination:	✓ Vertical □ Inclined
*Northing:	7620773.5	*Easting:	389140.5
*Installation Date:	2009	*Year 1 Monitoring Date:	2009
Datalogger Model #:	RX-16	Datalogger Cable Model:	☑ USB □ Serial Port
Datalogger Serial #:	0705003	Datalogger Cable Too Short?:	□ Y ☑ N
*Elevation (masl):	35.9	Extension Cable Required (m):	☑ N/A

Thermistor Inspection	Good	Needs Maintenance	Details
Casing Integrity	☑	□	
Cover/Lid Integrity	☑	□	
Datalogger Functionality	☑	□	
Cable Functionality	☑	□	
Bead Functionality	☑	□	

Lock	Yes	No	N/A	Details
Was casing found locked upon arrival?	☑	□		
Was a poorly functioning lock removed?	□	☑		Spec. lock in place
Was a new 7000PS-KA3 lock put in place?	□	☑	□	If no, model: 7000PS-KA3

Batteries		Yes	No	N/A	Details	
Batteries Found In Datalogger	Was datalogger functional upon arrival?	☑	□			
	Battery models:				Main: ULB-15	Auxiliary: ULB-1
	Battery installation date:				No sticker	
	Battery levels:				Main: 11.34	Auxiliary: 13.87
	Memory battery best before date:				No sticker	(Refer to yellow label above COM plug)
Battery Replacement	Were batteries replaced?	☑	□		If yes, models:	ULB-15, ULB-1
	New battery levels:			□	Main: 11.4	Auxiliary: 13.14
	Was desiccant replaced?	☑	□			
Final Status	Expected life of batteries in datalogger:				Years: 7	Replace by: Jun-26
	Was datalogger functional upon departure?	☑	□		If no, brought south for repairs?	□ Y □ N

Computer Connectivity	Yes	No
Does red status light on black internal data logger glow bright red when laptop attached?	☑	□

Manual Ground Temperature Readings

Bead	ohms	°C
1	12895	4.7
2	14277	2.7
3	15962	0.5
4	16912	-0.7
5	17921	-1.8
6	19357	-3.3
7	20330	-4.2
8	21350	-5.1

Bead	ohms	°C
9	21890	-5.6
10	22920	-6.5
11	23480	-6.9
12	24350	-7.6
13	24800	-7.9
14	25240	-8.2
15	26220	-9.0
16	26400	-9.1

Datalogger Programming and Maintenance

Data collection frequency: 48 hours
Data collection time: 12:00
Maintenance requirements: None

*Pre-populate this information before field program using previous reports

ANNEX M: Thermistor Inspection Template

Inspector Name:	Ryan Fletcher	Inspection Date:	Aug. 28, 2019
Inspector Signature:		*Previous Inspection Date:	11-Aug-16

Thermistor Information

*Site Name:	CAM-1	*Landfill:	Tier II Soil Disposal Facility
*Thermistor #:	**VT-4**	Inclination:	✓ Vertical □ Inclined
*Northing:	7620749	*Easting:	389124.5
*Installation Date:	2009	*Year 1 Monitoring Date:	2009
Datalogger Model #:	RX-16	Datalogger Cable Model:	☑ USB □ Serial Port
Datalogger Serial #:	07060006	Datalogger Cable Too Short?:	□ Y ☑ N
*Elevation (masl):	36.7	Extension Cable Required (m):	☑ N/A

Thermistor Inspection	Good	Needs Maintenance	Details
Casing Integrity	☑	□	
Cover/Lid Integrity	☑	□	
Datalogger Functionality	☑	□	
Cable Functionality	☑	□	
Bead Functionality	☑	□	

Lock	Yes	No	N/A	Details
Was casing found locked upon arrival?	☑	□		
Was a poorly functioning lock removed?	□	☑		Spec. lock in place
Was a new 7000PS-KA3 lock put in place?	□	☑	□	If no, model: 7000PS-KA3

Batteries		Yes	No	N/A	Details	
Batteries Found In Datalogger	Was datalogger functional upon arrival?	☑	□			
	Battery models:				Main: ULB-15	Auxiliary: ULB-1
	Battery installation date:				No sticker	
	Battery levels:				Main:	Auxiliary:
	Memory battery best before date:				No sticker	(Refer to yellow label above COM plug)
Battery Replacement	Were batteries replaced?	☑	□		If yes, models:	ULB-15, ULB-1
	New battery levels:			□	Main:	Auxiliary:
	Was desiccant replaced?	☑	□			
Final Status	Expected life of batteries in datalogger:				Years: 7	Replace by: Jun-26
	Was datalogger functional upon departure?	☑	□		If no, brought south for repairs?	□ Y □ N

Computer Connectivity	Yes	No
Does red status light on black internal data logger glow bright red when laptop attached?	☑	□

Manual Ground Temperature Readings

Bead	ohms	°C
1	9388	11.2
2	11854	6.4
3	12250	5.8
4	13596	3.6
5	15007	1.7
6	16289	0.1
7	17216	-1.0
8	17907	-1.8

Bead	ohms	°C
9	19160	-3.1
10	20960	-4.8
11	22140	-5.8
12	22660	-6.2
13	23660	-7.0
14	-	
15	-	
16	-	

Datalogger Programming and Maintenance

Data collection frequency: 48 hours
Data collection time: 12:00
Maintenance requirements: None

*Pre-populate this information before field program using previous reports

APPENDIX F

Groundwater Monitoring Well Sampling Logs

CAM-1: Monitoring Well Sampling Log

Site Name: CAM-1 Landfill Name: Non-Hazardous Waste Landfill

Date: Aug. 27, 2019 Time: 1800

Weather: Sun, windy, 10°C

Monitoring Well ID: MW-01 UTM Coordinates: 7620893.8 N 389277.0 E

Sample #: N/A Duplicate #:

Bottles Filled (by Parameter Type): ☐ PHC F1 ☐ Metals ☐ PHC F2-F4

Preservatives Used for PHC Fraction(s): ☐ Methanol ☐ Sodium Bisulfate ☐ Other: _____ ☐ None

Name(s) of Sampler(s): Ryan Fletcher

Ponded Water, Snow Depth, etc.: None observed

Well Condition/Repair Requirements: Excellet, no repairs required

Lock Make/Model/Condition/Replaced: (G. Hjukstrom Limited, 7000PS-KA3, 40mm) - not replaced, lock was functional

Pre-Measured Data (From Well Log)

Depth of Well (mbgs): 4.4 Diameter (cm): 3.8 (Pipe Diameter)

Depth to Top of Screen (mbgs): 0.5 Screen Length (m): 3

Field Measurements

Measurement Method: ☑ Interface Probe ☐ Water Level Tape ☐ Other _____

Well Stickup (Ground to Top of Pipe) (m): 0.5

Depth to Water (From Top of Pipe) (m): N/A

Calculated Static Water Level (mbgs): N/A

Well Refusal Depth (m): 2.507 DRY (Measure Refusal After Sampling)

Thickness of Water Column (m): N/A Water Volume (L): N/A (Calculated)

Free Product Thickness (mm): N/A Sludge/Silt: ☐ Y ☑ N

Purging Information Summary

Purging/Sampling Equipment/Technique: Low Flow Peristalltic Pump

Water Quality Parameter Equipment: N/A Calibration Details: N/A

Maintained Purge Rate at ≤ 100 mL/min: ☐ Y ☐ N Purge Rate: ☐ < Recharge Rate ☐ > Recharge Rate

Total Volume Purged (L): N/A (Total Volume Over Multiple Events, if Applicable)

Time (Note Dates if Multiple Days Required)	pH	Conductivity (uS/cm)	Turbidity (NTU)	Temperature (°C)
WELL DRY				
Final Time: Final Values:				

Clear? ☑ Y ☐ N Colour:

PHC Sheen? ☐ Y ☑ N PHC Odour? ☐ Y ☑ N

Free Product/PHC Globules? ☐ Y ☑ N Other Odour?

Decontamination of Sampling Equipment

All Equipment Dedicated/Single Use? ☐ Y ☐ N Decon Required? ☐ Y ☑ N

Type of Decontamination Fluid(s): N/A # Washes/Rinses: N/A

Photographic Records

Photo Numbers/IDs:

Close Up/Wide Angle/Panoramic: Direction:

Scale Indicated? ☑ Y ☐ N Line of Sight:

CAM-1: Monitoring Well Sampling Log

Site Name: CAM-1 Landfill Name: Non-Hazardous Waste Landfill

Date: Aug. 27, 2019 Time: 1605 (sampled @ 2030)

Weather: Sun, windy, 10°C

Monitoring Well ID: MW-02 UTM Coordinates: 7620968.2 N 389333.2 E

Sample #: N/A Duplicate #: N/A

Bottles Filled (by Parameter Type): ☐ PHC F1 ☐ Metals ☐ PHC F2-F4

Preservatives Used for PHC Fraction(s): ☐ Methanol ☐ Sodium Bisulfate ☐ Other: _____ ☐ None

Name(s) of Sampler(s): Ryan Fletcher

Ponded Water, Snow Depth, etc.: None observed

Well Condition/Repair Requirements: Excellet, no repairs required

Lock Make/Model/Condition/Replaced: (G. Hjukstrom Limited, 7000PS-KA3, 40mm) - not replaced, lock was functional

Pre-Measured Data (From Well Log)

Depth of Well (mbgs): 3.5 Diameter (cm): 3.8 (Pipe Diameter)

Depth to Top of Screen (mbgs): 0.5 Screen Length (m): 3

Field Measurements

Measurement Method: ☑ Interface Probe ☐ Water Level Tape ☐ Other _____

Well Stickup (Ground to Top of Pipe) (m): 0.34

Depth to Water (From Top of Pipe) (m): 1.605

Calculated Static Water Level (mbgs): 1.265

Well Refusal Depth (m): 1.781 (Measure Refusal After Sampling)

Thickness of Water Column (m): 0.176 Water Volume (L): 0.2 (Calculated)

Free Product Thickness (mm): N/A Sludge/Silt: ☐ Y ☑ N

Purging Information Summary

Purging/Sampling Equipment/Technique: Low Flow Peristalltic Pump

Water Quality Parameter Equipment: Horiba Calibration Details: Factory Calibrated

Maintained Purge Rate at ≤ 100 mL/min: ☑ Y ☐ N Purge Rate: ☐ < Recharge Rate ☑ > Recharge Rate

Total Volume Purged (L): ~500 mL (Total Volume Over Multiple Events, if Applicable)

Time (Note Dates if Multiple Days Required)	pH	Conductivity (uS/cm)	Turbidity (NTU)	Temperature (°C)
	8.23	1.57	30.5	10.16
	DRY < 1 min of pumping			
	Checked at 900, Aug. 28, 2019. No recharge.			
Final Time: Final Values:				

Clear? ☑ Y ☐ N Colour:

PHC Sheen? ☐ Y ☑ N PHC Odour? ☐ Y ☑ N

Free Product/PHC Globules? ☐ Y ☑ N Other Odour?

Decontamination of Sampling Equipment

All Equipment Dedicated/Single Use? ☑ Y ☐ N Decon Required? ☐ Y ☑ N

Type of Decontamination Fluid(s): N/A # Washes/Rinses: N/A

Photographic Records

Photo Numbers/IDs:

Close Up/Wide Angle/Panoramic: Direction:

Scale Indicated? ☐ Y ☐ N Line of Sight:

CAM-1: Monitoring Well Sampling Log

Site Name: CAM-1 Landfill Name: Non-Hazardous Waste Landfill

Date: Aug. 27, 2019 Time: 1950

Weather: Sun, windy, 10°C

Monitoring Well ID: MW-03 UTM Coordinates: 7621002.6 N 389287.5 E

Sample #: MW-03 Duplicate #: No

Bottles Filled (by Parameter Type): ☑ PHC F1 ☑ Metals ☑ PHC F2-F4

Preservatives Used for PHC Fraction(s): ☐ Methanol ☑ Sodium Bisulfate ☐ Other: _____ ☐ None

Name(s) of Sampler(s): Ryan Fletcher

Ponded Water, Snow Depth, etc.: None observed

Well Condition/Repair Requirements: Excellet, no repairs required

Lock Make/Model/Condition/Replaced: (G. Hjukstrom Limited, 7000PS-KA3, 40mm) - not replaced, lock was functional

Pre-Measured Data (From Well Log)

Depth of Well (mbgs): 4.8 Diameter (cm): 3.8 (Pipe Diameter)

Depth to Top of Screen (mbgs): 0.5 Screen Length (m): 3

Field Measurements

Measurement Method: ☑ Interface Probe ☐ Water Level Tape ☐ Other _____

Well Stickup (Ground to Top of Pipe) (m): 0.35

Depth to Water (From Top of Pipe) (m): 1.173

Calculated Static Water Level (mbgs): 0.823

Well Refusal Depth (m): 2.35 (Measure Refusal After Sampling)

Thickness of Water Column (m): 1.177 Water Volume (L): 1.3 (Calculated)

Free Product Thickness (mm): N/A Sludge/Silt: ☐ Y ☑ N

Purging Information Summary

Purging/Sampling Equipment/Technique: Low Flow Peristalltic Pump

Water Quality Parameter Equipment: Horiba Calibration Details: Factory calibrated

Maintained Purge Rate at ≤ 100 mL/min: ☑ Y ☐ N Purge Rate: ☑ < Recharge Rate ☐ > Recharge Rate

Total Volume Purged (L): ~3.2 (Total Volume Over Multiple Events, if Applicable)

Time (Note Dates if Multiple Days Required)	pH	Conductivity (uS/cm)	Turbidity (NTU)	Temperature (°C)
5	13.17	0.905	28.3	10.27
10	12.61	0.906	23.3	9.94
15	12.24	0.908	21.6	9.76
20	11.68	0.911	21.5	9.48
25	10.95	0.91	18.6	9.2
30	10.75	0.91	18	9.11
Final Time: Final Values:	10.75	0.91	18	9.11

Clear? ☑ Y ☐ N Colour:

PHC Sheen? ☐ Y ☑ N PHC Odour? ☐ Y ☑ N

Free Product/PHC Globules? ☐ Y ☑ N Other Odour?

Decontamination of Sampling Equipment

All Equipment Dedicated/Single Use? ☐ Y ☐ N Decon Required? ☐ Y ☑ N

Type of Decontamination Fluid(s): N/A # Washes/Rinses: N/A

Photographic Records

Photo Numbers/IDs:

Close Up/Wide Angle/Panoramic: Direction:

Scale Indicated? ☐ Y ☐ N Line of Sight:

CAM-1: Monitoring Well Sampling Log

Site Name: CAM-1 Landfill Name: Non-Hazardous Waste Landfill

Date: Aug. 27, 2019 Time: 1900

Weather: Sun, windy, 10°C

Monitoring Well ID: MW-04 UTM Coordinates: 7620986.2 N 389282.3 E

Sample #: MW-04 Duplicate #: MW-09 (dup) and MW-10 (field blank)

Bottles Filled (by Parameter Type): ☑ PHC F1 ☑ Metals ☑ PHC F2-F4

Preservatives Used for PHC Fraction(s): ☐ Methanol ☑ Sodium Bisulfate ☐ Other: _____ ☐ None

Name(s) of Sampler(s): Ryan Fletcher

Ponded Water, Snow Depth, etc.: None observed

Well Condition/Repair Requirements: Excellet, no repairs required

Lock Make/Model/Condition/Replaced: (G. Hjukstrom Limited, 7000PS-KA3, 40mm) - not replaced, lock was functional

Pre-Measured Data (From Well Log)

Depth of Well (mbgs): 4.9 Diameter (cm): 3.8 (Pipe Diameter)

Depth to Top of Screen (mbgs): 0.5 Screen Length (m): 3

Field Measurements

Measurement Method: ☑ Interface Probe ☐ Water Level Tape ☐ Other _____

Well Stickup (Ground to Top of Pipe) (m): 0.41

Depth to Water (From Top of Pipe) (m): 1.5

Calculated Static Water Level (mbgs): 1.09

Well Refusal Depth (m): 2.241 (Measure Refusal After Sampling)

Thickness of Water Column (m): 0.74 Water Volume (L): 0.84 (Calculated)

Free Product Thickness (mm): N/A Sludge/Silt: ☐ Y ☑ N

Purging Information Summary

Purging/Sampling Equipment/Technique: Low Flow Peristalltic Pump

Water Quality Parameter Equipment: Horiba Calibration Details: Factory calibrated

Maintained Purge Rate at ≤ 100 mL/min: ☑ Y ☐ N Purge Rate: ☑ < Recharge Rate ☐ > Recharge Rate

Total Volume Purged (L): ~3 (Total Volume Over Multiple Events, if Applicable)

Time (Note Dates if Multiple Days Required)	pH	Conductivity (uS/cm)	Turbidity (NTU)	Temperature (°C)
5	12.89	0.918	87.2	14.29
10	13.08	0.919	72.4	13.72
15	13.12	0.924	68	13.25
20	13.09	0.933	67.9	12.69
25	13.03	0.939	53.5	12.18
30	12.97	0.936	44	11.74
35	12.95	0.934	42.7	11.68
Final Time: Final Values:	12.95	0.934	42.7	11.68

Clear? ☑ Y ☐ N Colour:

PHC Sheen? ☐ Y ☑ N PHC Odour? ☐ Y ☑ N

Free Product/PHC Globules? ☐ Y ☑ N Other Odour?

Decontamination of Sampling Equipment

All Equipment Dedicated/Single Use? ☐ Y ☐ N Decon Required? ☐ Y ☑ N

Type of Decontamination Fluid(s): N/A # Washes/Rinses: N/A

Photographic Records

Photo Numbers/IDs:

Close Up/Wide Angle/Panoramic: Direction:

Scale Indicated? ☐ Y ☐ N Line of Sight:

CAM-1: Monitoring Well Sampling Log

Site Name: CAM-1 Landfill Name: Tier II Disposal Facility

Date: Aug. 27, 2019 Time: 1705

Weather: Sun, windy, 10°C

Monitoring Well ID: MW-05 UTM Coordinates: 7620729.5 N 389155.0 E

Sample #: N/A Duplicate #: N/A

Bottles Filled (by Parameter Type): ☐ PHC F1 ☐ Metals ☐ PHC F2-F4

Preservatives Used for PHC Fraction(s): ☐ Methanol ☐ Sodium Bisulfate ☐ Other: _____ ☐ None

Name(s) of Sampler(s): Ryan Fletcher

Ponded Water, Snow Depth, etc.: None observed

Well Condition/Repair Requirements: Excellet, no repairs required

Lock Make/Model/Condition/Replaced: (G. Hjukstrom Limited, 7000PS-KA3, 40mm) - not replaced, lock was functional

Pre-Measured Data (From Well Log)

Depth of Well (mbgs): 4.6 Diameter (cm): 3.8 (Pipe Diameter)

Depth to Top of Screen (mbgs): 0.5 Screen Length (m): 3

Field Measurements

Measurement Method: ☑ Interface Probe ☐ Water Level Tape ☐ Other _____

Well Stickup (Ground to Top of Pipe) (m): 0.3

Depth to Water (From Top of Pipe) (m): N/A

Calculated Static Water Level (mbgs): N/A

Well Refusal Depth (m): 1.785 DRY (Measure Refusal After Sampling)

Thickness of Water Column (m): N/A Water Volume (L): N/A (Calculated)

Free Product Thickness (mm): N/A Sludge/Silt: ☐ Y ☑ N

Purging Information Summary

Purging/Sampling Equipment/Technique: Low Flow Peristalltic Pump

Water Quality Parameter Equipment: N/A Calibration Details: N/A

Maintained Purge Rate at ≤ 100 mL/min: ☐ Y ☐ N Purge Rate: ☐ < Recharge Rate ☐ > Recharge Rate

Total Volume Purged (L): N/A (Total Volume Over Multiple Events, if Applicable)

Time (Note Dates if Multiple Days Required)	pH	Conductivity (uS/cm)	Turbidity (NTU)	Temperature (°C)
WELL DRY				
Final Time: Final Values:				

Clear? ☑ Y ☐ N Colour:

PHC Sheen? ☐ Y ☑ N PHC Odour? ☐ Y ☑ N

Free Product/PHC Globules? ☐ Y ☑ N Other Odour?

Decontamination of Sampling Equipment

All Equipment Dedicated/Single Use? ☐ Y ☐ N Decon Required? ☐ Y ☑ N

Type of Decontamination Fluid(s): N/A # Washes/Rinses: N/A

Photographic Records

Photo Numbers/IDs:

Close Up/Wide Angle/Panoramic: Direction:

Scale Indicated? ☐ Y ☐ N Line of Sight:

CAM-1: Monitoring Well Sampling Log

Site Name: CAM-1 Landfill Name: Tier II Disposal Facility

Date: Aug. 27, 2019 Time: 1710

Weather: Sun, windy, 10°C

Monitoring Well ID: MW-06 UTM Coordinates: 7620812.2 N 389129.4 E

Sample #: N/A Duplicate #: N/A

Bottles Filled (by Parameter Type): ☐ PHC F1 ☐ Metals ☐ PHC F2-F4

Preservatives Used for PHC Fraction(s): ☐ Methanol ☐ Sodium Bisulfate ☐ Other: _____ ☐ None

Name(s) of Sampler(s): Ryan Fletcher

Ponded Water, Snow Depth, etc.: None observed

Well Condition/Repair Requirements: Excellet, no repairs required

Lock Make/Model/Condition/Replaced: (G. Hjukstrom Limited, 7000PS-KA3, 40mm) - not replaced, lock was functional

Pre-Measured Data (From Well Log)

Depth of Well (mbgs): 4.65 Diameter (cm): 3.8 (Pipe Diameter)

Depth to Top of Screen (mbgs): 0.5 Screen Length (m): 3

Field Measurements

Measurement Method: ☑ Interface Probe ☐ Water Level Tape ☐ Other _____

Well Stickup (Ground to Top of Pipe) (m): 0.6

Depth to Water (From Top of Pipe) (m): N/A

Calculated Static Water Level (mbgs): N/A

Well Refusal Depth (m): 1.781 DRY (Measure Refusal After Sampling)

Thickness of Water Column (m): N/A Water Volume (L): N/A (Calculated)

Free Product Thickness (mm): N/A Sludge/Silt: ☐ Y ☑ N

Purging Information Summary

Purging/Sampling Equipment/Technique: Low Flow Peristalltic Pump

Water Quality Parameter Equipment: N/A Calibration Details: N/A

Maintained Purge Rate at ≤ 100 mL/min: ☐ Y ☐ N Purge Rate: ☐ < Recharge Rate ☐ > Recharge Rate

Total Volume Purged (L): N/A (Total Volume Over Multiple Events, if Applicable)

Time (Note Dates if Multiple Days Required)	pH	Conductivity (uS/cm)	Turbidity (NTU)	Temperature (°C)
WELL DRY				
Final Time: Final Values:				

Clear? ☑ Y ☐ N Colour:

PHC Sheen? ☐ Y ☑ N PHC Odour? ☐ Y ☑ N

Free Product/PHC Globules? ☐ Y ☑ N Other Odour?

Decontamination of Sampling Equipment

All Equipment Dedicated/Single Use? ☐ Y ☐ N Decon Required? ☐ Y ☑ N

Type of Decontamination Fluid(s): N/A # Washes/Rinses: N/A

Photographic Records

Photo Numbers/IDs:

Close Up/Wide Angle/Panoramic: Direction:

Scale Indicated? ☐ Y ☐ N Line of Sight:

CAM-1: Monitoring Well Sampling Log

Site Name: CAM-1 Landfill Name: Tier II Disposal Facility

Date: Aug. 27, 2019 Time: 1715

Weather: Sun, windy, 10°C

Monitoring Well ID: MW-07 UTM Coordinates: 7620778.5 N 389068.7 E

Sample #: N/A Duplicate #: N/A

Bottles Filled (by Parameter Type): ☐ PHC F1 ☐ Metals ☐ PHC F2-F4

Preservatives Used for PHC Fraction(s): ☐ Methanol ☐ Sodium Bisulfate ☐ Other: _____ ☐ None

Name(s) of Sampler(s): Ryan Fletcher

Ponded Water, Snow Depth, etc.: None observed

Well Condition/Repair Requirements: Excellet, no repairs required

Lock Make/Model/Condition/Replaced: (G. Hjukstrom Limited, 7000PS-KA3, 40mm) - not replaced, lock was functional

Pre-Measured Data (From Well Log)

Depth of Well (mbgs): 4.7 Diameter (cm): 3.8 (Pipe Diameter)

Depth to Top of Screen (mbgs): 0.5 Screen Length (m): 3

Field Measurements

Measurement Method: ☑ Interface Probe ☐ Water Level Tape ☐ Other _____

Well Stickup (Ground to Top of Pipe) (m): 0.5

Depth to Water (From Top of Pipe) (m): N/A

Calculated Static Water Level (mbgs): N/A

Well Refusal Depth (m): 1.609 DRY (Measure Refusal After Sampling)

Thickness of Water Column (m): N/A Water Volume (L): N/A (Calculated)

Free Product Thickness (mm): N/A Sludge/Silt: ☐ Y ☑ N

Purging Information Summary

Purging/Sampling Equipment/Technique: Low Flow Peristalltic Pump

Water Quality Parameter Equipment: N/A Calibration Details: N/A

Maintained Purge Rate at ≤ 100 mL/min: ☐ Y ☐ N Purge Rate: ☐ < Recharge Rate ☐ > Recharge Rate

Total Volume Purged (L): N/A (Total Volume Over Multiple Events, if Applicable)

Time (Note Dates if Multiple Days Required)	pH	Conductivity (uS/cm)	Turbidity (NTU)	Temperature (°C)
WELL DRY				
Final Time: Final Values:				

Clear? ☑ Y ☐ N Colour:

PHC Sheen? ☐ Y ☑ N PHC Odour? ☐ Y ☑ N

Free Product/PHC Globules? ☐ Y ☑ N Other Odour?

Decontamination of Sampling Equipment

All Equipment Dedicated/Single Use? ☐ Y ☐ N Decon Required? ☐ Y ☑ N

Type of Decontamination Fluid(s): N/A # Washes/Rinses: N/A

Photographic Records

Photo Numbers/IDs:

Close Up/Wide Angle/Panoramic: Direction:

Scale Indicated? ☐ Y ☐ N Line of Sight:

CAM-1: Monitoring Well Sampling Log

Site Name: CAM-1 Landfill Name: Tier II Disposal Facility

Date: Aug. 27, 2019 Time: 1720

Weather: Sun, windy, 10°C

Monitoring Well ID: MW-8 UTM Coordinates: 7620729.2 N 389051.7 E

Sample #: N/A Duplicate #: N/A

Bottles Filled (by Parameter Type): ☐ PHC F1 ☐ Metals ☐ PHC F2-F4

Preservatives Used for PHC Fraction(s): ☐ Methanol ☐ Sodium Bisulfate ☐ Other: _____ ☐ None

Name(s) of Sampler(s): Ryan Fletcher

Ponded Water, Snow Depth, etc.: None observed

Well Condition/Repair Requirements: Excellent, no repairs required

Lock Make/Model/Condition/Replaced: (G. Hjukstrom Limited, 7000PS-KA3, 40mm) - not replaced, lock was functional

Pre-Measured Data (From Well Log)

Depth of Well (mbgs): 4.8 Diameter (cm): 3.8 (Pipe Diameter)

Depth to Top of Screen (mbgs): 0.5 Screen Length (m): 3

Field Measurements

Measurement Method: ☑ Interface Probe ☐ Water Level Tape ☐ Other _____

Well Stickup (Ground to Top of Pipe) (m): 0.5

Depth to Water (From Top of Pipe) (m): N/A

Calculated Static Water Level (mbgs): N/A

Well Refusal Depth (m): 1.671 DRY (Measure Refusal After Sampling)

Thickness of Water Column (m): N/A Water Volume (L): N/A (Calculated)

Free Product Thickness (mm): N/A Sludge/Silt: ☐ Y ☑ N

Purging Information Summary

Purging/Sampling Equipment/Technique: Low Flow Peristalltic Pump

Water Quality Parameter Equipment: N/A Calibration Details: N/A

Maintained Purge Rate at ≤ 100 mL/min: ☐ Y ☐ N Purge Rate: ☐ < Recharge Rate ☐ > Recharge Rate

Total Volume Purged (L): N/A (Total Volume Over Multiple Events, if Applicable)

Time (Note Dates if Multiple Days Required)	pH	Conductivity (uS/cm)	Turbidity (NTU)	Temperature (°C)
WELL DRY				
Final Time: Final Values:				

Clear? ☑ Y ☐ N Colour:

PHC Sheen? ☐ Y ☑ N PHC Odour? ☐ Y ☑ N

Free Product/PHC Globules? ☐ Y ☑ N Other Odour?

Decontamination of Sampling Equipment

All Equipment Dedicated/Single Use? ☐ Y ☐ N Decon Required? ☐ Y ☑ N

Type of Decontamination Fluid(s): N/A # Washes/Rinses: N/A

Photographic Records

Photo Numbers/IDs:

Close Up/Wide Angle/Panoramic: Direction:

Scale Indicated? ☐ Y ☐ N Line of Sight:

APPENDIX G

Field Notes

VT 1

ANNEX M: Thermistor Inspection Template

Inspector Name: Ryan Fletcher	Inspection Date: Aug 28 2019
Inspector Signature:	*Previous Inspection Date: 11-Aug-16

Thermistor Information

*Site Name: CAM-1	*Landfill: Tier II Soil Disposal Facility
*Thermistor #: **VT-1**	Inclination: ✓ Vertical ☐ Inclined
*Northing: 7620734	*Easting: 389089
*Installation Date: 2009	*Year 1 Monitoring Date: 2009
Datalogger Model #: RX-16	Datalogger Cable Model: ☑ USB ☐ Serial Port
Datalogger Serial #: 07060015	Datalogger Cable Too Short?: ☐ Y ☑ N
*Elevation (masl): 35.9	Extension Cable Required (m): ☑ N/A

Thermistor Inspection	Good	Needs Maintenance	Details
Casing Integrity	☑	☐	
Cover/Lid Integrity	☑	☐	
Datalogger Functionality	☑	☐	
Cable Functionality	☑	☐	
Bead Functionality	☑	☐	

Lock	Yes	No	N/A	Details
Was casing found locked upon arrival?	☑	☐		Spel lock
Was a poorly functioning lock removed?	☐	☑		
Was a new 7000PS-KA3 lock put in place?	☐	☑	☐	If no, model:

Batteries

		Yes	No	N/A	Details
Batteries Found In Datalogger	Was datalogger functional upon arrival?		☐		
	Battery models:				Main: V -1 Auxiliary: -
	Battery installation date:				V - 1
	Battery levels:				Main: 11,3
	Memory battery best before date:				(Refer to yellow label above COM
Battery Replacement	Were batteries replaced?	☑	☐		If yes, models:
	New battery levels:			☐	Main: 1 Auxiliary: 1
	Was desiccant replaced?	☑	☐		
Final Status	Expected life of batteries in datalogger:				Years: Replace by: 0 2022
	Was datalogger functional upon departure?	☑	☐		If no, nt south for repairs? ☐ Y

Com uter Connectivi

	Yes	No
Does red status light on black internal data logger glow bright red when laptop attached?		☐

Manual Ground Tem erature Readin s

Bead	ohms	°C	Bead	ohms	°C
1	12		9	21.	
2	. 5		10	22.80	
3	5.92		11	23.37	
4	.		12	24.2	
5	.922		13	2	
6	9.2		14	2 37	
7	20.14		15	25.8	
8	21,02		16	.1	

Datalo er Pro rammin and Maintenance

Data collection frequency: 48 hours

Data collection time: 12:00

Maintenance requirements:

VT2

ANNEX M: Thermistor Inspection Template

Inspector Name: Ryan Fletcher	Inspection Date: Aug 28 2019
Inspector Signature:	*Previous Inspection Date: 11-Aug-16

Thermistor Information

*Site Name: CAM-1	*Landfill: Tier II Soil Disposal Facility
*Thermistor #: VT-2	Inclination: ✓ Vertical ☐ Inclined
*Northing: 7620759.5	*Easting: 389105.5
*Installation Date: 2009	*Year 1 Monitoring Date: 2009
Datalogger Model #: RX-16	Datalogger Cable Model: ☑ USB ☐ Serial Port
Datalogger Serial #: 07050030	Datalogger Cable Too Short?: ☐ Y ☑ N
*Elevation (masl): 36.5	Extension Cable Required (m): ☑ N/A

Thermistor Inspection	Good	Needs Maintenance	Details
Casing Integrity	☑	☐	
Cover/Lid Integrity	☑	☐	
Datalogger Functionality	☑	☐	
Cable Functionality	☑	☐	
Bead Functionality	☑	☐	

Lock	Yes	No	N/A	Details
Was casing found locked upon arrival?	☑	☐		
Was a poorly functioning lock removed?	☐	☑		
Was a new 7000PS-KA3 lock put in place?	☐	☑	☐	If no, model: Spec lock was in place

Batteries		Yes	No	N/A	Details
Batteries Found in Datalogger	Was datalogger functional upon arrival?	☑	☐		
	Battery models:				Main: ULB 15 Auxiliary: ULB 1
	Battery installation date:				Aug 2016
	Battery levels:				Main: 11.34 Auxiliary: 12.90
	Memory battery best before date:				(Refer to yellow label above COM plug)
Battery Replacement	Were batteries replaced?	☑	☐		If yes, models:
	New battery levels:			☐	Main: ULB 15 Auxiliary: ULB 1
	Was desiccant replaced?	☑	☐		11.31 13.14
Final Status	Expected life of batteries in datalogger:				Years: 7 Replace by: 06 20 26
	Was datalogger functional upon departure?	☑	☐		If no, brought south for repairs? ☐ Y ☐ N

Computer Connectivity	Yes	No
Does red status light on black internal data logger glow bright red when laptop attached?	☑	☐

Manual Ground Temperature Readings

Bead	ohms	°C
1	8.072	
2	8.941	
3	8.932	
4	9.233	
5	9.792	
6	11.694	
7	12.801	
8	14.446	

Bead	ohms	°C
9	16.094	
10	17.074	
11	18.120	
12	19.08	
13	20.57	
14	21.70	
15	22.65	
16	23.25	

Datalogger Programming and Maintenance

Data collection frequency: 48 hours
Data collection time: 12:00
Maintenance requirements:

VT3

ANNEX M: Thermistor Inspection Template

Inspector Name: Ryan Fletcher	Inspection Date: Aug 28 2019
Inspector Signature:	*Previous Inspection Date: 11-Aug-16

Thermistor Information

*Site Name: CAM-1	*Landfill: Tier II Soil Disposal Facility	
*Thermistor #: VT-3	Inclination: ✓ Vertical	☐ Inclined
*Northing: 7620773.5	*Easting: 389140.5	
*Installation Date: 2009	*Year 1 Monitoring Date: 2009	
Datalogger Model #: RX-16	Datalogger Cable Model: ☑ USB	☐ Serial Port
Datalogger Serial #: 0705 0003	Datalogger Cable Too Short?: ☐ Y	☑ N
*Elevation (masl): 35.9	Extension Cable Required (m):	☑ N/A

Thermistor Inspection	Good	Needs Maintenance	Details
Casing Integrity	☑	☐	
Cover/Lid Integrity	☑	☐	
Datalogger Functionality	☑	☐	
Cable Functionality	☑	☐	
Bead Functionality	☑	☐	

Lock	Yes	No	N/A	Details
Was casing found locked upon arrival?	☑	☐		Spec lock
Was a poorly functioning lock removed?	☐	☑		
Was a new 7000PS-KA3 lock put in place?	☐	☑	☐	If no, model: Spec lock in place

Batteries		Yes	No	N/A	Details
Batteries Found In Datalogger	Was datalogger functional upon arrival?	☑	☐		
	Battery models:				Main: VLB 15 Auxiliary: VLB1
	Battery installation date:				
	Battery levels:				Main: 11.34 Auxiliary: 13.87
	Memory battery best before date:				(Refer to yellow label above COM plug)
Battery Replacement	Were batteries replaced?	☑	☐		If yes, models: VLB-15, VLB-1
	New battery levels:			☐	Main: 11.34 Auxiliary: 13.14
	Was desiccant replaced?	☑	☐		
Final Status	Expected life of batteries in datalogger:				Years: 7 Replace by: 06 2026
	Was datalogger functional upon departure?	☑	☐		If no, brought south for repairs? ☐ Y ☒ N

Computer Connectivity	Yes	No
Does red status light on black internal data logger glow bright red when laptop attached?	☑	☐

Manual Ground Temperature Readings

Bead	ohms	°C
1	12.895	
2	14.277	
3	15.962	
4	16.912	
5	17.921	
6	19.357	
7	20.33	
8	21.35	

Bead	ohms	°C
9	21.89	
10	22.92	
11	23.48	
12	24.35	
13	24.80	
14	25.24	
15	26.22	
16	26.40	

Datalogger Programming and Maintenance

Data collection frequency: 48 hours
Data collection time: 12:00
Maintenance requirements:

CAM-1: Monitoring Well Sampling Log

Site Name: CAM-1 Landfill Name: ~~Tier II Disposal Facility~~ NHWL

Date: Aug 27 2019 Time: 16:05 Sampled @ 2030

Weather: Sun, windy, 10°C

Monitoring Well ID: MW-02 UTM Coordinates: 7620968.2 N 389333.2 E

Sample #: Duplicate #:

Bottles Filled (by Parameter Type): ☐ PHC F1 ☐ Metals ☐ PHC F2-F4

Preservatives Used for PHC Fraction(s): ☐ Methanol ☑ Sodium Bisulfate ☐ Other: _____ ☐ None

Name(s) of Sampler(s): Ryan Fletcher

Ponded Water, Snow Depth, etc.: None

Well Condition/Repair Requirements: Excellent

Lock Make/Model/Condition/Replaced: (G. Hjukstrom Limited, 7000PS-KA3, 40mm) / Excellent / Not Replaced

Pre-Measured Data (From Well Log)

Depth of Well (mbgs): 3.50 Diameter (cm): 3.8 (Pipe Diameter)

Depth to Top of Screen (mbgs): 0.5 Screen Length (m): 3

Field Measurements

Measurement Method: ☑ Interface Probe ☐ Water Level Tape ☐ Other _____

Well Stickup (Ground to Top of Pipe) (m): 0.34

Depth to Water (From Top of Pipe) (m): 1.605

Calculated Static Water Level (mbgs): 1.265

Well Refusal Depth (m): 1.781 (Measure Refusal After Sampling)

Thickness of Water Column (m): 0.176 Water Volume (L): 0.2 (Calculated)

Free Product Thickness (mm): N/A Sludge/Silt: ☐ Y ☒ N

Purging Information Summary

Purging/Sampling Equipment/Technique: Low Flow Peristalltic Pump

Water Quality Parameter Equipment: Calibration Details:

Maintained Purge Rate at ≤ 100 mL/min: ☑ Y ☐ N Purge Rate: ☐ < Recharge Rate ☐ > Recharge Rate

Total Volume Purged (L): (Total Volume Over Multiple Events, if Applicable)

Time (Note Dates if Multiple Days Required)	pH	Conductivity (uS/cm)	Turbidity (NTU)	Temperature (°C)
	10.16	1.57	30.5	8.23
	DRY	< 1 min		
	insufficient	Sample	volume	
Checked @ ~900	Aug 28 →	No recharge		DRY
Final Time: Final Values:				

Clear? ☐ Y ☐ N Colour:

PHC Sheen? ☐ Y ☐ N PHC Odour? ☐ Y ☐ N

Free Product/PHC Globules? ☐ Y ☐ N Other Odour?

Decontamination of Sampling Equipment

All Equipment Dedicated/Single Use? ☑ Y ☐ N Decon Required? ☐ Y ☑ N

Type of Decontamination Fluid(s): N/A # Washes/Rinses: N/A

Not Sampled

Photographic Records

Photo Numbers/IDs:

Close Up/Wide Angle/Panoramic: Direction:

CAM-1: Monitoring Well Sampling Log

Site Name: CAM-1 Landfill Name: ~~Tier II Disposal Facility~~ NHWL

Date: Aug 27 2019 Time: 1950

Weather: Sun, windy, 10°C

Monitoring Well ID: MW-03 UTM Coordinates: 7621002.6 N 389287.5 E

Sample #: MW-03 Duplicate #: —

Bottles Filled (by Parameter Type): ☒ PHC F1 ☒ Metals ☒ PHC F2-F4

Preservatives Used for PHC Fraction(s): ☐ Methanol ☑ Sodium Bisulfate ☐ Other: _____ ☐ None

Name(s) of Sampler(s): Ryan Fletcher

Ponded Water, Snow Depth, etc.: None

Well Condition/Repair Requirements: Excellent

Lock Make/Model/Condition/Replaced: (G. Hjukstrom Limited, 7000PS-KA3, 40mm) / Good / Not Replaced

Pre-Measured Data (From Well Log)

Depth of Well (mbgs): 4.80 Diameter (cm): 3.8 (Pipe Diameter)

Depth to Top of Screen (mbgs): 0.5 Screen Length (m): 3

Field Measurements

Measurement Method: ☑ Interface Probe ☐ Water Level Tape ☐ Other _____

Well Stickup (Ground to Top of Pipe) (m): 0.35

Depth to Water (From Top of Pipe) (m): 1.173

Calculated Static Water Level (mbgs): 0.823

Well Refusal Depth (m): 2.356 (Measure Refusal After Sampling)

Thickness of Water Column (m): 1.177 Water Volume (L): 1.3 (Calculated)

Free Product Thickness (mm): None Sludge/Silt: ☐ Y ☒ N

Purging Information Summary

Purging/Sampling Equipment/Technique: Low Flow Peristalltic Pump

Water Quality Parameter Equipment: Horiba Calibration Details: Cal solution

Maintained Purge Rate at ≤ 100 mL/min: ☑ Y ☐ N Purge Rate: ☐ < Recharge Rate ☐ > Recharge Rate

Total Volume Purged (L): ~ 3.2 L (Total Volume Over Multiple Events, if Applicable)

Time (Note Dates if Multiple Days Required)	pH	Conductivity (uS/cm)	Turbidity (NTU)	Temperature (°C)
5 mins	13.17	0.905	~~27.~~ 28.3	10.27
10 mins	12.61	0.906	23.3	9.94
15 mins	12.24	0.908	21.6	9.76
20 mins	11.68	0.911	21.5	9.48
25 mins	10.95	0.910	18.6	9.20
30 mins	10.75	0.910	18.0	9.11
	Sample			
Final Time: Final Values:				

Clear? ☑ Y ☐ N Colour: Clear

PHC Sheen? ☐ Y ☒ N PHC Odour? ☐ Y ☒ N

Free Product/PHC Globules? ☐ Y ☒ N Other Odour? NO

Decontamination of Sampling Equipment

All Equipment Dedicated/Single Use? ☑ Y ☐ N Decon Required? ☐ Y ☑ N

Type of Decontamination Fluid(s): N/A # Washes/Rinses: N/A

Photographic Records

Photo Numbers/IDs: _____

Close Up/Wide Angle/Panoramic: Direction:

CAM-1: Monitoring Well Sampling Log

Site Name: CAM-1 Landfill Name: ~~Tier II Disposal Facility~~ NHWL

Date: Aug 27 2019 Time: 1900

Weather: Sun, windy, ~10°C

Monitoring Well ID: MW-04 UTM Coordinates: 7620986.2 N 389282.3 E

Sample #: MW-04 Duplicate #: MW-09

Bottles Filled (by Parameter Type): ☒ PHC F1 ☒ Metals ☒ PHC F2-F4

Preservatives Used for PHC Fraction(s): ☐ Methanol ☑ Sodium Bisulfate ☐ Other: _____ ☐ None

Name(s) of Sampler(s): Ryan Fletcher

Ponded Water, Snow Depth, etc.: NO

Well Condition/Repair Requirements: Excellent

Lock Make/Model/Condition/Replaced: (G. Hjukstrom Limited, 7000PS-KA3, 40mm) / Good / Not Replaced

Pre-Measured Data (From Well Log)

Depth of Well (mbgs): 4.90 Diameter (cm): 3.8 (Pipe Diameter)

Depth to Top of Screen (mbgs): 0.5 Screen Length (m): 3

Field Measurements

Measurement Method: ☑ Interface Probe ☐ Water Level Tape ☐ Other _____

Well Stickup (Ground to Top of Pipe) (m): 0.41

Depth to Water (From Top of Pipe) (m): 1.500

Calculated Static Water Level (mbgs): 1.09

Well Refusal Depth (m): ~~2.9~~ 2.241 (Measure Refusal After Sampling)

Thickness of Water Column (m): 0.740 Water Volume (L): 0.84 (Calculated)

Free Product Thickness (mm): None Sludge/Silt: ☐ Y ☒ N

Purging Information Summary

Purging/Sampling Equipment/Technique: Low Flow Peristalltic Pump

Water Quality Parameter Equipment: Horiba Calibration Details: Multi Cal Solution

Maintained Purge Rate at ≤ 100 mL/min: ☑ Y ☐ N Purge Rate: ☐ < Recharge Rate ☐ > Recharge Rate

Total Volume Purged (L): ~3L (Total Volume Over Multiple Events, if Applicable)

Time (Note Dates if Multiple Days Required)	pH	Conductivity (uS/cm)	Turbidity (NTU)	Temperature (°C)
5 min	12.89	0.918	87.2	14.29
10 min	~~13.75~~ 13.08	0.919	72.4	13.72
15 min	13.12	0.924	68.0	13.25
20 min	13.09	0.933	67.9	12.69
25 min	13.03	0.939	53.5	12.18
30 min	12.97	0.936	44.0	11.74
35 min	12.95	0.934	42.7	11.68
Final Time: Final Values:				

Clear? ☒ Y ☐ N Colour: clear

PHC Sheen? ☐ Y ☒ N PHC Odour? ☐ Y ☒ N

Free Product/PHC Globules? ☐ Y ☒ N Other Odour? None

Field Blank = MW-10

Decontamination of Sampling Equipment

All Equipment Dedicated/Single Use? ☑ Y ☐ N Decon Required? ☐ Y ☑ N

Type of Decontamination Fluid(s): N/A # Washes/Rinses: N/A

Photographic Records

Photo Numbers/IDs: _____

Close Up/Wide Angle/Panoramic: Direction:

CAM-1: Monitoring Well Sampling Log

Site Name: CAM-1 Landfill Name: ~~NHWL~~ Tier II

Date: Aug 2019 Time: 1705

Weather: Sun, windy, 10°C

Monitoring Well ID: MW-05 UTM Coordinates: 7620729.5 N 389155.0 E

Sample #: — Duplicate #: —

Bottles Filled (by Parameter Type): ☐ PHC F1 ☐ Metals ☐ PHC F2-F4

Preservatives Used for PHC Fraction(s): ☐ Methanol ☑ Sodium Bisulfate ☐ Other: _____ ☐ None

Name(s) of Sampler(s): Ryan Fletcher

Ponded Water, Snow Depth, etc.: None

Well Condition/Repair Requirements: Excellent

Lock Make/Model/Condition/Replaced: (G. Hjukstrom Limited, 7000PS-KA3, 40mm) / Good / Not Replaced

Pre-Measured Data (From Well Log)

Depth of Well (mbgs): 4.60 Diameter (cm): 3.8 (Pipe Diameter)

Depth to Top of Screen (mbgs): 0.5 Screen Length (m): 3

Field Measurements

Measurement Method: ☑ Interface Probe ☐ Water Level Tape ☐ Other _____

Well Stickup (Ground to Top of Pipe) (m): 0.3

Depth to Water (From Top of Pipe) (m): N/A

Calculated Static Water Level (mbgs): N/A

Well Refusal Depth (m): 1.785 DRY (Measure Refusal After Sampling)

Thickness of Water Column (m): N/A Water Volume (L): N/A (Calculated)

Free Product Thickness (mm): N/A Sludge/Silt: ☐ Y ☒ N

Purging Information Summary

Purging/Sampling Equipment/Technique: N/A ~~Low-Flow Peristaltic Pump~~

Water Quality Parameter Equipment: N/A Calibration Details: N/A

Maintained Purge Rate at ≤ 100 mL/min: ☑ Y ☐ N Purge Rate: ☐ < Recharge Rate ☐ > Recharge Rate

Total Volume Purged (L): N/A (Total Volume Over Multiple Events, if Applicable)

Time (Note Dates if Multiple Days Required)	pH	Conductivity (uS/cm)	Turbidity (NTU)	Temperature (°C)
		DRY		
Final Time: Final Values:				

Clear? ☐ Y ☐ N Colour: N/A

PHC Sheen? ☐ Y ☐ N PHC Odour? ☐ Y ☐ N

Free Product/PHC Globules? ☐ Y ☐ N Other Odour?

Decontamination of Sampling Equipment

All Equipment Dedicated/Single Use? ☑ Y ☐ N Decon Required? ☐ Y ☑ N

Type of Decontamination Fluid(s): N/A # Washes/Rinses: N/A

Photographic Records

Photo Numbers/IDs:

Close Up/Wide Angle/Panoramic: Direction:

CAM-1: Monitoring Well Sampling Log

Site Name: CAM-1 Landfill Name: ~~NHWL~~ Tier II

Date: Aug 27 2019 Time: 1710

Weather: Sun / windy, 10°C

Monitoring Well ID: MW-06 UTM Coordinates: 7620812.2 N 389129.4 E

Sample #: N/A Duplicate #: N/A

Bottles Filled (by Parameter Type): ☐ PHC F1 ☐ Metals ☐ PHC F2-F4

Preservatives Used for PHC Fraction(s): ☐ Methanol ☑ Sodium Bisulfate ☐ Other: _____ ☐ None

Name(s) of Sampler(s): Ryan Fletcher

Ponded Water, Snow Depth, etc.: None

Well Condition/Repair Requirements: Excellent

Lock Make/Model/Condition/Replaced: (G. Hjukstrom Limited, 7000PS-KA3, 40mm) / Good / Not Replaced

Pre-Measured Data (From Well Log)

Depth of Well (mbgs): 4.65 Diameter (cm): 3.8 (Pipe Diameter)

Depth to Top of Screen (mbgs): 0.5 Screen Length (m): 3

Field Measurements

Measurement Method: ☑ Interface Probe ☐ Water Level Tape ☐ Other _____

Well Stickup (Ground to Top of Pipe) (m): 0.6

Depth to Water (From Top of Pipe) (m): N/A

Calculated Static Water Level (mbgs): N/A

Well Refusal Depth (m): 1.781 DRY (Measure Refusal After Sampling)

Thickness of Water Column (m): N/A Water Volume (L): N/A (Calculated)

Free Product Thickness (mm): N/A Sludge/Silt: ☐ Y ☒ N

Purging Information Summary

Purging/Sampling Equipment/Technique: N/A ~~Low Flow Peristalltic Pump~~

Water Quality Parameter Equipment: N/A Calibration Details: _____

Maintained Purge Rate at ≤ 100 mL/min: ☑ Y ☐ N Purge Rate: ☐ < Recharge Rate ☐ > Recharge Rate

Total Volume Purged (L): N/A (Total Volume Over Multiple Events, if Applicable)

Time (Note Dates if Multiple Days Required)	pH	Conductivity (uS/cm)	Turbidity (NTU)	Temperature (°C)
	DRY			
Final Time: Final Values:				

Clear? ☐ Y ☐ N N/A Colour: _____

PHC Sheen? ☐ Y ☐ N PHC Odour? ☐ Y ☐ N

Free Product/PHC Globules? ☐ Y ☐ N Other Odour? _____

Decontamination of Sampling Equipment

All Equipment Dedicated/Single Use? ☑ Y ☐ N Decon Required? ☐ Y ☑ N

Type of Decontamination Fluid(s): N/A # Washes/Rinses: N/A

Photographic Records

Photo Numbers/IDs: _____

Close Up/Wide Angle/Panoramic: Direction:

CAM-1: Monitoring Well Sampling Log

Site Name: CAM-1 Landfill Name: NHWL ~~Excel~~ Tier II

Date: Aug 27 2019 Time: 1715

Weather: Sunny, windy, 10°C

Monitoring Well ID: MW-07 UTM Coordinates: 7620778.5 N 389068.7 E

Sample #: N/A Duplicate #: N/A

Bottles Filled (by Parameter Type): ☐ PHC F1 ☐ Metals ☐ PHC F2-F4

Preservatives Used for PHC Fraction(s): ☐ Methanol ☑ Sodium Bisulfate ☐ Other: _____ ☐ None

Name(s) of Sampler(s): Ryan Fletcher

Ponded Water, Snow Depth, etc.: None

Well Condition/Repair Requirements: Good

Lock Make/Model/Condition/Replaced: (G. Hjukstrom Limited, 7000PS-KA3, 40mm) / Good / Not Replaced

Pre-Measured Data (From Well Log)

Depth of Well (mbgs): 4.70 Diameter (cm): 3.8 (Pipe Diameter)

Depth to Top of Screen (mbgs): 0.5 Screen Length (m): 3

Field Measurements

Measurement Method: ☑ Interface Probe ☐ Water Level Tape ☐ Other _____

Well Stickup (Ground to Top of Pipe) (m): 0.15

Depth to Water (From Top of Pipe) (m): N/A

Calculated Static Water Level (mbgs): N/A

Well Refusal Depth (m): 1.609 DRY (Measure Refusal After Sampling)

Thickness of Water Column (m): N/A Water Volume (L): NA (Calculated)

Free Product Thickness (mm): N/A Sludge/Silt: ☐ Y ☒ N

Purging Information Summary

Purging/Sampling Equipment/Technique: N/A ~~Low Flow Peristaltic Pump~~

Water Quality Parameter Equipment: N/A Calibration Details: N/A

Maintained Purge Rate at ≤ 100 mL/min: ☑ Y ☐ N Purge Rate: ☐ < Recharge Rate ☐ > Recharge Rate

Total Volume Purged (L): N/A (Total Volume Over Multiple Events, if Applicable)

Time (Note Dates if Multiple Days Required)	pH	Conductivity (uS/cm)	Turbidity (NTU)	Temperature (°C)
	DRY			
Final Time: Final Values:				

Clear? ☐ Y ☐ N Colour: _____

PHC Sheen? ☐ Y ☐ N N/A PHC Odour? ☐ Y ☐ N

Free Product/PHC Globules? ☐ Y ☐ N Other Odour? _____

Decontamination of Sampling Equipment

All Equipment Dedicated/Single Use? ☑ Y ☐ N Decon Required? ☐ Y ☑ N

Type of Decontamination Fluid(s): N/A # Washes/Rinses: N/A

Photographic Records

Photo Numbers/IDs: _____

Close Up/Wide Angle/Panoramic: Direction:

CAM-1: Monitoring Well Sampling Log

Site Name: CAM-1 Landfill Name: ~~NHWL~~ Tier II

Date: Aug 27 2019 Time: 1720

Weather: Sun, wind, 10°C

Monitoring Well ID: MW-8 UTM Coordinates: 7620729.2 N 389051.7 E

Sample #: N/A Duplicate #: N/A

Bottles Filled (by Parameter Type): ☐ PHC F1 ☐ Metals ☐ PHC F2-F4

Preservatives Used for PHC Fraction(s): ☐ Methanol ☑ Sodium Bisulfate ☐ Other: _____ ☐ None

Name(s) of Sampler(s): Ryan Fletcher

Ponded Water, Snow Depth, etc.: None

Well Condition/Repair Requirements: Good

Lock Make/Model/Condition/Replaced: (G. Hjukstrom Limited, 7000PS-KA3, 40mm) / Good / Not Replaced

Pre-Measured Data (From Well Log)

Depth of Well (mbgs): 4.60 Diameter (cm): 3.8 (Pipe Diameter)

Depth to Top of Screen (mbgs): 0.5 Screen Length (m): 3

Field Measurements

Measurement Method: ☑ Interface Probe ☐ Water Level Tape ☐ Other _____

Well Stickup (Ground to Top of Pipe) (m): ~~0.54~~ 0.5

Depth to Water (From Top of Pipe) (m): N/A

Calculated Static Water Level (mbgs): N/A

Well Refusal Depth (m): 1.671 DRY (Measure Refusal After Sampling)

Thickness of Water Column (m): N/A Water Volume (L): N/A (Calculated)

Free Product Thickness (mm): N/A Sludge/Silt: ☐ Y ☒ N

Purging Information Summary

Purging/Sampling Equipment/Technique: N/A Low Flow Peristalltic Pump

Water Quality Parameter Equipment: N/A Calibration Details: N/A

Maintained Purge Rate at ≤ 100 mL/min: ☑ Y ☐ N Purge Rate: ☐ < Recharge Rate ☐ > Recharge Rate

Total Volume Purged (L): N/A (Total Volume Over Multiple Events, if Applicable)

Time (Note Dates if Multiple Days Required)	pH	Conductivity (uS/cm)	Turbidity (NTU)	Temperature (°C)
	DRY			
Final Time: Final Values:				

Clear? ☐ Y ☐ N Colour: _____

PHC Sheen? ☐ Y ☐ N N/A PHC Odour? ☐ Y ☐ N

Free Product/PHC Globules? ☐ Y ☐ N Other Odour? _____

Decontamination of Sampling Equipment

All Equipment Dedicated/Single Use? ☑ Y ☐ N Decon Required? ☐ Y ☑ N

Type of Decontamination Fluid(s): N/A # Washes/Rinses: N/A

Photographic Records

Photo Numbers/IDs: _____

Close Up/Wide Angle/Panoramic: Direction:

Kitik 16 - 2019 - CAM-1 Soil Sampling Logs

Site Name: CAM-1

Landfill Name: East Landing Area Landfill

Date & Time of Sampling Event: Aug 26 2019

Weather: Sun, windy 10°C

Name of Sampling Staff: Ryan Fletcher

Sampling equipment and decontamination methods: Stainless Steel Shovel and Alconox with Distillied Water Wash

Soil Sampling Location ID	UTM Coordinates		Sample Depth	Notes: *Including (but not limited to) visual/olfactory observations (colour, odour, evidence of contamiantion...), depth and reason for refusal if required depth not achieved...*
	North (m)	East (m)		
C1-32	7618240.4	388199.8	0 - 15 cm	Grey fine sand + gravel, saturated, n/o, H20 @ 20cm
			40-50	organics 0-3cm; Sand - clay @ 0.4m
C1-33	7618191.8	388181.3	0 - 15 cm	Grey gravel, cobbles
			40-50	Sand
C1-34	7618206.9	388142.2	0 - 15 cm	Same as -33
			40-50	"
C1-35	7618235.7	388138.1	0 - 15 cm	Grey sand + gravel, moist, n/o
			40-50	Sand

Dup C1-41 @ C1-32A 6:25 pm

6:55 pm

7:10 pm

6:40 pm

Dup C1-41 @ C1-32A

Kitik 16 - 2019 - CAM-1 Soil Sampling Logs

Site Name: CAM-1

Landfill Name: USAF Landfill

Date & Time of Sampling Event: Aug 26 2019

Weather: Sunny, windy, 10°C

Name of Sampling Staff: Ryan Fletcher

Sampling equipment and decontamination methods: Stainless Steel Shovel and Alconox with Distillied Water Wash

Soil Sampling Location ID	UTM Coordinates		Sample Depth	Notes: *Including (but not limited to) visual/olfactory observations (colour, odour, evidence of contamiantion...), depth and reason for refusal if required depth not achieved...*
	North (m)	East (m)		
10:00 C1-27	7619250.3	388501.5	0 - 15 cm	Brown sand + gravel, moist, n/o
			40-50 cm	Same
9:15 C1-28 → Dup C1-40	7619291.8	388458.9	0 - 15 cm	Brown sand + gravel, moist, n/o
			40-50cm	
9:40 C1-29	7619300.9	388498.7	0 - 15 cm	Brown sand + gravel, moist, n/o
			40-50cm	Same – H2O @ 45cm
9:25 C1-30	7619337.5	388452	0 - 15 cm	Brown sand + gravel, organics 0-5cm, moist, n/o
			40-50cm	
9:30 C1-31	7619338.1	388489.7	0 - 15 cm	Light Brown sand + gravel, moist, n/o
			40-50	Same

Dup C1-40 @ C1-28A

26 2019

Sun, windy, 10°C

			0 - 15 cm	Orangy s
Dup C1-38@ 15:00 C1-23A →			15 - 25cm	Same
1535	C1-24	7620608.8	389752	0 - 15 cm	Dark bra
				40 - 50
	C1-25	7620578.5	389697.5	0 - 15 cm	Brown sa
				25 - 37cm	Same
→	C1-26	7620604.4	389645.8	0 - 15 cm	Grey sa
				25-35cm	Same

Dup C1

Kitik 16 - 2019 - CAM-1 Soil Sampling Logs

Site Name: CAM-1

Landfill Name: Station East Landfill

Date & Time of Sampling Event: Aug 26 2019

Weather: Sunny, windy, 10°C

Name of Sampling Staff: Ryan Fletcher

Sampling equipment and decontamination methods: Stainless Steel Shovel and Alconox with Distillied Water Wash

Soil Sampling Location ID	UTM Coordinates		Sample Depth	Notes: *Including (but not limited to) visual/olfactory observations (colour, odour, evidence of contamiantion...), depth and reason for refusal if required depth not achieved...*
	North (m)	East (m)		
C1-19	7620804.4	389772.4	0 - 15 cm	Brown Sandy ns - 20
			40-50	"
1620 C1-20	7620723.2	389877.1	0 - 15 cm	Fractured bedrock w brown sand, moist, n/o organics 0-5 cm
			40-50	Same
1615 C1-21	7620688.1	389834.2	0 - 15 cm	Fractured bedrock w brown sand
			25-35	Same - Refusal on B.R.
1600 C1-22	7620646.7	389795.9	0 - 15 cm	Brown sand + gravel, moist, n/o
			40-50 cm	same

Kitik 16 - 2019 - CAM-1 Soil Sampling Logs

Site Name: CAM-1

Landfill Name: South East Landfill

Date & Time of Sampling Event: Aug 26 2019

Weather: Sunny, windy, 10°C

Name of Sampling Staff: Ryan Fletcher

Sampling equipment and decontamination methods: Stainless Steel Shovel and Alconox with Distillied Water Wash

Soil Sampling Location ID	UTM Coordinates		Sample Depth	Notes: *Including (but not limited to) visual/olfactory observations (colour, odour, evidence of contamiantion...), depth and reason for refusal if required depth not achieved...*
	North (m)	East (m)		
11:10 C1-14	7620632.5	389245.6	0 - 15 cm	Brown sand + gravel, moist, n/o
			40-50	Same
11:00 C1-15	7620596.1	389234.5	0 - 15 cm	Brown sand + gravel, moist, n/o
Dup C1-39 @ A →			40-50cm	Same
11:30 C1-16	7620549.6	389262.5	0 - 15 cm	Orange/brown sand + gravel, moist, n/o
			40-50cm	Same
11:40 C1-17	7620531.1	389233.4	0 - 15 cm	Orange sand + gravel, moist, n/o
			30-40cm	Same Refusal on B.R.
11:50 C1-18	7620531.7	389196.4	0 - 15 cm	Grey/brown sand + gravel, moist, n/o
Dup C1-37 @ A			40-50	Same

Dup C1-39 @ C1-15A / Dup C1-37 @ C1-18A

Kitik 16 - 2019 - CAM-1 Soil Sampling Logs

Site Name: CAM-1

Landfill Name: Station West Landfill

Date & Time of Sampling Event: Aug 26 2019

Weather: Sun, windy, 10°C

Name of Sampling Staff: Ryan Fletcher

Sampling equipment and decontamination methods: Stainless Steel Shovel and Alconox with Distillied Water Wash

Soil Sampling Location ID	UTM Coordinates		Sample Depth	Notes: *Including (but not limited to) visual/olfactory observations (colour, odour, evidence of contamiantion...), depth and reason for refusal if required depth not achieved...*
	North (m)	East (m)		
1350 C1-10	7620901.3	389059.5	0 - 15 cm	Brown sand + gravel, cobbles, moist, n/o
			40-50	Same
1400 C1-11	7620922.1	388987.6	0 - 15 cm	Brown sand, some gravel, moist, n/o
			40-50	Same
1410 C1-12	7620957.4	389001.9	0 - 15 cm	Same as -11
			40-50	gravelly at 0.45m
1420 C1-13	7620969.5	389044.6	0 - 15 cm	Same as -11
			40-50	Same

Kitik 16 - 2019 - CAM-1 Soil Sampling Logs

Site Name: CAM-1

Landfill Name: Northeast Landfill

Date & Time of Sampling Event: Aug 27 2019

Weather: Sunny, windy, 10°C

Name of Sampling Staff: Ryan Fletcher

Sampling equipment and decontamination methods: Stainless Steel Shovel and Alconox with Distillied Water Wash

Soil Sampling Location ID	UTM Coordinates		Sample Depth	Notes: *Including (but not limited to) visual/olfactory observations (colour, odour, evidence of contamiantion...), depth and reason for refusal if required depth not achieved...*
	North (m)	East (m)		
1040 C1-7	7621109.7	389556.7	0 - 15 cm	Black organics, moist
			40-50cm	Dark brown sand & gravel, moist, n/o
1130 C1-6	7621160.9	389483.1	0 - 15 cm	Orangy brown sand & gravel, moist, n/o
			40-50cm	Same
1100 C1-8	7621184.3	389520.9	0 - 15 cm	Light brown sand & gravel, moist, n/o
			40-50cm	Same
1115 C1-9	7621178.6	389558.9	0 - 15 cm	Same as -8 Organics 0-50cm
			40-50cm	11

Kitik 16 - 2019 - CAM-1 Soil Sampling Logs

Site Name: CAM-1

Landfill Name: Borrow Area North Landfill

Date & Time of Sampling Event: Aug 27 2019

Weather: Sunny, windy, 10 °C

Name of Sampling Staff: Ryan Fletcher

Sampling equipment and decontamination methods: Stainless Steel Shovel and Alconox with Distillied Water Wash

Soil Sampling Location ID	UTM Coordinates		Sample Depth	Notes: *Including (but not limited to) visual/olfactory observations (colour, odour, evidence of contamiantion...), depth and reason for refusal if required depth not achieved...*
	North (m)	East (m)		
925 C1-1	7621337.8	389749.9	0 - 15 cm	Black organic peat, wet
			40-50	Brown sand + gravel, moist to wet, n/c, H2O @ 45 cm
915 C1-2	7621432	389707.7	0 - 15 cm	Brown sand + gravel, moist, n/o
			30-40cm	Same - refusal on B/R.
955 C1-3	7621370.3	389674.9	0 - 15 cm	Brown sand + gravel, moist, n/o
			40-50cm	Same
935 C1-4	7621293.8	389680.6	0 - 15 cm	Brown sand + gravel, moist, n/o
			40-50cm	Same
940 C1-5	7621223.5	389660.9	0 - 15 cm	Light Brown sand, moist, n/o
			40-50	Same

Kitik 16 - 2019 - CAM-1 Soil Sampling Logs

Site Name: CAM-1

Landfill Name: ~~Pallet Line West Landfill~~ ~~Tier II~~ Tier II Landfill

Date & Time of Sampling Event: Aug ~~27~~ 2019

Weather: Sun, windy, 10°C

Name of Sampling Staff: Ryan Fletcher

Sampling equipment and decontamination methods: Stainless Steel Shovel and Alconox with Distillied Water Wash

Soil Sampling Location ID	UTM Coordinates		Sample Depth	Notes: *Including (but not limited to) visual/olfactory observations (colour, odour, evidence of contamiantion...), depth and reason for refusal if required depth not achieved...*
	North (m)	East (m)		
1330 MW-05	7620729.5	389155	0 - 15 cm	Brown sand + gravel, moist, n/o
			40-50	Same
1300 MW-06	7620812.2	389129.4	0 - 15 cm	Brown sand + gravel, coarse, moist, n/o
			40-50cm	Same
1315 MW-07	7620778.5	389068.7	0 - 15 cm	Brown coarse sand + gravel, moist, n/o
			40-50	Same
1310 MW-08	7620729.2	389051.7	0 - 15 cm	Brown sandy gravel, moist, n/o, cobbles
			40-50cm	Same

Dup CI-43 @ MW-06B / Dup CI-44 @ ~~MW-07~~ MW-06A

Dup CI-36 @ MW07B

Kitik 16 - 2019 - CAM-1 Soil Sampling Logs

Site Name: CAM-1

Landfill Name: Non-Hazardous Waste Landfill

Date & Time of Sampling Event: Aug 22 2019

Weather: Sunny, windy, ~10°C

Name of Sampling Staff: Ryan Fletcher

Sampling equipment and decontamination methods: Stainless Steel Shovel and Alconox with Distillied Water Wash

Soil Sampling Location ID	UTM Coordinates		Sample Depth	Notes: *Including (but not limited to) visual/olfactory observations (colour, odour, evidence of contamiantion...), depth and reason for refusal if required depth not achieved...*
	North (m)	East (m)		
1450 MW-01	7620893.8	389277	0 - 15 cm	Brown sand + gravel, moist, n/o
			40-50cm	Same
1515 MW-02	7620968.2	389333.2	0 - 15 cm	Orangy brown sand, moist, n/o
			20-30	Same - Refusal B.R. or Boulder
1505 MW-03	7621002.6	389287.5	0 - 15 cm	Grey sand + gravel, moist, n/o
			30-40	Same Refusal B.R. or Boulder
1525 MW-04	7620986.2	389282.3	0 - 15 cm	Dark brown sand + gravel, moist, n/o
			25-35	Same Refusal on B.R. or boulder

DEW LINE CLEANUP: POST-CONSTRUCTION - LANDFILL MONITORING

VISUAL INSPECTION CHECKLIST

ANNEX J1: INSPECTION REPORT – PAGE 1 OF 3

SITE NAME:	CAM-1
LANDFILL DESIGNATION:	~~Pit~~ Borrow Area North
LANDFILL TYPE (regraded, leachate contained, Tier II or NH):	regraded
DATE OF INSPECTION:	27 Aug. 2019 (early morning)
WEATHER CONDITIONS:	Sunny, winds from south - 14 km/hr, 9°C
DATE OF PREVIOUS INSPECTION:	Aug. 2016
INSPECTED BY (name and signature):	T. Austin
REPORT PREPARED BY (name and signature):	T. Austin

The inspector represents to the best of their knowledge that the following statements and observations are true and correct and that no material facts have been suppressed or misstated.

Notes:

- *All Features must have UNIQUE and consistent identifiers:*
  - *If a Feature is identified as Feature 'A' in 2013; then this same Feature 'A' must be followed up on as Feature 'A' in 2014 and all subsequent years. If it is not observed in a year, than it must be described as 'not observed'; Feature 'A' cannot be replaced to become a different Feature in later years.*
  - *If a Feature was noted in a previous year, but in the Geotechnical Engineer's opinion is not relevant; you can explain why in your opinion it is not relevant.*
  - *A new Feature must get its own unique identifier, in alphabetical order from where the previous list of Features left off; It should also be described as 'NEW' in the description column;*
  - *New Features can only be grouped together if they are very similar and located in close proximity;*
  - *Feature names must be consistent in the Tables, Figures, Photos and text; All Feature referencing must be verified for consistency.*
- *All measurements must be metric units;*
- *GPS is in UTM coordinates (NAD83).*

VISUAL INSPECTION CHECKLIST - INSPECTION REPORT – PAGE 2 OF 3

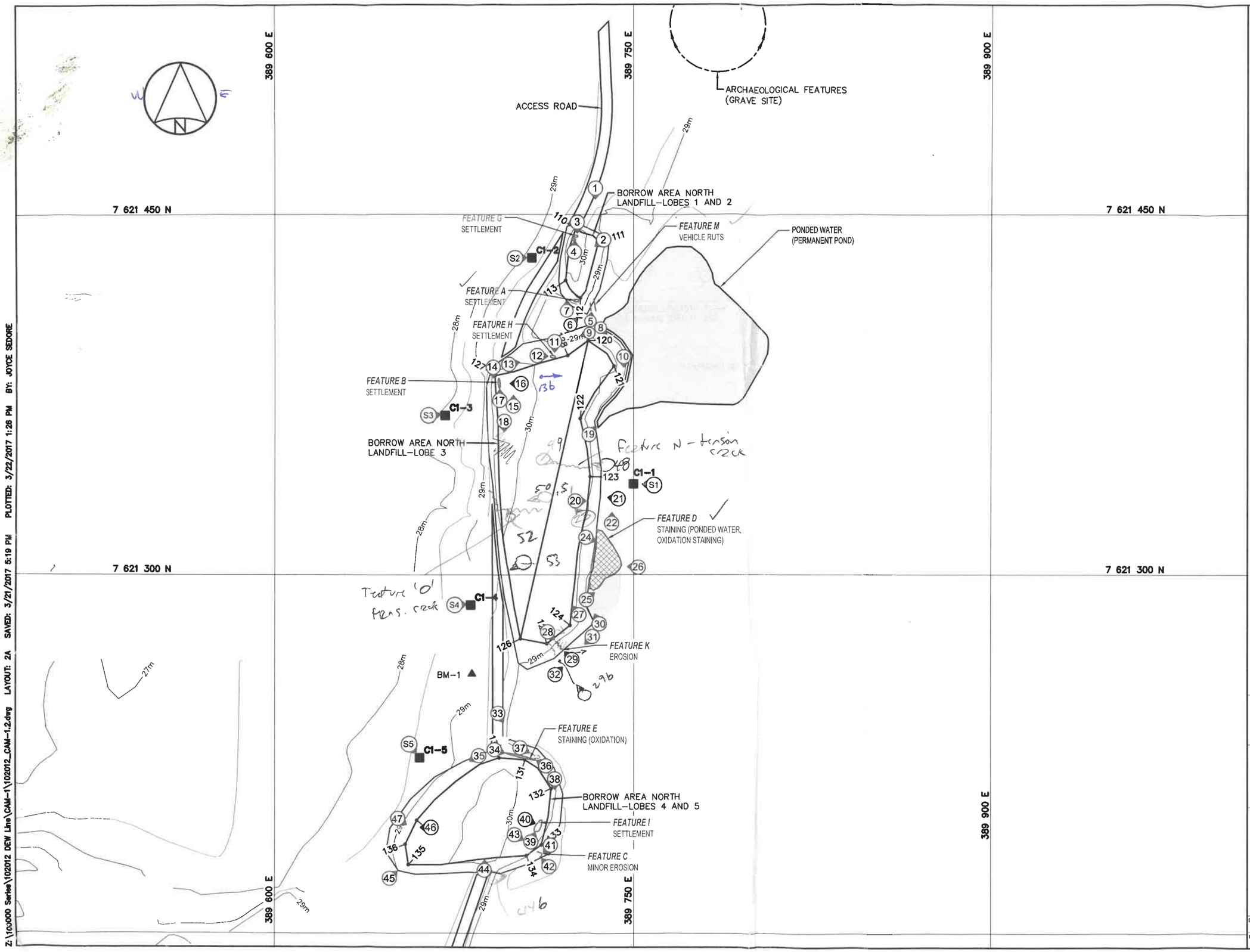
Checklist Item	Present Yes/No FEATURE	Feature Number (Feature A, B, C – Keep name from historical observations, where appropriate)	Location (Describe relative to existing monuments/ features and relative to landfill design i.e. surface, berms, toe)	GPS coordinates (Taken at each 0.5m to 1m interval, and at any significant change in direction and around circumference of feature) Also take centre of feature (where feasible, and call c) Easting/ Northing/Zone /4	Length	Width	Depth	Extent relative to Area of Landfill (%)	Description	Comparison with historical observations	Additional Comments	Photographic Records Photo Reference, Focal length, location, view point & direction (relative to magnetic north) Feature of note Scale CAM-1, BAN-
Settlement	A	South side slope Lobes 1+2		389726.139/7621414.263	1.0	1.0	0.05	<1%	minor depression on side slope	NSC	acceptable	-5, 6
	B	NW cover - Lobe 3		389693.279/7621382.024 389694.015/7621380.077	0.4-4m	0.2-1.0m	0.1	<1%	two linear depressions	NSC	"	-14 to 17
Erosion	G	NW side slopes Lobe 1+2		389724.902/7624439.695 389726.050/7624441.194	0.6-1m	0.4-0.6	0.04	<1%	decr. in depth - infilling (from 0.1 to 0.04 in 2019)	slight decrease in depth	"	- 3, 4
	H	N side slope - Lobe 3		389704.539/7621303.63	1m	0.2	0.1	<1%	minor depression	NSC	"	- 11, 12
Lateral Movement =NO	I	E. cover - Lobes 4+5		389709.681 7621194.527	3m	1m	0.1	<1%	minor depression	NSC	"	- 39, 40
	C	SE side slope - Lobes 4+5		389711.134/7621183.851	4	0.5	0.05	<1%	minor erosion of fines, washing of fines on side slope	NSC	"	- 41, 42
Frost Action =NO	J	former E side slope (Lobe 3)		Not observed	—	N/A	—		erosion not observed			- 20, 21, 22
	K	SE side slope Lobe 3		389719.113/7621270.162	5	0.5-1.0	0.01	<1%	erosion not very distinct	infilling occurring	acceptable	- 28, 29
Sloughing =NO	L	SW side slope (Lobes 4+5		Not observed	—	N/A	—		not observed	N/A	N/A	- 46, 47
Cracking	"O"	middle W side cover middle of hill		389704.85 m E/ 7621319.658 m N	20	0.02	0.02	<1%	minor cracking	NEW	acceptable	- 51, 52
	F	NE corner of Lobes 4+5		Not observed	—	N/A	—		not observed	completely infilled in 2019, 2016 + 2014 N/A	N/A	
Animal Burrows =NO	N	middle E. side middle of hill		389715.08m E/ 7621354.246 m N	16	0.02-0.03	0.02		minor cracking	NEW	acceptable	-50

NSC = no significant change

FEATURE

VISUAL INSPECTION CHECKLIST - INSPECTION REPORT – PAGE 3 OF 3

Checklist Item	Present Yes/No	Feature Number (Feature A, B, C – Keep name from historical observations, where appropriate)	Location (Describe relative to existing monuments/ features and relative to landfill design i.e. surface, berms, toe)	GPS coordinates (Taken at each 0.5m to 1m interval, and at any significant change in direction and around circumference of feature) Also take centre of feature (where feasible, and call c) Easting/ Northing/Zone 14	Length	Width	Depth	Extent relative to Area of Landfill (%)	Description	Comparison with historical observations	Additional Comments	Photographic Records Photo Reference, Focal length, location, view point & direction (relative to magnetic north) Feature of note Scale
Vegetation Establishment =NO												CAM-1, BAN-
Staining –	P	E. toe beside Lobe 3		389774.107/ 7621312.356	10	5	0.05	<1%	ponding with ironoxide staining east of Lobe 3	seasonal ponding	acceptable	– 24, 25, 26
=	E	N side cover, Lobe 4-5		389698.065/ 7621225.650	5	1-3m	—		thinning of fine granular cover exposing brown fill soil beneath	NSC	acceptable	– 33+34
Vegetation Stress =NO												
Seepage Points (or) Ponded Water <.	–	NE of Lobes 1+3		389737.443/ 7621402.262	63	70	0.3 water depth		permanent ponded water to NE of Lobes 1+3	not within landfill	N/A	– 8, 19
Debris and/or Liner Exposed =NO												
Presence & Condition of Monitoring Instruments =NO												
Features of Note/ Other Relevant Observations (e.g. signs of activity, ruts...)	M	vehicle ruts SE corner of Lobes 1+2		389732.106/ 7621412.615 389733.527/ 7621414.757	4 to 5m	0.3	0.1 – 0.2	<1%	vehicle ruts	NSC	acceptable	– 5, 6



LEGEND:

- MONITORING SOIL SAMPLE LOCATION
- BM–1 PERMANENT BENCHMARK LOCATION
- 110 COORDINATE POINT
- 1 APPROX. PHOTOGRAPHIC VIEWPOINT
- BODY OF WATER
- SETTLEMENT
- STAINING
- EROSION

Inspected by: T. Aubrey

27 Aug, 2019

photos: 1 – 53

0 30 60 metres

SCALE 1:1500

ARCADIS

DEPARTMENT OF NATIONAL DEFENCE

COLLECTION OF LANDFILL MONITORING DATA

CAM-1, JENNY LIND ISLAND, NUNAVUT

BORROW AREA NORTH LANDFILL PLAN/MONITORING POINTS/ LANDFILL OBSERVATIONS

Drawn By: I.S.Z.	Approved By: S.B.	Project No: 1020
Date: FEB. 2017	Scale: AS SHOWN	Figure No: C

Z:\100000 Series\102012 DEW Line\CAM-1\102012_CAM-1_2.dwg LAYOUT: 2A SAVED: 3/21/2017 5:19 PM PLOTTED: 3/22/2017 1:28 PM BY: JOYCE SEDORE

DEW LINE CLEANUP: POST-CONSTRUCTION - LANDFILL MONITORING

VISUAL INSPECTION CHECKLIST

ANNEX J1: INSPECTION REPORT – PAGE 1 OF 3

SITE NAME:	CAM-1
LANDFILL DESIGNATION:	NE Landfill
LANDFILL TYPE (regraded, leachate contained, Tier II or NH):	regraded
DATE OF INSPECTION:	27 Aug 2019 (morning inspn)
WEATHER CONDITIONS:	sunny, winds from South -14 km/hr, 10°C
DATE OF PREVIOUS INSPECTION:	Aug 2016
INSPECTED BY (name and signature):	T. Austins
REPORT PREPARED BY (name and signature):	T. Austins,
The inspector represents to the best of their knowledge that the following statements and observations are true and correct and that no material facts have been suppressed or misstated.	

Notes:

- *All Features must have UNIQUE and consistent identifiers:*
  - *If a Feature is identified as Feature 'A' in 2013; then this same Feature 'A' must be followed up on as Feature 'A' in 2014 and all subsequent years. If it is not observed in a year, than it must be described as 'not observed'; Feature 'A' cannot be replaced to become a different Feature in later years.*
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- *GPS is in UTM coordinates (NAD83).*

VISUAL INSPECTION CHECKLIST - INSPECTION REPORT – PAGE 2 OF 3

Checklist Item	Present Yes/No	Feature Number (Feature A, B, C – Keep name from historical observations, where appropriate)	Location (Describe relative to existing monuments/ features and relative to landfill design i.e. surface, berms, toe)	GPS coordinates (Taken at each 0.5m to 1m interval, and at any significant change in direction and around circumference of feature) Also take centre of feature (where feasible, and call c) Easting/ Northing/Zone 14	Length	Width	Depth	Extent relative to Area of Landfill (%)	Description	Comparison with historical observations	Additional Comments	Photographic Records Photo Reference, Focal length, location, view point & direction (relative to magnetic north) Feature of note Scale CAM–1, NE–
Settlement	A	N side slope Lobes 1+3		389534.618 / 7621162.129 389536.391 / 7621157.057 389531.102 / 7621161.752	0.3–2m	0.3–1m	0.1–0.3m	<1%	(2m×1m×0.3 deep = largest settlement observed on inside corner 3 depressions – 2× inside corner + one on N side slope	NSC	acceptable	–25 & 27
Erosion	D	E landfill cover - Lobe 2		389544.257 / 7621114.25	13	0.2	0.05	<1%	linear depression possibly caused by poor final grading	NSC	— " —	–6,7
	E	NW corner Lobe 1+3		389509.864 / 7621167.369	0.4	0.3	0.1	<1%	pothole depression	NSC	— " —	–20
Lateral Movement =NO	H	W. L'fill cover Lobe 2		389519.845 / 7621102.066	7	0.3	0.05	<1%	linear depression	NSC	— " —	–34,35
	C	N side slope Lobes 1+3		389541.212 / 7621164.329	4	0.15	0.05	<1%	mina erosion	NSC	— " —	–30
Frost Action =NO	F	NE corner Lobes 1+3		389557.114 / 7621161.046	3	0.1	0.05	<1%	— " —	NSC	— " —	–31
	G	W side slope Lobes 1+3		389500.762 / 7621158.123	7	0.5	0.1	<1%	minor erosion feature may be poor final grading of L'fill	NSC	acceptable	–18,19
Sloughing =NO												
Cracking =NO												
Animal Burrows =NO												

DEW LINE CLEANUP: POST-CONSTRUCTION - LANDFILL MONITORING

VISUAL INSPECTION CHECKLIST

ANNEX J1: INSPECTION REPORT – PAGE 1 OF 3

SITE NAME: CAM – 1
LANDFILL DESIGNATION: Station West Landfill
LANDFILL TYPE (regraded, leachate contained, Tier II or NH): regraded
DATE OF INSPECTION: 26 AUG. 2019
WEATHER CONDITIONS: sunny, 14°C, 18 km/hr winds from South
DATE OF PREVIOUS INSPECTION: Aug 2016
INSPECTED BY (name and signature): T. Austins
REPORT PREPARED BY (name and signature): T. Austins
The inspector represents to the best of their knowledge that the following statements and observations are true and correct and that no material facts have been suppressed or misstated.

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VISUAL INSPECTION CHECKLIST - INSPECTION REPORT – PAGE 2 OF 3

Checklist Item	Present Yes/No	Feature Number (Feature A, B, C – Keep name from historical observations, where appropriate)	Location (Describe relative to existing monuments/ features and relative to landfill design i.e. surface, berms, toe)	GPS coordinates (Taken at each 0.5m to 1m interval, and at any significant change in direction and around circumference of feature) Also take centre of feature (where feasible, and call c) Easting/ Northing/ Zone 14	Length	Width	Depth	Extent relative to Area of Landfill (%)	Description	Comparison with historical observations	Additional Comments	Photographic Records Photo Reference, Focal length, location, view point & direction (relative to magnetic north) Feature of note Scale
Settlement	Y	A (4 locns)	East side slope	389013.164 7620948.791 389044.606 7620943.954 389048.023 7620936.951 389051.741 7620933.194	0.2-2m	0.1-0.2	0.05	<1	very minor settlement observ.	NSC		CAM-1 SW- 3,5,6,9
	Y	B	NW sideslope	389013.164 7620946.19								
Erosion		(3 spots)	+N cover	389027.593 7620954.577) 389029.736 7620954.773 }20.7- 389022.164 7620946.190)1.5	0.2	0.05-0.1		<1	very minor @ 3 spots	NSC		CAM-1 SW- 14, 29, 34
	Y	E	NE corner	389041.821 7620956.566 6	4	0.1		<1	minor settlement over large area (may be caused by improper grading)	NSC		CAM-1, SW - 10, 11, 12
	Y	J	SE corner of cover	389052.621 7620911.30	1m	0.2	0.05	<1	minor	NSC	v. low severity	CAM-1, SW - 17
Lateral Movement =NO	Y	K	SW side slope	389017.437 7620909.000 389013.65 7620912.067	0.3	0.3	0.05	<1	] 2 locns	NSC NSC	v. low v. low	CAM-1, SW - 23, 24 CAM-1, SW - 10
	Y	L	NE side slope	389038.639 7620951.126	0.5	0.2	0.05	<1	very minor			CAM-1, SW - 14, 34
	Y	M	N. cover	389027.362 7620951.939	0.5	0.2	0.05	<1	—"—	NSC	v. low	
	Y	N	N cover	389019.53 7620952.014	— " —			<1	—"—	NSC	v. low	CAM-1, SW - 33
Frost Action =NO												
Erosion	Y	P	E. sideslope	389047.698 7620934.394	3.5	0.1	0.05	<1	minor erosion of fines	NSC	v. low	CAM-1, SW- 6, 7
Sloughing =NO												
Cracking	Yes	G (5 cracks observed)	south side slope	389032.912 7620901.755 (Zone 14)	i) 2 x ii) 0.5 x iii) 1m x iv) 3m x v) 0.2 x	0.01 = 0.01 0.02 = 0.02 0.01 = 0.01 0.01 = 0.01 0.01 = 0.01		<1	partially infilled tension cracks x 5 observed	NSC	acceptable	CAM-1 SW 19, 20, 21
Animal Burrows =NO	Y	H	NE slope	389040.806 7620950.267	0.3	3	0.02-0.04	<1%	tension crack	NSC	~~acceptable~~ acceptable	~~CAM-1 SW~~ CAM-1 SWNW- 9, 10
		I	E. side slope	389047.694 7620934.523	2	0.02-0.04	0.02	<1%	—"—	NSC	acceptable	CAM-1 SWNW- 3

NSC = no significant change

VISUAL INSPECTION CHECKLIST - INSPECTION REPORT – PAGE 3 OF 3

Checklist Item	Present Yes/No	Feature Number (Feature A, B, C – Keep name from historical observations, where appropriate)	Location (Describe relative to existing monuments/ features and relative to landfill design i.e. surface, berms, toe)	GPS coordinates (Taken at each 0.5m to 1m interval, and at any significant change in direction and around circumference of feature) Also take centre of feature (where feasible, and call c) Easting/ Northing/Zone 14	Length	Width	Depth	Extent relative to Area of Landfill (%)	Description	Comparison with historical observations	Additional Comments	Photographic Records Photo Reference, Focal length, location, view point & direction (relative to magnetic north) Feature of note Scale
Vegetation Establishment	NO											—
Staining	Y (somewhat)	F	S. land fill cover	389038.852 7620921.768 389022.156 7620909.415 389035.984 7620921.641 389019.573 7620917.375 389042.266 7620918.33	2-4m	0.2-0.4	none	<1	this is brown soil exposed due to lack of granular stone cover @ 5 spots	NSC	no impact to severity	CAM-1 ; SW - 15, 16, 18, 28
Vegetation Stress	NO											—
Seepage Points (or) Ponded Water	NO											
Debris and/or Liner Exposed	NO											
Presence & Condition of Monitoring Instruments	NO											
Features of Note/ Other Relevant Observations (e.g. signs of activity, ruts…)	Y	C	SW corner	389004.148 7620921.737	5	5	0.05	<1	uneven side slope	NSC	u.low severity	CAM-1, SW - 27

NSC = no significant change

7 621 000 N

389 000 E

389 100 E

7 620 900 N

N

23m

25m

26m

24m

27m

FEATURE M
SETTLEMENT

FEATURE N
SETTLEMENT

FEATURE O
EQUIPMENT TRACKS

FEATURE E
SETTLEMENT

FEATURE L
SETTLEMENT

FEATURE H
CRACK

FEATURE A
SETTLEMENT

FEATURE B
SETTLEMENT

FEATURE D
EROSION

FEATURE F
STAINING

FEATURE I
CRACK

FEATURE J
SETTLEMENT

FEATURE C
UNEVEN SIDE SLOPE

FEATURE K
SETTLEMENT

FEATURE G
CRACK

C1–13 S13

C1–12 S12

C1–11 S11

C1–10 S10

STATION WEST LANDFILL

1cm x 1cm x 2m

1cm x 1cm x 1m

3m x 1cm x 1cm

4 @ 6 cms long

LEGEND:

- MONITORING SOIL SAMPLE LOCATION
- 201 COORDINATE POINT
- 1 APPROX. PHOTOGRAPHIC VIEWPOINT
- SETTLEMENT
- STAINING
- EQUIPMENT TRACKS/RUTS
- UNEVEN SIDE SLOPE
- EROSION
- TENSION CRACK

no stability concerns identified
"staining" simply an absence of fine granular cover with brown soil exposed.
several tension cracks observed at middle south end of landfill cap + slope
photos 1–37

sunny, S. wind 20km/h, 15°C

26 AUG 2019
1:30pm – 3:30pm
photos 1–37

0 10 20 metres
SCALE 1:500

ARCADIS

DEPARTMENT OF NATIONAL DEFENCE

COLLECTION OF LANDFILL MONITORING DATA

CAM-1, JENNY LIND ISLAND, NUNAVUT

STATION WEST LANDFILL
PLAN/MONITORING POINTS/LANDFILL OBSERVATIONS

Drawn By: I.S.Z.	Approved By: S.B.	Project No: 102012-1
Date: FEB. 2017	Scale: AS SHOWN	Figure No: CAM-1.4A

Z:\100000 Series\102012 DEW Line\CAM-1\102012_CAM-1.4.dwg LAYOUT: 1.4A SAVED: 3/22/2017 2:53 PM PLOTTED: 3/24/2017 1:08 PM BY: IZABELA ZIBA

DEW LINE CLEANUP: POST-CONSTRUCTION - LANDFILL MONITORING

VISUAL INSPECTION CHECKLIST

ANNEX J1: INSPECTION REPORT – PAGE 1 OF 3

SITE NAME:	CAM-1
LANDFILL DESIGNATION:	Non-hzz Cell
LANDFILL TYPE (regraded, leachate contained, Tier II or NH):	NH
DATE OF INSPECTION:	27 AUG. 2019
WEATHER CONDITIONS:	sunny, 16km/hr winds from south, 15°c
DATE OF PREVIOUS INSPECTION:	Aug. 2016
INSPECTED BY (name and signature):	T. Austin, (ARCADIS)
REPORT PREPARED BY (name and signature):	T. Austin,

The inspector represents to the best of their knowledge that the following statements and observations are true and correct and that no material facts have been suppressed or misstated.

Notes:

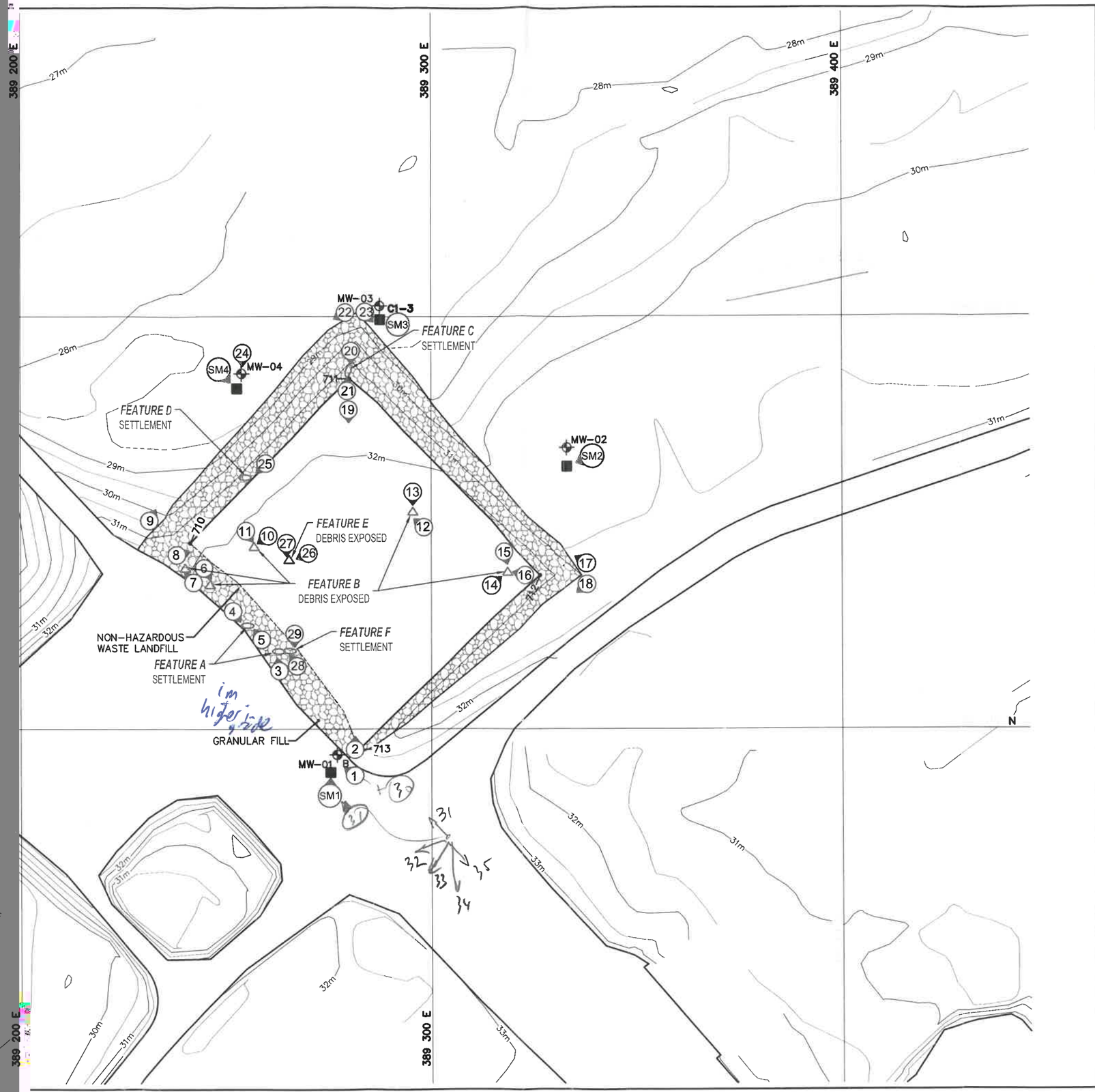
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- *GPS is in UTM coordinates (NAD83).*

VISUAL INSPECTION CHECKLIST - INSPECTION REPORT – PAGE 2 OF 3

Checklist Item	Present Yes/No	Feature Number (Feature A, B, C – Keep name from historical observations, where appropriate)	Location (Describe relative to existing monuments/ features and relative to landfill design i.e. surface, berms, toe)	GPS coordinates (Taken at each 0.5m to 1m interval, and at any significant change in direction and around circumference of feature) Also take centre of feature (where feasible, and call c) Easting/ Northing/Zone 17	Length	Width	Depth	Extent relative to Area of Landfill (%)	Description	Comparison with historical observations	Additional Comments	Photographic Records Photo Reference, Focal length, location, view point & direction (relative to magnetic north) Feature of note Scale CAM-1, NW
Settlement	Y	A = SW [illegible] cover		389 265.85 / 7620918.139	0.4	0.15-0.2	0.05	<1%	two linear depressions	NSC	acceptable	3-5
				389255.02 / 7620924.079	0.6							
	Y	C = N corner slope		389 [illegible] .05 / 76 [illegible] 0795.573	1	0.4	0.05	<1%	linear depression	NSC	—"—	20, 21
	Y	D = NW side slope		389253.093mE / 7620938.897mN	1	0.2	0.1	<1%	—"—	NSC	—"—	25
Erosion =NO	Y	F = W side, cover		389265.71 / 7620919.062	0.2	0.2	0.1	<1%	2 minor pothole depressions	NSC	—"—	28, 29
Lateral Movement	N											
Frost Action	N											
Sloughing	N											
Cracking	N											
Animal Burrows	N											

VISUAL INSPECTION CHECKLIST - INSPECTION REPORT – PAGE 3 OF 3

Checklist Item	Present Yes/No	Feature Number (Feature A, B, C – Keep name from historical observations, where appropriate)	Location (Describe relative to existing monuments/ features and relative to landfill design i.e. surface, berms, toe)	GPS coordinates (Taken at each 0.5m to 1m interval, and at any significant change in direction and around circumference of feature) Also take centre of feature (where feasible, and call c) Easting/ Northing/Zone	Length	Width	Depth	Extent relative to Area of Landfill (%)	Description	Comparison with historical observations	Additional Comments	Photographic Records Photo Reference, Focal length, location, view point & direction (relative to magnetic north) Feature of note Scale
Vegetation Establishment	N											CAM-1, NW
Staining	N											
Vegetation Stress	N										7620952.377mN 389295.496mE	
Seepage Points (or) Ponded Water	N										7620944.271mN 389257.012mE	7620937.659mN 389338.490mE
Debris and/or Liner Exposed	Y	N, E, W side cover B=		see Nomad GPS coord	0.1 0.3	0.1 0.2	NA	<1	three locations of debris = geotextile or poly liner cloth	NSC	accepted	10, 11, 12, 13, 14-16
		E = W. side cover		389265.586 7620941.051	0.3	0.1	—	<1	exposed metal strap - embedded	NSC	accepted	26, 27
Presence & Condition of Monitoring Instruments	YES	MW's	monitoring wells	— see Nomad data —					MW-01, MW-02, MW-03 MW-04	good condition	accepted	1, 24
Features of Note/ Other Relevant Observations (e.g. signs of activity, ruts...)	N											



LEGEND:

- MONITORING SOIL SAMPLE LOCATION
- BM-2 PERMANENT BENCHMARK LOCATION
- 710 COORDINATE POINT
- MONITORING WELL LOCATION
- B BACKGROUND MONITORING WELL LOCATION
- 1 APPROX. PHOTOGRAPHIC VIEWPOINT
- SETTLEMENT
- DEBRIS EXPOSED

- no stability issues identified
- no significant changes observed

Inspected by:
T. Austrin
27 Aug 2019
photos 1-35

0 20 40 metres
SCALE 1:1000

ARCADIS

DEPARTMENT OF NATIONAL DEFENCE

COLLECTION OF LANDFILL MONITORING DATA

CAM-1, JENNY LIND ISLAND, NUNAVUT

NON-HAZARDOUS WASTE LANDFILL PLAN/MONITORING POINTS/LANDFILL OBSERVATIONS

Drawn By: I.S.Z.	Approved By: S.B.	Project No:	102012-1
Date: FEB. 2017	Scale: AS SHOWN	Figure No:	CAM-1.5A

Z:\100000 Series\102012 DEW Line\CAM-1\102012_CAM-1.5.dwg LAYOUT: 1.5A SAVED: 3/21/2017 5:56 PM PLOTTED: 3/22/2017 1:28 PM BY: JOYCE SEDORE

DEW LINE CLEANUP: POST-CONSTRUCTION - LANDFILL MONITORING

VISUAL INSPECTION CHECKLIST

ANNEX J1: INSPECTION REPORT – PAGE 1 OF 3

SITE NAME:	CAM-1
LANDFILL DESIGNATION:	Tier II landfill
LANDFILL TYPE (regraded, leachate contained, Tier II or NH):	Tier II
DATE OF INSPECTION:	27 Aug 2019
WEATHER CONDITIONS:	sunny, winds from SE 12 km/hr, 16°C
DATE OF PREVIOUS INSPECTION:	Aug. 2016
INSPECTED BY (name and signature):	T. Austin (ARCADIS)
REPORT PREPARED BY (name and signature):	T. Austin

The inspector represents to the best of their knowledge that the following statements and observations are true and correct and that no material facts have been suppressed or misstated.

Notes:

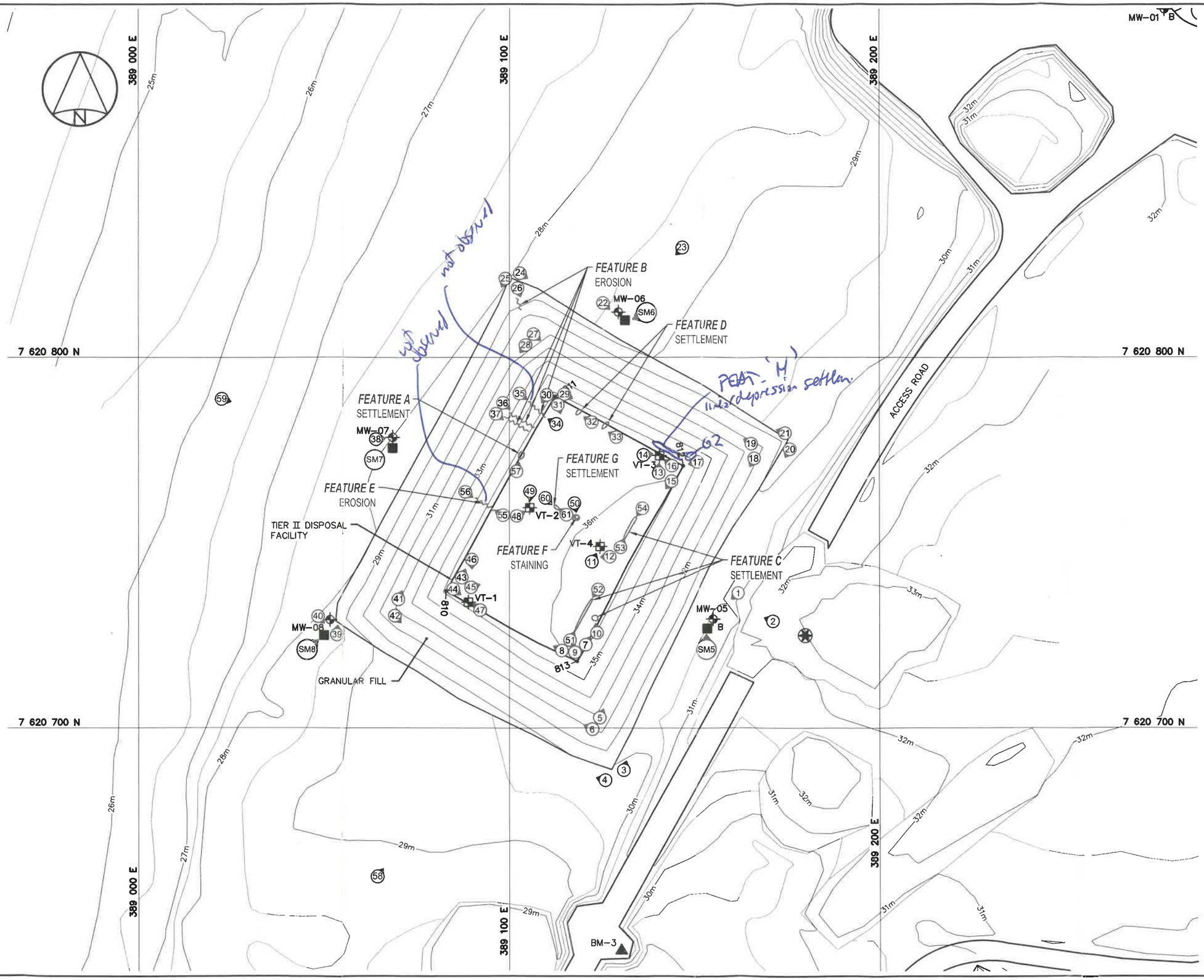
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VISUAL INSPECTION CHECKLIST - INSPECTION REPORT – PAGE 2 OF 3

Checklist Item	Present Yes/No	Feature Number (Feature A, B, C – Keep name from historical observations, where appropriate)	Location (Describe relative to existing monuments/ features and relative to landfill design i.e. surface, berms, toe)	GPS coordinates (Taken at each 0.5m to 1m interval, and at any significant change in direction and around circumference of feature) Also take centre of feature (where feasible, and call c) Easting/ Northing/Zone 14	Length	Width	Depth	Extent relative to Area of Landfill (%)	Description	Comparison with historical observations	Additional Comments	Photographic Records Photo Reference, Focal length, location, view point & direction (relative to magnetic north) Feature of note Scale
												CAM-1, TT-
Settlement	Y	A = W. side slope		389103.33 7620773.69	1.2	0.25	0.1	<1%	linear depression	very minor; NSC	acceptable	-57
	Y	C = SE cover		389117.099 7620724.928 / 389130.736 7620750.771 / 389123.093 7620729.663	7-12	0.3	0.1	<1%	two linear depr. (possible vehicle rutting)	NSC	acceptable	-10, 51, 52, 53, 54
	Y	D = NE side slope		389113.641 / 7620795.191	1.2	0.2	0.1	<1	oval pothole depression	NSC	acceptable	-32, 33
Erosion	Y	G = centre of lfill		389125.669 / 7620781.387 / 389112.738 7620759.912	1	0.2	0.05	<1	linear depression	less depth seen (previously 0.1 to now 0.05)	acceptable	-60, 61
	Y	B = NW corner + side slope		check Nomad GPS = 389104.64 / 7620782.349	3 to 8m	0.1-0.3	0.05	<1	2 erosion channels	v. minor; previously 4 channels seen	acceptable	-26, 34, 35, 36, 37
	N	E = not observed in 209							— NA —	not observed		
Lateral Movement = NO Settlement	M	= North side, E corner side slope near crest		see Nomad GPS 7620775.434 mN / 389142.125 mE	10m	0.5	0.1	<1	linear settlement depression	v. minor; NEW observation	acceptable	-62
Frost Action	N											
Sloughing	N											
Cracking	N											
Animal Burrows	N											

VISUAL INSPECTION CHECKLIST - INSPECTION REPORT – PAGE 3 OF 3

Checklist Item	Present Yes/No	Feature Number (Feature A, B, C – Keep name from historical observations, where appropriate)	Location (Describe relative to existing monuments/ features and relative to landfill design i.e. surface, berms, toe)	GPS coordinates (Taken at each 0.5m to 1m interval, and at any significant change in direction and around circumference of feature) Also take centre of feature (where feasible, and call c) Easting/ Northing/Zone 14	Length	Width	Depth	Extent relative to Area of Landfill (%)	Description	Comparison with historical observations	Additional Comments	Photographic Records Photo Reference, Focal length, location, view point & direction (relative to magnetic north) Feature of note Scale CAM-1, T2 –
Vegetation Establishment	N											
Staining	Y	F = centre of fill cover		3811[illegible]6/76[illegible]0756.[illegible]	0.3	0.3	—	<1%	localized dark staining 0.3m Ø	NSC	acceptable	-50
Vegetation Stress	N											
Seepage Points (or) Ponded Water	N											
Debris and/or Liner Exposed	N											
Presence & Condition of Monitoring Instruments	Y	MWs + thermistors							4×MW observed + 4× thermistors	MW-1, MW-6, MW-7, MW-8 VT-1, VT-2, VT-3, VT-4	in good condition	– 1, 11, 12, 13, 14, 16, 22, 38, 39, 40, 47, -49
Features of Note/ Other Relevant Observations (e.g. signs of activity, ruts…)	N											



LEGEND:

- BM-3 — PERMANENT BENCHMARK LOCATION
- 810 — COORDINATE POINT
- COMMEMORATIVE PLAQUE LOCATION
- MONITORING WELL LOCATION
- B — BACKGROUND MONITORING WELL LOCATION
- VERTICAL THERMISTOR LOCATION
- MONITORING SOIL SAMPLE LOCATION
- 1 — APPROX. PHOTOGRAPHIC VIEWPOINT
- SETTLEMENT
- STAINING
- EROSION

- some erosion features not observed in 2019
- no stability concerns identified in 2019

Inspected by:
T. Austring
27 Aug. 2019
photos 1 - 62

0 20 40 metres
SCALE 1:1000

ARCADIS

DEPARTMENT OF NATIONAL DEFENCE

COLLECTION OF LANDFILL MONITORING DATA

CAM-1, JENNY LIND ISLAND, NUNAVUT

TIER II DISPOSAL FACILITY
PLAN/MONITORING POINTS/LANDFILL OBSERVATIONS

Drawn By: I.S.Z.	Approved By: S.B.	Project No: 102012-1	
Date: FEB. 2017	Scale: AS SHOWN	Figure No: CAM-1.6A	

Z:\100000 Series\102012 DEW Line\CAM-1\102012_CAM-1.6.dwg LAYOUT: 1.6A SAVED: 3/21/2017 5:56 PM PLOTTED: 3/22/2017 1:22 PM BY: JOYCE SEDORE

DEW LINE CLEANUP: POST-CONSTRUCTION - LANDFILL MONITORING

VISUAL INSPECTION CHECKLIST

ANNEX J1: INSPECTION REPORT – PAGE 1 OF 3

SITE NAME:	CAM-1
LANDFILL DESIGNATION:	regraded Southeast Landfill
LANDFILL TYPE (regraded, leachate contained, Tier II or NH):	regraded
DATE OF INSPECTION:	26 AUG. 2019
WEATHER CONDITIONS:	sunny, winds from south , 12°c
DATE OF PREVIOUS INSPECTION:	Aug. 2016
INSPECTED BY (name and signature):	T. Austin
REPORT PREPARED BY (name and signature):	T. Austin

The inspector represents to the best of their knowledge that the following statements and observations are true and correct and that no material facts have been suppressed or misstated.

Notes:

- *All Features must have UNIQUE and consistent identifiers:*
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- *All measurements must be metric units;*
- *GPS is in UTM coordinates (NAD83).*

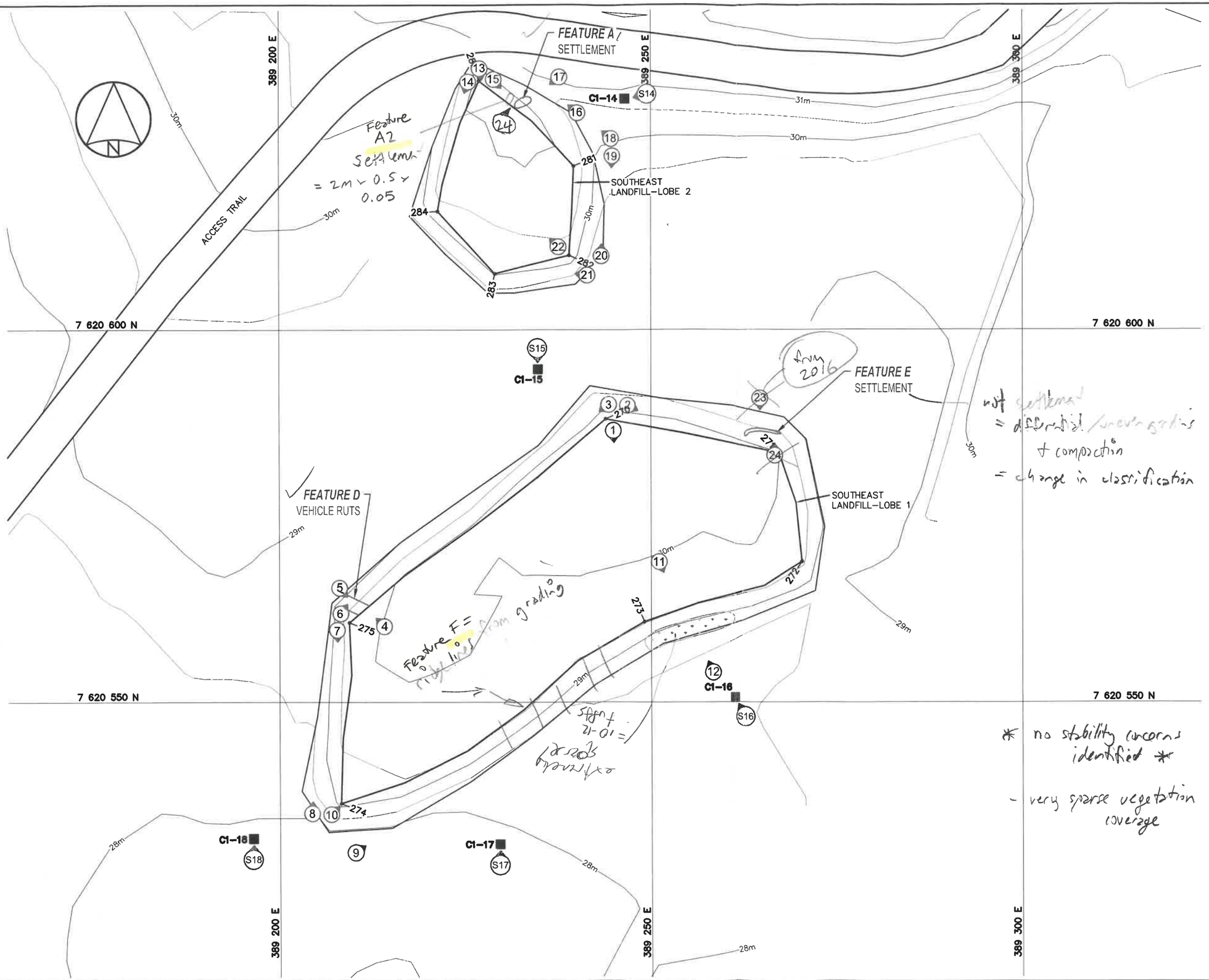
VISUAL INSPECTION CHECKLIST - INSPECTION REPORT – PAGE 2 OF 3

Checklist Item	Present Yes/No	Feature Number (Feature A, B, C – Keep name from historical observations, where appropriate)	Location (Describe relative to existing monuments/ features and relative to landfill design i.e. surface, berms, toe)	GPS coordinates (Taken at each 0.5m to 1m interval, and at any significant change in direction and around circumference of feature) Also take centre of feature (where feasible, and call c) Easting/ Northing/Zone 14	Length	Width	Depth	Extent relative to Area of Landfill (%)	Description	Comparison with historical observations	Additional Comments	Photographic Records Photo Reference, Focal length, location, view point & direction (relative to magnetic north) Feature of note Scale CAM-1, SE –
Settlement	Y	A = N. side slope – lobe 2		389235.499 7620632.276	2.5	0.15	0.05	<1	settlement	NSC	Accepted	CAM-1, SE – 16, 17
		A2 =			2	0.5	0.05	<1	— New 2019 —	new	Accepted	CAM-1, SE – 24
	Y	E = E side slope, lobe 1		389262.077 7620595.886	6	0.2	0.1	<1	Not settlement – due to uneven final landfill grading!		Accepted	CAM-1, SE – 23
Erosion	N	B = SE crest, lobe 1		not observed — not observed							N/A	
	N	C = S. cover/side slope, lobe 1		not observed — not observed							N/A	CAM-1, SE – 11, 12
Lateral Movement = NO												
Frost Action = NO												
Sloughing = NO												
Cracking = NO												
Animal Burrows = NO												

VISUAL INSPECTION CHECKLIST - INSPECTION REPORT – PAGE 3 OF 3

Checklist Item	Present Yes/No	Feature Number (Feature A, B, C – Keep name from historical observations, where appropriate)	Location (Describe relative to existing monuments/ features and relative to landfill design i.e. surface, berms, toe)	GPS coordinates (Taken at each 0.5m to 1m interval, and at any significant change in direction and around circumference of feature) Also take centre of feature (where feasible, and call c) Easting/ Northing/Zone 14	Length	Width	Depth	Extent relative to Area of Landfill (%)	Description	Comparison with historical observations	Additional Comments	Photographic Records Photo Reference, Focal length, location, view point & direction (relative to magnetic north) Feature of note Scale CAM-1, SE –
Vegetation Establishment	Y	N/A	South 12-1 fill side slopes	various	—	—	—	<1	< 12 tufts of plant life observed	NSC	Acceptable	CAM-1, SE – 12
Staining =NO												
Vegetation Stress =NO												
Seepage Points (or) Ponded Water =NO												
Debris and/or Liner Exposed =NO												
Presence & Condition of Monitoring Instruments =No												
Features of Note/ Other Relevant Observations (e.g. signs of activity, ruts...)	Y	Feature F – SE side of 12nd fill	ridge liner	389236.539 / 7620557.048 – 12m DJ	—	—	—	<1	Some residual grading ridges/bumps observ. on SE side of fill	NEW OBSERVATION – noted in 2019		CAM-1, SE – 11, 12, 9
		D – vehicle ruts	west side slope 9 Label	389210.134 7620563.753	3 to 5m	0.15	0.05	<1	vehicle ruts	first noted in 2011 = NSC		CAM-1, SE – 4, 5

NSC = no significant change



LEGEND:

- MONITORING SOIL SAMPLE LOCATION
- 270 COORDINATE POINT
- 1 APPROX. PHOTOGRAPHIC VIEWPOINT
- SETTLEMENT
- VEHICLE RUTS
- EROSION
- VEGETATION

Features B + C = not observed

photos 1-24

* Inspected by T. Austrins
ARCADIS

Sunny, wind 20 km/hr from south
14 - 16°C
11:10 am

AUG. 26, 2019
photos 1-24

* no stability concerns identified *

- very sparse vegetation coverage

0 10 20 metres
SCALE 1:500

ARCADIS

DEPARTMENT OF NATIONAL DEFENCE

COLLECTION OF LANDFILL MONITORING DATA

CAM-1, JENNY LIND ISLAND, NUNAVUT

SOUTHEAST LANDFILL
PLAN/MONITORING POINTS/LANDFILL OBSERVATIONS

Drawn By: I.S.Z.	Approved By: S.B.	Project No: 102012-1	
Date: FEB. 2017	Scale: AS SHOWN	Figure No: CAM-1.7A	

PLOTTED: 3/22/2017 1:30 PM BY: JOYCE SEDORE
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DEW LINE CLEANUP: POST-CONSTRUCTION - LANDFILL MONITORING

VISUAL INSPECTION CHECKLIST

ANNEX J1: INSPECTION REPORT – PAGE 1 OF 3

SITE NAME: CAM-1
LANDFILL DESIGNATION: Main Landfill
LANDFILL TYPE (regraded, leachate contained, Tier II or NH): regraded
DATE OF INSPECTION: 26 AUG 2019
WEATHER CONDITIONS: sunny, winds from south, 12°C
DATE OF PREVIOUS INSPECTION: Aug. 2016
INSPECTED BY (name and signature): T. Austin
REPORT PREPARED BY (name and signature): T. Austin
The inspector represents to the best of their knowledge that the following statements and observations are true and correct and that no material facts have been suppressed or misstated.

Notes:

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- *GPS is in UTM coordinates (NAD83).*

MAIN CELL

VISUAL INSPECTION CHECKLIST - INSPECTION REPORT – PAGE 2 OF 3

Checklist Item	Present Yes/No	Feature Number (Feature A, B, C – Keep name from historical observations, where appropriate)	Location (Describe relative to existing monuments/ features and relative to landfill design i.e. surface, berms, toe)	GPS coordinates (Taken at each 0.5m to 1m interval, and at any significant change in direction and around circumference of feature) Also take centre of feature (where feasible, and call c) Easting/ Northing/Zone 14	Length	Width	Depth	Extent relative to Area of Landfill (%)	Description	Comparison with historical observations	Additional Comments	Photographic Records Photo Reference, Focal length, location, view point & direction (relative to magnetic north) Feature of note Scale
Settlement	Y	A = NW + N landfill corner		389648.617 7620711.237	0.4-1m	0.2	0.05-0.1	<1	three very minor depressions	NSC	no to v. low severity risk = acceptable	CAM-1, main - 3, 44, 45
	Y	B = SW corner + sideslope		389619.105 7620631.353 – 389651.424 7620632.975	0.5-1.2	0.3-0.4	0.05-0.1	<1	two minor depressions	NSC	v. low	CAM-1, main - 12, 47
Erosion	Y	C = SE cover + sideslope		389737.771 7620616.755 389739.133 7620610.975 389739.244 – 7620610.870	0.4-2	0.15-0.3	0.05-0.1	<1	three v. minor depressions	NSC	v. low	CAM-1, main - 22, 23-24, 31-33.
	Y	H = W. cover		389629.117 7620634.114	0.3	0.3	0.06	<1	minor depression	slight incr. in depth (0.05 to 0.06m)	v. low	CAM-1, main - 46
Lateral Movement = No	Y	I = SW cover		389654.473 7620627.976	0.3	0.3	0.05	<1	"	NSC	v. low	CAM-1, main - 20
	Y	J = S. cover		389695.209 7620605.257 – 389692.587 7620599.332 – 389691.621 7620597.071	0.3 to 12m	0.2-0.3	0.05-0.08	<1	3 minor depressions; one linear in nature	NSC	v. low	CAM-1, main - 48+49
Frost Action = No EROSION	Y	D = NW side slope + corner		389637.502 7620702.947	27	0.4-0.5	0.05	<1	possible toe erosion or 'beach' effect since this low cost for surroundings	NSC	v. low	CAM-1, main - 4 to 8
Sloughing = No	Y	E = SW toe + side slope		389651.954 7620625.914	24	0.05-0.5	0.05-0.15	<1	"	NSC	v. low	CAM-1, main - 16, 17, 19
		F = NE corner side slope, corner + toe		389712.364 7620699.570 – 389696.429 7620716.324	3-30	0.02-0.15	0.05-0.1	<1	granular fines near base of slope toe at three areas	NSC	v. low	CAM-1, main - 38 – 42
Cracking = NO				389689.603 7620727.249								
Animal Burrows = NO												

NSC = no signif. change

VISUAL INSPECTION CHECKLIST - INSPECTION REPORT – PAGE 3 OF 3

Checklist Item	Present Yes/No	Feature Number (Feature A, B, C – Keep name from historical observations, where appropriate)	Location (Describe relative to existing monuments/ features and relative to landfill design i.e. surface, berms, toe)	GPS coordinates (Taken at each 0.5m to 1m interval, and at any significant change in direction and around circumference of feature) Also take centre of feature (where feasible, and call c) Easting/ Northing/Zone	Length	Width	Depth	Extent relative to Area of Landfill (%)	Description	Comparison with historical observations	Additional Comments	Photographic Records Photo Reference, Focal length, location, view point & direction (relative to magnetic north) Feature of note Scale
Vegetation Establishment	Y	Some side slopes (southside)		N/A					v. occ. tufts of plants on side slopes	NSC	v. low severity	CAM-1, Main – 3, 9, 15, 16, 18
Staining	Y	G = central cover		389694.436 7620657.175	30	25	—	2%	thinning grass cover exposes brown soil beneath – should not be classified as staining	re-classification needed	v. low severity	CAM-1, Main – 28 & 29
Vegetation Stress = NO												
Seepage Points (or) Ponded Water = NO												
Debris and/or Liner Exposed = NO												
Presence & Condition of Monitoring Instruments = NO												
Features of Note/ Other Relevant Observations (e.g. signs of activity, ruts...) = NO												

Z:\100000 Series\102012 DEW Line\CAM-1\102012_CAM-1.8.dwg LAYOUT: 1.8A SAVED: 3/21/2017 5:37 PM PLOTTED: 3/22/2017 1:31 PM BY: JOYCE SEDORE

389 600 E

389 750 E

389 900 E

7 620 700 N

7 620 550 N

MAIN C'FILL
= 26 AUG
1930 hrs

31m

30m

29m

28m

27m

26m

ACCESS ROAD

MODULE TRAIN DEBRIS AREA LOBE 2

BM-4

C1-23 (S23)

C1-19 (S19)

C1-20 (S20)

C1-21 (S21)

C1-22 (S22)

C1-24 (S24)

C1-25 (S25)

C1-26 (S26)

FEATURE A SETTLEMENT

FEATURE B EROSION

FEATURE C SETTLEMENT

FEATURE D SETTLEMENT

FEATURE E EROSION

FEATURE F EROSION = ridge

FEATURE G EROSION

FEATURE A SETTLEMENT

FEATURE F EROSION

FEATURE D EROSION

1m x 0.2 x 0.1m

FEATURE G STAINING = brown soil showing

MAIN LANDFILL

MAIN LANDFILL LOBES 1 AND 2

FEATURE SETTLEMENT

beaching

FEATURE H SETTLEMENT

FEATURE I SETTLEMENT

low spot

FEATURE E EROSION or beaching effect

FEATURE J SETTLEMENT vehicle cuts

FEATURE C SETTLEMENT

or vehicle track

not taken 3D

low spot

not settlem.

STATION EAST LANDFILL LOBES 1 AND 2

MAIN LANDFILL
- low relief structure; rounded top
- crest of landfil subjective
- no stability concerns identified

STN EAST
- no stability concerns identified
- rounded top = crest of landfil location is subjective
- very low relief, rounded structure

LEGEND:

- MONITORING SOIL SAMPLE LOCATION
- BM-4 PERMANENT BENCHMARK LOCATION
- 310 COORDINATE POINT
- 1 APPROX. PHOTOGRAPHIC VIEWPOINT
- SETTLEMENT
- EROSION
- STAINING
- VEGETATION

STN EAST
4:30 - 5:45 pm
27 AUG. 2019
photos 1 - 39

MAIN C'FILL
= 26 AUG 2019
- 5pm
photos 1 - 51

Inspected by:
T. Austrins
ARCADIS

0 25 50 metres
SCALE 1:1250

ARCADIS

DEPARTMENT OF NATIONAL DEFENCE

COLLECTION OF LANDFILL MONITORING DATA

CAM-1, JENNY LIND ISLAND, NUNAVUT

STATION EAST AND MAIN LANDFILL PLAN/MONITORING POINTS/ LANDFILL OBSERVATIONS

Drawn By: I.S.Z.	Approved By: S.B.	Project No:	102012-1
Date: FEB. 2017	Scale: AS SHOWN	Figure No:	CAM-1.8A

DEW LINE CLEANUP: POST-CONSTRUCTION - LANDFILL MONITORING

VISUAL INSPECTION CHECKLIST

ANNEX J1: INSPECTION REPORT – PAGE 1 OF 3

SITE NAME:	CAM-1
LANDFILL DESIGNATION:	Station East Landfill
LANDFILL TYPE (regraded, leachate contained, Tier II or NH):	regraded
DATE OF INSPECTION:	27 August 2019 (4:30 – 5:45pm)
WEATHER CONDITIONS:	sunny; winds from south 10 km/hr, 15°C
DATE OF PREVIOUS INSPECTION:	11 August 2016
INSPECTED BY (name and signature):	T. Austrins (ARCADIS)
REPORT PREPARED BY (name and signature):	T. Austrins

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VISUAL INSPECTION CHECKLIST - INSPECTION REPORT – PAGE 2 OF 3

Checklist Item	Present Yes/No	Feature Number (Feature A, B, C – Keep name from historical observations, where appropriate)	Location (Describe relative to existing monuments/ features and relative to landfill design i.e. surface, berms, toe)	GPS coordinates (Taken at each 0.5m to 1m interval, and at any significant change in direction and around circumference of feature) Also take centre of feature (where feasible, and call c) Easting/ Northing/Zone 14	Length	Width	Depth	Extent relative to Area of Landfill (%)	Description	Comparison with historical observations	Additional Comments	Photographic Records Photo Reference, Focal length, location, view point & direction (relative to magnetic north) Feature of note Scale CAM-1, STNE-
Settlement	Y	A = southwest landfill cover		389799.562 / 7620719.542 389771.68 / 7620736.136 387794.461 / 7620729.783	0.5-2m	0.1-0.3	0.05	<1%	three minor depressions (linear + pothole)	NSC	acceptable	36-37, 39
	Y	C	W. cover + side slope	5 locns GPS - see Nomad	1-3m	0.4-1	0.05-0.1	<1%	five minor potholes + linear depression	6 observed previously	acceptable	- 2, 3, 8, 9, 11
Erosion	Y	D	NE cover	6 linear depressions - see Nomad data	0.4-8m	0.15-0.4	0.05-0.1	<1%	likely resulting from rough grading of final cover	NSC	acceptable	- 15, 16, 20
	Y	B	West side slope toe	389760.356 7620780.125	9	0.3-0.5	0.05	<1%	Natural erosion from waterflow lead to toe of fill	NSC	"	- 4
	Y	E	NW side slope	389761.558 7620784.499	4	0.2	0.05	<1%	possible from rough grading of final fill cover	NSC	"	- 5, 6
	Y	F	N side slope	389805.459 7620767.317	4-6	0.2	0.05	<1%	ridge beside erosion likely from rough grading	NSC	"	- 24, 25
Lateral Movement ↘ NO	Y	G	SW side slope	389777.603 7620727.532	5	0.1	0.05	<1	very minor erosion; fines washing observed	NSC	"	- 37, 38
Frost Action ↘ NO												
Sloughing ↘ NO												
Cracking ↘ NO												
Animal Burrows ↘ NO												

NSC = no significant change

VISUAL INSPECTION CHECKLIST - INSPECTION REPORT – PAGE 3 OF 3

Checklist Item	Present Yes/No	Feature Number (Feature A, B, C – Keep name from historical observations, where appropriate)	Location (Describe relative to existing monuments/ features and relative to landfill design i.e. surface, berms, toe)	GPS coordinates (Taken at each 0.5m to 1m interval, and at any significant change in direction and around circumference of feature) Also take centre of feature (where feasible, and call c) Easting/ Northing/Zone 14			Length	Width	Depth	Extent relative to Area of Landfill (%)	Description	Comparison with historical observations	Additional Comments	Photographic Records Photo Reference, Focal length, location, view point & direction (relative to magnetic north) Feature of note Scale
Vegetation Establishment =NO	N													CAM-1; SNE -
Staining =NO	N													
Vegetation Stress =NO	N													
Seepage Points (or) Ponded Water =NO	N													
Debris and/or Liner Exposed =NO	N													
Presence & Condition of Monitoring Instruments =NO	N													
Features of Note/ Other Relevant Observations (e.g. signs of activity, ruts...) =NO	N													

MAIN C'FILL
= 26 AUG
1900 hrs

389 750 E

389 900 E

7 620 700 N

7 620 550 N

550 N

LE
BRI
LOB

BM-4

C1-19

C1-20

C1-21

C1-22

C1-23

C1-24

C1-25

FEATURE A
SETTLEMENT

FEATURE B
EROSION

FEATURE C
SETTLEMENT

FEATURE D
SETTLEMENT

FEATURE E
EROSION

FEATURE F
EROSION = ridge

FEATURE G
EROSION

FEATURE D
EROSION

FEATURE F
EROSION

FEATURE G
STAINING
= brown soil showing

FEATURE
SETTLEMENT

FEATURE I
SETTLEMENT

FEATURE J
SETTLEMENT
vehicle ruts

FEATURE C
SETTLEMENT

not settlem.

or vehicle track

beach effect

MAIN LANDFILL
LOBES 1 AND 2

STATION LANDFILL
LOBES 1 AND 2

MAIN LAVOFILL

MAIN LANDFILL
- low relief structure; rounded top
- crest of landfill subjective
- no stability concerns identified

STN EAST
- no stability concerns identified
- rounded top = crest of landfill location is subjective
- very low relief, rounded structure

STN EAST
4:30 - 5:45 pm
27 AUG. 2019
1 - 39

MAIN C'FILL
= 26 AUG 2019
- 5pm
photos 1 - 51
Inspected by:
T. Austin
ARCADIS

LEGEND:

- MONITORING SOIL SAMPLE LOCATION
- BM-4 PERMANENT BENCHMARK LOCATION
- 310 COORDINATE POINT
- 1 APPROX. PHOTOGRAPHIC VIEWPOINT
- SETTLEMENT
- EROSION
- STAINING
- VEGETATION

0 25 50 metres
SCALE 1:1250

ARCADIS

DEPARTMENT OF NATIONAL DEFENCE

COLLECTION OF LANDFILL MONITORING DATA

CAM-1, JENNY LIND ISLAND, NUNAVUT

STATION EAST AND MAIN LANDFILL PLAN/MONITORING POINTS/ LANDFILL OBSERVATIONS

Drawn By: I.S.Z.	Approved By: S.B.	Project No: 102012-1	
Date: FEB. 2017	Scale: AS SHOWN	Figure No: CAM-1.8A	

DEW LINE CLEANUP: POST-CONSTRUCTION - LANDFILL MONITORING

VISUAL INSPECTION CHECKLIST

ANNEX J1: INSPECTION REPORT – PAGE 1 OF 3

SITE NAME:	CAM-1
LANDFILL DESIGNATION:	USAF
LANDFILL TYPE (regraded, leachate contained, Tier II or NH):	regraded
DATE OF INSPECTION:	26 AUG. 2019
WEATHER CONDITIONS:	SUNNY, 9°C – winds from South
DATE OF PREVIOUS INSPECTION:	August 2016
INSPECTED BY (name and signature):	T. Austin ARCADIS
REPORT PREPARED BY (name and signature):	T. Austin

The inspector represents to the best of their knowledge that the following statements and observations are true and correct and that no material facts have been suppressed or misstated.

Notes:

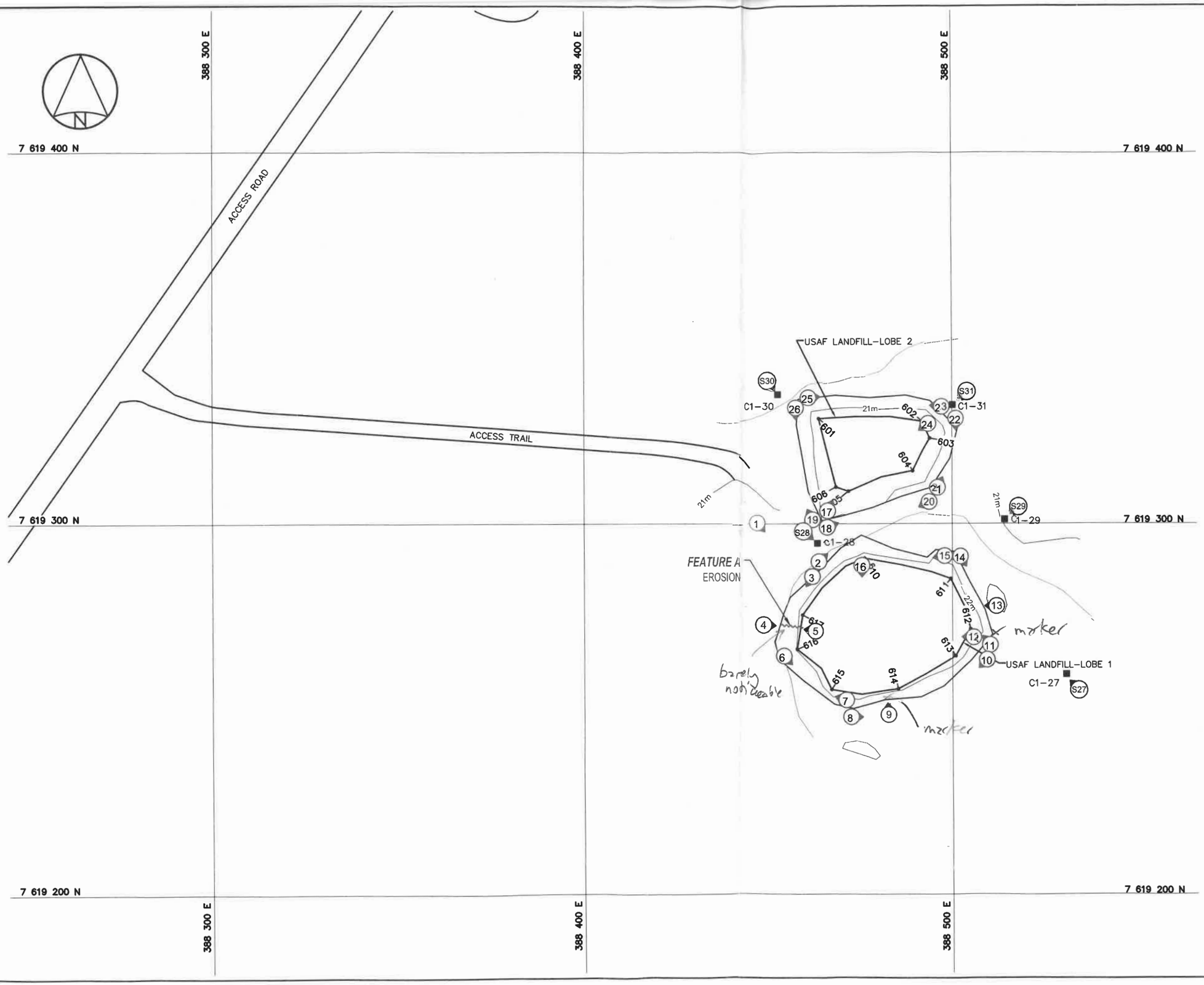
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  - *A new Feature must get its own unique identifier, in alphabetical order from where the previous list of Features left off; It should also be described as 'NEW' in the description column;*
  - *New Features can only be grouped together if they are very similar and located in close proximity;*
  - *Feature names must be consistent in the Tables, Figures, Photos and text; All Feature referencing must be verified for consistency.*
- *All measurements must be metric units;*
- *GPS is in UTM coordinates (NAD83).*

VISUAL INSPECTION CHECKLIST - INSPECTION REPORT – PAGE 2 OF 3

Checklist Item	Present Yes/No	Feature Number (Feature A, B, C – Keep name from historical observations, where appropriate)	Location (Describe relative to existing monuments/ features and relative to landfill design i.e. surface, berms, toe)	GPS coordinates (Taken at each 0.5m to 1m interval, and at any significant change in direction and around circumference of feature) Also take centre of feature (where feasible, and call c) Easting/ Northing/Zone 14	Length	Width	Depth	Extent relative to Area of Landfill (%)	Description	Comparison with historical observations	Additional Comments	Photographic Records Photo Reference, Focal length, location, view point & direction (relative to magnetic north) Feature of note Scale
Settlement	N											
Erosion	Y	A = W.	sideslope lobe 1	388453.566 7619272.42	5	0.1	0.01	<1	minor washing of finer – barely noticeable	- decrease in severity in 2019	no severity expected/ acceptable	CAM-1, USAF - 4,5
Lateral Movement	N											
Frost Action	N											
Sloughing	N											
Cracking	N											
Animal Burrows	N											

VISUAL INSPECTION CHECKLIST - INSPECTION REPORT – PAGE 3 OF 3

Checklist Item	Present Yes/No	Feature Number (Feature A, B, C – Keep name from historical observations, where appropriate)	Location (Describe relative to existing monuments/ features and relative to landfill design i.e. surface, berms, toe)	GPS coordinates (Taken at each 0.5m to 1m interval, and at any significant change in direction and around circumference of feature) Also take centre of feature (where feasible, and call c) Easting/ Northing/Zone			Length	Width	Depth	Extent relative to Area of Landfill (%)	Description	Comparison with historical observations	Additional Comments	Photographic Records Photo Reference, Focal length, location, view point & direction (relative to magnetic north) Feature of note Scale
Vegetation Establishment	N													
Staining	N													
Vegetation Stress	N													
Seepage Points (or) Ponded Water	N													
Debris and/or Liner Exposed	N													
Presence & Condition of Monitoring Instruments	N													
Features of Note/ Other Relevant Observations (e.g. signs of activity, ruts…)	N													



LEGEND:

- MONITORING SOIL SAMPLE LOCATION
- 601 COORDINATE POINT
- (1) APPROX. PHOTOGRAPHIC VIEWPOINT
- EROSION

26 AUG 2017
9:40am

- no stability concerns identified
- erosion feature is barely noticeable
- low-relief mounded structure

photos 1 – 26

- Inspected by: T. Austrins, Arcadis

0 20 40 metres
SCALE 1:1000

ARCADIS

DEPARTMENT OF NATIONAL DEFENCE

COLLECTION OF LANDFILL MONITORING DATA

CAM-1, JENNY LIND ISLAND, NUNAVUT

USAF LANDFILL
PLAN/MONITORING POINTS/LANDFILL OBSERVATIONS

Drawn By: I.S.Z.	Approved By: S.B.	Project No:	102012-1
Date: FEB. 2017	Scale: AS SHOWN	Figure No:	CAM-1.9A

Z:\100000 Series\102012 DEW Line\CAM-1\102012_CAM-1.9.dwg LAYOUT: 1.9A SAVED: 3/21/2017 5:50 PM PLOTTED: 3/22/2017 1:32 PM BY: JOYCE SEDORE

DEW LINE CLEANUP: POST-CONSTRUCTION - LANDFILL MONITORING

VISUAL INSPECTION CHECKLIST

ANNEX J1: INSPECTION REPORT – PAGE 1 OF 3

SITE NAME: CAM-1 : EAST LANDING LAND FILL
LANDFILL DESIGNATION: EAST LANDING LANDFILL
LANDFILL TYPE (regraded, leachate contained, Tier II or NH): regraded
DATE OF INSPECTION: 25 AUG. 2019
WEATHER CONDITIONS: MAINLY SUNNY, 11°C, 25 km/hr winds from W.,
DATE OF PREVIOUS INSPECTION: Aug 2016
INSPECTED BY (name and signature): T AUSTRINS
REPORT PREPARED BY (name and signature): T. AUSTRINS
The inspector represents to the best of their knowledge that the following statements and observations are true and correct and that no material facts have been suppressed or misstated.

Notes:

- *All Features must have UNIQUE and consistent identifiers:*
  - *If a Feature is identified as Feature 'A' in 2013; then this same Feature 'A' must be followed up on as Feature 'A' in 2014 and all subsequent years. If it is not observed in a year, than it must be described as 'not observed'; Feature 'A' cannot be replaced to become a different Feature in later years.*
  - *If a Feature was noted in a previous year, but in the Geotechnical Engineer's opinion is not relevant; you can explain why in your opinion it is not relevant.*
  - *A new Feature must get its own unique identifier, in alphabetical order from where the previous list of Features left off; It should also be described as 'NEW' in the description column;*
  - *New Features can only be grouped together if they are very similar and located in close proximity;*
  - *Feature names must be consistent in the Tables, Figures, Photos and text; All Feature referencing must be verified for consistency.*
- *All measurements must be metric units;*
- *GPS is in UTM coordinates (NAD83).*

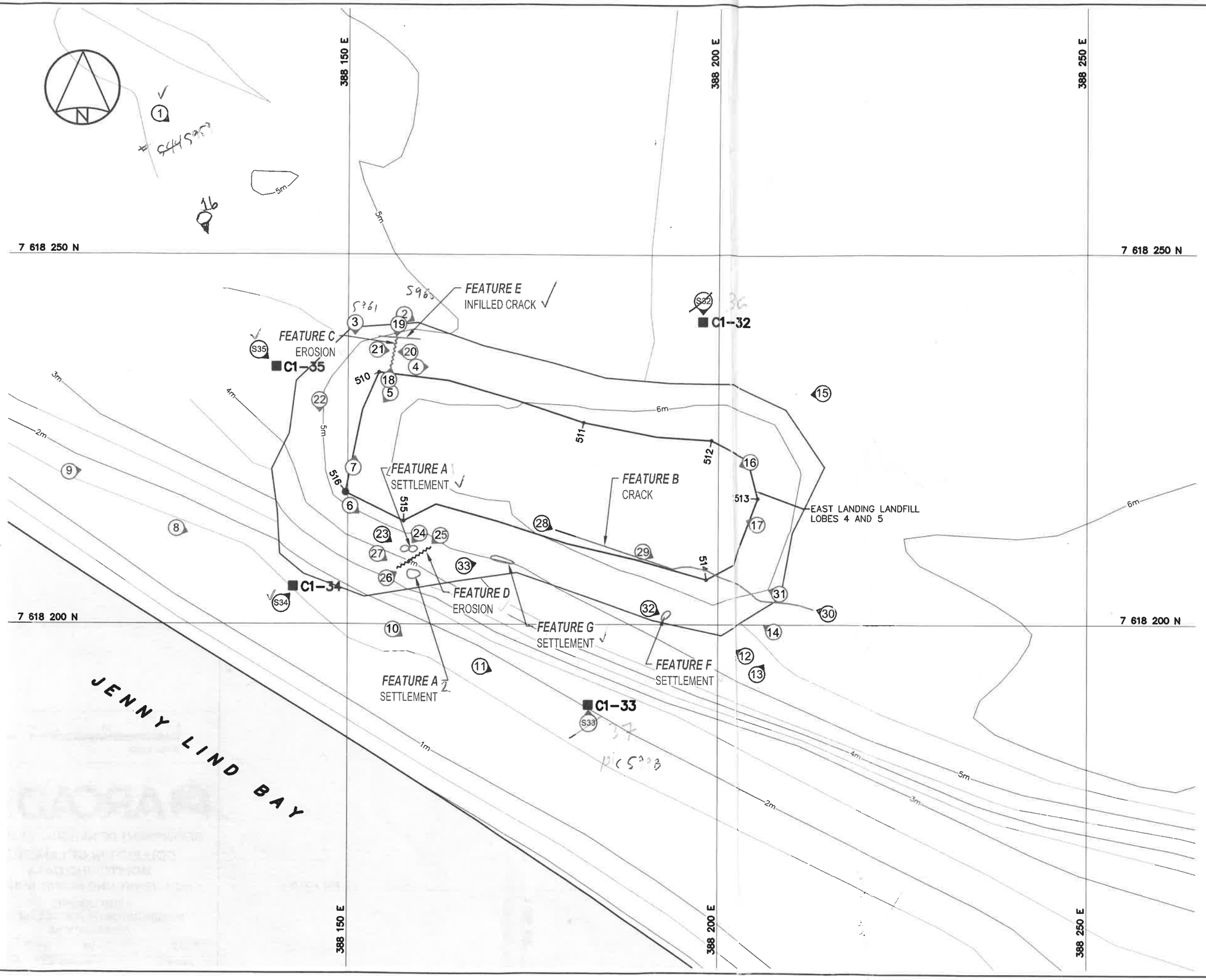
VISUAL INSPECTION CHECKLIST - INSPECTION REPORT – PAGE 2 OF 3

Checklist Item	Present Yes/No	Feature Number (Feature A, B, C – Keep name from historical observations, where appropriate)	Location (Describe relative to existing monuments/ features and relative to landfill design i.e. surface, berms, toe)	GPS coordinates (Taken at each 0.5m to 1m interval, and at any significant change in direction and around circumference of feature) Also take centre of feature (where feasible, and call c) Easting/ Northing/Zone 14	Length	Width	Depth	Extent relative to Area of Landfill (%)	Description	Comparison with historical observations	Additional Comments	Photographic Records Photo Reference, Focal length, location, view point & direction (relative to magnetic north) Feature of note Scale
Settlement	Y	A1	SW sideslope of landfill	A1 – 388157.867 7618210.779 388158.277 7618210.382	0.2–0.5	0.2–0.5	0.05–0.1	<1%		NSC	acceptable	CAM-1, EL-23, 24, 27
		A2		A2 – 388157.955 7618207.479	1.5	0.6	0.1	<1%				
	Y	F	SE sideslope	388192.989 7618201.075	0.3	0.4	0.1	<1%	minor depression	NSC	acceptable	CAM-1, EL-32
	Y	G	S sideslope	388170.126 7618208.965	2.2	0.9	0.05	<1%	minor depression	decrease in length from 5m to 2.2m	acceptable	CAM-1, EL-33
Erosion	Y	C	NW side slope	388156.241 7618238.159	4	0.2–1.0	0.02	<1%	minor erosion	NSC	acceptable	CAM-1, EL-18, 19
	Y	D	SW sideslope	388158.035 7618208.922	6	0.3	0.05–0.1	<1%	minor erosion	NSC	acceptable	CAM-1, EL-25, 26
Lateral Movement	N											
Frost Action	N											
Sloughing	N											
Cracking	Y	B	SE corner of fill cover	388186.378 7618210.061	43	0.07–0.1	0.03–0.06	<1	continuous tension crack	somewhat increased in length by 4m +/–. crack has widened in some areas; but infilled in others.	acceptable	CAM-1, EL-28, 29, 30, 31
	Y	E	NW corner side slope	388155.738 7618235.641	NA	NA	NA	<1%	infilled – not observed		acceptable	CAM-1, EL-20, 21
Animal Burrows	N											

NSC = no signifi. change

VISUAL INSPECTION CHECKLIST - INSPECTION REPORT – PAGE 3 OF 3

Checklist Item	Present Yes/No	Feature Number (Feature A, B, C – Keep name from historical observations, where appropriate)	Location (Describe relative to existing monuments/ features and relative to landfill design i.e. surface, berms, toe)	GPS coordinates (Taken at each 0.5m to 1m interval, and at any significant change in direction and around circumference of feature) Also take centre of feature (where feasible, and call c) Easting/ Northing/Zone			Length	Width	Depth	Extent relative to Area of Landfill (%)	Description	Comparison with historical observations	Additional Comments	Photographic Records Photo Reference, Focal length, location, view point & direction (relative to magnetic north) Feature of note Scale
Vegetation Establishment	N										only sl. traces of veget? growth			
Staining	N													
Vegetation Stress	N													
Seepage Points (or) Ponded Water	N													
Debris and/or Liner Exposed	N													
Presence & Condition of Monitoring Instruments	NA													
Features of Note/ Other Relevant Observations (e.g. signs of activity, ruts...)	N													



LEGEND:

- MONITORING SOIL SAMPLE LOCATION
- 510 COORDINATE POINT
- 1 APPROX. PHOTOGRAPHIC VIEWPOINT
- BODY OF WATER
- SETTLEMENT
- TENSION CRACK
- EROSION

IN GENERAL:

- NO CONCERNS
- NO STAINING
- NO BURROWING BY ANIMALS
- NO SEEPAGE / WET AREAS
- TRACE INSTANCES OF VEG. STARTING TO GROW IN DISCRETE POCKETS

INSPECTION COMPLETED BY T. AUSTRINS ARCADIS

25 AUG 2017

photos 1 – 37

0 10 20 metres

SCALE 1:500

ARCADIS

DEPARTMENT OF NATIONAL DEFENCE

COLLECTION OF LANDFILL MONITORING DATA

CAM-1, JENNY LIND ISLAND, NUNAVUT

EAST LANDING LANDFILL
PLAN/MONITORING POINTS/LANDFILL OBSERVATIONS

Drawn By: I.S.Z.	Approved By: S.B.	Project No: 102012-1	
Date: FEB. 2017	Scale: AS SHOWN	Figure No: CAM-1.10A	

Z:\100000 Series\102012 DEW Line\CAM-1\102012_CAM-1.10.dwg LAYOUT: 1.10A SAVED: 3/21/2017 5:50 PM PLOTTED: 3/22/2017 1:25 PM BY: JOYCE SEDORE

APPENDIX H

Site Photographic Logs

APPENDIX H1

Aerial Photograph Log, Thermistor and Sample Station Photograph Log

Photo Identification	Figure ID	View Direction	Feature Identification	Feature of Note	UTM		Photo Size KB	Date of Photo	Camera Information
					Northing	Easting			
Aerial Photographs									
C1-A1	CAM - 1.1	south southwest	A1	East Landing Landfill	388376.4639	7618280.765	3908	2019-08-28	Fuji Film Finepix XP70, F3.9, AspectRatio 4:3, 16 MP sensor
C1-A2	CAM - 1.1	northeast	A2	USAF Landfill	388639.2032	7619222.308	788	2019-08-28	Fuji Film Finepix XP70, F3.9, Ratio 4:3, 16 MPcmos sensor
C1-A3	CAM - 1.1	northeast	A3	Southeast Landfill	389381.3788	7620564.376	1432	2019-08-28	Fuji Film Finepix XP70, F3.9, AspectRatio 4:3, 16 MP sensor
C1-A4	CAM - 1.1	northeast	A4	Non-Hazardous Waste Landfill	389301.9835	7621112.166	980	2019-08-28	Fuji Film Finepix XP70, F3.9, Ratio 4:3, 16 MPcmos sensor
C1-A5	CAM - 1.1	northeast	A5	Tier II Disposal Facility	389133.396	7620902.574	511	2019-08-28	Fuji Film Finepix XP70, F3.9, AspectRatio 4:3, 16 MP sensor
C1-A6	CAM - 1.1	southwest	A6	Station East and Main Landfill	389964.1845	7620835.824	738	2019-08-28	Fuji Film Finepix XP70, F3.9, Ratio 4:3, 16 MPcmos sensor
C1-A7	CAM - 1.1	east northeast	A7	Borrow Area North Landfill	389861.8954	7621463.987	440	2019-08-28	Fuji Film Finepix XP70, F3.9, AspectRatio 4:3, 16 MP sensor
C1-A8	CAM - 1.1	southwest	A8	Station West Landfill	388910.2516	7620977.055	412	2019-08-28	Fuji Film Finepix XP70, F3.9, Ratio 4:3, 16 MPcmos sensor
C1-A9	CAM - 1.1	north northwest	A9	Northeast Landfill	389646.2687	7621055.649	273	2019-08-28	Fuji Film Finepix XP70, F3.9, AspectRatio 4:3, 16 MP sensor

Photo Identification	Figure ID	View Direction	Photo Location and Direction	Feature Identification	Feature of Note	Other Comments	UTM		Photo Size KB	Date of Photo	Camera Information
							Northing	Easting			
Sample Station Photographs - Borrow Area North Landfill											
C1-1-1	S1	NA	Sample station C1-1	C1-1		Close-up of test pit	389749.9447	7621337.807	4004	2019-08-27	Fuji Film Finepix XP70, F3.9, Aspect Ratio 4:3, 16 MPcmos sensor
C1-1-2		West				Test pit location			9935	2019-08-27	
C1-1-3		West				Test pit backfilled			3970	2019-08-27	
C1-2-1	S2	NA	Sample station C1-2	C1-2		Close-up of test pit	389707.7098	7621432.046	3984	2019-08-27	Fuji Film Finepix XP70, F3.9, Aspect Ratio 4:3, 16 MPcmos sensor
C1-2-2		Southeast				Test pit location			3990	2019-08-27	
C1-2-3		Southeast				Test pit backfilled			4019	2019-08-27	
C1-3-1	S3	NA	Sample station C1-3	C1-3		Close-up of test pit	389671.5786	7621366.412	4000	2019-08-27	Fuji Film Finepix XP70, F3.9, Aspect Ratio 4:3, 16 MPcmos sensor
C1-3-2		East				Test pit location			4017	2019-08-27	
C1-3-3		East				Test pit backfilled			4021	2019-08-27	
C1-4-1	S4	NA	Sample station C1-4	C1-4		Close-up of test pit	389682.0612	7621287.341	4010	2019-08-27	Fuji Film Finepix XP70, F3.9, Aspect Ratio 4:3, 16 MPcmos sensor
C1-4-2		East Northeast				Test pit location			3939	2019-08-27	
C1-4-3		East Northeast				Test pit backfilled			4004	2019-08-27	
C1-5-1	S5	NA	Sample station C1-5	C1-5		Close-up of test pit	389660.8615	7621223.509	4013	2019-08-27	Fuji Film Finepix XP70, F3.9, Aspect Ratio 4:3, 16 MPcmos sensor
C1-5-2		Southeast				Test pit location			3999	2019-08-27	
C1-5-3		Southeast				Test pit backfilled			3984	2019-08-27	
Sample Station Photographs - Northeast Landfill											
C1-6-1	S6	NA	Sample Station C1-6	C1-6		Close-up of test pit	389557.5809	7621103.978	3969	2019-08-27	Fuji Film Finepix XP70, F3.9, Aspect Ratio 4:3, 16 MPcmos sensor
C1-6-2		Northwest				Test pit location			4071	2019-08-27	
C1-6-3		Northwest				Test pit backfilled			3958	2019-08-27	
C1-7-1	S7	NA	Sample Station C1-7	C1-7		Close-up of test pit	389482.7444	7621155.35	4038	2019-08-27	Fuji Film Finepix XP70, F3.9, Aspect Ratio 4:3, 16 MPcmos sensor
C1-7-2		Southeast				Test pit location			4018	2019-08-27	
C1-7-3		Southeast				Test pit backfilled			4060	2019-08-27	
C1-8-1	S8	NA	Sample Station C1-8	C1-8		Close-up of test pit	389522.7462	7621182.989	4007	2019-08-27	Fuji Film Finepix XP70, F3.9, Aspect Ratio 4:3, 16 MPcmos sensor
C1-8-2		South Southwest				Test pit location			4048	2019-08-27	
C1-8-3		South Southwest				Test pit backfilled			4050	2019-08-27	
C1-9-1	S9	NA	Sample Station C1-9	C1-9		Close-up of test pit	389556.7149	7621180.426	3949	2019-08-27	Fuji Film Finepix XP70, F3.9, Aspect Ratio 4:3, 16 MPcmos sensor
C1-9-2		South Southwest				Test pit location			4045	2019-08-27	
C1-9-3		South Southwest				Test pit backfilled			4023	2019-08-27	

Photo Identification	Figure ID	View Direction	Photo Location and Direction	Feature Identification	Feature of Note	Other Comments	UTM		Photo Size KB	Date of Photo	Camera Information
							Northing	Easting			
Sample Station Photographs - Station West Landfill											
C1-10-1	S10	NA	Sample Station C1-10	C1-10		Close-up of test pit	389062.0176	7620898.13	4018	2019-08-26	Fuji Film Finepix XP70, F3.9, Aspect Ratio 4:3, 16 MPcmos sensor
C1-10-2		Northwest				Test pit location			4025	2019-08-26	
C1-10-3		Northwest				Test pit backfilled			3937	2019-08-26	
C1-11-1	S11	NA	Sample Station C1-11	C1-11		Close-up of test pit	388991.1901	7620921.839	3996	2019-08-26	Fuji Film Finepix XP70, F3.9, Aspect Ratio 4:3, 16 MPcmos sensor
C1-11-2		East				Test pit location			4067	2019-08-26	
C1-11-3		East				Test pit backfilled			4027	2019-08-26	
C1-12-1	S12	NA	Sample Station C1-12	C1-12		Close-up of test pit	389001.8463	7620957.352	4009	2019-08-26	Fuji Film Finepix XP70, F3.9, Aspect Ratio 4:3, 16 MPcmos sensor
C1-12-2		Southeast				Test pit location			3976	2019-08-26	
C1-12-3		Southeast				Test pit backfilled			4024	2019-08-26	
C1-13-1	S13	NA	Sample Station C1-13	C1-13		Close-up of test pit	389049.4592	7620966.553	3981	2019-08-26	Fuji Film Finepix XP70, F3.9, Aspect Ratio 4:3, 16 MPcmos sensor
C1-13-2		Southwest				Test pit location			4053	2019-08-26	
C1-13-3		Southwest				Test pit backfilled			4064	2019-08-26	
Sample Station Photographs - Non-Hazardous Waste Landfill											
C1-MW01-1	MW01	NA	Sample Station MW01	MW01		Close-up of test pit	389274.3385	7620890.608	4001	2019-08-27	Fuji Film Finepix XP70, F3.9, Aspect Ratio 4:3, 16 MPcmos sensor
C1-MW01-2		North				Test pit location			3986	2019-08-27	
C1-MW01-3		North				Test pit backfilled			3940	2019-08-27	
C1-MW02-1	MW02	NA	Sample Station MW02	MW02		Close-up of test pit	389332.1441	7620964.766	4071	2019-08-27	Fuji Film Finepix XP70, F3.9, Aspect Ratio 4:3, 16 MPcmos sensor
C1-MW02-2		Southwest				Test pit location			4008	2019-08-27	
C1-MW02-3		Southwest				Test pit backfilled			3978	2019-08-27	
C1-MW03-1	MW03	NA	Sample Station MW03	MW03		Close-up of test pit	389286.5046	7621000.392	4023	2019-08-27	Fuji Film Finepix XP70, F3.9, Aspect Ratio 4:3, 16 MPcmos sensor
C1-MW03-2		Southwest				Test pit location			3984	2019-08-27	
C1-MW03-3		Southwest				Test pit backfilled			4001	2019-08-27	
C1-MW04-1	MW04	NA	Sample Station MW04	MW04		Close-up of test pit	389251.7197	7620983.635	3996	2019-08-27	Fuji Film Finepix XP70, F3.9, Aspect Ratio 4:3, 16 MPcmos sensor
C1-MW04-2		Southeast				Test pit location			4009	2019-08-27	
C1-MW04-3		Southeast				Test pit backfilled			4025	2019-08-27	

Photo Identification	Figure ID	View Direction	Photo Location and Direction	Feature Identification	Feature of Note	Other Comments	UTM		Photo Size KB	Date of Photo	Camera Information
							Northing	Easting			
Sample Station Photographs - Tier II Disposal Facility											
C1-MW05-1	MW05	NA	Sample Station MW05	MW05		Close-up of test pit	389154.7248	7620725.957	3947	2019-08-27	Fuji Film Finepix XP70, F3.9, Aspect Ratio 4:3, 16 MPcmos sensor
C1-MW05-2		Northwest				Test pit location			4031	2019-08-27	
C1-MW05-3		Northwest				Test pit backfilled			3995	2019-08-27	
C1-MW06-1	MW06	NA	Sample Station MW06	MW06		Close-up of test pit	389133.2724	7620811.597	3993	2019-08-27	Fuji Film Finepix XP70, F3.9, Aspect Ratio 4:3, 16 MPcmos sensor
C1-MW06-2		South Southwest				Test pit location			3992	2019-08-27	
C1-MW06-3		South Southwest				Test pit backfilled			4004	2019-08-27	
C1-MW07-1	MW07	NA	Sample Station MW07	MW07		Close-up of test pit	389065.4188	7620782.441	4062	2019-08-27	Fuji Film Finepix XP70, F3.9, Aspect Ratio 4:3, 16 MPcmos sensor
C1-MW07-2		Southeast				Test pit location			4018	2019-08-27	
C1-MW07-3		Southeast				Test pit backfilled			4047	2019-08-27	
C1-MW08-1	MW08	NA	Sample Station MW08	MW08		Close-up of test pit	389048.2472	7620729.814	4085	2019-08-27	Fuji Film Finepix XP70, F3.9, Aspect Ratio 4:3, 16 MPcmos sensor
C1-MW08-2		South Southeast				Test pit location			4049	2019-08-27	
C1-MW08-3		South Southeast				Test pit backfilled			4014	2019-08-27	
Sample Station Photographs - Southeast Landfill											
C1-14-1	S14	NA	Sample Station C1-14	C1-14		Close-up of test pit	389245.0075	7620629.745	4010	2019-08-26	Fuji Film Finepix XP70, F3.9, Aspect Ratio 4:3, 16 MPcmos sensor
C1-14-2		Soutwest				Test pit location			4053	2019-08-26	
C1-14-3		Soutwest				Test pit backfilled			4005	2019-08-26	
C1-15-1	S15	NA	Sample Station C1-15	C1-15		Close-up of test pit	389235.589	7620596.502	4067	2019-08-26	Fuji Film Finepix XP70, F3.9, Aspect Ratio 4:3, 16 MPcmos sensor
C1-15-2		South Southeast				Test pit location			4038	2019-08-26	
C1-15-3		South Southeast				Test pit backfilled			4001	2019-08-26	
C1-16-1	S16	NA	Sample Station C1-16	C1-16		Close-up of test pit	389259.0792	7620553.023	4002	2019-08-26	Fuji Film Finepix XP70, F3.9, Aspect Ratio 4:3, 16 MPcmos sensor
C1-16-2		Northwest				Test pit location			3965	2019-08-26	
C1-16-3		Northwest				Test pit backfilled			3983	2019-08-26	
C1-17-1	S17	NA	Sample Station C1-17	C1-17		Close-up of test pit	389233.2018	7620532.595	4000	2019-08-26	Fuji Film Finepix XP70, F3.9, Aspect Ratio 4:3, 16 MPcmos sensor
C1-17-2		North northwest				Test pit location			3973	2019-08-26	
C1-17-3		North northwest				Test pit backfilled			3963	2019-08-26	
C1-18-1	S18	NA	Sample Station C1-18	C1-18		Close-up of test pit	389194.8034	7620534.079	3963	2019-08-26	Fuji Film Finepix XP70, F3.9, Aspect Ratio 4:3, 16 MPcmos sensor
C1-18-2		Northeast				Test pit location			4006	2019-08-26	
C1-18-3		Northeast				Test pit backfilled			4028	2019-08-26	

Photo Identification	Figure ID	View Direction	Photo Location and Direction	Feature Identification	Feature of Note	Other Comments	UTM		Photo Size KB	Date of Photo	Camera Information
							Northing	Easting			
Sample Station Photographs - Station East Landfill											
C1-19-1	S19	NA	Sample Station C1-19	C1-19		Close-up of test pit	389770.8069	7620806.025	4036	2019-08-26	Fuji Film Finepix XP70, F3.9, Aspect Ratio 4:3, 16 MPcmos sensor
C1-19-2		East Southeast				Test pit location			4038	2019-08-26	
C1-19-3		East Southeast				Test pit backfilled			4008	2019-08-26	
C1-20-1	S20	NA	Sample Station C1-20	C1-20		Close-up of test pit	389878.3304	7620724.824	3951	2019-08-26	Fuji Film Finepix XP70, F3.9, Aspect Ratio 4:3, 16 MPcmos sensor
C1-20-2		Northwest				Test pit location			4019	2019-08-26	
C1-20-3		Northwest				Test pit backfilled			4039	2019-08-26	
C1-21-1	S21	NA	Sample Station C1-21	C1-21		Close-up of test pit	389838.5918	7620693.568	3990	2019-08-26	Fuji Film Finepix XP70, F3.9, Aspect Ratio 4:3, 16 MPcmos sensor
C1-21-2		Northwest				Test pit location			4049	2019-08-26	
C1-21-3		Northwest				Test pit backfilled			4065	2019-08-26	
C1-22-1	S22	NA	Sample Station C1-22	C1-22		Close-up of test pit	389794.3463	7620648.284	4032	2019-08-26	Fuji Film Finepix XP70, F3.9, Aspect Ratio 4:3, 16 MPcmos sensor
C1-22-2		North				Test pit location			4060	2019-08-26	
C1-22-3		North				Test pit backfilled			4019	2019-08-26	
Sample Station Photographs - Main Landfill											
C1-23-1	S23	NA	Sample Station C1-23	C1-23		Close-up of test pit	389627.3911	7620717.375	3993	2019-08-26	Fuji Film Finepix XP70, F3.9, Aspect Ratio 4:3, 16 MPcmos sensor
C1-23-2		Southeast				Test pit location			4067	2019-08-26	
C1-23-3		Southeast				Test pit backfilled			4020	2019-08-26	
C1-24-1	S24	NA	Sample Station C1-24	C1-24		Close-up of test pit	389752.4639	7620614.06	3944	2019-08-26	Fuji Film Finepix XP70, F3.9, Aspect Ratio 4:3, 16 MPcmos sensor
C1-24-2		Northwest				Test pit location			4055	2019-08-26	
C1-24-3		Northwest				Test pit backfilled			4005	2019-08-26	
C1-25-1	S25	NA	Sample Station C1-25	C1-25		Close-up of test pit	389697.8457	7620577.686	3933	2019-08-26	Fuji Film Finepix XP70, F3.9, Aspect Ratio 4:3, 16 MPcmos sensor
C1-25-2		North Northeast				Test pit location			4022	2019-08-26	
C1-25-3		North Northeast				Test pit backfilled			4033	2019-08-26	
C1-26-1	S26	NA	Sample Station C1-26	C1-26		Close-up of test pit	389645.9146	7620602.156	4005	2019-08-26	Fuji Film Finepix XP70, F3.9, Aspect Ratio 4:3, 16 MPcmos sensor
C1-26-2		Northeast				Test pit location			4025	2019-08-26	
C1-26-3		Northeast				Test pit backfilled			4080	2019-08-26	

Photo Identification	Figure ID	View Direction	Photo Location and Direction	Feature Identification	Feature of Note	Other Comments	UTM		Photo Size KB	Date of Photo	Camera Information
							Northing	Easting			
Sample Station Photographs - USAF Lamdfill											
C1-27-1	S27	NA	Sample Station C1-27	C1-27		Close-up of test pit	388526.9073	7619259.421	3971	2019-08-26	Fuji Film Pinepix XP70, F3.9, Ration 4:3, 16 MPcmos sensor
C1-27-2		Southwest				Test pit location			3984	2019-08-26	
C1-27-3		Southwest				Test pit backfilled			4014	2019-08-26	
C1-28-1	S28	NA	Sample Station C1-28	C1-28		Close-up of test pit	388465.8602	7619297.441	4011	2019-08-26	Fuji Film Finepix XP70, F3.9, Aspect Ratio 4:3, 16 MPcmos sensor
C1-28-2		Southeast				Test pit location			4010	2019-08-26	
C1-28-3		Southeast				Test pit backfilled			4048	2019-08-26	
C1-29-1	S29	NA	Sample Station C1-29	C1-29		Close-up of test pit	388517.9935	7619299.604	3944	2019-08-26	Fuji Film Finepix XP70, F3.9, Aspect Ratio 4:3, 16 MPcmos sensor
C1-29-2		Northwest				Test pit location			4004	2019-08-26	
C1-29-3		Northwest				Test pit backfilled			4022	2019-08-26	
C1-30-1	S30	NA	Sample Station C1-30	C1-30		Close-up of test pit	388458.2185	7619341.461	3957	2019-08-26	Fuji Film Finepix XP70, F3.9, Aspect Ratio 4:3, 16 MPcmos sensor
C1-30-2		South Southeast				Test pit location			4062	2019-08-26	
C1-30-3		South Southeast				Test pit backfilled			4027	2019-08-26	
C1-31-1	S31	NA	Sample Station C1-31	C1-31		Close-up of test pit	388500.9633	7619338.4556`	3943	2019-08-26	Fuji Film Finepix XP70, F3.9, Aspect Ratio 4:3, 16 MPcmos sensor
C1-31-2		South Southwest				Test pit location			3997	2019-08-26	
C1-31-3		South Southwest				Test pit backfilled			4005	2019-08-26	
Sample Station Photographs - East Landing Landfill											
C1-32-1	S32	NA	Sample Station P2-27	C1-32		Close-up of test pit	388195.8595	7618243.405	3940	2019-08-26	Fuji Film Finepix XP70, F3.9, Aspect Ratio 4:3, 16 MPcmos sensor
C1-32-2		South Southwest				Test pit location			3997	2019-08-26	
C1-32-3		South Southwest				Test pit backfilled			4035	2019-08-26	
C1-33-1	S33	NA	Sample Station P2-29	C1-33		Close-up of test pit	388180.8054	7618191.099	3934	2019-08-26	Fuji Film Finepix XP70, F3.9, Aspect Ratio 4:3, 16 MPcmos sensor
C1-33-2		North Northeast				Test pit location			4053	2019-08-26	
C1-33-3		North Northeast				Test pit backfilled			4022	2019-08-26	
C1-34-1	S34	NA	Sample Station P2-30	C1-34		Close-up of test pit	388140.6436	7618205.082	4061	2019-08-26	Fuji Film Finepix XP70, F3.9, Aspect Ratio 4:3, 16 MPcmos sensor
C1-34-2		Northeast				Test pit location			4026	2019-08-26	
C1-34-3		Northeast				Test pit backfilled			4024	2019-08-26	
C1-35-1	S35	NA	Sample Station P2-29	C1-35		Close-up of test pit	388139.0089	7618239.063	4016	2019-08-26	Fuji Film Finepix XP70, F3.9, Aspect Ratio 4:3, 16 MPcmos sensor
C1-35-2		East Southeast				Test pit location			4053	2019-08-26	
C1-35-3		East Southeast				Test pit backfilled			4023	2019-08-26	

Photo Identification	Figure ID	View Direction	Photo Location	Feature Identification	UTM		Date of Photo	Camera Information
					Northing	Easting		
Thermistor and Monitoring Well Photographs - Non-Hazardous Waste Landfill								
C1-MW01-A	MW01	Down	MW01	Monitoring Well MW-01	389275.210	7620889.469	2019-08-27	Fuji Film Finepix XP70, F3.9, Aspect Ratio 4:3, 16 MPcmos sensor
C1-MW01-B		North						
C1-MW02-A	MW02	Down	MW02	Monitoring Well MW-02	389334.889	7620969.268	2019-08-27	
C1-MW02-B		SW						
C1-MW03-A	MW03	Down	MW03	Monitoring Well MW-03	389288.851	7621005.076	2019-08-27	
C1-MW03-B		SW						
C1-MW04-A	MW04	Down	MW04	Monitoring Well MW-04	389252.703	7620988.024	2019-08-27	
C1-MW04-B		SE						
Thermistor and Monitoring Well Photographs - Tier II Disposal Facility								
C1-MW05-A	MW05	Down	MW05	Monitoring Well MW05	389155.171	7620728.849	2019-08-27	Fuji Film Finepix XP70, F3.9, Aspect Ratio 4:3, 16 MPcmos sensor
C1-MW05-B		NW						
C1-MW06-A	MW06	Down	MW06	Monitoring Well MW06	389129.253	7620812.740	2019-08-27	
C1-MW06-B		SSW						
C1-MW07-A	MW07	Down	MW07	Monitoring Well MW07	389066.506	762078.343	2019-08-27	
C1-MW07-B		SE						
C1-MW08-A	MW08	Down	MW08	Monitoring Well MW08	389050.137	7620727.826	2019-08-27	
C1-MW08-B		SE						
C1-VT1-1	VT-1	Down	VT-1	Thermistor VT-1	389089.210	7620727.826	2019-08-27	
C1-VT1-2		Stickup						
C1-VT1-3		Box						
C1-VT2-1	VT-2	Down	VT-2	Thermistor VT-2	389104.423	7620760.211	2019-08-27	
C1-VT2-2		Stickup						
C1-VT2-3		Box						
C1-VT3-1	VT-3	Down	VT-3	Thermistor VT-3	389139.514	7620772.243	2019-08-27	
C1-VT3-2		Stickup						
C1-VT3-3		Box						
C1-VT4-1	VT-4	Down	VT-4	Thermistor VT-4	389123.639	7620747.512	2019-08-27	
C1-VT4-2		Stickup						
C1-VT4-3		Box						

APPENDIX H2

Visual Inspection Photograph Log

Photo Identification	Figure ID	View Direction	Photo Location	Feature of Note	Feature ID	Caption	UTM		Date of Photo	Camera Information
							Northing	Easting		
BORROW AREA NORTH LANDFILL										
CAM-1 BAN 1	1	S	Lobes 1 and 2	N/A	N/A	View towards Lobes 1 and 2	7621459.621	389733.269	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 BAN 2	2	SW	Lobes 1 and 2	N/A	N/A	View across Lobes 1 and 2 landfill surface	7621439.303	389736.449	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 BAN 3	3	S	Lobes 1 and 2- Landfill cover	Settlement	G1	Small depression G1 on Lobes 1 and 2	7621444.957	389728.658	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 BAN 4	4	N	Lobes 1 and 2- Landfill cover	Settlement	G2	Small depression G2 on Lobes 1 and 2	7621434.059	389725.559	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 BAN 5	5	N	South end of Lobes 1 and 2	Vehicle ruts	M	Vehicle ruts on south end of Lobes 1 and 2	7621409.485	389732.308	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 BAN 6	6	NE	South end of Lobes 1 and 2	Settlement	A	Settlement on south end of Lobes 1 and 2	7621405.619	389727.593	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 BAN 7	7	N	West toe of Lobes 1 and 2	N/A	N/A	View along West toe of Lobes 1 and 2	7621414.107	389722.124	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 BAN 8	8	SE	Northeast corner- toe of Lobe 3	N/A	N/A	Ponded water along northeast toe of Lobe 3	7621404.254	389735.347	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 BAN 9	9	SW	North side, toe of Lobe 3	N/A	N/A	North toe of Lobe 3	7621403.28	389733.275	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 BAN 10	10	S	Lobe 3, northeast side	N/A	N/A	View across Lobe 3 toe	7621388.137	389745.404	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 BAN 11	11	S	North end of Lobe 3	Settlement	H	Linear depression at north end of Lobe 3= Feature H	7621397.311	389716.155	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 BAN 12	12	W	North end of Lobe 3	Settlement	P	North toe of Lobe 3 (Feature P (NEW) shown)	7621391.491	389707.98	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 BAN 13	13	E	North toe of Lobe 3	Settlement	P	North toe of Lobe 3 (Feature P (NEW) shown)	7621384.4	389692.612	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 BAN 13b	13b	E	North toe of Lobe 3	N/A	N/A	North landfill surface across Lobe 3	7621382.828	389693.683	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 BAN 14	14	S	West toe of Lobe 3	Settlement	B	Settlement along west toe of Lobe 3	7621379.639	389693.985	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 BAN 15	15	N	NW corner of Lobe 3	Settlement	B	Settlement on NW corner of Lobe 3	7621379.639	389693.985	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 BAN 16	16	W	NW corner of Lobe 3	Settlement	B1 + B2	Settlement on NW corner of Lobe 3	7621379.598	389703.001	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 BAN 17	17	N	West toe of Lobe 3	Settlement	B1 + B2	Settlement along west toe of Lobe 3	76213740.44	389693.752	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 BAN 18	18	S	West side slope of Lobe 3	N/A	N/A	West side slope of Lobe 3, view along top of slope	7621362.004	389694.902	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 BAN 19	19	NE	NE corner of Lobe 3	N/A	N/A	Ponded water on NE corner of Lobe 3	7621365.288	389729.838	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 BAN 20	20	E	Lobe 3 east side slope	Erosion	J	Area where minor erosion previously reported on Lobe 3 east side slope. Feature J not observed	7621329.459	389731.335	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 BAN 21	21	W	Lobe 3 east side slope	Erosion	J	Area where minor erosion previously reported on Lobe 3 east side slope. Feature J not observed	7621331.361	389744.634	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 BAN 22	22	N	Lobe 3 east side slope	Erosion	J	Area where minor erosion previously reported on Lobe 3 east side slope. Feature J not observed	7621321.036	389737.93	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 BAN 23	23	NW	Middle east side, Lobe 3	Landfill surface	N/A	View across landfill surface	7621319.326	389733.499	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 BAN 24	24	SE	East of Lobe 3, middle	Discolouration	D	Minor ponding and rust coloured oxidation east of Lobe 3	7621314.822	389733.101	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 BAN 25	25	NE	East of Lobe 3, middle	Discolouration	D	Minor ponding and rust coloured oxidation east of Lobe 3	7621288.976	389729.968	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 BAN 26	26	W	East of Lobe 3, middle	Discolouration	D	Minor ponding and rust coloured oxidation east of Lobe 3	7621299.83	389748.464	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 BAN 27	27	NW	Lobe 3 - SE corner	N/A	N/A	View across Lobe 3 from SE corner	7621280.983	389726.121	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 BAN 28	28	SE	Lobe 3 - SE corner side slope	Erosion	K	Minor erosion on Lobe 3 SE side slope	7621276.546	389721.577	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 BAN 29	29	NW	Lobe 3 - SE corner side slope	Erosion	K	Minor erosion on Lobe 3 SE side slope	7621271.351	389730.55	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 BAN 29b	29b	NW	Lobe 3 - SE corner side slope	Erosion	K	Minor erosion on Lobe 3 SE side slope	7621266.185	389721.671	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 BAN 30	30	N	Lobe 3 - SE corner side slope	N/A	N/A	View north along Lobe 3 east side slope	7621279.13	389734.76	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 BAN 31	31	SW	Lobe 3 SE side slope	N/A	N/A	Lobe 3 SE side slope, view to SW	7621278.983	389734.903	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 BAN 32	32	NE	Lobe 3 SE side slope	N/A	N/A	Lobe 3 SE side slope, view to NE	7621262.429	389717.044	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 BAN 33	33	SE	North side slope of Lobes 4 and 5	Discolouration	E	Minor discolouration on north side slope of Lobes 4 and 5	7621240.317	389693.358	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 BAN 34	34	SE	North side slope of Lobes 4 and 5	Discolouration	E	Minor discolouration on north side slope of Lobes 4 and 5	7621225.072	389694.014	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 BAN 35	35	SW	Northwest toe of Lobes 4 and 5	N/A	N/A	Northwest toe of Lobes 4 and 5, view along toe of slope	7621225.181	389693.612	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 BAN 36	36	NW	Lobes 4 and 5, northeast side	N/A	N/A	Location of infilled tension crack reported in 2014 report on Lobes 4 and 5. No evidence of tension crack observed- former Feature F	7621219.208	389707.993	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 BAN 37	37	SE	Lobes 4 and 5, northeast side	N/A	N/A	Location of infilled tension crack reported in 2014 report on Lobes 4 and 5. No evidence of tension crack observed- former Feature F	7621224.177	389701.924	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 BAN 38	38	S	East side slope of Lobes 4 and 5	N/A	N/A	East side slope of Lobes 4 and 5, view along toe of slope	7621214.269	389713.394	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 BAN 39	39	NE	East side of Lobes 4 and 5	Settlement	I + Q	Minor settlement on east side of Lobes 4 and 5; Feature I. Sparse vegetation also observed (Feature Q)	7621190.098	389711.138	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel

Appendix H- CAM-1 Photo Log (Aug. 2019)

Photo Identification	Figure ID	View Direction	Photo Location	Feature of Note	Feature ID	Caption	UTM		Date of Photo	Camera Information
							Northing	Easting		
CAM-1 BAN 40	40	SE	East side of Lobes 4 and 5	Settlement	I + Q	Minor settlement on east side of Lobes 4 and 5; Feature I. Sparse vegetation also observed (Feature Q)	7621195.946	389707.559	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 BAN 41	41	SW	SE side slope of Lobes 4 and 5	Erosion	C	Minor erosion at toe of SE side slope of Lobes 4 and 5	7621187.468	389712.641	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 BAN 42	42	WNW	SE side slope of Lobes 4 and 5	N/A	N/A	View of SE side slope Lobes 4 and 5 toe	7621178.693	389716.906	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 BAN 43	43	N	East side slope of Lobes 4 and 5	Settlement	I + Q	Minor settlement on east side of Lobes 4 and 5; Feature I. Sparse vegetation also observed (Feature Q)	7621187.112	389706.901	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 BAN 44	44	N	Lobes 4 and 5, south side	N/A	N/A	View across Lobes 4 and 5	7621175.244	389686.752	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 BAN 44b	44b	ENE	Lobes 4 and 5 -South end of Landfill	N/A	N/A	View across Lobes 4 and 5 towards ENE from South end of Landfill	7621175.244	389686.752	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 BAN 45	45	NE	Lobes 4 and 5, southwest corner of landfill	N/A	N/A	View across Lobes 4 and 5	7621174.595	389649.969	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 BAN 46	46	W	Lobe 3 SE side slope	Erosion	L	Area where minor erosion previously reported on Lobe 3 SE side slope. Feature L not observed	7621194.246	389661.528	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 BAN 47	47	SE	Lobe 3 SE side slope	Erosion	L	Area where minor erosion previously reported on Lobe 3 SE side slope. Feature L not observed	7621196.652	389652.398	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 BAN 48	48	NE	Middle E side of Lobe 3	Tension crack	N	View of Feature N- tension crack	7621354.045	389731.949	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 BAN 49	49	E	Middle E side of Lobe 3	Tension crack	N	View of Feature N- tension crack	7621354.246	389715.818	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 BAN 50	50	W	Middle W side of Lobe 3	Tension crack	O	View of Feature O- tension crack	7621322.32	389710.259	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 BAN 51	51	W	Middle W side of Lobe 3	Tension crack	O	View of Feature O- tension crack	7621322.32	389710.259	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 BAN 52	52	NW	Middle W side of Lobe 3	Tension crack	O	View of Feature O- tension crack, west end of cracking	7621318.73	389696.513	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 BAN 53	53	SW	SW landfill Lobe 3	N/A	Landfill edge	View across landfill edge towards SW	7621302.705	389701.183	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel

Photo Identification	Figure ID	View Direction	Photo Location	Feature of Note	Feature ID	Caption	UTM		Date of Photo	Camera Information
							Northing	Easting		
						NORTHEAST LANDFILL				
CAM-1 NE 1	1	SW	Lobe 2, east end	N/A	N/A	View along centreline of Lobe 2	7621150.008	389581.91	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 NE 2	2	SW	Lobe 2, east end	N/A	N/A	View along west toe of Lobe 2	7621154.134	389578.468	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 NE 3	3	SW	Lobe 2, east end	N/A	N/A	View along east toe of Lobe 2	7621147.678	389583.494	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 NE 4	4	NE	Lobe 2, middle, landfill top cover	N/A	N/A	View along centreline of Lobe 2	7621115.543	389541.862	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 NE 5	5	SW	Lobe 2, middle, landfill top cover	N/A	N/A	View along centreline of Lobe 2	7621115.323	389541.633	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 NE 6	6	NE	Lobe 2, middle, landfill top cover	Settlement	D	Linear depression on east cover of Lobe 2	7621109.438	389538.153	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 NE 7	7	SW	East cover of Lobe 2	Settlement	D	Linear depression on east cover of Lobe 2	7621121.267	389553.768	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 NE 8	8	NE	Centreline of Lobe 2	N/A	N/A	View along centreline of Lobe 2	7621077.933	389500.213	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 NE 9	9	NE	West toe of Lobe 2	N/A	N/A	View along west toe of Lobe 2	7621081.852	389498.129	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 NE 10	10	NE	East toe of Lobe 2	N/A	N/A	View along east toe of Lobe 2	7621076.449	389503.426	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 NE 11	11	N	South side of Lobes 1 and 3	N/A	N/A	View of south side of Lobes 1 and 3	7621098.766	389499.172	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 NE 12	12	NE	East toe of Lobes 1 and 3	Vegetation	I	East toe of Lobes 1 and 3 showing sparse vegetation= Feature I	7621116.658	389495.566	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 NE 13	13	NE	Lobes 1 and 3 cover	N/A	N/A	View across Lobes 1 and 3 cover	7621124.909	389493.003	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 NE 14	14	NW	South toe of Lobes 1 and 3	N/A	N/A	South toe of Lobes 1 and 3, view along toe of slope	7621122.129	389484.671	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 NE 15	15	NE	West toe of Lobes 1 and 3	N/A	N/A	West toe of Lobes 1 and 3, view along landfill cover	7621141.159	389472.73	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 NE 16	16	SE	South toe of Lobes 1 and 3	N/A	N/A	South toe of Lobes 1 and 3, view along toe of slope	7621138.363	389471.577	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 NE 17	17	E	South cover of Lobes 1 and 3	N/A	N/A	View across south cover of Lobes 1 and 3	7621140.545	389479.938	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 NE 18	18	SSE	West side slope of Lobes 1 and 3	Erosion	G	Minor erosion on west side slope of Lobes 1 and 3	7621159.464	389501.061	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 NE 19	19	NW	West side slope of Lobes 1 and 3	Erosion	G	Minor erosion on west side slope of Lobes 1 and 3	7621150.989	389505.878	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 NE 20	20	SW	Cover of Lobes 1 and 3, north end	Uneven Side Slope Settlement	B E	Uneven side slope and minor settlement on cover of Lobes 1 and 3	7621175.37	389509.655	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 NE 21	21	SE	North side slope of Lobes 1 and 3	N/A	N/A	North side slope of Lobes 1 and 3, view along slope toe	7621175.104	389510.798	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 NE 22	22	S	West side slope of Lobes 1 and 3	Uneven Side Slope	B	Uneven side slope on west side slope of Lobes 1 and 3	7621177.687	389509.009	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 NE 23	23	SE	Landfill cover on Lobes 1 and 3, north end	N/A	N/A	View across landfill cover on Lobes 1 and 3	7621169.844	389512.747	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 NE 24	24	N	West side slope of Lobes 1 and 3	Uneven Side Slope	B	Uneven side slope on west side slope of Lobes 1 and 3	7621165.515	389513.897	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 NE 25	25	S	North side slope on Lobes 1 and 3	Settlement	A	Minor depression on inside corner of north side slope on Lobes 1 and 3	7621164.328	389532.73	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 NE 26	26	N	North side slope on Lobes 1 and 3	Settlement	A	Minor settlement features on inside corner of north side slope on Lobes 1 and 3	7621153.939	389537.545	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 NE 27	27	SE	North side slope on Lobes 1 and 3	Settlement	A	Minor settlement features on inside corner of north side slope on Lobes 1 and 3	7621164.597	389533.704	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 NE 28	28	NW	North side slope of Lobes 1 and 3	Vegetation	N/A	North side slope of Lobes 1 and 3 with sparse vegetation establishment	7621164.328	389532.73	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 NE 29	29	NE	Northeast extension of Lobes 1 and 3	N/A	N/A	View of northeast extension of Lobes 1 and 3	7621159.106	389536.917	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 NE 30	30	SE	North side slope of Lobes 1 and 3	Erosion	C	Minor erosion on north side slope of Lobes 1 and 3	7621167.517	389536.781	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 NE 31	31	NW	North side slope of Lobes 1 and 3	Erosion Vegetation	F N/A	North side slope of Lobes 1 and 3, sparse vegetation establishment	7621164.595	389561.856	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 NE 32	32	SW	Northeast corner of Lobes 1 and 3	Erosion Vegetation	F N/A	Minor erosion on northeast corner of Lobes 1 and 3, sparse vegetation establishment	7621164.595	389561.856	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 NE 33	33	S	View of north side of Lobes 1 and 3	N/A	N/A	View of north side of Lobes 1 and	7621195.995	389545.374	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 NE 34	34	NE	West cover of Lobe 2	Settlement	H	Feature H- Settlement; on west cover of Lobe 2	7621100.261	389517.505	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 NE 35	35	SW	West cover of Lobe 2	Settlement	H	Feature H- Settlement; on west cover of Lobe 2	7621107.301	389529.087	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel

Photo Identification	Figure ID	View Direction	Photo Location	Feature of Note	Feature ID	Caption	UTM		Date of Photo	Camera Information
							Northing	Easting		
STATION WEST LANDFILL										
CAM-1 STNW 0	0	-	cover page	N/A	N/A	Cover page	-	-	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 STNW 0a	0a	SE	North end of StnWest Landfill	N/A	N/A	View towards Tier II Landfill	7620947.5	389028.493	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 STNW 0b	0b	NW	S end of landfill	N/A	N/A	View across landfill middle from S end	7620915.706	389032.155	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 STNW 1	1	W	East side of landfill	N/A	N/A	View across east side of landfill cover	7620923.169	389054.397	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 STNW 2	2	NW	East side of landfill	N/A	N/A	East side of landfill, view along toe of slope	7620924.913	389058.293	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 STNW 3	3	NW	East side of landfill	Cracking	I	Mostly infilled crack on east side of landfill	7620931.588	389051.378	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 STNW 4	4	NW	Landfill edge, middle east side	Landfill edge	A3	View alongside landfill edge (view of Feature A3)	7620939.792	389052.797	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 STNW 5	5	SE	East side of landfill	Erosion Settlement Cracking	D A I	Minor erosion, settlement and mostly infilled crack on east side of landfill	7620942.132	389046.336	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 STNW 6	6	SW	East side of landfill	Erosion Settlement	D A	Minor erosion and settlement on east side of landfill	7620939.792	389052.797	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 STNW 7	7	NE	East side of landfill	Erosion Cracking	D I	Minor erosion and mostly infilled crack on east side of landfill	7620933.903	389044.495	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 STNW 7a	7a	_	photo of logbook	-	-	photo of logbook	-	-	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 STNW 8	8	SE	East side of landfill	Erosion Settlement	D A	Minor settlement and erosion on east side of landfill	7620944.327	389044.908	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 STNW 9	9	N	Northeast side of landfill	Settlement Cracking	L, H A1	Linear depression and mostly infilled crack on northeast side of landfill (view of Features A1, H, and L)	7620948.107	389039.135	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 STNW 10	10	SW	Northeast side of landfill	Settlement	E	Wide area of settlement and linear depression on northeast side of landfill	7620956.878	389041.734	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 STNW 11	11	SW	Northeast side of landfill	Settlement	L	Wide area of settlement on northeast side of landfill	7620963.357	389040.754	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 STNW 12	12	SE	Northeast side of landfill	Settlement	L	Wide area of settlement on northeast side of landfill	7620963.35	389031.712	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 STNW 13	13	W	North side slope of landfill	N/A	N/A	North side slope of landfill, view along toe of slope	7620960.842	389021.932	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 STNW 14	14	N	North side of landfill	Settlement	B M	Small depressions on north side of landfill	7620947.5	389028.493	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 STNW 15	15	S	Middle southeast end of Landfill	Discolouration	F	Higher percentage of fines observed; less granular- giving impression of discolouration	7620921.261	389037.506	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 STNW 16	16	ESE	Middle southeast end of Landfill	Discolouration	F	Higher percentage of fines observed; less granular- giving impression of discolouration	7620915.706	389032.155	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 STNW 17	17	E	South landfill slope	Settlement	G1	Small settlement on south landfill slope (Feature G1)	7620902.791	389035.544	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 STNW 18	18	S	Middle south end of landfill	Discolouration	F	Higher percentage of fines observed; less granular- giving impression of discolouration	7620911.993	389020.699	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 STNW 19	19	W	South side slope	Cracking	G	Partially infilled cracks on south side slope	7620902.015	389042.872	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 STNW 20	20	E	South side slope	Cracking	G	Partially infilled cracks on south side slope	7620902.067	389029.329	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 STNW 21	21	N	South side slope	Cracking	G	Partially infilled cracks on south side slope	7620899.658	389029.858	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 STNW 22	22	N	South side of landfill	N/A	N/A	View of south side of landfill	7620903.209	389032.144	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 STNW 23	23	SE	South side slope of landfill	Settlement	K2	Minor depression on south side slope of landfill (Feature K2)	7620911.205	389015.505	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 STNW 24	24	SE	South side slope of landfill	Settlement	K1	Minor depression on south side slope of landfill (Feature K1)	7620913.746	389012.167	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 STNW 25	25	SE	South side of landfill	N/A	N/A	South side of landfill, view along toe of slope	7620917.531	389001.086	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 STNW 26	26	NE	West side of landfill	Uneven Surface	C	West side of landfill, uneven surface at southwest corner	7620917.71	389001.104	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 STNW 27	27	W	Southwest landfill corner	Uneven Surface	C	Uneven surface at southwest corner	7620920.508	389009.922	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 STNW 28	28	E	Southwest corner of landfill	discolouration	F	discolouration of cover material at southwest corner of landfill	7620924.301	389010.49	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 STNW 29	29	E	West landfill crest	Settlement	B1	Settlement on west landfill crest (Feature B1)	7620945.958	389007.846	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 STNW 30	30	S	West side of landfill	N/A	N/A	West side of landfill, view along toe of slope	7620956.586	389012.895	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 STNW 31	31	NE	North side of landfill	N/A	N/A	North side of landfill, view along toe of slope	7620956.666	389012.883	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 STNW 32	32	SW	West of landfill	Equipment tracks	O	Equipment tracks west of landfill. Previously identified, newly denoted in 2016 as Feature "O"	7620957.2	389008.921	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 STNW 33	33	W	Northwest landfill cover	Settlement	N	Minor settlement on northwest landfill cover (Feature N)	7620949.402	389020.268	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 STNW 34	34	NW	North landfill cover	Settlement	B2 + B3 + M	Minor settlement on north landfill cover (Features B2 and B3 and M)	7620951.775	389028.606	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 STNW 35	35	E	Crest of southeast landfill slope	Settlement	J	Settlement- Feature J	7620909.777	389047.226	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 STNW 36	36	W	Middle south end of landfill	Cracking	G	Minor tension cracking on middle south end of landfill (Features G2, G3, G4, G5)	7620904.708	389040.695	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1 STNW 37	37	W	Middle south end of landfill	Cracking	G	Minor tension cracking on middle south end of landfill	7620904.166	389035.785	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel

Photo Identification	Figure ID	View Direction	Photo Location	Feature of Note	Feature ID	Caption	UTM		Date of Photo	Camera Information
							Northing	Easting		
NON-HAZARDOUS WASTE LANDFILL										
CAM-1-NHW-0	0	-	cover page	N/A	N/A	Cover page	-	-	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-NHW-1	1	NW	South end of Landfill	N/A	N/A	Monitoring well MW-1 with metal debris piled nearby	7620888.996	389280.547	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-NHW-2	2	N	South end of Landfill	N/A	N/A	View across landfill cover from south corner	7620895.351	389281.662	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-NHW-3	3	NW	Middle southwest side of landfill cover	A	Settlement	Linear depression on southwest landfill cover	7620914.532	389264.433	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-NHW-4	4	SE	Southwest landfill cover	A	Settlement	Linear depression on southwest landfill cover	7620926.702	389252.239	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-NHW-5	5	NW	Southwest landfill cover	A	Settlement	Linear depression on southwest landfill cover	7620922.789	389258.734	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-NHW-6	6	SE	Northwest corner	B	Debris Exposed	Exposed geotextile debris on northwest cover	7620936.117	389243.692	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-NHW-7	7	NW	Northwest corner	B	Debris Exposed	Exposed geotextile debris on northwest cover	7620935.024	389242.474	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-NHW-8	8	E	Northwest corner	N/A	N/A	View across landfill cover from west corner	7620941.572	389238.308	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-NHW-9	9	NE	Northwest corner	N/A	N/A	Northwest side slope of landfill	7620950.567	389231.6	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-NHW-10	10	SW	Northwest corner, landfill top cover	B1	Debris Exposed	Exposed geotextile debris on northwest cover	7620944.192	389260.233	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-NHW-11	11	SE	Northwest corner, landfill top cover	B1	Debris Exposed	Exposed geotextile debris on northwest cover	7620946.582	389254.705	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-NHW-12	12	NW	Middle northeast end, landfill top cover	B2	Debris Exposed	Exposed geotextile debris on north cover	7620950.62	389297.956	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-NHW-13	13	S	Middle northeast end, landfill top cover	B2	Debris Exposed	Exposed geotextile debris on north cover	7620957.407	389296.325	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-NHW-14	14	NE	East end	B3	Debris Exposed	Exposed geotextile debris- east end landfill cover	7620935.834	389316.29	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-NHW-15	15	SE	East end	B3	Debris Exposed	Exposed geotextile debris- east end landfill cover	7620941.173	389317.173	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-NHW-16	16	E	East end	B3	Debris Exposed	Exposed geotextile debris- east end landfill cover	7620936.262	389326.356	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-NHW-17	17	NW	East end	N/A	N/A	View along toe of slope	7620926.099	389332.621	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-NHW-18	18	SW	East end	N/A	N/A	View along toe of slope	7620926.099	389332.621	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-NHW-19	19	S	North end of landfill cover	N/A	N/A	View across landfill cover from north corner	7620980.523	389280.349	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-NHW-20	20	S	North end of landfill	C	Settlement	Minor settlement on north landfill corner side slope	7620990.523	389280.051	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-NHW-20B	20B	S	North end of landfill (same as Photo NHW-20)	C	Settlement	Minor settlement on north landfill corner side slope	7620990.523	389280.051	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-NHW-21	21	N	North end of landfill	C	Settlement	Minor settlement on north landfill corner side slope	7620983.651	389280.573	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-NHW-22	22	SW	North side slope of landfill	N/A	N/A	North side slope of landfill, view to SW along toe of slope	7621000.896	389279.06	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-NHW-23	23	SE	North side slope of landfill	N/A	N/A	North side slope of landfill, view to SE along toe of slope	7621001.662	389282.173	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-NHW-24	24	S	Monitoring well MW-4	N/A	N/A	Monitoring well MW-4	7620988.293	389254.233	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-NHW-25	25	SW	Northwest landfill crest, middle	D	Settlement	Linear depression below northwest landfill crest	7620960.759	389255.871	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-NHW-26	26	W	Central landfill cover, west end	E	Debris Exposed	Exposed metal debris on central landfill cover	7620942.411	389268.05	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-NHW-27	27	S	Central landfill cover, west end	E	Debris Exposed	Exposed metal debris on central landfill cover	7620941.803	389263.263	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-NHW-28	28	NW	Middle southwest cover	F	Settlement	Minor depression on southwest cover	7620919.698	389265.62	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-NHW-29	29	S	Middle southwest cover	F	Settlement	Minor depression on southwest cover	7620921.088	389264.492	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-NHW-30	30	NW	Monitoring well MW-1	N/A	N/A	Monitoring well MW-1 with metal debris piled nearby; close-up photo	7620888.996	389280.547	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-NHW-31	31	NW	View to NW up Access Road	N/A	N/A	View to NW up Access Road	7620880.389	389275.619	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-NHW-32	32	W	View to W towards north side of Tier II Landfill	N/A	N/A	View to W towards north side of Tier II Landfill	7620880.389	389275.619	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-NHW-33	33	SW	View to SW towards Tier II Landfill	N/A	N/A	View to SW towards Tier II Landfill	7620880.389	389275.619	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-NHW-34	34	S	View to S towards Southeast Landfill	N/A	N/A	View to S towards Southeast Landfill	7620880.389	389275.619	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-NHW-35	35	SE	View to SE towards Main & Station East landfills	N/A	N/A	View to SE towards Main & Station East landfills	7620880.389	389275.619	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel

Photo Identification	Figure ID	View Direction	Photo Location	Feature of Note	Feature ID	Caption	UTM		Date of Photo	Camera Information
							Northing	Easting		
						TIER II DISPOSAL FACILITY				
CAM-1-T2-1	1	SW	Monitoring well MW-05	N/A	N/A	Monitoring well MW-05	7620736.406	389162.072	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-2	2	NW	East side of Disposal Facility (DF)	N/A	N/A	View of east side of Disposal Facility (DF)	7620728.69	389171.307	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-3	3	NE	Southeast toe of DF	N/A	N/A	Southeast toe of DF	7620685.781	389129.71	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-4	4	NW	Southwest toe of DF	N/A	N/A	Southwest toe of DF	7620685.781	389129.71	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-5	5	NE	Southeast side slope of DF	N/A	N/A	Southeast side slope of DF	7620701.479	389123.963	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-5B	5B	NE	Southeast side slope of DF (same as photo T2-5)	N/A	N/A	Southeast side slope of DF	7620701.479	389123.963	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-6	6	NW	Southwest side slope of DF	N/A	N/A	Southwest side slope of DF	7620701.479	389123.963	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-7	7	NE	Southeast crest of DF	N/A	N/A	Southeast crest of DF	7620717.649	389117.455	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-8	8	NW	Southwest crest of DF	N/A	N/A	Southwest crest of DF	7620718.441	389115.306	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-9	9	N	Southeast corner of DF	N/A	N/A	View across cover from southeast corner	7620721.221	389114.917	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-10	10	N	Southeast corner of DF	Settlement	C3	Minor depression on southeast crest of DF (Feature C3)	7620727.359	389122.364	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-11	11	NE	middle East end -landfill cover	N/A	N/A	Vertical thermistor VT-4	7620743.356	389121.262	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-12	12	W	middle East end -landfill cover	N/A	N/A	Vertical thermistor VT-4	7620749.516	389125.413	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-13	13	N	N end -landfill cover	N/A	N/A	Vertical thermistor VT-3	7620768.804	389137.883	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-14	14	E	N end -landfill cover	N/A	N/A	Vertical thermistor VT-3	7620773.397	389138.542	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-15	15	SW	Southeast crest of DF	N/A	N/A	Southeast crest of DF	7620768.808	389145.969	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-16	16	NW	Northeast crest of DF	N/A	N/A	Northeast crest of DF, Vertical thermistor VT-3	7620768.866	389145.895	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-17	17	W	Northeast corner	N/A	N/A	View across cover from northeast corner	7620769.85	389146.971	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-18	18	SW	Southeast side slope of DF	N/A	N/A	Southeast side slope of DF	7620773.866	389164.902	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-19	19	NW	Northeast side slope of DF	N/A	N/A	Northeast side slope of DF	7620773.866	389164.902	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-20	20	SW	Southeast toe of DF	N/A	N/A	Southeast toe of DF, view to SW	7620778.934	389176.002	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-21	21	NW	Northeast toe of DF	N/A	N/A	Northeast toe of DF, view to NW	7620778.934	389176.002	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-22	22	SE	Middle N side of DF	N/A	N/A	Monitoring well MW-6	7620814.638	389125.334	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-23	23	SW	Northeast side of DF	N/A	N/A	View of northeast side of DF	7620829.671	389146.495	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-24	24	SE	Northeast toe of DF	N/A	N/A	Northeast toe of DF, view to SE	7620823.244	389098.342	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-25	25	SW	Northwest toe of DF	N/A	N/A	Northwest toe of DF, view to SW	7620823.244	389098.342	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-26	26	S	North corner of DF	Erosion	B1	Minor erosion channel on north corner of DF (Feature B1)	7620823.244	389098.342	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-27	27	SE	Northeast side slope of DF	N/A	N/A	Northeast side slope of DF, view to SE	7620805.198	389106.705	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-28	28	SW	Northwest side slope of DF	N/A	N/A	Northwest side slope of DF, view to SW	7620805.198	389106.705	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-29	29	SE	Northeast crest of DF	N/A	N/A	Northeast crest of DF, view to SE	7620788.521	389112.823	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-30	30	SW	Northwest crest of DF	N/A	N/A	Northwest crest of DF, view to SW	7620788.521	389112.823	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-31	31	SE	Northwest corner	N/A	N/A	View across cover from northwest corner	7620788.521	389112.823	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-32	32	NW	Northeast crest of DF	Settlement	D1	Minor depression on northeast crest of DF (Feature D1)	7620782.611	389122.372	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-33	33	NW	Northeast crest of DF	Settlement	D2	Minor depression on northeast crest of DF (Feature D2)	7620778.52	389129.085	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-34	34	NW	Northwest side slope of DF	Erosion	B	Minor erosion on northwest side slope of DF	7620785.276	389112.031	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-35	35	SE	Northwest side slope of DF	Erosion	B	Minor erosion on northwest side slope of DF	7620788.212	389128.885	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-36	36	SE	Northwest side slope of DF	Erosion	B3	Minor erosion on northwest side slope of DF (Feature B3)	7620785.652	389051.013	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-37	37	SE	Northwest side slope of DF	Erosion	B4	Minor erosion on northwest side slope of DF (Feature B4)	7620782.521	389098.987	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-38	38	E	middle West side of Landfill	N/A	N/A	Monitoring well MW-7	7620780.37	389065.493	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-39	39	N	Northwest toe of DF	N/A	N/A	Northwest toe of DF, monitoring well MW-8	7620731.134	389050.438	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-40	40	SE	Southwest toe of DF	N/A	N/A	Southwest toe of DF, monitoring well MW-8	7620731.134	389050.438	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel

Photo Identification	Figure ID	View Direction	Photo Location	Feature of Note	Feature ID	Caption	UTM		Date of Photo	Camera Information
							Northing	Easting		
CAM-1-T2-41	41	NE	Northwest side slope of DF	N/A	N/A	Northwest side slope of DF, view to NE	7620731.085	389068.434	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-42	42	SE	Southwest side slope of DF	N/A	N/A	Southwest side slope of DF, view to SE	7620731.085	389068.434	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-43	43	NE	Northwest crest of DF	N/A	N/A	Northwest crest of DF, view to NE	7620736.259	389085.014	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-44	44	SE	Southwest crest of DF	N/A	N/A	Southwest crest of DF, view to SE	7620736.259	389085.014	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-45	45	NE	Southwest corner	N/A	N/A	View across cover from southwest corner	7620736.259	389085.014	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-46	46	S	SW corner of DF	N/A	N/A	Vertical thermistor VT-1	7620742.582	389087.696	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-47	47	NW	SW corner of DF	N/A	N/A	Vertical thermistor VT-1	7620733.335	389089.466	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-48	48	NE	middle W side of DF cover	N/A	N/A	Vertical thermistor VT-2	7620759.136	389101.853	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-49	49	S	middle W side of DF cover	N/A	N/A	Vertical thermistor VT-2	7620762.855	389106.235	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-50	50	S	Central cover- middle	Staining	F	Small area of staining on central cover (Feature F)	7620759.768	389104.115	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-51	51	NE	Southeast cover	Settlement	C2	Linear depression on southeast cover (Feature C2)	7620723.856	389116.128	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-52	52	SW	Southeast cover	Settlement	C	Linear depression on southeast cover	7620739.642	389124.375	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-53	53	NE	East cover	Settlement	C1	Linear depression on east cover (Feature C1)	7620749.601	389113.573	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-54	54	SW	East cover	Settlement	C	Linear depression on east cover	7620759.034	389133.235	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-55	55	NW	West side slope	Erosion	E	Minor erosion on west side slope	7620758.38	389096.846	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-56	56	SE	West side slope	Erosion	E	Minor erosion on west side slope	7620761.907	389087.87	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-57	57	NNE	Northwest crest	Settlement	A	Minor depression below northwest crest	7620771.179	389121.915	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-58	58	NE	Southwest side of DF	N/A	N/A	Southwest side of DF	7620659.943	389064.642	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-59	59	ESE	Northwest side of DF	N/A	N/A	Northwest side of DF	7620788.803	389021.623	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-60	60	SE	Central cover, middle west end	Settlement	G	Minor settlement on central cover	7620761.987	389110.314	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-61	61	NW	Central cover, middle west end	Settlement	G	Minor settlement on central cover (Feature G)	7620757.745	389114.786	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-62	62	NW	Crest of slope-northeast side of DF	Settlement	H	Minor linear settlement just below crest of slope northeast side of DF (New Feature H)	7620773.148	389146.767	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-T2-62B	62B	NW	Crest of slope-northeast side of DF	Settlement	H	Minor linear settlement just below crest of slope northeast side of DF (New Feature H)	7620774.103	389145.13	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel

Photo Identification	Figure ID	View Direction	Photo Location	Feature of Note	Feature ID	Caption	UTM		Date of Photo	Camera Information
							Northing	Easting		
						SOUTHEAST LANDFILL				
CAM-1-SE-0	0	-	Cover page for Southeast Landfill	-	-	-	-	-	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-SE-1	1	S	NW corner of Lobe 1	N/A	N/A	NW corner of Lobe 1, view towards south	7620586.089	389247.01	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-SE-2	2	SE	North toe of Lobe 1	N/A	N/A	North toe of Lobe 1, view to SE	7620588.847	389248.532	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-SE-3	3	SW	Northwest toe of Lobe 1	N/A	N/A	Northwest toe of Lobe 1, view to SW	7620589.378	389246.52	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-SE-4	4	NW	West side slope Lobe 1	Vehicle ruts	D	West side slope Lobe 1 (Feature D)	7620561.086	389214.044	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-SE-5	5	SE	West side slope Lobe 1	Vehicle ruts	D	West side slope Lobe 1 (Feature D)	7620564.048	389207.147	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-SE-6	6	NE	Northwest toe of Lobe 1	N/A	N/A	Northwest toe of Lobe 1, view to NE	7620563.898	389208.246	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-SE-7	7	S	West toe of Lobe 1	N/A	N/A	West toe of Lobe 1, view to South	7620562.411	389206.497	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-SE-8	8	N	West toe of Lobe 1	N/A	N/A	West toe of Lobe 1, view to North	7620534.924	389204.278	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-SE-9	9	NE	Southeast toe of Lobe 1	N/A	N/A	Southeast toe of Lobe 1 (ridge lines from improper grading observed in distance)	7620529.658	389210.11	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-SE-10	10	NE	SW corner of Lobe 1	N/A	N/A	View from SW corner of Lobe 1	7620537.712	389207.559	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-SE-11	11	SE	Slope of Lobe 1 - middle S side	Erosion	C	Area where minor erosion on cover/side slope of Lobe 1 was previously reported. Feature not observed	7620570.504	389252.185	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-SE-12	12	NW	Slope of Lobe 1 - middle S side	Erosion / Vegetation	C F	Feature C not observed. Sparse Vegetation Feature F	7620553.972	389258.233	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-SE-13	13	S	Lobe 2, north end	N/A	N/A	Looking across Lobe 2	7620636.478	389227.01	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-SE-14	14	SW	Lobe 2, north end	N/A	N/A	West toe of Lobe 2	7620634.564	389225.453	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-SE-15	15	SE	Lobe 2, north end	Settlement	A2	Minor depression on northeast side slope of Lobe 2 (Feature A2)	7620636.103	389229.463	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-SE-16	16	NW	Northeast side slope of Lobe 2	Settlement	A	Minor depression on northeast side slope of Lobe 2	7620629.008	389239.894	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-SE-17	17	SW	Northeast side slope of Lobe 2	Settlement	A	Minor depression on northeast side slope of Lobe 2	7620634.065	389237.552	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-SE-18	18	NW	Northeast toe of Lobe 2	N/A	N/A	Northeast toe of Lobe 2, view to NW	7620623.368	389245.014	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-SE-19	19	S	East toe of Lobe 2	N/A	N/A	East toe of Lobe 2, view to South	7620623.368	389245.014	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-SE-20	20	N	East toe of Lobe 2	N/A	N/A	East toe of Lobe 2, view to North	7620602.525	389236.616	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-SE-21	21	W	South toe of Lobe 2	N/A	N/A	South toe of Lobe 2, view to West	7620601.337	389232.394	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-SE-22	22	NW	Lobe 2, south end	N/A	N/A	Looking across Lobe 2, view to NW	7620608.171	389232.506	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-SE-23	23	S	North side slope of Lobe 1	No Settlement	formerly E	No photo available- Not Settlement; due to uneven grading during landfill construction at North side slope of Lobe 1	N/A	N/A	N/A	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-SE-24	24	NE	Lobe 2, north side	Settlement	A1	Minor settlement- Feature A1- at Lobe 2, north side	7620628.582	389231.487	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel

Photo Identification	Figure ID	View Direction	Photo Location	Feature of Note	Feature ID	Caption	UTM		Date of Photo	Camera Information
							Northing	Easting		
						MAIN LANDFILL				
CAM-1-Main-0	0	-	Cover page for Southeast Landfill	-	-	-	photo	-	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-Main-1	1	NE	North side slope of landfill	N/A	N/A	North side slope of landfill, view to NE	7620719.843	389657.832	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-Main-2	2	SW	Northwest side slope of landfill	N/A	N/A	Northwest side slope of landfill, view to SW	7620716.631	389652.153	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-Main-3	3	N	Northwest side slope	Settlement Vegetation	A N/A	Settlement on northwest side slope and sparse vegetation establishment	7620715.101	389644.669	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-Main-4	4	SW	Northwest landfill side slope	Settlement	A	Northwest landfill side slope	7620716.463	389655.017	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-Main-5	5	SW	Toe of northwest side slope	Erosion	D	Minor erosion on toe of northwest side slope	7620710.837	389646.461	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-Main-6	6	NE	Toe of northwest side slope	Erosion	D	Minor erosion on toe of northwest side slope	7620684.647	389619.053	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-Main-7	7	S	West side slope of landfill	N/A	N/A	West side slope of landfill, view to South	7620685.197	389622.29	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-Main-8	8	N	NW corner of Landfill	N/A	N/A	NW corner of Landfill, view to North	7620678.38	389622.42	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-Main-9	9	SE	Northwest corner of landfill cover	Vegetation	N/A	View across landfill cover and sparse vegetation establishment	7620680.093	389624.988	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-Main-10	10	S	Southwest corner of landfill	Settlement	B	Linear depression on southwest corner of landfill	7620634.232	389619.456	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-Main-11	11	SE	Southwest corner of landfill	N/A	N/A	View across southwest corner of landfill	7620631.97	389620.525	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-Main-12	12	NE	West side slope of landfill	N/A	N/A	West side slope of landfill, view to NE	7620627.635	389618.736	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-Main-13	13	E	Southwest toe of landfill	N/A	N/A	Southwest toe of landfill, view to East	7620623.421	389620.083	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-Main-14	14	NE	Southwest toe of landfill	N/A	N/A	View across landfill cover	7620626.479	389622.231	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-Main-15	15	E	Southwest toe of landfill	Erosion	E1, K3	Minor erosion (E1) and sparse vegetation (K3) on southwest side slope of landfill	7620627.091	389631.025	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-Main-16	16	NE	Southwest toe of landfill	Erosion Vegetation	E2 K4	Minor erosion and sparse vegetation on southwest side slope of landfill	7620626.519	389646.683	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-Main-17	17	NW	Southwest toe of landfill	Erosion	E1	Minor erosion on southwest side slope of landfill	7620617.747	389656.717	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-Main-18	18	E	Southwest toe of landfill	Erosion	E3	Erosion feature E3 on side slope, south end of landfill	7620617.894	389658.406	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-Main-19	19	W	Southwest end of landfill	Erosion/ Settlement	E1, I1, B2	Minor erosion on southwest side slope of landfill and Settlement Feature I1	7620615.253	389655.312	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-Main-20	20	SE	Southwest toe of landfill	N/A	N/A	View across toe of slope, south end	7620628.022	389659.619	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-Main-21	21	N	South landfill end	N/A	N/A	View across south landfill cover	7620588.007	389665.612	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-Main-22	22	E	South side of landfill	Settlement	C1	Linear depression on south side of landfill	7620587.061	389681.472	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-Main-24	24	NE	South side of landfill	Settlement	C	Linear depression on south side of landfill	7620584.729	389690.236	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-Main-25	25	SW	South toe of landfill	N/A	N/A	South toe of landfill, view to SW	7620613.612	389700.349	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-Main-26	26	SE	South toe of landfill	N/A	N/A	South toe of landfill, view to SE	7620613.612	389700.349	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-Main-27	27	NW	middle S end of Landfill	discolouration	G	View across landfill cover towards area of discoloured cover material	7620613.612	389700.349	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-Main-28	28	NW	Middle of Landfill	discolouration	G	Discoloured cover material; caused by lower quantity of fine white granular materials.	7620625.488	389696.524	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-Main-29	29	S	Middle of Landfill	discolouration	G	Discoloured cover material; caused by lower quantity of fine granular materials.	7620667.459	389678.477	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-Main-30	30	NW	Southeast side of landfill	N/A	N/A	View of southeast side of landfill	7620593.785	389745.703	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-Main-31	31	NW	Southeast side slope	Settlement	C3	Minor depression on southeast side slope	7620608.036	389743.314	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-Main-32	32	SW	East side of landfill	Settlement	C2	Minor depression on inside corner of east side of landfill	7620616.389	389736.484	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-Main-33	33	NE	East side of landfill	Settlement	C	Minor depression on inside corner of east side of landfill	7620617.483	389729.287	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-Main-34	34	NW	East side slope of landfill	N/A	N/A	East side slope of landfill	7620655.357	389750.177	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-Main-35	35	W	East side of landfill	N/A	N/A	View across east side of landfill	7620652.34	389749.605	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel

Photo Identification	Figure ID	View Direction	Photo Location	Feature of Note	Feature ID	Caption	UTM		Date of Photo	Camera Information
							Northing	Easting		
CAM-1-Main-36	36	SE	East side slope of landfill	N/A	N/A	East side slope of landfill	7620689.963	389720.252	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-Main-37	37	NW	East side slope of landfill	N/A	N/A	East side slope of landfill	7620689.963	389720.252	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-Main-38	38	NW	East toe of landfill	Erosion	F3	Minor erosion of fines along east toe of landfill slope	7620700.004	389712.26	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-Main-39	39	NE	East toe of landfill	Erosion	F3	Minor erosion of fines along east toe of landfill slope	7620715.265	389693.467	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-Main-40	40	SW	East toe of landfill	Erosion	F2	Minor erosion of fines along east toe of landfill slope	7620721.006	389699.144	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-Main-41	41	SE	East toe of landfill	Erosion	F2, F3	Minor erosion of fines along east toe of landfill slope	7620721.497	389691.698	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-Main-42	42	S	Northeast corner of landfill	Erosion	F1	Minor erosion (Feature F1) on northeast corner of landfill not observed	7620731.342	389689.63	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-Main-43	43	NE	Northeast corner of landfill	N/A	N/A	Exposed bedrock northeast of landfill	7620731.242	389687.011	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-Main-44	44	NE	Northwest landfill cover	Settlement	A2	Settlement on northwest landfill cover	7620701.992	389647.519	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-Main-45	45	NW	Northwest landfill cover	Settlement	A3 + K2	Minor settlement on northwest landfill cover (Feature A). Sparse vegetation Feature K2.	7620680.553	389634.586	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-Main-46	46	S	Southwest landfill cover	Settlement	H	Minor settlement on southwest landfill cover	7620636.453	389620.7	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-Main-47	47	SE	South landfill cover	Settlement	B, I2	Minor settlement on south landfill cover	7620630.41	389653.427	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-Main-48	48	S	Middle south end of landfill	Vehicle ruts	L	Vehicle tracks; formerly referred to as Settlement Feature J	7620608.012	389694.776	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-Main-49	49	SW	Middle West end of Landfill	N/A	N/A	View to SW beyond toe of landfill; shows low area where 'beach-formation' sands are accumulating	7620630.41	389653.427	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-Main-50	50	NW	North end, middle of Main Landfill	N/A	N/A	View towards Access Road	7620706.489	389656.191	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-Main-51	51	W	North end, middle of Main Landfill	N/A	N/A	View towards Tier II Landfill	7620706.489	389656.191	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
xCAM-1-Tier2 E corner	x-tier2	N	View from Plaque to S of Tier II Disposal Facility; looking N	N/A	N/A	View from Plaque to S of Tier II Disposal Facility; looking N	7620729.99	389183.989	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
xCAM-1-view to SE from Plaque	x-view to SE	SE	View from Plaque towards SE	N/A	N/A	View from Plaque towards SE	7620729.99	389183.989	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel

Photo Identification	Figure ID	View Direction	Photo Location	Feature of Note	Feature ID	Caption	UTM		Date of Photo	Camera Information
							Northing	Easting		
						STATION EAST LANDFILL				
CAM-1-STNE-0	0	-	Cover page for Southeast Landfill	-	-	-	-	-	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-STNE-1	1	NE	Northwest side slope of landfill	N/A	N/A	Northwest side slope of landfill; looking NE	7620755.412	389748.01	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-STNE-2	2	SE	Southwest side slope toe of landfill	N/A	N/A	Southwest side slope toe of landfill; looking SE	7620751.809	389748.292	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-STNE-3	3	NW	West toe of landfill	Not Settlement	C6	This Feature C6 was not considered as Settlement but rather remnant from uneven grading at time of landfill construction.	7620741.8	389757.591	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-STNE-4	4	S	West toe of landfill	Erosion	B	Minor erosion on west toe of landfill not observed in 2019	7620781.307	389760.479	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-STNE-5	5	W	West side slope of landfill	Erosion	E	Minor erosion on west side slope of landfill	7620784.245	389763.414	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-STNE-6	6	NE	West side slope of landfill	Erosion	E	Minor erosion on west side slope of landfill	7620784.089	389755.666	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-STNE-7	7	NW	West side slope of landfill	N/A	N/A	View down west side slope of landfill; looking NW	7620780.135	389761.182	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-STNE-8	8	SE	West landfill cover	Settlement	C1	Minor settlement on west landfill cover	7620777.634	389765.968	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-STNE-9	9	SE	West landfill cover	Settlement	C2	Minor settlement on west landfill cover	7620769.249	389766.009	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-STNE-10	10	S	West landfill cover	Settlement	C4, C5	Minor settlement on west landfill cover	7620752.566	389759.534	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-STNE-11	11	SW	West landfill cover	Settlement	C2	Minor settlement on west landfill cover	7620771.736	389766.535	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-STNE-12	12	E	Northwest toe of landfill	N/A	N/A	Northwest toe of landfill; looking E	7620789.369	389758.545	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-STNE-13	13	SW	Northwest toe of landfill	N/A	N/A	Northwest toe of landfill; looking SW	7620804.858	389798.292	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-STNE-14	14	SE	Northeast toe of landfill	N/A	N/A	Northeast toe of landfill; looking SE	7620804.543	389803.195	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-STNE-15	15	SE	North landfill cover	Settlement	D1	Minor depression on north landfill cover	7620795.181	389795.347	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-STNE-16	16	NW	North landfill cover	Settlement	D4, D5	Minor depressions on north landfill cover	7620790.047	389823.504	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-STNE-17	17	NE	North landfill cover	Settlement	D3	Minor depression on north landfill cover	7620790.106	389818.867	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-STNE-18	18	NW	North toe of landfill	N/A	N/A	North toe of landfill, view to West	7620785.742	389849.54	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-STNE-19	19	S	Northeast toe of landfill	N/A	N/A	Northeast toe of landfill, view to South	7620785.742	389849.54	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-STNE-20	20	S	Northeast landfill cover	Settlement	D6	Minor settlement on northeast landfill cover	7620777.992	389844.233	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-STNE-21	21	NW	Northeast toe of landfill	N/A	N/A	Northeast toe of landfill	7620760.27	389867.995	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-STNE-22	22	SW	East toe of landfill	N/A	N/A	East toe of landfill	7620760.27	389867.995	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-STNE-23	23	SW	East landfill cover	N/A	N/A	View across east landfill cover; looking SW	7620751.962	389863.174	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-STNE-24	24	N	Northeast side slope	Erosion	F	Three minor adjacent erosion channels on northeast side slope	7620760.858	389853.709	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-STNE-25	25	SW	Northeast side slope	Erosion	F	Three minor adjacent erosion channels on northeast side slope	7620768.347	389860.657	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-STNE-26	26	SW	Southeast toe of landfill	N/A	N/A	Southeast toe of landfill	7620731.661	389861.961	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-STNE-27	27	SW	Cover on southeast side of landfill	N/A	N/A	Cover on southeast side of landfill, some loose material present	7620731.723	389854.157	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-STNE-28	28	NW	Southeast side of landfill	N/A	N/A	View across southeast side of landfill	7620712.929	389831.597	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-STNE-29	29	SW	Southeast toe of landfill	N/A	N/A	Southeast toe of landfill	7620708.436	389835.888	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-STNE-30	30	NE	Southeast toe of landfill	N/A	N/A	Southeast toe of landfill	7620657.591	389796.497	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-STNE-31	31	W	South end of landfill	N/A	N/A	South end of landfill, view to West	7620655.719	389793.481	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-STNE-32	32	NW	South landfill cover	N/A	N/A	View across south landfill cover; looking NW	7620661.862	389794.204	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-STNE-33	33	NE	Southwest toe of landfill	N/A	N/A	Southwest toe of landfill, view to NE	7620658.702	389773.691	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-STNE-34	34	S	Southwest toe of landfill	N/A	N/A	Southwest toe of landfill, view to South	7620709.75	389788.664	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-STNE-35	35	NW	Southwest toe of landfill	N/A	N/A	Southwest toe of landfill, view to NW	7620711.892	389788.325	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-STNE-36	36	S	Side landfill slope, middle west end	Settlement	A3	Minor settlement on southwest cover	7620722.415	389799.805	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-STNE-37	37	SW	Side landfill slope, middle west end	Settlement Erosion	A2 G	Minor settlement on landfill cover and minor erosion channel on side slope	7620731.032	389781.21	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-STNE-38	38	NE	Side landfill slope, middle west end	Settlement Erosion	A G	Minor settlement on landfill cover and minor erosion channel on side slope	7620724.253	389774.374	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-STNE-39	39	NE	Side landfill slope, middle west end	Settlement	A1	Minor settlement on landfill cover	7620733.61	389770.083	27 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel

Photo Identification	Figure ID	View Direction	Photo Location	Feature of Note	Feature ID	Caption	UTM		Date of Photo	Camera Information
							Northing	Easting		
						USAF LANDFILL				
CAM-1-USAF-1	1	SE	West side of Lobes 1 and 2	N/A	N/A	View from west of Lobes 1 and 2	7619299.498	388447.444	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-USAF-2	2	NE	West side slope of Lobe 1	N/A	N/A	West side slope of Lobe 1, view to NE	7619289.732	388463.932	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-USAF-3	3	SW	West side slope of Lobe 1	N/A	N/A	West side slope of Lobe 1, view to SW	7619287.849	388462.76	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-USAF-4	4	E	West side slope of Lobe 1	Erosion	A	Minor erosion on west side slope of Lobe 1	7619272.799	388452.816	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-USAF-5	5	W	West side slope of Lobe 1	Erosion	A	Minor erosion on west side slope of Lobe 1	7619272.719	388459.828	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-USAF-6	6	SE	Southwest side slope of Lobe 1	N/A	N/A	Southwest side slope of Lobe 1, view to SE	7619263.639	388454.556	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-USAF-7	7	WNW	Southwest side slope of Lobe 1	N/A	N/A	Southwest side slope of Lobe 1, view to NW	7619252.981	388470.571	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-USAF-8	8	E	Southeast side slope of Lobe 1	N/A	N/A	Southeast side slope of Lobe 1, view to East	7619247.558	388473.228	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-USAF-9	9	N	South side of Lobe 1	N/A	N/A	Corner marker post for USAF landfill located south of Lobe 1	7619249.571	388483.474	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-USAF-10	10	SW	Southeast side slope of Lobe 1	N/A	N/A	Southeast side slope of Lobe 1	7619263.126	388508.079	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-USAF-11	11	NW	East side slope of Lobe 1	N/A	N/A	East side slope of Lobe 1	7619268.062	388509.608	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-USAF-12	12	W	Lobe 1 -east side	N/A	N/A	View across Lobe 1 from east side	7619269.786	388504.538	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-USAF-13	13	W	East side of Lobe 1	N/A	N/A	Corner marker post for USAF landfill located east of Lobe 1	7619278.66	388511.508	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-USAF-14	14	SE	East side slope of Lobe 1	N/A	N/A	East side slope of Lobe 1	7619291.009	388499.779	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-USAF-15	15	W	North side slope of Lobe 1	N/A	N/A	North side slope of Lobe 1	7619292.213	388496.342	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-USAF-16	16	S	Lobe 1 - north side	N/A	N/A	View across Lobe 1 from north side	7619289.093	388478.208	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-USAF-17	17	NE	Lobe 2 - southwest corner	N/A	N/A	View across Lobe 2 from southwest corner	7619304.35	388467.643	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-USAF-18	18	E	South side slope of Lobe 2	N/A	N/A	South side slope of Lobe 2	7619304.35	388467.643	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-USAF-19	19	NW	West side slope of Lobe 2	N/A	N/A	West side slope of Lobe 2	7619300.601	388465.017	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-USAF-20	20	SW	South side slope of Lobe 2	N/A	N/A	South side slope of Lobe 2	7619308.238	388493.759	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-USAF-21	21	NW	East side slope of Lobe 2	N/A	N/A	East side slope of Lobe 2	7619310.832	388497.2	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-USAF-22	22	S	East side slope of Lobe 2	N/A	N/A	East side slope of Lobe 2	7619329.997	388500.199	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-USAF-23	23	W	North side slope of Lobe 2	N/A	N/A	North side slope of Lobe 2	7619332.005	388496.785	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-USAF-24	24	SW	Lobe 2 - northeast corner	N/A	N/A	View across Lobe 2 from northeast corner	7619326.888	388492.795	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-USAF-25	25	E	North side slope of Lobe 2	N/A	N/A	North side slope of Lobe 2	7619334.53	388462.642	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-USAF-26	26	S	West side slope of Lobe 2	N/A	N/A	West side slope of Lobe 2	7619333.231	388458.783	26 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel

Photo Identification	Figure ID	View Direction	Photo Location	Feature of Note	Feature ID	Caption	UTM		Date of Photo	Camera Information
							Northing	Easting		
						EAST LANDING LANDFILL				
CAM-1-EL-1	1	SE	NW of landfill	N/A	N/A	View from NW of landfill- from distance	7618329.295	388112.298	25 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-EL-2	2	SE	North toe of landfill	N/A	N/A	North toe of landfill, view to SE	7618241.23	388156.432	25 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-EL-3	3	S	West toe of landfill	N/A	N/A	West toe of landfill, view to South	7618240.531	388150.873	25 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-EL-4	4	E	North side of landfill	N/A	N/A	North side of landfill, view to East	7618234.773	388159.139	25 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-EL-5	5	SSW	West side of landfill	N/A	N/A	West side of landfill, view to South	7618232.237	388155.866	25 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-EL-6	6	SE	South side of landfill	N/A	N/A	South side of landfill, view to SE	7618215.916	388150.453	25 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-EL-6B	6B	SE	South side of landfill (identical to CAM-1 EL-6)	N/A	N/A	South side of landfill, view to SE	7618215.916	388150.453	25 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-EL-7	7	N	West side of landfill	N/A	N/A	West side of landfill	7618221.172	388150.777	25 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-EL-8	8	SE	Southwest corner of landfill	N/A	N/A	Southwest corner of landfill	7618212.936	388126.852	25 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-EL-9	9	E	Southwest end of landfill	N/A	N/A	View from southwest of landfill	7618220.499	388112.336	25 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-EL-10	10	SE	South toe of landfill	N/A	N/A	South toe of landfill, view to SE	7618199.406	388156.195	25 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-EL-11	11	SE	South toe of landfill	N/A	N/A	South toe of landfill, view to SE	7618194.336	388167.991	25 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-EL-12	12	NW	South toe of landfill	N/A	N/A	South toe of landfill	7618195.446	388204.294	25 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-EL-13	13	NE	East toe of landfill	N/A	N/A	East toe of landfill, view to NE	7618195.446	388204.294	25 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-EL-14	14	NW	South side of landfill	N/A	N/A	South side of landfill, view to NW	7618199.074	388207.879	25 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-EL-15	15	W	North toe of landfill	N/A	N/A	North toe of landfill, view to West	7618231.397	388214.431	25 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-EL-16	16	SW	Northeast landfill corner	N/A	N/A	View across landfill from northeast corner	7618221.857	388204.744	25 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-EL-17	17	NW	Landfill middle	N/A	N/A	View across centre of landfill	7618213.509	388205.704	25 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-EL-18	18	N	Northwest side slope	Erosion	C	Minor erosion on northwest side slope	7618234.205	388155.698	25 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-EL-19	19	S	Northwest side slope	Erosion Cracking	C E	Feature E completely infilled and no longer present	7618240.436	388156.128	25 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-EL-20	20	W	Northwest side slope	Cracking	E	Feature E completely infilled and no longer present	7618235.854	388156.239	25 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-EL-21	21	E	Northwest side slope	Erosion	C	View to E of erosion Feature C on NW side slope	7618237.073	388151.801	25 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-EL-22	22	S	West side slope of landfill	N/A	N/A	West side slope of landfill, view to South	7618230.264	388146.299	25 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-EL-23	23	SE	Southwest side slope	Settlement	A	Minor depressions on southwest side slope	7618211.875	388154.959	25 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-EL-24	24	SW	Southwest side slope	Settlement	A1	Minor depressions on southwest side slope	7618212.413	388159.354	25 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-EL-25	25	WSW	Southwest side slope	Other (ATV ruts)	D	ATV Ruts on southwest side slope	7618211.666	388161.701	25 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-EL-25B	25B	SW	Southwest side slope (identical to photo CAM-1-EL-26)	Other (ATV ruts)	D	ATV Ruts on southwest side slope	7618206.221	388157.574	25 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-EL-26	26	SW	Southwest side slope	Other (ATV Ruts)	D	ATV Ruts on southwest side slope	7618206.221	388157.574	25 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-EL-27	27	SE	Southwest side slope	Settlement	A2	Minor depression on southwest side slope	7618206.999	388156.327	25 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-EL-28	28	ESE	Southeast landfill cover	Cracking	B	West side of tension crack on southeast landfill cover	7618213.889	388112.298	25 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-EL-29	29	ESE	Southeast landfill cover	Cracking	B	Tension crack on southeast landfill cover	7618208.672	388125.132	25 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-EL-30	30	NW	Southeast landfill cover	Cracking	B	East side of tension crack on southeast landfill cover	7618202.697	388215.231	25 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-EL-31	31	NW	Southeast landfill cover	Cracking	B	Tension crack on southeast landfill cover	7618204.078	388208.407	25 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-EL-32	32	SE	Southeast landfill side slope	Settlement	F	Minor depression on southeast side slope- first observed in 2016	7618201.85	388191.71	25 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-EL-33	33	NE	Southeast landfill side slope	Settlement	G	Minor depression on southeast side slope- first observed in 2016	7618208.806	388166.39	25 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-EL-34	34	NE	Soil Sample location C1-34	N/A	N/A	Soil Sample location C1-34	7618205.107	388142.263	25 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-EL-35	35	SE	Soil Sample location C1-35	N/A	N/A	Soil Sample location C1-35	7618234.801	388139.912	25 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-EL-36	36	SSW	Soil Sample location C1-32	N/A	N/A	Soil Sample location C1-32	7618240.45	388197.25	25 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel
CAM-1-EL-37	37	N	Soil Sample location C1-33	N/A	N/A	Soil Sample location C1-33	7618189.157	388182.092	25 Aug. 2019	Fujifilm Finepix XP130 Aspect Ratio 4:3, Focal Length 5 to 25mm, 16.4 Mpixel

APPENDIX H3

CAM-1 Sample Photographs

Project Photographs

CAM-1 Select Site Visual Inspection Photographs
August 2019



Photo: CAM-1 BAN-1 (Borrow Area North Landfill)

Date:

27 August 2019

Description:

View southward across Lobes 1 and 2 of Borrow Area North Landfill.



Photo: CAM-1 BAN-6 (Borrow Area North Landfill)

Date:

27 August 2019

Description:

Settlement and vehicle ruts on south end of Lobes 1 and 2– looking Northeast at Settlement Feature A.

Project Photographs

CAM-1 Select Site Visual Inspection Photographs
August 2019



Photo: CAM-1 BAN-12 (Borrow Area North Landfill)

Date:

27 August 2019

Description:

View of Settlement Feature “H" – looking East.



Photo: CAM-1 BAN-15 (Borrow Area North Landfill)

Date:

27 August 2019

Description:

Lobe 3 NW corner; view to N showing settlement Features B1/B2.

Project Photographs

CAM-1 Select Site Visual Inspection Photographs
August 2019



Photo: CAM-1 BAN-39 (Borrow Area North Landfill)

Date:

27 August 2019

Description:

Minor settlement on east side of Lobes 4 and 5 at Landfill (Feature I)– view towards North. Also shows sparse vegetation (Feature Q)



Photo: CAM-1 BAN-52 (Borrow Area North Landfill)

Date:

27 August 2019

Description:

View of Feature O-tension crack, on Landfill Lobe 3 west side– view towards W.

Project Photographs

CAM-1 Select Site Visual Inspection Photographs
August 2019



Photo: CAM-1 NE-1 (Northeast Landfill)

Date:

27 August 2019

Description:

View along centreline of Lobe 2 – looking Southwest across Landfill



Photo: CAM-1 NE-18 (Northeast Landfill)

Date:

27 August 2019

Description:

Minor erosion on west side slope of Lobes 1 and 3 (Feature G)- looking SSE.

Project Photographs

CAM-1 Select Site Visual Inspection Photographs
August 2019

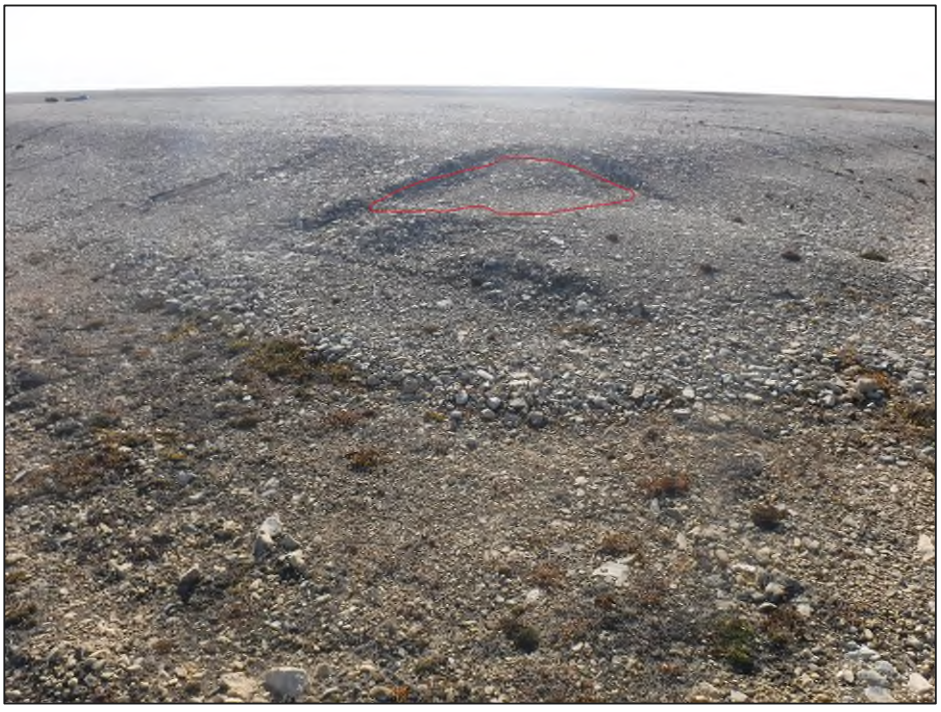


Photo: CAM-1 NE-22 (Northeast Landfill)

Date:
27 August 2019

Description:
Uneven side slope on west side slope of Lobes 1 and 3 (Feature B) – looking South.



Photo: CAM-1 NE-30 (Northeast Landfill)

Date:
27 August 2019

Description:
Minor erosion on north side slope of Lobes 1 and 3 (Feature C) – looking Southeast.

Project Photographs

CAM-1 Select Site Visual Inspection Photographs
August 2019



Photo: CAM-1 STNW-1 (Station West Landfill)

Date:
26 August 2019

Description:
View across east side of landfill cover- looking West.



Photo: CAM-1 STNW-4 (Station West Landfill)

Date:
26 August 2019

Description:
Minor settlement on landfill slope at east side of landfill (view of Feature A3) – looking NW.

Project Photographs

CAM-1 Select Site Visual Inspection Photographs
August 2019



Photo: CAM-1 STNW-33 (Station West Landfill)

Date:
26 August 2019

Description:
Minor settlement on northwest landfill cover (Feature N)- looking NE

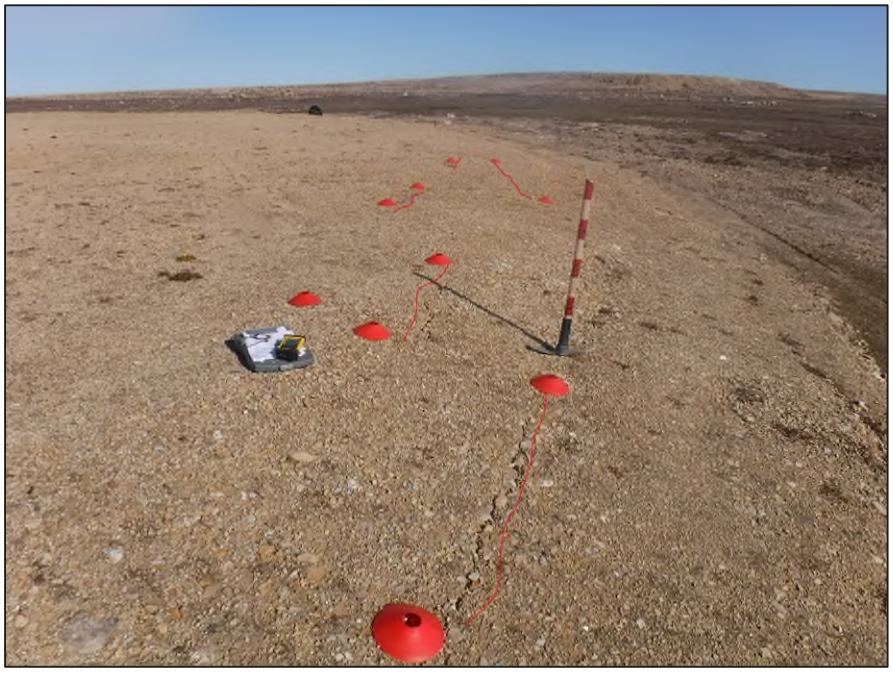


Photo: CAM-1 STNW-20 (Station West Landfill)

Date:
26 August 2019

Description:
Feature G- Partially infilled cracks on south side slope –looking towards E. Features G5, G4, G3 in foreground.

Project Photographs

CAM-1 Select Site Visual Inspection Photographs
August 2019



Photo: CAM-1 STNW-28 (Station West Landfill)

Date:

26 August 2019

Description:

Staining of cover material at southwest corner of landfill (caused by increase soil quantity and reduced granular materials) -looking E.



Photo: CAM-1 STNW-30 (Station West Landfill)

Date:

26 August 2019

Description:

West side of landfill-looking South.

Project Photographs

CAM-1 Select Site Visual Inspection Photographs
August 2019



Photo: CAM-1 NHW-8 (Non-Hazardous Waste Landfill)

Date:

27 August 2019

Description:

View across landfill cover from west corner– looking E.



Photo: CAM-1 NHW-11 (Non-Hazardous Waste Landfill)

Date:

27 August 2019

Description:

Exposed geotextile debris on northwest cover (Feature B)- looking SE.

Project Photographs

CAM-1 Select Site Visual Inspection Photographs
August 2019



Photo: CAM-1 NHW-14 (Non-Hazardous Waste Landfill)

Date:

27 August 2019

Description:

Exposed geotextile debris on northeast cover (Feature B) – looking NE.



Photo: CAM-1 NHW-28 (Non-Hazardous Waste Landfill)

Date:

27 August 2019

Description:

Minor depression on south cover (Feature F) - looking NW.

Project Photographs

CAM-1 Select Site Visual Inspection Photographs
August 2019



Photo: CAM-1 NHW-24 (Non-Hazardous Waste Landfill)

Date:

27 August 2019

Description:

View of Monitoring well MW-4 –looking S.



Photo: CAM-1 NHW-17 (Non-Hazardous Waste Landfill)

Date:

27 August 2019

Description:

Northeast side slope of landfill – looking NW.

Project Photographs

CAM-1 Select Site Visual Inspection Photographs
August 2019



Photo: CAM-1 T2-2
(Tier II Disposal Facility)

Date:
27 August 2019

Description:
View of east side of Disposal Facility (DF)– looking NW.



Photo: CAM-1 T2-14
(Tier II Disposal Facility)

Date:
27 August 2019

Description:
Vertical thermistor VT-3– looking E.

Project Photographs

CAM-1 Select Site Visual Inspection Photographs
August 2019



Photo: CAM-1 T2-26 (Tier II Disposal Facility)

Date:

27 August 2019

Description:

Minor erosion channel on north corner of DF – looking S (Feature B1- Erosion).



Photo: CAM-1 T2-36 (Tier II Disposal Facility)

Date:

27 August 2019

Description:

Minor erosion on northwest side slope of DF – looking SE (Feature B3- Erosion).

Project Photographs

CAM-1 Select Site Visual Inspection Photographs
August 2019

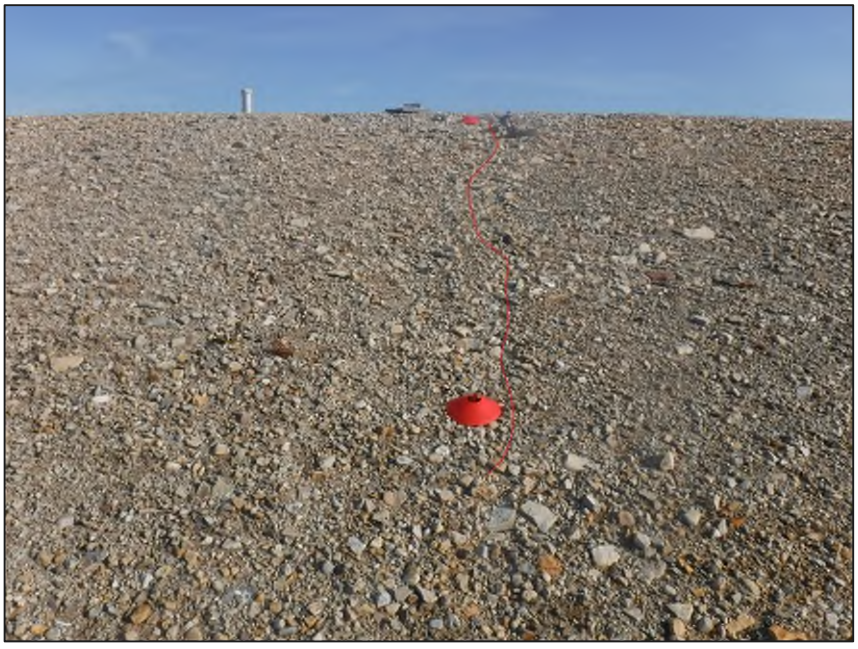


Photo: CAM-1 T2-56
(Tier II Disposal Facility)

Date:
27 August 2019

Description:
Minor erosion on west side slope –looking SE (Feature E- Erosion).



Photo: CAM-1 T2-50
(Tier II Disposal Facility)

Date:
27 August 2019

Description:
Small area of staining on central cover – looking S (Feature F- Staining).

Project Photographs

CAM-1 Select Site Visual Inspection Photographs
August 2019



Photo: CAM-1 SE-4 (Southeast Landfill)

Date:

26 August 2019

Description:

West side slope Lobe 1 – Vehicle Ruts (Feature D) – looking NW.



Photo: CAM-1 SE-10 (Southeast Landfill)

Date:

26 August 2019

Description:

View from SW corner of Lobe 1 – looking NE.

Project Photographs

CAM-1 Select Site Visual Inspection Photographs
August 2019

Photo: CAM-1 SE-24 (Southeast Landfill)

Date:

26 August 2019

Description:

Settlement- at Lobe 2, north side (Feature A + A2) – looking N.

Photo: CAM-1 SE-22 (Southeast Landfill)

Date:

26 August 2019

Description:

Looking NW across Lobe 2 of Southeast Landfill.

Project Photographs

CAM-1 Select Site Visual Inspection Photographs
August 2019



Photo: CAM-1 STNE-2 (Station East Landfill)

Date:
27 August 2019

Description:
Southwest side slope toe of landfill – looking SE.



Photo: CAM-1 STNE-6 (Station East Landfill)

Date:
27 August 2019

Description:
Minor erosion on west side slope of landfill- looking NE (Feature E).

Project Photographs

CAM-1 Select Site Visual Inspection Photographs
August 2019



Photo: CAM-1 STNE-11 (Station East Landfill)

Date:

27 August 2019

Description:

Minor settlement on West landfill cover (Feature C2)-– looking SW.

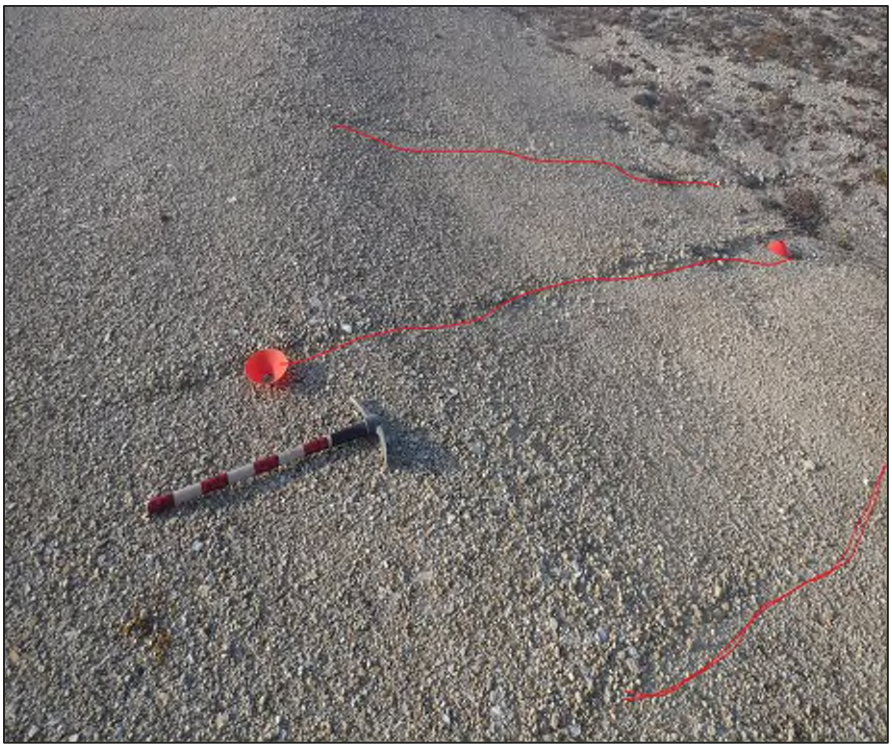


Photo: CAM-1 STNE-24 (Station East Landfill)

Date:

27 August 2019

Description:

Three minor erosion channels on northeast side slope - looking N (Feature F).

Project Photographs

CAM-1 Select Site Visual Inspection Photographs
August 2019



Photo: CAM-1 STNE-32 (Station East Landfill)

Date:

27 August 2019

Description:

View across south landfill cover– looking NW.



Photo: CAM-1 STNE-35 (Station East Landfill)

Date:

27 August 2019

Description:

Southwest toe of landfill - looking NW.

Project Photographs

CAM-1 Select Site Visual Inspection Photographs
August 2019



Photo: CAM-1 STNE-36 (Station East Landfill)

Date:
27 August 2019

Description:
Minor settlement on southwest cover – looking S (Feature A3).



Photo: CAM-1 STNE-37 (Station East Landfill)

Date:
27 August 2019

Description:
Minor settlement on landfill cover and minor erosion channel on side slope - looking SW (Features A2 (Settlement) and G (Erosion)).

Project Photographs

CAM-1 Select Site Visual Inspection Photographs
August 2019



Photo: CAM-1 Main-6 (Main Landfill)

Date:

26 August 2019

Description:

Minor erosion on toe of northwest side slope– looking NE (Feature D). Washing of fines/ beach sand formation during spring ponding.



Photo: CAM-1 Main-7 (Main Landfill)

Date:

26 August 2019

Description:

West side slope of Main landfill – looking S.

Project Photographs

CAM-1 Select Site Visual Inspection Photographs
August 2019



Photo: CAM-1 Main-17 (Main Landfill)

Date:

26 August 2019

Description:

Minor erosion on southwest side toe of slope of landfill– looking NW (Feature E). Washing of fines/ beach sand formation during spring ponding.

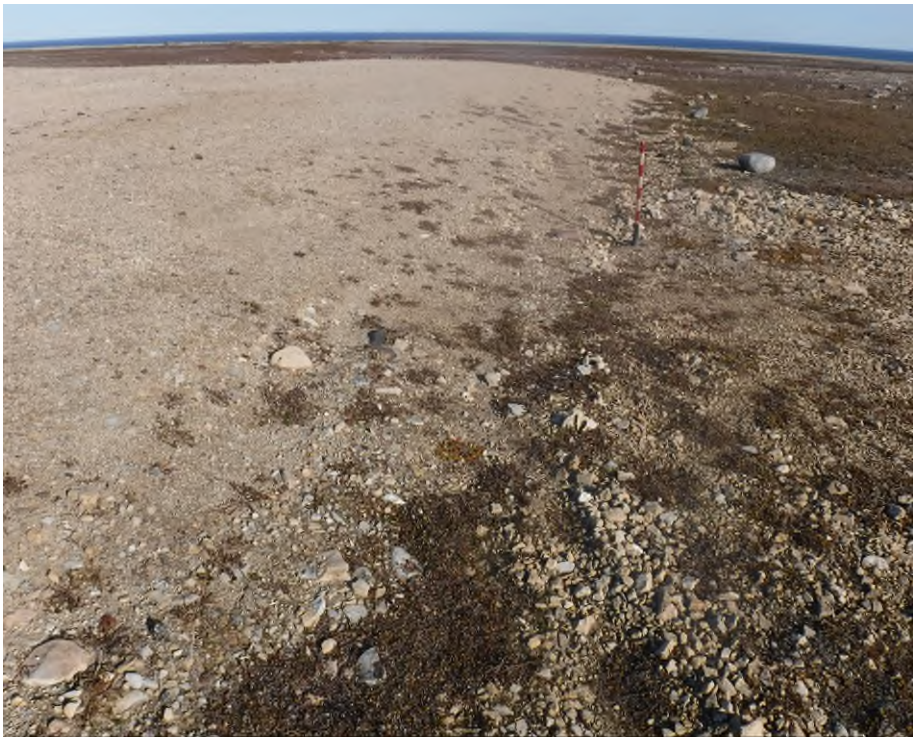


Photo: CAM-1 Main-26 (Main Landfill)

Date:

26 August 2019

Description:

South toe of Main landfill – looking SE.

Project Photographs

CAM-1 Select Site Visual Inspection Photographs
August 2019

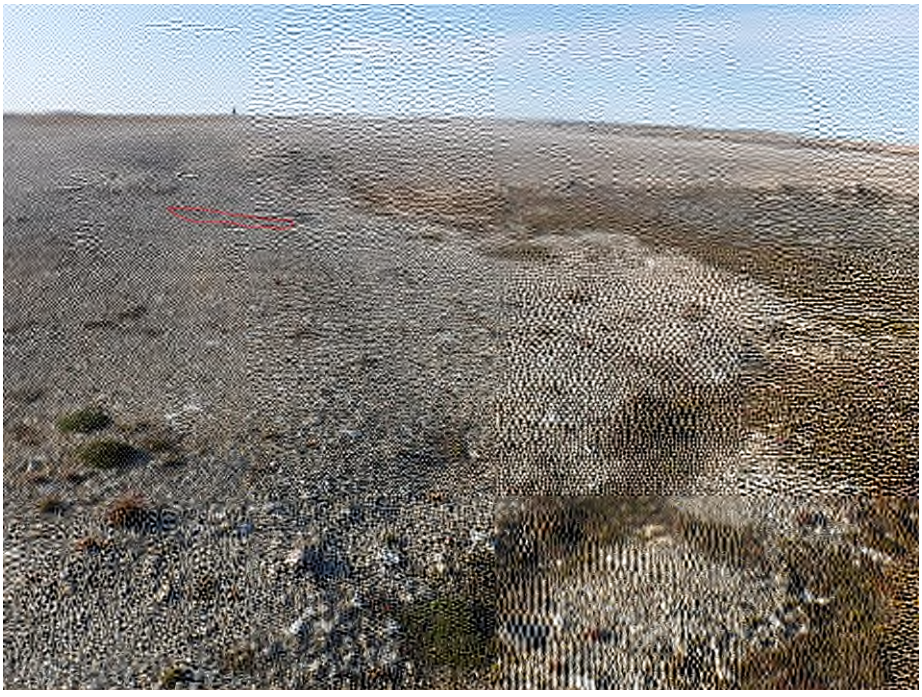


Photo: CAM-1 Main-31 (Main Landfill)

Date:

26 August 2019

Description:

Minor depression on southeast side slope – looking NW (Feature C3 shown).



Photo: CAM-1 Main-36 (Main Landfill)

Date:

26 August 2019

Description:

View across east side of Main landfill – looking W.

Project Photographs

CAM-1 Select Site Visual Inspection Photographs
August 2019

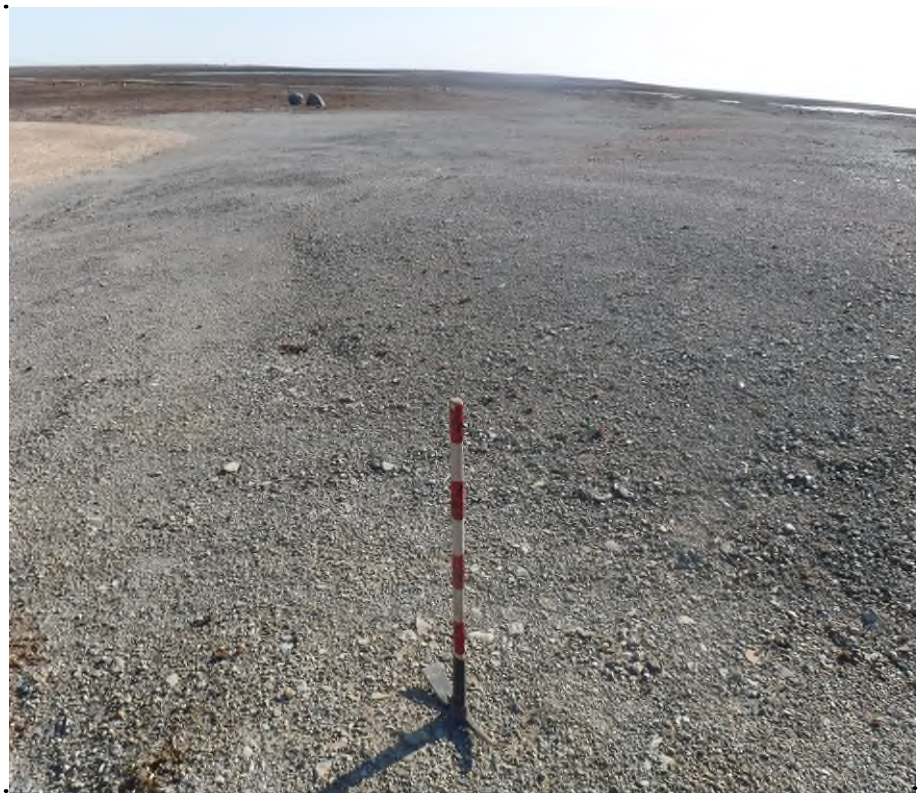


Photo: CAM-1 USAF-2 (USAF Landfill)

Date:

26 August 2019

Description:

West side slope of Lobe 1– looking NE.

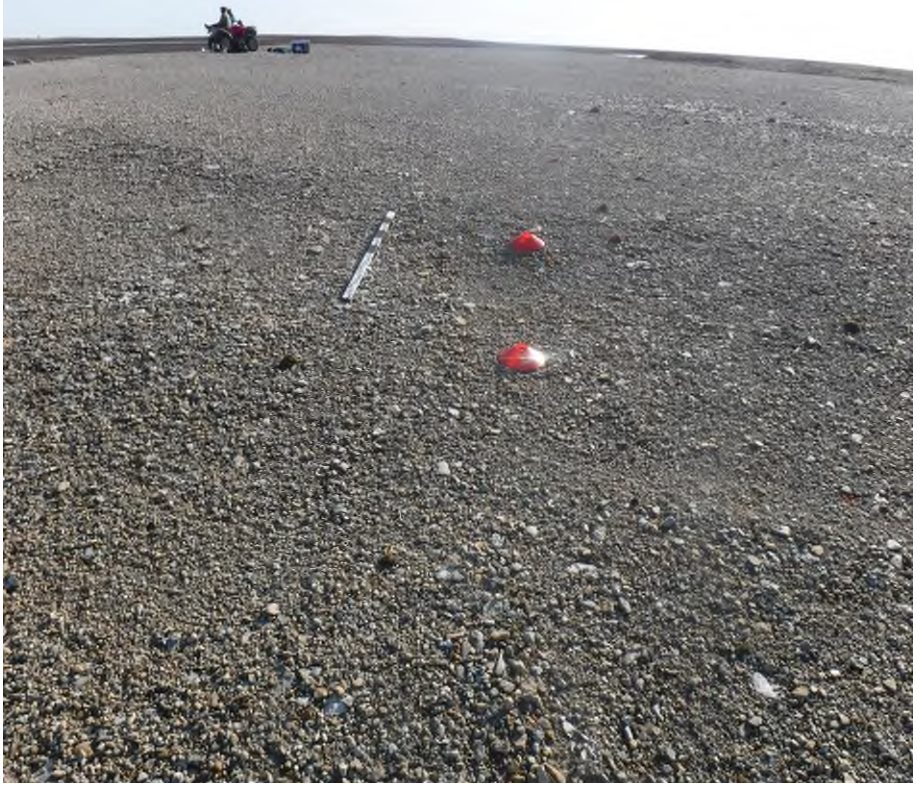


Photo: CAM-1 USAF-4 (USAF Landfill)

Date:

26 August 2019

Description:

Minor erosion on west side slope of Lobe 1 of USAF landfill – looking E (Feature A).

Project Photographs

CAM-1 Select Site Visual Inspection Photographs
August 2019



Photo: CAM-1 USAF-9 (USAF Landfill)

Date:
26 August 2019

Description:
Corner marker post for USAF landfill located south of Lobe 1 – looking N.



Photo: CAM-1 USAF-24 (USAF Landfill)

Date:
26 August 2019

Description:
View across Lobe 2 from northeast corner of USAF landfill – looking SW.

Project Photographs

CAM-1 Select Site Visual Inspection Photographs
August 2019



Photo: CAM-1 EL-4 (East Landing Landfill)

Date:
25 August 2019

Description:
North side of East Landing landfill – looking E.



Photo: CAM-1 EL-24 (East Landing Landfill)

Date:
25 August 2019

Description:
Minor depressions on southwest side slope – looking SW (Feature A1).

Project Photographs

CAM-1 Select Site Visual Inspection Photographs
August 2019



Photo: CAM-1 EL-26 (East Landing Landfill)

Date:

25 August 2019

Description:

ATV tire ruts on southeast side slope of East Landing landfill – looking SW (Feature D).



Photo: CAM-1 EL-29 (East Landing Landfill)

Date:

25 August 2019

Description:

Tension crack on southeast landfill cover– looking ESE (Feature B).

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