THE COLLECTION OF LANDFILL MONITORING DATA AT THE FORMER PIN-2 DISTANT EARLY WARNING LINE SITE

Cape Young, Nunavut

Revised Final Report 2016
(O/Ref.: CD3654)
(Y/Ref.: DLC MON (KITIK 13))

DEFENCE CONSTRUCTION CANADA

April 2017

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DEFENCE CONSTRUCTION CANADA

April 2017

Presented to: Nahed Farah
Defence Construction Canada

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1 OUTLINE

1.1 OBJECTIVE AND SCOPE OF WORK

The objective of the Defence Construction Canada (DCC) Landfill Monitoring Program is to collect sufficient information to assess the performance of landfills at former Distant Early Warning (DEW) Line Sites that have been remediated, from a geotechnical and environmental perspective. DCC has specified the requirements for the Landfill Monitoring Program in the document entitled *Terms of Reference – Contracting Services for the Collection of Landfill Monitoring Data – PIN-2 Cape Young, PIN-4 Byron Bay, CAM-1 Jenny Lind Island - DEW LINE SITES, NUNAVUT, KITIKMEOT REGION, DCC PROJECT #: DLC MON (KITIK13)*, April 18, 2013. This report contains a summary of the findings from the 2016 inspection of the PIN-2 Cape Young site.

During the 2016 monitoring program, a visual inspection and soil sampling has been completed at all site landfills identified on the overall site plan (Figure PIN-2.1). Groundwater sampling has also been completed at the Tier II Disposal Facility and Non-Hazardous Waste Landfill, and thermal monitoring has been completed at the Tier II Disposal Facility. Table I summarizes the monitoring requirements of the 2016 season. No deviations from the Terms of reference (TOR) have been experienced while completing the 2016 monitoring.

Table I: 2016 Monitoring Requirements for PIN-2 Landfills

Landfill	Visual Inspection	Soil Sampling	Groundwater Sampling	Thermal Monitoring
Airstrip Landfill	✓	✓		
USAF Landfill	✓	✓		
Station West Landfill	✓	✓		
Tier II Disposal Facility	✓	✓	✓	✓
Airstrip South Landfill	✓	✓		
Pallet Line West Landfill	✓	✓		
Non-Hazardous Waste Landfill	✓	✓	✓	
South Landfill - East	✓	✓		
South Borrow Landfill	✓	✓		

1.2 FIELD PROGRAM STAFF AND TIMING

The 2016 on-site field program at the former PIN-2 DEW line site took place on August 15 to 17, 2016. Englobe Corp. (Englobe) subcontracted Sila Remediation Inc. (Sila), from Igloolik, Nunavut, to perform the fieldwork. The field program was executed by Mr. Andrew Passalis with the assistance of five local representatives hired by Sila, whose names and responsibilities are detailed below:

- Mr. Andrew Passalis, Project Engineer (Englobe)
- Susie Koaha, Field Technician (Sila)
- Matthew Ohokannoak, Field Technician (Sila)
- Gordon Anayoak, Field Technician (Sila)
- Kaylene Epilon, Field Technician (Sila)
- Joe Koaha, Wildlife Monitor (Sila)

1.3 2016 WEATHER CONDITIONS

Seasonally warm weather conditions have been observed during the 2016 monitoring event. Skies were generally clear upon arrival, however became overcast with extensive periods of heavy fog and mist by late afternoon, and extended through to the evening of August 16, 2016. On August 17, 2016, skies were partly sunny with isolated periods of light rain scattered throughout the area. Daytime high temperatures generally ranging between 10 °C and 18 °C with light to moderate northwest winds between 10-25 km/h have been observed on August 15 and 16, 2016, whereas strong winds gusting up to 40-50 km/h were noted on August 17, 2016.

1.4 REPORT FORMAT

This report describes the work carried out in August 2016 at the nine landfills at PIN-2. Results from soil and groundwater sampling, thermal monitoring, and visual inspection of the sites are also presented in the formats described in the TOR (Reference A in Section 2.8). An electronic version of the report and its associated tables, figures, and data files are included in an Addendum DVD-ROM.

The report is organized with a separate section for each of the landfill areas. Each section contains all relevant information for that landfill area for the 2016 Landfill Monitoring Program. The following information is provided in each landfill section:

- Visual inspection checklist
- Visual inspection drawing mark-up
- A selection of visual inspection photos
- Thermal monitoring inspection reports (where applicable)
- Summary of 2016 soil analytical data
- Summary of 2016 groundwater analytical data (where applicable)
- Monitoring well development/sampling reports (where applicable)

An overall site plan (Figure PIN-2.1) presents an overview of the former PIN-2 site with the localization of each landfill areas. For the photographic record, a photographic index has been completed as per the TOR for each of the landfill areas. The full resolution photos are included in electronic format in the Addendum DVD-ROM. Aerial photo descriptions can be found in the photolog of the relevant landfill. Certificates of Analyses, Quality Assurance/Quality Control (QA/QC) analytical results and field notes are attached in the Annexes.

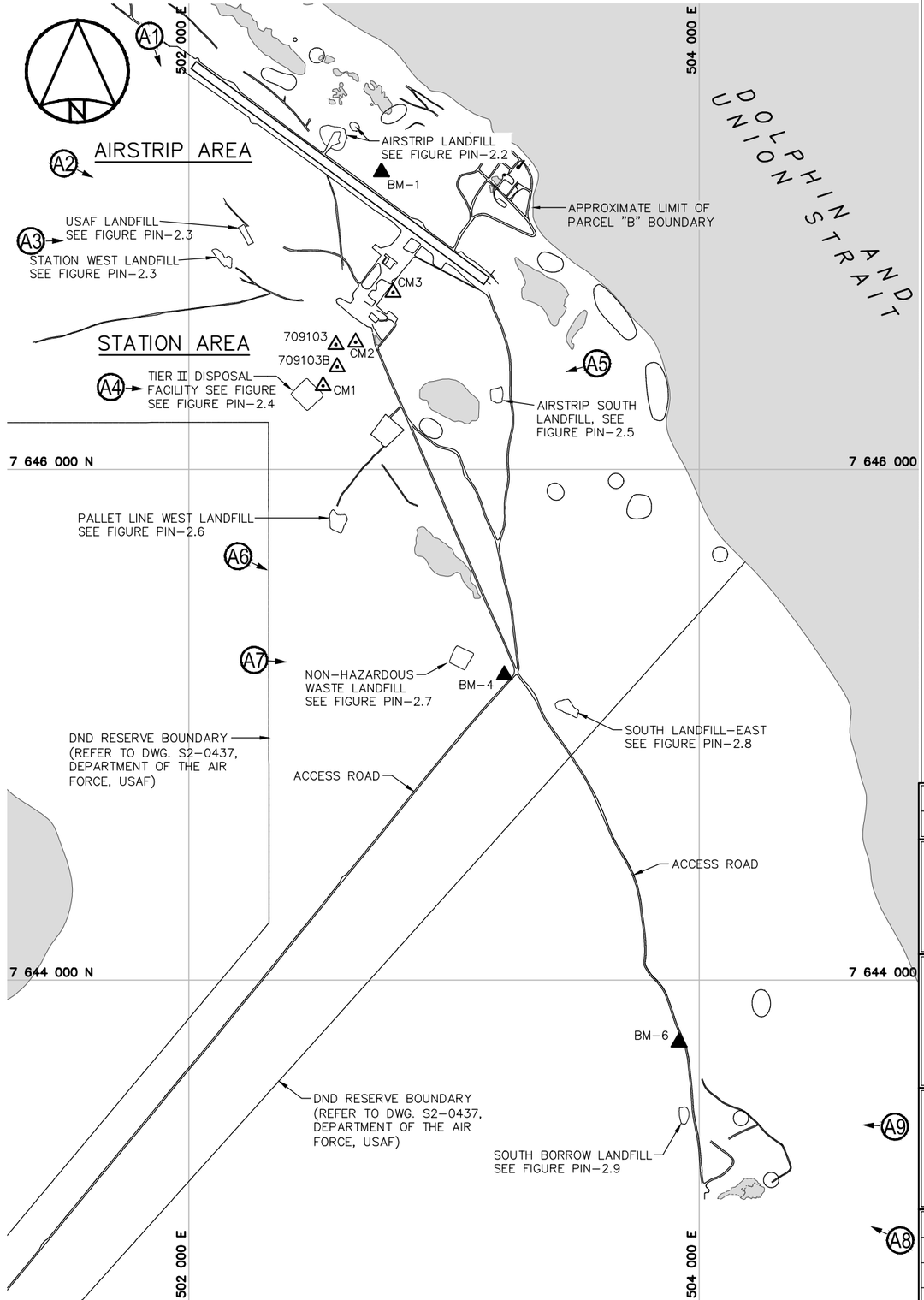
LOCATION OF CAPE YOUNG WITHIN NUNAVUT TERRITORY

SCALE: NTS

SURVEY CONTROL MONUMENTS				
NO.	UTM COORDINATES		ELEV.	DESCRIPTION
	NORTHING	EASTING		
CM1	7 646 327.029	502 525.754	13.804	PIN-2 BASELINE STA. 0+00
CM2	7 646 497.473	502 653.662	13.993	PIN-2 BASELINE STA. 7+00
CM3	7 646 692.507	502 799.974	14.534	PIN-2 BASELINE STA. 15+00
709103	7 646 487.974	502 576.191	13.790	GEODETIC BENCHMARK
709103B	7 646 400.920	502 581.212	13.954	GEODETIC BENCHMARK

NOTE: BASELINE STATIONS SHOWN ARE IN IMPERIAL UNITS.

PERMANENT BENCHMARK (AS-BUILT)				
NO.	UTM COORDINATES		ELEV.	DESCRIPTION
	NORTHING	EASTING		
BM-1	7 647 164.203	502 754.676	14.398	25mm DIA. STEEL PIPE
BM-4	7 645 194.471	503 236.108	17.189	25mm DIA. STEEL PIPE
BM-6	7 643 756.513	503 920.587	13.296	25mm DIA. STEEL PIPE



LEGEND

- CM1 — SURVEY CONTROL MONUMENT (5)
- BM-1 — PERMANENT BENCHMARK LOCATION (3)
- ARCHAEOLOGICAL FEATURES
- APPROXIMATE LOCATION OF PROPERTY BOUNDARY
- BODY OF WATER
- (X) — AERIAL PHOTOGRAPH

0m 200m 400m 600m 800m 1000m

NO.	VERSION	DATE	BY	VERIF.	APPR.
00	FINAL	17-03-03	J.P.	J.-P.P.	M.F.

Construction de Défense Canada
Defence Construction Canada

COLLECTION OF LANDFILL MONITORING DATA

PIN-2, CAPE YOUNG, NUNAVUT

LOCATION PLAN

Englobe
1260 Lebourgneuf Boulevard
Suite 400
Quebec (Quebec) Canada, G2K 2G2
Phone : 418.704.8091
www.englobecorp.com

MEASUREMENT UNIT	SCALE:	DATE (month-year):
Metre	1 : 20,000	JANUARY 2017
DRAWN BY: J. POULIN	VERIFIED BY: J.-P. PELLETIER	APPROVED BY: M. FLEURY P. ENG
PROJECT NO: P-0009730-0-05-503	DRAWING NO: P-0009730-0-05-503-PIN-2A-PL	PAGE PL

FIGURE PIN-2.1

2 METHODOLOGY

2.1 VISUAL INSPECTION

Data and information collected during the visual inspection of the PIN-2 landfills are included in the visual inspection data sheets. These data sheets include inspection data such as the location of settlement, erosion, frost action, sloughing and cracking, animal burrows, vegetation cover and stress, staining, seepage points, exposed debris, and any other features of note.

Each feature was identified with an alphabetical or numerical tag to be used consistently each year in an effort to track changes in conditions for each specific feature.

Digital photos have been taken to illustrate the current state of the landfills as well as features of interest. Annotated sketches/diagrams are included in the report for each landfill.

The photos have been taken with a Sony DSC-TX5 10.2 megapixel (MP) digital camera. Full resolution digital .jpg copies are available on the DVD-ROM. The photo log, including the local coordinates of the location where the photo has been taken, orientation (relative to map north), features of note, and picture numbers are included with each landfill report.

2.2 SOIL SAMPLING

The soil sampling methodology conformed to guidance provided in the following Canadian Council of Ministers of the Environment (CCME) documents:

- CCME Guidance Document on the *Management of Contaminated Sites in Canada*, April 1997, CCME PN 1279. (CCME catalogue - http://www.ccme.ca/pdfs/cat_eng.pdf).
- CCME EPC-NCS62E Guidance Manual on *Sampling, Analysis, and Data Management for Contaminated Sites* - Volume I: Main Report, Dec 1993 (CCME catalogue - http://www.ccme.ca/pdfs/cat_eng.pdf).
- CCME EPC-NCS66E Guidance Manual on *Sampling, Analysis, and Data Management for Contaminated Sites* - Volume II: Analytical Method Summaries, Dec. 1993 (CCME catalogue - http://www.ccme.ca/pdfs/cat_eng.pdf).
- Reference method for the *Determination of Petroleum Hydrocarbons in Soil - Tier I Method*, 2001.
- CCME *Subsurface Assessment Handbook for Contaminated Sites*, March 1994, EPC-NCSRP-48E (CCME catalogue - http://www.ccme.ca/pdfs/cat_eng.pdf).

Specific methodologies used for the collection of soil samples during the August 2016 landfill monitoring program are summarized in Englobe's Standard Operating Procedures (SOPs). No deviation occurred from the SOP.

The soil samples were analyzed for requested parameters (TPH [F1-F4], selected metals and PCB) as specified by DCC. Table II below summarizes the soil sampling at PIN-2 during the August 2016 field program:

Table II: Summary of Soil Sampling at PIN-2 - August 2016

Landfill Site	Soil Sample Locations					
USAF Landfill	P2-1	P2-2	P2-3	P2-4		
Station West Landfill	P2-5	P2-6	P2-7	P2-8		
Pallet Line West Landfill	P2-9	P2-10	P2-11	P2-12		
Airstrip South Landfill	P2-13	P2-14	P2-15	P2-16		
South Landfill - East	P2-17	P2-18	P2-19	P2-20		
Airstrip Landfill	P2-21	P2-22	P2-23	P2-24	P2-25	P2-26
South Borrow Landfill	P2-27	P2-28	P2-29	P2-30		
Tier II Disposal Facility	MW-1	MW-2	MW-3	MW-4		
Non-Hazardous Waste Landfill	MW-5	MW-6	MW-7	MW-8		

2.3 GROUNDWATER SAMPLING

The groundwater sampling methodology conformed to guidance provided in the following CCME documents:

- CCME EPC-NCS62E Guidance Manual on *Sampling, Analysis and Data Management for Contaminated Sites* - Volume I: Main Report, Dec 1993 (CCME catalogue - http://www.ccme.ca/pdfs/cat_eng.pdf).
- CCME EPC-NCS66E Guidance Manual on *Sampling, Analysis and Data Management for Contaminated Sites* - Volume II: Analytical Method Summaries, Dec. 1993 (CCME catalogue - http://www.ccme.ca/pdfs/cat_eng.pdf).

Specific methodologies used for the measurement of water level and free product, and for the collection of groundwater samples during the August 2016 landfill monitoring program are summarized in Englobe's SOP. No deviation occurred from the SOP.

Unfortunatelly, the analysis of PHC fraction F4 was not requested to the laboratories as we were looking for C_6-C_{34} concentrations. A copy a F3 results were mistakenly presented as F4 results in the 0A preliminary version.

The 2016 field program included the sampling of four monitoring wells at the Tier II Disposal Facility and three monitoring wells at the Non-Hazardous Waste Landfill (NHWLF). One monitoring well (MW-08) located upgradient of the NHWLF was found to be dry at the time of monitoring, and consequently could not be sampled. A summary of the groundwater sampling undertaken at PIN-2 is presented in Table III.

In all monitored wells, no evidence of free-phase hydrocarbon product was detected. Results of the free product monitoring and well purging observations are included in Monitoring Well Development and Sampling Record forms, which are included in appropriate sections of this report.

Table III: Summary of Groundwater Sampling at PIN-2 - August 2016

Landfill Site	Groundwater Sample Locations			
Tier II Disposal Facility	MW-1	MW-2	MW-3	MW-4
NHWLF	MW-5	MW-6	MW-7	MW-8 (dry)

2.4 THERMAL MONITORING

The 2016 thermal monitoring program at PIN-2 consisted of an inspection of four thermistors and dataloggers, the downloading of datasets and manual reading of thermistors at all datalogger locations. Specific detailed information regarding temperature data is contained in the Tier II Disposal Facility section of this report.

2.5 FIELD NOTES

Field notes from the 2016 Landfill Monitoring program, including soil and water sampling, are included in Annex 3 for reference. Notes were written in field books, previously prepared logs or entered directly into a field computer. The notes were scanned to an Adobe PDF document for future reference and backup. Locations of all observations and features for the visual inspection were recorded using a Garmin Oregon 400 hand held GPS, which included a combination of continuous tracks and discrete way points. Data sets collected from the individual vertical thermistors were downloaded directly to a field laptop computer.

2.6 QUALITY CONTROL

Samples were submitted to Maxxam Analytical inc. (Maxxam) and Exova laboratories using laboratory specific bottles and jars.
Englobe implemented standard sample collection techniques to decrease the likelihood of compromising collected samples. The methods used for sample collection are presented in Englobe' SOP.

COC forms have been prepared prior to mobilisation to the site, and completed by the Project Engineer after sample collection. The samples have been refrigerated in chilled coolers prior to off-site shipment by commercial cargo carriers (First Air Cargo, Canadian North Cargo and Air Canada) directly to Maxxam (via Yellowknife) and Exova laboratories in Edmonton and ESG, via Ottawa to Kingston, Ontario (via Edmonton), where they were checked in by laboratory representatives. All analyses were completed as specified on COC forms.

2.7 QA/QC PROCEDURES

Englobe uses standard QA/QC procedures as specified in the TOR and CCME Guidance Documents for this project. The following is a summary of the analytical QA/QC samples collected:

- 10 % field blind duplicate samples of soil and water have been sent to Maxxam. Results can be found in Annex 1.
- 10 % inter-laboratory duplicate samples were sent to Exova (to determine if variation in procedures cause significant difference in analytical results).
- 10 % archival samples of soil have been sent to ESG.

Maxxam has QA/QC measures for sample analysis. Maxxam QC samples will typically be introduced into the analytical stream on a batch basis, normally comprising 20 % – 30 % of the total sample throughput. A batch size of 15 – 20 typically includes one of each control standard, reference standard, surrogate spike, duplicate sample, and method blank. A control sample is a blank matrix fortified with analyte of interest and carried through all analytical steps to monitor lab performance (recovery & basis) on clean matrix. A reference sample is a sample with predetermined certified characteristics that undergoes the same processing as samples used to evaluate accuracy of procedure. A surrogate spike is an organic compound with similar chemical composition and behaviour in the analytical process used to monitor recovery in each sample.

A duplicate sample occurs when client samples are analyzed in duplicate to monitor reproducibility in analysis and preparation. Finally, a method blank is a blank sample matrix carried through the same procedure as the samples that is used to monitor for process contamination.

Exova follows similar in-house QA/QC procedures. Exova and Maxxam QA/QC reports can be found within the certificates of analysis in Annex 1.

2.8 PROJECT REFERENCES

The following references are specifically relevant to the 2016 Landfill Monitoring activities:

A. Invitation to Tender - *Contractor Services for the Collection of Landfill Monitoring Data: PIN-2 Cape Young, PIN-4 Byron Bay, CAM-1 Jenny Lind Island - DEW LINE SITES, NUNAVUT, KITIKMEOT REGION, DCC PROJECT #: DLC MON(KITIK13)*,

B. Terms of Reference *(TOR) – Contracting Services for the Collection of Landfill Monitoring Data – PIN-2 Cape Young, PIN-2 Cape Young, CAM-1 Jenny Lind Island - DEW LINE SITES, NUNAVUT, KITIKMEOT REGION, DCC PROJECT #: DLC MON (KITIK13)*, April 18, 2013.

C. Technical Proposal – *The Collection of Landfill Monitoring Data for the DEW Line Sites*: *PIN-2 Cape Young, PIN-2 Cape Young, CAM-1 Jenny Lind Island - DEW LINE SITES, NUNAVUT, KITIKMEOT REGION, DCC PROJECT #: DLC MON (KITIK13)*, April 18, 2013. *Project Ref 6121-150,* May 2013.

D. *Post-Field Progress Report, PIN-2 Landfill Monitoring 2016*, September 2016.

3 AIRSTRIP LANDFILL

3.1 SUMMARY

On August 16, 2016 a visual inspection has been completed at the Airstrip Landfill. Soil sampling was completed at six stations located upgradient and downgradient of the two landfill lobes.

No TPH, PCB or relatively high metal concentrations have been detected in any of the soil samples collected. Slightly elevated concentrations of chromium have been detected at depth at upgradient location P2-21 (16 mg/kg) and at surface at downgradient location P2-24 (14 mg/kg). Similarly, a slightly elevated concentration of copper has been detected at depth at downgradient location P2-25 (8.1 mg/kg).

As of 2016, no features with “significant” or “unacceptable” severity ratings have been identified in the Preliminary Stability Assessment of the Airstrip Landfill. Indications of minor erosion have been noted at a single location near the north toe of Lobe A (Feature F). This feature was not observed during the previous 2015 assessment.

Indications of minor settlement were noted at three locations, including linear depressions on the northeast side slope of Lobe A (Feature B), south side slope of Lobes E & F (Feature C) and one new feature on the northeast side slope (Feature E). Feature B was previously observed during the 2014 and 2015 assessments with a marginal increase in length (1.5 to 2.2 m) and width (0.3 to 0.5 m) from the previous 2015 assessment. Feature C was first observed during the 2015 assessment, and has shown a marginal increase in depth from 0.07 to 0.10 m since. Feature E has not been noted during the previous 2015 assessment. Evidence of surface debris was noted at the landfill with six small pieces of miscellaneous metal debris in proximity to the landfill, including four existing pieces (Feature A) located southwest and northwest of Lobes A, E & F, as well as one existing and one newly observed piece (Feature D) located north of Lobes E & F.

At this time, the overall performance of the landfill is rated as acceptable.

The Visual Inspection Checklist is included in Table IV of this report and has been completed as per the TOR. Please refer to Figure PIN-2.2 for a sketch of the Airstrip Landfill detailing the location of photographs and features.

Table IV: Visual Inspection Checklist / Report – Airstrip Landfill

DEW Line Cleanup: Post-construction - Landfill Monitoring
Visual Inspection Checklist

Inspection Report – Page 1 of 2

SITE NAME: PIN-2 Cape Young
LANDFILL DESIGNATION: Airstrip Landfill (Existing Regrade Area)
DATE OF INSPECTION: August 16, 2016
DATE OF PREVIOUS INSPECTION: August 15, 2015
INSPECTED BY: A. Passalis
REPORT PREPARED BY: A. Passalis
MONITORING EVENT NUMBER: 5
The inspector/reporter represents to the best of his/her 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 IV: PIN-2, CAPE YOUNG - AIRSTRIP LANDFILL (Page 2 of 2)

Site Name: PIN-2, CAPE YOUNG
Landfill: Airstip Landfill
Designation: Existing Regrade Area
Date Inspected: August 16, 2016
Inspected by: Andrew Passalis, P.Eng.

Signature: 

Checklist Item	Present (Yes/No)	Location	Length	Width	Depth	Extent	Description	Photographic Record	Severity Rating	Additional Comments
Settlement	Yes	FEATURE B See Figure PIN-2.2 (Lobe A, NE side slope)	2.2 m	0.5 m	0.15 m	< 1%	Linear depression	ALF-11, 12	Acceptable	Slope appears stable. Marginal increase in length from 1.5 to 2.2 m and width from 0.3 to 0.5 m since previous 2015 assessment.
		FEATURE C See Figure PIN-2.2 (Lobes E & F, S side slope)	3.0 m	0.10 m	0.1 m	< 1%	Linear depression	ALF-41, 42	Acceptable	Slope appears stable. Marginal increase in depth from 0.07 to 0.10 m from previous 2015 assessment.
		FEATURE E See Figure PIN-2.2, (Lobe A, NE side slope) - New Obs.	2.0 m	0.5 m	0.1 m	< 1%	Linear depression	ALF-22, 23	Acceptable	Slope appears stable. New Observation.
Erosion	Yes	FEATURE F See Figure PIN-2.2 Lobe A, N toe) - New Obs.	9 m	0.1 m	0.02 - 0.05 m	< 1%	Minor erosion	ALF-24, 25	Acceptable	Self armouring. New Observation.
Frost Action	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Animal Burrows	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Vegetation	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Staining	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Vegetation Stress	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Seepage Points	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Debris Exposed	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Presence/Condition of Monitoring Instruments	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Other Features of Note:	Yes	FEATURE A See Figure PIN-2.2 (SW and NW of Lobes A and E & F)	0.3 m	0.03 m	Surface	Isolated	Miscellaneous metal debris - surface	ALF-35, 46-48	Acceptable	Four small pieces of metal surface debris located between lobes. No change.
		FEATURE D See Figure PIN-2.2 (North of Lobes E & F - 1 New Obs.)	0.15 m	0.10 m	Surface	Isolated	Miscellaneous metal debris - surface	ALF-34, 36	Acceptable	Two pieces of debris 1 New Observation.
Additional Photos	Yes	See Figure PIN-2.2 and Photographic Record	N/A	N/A	N/A	N/A	General Photographic Record	N/A	Not Observable	General photos for documentation, no additional features of note.
Overall Landfill Performance:	**Acceptable**									

3.2 PRELIMINARY STABILITY ASSESSMENT

The Preliminary Stability Assessment for Airstrip Landfill has been completed as per the TOR and is included in Table V below.

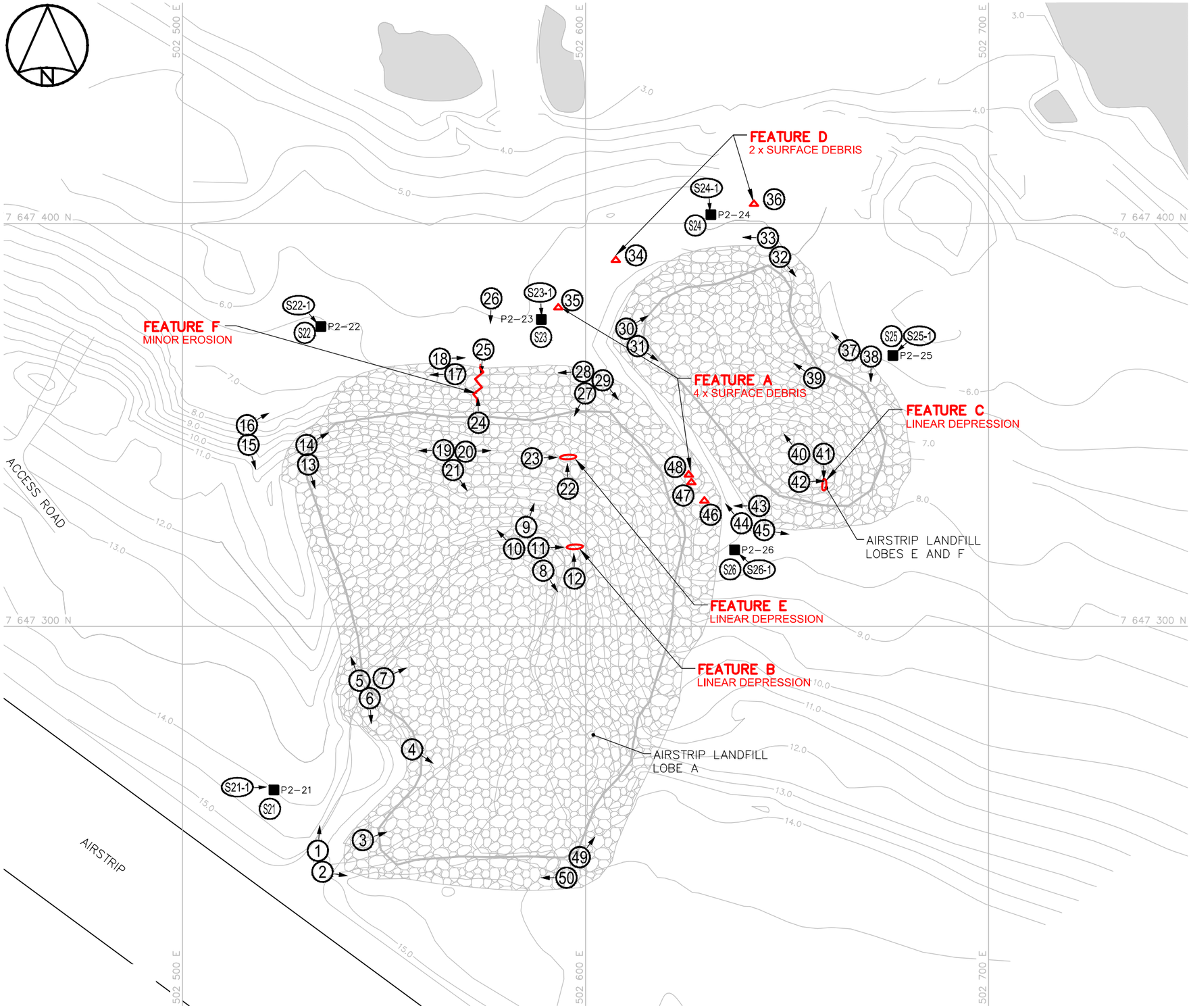
Table V: Preliminary Stability Assessment – Airstrip Landfill

Feature	Severity Rating	Extent
Settlement	Acceptable	Isolated
Erosion	Acceptable	Isolated
Frost Action	Not observed	None
Staining	Not observed	None
Vegetation Stress	Not observed	None
Seepage/Ponded Water	Not observed	None
Debris exposure	Acceptable	Isolated (outside regrade area)
Overall Landfill Performance	**Acceptable**	

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

3.3 LOCATION PLAN

The Location Plan for the Airstrip Landfill has been completed as per the TOR and is presented in Figure PIN-2.2.



LEGEND

- MONITORING SOIL SAMPLE LOCATION (6)
- APPROX. PHOTOGRAPHIC VIEWPOINT
- BODY OF WATER
- DEBRIS (NTS)
- SETTLEMENT (NTS)
- MINOR EROSION (NTS)

0m 10m 20m 30m 40m 50m

NO.	VERSION	DATE	BY	VERIF.	APPR.
00	FINAL	17-03-03	J.P.	J.-P.P.	M.F.

Construction de Défense Canada
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COLLECTION OF LANDFILL MONITORING DATA

PIN-2, CAPE YOUNG, NUNAVUT

AIRSTRIP LANDFILL

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Metre	1 : 1,000	JANUARY 2017
DRAWN BY:	VERIFIED BY:	APPROVED BY:
J. POULIN	J.-P. PELLETIER	M. FLEURY P. ENG
PROJECT NO:	DRAWING NO:	PAGE
P-0009730-0-05-503	P-0009730-0-05-503-PIN-2B-PL	PL

FIGURE PIN-2.2

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3.4 PHOTOGRAPHIC RECORDS

The Photographic Record for the Airstrip Landfill has been completed as per the TOR and is included as Table VI hereafter. Full-sized photographs are contained in the Addendum DVD- ROM.

Table VI: LANDFILL VISUAL INSPECTION PHOTO LOG

Site Name: PIN-2, Cape Young
Landfill: Airstrip Landfill
Date Inspected: August 16, 2016
Inspected by: Andrew Passalis, P.Eng.

Photo (ALF-)	Filename	Size (KB)	Date	Vantage Point		Caption
				Easting	Northing	
1	P216_2279	4,194	16/08/16	502535	7647243	View looking north along west side of Airstrip Landfill - Lobe A
2	P216_2280	4,217	16/08/16	502536	7647240	View looking east along south side of Airstrip Landfill - Lobe A
3	P216_2281	3,795	16/08/16	502546	7647247	View looking northeast at southwest corner of Airstrip Landfill - Lobe A
4	P216_2282	4,021	16/08/16	502559	7647269	View looking southeast across south cover of Airstrip Landfill - Lobe A
5	P216_2283	3,950	16/08/16	502544	7647286	View north-northwest along northwest crest of Airstrip Landfill - Lobe A
6	P216_2284	3,785	16/08/16	502547	7647284	View looking south along west side of Airstrip Landfill - Lobe A
7	P216_2285	3,964	16/08/16	502550	7647287	VIew looking northeast across cover from west side of Airstrip Landfill - Lobe A
8	P216_2286	4,141	16/08/16	502590	7647315	View looking southeast across east cover of Airstrip Landfill - Lobe A
9	P216_2287	4,226	16/08/16	502586	7647322	View looking northeast across north cover of Airstrip Landfill - Lobe A
10	P216_2288	4,024	16/08/16	502584	7647318	View looking northwest across north cover of Airstrip Landfill - Lobe A
11	P216_2289	4,402	16/08/16	502588	7647319	View looking east at linear depression on northeast side slope - FEATURE B
12	P216_2290	4,261	16/08/16	502598	7647315	View looking north at linear depression on northeast side slope - FEATURE B
13	P216_2291	3,907	16/08/16	502531	7647342	View looking south along west crest of Airstrip Landfill - Lobe A
14	P216_2292	3,942	16/08/16	502531	7647344	View looking east-northeast along north crest of Airstrip Landfill - Lobe A
15	P216_2293	4,082	16/08/16	502517	7647346	View looking south along west toe of Airstrip Landfill - Lobe A
16	P216_2294	3,835	16/08/16	502517	7647349	View looking east-northeast along northwest toe of Airstrip Landfill - Lobe A
17	P216_2297	3,809	16/08/16	502568	7647364	View looking west along north side slope of Airstrip Landfill - Lobe A
18	P216_2298	4,255	16/08/16	502566	7647366	View looking east along north side slope of Airstrip Landfill - Lobe A
19	P216_2299	4037	16/08/16	502565	7647344	View looking west along mid slope on north side of Airstrip Landfill - Lobe A
20	P216_2300	4,225	16/08/16	502570	7647343	View looking east along mid slope on north side of Airstrip Landfill - Lobe A
21	P216_2301	4,199	16/08/16	502567.6	7647341	View looking southeast upslope of Airstrip Landfill - Lobe A
22	P216_2302	4,315	16/08/16	502595.2	7647337	View looking north at linear depression between Type 1 & 2 cover materials - FEATURE E (new)
23	P216_2303	4,260	16/08/16	502588.7	7647342	View looking east at linear depression between Type 1 & 2 cover materials - FEATURE E (new)
24	P216_2304	4,069	16/08/16	502574	7647352	View looking north at minor erosion near toe of north slope - FEATURE F (new)
25	P216_2305	4,282	16/08/16	502574	7647367	View looking south at minor erosion near toe of north slope - FEATURE F (new)
26	P216_2308	4,077	16/08/16	502576	7647380	View looking south at north side of Airstrip Landfill - Lobe A
27	P216_2309	3,949	16/08/16	502602	7647359	View looking southwest upslope of Airstrip Landfill - Lobe A
28	P216_2310	4,221	16/08/16	502601	7647362	View looking west along north toe of Airstrip Landfill - Lobe A
29	P216_2311	4,180	16/08/16	502603	7647361	View looking southeast between Lobes A and E & F of Airstrip Landfill
30	P216_2312	4,004	16/08/16	502610	7647373	View looking northeast along north crest of Airstrip Landfill - Lobes E & F
31	P216_2313	4,132	16/08/16	502612	7647371	View looking southeast across south crest of Airstrip Landfill - Lobes E & F
32	P216_2314	3,845	16/08/16	502649	7647393	View looking southeast along east side of Airstrip Landfill - Lobes E & F
33	P216_2315	3,797	16/08/16	502646	7647395	View looking west along north side of Airstriip Landfill - Lobes E & F
34	P216_2316	4,413	16/08/16	502608	7647391	Miscellaneous metal debris on surface between Lobes A and E & F - FEATURE D (new)
35	P216_2317	4,028	16/08/16	502594	7647380	Miscellaneous metal debris on surface north of Lobes E & F - FEATURE A
36	P216_2320	4,086	16/08/16	502642	7647405	Miscellaneous metal debris on surface north of Lobes E & F - FEATURE D (new)
37	P216_2323	4,437	16/08/16	502667	7647369	View looking northwest along east toe of Lobes E & F
38	P216_2324	3,996	16/08/16	502669	7647368	View looking south along east toe of Lobes E & F
39	P216_2325	4,064	16/08/16	502656	7647363	View looking northwest across cover of Lobes E & F
40	P216_2326	4,407	16/08/16	502654	7647342	View looking northwest cover of Airstrip Landfill - Lobes E & F
41	P216_2327	4,239	16/08/16	502659	7647341	View looking south at linear depression on side slope of Airstrip Landfill - Lobes E & F - FEATURE C
42	P216_2328	4,252	16/08/16	502656	7647336	View looking east at linear depression on side slope of Airstrip Landfill - Lobes E & F - FEATURE C
43	P216_2332	3,753	16/08/16	502641	7647329	View looking west at Lobe A
44	P216_2333	4,311	16/08/16	502639	7647327	View looking northwest along west toe of Lobes E & F
45	P216_2334	4,332	16/08/16	502643	7647324	View looking east along south toe of Lobes E & F
46	P216_2335	4,398	16/08/16	502630	7647330	Miscellaneous metal debris on surface between Lobes A and E & F - FEATURE A
47	P216_2336	4,245	16/08/16	502625	7647334	Miscellaneous metal debris on surface between Lobes A and E & F - FEATURE A
48	P216_2337	4,405	16/08/16	502623	7647338	Miscellaneous metal debris on surface between Lobes A and E & F - FEATURE A
49	P216_2340	4,236	16/08/16	502598	7647241	View looking northeast along east side of Lobe A - Airstrip Landfill
50	P216_2341	4,107	16/08/16	502596	7647238	View looking west along south side of Lobe A - Airstrip Landfill
Soil Sampling						
S21	P216_2295	4,395	16/08/16	502521.9	7647257	Sampling location P216-21 located upgradient of Airstrip Landfill
S21-1	P216_2296	4,158	16/08/16	502517	7647260	View looking east at P216-21 located upgradient of Airstrip Landfill
S22	P216_2306	3,997	16/08/16	502534	7647374	Sampling location P216-22 located downgradient of Airstrip Landfill
S22-1	P216_2307	4,386	16/08/16	502531	7647378	View looking southeast at P216-22 located downgradient of Airstrip Landfill
S23	P216_2318	4,252	16/08/16	502590	7647377	Sampling location P216-23 located downgradient of Airstrip Landfill
S23-1	P216_2319	4,407	16/08/16	502589	7647381	View looking south at P216-23 located downgradient of Airstrip Landfill
S24	P216_2321	4,264	16/08/16	502632	7647403	Sampling location P216-24 located downgradient of Airstrip Landfill
S24-1	P216_2322	4,339	16/08/16	502631	7647407	View looking south at P216-24 located downgradient of Airstrip Landfill
S25	P216_2330	4,006	16/08/16	502675	7647372	Sampling location P216-25 located downgradient of Airstrip Landfill
S25-1	P216_2331	4,416	16/08/16	502678	7647376	View looking southwest at P216-25 located downgradient of Airstrip Landfill
S26	P216_2338	4,247	16/08/16	502637	7647318	Sampling location P216-26 located downgradient of Airstrip Landfill
S26-1	P216_2339	4,131	16/08/16	502641	7647315	View looking northwest at P216-26 located downgradient of Airstrip Landfill

3.5 SOIL SAMPLE ANALYTICAL DATA

The soil chemical analysis results for the 2016 Airstrip Landfill samples are presented in Table VII hereafter. Certificates of analyses are presented in Annex 1 at the end of this report.

Table VII: Soil Chemical Analysis Results - Airstrip Landfill

Sample #	Location	Depth (cm)	Parameters													
			As [mg/kg]	Cd [mg/kg]	Cr [mg/kg]	Co [mg/kg]	Cu [mg/kg]	Pb [mg/kg]	Ni [mg/kg]	Zn [mg/kg]	Hg [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_{34}-C_{50} [mg/kg]
Detection Limit			1.0	0.050	1.0	0.50	1.0	0.5	1.0	10	0.050	0.010	12	10	50	50
Upgradient Soil Samples																
P216-21A	P2-21	0-15	2.9	<0.050	3.5	0.53	2.8	3.1	1.7	<10	<0.050	<0.010	<12	<10	<50	<50
P216-21B		40-50	2.9	0.055	16.0	0.73	3.7	2.7	6.0	<10	<0.050	<0.010	<12	<10	<50	<50
Downgradient Soil Samples																
P216-22A	P2-22	0-15	5.2	<0.050	2.9	0.69	2.2	3.9	1.9	<10	<0.050	<0.010	<12	<10	<50	<50
P216-22B		40-50	5.6	<0.050	5.5	0.79	1.9	3.6	3.2	<10	<0.050	<0.010	<12	<10	<50	<50
P216-23A	P2-23	0-15	7.5	<0.050	9.0	0.97	3.8	5.3	5.6	<10	<0.050	<0.010	<12	<10	<50	<50
P216-23B		40-50	6.9	<0.050	5.1	0.88	3.5	4.9	3.7	<10	<0.050	<0.010	<12	<10	<50	<50
P216-24A	P2-24	0-15	6.4	<0.050	14.0	0.70	2.7	3.7	6.4	<10	<0.050	<0.010	<12	<10	<50	<50
P216-24B		40-50	7.2	<0.050	10.0	0.71	2.7	4.7	5.1	<10	<0.050	<0.010	<12	<10	<50	<50
P216-25A	P2-25	0-15	7.3	<0.050	2.5	1.10	5.8	6.0	3.0	<10	0.100	<0.010	<12	<10	<50	<50
P216-25B		40-50	6.6	0.052	2.3	0.97	8.1	5.2	2.5	10	<0.050	<0.010	<12	<10	<50	<50
P216-26A	P2-26	0-15	5.2	0.052	2.3	0.72	3.2	4.8	1.6	<10	0.065	<0.010	<12	<10	<50	<50
P216-26B		40-50	5.3	<0.050	2.4	0.77	5.3	6.1	1.6	<10	<0.050	<0.010	<12	<10	<50	<50

4 USAF LANDFILL

4.1 SUMMARY

On August 16, a visual inspection has been completed at the USAF Landfill. Soil sampling was completed at four stations located upgradient and downgradient of the landfill.

Detectable PCB concentrations have been noted at surface and depth at downgradient location P2-4 (respectively 0.42 mg/kg and 0.22 mg/kg). Similarly, a detectable TPH (Fraction F3) has been noted at surface at upgradient location P2-1 (160 mg/kg). Relatively high levels of concentrations have been observed for arsenic at depth at downgradient location P2-2 (20 mg/kg); chromium (87 mg/kg), copper (56 mg/kg), lead (24 mg/kg) and nickel (38 mg/kg) at surface at downgradient location P2-4, and mercury at surface at upgradient location P2-1 (0.14 mg/kg).

As of the 2016 monitoring event, no features have been identified with “significant” or “unacceptable” severity ratings. Minor settlement has been noted at two locations, including one existing location on the west side slope of the landfill (Feature A) and one newly observed location on the west crest of the landfill (Feature B). Feature A was first observed during the 2014 inspection period and has shown a slight increase in depth from 0.15 to 0.20 m since the previous 2015 assessment. Feature B was not noted during the previous 2015 assessment.

At this time, the overall performance of the landfill is rated as acceptable.

The Visual Inspection Checklist is included in Table VIII of this report and has been completed as per the TOR. Please refer to Figure PIN-2.3 for a sketch of the USAF Landfill detailing the location of photographs and features.

Table VIII: Visual Inspection Checklist / Report – USAF Landfill

DEW Line Cleanup: Post-construction - Landfill Monitoring
Visual Inspection Checklist

Inspection Report – Page 1 of 2

SITE NAME: PIN-2 Cape Young
LANDFILL DESIGNATION: USAF Landfill (Existing Regrade Area)
DATE OF INSPECTION: August 16, 2016
DATE OF PREVIOUS INSPECTION: August 15, 2015
INSPECTED BY: A. Passalis
REPORT PREPARED BY: A. Passalis
MONITORING EVENT: 5
The inspector/reporter represents to the best of his/her 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 VIII: PIN-2, CAPE YOUNG - USAF LANDFILL (Page 2 of 2)

Site Name: PIN-2, CAPE YOUNG
Landfill: USAF Landfill
Designation: Existing Regrade Area
Date Inspected: August 16, 2016
Inspected by: Andrew Passalis, P.Eng.

Signature: 

Checklist Item	Present (Yes/No)	Location	Length	Width	Depth	Extent	Description	Photographic Record	Severity Rating	Additional Comments
Settlement	Yes	FEATURE A See Figure PIN-2.3 (W side slope)	0.40 m	0.30 m	0.20 m	Isolated	Minor depression	USAF-6, 7	Acceptable	Pothole-type depression. Slight increase in depth from 0.15 to 0.20 m since 2015 assessment.
		FEATURE B See Figure PIN-2.3 (W crest) - New Obs.	2.6	0.25 m	0.05 - 0.10 m	Isolated	Minor depression	USAF-8, 9	Acceptable	Linear depression. New observation.
Erosion	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Frost Action	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Animal Burrows	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Vegetation	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Staining	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Vegetation Stress	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Seepage Points	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Debris Exposed	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Presence/Condition of Monitoring Instruments	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Other Features of Note:	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Additional Photos	Yes	See Figure PIN-2.3 and Photographic Record	N/A	N/A	N/A	N/A	General Photographic Record	N/A	Not Observable	General photos for documentation, no additional features of note.
Overall Landfill Performance:	**Acceptable**									

4.2 PRELIMINARY STABILITY ASSESSMENT

The Preliminary Stability Assessment for the USAF Landfill has been completed as per the TOR and is included in Table IX hereafter.

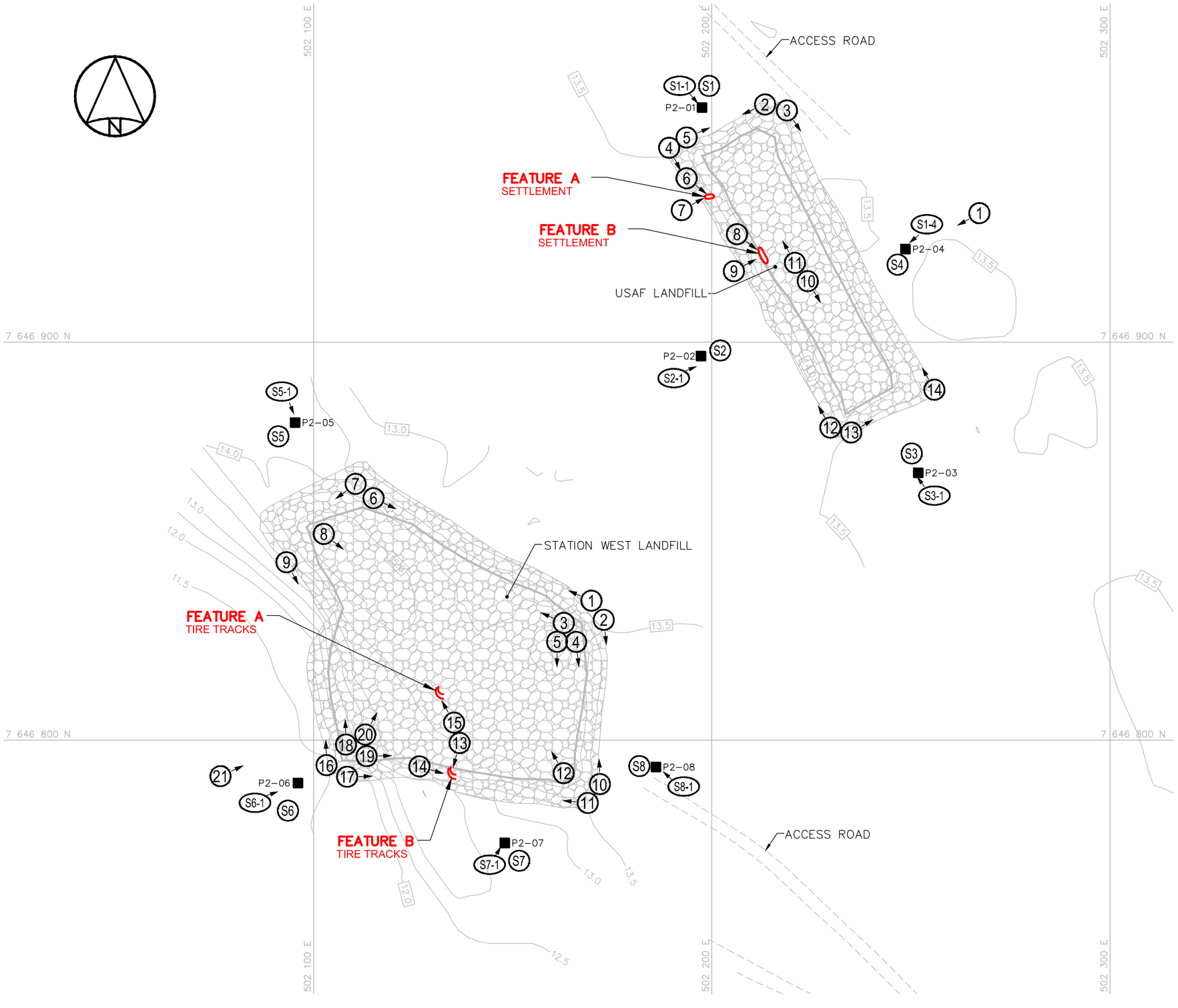
Table IX: Preliminary Stability Assessment – USAF Landfill

Feature	Severity Rating	Extent
Settlement	Acceptable	Isolated
Erosion	Not observed	None
Frost Action	Not observed	None
Staining	Not observed	None
Vegetation Stress	Not observed	None
Seepage/Ponded Water	Not observed	None
Debris exposure	Not observed	None
Overall Landfill Performance	**Acceptable**	

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

4.3 LOCATION PLAN

The Location Plan for the USAF Landfill has been completed as per the TOR and is presented in Figure PIN-2.3.



LEGEND

- MONITORING SOIL SAMPLE LOCATION (8)
- APPROX. PHOTOGRAPHIC VIEWPOINT
- TIRE TRACKS NTS
- SETTLEMENT (NTS)

0m 10m 20m 30m 40m 50m

NO.	VERSION	DATE	BY	VERIF.	APPR.
00	FINAL	17-03-03	J.P.	J.-P.P.	M.F.

Construction de Défense Canada
Defence Construction Canada

COLLECTION OF LANDFILL MONITORING DATA

PIN-2, CAPE YOUNG, NUNAVUT

USAF LANDFILL AND STATION WEST LANDFILL

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MEASUREMENT UNIT	SCALE:	DATE (month-year):
Metre	1 : 1,000	JANUARY 2017
DRAWN BY:	VERIFIED BY:	APPROVED BY:
J. POULIN	J.-P. PELLETIER	M. FLEURY P. ENG
PROJECT NO:	DRAWING NO:	PAGE
P-0009730-0-05-503	P-0009730-0-05-503-PIN-2C-PL	PL

FIGURE PIN-2.3

4.4 PHOTOGRAPHIC RECORDS

The Photographic Record for the USAF Landfill has been completed as per the TOR and is included in the following page in Table X. Full-sized photographs are contained in the Addendum DVD-ROM.

Table X : LANDFILL VISUAL INSPECTION PHOTO LOG

Site Name: PIN-2, Cape Young
Landfill: USAF Landfill
Date Inspected: August 16, 2016
Inspected by: Andrew Passalis, P.Eng.

Photo (USAF-)	Filename	Size (KB)	Date	Vantage Point		Caption
				Easting	Northing	
A1	P216_1912	3,797	15/08/16	501839	7647686	Aerial view looking south-southeast at USAF Landfill - Refer to Figure PIN-2.1
A2	P216_1913	4,044	15/08/16	501511	7647150	Aerial view looking southeast at USAF Landfill - Refer to Figure PIN-2.1
A3	P216_1914	3,934	15/08/16	501363	7646871	Aerial view looking east at USAF Landfill - Refer to Figure PIN-2.1
1	P216_2227	4,161	16/08/16	502268	7646931	View looking southwest at east side of USAF Landfill
2	P216_2228	4,020	16/08/16	502213	7646958	View looking southwest along north side of USAF Landfill
3	P216_2229	3,885	16/08/16	502218	7646958	View looking southeast along east side of USAF Landfill
4	P216_2230	4,057	16/08/16	502189	7646948	View looking southeast along west side of USAF Landfill
5	P216_2231	3,868	16/08/16	502193	7646950	View looking northeast along north side of USAF Landfill
6	P216_2232	4,156	16/08/16	502194	7646940	View looking southeast at pothole on west side slope - FEATURE A
7	P216_2233	4,384	16/08/16	502195	7646934	View looking northeast at pothole on west side slope - FEATURE A
8	P216_2234	4,268	16/08/16	502209	7646924	View looking southeast at linear depression on west side slope - FEATURE B (new)
9	P216_2235	4,439	16/08/16	502208	7646919	View looking northeast at linear depression on west side slope - FEATURE B (new)
10	P216_2236	4,152	16/08/16	502223.6	7646917	View looking southeast across south cover of USAF Landfill
11	P216_2237	4,187	16/08/16	502221.5	7646919	View looking northwest across north cover of USAF Landfill
12	P216_2238	4,180	16/08/16	502231.6	7646878	View looking northwest along west side of USAF Landfill
13	P216_2239	4,227	16/08/16	502235.1	7646877	View looking northeast along south side of USAF Landfill
14	P216_2240	3,917	16/08/16	502255.8	7646889	View looking northwest along east side of USAF Landfill
Soil Sampling						
S1	P216_2243	4,428	16/08/16	502199.3	7646963	Sampling location P216-1 located downgradient of USAF Landfill
S1-1	P216_2244	4,395	16/08/16	502195	7646967	View looking southeast at P216-1 located downgradient of USAF Landfill
S2	P216_2245	4,328	16/08/16	502197	7646897	Sampling location P216-2 located downgradient of USAF Landfill
S2-1	P216_2246	4,458	16/08/16	502194	7646893	View looking northeast at P216-2 located downgradient of USAF Landfill
S3	P216_2247	4,307	16/08/16	502252	7646867	Sampling location P216-3 located downgradient of USAF Landfill
S3-1	P216_2248	4,382	16/08/16	502255	7646862	View looking northwest at P216-3 located downgradient of USAF Landfill
S4	P216_2241	4,436	16/08/16	502248	7646924	Sampling location P216-4 located downgradient of USAF Landfill
S4-1	P216_2242	4,324	16/08/16	502252	7646927	View looking southwest at P216-4 located downgradient of USAF Landfill

4.5 SOIL SAMPLE ANALYTICAL DATA

The soil chemical analysis results for the 2016 USAF Landfill samples are presented in Table XI hereafter. Certificates of analyses and results of field duplicates collected as part of the QA/QC program are presented in Annexes 1 and 2 at the end of this report.

Table XI: Soil Chemical Analysis Results - USAF Landfill

Sample #	Location	Depth (cm)	Parameters										F1	F2	F3	F4
			As [mg/kg]	Cd [mg/kg]	Cr [mg/kg]	Co [mg/kg]	Cu [mg/kg]	Pb [mg/kg]	Ni [mg/kg]	Zn [mg/kg]	Hg [mg/kg]	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]
Detection Limit			1.0	0.050	1.0	0.05	1.0	0.5	1.0	10	0.050	0.010	12	10	50	50
Upgradient Soil Samples																
P216-1A	P2-1	0-15	<2.0 (3)	0.260 (3)	3.9 (3)	1.1 (3)	11.0 (3)	3.3 (3)	2.9 (3)	22 (3)	0.14 (3)	<0.030 (1)	<30 (2)	<28 (1)	160 (1)	<140 (1)
P216-BD3 (Intra-Lab Blind Duplicate)		0-15	<2.0 (3)	0.240 (3)	3.4 (3)	<1.0 (3)	11.0 (3)	3.1 (3)	2.6 (3)	21 (3)	0.12 (3)	<0.030 (1)	<32 (2)	<28 (1)	150 (1)	<140 (1)
P216-1A (Inter-Lab Blind Duplicate)		0-15	1.3	0.22	2.8	0.8	9.1	2.0	2.3	24	0.10	<0.05	<10	<50	56	<100
Average Value for P216-1A Sample		0-15	--	0.24 ± 0.02	3.37 ± 0.55	0.95 ± 0.21	10.37 ± 1.1	2.80 ± 0.70	2.60 ± 0.30	19.00 ± 4.36	--	--	--	--	--	--
P216-1B		40-50	<2.0	<0.100	4.3	1.3	5.9	2.6	2.7	<20	<0.10	<0.020 (1)	<12	<10	<50	<50
Downgradient Soil Samples																
P216-2A	P2-2	0-15	3.3	0.083	7.8	2.9	5.5	3.9	5.9	23	<0.050	<0.010	<12	<10	<50	<50
P216-2B		40-50	20.0	0.190	8.0	2.6	7.0	5.4	5.7	25	<0.050	<0.010	<12	<10	<50	<50
P216-3A	P2-3	0-15	2.3	0.100	3.8	1.6	6.2	2.6	3.2	19	<0.050	<0.010	<12	<10	<50	<50
P216-3B		40-50	2.6	0.070	6.8	3.2	4.8	3.0	4.9	12	<0.050	<0.010	<12	<10	<50	<50
P216-4A	P2-4	0-15	5.6	0.120	87.0	2.0	56	24.0	38.0	16	<0.050	0.420	<12	<10	<50	<50
P216-4B		40-50	4.2	0.110	13	2.1	5.4	4.8	7.3	14	<0.050	0.220	<12	<10	<50	<50

Notes:

(1) DL raised due to high moisture content

(2) DL raised due to moisture content > 50 %

(3) DL for metals raised due to sample matrix for samples from locations P2-1

5 STATION WEST LANDFILL

5.1 SUMMARY

On August 15, 2016 a visual inspection has been completed at the Station West Landfill. Soil samples were collected from four stations located upgradient and downgradient of the landfill.

No PCB or high metal concentrations have been detected in any of the soil samples collected. A detectable concentration of TPH (PHC F3 Fraction) has been noted in the surface interlaboratory duplicate sample collected at downgradient location P2-6 (55 mg/kg). Slightly elevated concentrations of chromium and cobalt have been detected at surface at downgradient location P2-6 (respectively 14 mg/kg and 5.0 mg/kg), and copper and zinc at surface at upgradient location P2-5 (respectively 11 mg/kg and 55 mg/kg).

As of the 2016 monitoring event, no features were identified with “significant” or “unacceptable” severity ratings. Two sets of vehicle tracks (shallow ruts) were noted on the south central crest (Feature A) and south side slope of the landfill (Feature B). Feature A observations were consistent with observations noted during the previous 2013, 2014 and 2015 inspection periods. Feature B was not observed during the previous 2015 assessment. There were no other features of note at the landfill.

At this time, the overall performance of the landfill is rated as acceptable.

The Visual Inspection Checklist is included in Table XII of this report and has been completed as per the TOR. Please refer to Figure PIN-2.3 for a sketch of the Station West Landfill detailing the location of photographs and features.

Table XII: Visual Inspection Checklist / Report – Station West Landfill

DEW Line Cleanup: Post-construction - Landfill Monitoring
Visual Inspection Checklist

Inspection Report – Page 1 of 2

SITE NAME: PIN-2 Cape Young
LANDFILL DESIGNATION: Station West Landfill (Existing Regraded Area)
DATE OF INSPECTION: August 16, 2016
DATE OF PREVIOUS INSPECTION: August 15, 2015
INSPECTED BY: A. Passalis
REPORT PREPARED BY: A. Passalis
MONITORING EVENT: 5
The inspector/reporter represents to the best of his/her 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 XII: PIN-2, CAPE YOUNG - STATION WEST LANDFILL (Page 2 of 2)

Site Name: PIN-2, CAPE YOUNG
Landfill: Station West Landfill
Designation: Existing Regrade Area
Date Inspected: August 16, 2016
Inspected by: Andrew Passalis, P.Eng.

Signature: 

Checklist Item	Present (Yes/No)	Location	Length	Width	Depth	Extent	Description	Photographic Record	Severity Rating	Additional Comments
Settlement	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Erosion	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Frost Action	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Animal Burrows	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Vegetation	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Staining	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Vegetation Stress	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Seepage Points	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Debris Exposed	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Presence/Condition of Monitoring Instruments	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Other Features of Note:	Yes	FEATURE A See Figure PIN-2.3 (S central crest)	4 - 8 m	0.30 m	0.05 m	Isolated	Vehicle tracks	SWLF-15	Acceptable	Consistent with 2013 - 2015 assessments.
		FEATURE B See Figure PIN-2.3 (S side slope) - New Obs.	5 m	0.30 m	0.30 m	Isolated	Vehicle tracks	SWLF-13, 14	Acceptable	Vehicle tracks on side slope. New observation.
Additional Photos	Yes	See Figure PIN-2.3 and Photographic Record	2 m	N/A	N/A	N/A	General Photographic Record	N/A	Not Observable	General photos for documentation, no additional features of note.
Overall Landfill Performance:	**Acceptable**									

5.2 PRELIMINARY STABILITY ASSESSMENT

The Preliminary Stability Assessment for Station West Landfill has been completed as per the TOR and is included in Table XIII below.

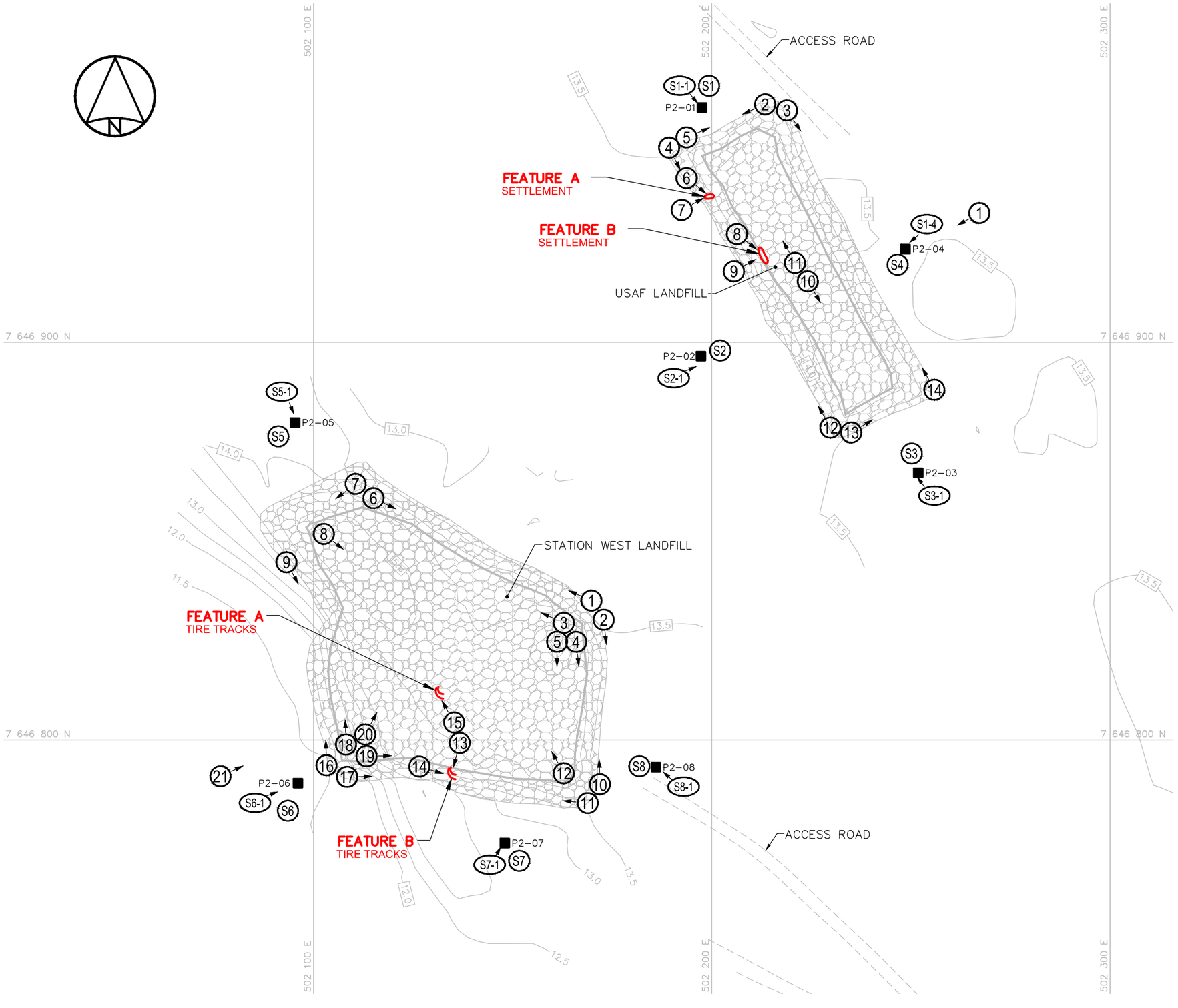
Table XIII: Preliminary Stability Assessment – Station West Landfill

Feature	Severity Rating	Extent
Settlement	Not observed	None
Erosion	Not observed	None
Frost Action	Not observed	None
Staining	Not observed	None
Vegetation Stress	Not observed	None
Seepage/Ponded Water	Not observed	None
Debris exposure	Not observed	None
Overall Landfill Performance	**Acceptable**	

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

5.3 LOCATION PLAN

The Location Plan for the Station West Landfill has been completed as per the TOR and is presented in Figure PIN-2.3.



LEGEND

- MONITORING SOIL SAMPLE LOCATION (8)
- APPROX. PHOTOGRAPHIC VIEWPOINT
- TIRE TRACKS NTS
- SETTLEMENT (NTS)

0m 10m 20m 30m 40m 50m

NO.	VERSION	DATE	BY	VERIF.	APPR.
00	FINAL	17-03-03	J.P.	J.-P.P.	M.F.

Construction de Défense Canada
Defence Construction Canada

COLLECTION OF LANDFILL MONITORING DATA

PIN-2, CAPE YOUNG, NUNAVUT

USAF LANDFILL AND STATION WEST LANDFILL

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www.englobecorp.com

MEASUREMENT UNIT	SCALE:	DATE (month-year):
Metre	1 : 1,000	JANUARY 2017
DRAWN BY:	VERIFIED BY:	APPROVED BY:
J. POULIN	J.-P. PELLETIER	M. FLEURY P. ENG
PROJECT NO:	DRAWING NO:	PAGE
P-0009730-0-05-503	P-0009730-0-05-503-PIN-2C-PL	PL

FIGURE PIN-2.3

5.4 PHOTOGRAPHIC RECORDS

The Photographic Record for the Station West Landfill has been completed as per the TOR and is included as Table XIV hereafter. Full sized photographs are contained in the Addendum DVD-ROM.

Table XIV: LANDFILL VISUAL INSPECTION PHOTO LOG

Site Name: PIN-2, Cape Young
Landfill: Station West Landfill
Date Inspected: August 16, 2016
Inspected by: Andrew Passalis, P.Eng.

Photo (SWLF-)	Filename	Size (KB)	Date	Vantage Point		Caption
				Easting	Northing	
A1	P216_1912	3,797	15/08/16	501839	7647686	Aerial view looking south-southeast at USAF Landfill - Refer to Figure PIN-2.1
A2	P216_1913	4,044	15/08/16	501511	7647150	Aerial view looking southeast at USAF Landfill - Refer to Figure PIN-2.1
A3	P216_1914	3,934	15/08/16	501363	7646871	Aerial view looking east at USAF Landfill - Refer to Figure PIN-2.1
1	P216_2249	3,970	16/08/16	502170	7646834	View looking northwest along northeast side of Station West Landfill
2	P216_2250	4,055	16/08/16	502172	7646831	View looking south along east side of Station West Landfill
3	P216_2251	4,309	16/08/16	502164	7646828	View looking northwest along northeast crest of Station West Landfill
4	P216_2252	4,376	16/08/16	502165	7646826	View looking south along east crest of Station West Landfill
5	P216_2253	4,436	16/08/16	502162	7646826	View looking south across cover of Station West Landfill
6	P216_2254	4,009	16/08/16	502114	7646861	View looking southeast along northeast side of Station West Landfill
7	P216_2255	4,019	16/08/16	502111	7646863	View looking southwest along north side of Station West Landfill
8	P216_2256	4,022	16/08/16	502101	7646852	View looking southeast across cover from northwest corner of Station West Landfill
9	P216_2257	4,073	16/08/16	502094	7646846	View looking southeast along northwest toe of Station West Landfill
10	P216_2260	4031	16/08/16	502171	7646787	View looking north along east side of Station West Landfill
11	P216_2261	4065	16/08/16	502169	7646785	View looking west along south side of Station West Landfill
12	P216_2262	3941	16/08/16	502162	7646792	View looking northwest across cover from southeast corner of Station West Landfill
13	P216_2263	3940	16/08/16	502136	7646798	View looking south-southwest at tire tracks on south side slope - FEATURE B (new)
14	P216_2264	4419	16/08/16	502129	7646792	View looking east at tire tracks on south side slope - FEATURE B (new)
15	P216_2265	4422	16/08/16	502136	7646803	View looking northwest at vehicle tracks on south cover area of Station West Landfill - FEATURE A
16	P216_2268	4298	16/08/16	502103	7646794	View looking north along west side of Station West Landfill
17	P216_2269	4089	16/08/16	502107	7646791	View looking east along south side of Station West Landfill
18	P216_2270	3940	16/08/16	502109	7646798	View looking north along west crest of Station West Landfill
19	P216_2271	4040	16/08/16	502111	7646796	View looking east along south crest of Station West Landfill
20	P216_2272	4032	16/08/16	502111	7646801	View looking northeast across cover from southwest corner of Station West Landfill
21	P216_2273	3913	16/08/16	502077	7646791	View looking northeast at west side of Station West Landfill
Soil Sampling						
S5	P216_2277	4378	16/08/16	502095	7646880	Sampling location P216-5 located downgradient of Station West Landfill
S5-1	P216_2278	4372	16/08/16	502093	7646886	View looking southeast at P216-5 located downgradient of Station West Landfill
S6	P216_2275	4397	16/08/16	502096	7646789	Sampling location P216-6 located downgradient of Station West Landfill
S6-1	P216_2276	4331	16/08/16	502091	7646787	View looking northeast at P216-6 located downgradient of Station West Landfill
S7	P216_2266	4305	16/08/16	502148	7646772	Sampling location P216-7 located downgradient of Station West Landfill
S7-1	P216_2267	4420	16/08/16	502148	7646768	View looking north at P216-7 located downgradient of Station West Landfill
S8	P216_2258	4,245	16/08/16	502186	7646793	Sampling location P216-8 located downgradient of Station West Landfill
S8-1	P216_2259	4311	16/08/16	502192	7646789	View looking northwest at P216-8 located downgradient of Station West Landfill

5.5 SOIL SAMPLE ANALYTICAL DATA

The soil chemical analysis results for the 2016 Station West Landfill sampling are presented in Table XV hereafter. Certificates of analyses and results of field duplicates collected as part of the QA/QC program are presented in Annexes 1 and 2 at the end of this report.

Table XV: Soil Chemical Analysis Results - Station West Landfill

Sample #	Location	Depth (cm)	Parameters										F1	F2	F3	F4
			As [mg/kg]	Cd [mg/kg]	Cr [mg/kg]	Co [mg/kg]	Cu [mg/kg]	Pb [mg/kg]	Ni [mg/kg]	Zn [mg/kg]	Hg [mg/kg]	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]
Detection Limit			1.0	0.050	1.0	0.50	1.0	0.50	1.0	10	0.050	0.010	12	10	50	50
Upgradient Soil Samples																
P216-5A	P2-5	0-15	<2.0 (1)	0.460 (1)	3.6 (1)	1.60 (1)	11 (1)	2.2 (1)	2.7 (1)	55 (10	<0.10 (1)	<0.040 (1)	<38 (2)	<35	<180	<180
P216-5B		40-50	2.5	0.082	4.4	1.60	2.6	2.1	2.9	10	<0.050	<0.010	<12	<10	<50	<50
Downgradient Soil Samples																
P216-6A	P2-6	0-15	4.3 (1)	0.340 (1)	14.0 (1)	5.00 (1)	9.4 (1)	7.9 (1)	7.7 (1)	26 (1)	<0.10 (1)	<0.030 (1)	<25 (2)	<24	<120	<120
P216-BD4 (Intra-Lab Blind Duplicate)		0-15	4.2 (1)	0.350 (1)	14.0 (1)	5.00 (1)	9.1 (1)	8.0 (1)	7.8 (1)	26 (1)	<0.10 (1)	<0.020 (1)	<23 (2)	<23	<110	110
P216-6A (Inter-Lab Blind Duplicate)		0-15	4.8	0.37	13.2	4.70	9.4	6.6	7.8	32	0.08	<0.05	<10	<50	55	<100
Average Value for P216-6A Sample		0-15	4.43 ± 0.32	0.35 ± 0.02	13.7 ± 0.46	4.90 ± 0.17	9.30 ± 0.17	7.50 ± 0.78	7.77 ± 0.06	28.00 ± 3.46	--	--	--	--	--	--
P216-6B		40-50	2.5	0.100	4.6	1.30	2.0	3.4	2.4	11	<0.050	<0.010	<12	<10	<50	<50
P216-7A	P2-7	0-15	2.9	0.160	3.2	1.10	4.2	3.0	2.0	21	<0.050	<0.010	<12	<10	<50	<50
P216-7B		40-50	3.8	0.140	6.7	0.76	2.7	2.9	3.0	12	<0.050	<0.010	<12	<10	<50	<50
P216-8A	P2-8	0-15	2.9	0.088	7.5	1.10	4.2	2.8	3.7	17	<0.050	<0.010	<12	<10	<50	<50
P216-8B		40-50	2.4	0.072	5.0	1.10	2.1	2.4	2.4	<10	<0.050	<0.010	<12	<10	<50	<50

Notes:

(1) DL raised due to high moisture content for samples P-216-5A, 6A, and BD4

(2) DL raised due to moisture content > 50 %

6 TIER II SOIL DISPOSAL FACILITY

6.1 SUMMARY

The 2016 monitoring of the Tier II Disposal Facility conducted on August 16, 2016 consisted of a visual inspection, the collection of soil and groundwater samples, and thermal monitoring as per the TOR.

No PCB or high metal concentrations have been detected in any of the soil samples collected. A detectable concentration of TPH (PHC F3 Fraction) has been noted in the surface samples collected at downgradient locations MW-2 (100 mg/kg) and MW-1 (interlaboratory duplicate – 56 mg/kg). Slightly elevated concentrations of copper and mercury have been noted in the surface sample collected at downgradient location MW-1 (respectively 12 mg/kg and 0.19 mg/kg).

No PCB, TPH or high metal concentrations have been detected in any of the wells sampled.

With the exception of anomalous readings noted at VT-1 and periodic errors at VT-4, all thermistors at the Tier II Soil Disposal Facility have been found to be in good condition with no significant concerns identified. Data from all thermistors was successfully retrieved.

As of the 2016 monitoring event, no features were identified with “significant” or “unacceptable” severity ratings. Indications of minor settlement have been noted at seven locations on the Tier II Disposal Facility, including one linear depression below VT-1 and three localized oval-shaped depressions along the southwest crest (Feature A), one linear depression on the east crest (Feature I), and two linear depressions on the southwest side slope (Feature J). All depressions associated with Feature A appear consistent with findings from the previous 2015 assessment. Features I and J were not observed during the previous 2015 assessment. Feature D, a single localized depression previously observed on the northeast crest, was not noted during the 2015 or 2016 inspections.

Evidence of minor surface erosion has been noted at ten locations on the Tier II Disposal Facility, including: a single location on the southwest side slope below VT-1 (Feature B); three locations on the southeast side slope (Feature C); two locations on the northwest side slope (Feature E); one location on the northwest side slope (Feature G); one location on the northeast side slope (Feature H); one newly observed single location on the west side slope (Feature K); and one new single location on the north side slope (Feature L). With the exception of Feature L, all locations consisted of shallow surface erosion of fines that extended from the crest down slope. The facility side slopes appear stable and self-armouring at all erosion locations, with only minor washing of fines noted. With the exception of new Features K and L, the majority of erosional features exhibited a marginal increase in size from the previous 2015 assessment, including Feature B which increased in length from 7 to 8 m and depth from 0.02 to 0.05 m; Feature E that increased marginally in width from 0.4 to 0.5 m and depth from 0.05 to 0.10 m; Feature G which increased slightly in width from 0.25 to 0.40 m; and Feature H which increased in length from 1.5 to 10.0 m, width from 0.15 to 0.30 m and depth from 0.05 to 0.10 m. Several northeast-southwest orientated linear striations have been noted on the north cover of the facility (Feature F). The striations appear consistent with findings from the previous 2014 and 2015 assessments. No exposed debris was noted.

At this time, the overall performance of the landfill is rated as acceptable.

The Visual Inspection Checklist is included in Table XVI of this report and has been completed as per the TOR. Please refer to Figure PIN-2.4 for a sketch of the Tier II Disposal Facility detailing the location of photographs and features.

Table XVI: Visual Inspection Checklist - Tier II Disposal Facility

DEW Line Cleanup: Post-construction - Landfill Monitoring
Visual Inspection Checklist

Inspection Report – Page 1 of 2

SITE NAME: PIN-2 Cape Young
LANDFILL DESIGNATION: Tier II Disposal Facility (New Landfill)
DATE OF INSPECTION: August 16, 2016
DATE OF PREVIOUS INSPECTION: August 15, 2015
INSPECTED BY: A. Passalis
REPORT PREPARED BY: A. Passalis
MONITORING EVENT NUMBER: 5
The inspector/reporter represents to the best of his/her 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 XVI: PIN-2, CAPE YOUNG - TIER II DISPOSAL FACILITY (Page 2 of 2)

Site Name: PIN-2, CAPE YOUNG
Landfill: Tier II Disposal Facility
Designation: New Landfill
Date Inspected: August 16, 2016
Inspected by: Andrew Passalis, P.Eng.

Signature:

Checklist Item	Present (Yes/No)	Location	Length	Width	Depth	Extent	Description	Photographic Record	Severity Rating	Additional Comments
Settlement	Yes	FEATURE A See Figure PIN-2.4 (SW crest)	0.4 -3.0 m	0.3 - 0.6 m	0.10 - 0.15 m	Occasional (< 2 %)	4 Minor depressions	Tier II-10, 11, 29, 30, 37-39	Acceptable	Linear and oval-shaped depressions. No significant changes from previous 2015 assessment.
	No	FEATURE D See Figure PIN-2.4 (NE crest)	0.7 m	0.3 m	0.15 m	Isolated	Minor depression	-	Not Observable	Feature not observed during 2015 or 2016 inspections.
	Yes	FEATURE I See Figure PIN-2.4 (E crest) - New Obs.	2.5 m	0.8 m	0.05 m	Occasional (< 2 %)	Minor depression	Tier II -21, 22	Acceptable	Linear depression along east crest. Cover appears stable. New observation.
		FEATURE J See Figure PIN-2.4 (SW side slope) - New Obs.	1.5 - 2.0 m	0.2 m	0.05- 0.07 m	Occasional (< 2 %)	Minor depressions	Tier II -31, 32, 33, 34, 35, 36	Acceptable	Two linear depressions on the southwest side slope. Cover appears stable. New observation.
Erosion	Yes	FEATURE B See Figure PIN-2.4 (SW side slope near VT-1)	8 m	0.1-0.15 m	0.05 m	Occasional (< 2%)	Minor erosion	Tier II-37, 39	Acceptable	Single location. Washing of fines, self armouring. Slope appears stable. Associated with settlement feature below VT-1 (Feature A). Minor increase in length from 7 to 8 m and depth from 0.02 to 0.05 m from previous 2015 assessment.
		FEATURE C See Figure PIN-2.4 (SE side slope)	5 - 12 m	0.1 - 0.3 m	0.05 m		Minor erosion	Tier II-12-17	Acceptable	3 locations. Washing of fines, self armouring. Slope appears stable. No significant change from 2014 and 2015 assessments.
		FEATURE E See Figure PIN-2.4 (NW side slope)	8 - 15 m	0.3 - 0.5 m	0.05 - 0.10 m		Minor erosion	Tier II-52-55	Acceptable	2 locations. Washing of fines, self armouring. Slope appears stable. Marginal increase in width from 0.4 to 0.5 m and depth from 0.05 to 0.10 m from 2015 assessment.
		FEATURE G See Figure PIN-2.4 (NW side slope)	16 m	0.4 m	0.05 m		Minor erosion	Tier II-50-51	Acceptable	Single location. Washing of fines, self armouring. Slope appears stable. Minor increase in width from 0.25 to 0.40 m from previous 2015 assessment.
		FEATURE H See Figure PIN-2.4 (NE side slope below crest)	10 m	0.3 m	0.10 m		Minor erosion	Tier II-69, 70	Acceptable	Single location. Washing of fines, self armouring. Slope appears stable. Notable increase in length from 1.5 to 10.0 m, width from 0.15 to 0.30 m and depth from 0.05 to 0.10 m since previous 2015 assessment.
		FEATURE K See Figure PIN-2.4 (W side slope - New Obs.)	15 m	0.1 - 0.3 m	0.10 m		Minor erosion	Tier II-43, 48	Acceptable	Single location. Self armouring. Slope appears stable. New Observation.
		FEATURE L See Figure PIN-2.4 (N side slope - New Obs.)	6 m	0.1 - 0.3 m	0.10 m		Minor erosion	Tier II-67, 68	Acceptable	Single location. Self armouring. Slope appears stable. New Observation.
Frost Action	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Animal Burrows	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Vegetation	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Staining	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Vegetation Stress	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Seepage Points	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Debris Exposed	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Presence/Condition of Monitoring Instruments	Yes	See Figure PIN-2.4	N/A	N/A	N/A	N/A	VT-1, 2, 3, 4 MW-1, 2, 3, 4	Tier II - 37, T4, T2, T1 Tier II - 49, 27, 1, 71	Acceptable	N/A
Other Features of Note:	Yes	FEATURE F See Figure PIN-2.4 (N cover)	4 - 9 m	0.15 m	0.02 - 0.05 m	< 2%	Shallow Striations	Tier II-59-62	Acceptable	Parallel striations resulting from heavy equipment during final grading of cover. No change from previous assessments.
Additional Photos	Yes	See Figure PIN-2.4 and Photographic Record	N/A	N/A	N/A	N/A	General Photographic Record	N/A	Not Observable	General photos for documentation, no additional features of note.
Overall Landfill Performance:	**Acceptable**									

6.2 PRELIMINARY STABILITY ASSESSMENT

The Preliminary Stability Assessment for the Tier II Soil Disposal Facility has been completed as per the TOR and is included in Table XVII hereafter.

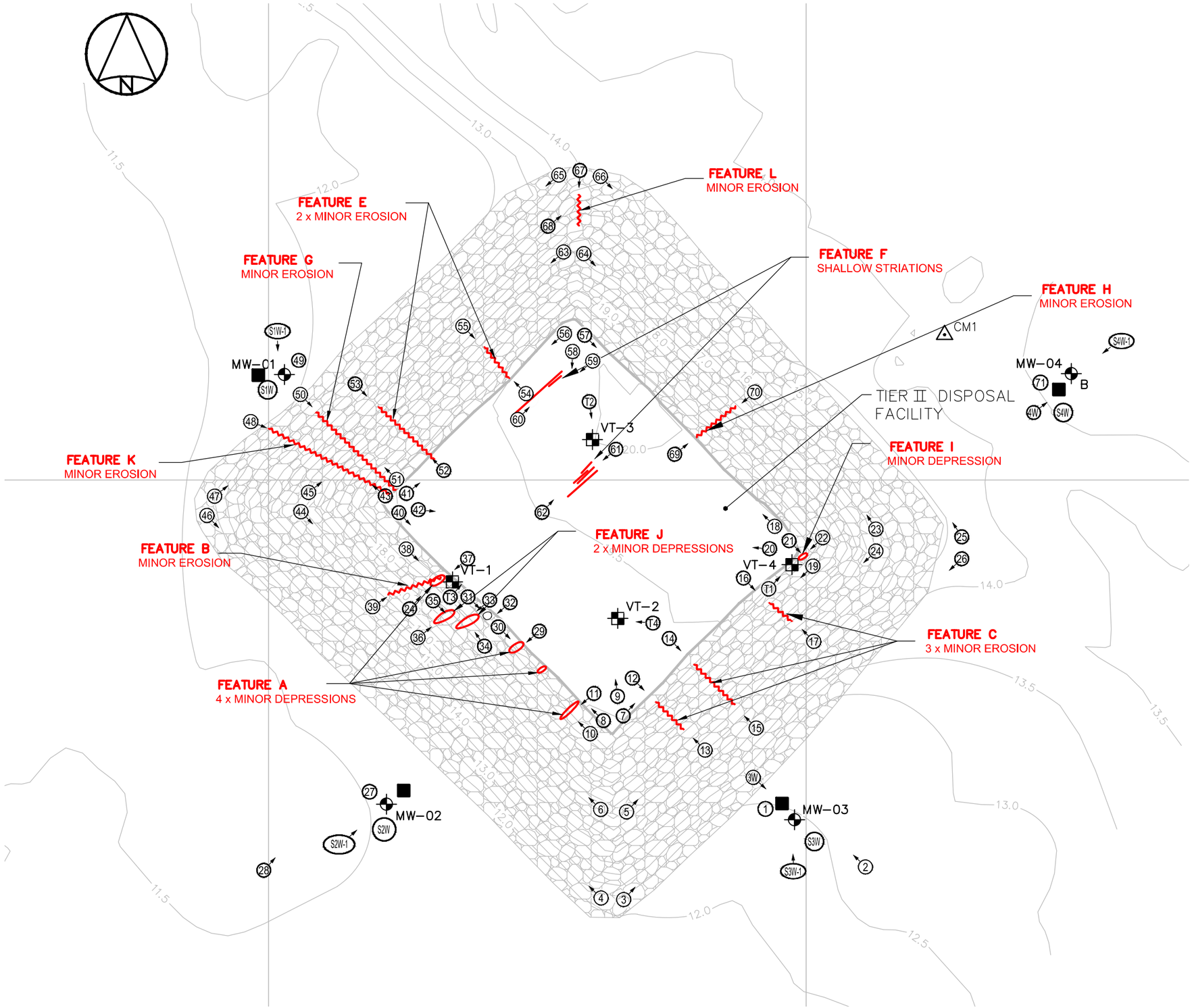
Table XVII: Preliminary Stability Assessment – Tier II Soil Disposal Facility

Feature	Severity Rating	Extent
Settlement	Acceptable	Occasional
Erosion	Acceptable	Occasional
Frost Action	Not observed	None
Staining	Not observed	None
Vegetation Stress	Not observed	None
Seepage/Ponded Water	Not observed	None
Debris exposure	Not observed	None
Overall Landfill Performance	**Acceptable**	

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

6.3 LOCATION PLAN

The Location Plan for the Tier II Disposal Facility has been completed as per the TOR and is included in the following page as Figure PIN-2.4.



LEGEND

- MONITORING WELL LOCATION (3)
- BACKGROUND MONITORING WELL LOCATION (1)
- GROUND TEMPERATURE CABLE LOCATION (4)
- MONITORING SOIL SAMPLE LOCATION (4)
- APPROX. PHOTOGRAPHIC VIEWPOINT
- MINOR SETTLEMENT (NTS)
- MINOR EROSION (NTS)
- SHALLOW STRIATIONS (NTS)
- CONTROL MONUMENT

0m 7.5m 15.0m 22.5m 30.0m 37.5m

NO.	VERSION	DATE	BY	VERIF.	APPR.
00	FINAL	17-03-13	J.P.	J.-P.P.	M.F.

Construction de Défense Canada
Defence Construction Canada

COLLECTION OF LANDFILL MONITORING DATA

PIN-2, CAPE YOUNG, NUNAVUT

TIER II DISPOSAL FACILITY

Englobe
1260 Lebourgneuf Boulevard
Suite 400
Quebec (Quebec) Canada, G2K 2G2
Phone : 418.704.8091
www.englobecorp.com

MEASUREMENT UNIT	SCALE:	DATE (month-year):
Metre	1 : 750	JANUARY 2017
DRAWN BY:	VERIFIED BY:	APPROVED BY:
J. POULIN	J.-P. PELLETIER	M. FLEURY P. ENG
PROJECT NO:	DRAWING NO:	PAGE
P-0009730-0-05-503	P-0009730-0-05-503-PIN-2D-PL	PL

FIGURE PIN-2.4

6.4 PHOTOGRAPHIC RECORDS

The Photographic Record for the Tier II Disposal Facility has been completed as per the TOR and is included in the following page in Table XVIII. Full-sized photographs are contained in the Addendum DVD-ROM.

Table XVIII: LANDFILL VISUAL INSPECTION PHOTO LOG (page 1 of 2)

Site Name: PIN-2, Cape Young
Landfill: Tier II Disposal Facility
Date Inspected: August 16, 2016
Inspected by: Andrew Passalis, P.Eng.

Photo (Tier II-)	Filename	Size (KB)	Date	Vantage Point		Caption
				Easting	Northing	
A4	P216_1915	4,205	15/08/16	501696.8	7646324	Aerial view looking east at Tier II DF - Refer to Figure PIN-2.1
T1	P216_2342	4,084	15/08/16	502497	7646283	View looking northeast at VT-4; MW-4 in background
T2	P216_2343	4,441	15/08/16	502461	7646312	View looking south at VT-3; VT-2 in background
T3	P216_2344	4,325	15/08/16	502433	7646276	View looking northeast at VT-1; VT-3 in background
T4	P216_2345	4,170	15/08/16	502471	7646273	View looking west at VT-2; VT-1 in background
1	P216_2147	4,013	16/08/16	502495.5	7646239	MW-3
2	P216_2148	4,184	16/08/16	502511.1	7646228	View looking northwest at southeast side of Tier II DF
3	P216_2149	4,170	16/08/16	502465.5	7646222	View looking northeast along southeast toe of Tier II DF
4	P216_2150	4,387	16/08/16	502462.2	7646223	View looking northwest along southwest toe of Tier II DF
5	P216_2151	4,084	16/08/16	502465.7	7646239	View looking northeast along southeast side slope of Tier II DF
6	P216_2152	4,199	16/08/16	502462.1	7646239	View looking northwest along southwest crest of Tier II DF
7	P216_2153	4,319	16/08/16	502465.4	7646257	View looking northeast along southeast crest of Tier II DF
8	P216_2154	4,428	16/08/16	502462.5	7646255	View looking northwest along southeast crest of Tier II DF
9	P216_2155	4,441	16/08/16	502463.4	7646258	View looking north across cover from south corner of Tier II DF
10	P216_2156	4,193	16/08/16	502459.2	7646254	View looking northwest at linear depression on southwest crest - FEATURE A
11	P216_2157	4,284	16/08/16	502458.9	7646259	View looking southwest at linear depression on southwest crest - FEATURE A
12	P216_2158	4,356	16/08/16	502468.2	7646262	View looking southeast at minor erosion on southeast side slope - FEATURE C
13	P216_2159	4,325	16/08/16	502480	7646251	View looking northwest at minor erosion on southeast side slope - FEATURE C
14	P216_2160	4,258	16/08/16	502475.5	7646269	View looking southeast at minor erosion on southeast side slope - FEATURE C
15	P216_2161	4,268	16/08/16	502489.7	7646255	View looking northwest at minor erosion on southeast side slope - FEATURE C
16	P216_2162	4,229	16/08/16	502489.2	7646281	View looking southeast at minor erosion on southeast side slope - FEATURE C
17	P216_2163	4,350	16/08/16	502500.4	7646271	View looking northwest at minor erosion on southeast side slope - FEATURE C
18	P216_2164	4,142	16/08/16	502497	7646289	View looking northwest along northeast crest of Tier II DF
19	P216_2165	4,209	16/08/16	502497.4	7646286	View looking southwest along southeast crest of Tier II DF
20	P216_2166	3,903	16/08/16	502494.3	7646287	View looking west across cover from east corner of Tier II DF
21	P216_2167	4,408	16/08/16	502497.6	7646288	View looking southeast at minor erosion on southwest side slope - FEATURE I (new)
22	P216_2168	4,039	16/08/16	502502.5	7646289	View looking southwest at minor erosion on southwest side slope - FEATURE I (new)
23	P216_2169	3,973	16/08/16	502513.2	7646290	View looking northwest along northeast side slope of Tier II DF
24	P216_2170	4,109	16/08/16	502512.9	7646287	View looking southwest along southeast side slope of Tier II DF
25	P216_2171	4,398	16/08/16	502529.1	7646288	View looking northwest along northeast toe of Tier II DF
26	P216_2172	4,329	16/08/16	502528.4	7646286	View looking southwest along southeast toe of Tier II DF
27	P216_2175	4,233	16/08/16	502419.9	7646241	MW-2
28	P216_2176	3,748	16/08/16	502399.9	7646228	View looking northeast at southwest side of Tier II DF
29	P216_2179	4,247	16/08/16	502449.1	7646271	View looking southwest at pothole type depression at crest of Tier II DF - FEATURE A
30	P216_2180	4,314	16/08/16	502443.5	7646272	View looking southeast at pothole type depression at crest of Tier II DF - FEATURE A
31	P216_2181	4,097	16/08/16	502436.1	7646278	View looking southeast at pothole type depression at crest of Tier II DF - FEATURE J (new)
32	P216_2182	4,179	16/08/16	502443.5	7646277	View looking southwest at pothole type depression at crest of Tier II DF - FEATURE J (new)

Table XVIII: LANDFILL VISUAL INSPECTION PHOTO LOG (page 2 of 2)

Site Name: PIN-2, Cape Young
Landfill: Tier II Disposal Facility
Date Inspected: August 16, 2016
Inspected by: Andrew Passalis, P.Eng.

Photo (Tier II-)	Filename	Size (KB)	Date	Vantage Point		Caption
				Easting	Northing	
33	P216_2183	4,241	16/08/16	502440.3	7646277	View looking southwest at linear depression on southwest side slope - FEATURE J (new)
34	P216_2184	4,302	16/08/16	502439.2	7646270	View looking northwest at linear depression on southwest side slope - FEATURE J (new)
35	P216_2185	4,272	16/08/16	502431.1	7646277	View looking southeast at subtle depression below crest on southwest side slope of Tier II DF - FEATURE J (new)
36	P216_2186	4,163	16/08/16	502429.9	7646272	View looking northeast at subtle depression below crest on southwest side slope of Tier II DF - FEATURE J (new)
37	P216_2187	4,206	16/08/16	502435.6	7646284	View looking southwest at minor depression on slope below VT-1 - FEATURE A
38	P216_2188	4,042	16/08/16	502426.9	7646286	View looking southeast at minor depression on slope below VT-1 - FEATURE A
39	P216_2189	4,082	16/08/16	502420.7	7646276	View looking east northeast at erosion on slope below VT-1 - FEATURES A/B
40	P216_2190	4,325	16/08/16	502424.8	7646294	View looking southeast along southwest crest of Tier II DF
41	P216_2191	4,152	16/08/16	502425.4	7646296	View looking northeast along northwest crest of Tier II DF
42	P216_2192	3,940	16/08/16	502427.8	7646294	View looking east across cover from west corner of Tier II DF
43	P216_2194	4,165	16/08/16	502421.7	7646297	View looking northwest at minor erosion on southeast side slope - FEATURE K (new)
44	P216_2195	4,047	16/08/16	502406.1	7646295	View looking southeast along southwest side slope of Tier II DF
45	P216_2196	3,960	16/08/16	502407.1	7646297	View looking northeast along northwest side slope of Tier II DF
46	P216_2197	3,836	16/08/16	502388.5	7646294	View looking southeast along southwest toe of Tier II DF
47	P216_2198	4,483	16/08/16	502389.2	7646297	View looking northeast along northwest toe of Tier II DF
48	P216_2199	4,306	16/08/16	502397.1	7646310	View looking southeast at minor erosion on southwest side slope - FEATURE K (new)
49	P216_2200	4,201	16/08/16	502404.6	7646321	MW-1
50	P216_2203	4,374	16/08/16	502407.2	7646315	View looking southeast at minor erosion on northwest side of Tier II DF - FEATURE G
51	P216_2204	4,426	16/08/16	502422	7646301	View looking northwest at minor erosion on northwest side of Tier II DF - FEATURE G
52	P216_2205	4,086	16/08/16	502431.5	7646303	View looking northwest at minor erosion on northwest side of Tier II DF - FEATURE E
53	P216_2206	4,305	16/08/16	502417.3	7646316	View looking southeast at minor erosion on northwest side of Tier II DF - FEATURE E
54	P216_2207	4,392	16/08/16	502447.2	7646317	View looking northwest at minor erosion on northwest side of Tier II DF - FEATURE E
55	P216_2208	4,319	16/08/16	502437	7646326	View looking southeast at minor erosion on northwest side of Tier II DF - FEATURE E
56	P216_2209	4,113	16/08/16	502455.7	7646327	View looking southwest along northeast crest of Tier II DF
57	P216_2210	4,029	16/08/16	502458.3	7646327	View looking southeast along northwest crest of Tier II DF
58	P216_2211	4,182	16/08/16	502456.6	7646324	View looking south across cover from north corner of Tier II DF
59	P216_2212	4,181	16/08/16	502460.5	7646323	View looking southwest at striations on north cover of Tier II DF from final grading - FEATURE F
60	P216_2213	4,408	16/08/16	502446.7	7646312	View looking northeast at striations on north cover of Tier II DF from final grading - FEATURE F
61	P216_2214	4,402	16/08/16	502464.3	7646306	View looking southwest at striations on cover of Tier II DF from final grading - FEATURE F
62	P216_2215	4,003	16/08/16	502451.4	7646295	View looking northeast at striations on cover of Tier II DF from final grading - FEATURE F
63	P216_2216	4,101	16/08/16	502455.8	7646342	View looking southwest along northwest side slope of Tier II DF
64	P216_2217	3,795	16/08/16	502457.8	7646342	View looking southeast along northeast side slope of Tier II DF
65	P216_2218	4,089	16/08/16	502455.3	7646357	View looking southwest along northwest toe of Tier II DF
66	P216_2219	4,052	16/08/16	502461	7646357	View looking southeast along northeast toe of Tier II DF
67	P216_2220	4,146	16/08/16	502458	7646357	View looking south at minor erosion on north side slope of Tier II DF - FEATURE L (new)
68	P216_2221	4,281	16/08/16	502452.6	7646347	View looking northeast at minor erosion on north side slope of Tier II DF - FEATURE L (new)
69	P216_2222	4,381	16/08/16	502476.8	7646305	View looking northeast at minor erosion on northeast crest of Tier II DF - FEATURE H
70	P216_2223	4,354	16/08/16	502489.1	7646316	View looking southwest at minor erosion on northeast crest of Tier II DF - FEATURE H
71	P216_2224	4,001	16/08/16	502547.8	7646318	MW-4
Soil Sampling						
S1W	P216_2201	4,204	16/08/16	502402.4	7646323	Sampling location P213-1W located downgradient of Tier II DF
S1W-1	P216_2202	4,309	16/08/16	502401.6	7646326	View looking south at MW-01 located downgradient of Tier II DF
S2W	P216_2177	4,375	16/08/16	502418.5	7646235	Sampling location P213-2W located downgradient of Tier II DF
S2W-1	P216_2178	4,333	16/08/16	502414.8	7646233	View looking northeast at MW-02 located downgradient of Tier II DF
S3W	P216_2173	4,423	16/08/16	502497.7	7646232	Sampling location P213-3W located downgradient of Tier II DF
S3W-1	P216_2174	4,376	16/08/16	502497.4	7646229	View looking north at MW-03 located downgradient of Tier II DF
S4W	P216_2225	4,217	16/08/16	502553.6	7646324	Sampling location P213-4W located upgradient of Tier II DF
S4W-1	P216_2226	4,223	16/08/16	502557	7646325	View looking southwest at MW-04 located upgradient of Tier II DF

6.5 THERMAL MONITORING DATA

Data from all thermistors was successfully retrieved during the August 2016 inspection and batteries were replaced in each datalogger as specified in the TOR.

Manual reading of the analogues/thermocouples at VT-1 identified several anomalous readings, including beads 6, 7, 8, 11 and 15. Review of the real-time thermal data monitored following battery replacement also noted anomalous readings at analogues/thermocouples 2, 4, 6, 7, 8, 11, and 15, suggesting the presence of a problem with the thermistor string installation, similar to observations made after re-installation of the datalogger in 2015. Analogues/thermocouples at the remaining thermistor locations were observed to be functioning properly at the time of the inspection. Further review of the downloaded data sets identified periodic errors in temperature readings for beads 1 and 9 at VT-4 throughout the 2015 - 2016 monitoring period.

Internal memories have been reset, and clocks synchronized using the Prolog Software. Manual resistive readings have been collected from the thermistor strings as per the TOR. Manual readings and inspection results for each thermistor are presented on the Thermistor Annual Maintenance Reports (VT-1 to VT-4) included in this section of the report.

The protective casing at VT-2 was found to have a small crack on the side of the cover during the previous inspection period. The crack does not impede the function of the casing, as the datalogger and thermistor string are protected from the elements and secured (locked). No maintenance is anticipated for the next monitoring period.

Thermistor Annual Maintenance Report

Contractor Name:	**Englobe Corp.**	Inspection Date:	**15/08/2016**
Prepared By:	**A.Passalis**		

Thermistor Information

Site Name:	**PIN-2**		Thermistor Location		**Tier II Disposal Facility**		
Thermistor Number:	**VT-1**		Inclination		**Vertical**		
Install Date:			First Date Event		**09/08/2016**	Last Date Event	**15/08/2015**
Coordinates and Elevation		N	**7646281.0**	E	**502434.2**	Elev	**19.1**
Length of Cable (m)		Cable Lead Above Ground (m)	**3.25**	Nodal Points			**16**
Datalogger Serial #	**7040010**			Cable Serial Number			**VT-1**

Thermistor Inspection

	Good	Needs Maintenance	
Casing	**Yes**	**No**	
Cover	**Yes**	**No**	
Data Logger	**Yes**	**No**	
Cable	**Yes**	**No**	
Beads	**Select**	**No**	error reading in Beads 6, 7, 8, 9, 11 and 15.
Battery Installation Date	**15/08/2016**		
Battery Levels	Main **11.34**	Aux	**13.87 V (13.42 old)**

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	9.776	10.3165
2	10.116	9.6554
3	11.686	6.7643
4	12.291	4.4509
5	15.675	0.9666
6	399.40	93.6829
7	2.349	42.9579
8	4.112	29.3341

Bead	ohms	Degrees C
9	11.790	10.7003
10	19.172	-3.3240
11	691.4	76.9765
12	21.25	-5.2463
13	21.65	-5.6611
14	22.12	-6.0892
15	226.0	-112.8000
16	22.61	-6.6286

Observations and Proposed Maintenance

A select number of thermistor beads appear to be faulty (erroneous resistive and temperature readings).
Clock was 29 min slow. Memory at 40 %.
Download thermistor data. File: Site_021_VT-1_Aug_15_2016
Reset clock and restart datalogger.
A select number of thermistor beads appear to be faulty.

Thermistor Annual Maintenance Report

Contractor Name:	**Englobe Corp.**	Inspection Date:	**15/08/2016**
Prepared By:	**A.Passalis**		

Thermistor Information

Site Name:	**PIN-2**	Thermistor Location		**Tier II Disposal Facility**			
Thermistor Number:	**VT-2**	Inclination		**Vertical**			
Install Date:		First Date Event		**09/08/2016**	Last Date Event		**15/08/2015**
Coordinates and Elevation	N	**7646274.2**	E	**502465.0**		Elev	**19.2**
Length of Cable (m)	Cable Lead Above Ground (m)	**3.25**	Nodal Points				**13**
Datalogger Serial #	**7050024**		Cable Serial Number				**VT-2**

Thermistor Inspection

	Good	Needs Maintenance	
Casing	**Yes**	**No**	
Cover	**Yes**	**No**	Cracked cover temporarily patched with tape
Data Logger	**Yes**	**No**	
Cable	**Yes**	**No**	
Beads	**Yes**	**No**	
Battery Installation Date	**15/08/2016**		
Battery Levels	Main **11.34 V**	Aux	**14.11 V (13.32 old)**

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	10.138	9.7338
2	9.344	10.7003
3	9.850	10.2176
4	11.828	6.5344
5	13.825	3.3743
6	16.427	0.1633
7	16.882	-0.5575
8	17.522	-1.3254

Bead	ohms	Degrees C
9	18.558	-2.4362
10	19.518	-3.4544
11	20.36	-4.3600
12	21.26	-5.2276
13	21.89	-5.7068
	-	-
	-	-
	-	-

Observations and Proposed Maintenance

Protective casing cover has a small crack on the side, however does not impede functionability.
Clock was 26 min slow. Memory at 40 %.
Download thermistor data. File: Site_024_PIN-2_VT-2_Aug_15_2016
Reset clock and restart datalogger.

Thermistor Annual Maintenance Report

Contractor Name:	**Englobe Corp.**	Inspection Date:	**15/08/2016**
Prepared By:	**A.Passalis**		

Thermistor Information

Site Name:	**PIN-2**	Thermistor Location		**Tier II Disposal Facility**			
Thermistor Number:	**VT-3**	Inclination		**Vertical**			
Install Date:	**xx/xx/2011**	First Date Event		**09/08/2016**	Last Date Event		**15/08/2015**
Coordinates and Elevation	N	**7646307.5**	E	**502460.3**		Elev	**20.0**
Length of Cable (m)		Cable Lead Above Ground (m)	**2.15**	Nodal Points			**12**
Datalogger Serial #	**7050029**			Cable Serial Number			**VT-3**

Thermistor Inspection

	Good	Needs Maintenance	
Casing	**Yes**	**No**	
Cover	**Yes**	**No**	
Data Logger	**Yes**	**No**	
Cable	**Yes**	**No**	
Beads	**Yes**	**No**	
Battery Installation Date	**15/08/2016**		
Battery Levels	Main **11.34 V**	Aux	**13.50 V (13.14 old)**

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	9.592	10.3165
2	11.390	7.1719
3	13.333	4.1385
4	15.606	0.9666
5	16.938	-0.4735
6	17.403	-1.3057
7	18.394	-2.2735
8	19.758	-3.6871

Bead	ohms	Degrees C
9	21.06	-5.0065
10	21.85	-5.7471
11	22.64	-6.4140
12	22.91	-6.6940
	-	-
	-	-
	-	-
	-	-

Observations and Proposed Maintenance

Clock was 21 min slow. Memory at 40 %.
Download thermistor data. File: Site_029_VT-3_Aug_15_2016
Reset clock and restart datalogger.

Thermistor Annual Maintenance Report

Contractor Name:	**Englobe Corp.**	Inspection Date:	**15/08/2016**
Prepared By:	**A.Passalis**		

Thermistor Information

Site Name:	**PIN-2**	Thermistor Location		**Tier II Disposal Facility**			
Thermistor Number:	**VT-4**	Inclination		**Vertical**			
Install Date:		First Date Event		**09/08/2016**	Last Date Event		**15/08/2015**
Coordinates and Elevation	N	**7646284.2**	E	**502497.4**		Elev	**19.9**
Length of Cable (m)	Cable Lead Above Ground (m)	**2.50**	Nodal Points				**16**
Datalogger Serial #	**7010044**		Cable Serial Number				**VT-4**

Thermistor Inspection

	Good	Needs Maintenance	
Casing	**Yes**	**No**	
Cover	**Yes**	**No**	
Data Logger	**Yes**	**No**	
Cable	**Yes**	**No**	
Beads	**Yes**	**No**	
Battery Installation Date	**15/08/2016**		
Battery Levels	Main **11.34 V**	Aux	**13.87 V (13.63 old)**

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	10.341	9.3320
2	11.450	7.1619
3	13.284	4.1534
4	15.439	1.2487
5	16.666	-0.2957
6	17.573	-1.2957
7	19.347	-2.1446
8	19.729	-3.5433

Bead	ohms	Degrees C
9	20.380	-4.2967
10	20.97	-4.8497
11	21.22	-5.1770
12	21.72	-5.5780
13	21.94	-5.8977
14	22.21	-6.3124
15	22.37	-6.3489
16	22.66	-6.5579

Observations and Proposed Maintenance

Clock was 22 min slow. Memory at 40 %.
Download thermistor data. File: Site_044_PIN-2 _VT-4_Aug_15_2016
Reset clock and restart datalogger.

6.6 SOIL SAMPLE ANALYTICAL DATA

The soil chemical analysis results for the 2016 Tier II Disposal Facility samples are presented in Table XIX hereafter. Certificates of analyses and results of field duplicates collected as part of the QA/QC program are presented in Annexes 1 and 2 at the end of this report.

Table XIX: Soil Chemical Analysis Results - Tier II Disposal Faclity

Sample #	Location	Depth (cm)	Parameters													
			As [mg/kg]	Cd [mg/kg]	Cr [mg/kg]	Co [mg/kg]	Cu [mg/kg]	Pb [mg/kg]	Ni [mg/kg]	Zn [mg/kg]	Hg [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_{34}-C_{50} [mg/kg]
Detection Limit			1.0	0.050	1.0	0.5	1.0	0.5	1.0	10	0.050	0.010	12	10	50	50
Upgradient Soil Samples																
P216-4WA	MW-4	0-15	1.7	0.170	7.5	1.1	2.5	2.6	4.1	11	<0.050	<0.010	<12	<10	<50	<50
P216-4WB		40-50	1.8	0.110	4.6	1.3	1.9	2.8	3.0	<10	<0.050	<0.010	<12	<10	<50	<50
Downgradient Soil Samples																
P216-1WA	MW-1	0-15	4.4	0.590	4.6	1.9	12.0	2.7	6.5	20	0.190	<0.030 (1)	<26 (2)	<24 (1)	<120 (1)	<120 (1)
P216-BD1 (Intra-Lab Blind Duplicate)		0-15	5.0 (1)	0.620	5.8	2.2	12.0	3.0	7.4	<20	0.140	<0.020 (1)	<29 (2)	<26 (1)	<130 (1)	<130 (1)
P216-1WA (Inter-Lab Blind Duplicate)		0-15	5.0	0.580	4.6	2.0	11.2	2.3	6.9	21	0.100	<0.05	<10	<50	56	<100
Average Value for P216-1WA Sample		0-15	4.80 ± 0.35	0.60 ± 0.02	5.00 ± 0.69	2.03± 0.15	11.73± 0.46	2.67 ± 0.35	6.93 ± 0.45	20.50 ± 0.71	--	--	--	--	--	--
P216-1WB		40-50	3.7	0.240	12.0	2.2	5.2	4.2	7.2	15	<0.050	<0.010	<12	<10	<50	<50
P216-2WA	MW-2	0-15	2.8	0.230	6.6	1.9	8.0	2.6	6.4	17	<0.050	<0.010	<12	<10	100	<50
P216-2WB		40-50	6.2	0.210	11.0	2.6	5.4	2.7	6.3	17	<0.050	<0.010	<12	<10	<50	<50
P216-3WA	MW-3	0-15	2.0	0.170	8.8	1.1	3.7	2.6	4.5	19	<0.050	<0.010	<12	<10	<50	<50
P216-3WB		40-50	2.6	0.088	6.4	1.8	3.0	2.8	3.9	13	<0.050	<0.010	<12	<10	<50	<50

Notes:

(1) DL raised due to high moisture content

(2) DL raised due to moisture content > 50 %

6.7 GROUNDWATER SAMPLE ANALYTICAL DATA

The groundwater chemical analysis results for the 2016 Tier II Disposal Facility samples are presented in Table XX hereafter. Certificates of analyses and results for groundwater samples collected as part of the QA/QC program are presented in Annexes 1 and 2 at the end of this report.

Table XX: Groundwater Chemical Analysis Results - Tier II Disposal Faclity

Sample #	Location	Parameters												
		As [mg/L]	Cd [mg/L]	Cr [mg/L]	Co [mg/L]	Cu [mg/L]	Pb [mg/L]	Ni [mg/L]	Zn [mg/L]	Hg [mg/L]	PCB [mg/L]	F1 C_6-C_{10} [mg/L]	F2 C_{10}-C_{16} [mg/L]	F3 C_{16}-C_{34} [mg/L]
Detection Limit		0.00010	0.000010	0.0010	0.00050	0.00050	0.00020	0.0010	0.0050	0.000050	0.00005	0.1	0.1	0.2
Upgradient Groundwater Sample														
P215-4W	MW-4	0.00026	0.000017	<0.0010	<0.00050	0.00120	<0.00020	0.0030	<0.0050	<0.000050	<0.00005	<0.1	<0.1	<0.2
Downgradient Groundwater Samples														
P216-1W	MW-1	0.00135	0.000020	0.0033	<0.00050	0.01930	0.00051	0.0067	0.0253	<0.000050	<0.00005	<0.1	<0.1	<0.2
P216-2W	MW-2	0.00058	0.000013	<0.0010	<0.00050	0.00125	<0.00020	0.0026	<0.0050	<0.000050	<0.00005	<0.1	<0.1	<0.2
P216-BDW1 (Intra-Lab Blind Duplicate)		0.00060	0.000021	<0.0010	<0.00050	0.00112	<0.00020	0.0028	<0.0050	<0.000050	<0.00005	<0.1	<0.1	<0.2
P216-2W (Inter-Lab Blind Duplicate)		0.00060	0.000020	<0.0005	<0.00010	<0.001	<0.0001	0.0030	0.0030	0.000009	<0.00005	<0.1 (1)	<0.1	<0.1
Average Value for P215-2WA Sample		0.00059 ± 0.00001	0.000018 ± 0.000004	--	--	0.0019 ± 0.00009	--	0.0028 ± 0.0002	--	--	--	--	--	--
P216-3W	MW-3	0.00033	0.000027	<0.0010	<0.0005	0.00137	<0.0002	0.0030	<0.0050	<0.000050	<0.00005	<0.1	<0.1	<0.2

(1): Holding Time Exceeded

6.8 MONITORING WELL SAMPLING / INSPECTION LOGS

The monitoring well sampling logs for MW-1 to MW-4 are presented in this section.

Monitoring Well Sampling Log

Site Name: PIN-2 Landfill Name: Tier II Disposal Facility

Monitoring Well ID: MW-1

Sample Number(s) include dups.: P216-1W

Bottles filled (by parameter type): 100 mL (Met), 2x500 L amber (PCBs), 2x250 L amber/2 x 40 mL (PHCs)

Date of Sampling Event: 17-Aug-16 Time: 10:20

Weather: 8C, Cloudy, 15-25 km/h NW

Names of Samplers: A.Passalis

Description of Well Condition and Surrounding ground conditions (note ponding of water):

Good condition. no ponding

Lock (condition, presence, model, manufacturer): Good, KA1

Pre-Measured Data (From Water Well Record Log)

*Depth of well installation (cm)= 340 Diameter of well (cm)= 4

*Depth to top of screen (cm)= 40 Length screened section (cm)= 300

*note: *depths are from ground surface*

Field Measurements

Measurement method (interface probe, tape, etc): Interface

Well pipe height above ground (cm) (to top of pipe)= 54

Static water level (cm) from top of pipe = 229

Static water level (cm) (below ground surface) calculated = 175

Measured well refusal depth (cm) (measure after sampling)= 245

Thickness of water column (cm)= 16 Static volume of water in well (mL)= 201

Free product thickness (mm)= 0 Evidence of sludge or siltation: No

Purging Information Summary*

Purging/sampling equipment, sampling technique and equipment calibration information: Peristaltic pump with dedicated 1/4" LDPE tubing, multimeter, turbidimeter with daily calibration check

Well purged (Y/N): Y Recharge Rate: >200 mL/min

Volume Purged (L) (note multiple purging events if applicable): 1.5

Parameter	Initial	Stabilized	Final	*Notes (if not stabilized)*
pH	8.3	8.1	8.1	
Conductivity (uS/cm)	738	997	1014	
Turbidity (NTU)	115	74.1	72.6	
Temperature (degC)	1.7	1.2	1.2	

Visual/olfactory observations (incl. colour, odour, presence of free product/sheen/globules, siltation…): Clear, colourless, odourless

Decontamination of sampling equipment

Type of decontamination fluid (s): Non required,dedicated tubing

Number washes: N/A Number rinses: N/A

Other Relevant Comments:

* Complete field notes including full suite of water quality indicator parameters VS time as per EPA low flow sampling procedures should be apended to this summary.

Monitoring Well Sampling Log

Site Name: PIN-2 Landfill Name: Tier II Disposal Facility

Monitoring Well ID: MW-2

Sample Number(s) include dups.: P216-2W, P216-BDW1, P215-2W (Exova)

Bottles filled (by parameter type): 3x100 mL (Met), 6x500 L amber (PCBs), 6x250 L amber/7 x 40 mL (PHCs)

Date of Sampling Event: 17-Aug-16 Time: 9:40

Weather: 8C, Cloudy, 15-25 km/h NW

Names of Samplers: A.Passalis

Description of Well Condition and Surrounding ground conditions (note ponding of water):

Good condition. no ponding

Lock (condition, presence, model, manufacturer): Good, KA1

Pre-Measured Data (From Water Well Record Log)

*Depth of well installation (cm)= 340 Diameter of well (cm)= 4

*Depth to top of screen (cm)= 40 Length screened section (cm)= 300

*note: *depths are from ground surface*

Field Measurements

Measurement method (interface probe, tape, etc): Interface

Well pipe height above ground (cm) (to top of pipe)= 63

Static water level (cm) from top of pipe = 162

Static water level (cm) (below ground surface) calculated = 99

Measured well refusal depth (cm) (measure after sampling)= 305

Thickness of water column (cm)= 143 Static volume of water in well (mL)= 1796

Free product thickness (mm)= 0 Evidence of sludge or siltation: No

Purging Information Summary*

Purging/sampling equipment, sampling technique and equipment calibration information: Peristaltic pump with dedicated 1/4" LDPE tubing, multimeter, turbidimeter with daily calibration check

Well purged (Y/N): Y Recharge Rate: >200 mL/min

Volume Purged (L) (note multiple purging events if applicable): 5.0

Parameter	Initial	Stabilized	Final	*Notes (if not stabilized)*
pH	8.0	7.8	7.8	
Conductivity (uS/cm)	796	785	784	
Turbidity (NTU)	10.7	4.55	4.61	
Temperature (degC)	2.2	2.1	2.2	

Visual/olfactory observations (incl. colour, odour, presence of free product/sheen/globules, siltation…): Clear, colourless, odourless

Decontamination of sampling equipment

Type of decontamination fluid (s): Non required,dedicated tubing

Number washes: N/A Number rinses: N/A

Other Relevant Comments:

* Complete field notes including full suite of water quality indicator parameters VS time as per EPA low flow sampling procedures should be apended to this summary.

Monitoring Well Sampling Log

Site Name: PIN-2 Landfill Name: Tier II Disposal Facility

Monitoring Well ID: MW-3

Sample Number(s) include dups.: P216-3W

Bottles filled (by parameter type): 100 mL (Met), 2x500 L amber (PCBs), 2x250 L amber/2 x 40 mL (PHCs)

Date of Sampling Event: 17-Aug-16 Time: 9:00

Weather: 8C, Cloudy, 15-25 km/h NW

Names of Samplers: A.Passalis

Description of Well Condition and Surrounding ground conditions (note ponding of water):

Good condition. no ponding

Lock (condition, presence, model, manufacturer): Good, KA1

Pre-Measured Data (From Water Well Record Log)

*Depth of well installation (cm)= 340 Diameter of well (cm)= 4

*Depth to top of screen (cm)= 40 Length screened section (cm)= 300

*note: *depths are from ground surface*

Field Measurements

Measurement method (interface probe, tape, etc): Interface

Well pipe height above ground (cm) (to top of pipe)= 58

Static water level (cm) from top of pipe = 215

Static water level (cm) (below ground surface) calculated = 157

Measured well refusal depth (cm) (measure after sampling)= 294

Thickness of water column (cm)= 79 Static volume of water in well (mL)= 992

Free product thickness (mm)= 0 Evidence of sludge or siltation: No

Purging Information Summary*

Purging/sampling equipment, sampling technique and equipment calibration information: Peristaltic pump with dedicated 1/4" LDPE tubing, multimeter, turbidimeter with daily calibration check

Well purged (Y/N): Y Recharge Rate: ~150 mL/min

Volume Purged (L) (note multiple purging events if applicable): 3.5

Parameter	Initial	Stabilized	Final	*Notes (if not stabilized)*
pH	8.2	8.0	8.0	
Conductivity (uS/cm)	744	753	751	
Turbidity (NTU)	18.8	6.33	5.96	
Temperature (degC)	2.3	2.2	2.2	

Visual/olfactory observations (incl. colour, odour, presence of free product/sheen/globules, siltation…): Clear, colourless, odourless

Decontamination of sampling equipment

Type of decontamination fluid (s): Non required,dedicated tubing

Number washes: N/A Number rinses: N/A

Other Relevant Comments:

* Complete field notes including full suite of water quality indicator parameters VS time as per EPA low flow sampling procedures should be apended to this summary.

Monitoring Well Sampling Log

Site Name: PIN-2 Landfill Name: Tier II Disposal Facility

Monitoring Well ID: MW-4

Sample Number(s) include dups.: P216-4W

Bottles filled (by parameter type): 100 mL (Met), 2x500 L amber (PCBs), 2x250 L amber/2 x 40 mL (PHCs)

Date of Sampling Event: 17-Aug-16 Time: 11:40

Weather: 8C, Cloudy, 15-25 km/h NW

Names of Samplers: A.Passalis

Description of Well Condition and Surrounding ground conditions (note ponding of water):

Good condition. no ponding

Lock (condition, presence, model, manufacturer): Good, KA1

Pre-Measured Data (From Water Well Record Log)

*Depth of well installation (cm)= 340 Diameter of well (cm)= 4

*Depth to top of screen (cm)= 40 Length screened section (cm)= 300

*note: *depths are from ground surface*

Field Measurements

Measurement method (interface probe, tape, etc): Interface

Well pipe height above ground (cm) (to top of pipe)= 56

Static water level (cm) from top of pipe = 187

Static water level (cm) (below ground surface) calculated = 131

Measured well refusal depth (cm) (measure after sampling)= 315

Thickness of water column (cm)= 128 Static volume of water in well (mL)= 1608

Free product thickness (mm)= 0 Evidence of sludge or siltation: No

Purging Information Summary*

Purging/sampling equipment, sampling technique and equipment calibration information: Peristaltic pump with dedicated 1/4" LDPE tubing, multimeter, turbidimeter with daily calibration check

Well purged (Y/N): Y Recharge Rate: >200 mL/min

Volume Purged (L) (note multiple purging events if applicable): 4.7

Parameter	Initial	Stabilized	Final	*Notes (if not stabilized)*
pH	8.2	8.0	8.1	
Conductivity (uS/cm)	727	720	726	
Turbidity (NTU)	17.0	5.02	6.12	
Temperature (degC)	3.0	2.7	2.6	

Visual/olfactory observations (incl. colour, odour, presence of free product/sheen/globules, siltation…): Clear, colourless, odourless

Decontamination of sampling equipment

Type of decontamination fluid (s): Non required,dedicated tubing

Number washes: N/A Number rinses: N/A

Other Relevant Comments:

* Complete field notes including full suite of water quality indicator parameters VS time as per EPA low flow sampling procedures should be apended to this summary.

7 AIRSTRIP SOUTH LANDFILL

7.1 SUMMARY

On August 15, 2016 a visual inspection was completed at the Airstrip South Landfill. Soil samples were collected from four stations located upgradient and downgradient of the landfill.

No PCB or TPH concentrations were detected at any of the soil sample locations, with the exception of one downgradient station (P2-16) where TPH Fraction 3 has been noted at surface (120 mg/kg) and PCB at depth (0.011 mg/kg). No high metal concentrations have been detected in any of the soil samples collected, however a slightly elevated concentration of zinc was noted at surface at downgradient location P2-16 (48 mg/kg).

As of the 2016 monitoring event, no features were identified with “significant” or “unacceptable” severity ratings. Evidence of minor settlement has been noted at three locations, including one existing single area on the west side slope (Feature A) and two newly observed areas on the west side slope of the Airstrip South Landfill. New areas included an isolated pothole type depression (Feature B) and a linear depression (Feature C). Feature A appears consistent with findings from the previous 2015 assessment.

At this time, the overall performance of the landfill is rated as acceptable.

The Visual Inspection Checklist is included in Table XXI of this report and has been completed as per the TOR. Please refer to Figure PIN-2.5 for a sketch of the Airstrip South Landfill detailing the location of photographs and features.

Table XXI: Visual Inspection Checklist / Report – Airstrip South Landfill

DEW Line Cleanup: Post-construction - Landfill Monitoring
Visual Inspection Checklist

Inspection Report – Page 1 of 2

SITE NAME: PIN-2 Cape Young
LANDFILL DESIGNATION: Airstrip South Landfill (Existing Regrade Area)
DATE OF INSPECTION: August 15, 2016
DATE OF PREVIOUS INSPECTION: August 15, 2015
INSPECTED BY: A. Passalis
REPORT PREPARED BY: A. Passalis
MONITORING EVENT NUMBER: 5
The inspector/reporter represents to the best of his/her 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 XXI: PIN-2, CAPE YOUNG - AIRSTRIP SOUTH LANDFILL (Page 2 of 2)

Site Name: PIN-2, CAPE YOUNG
Landfill: Airstrip South Landfill
Designation: Existing Regrade Area
Date Inspected: August 15, 2016
Inspected by: Andrew Passalis, P.Eng.

Signature: 

Checklist Item	Present (Yes/No)	Location	Length	Width	Depth	Extent	Description	Photographic Record	Severity Rating	Additional Comments
Settlement	Yes	FEATURE A See Figure PIN-2.5 (W side slope)	6 m	0.3 m	0.1 m	Isolated	Linear depression	ASLF-9, 10	Acceptable	Shallow depression. Slope appears stable. No change since initial observation in 2014.
		FEATURE B See Figure PIN-2.5 (W side slope) - New Obs.	0.3 m	0.3 m	0.1 m	Isolated	Pothole-type depression	ASLF-11, 12	Acceptable	Shallow depression. Slope appears stable. New observation.
		FEATURE C See Figure PIN-2.5 (W side slope) - New Obs.	0.8 m	0.3 m	0.15 m	Isolated	Linear depression	ASLF-13, 14	Acceptable	Shallow depression. Slope appears stable. New observation.
Erosion	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Frost Action	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Animal Burrows	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Vegetation	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Staining	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Vegetation Stress	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Seepage Points	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Debris Exposed	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Presence/Condition of Monitoring Instruments	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Other Features of Note:	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Additional Photos	Yes	See Figure PIN-2.5 and Photographic Record	N/A	N/A	N/A	N/A	General Photographic Record	N/A	Not Observable	General photos for documentation, no additional features of note.
Overall Landfill Performance:	**Acceptable**									

7.2 PRELIMINARY STABILITY ASSESSMENT

The Preliminary Stability Assessment for the Airstrip South Landfill has been completed as per the TOR and is included as Table XXII hereafter.

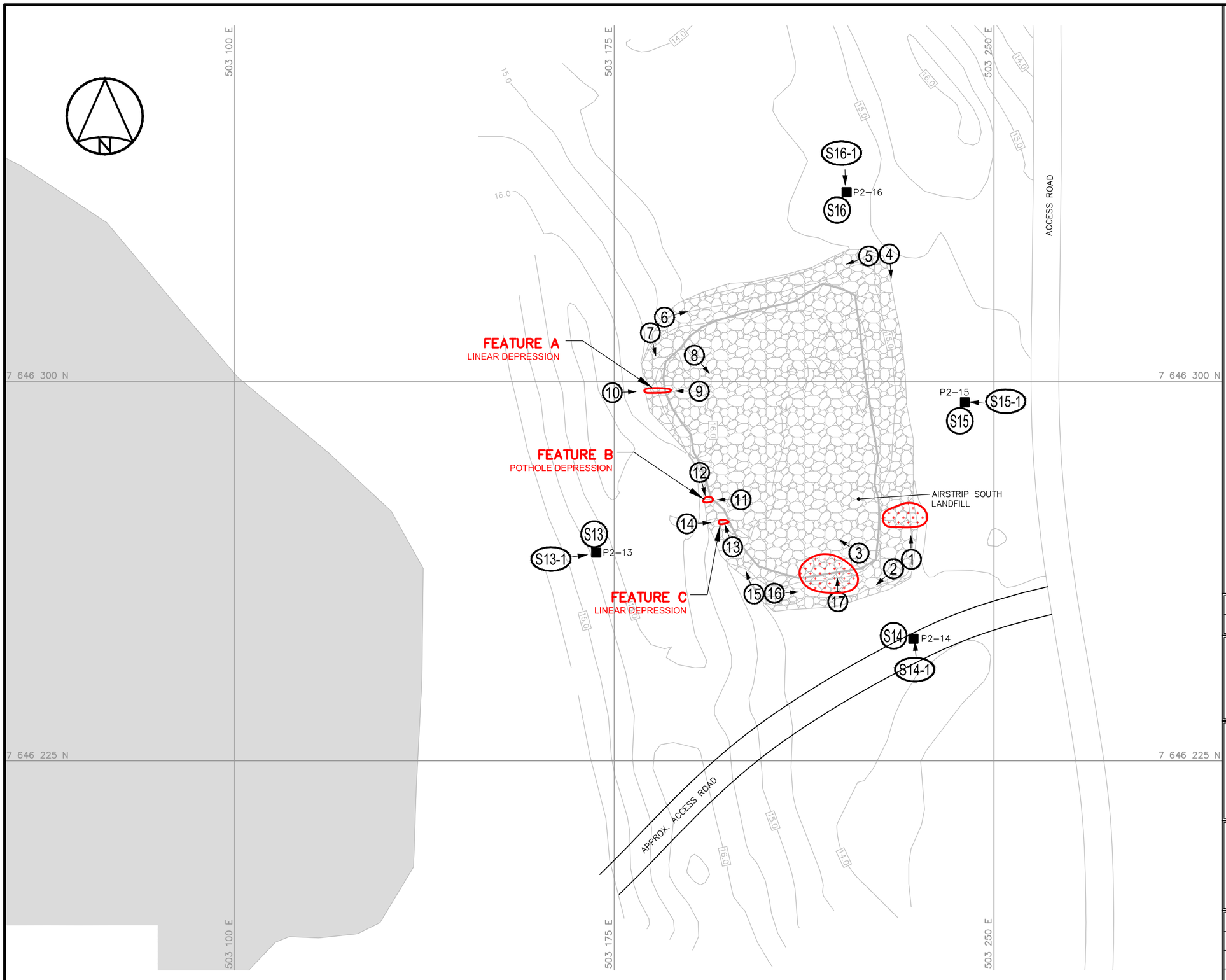
Table XXII: Preliminary Stability Assessment – Airstrip South Landfill

Feature	Severity Rating	Extent
Settlement	Acceptable	Isolated
Erosion	Not observed	None
Frost Action	Not observed	None
Staining	Not observed	None
Vegetation Stress	Not observed	None
Seepage/Ponded Water	Not observed	None
Debris exposure	Not observed	None
Overall Landfill Performance	**Acceptable**	

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

7.3 LOCATION PLAN

The Location Plan for the Airstrip South Landfill has been completed as per the TOR and is presented in Figure PIN-2.5.



LEGEND

- MONITORING SOIL SAMPLE LOCATION (4)
- APPROX. PHOTOGRAPHIC VIEWPOINT
- BODY OF WATER
- LINEAR DEPRESSION (NTS)
- SPARSE VEGETATION (NTS)

0m 7.5m 15.0m 22.5m 30.0m 37.5m

NO.	VERSION	DATE	BY	VERIF.	APPR.
00	FINAL	17–03–03	J.P.	J.–P.P.	M.F.

Construction de Défense Canada
Defence Construction Canada

COLLECTION OF LANDFILL MONITORING DATA

PIN-2, CAPE YOUNG, NUNAVUT

AIRSTRIP SOUTH LANDFILL

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MEASUREMENT UNIT	SCALE:	DATE (month–year):
Metre	1 : 750	JANUARY 2017
DRAWN BY:	VERIFIED BY:	APPROVED BY:
J. POULIN	J.–P. PELLETIER	M. FLEURY P. ENG
PROJECT NO:	DRAWING NO:	PAGE
P-0009730-0-05-503	P-0009730-0-05-503-PIN-2E-PL	PL

FIGURE PIN-2.5

7.4 PHOTOGRAPHIC RECORDS

The Photographic Record for the Airstrip South Landfill has been completed as per the TOR and is included in Table XXIII hereafter. Full-sized photographs are contained in the Addendum DVD-ROM.

Table XXIII: LANDFILL VISUAL INSPECTION PHOTO LOG

Site Name: PIN-2, Cape Young
Landfill: Airstrip South Landfill
Date Inspected: August 15, 2016
Inspected by: Andrew Passalis, P.Eng.

Photo (ASLF-)	Filename	Size (KB)	Date	Vantage Point		Caption
				Easting	Northing	
A5	P216_1924	4,131	15/08/16	503596	7646399	Aerial view looking west-southwest at Airstrip South Landfill - Refer to Figure PIN-2.1
1	P216_2013	4,089	15/08/16	503234	7646264	View looking north along east toe of Airstrip South Landfill
2	P216_2014	4,336	15/08/16	503231	7646263	View looking southwest along south toe of Airstrip South Landfill
3	P216_2015	4,263	15/08/16	503224	7646267	View looking northwest across cover from southeast corner of Airstrip South Landfill
4	P216_2016	4,032	15/08/16	503229	7646325	View looking south along east side of Airstrip South Landfill
5	P216_2017	3,955	15/08/16	503226	7646324	View looking west-southwest along north side of Airstrip South Landfill
6	P216_2018	4,102	15/08/16	503184	7646312	View looking east-northeast along north side of Airstrip South Landfill
7	P216_2019	4,070	15/08/16	503182	7646309	View looking south along west side of Airstrip South Landfill
8	P216_2020	4,126	15/08/16	503191	7646304	View looking southeast across cover from northwest corner of Airstrip South Landfill
9	P216_2021	4,195	15/08/16	503190	7646298	View looking west at linear depression on west side slope of Airstrip South Landfill - FEATURE A
10	P216_2022	4,034	15/08/16	503177	7646297	View looking east at linear depression on west side slope of Airstrip South Landfill - FEATURE A
11	P216_2023	4,374	15/08/16	503197	7646277	View looking west at pothole-type depression on west side slope of Airstrip South Landfill - FEATURE B (new)
12	P216_2024	4421	15/08/16	503192	7646279	View looking south at pothole-type depression on west side slope of Airstrip South Landfill - FEATURE B (new)
13	P216_2025	4393	15/08/16	503198	7646271	View looking north northwest at linear depression on west side slope of Airstrip South Landfill - FEATURE C (new)
14	P216_2026	4391	15/08/16	503192	7646272	View looking east at linear depression on west side slope of Airstrip South Landfill - FEATURE C (new)
15	P216_2027	4127	15/08/16	503206	7646258	View looking north-northwest along west side of Airstrip South Landfill
16	P216_2028	3869	15/08/16	503204	7646258	View looking east along south side of Airstrip South Landfill
17	P216_2029	4088	15/08/16	503219	7646256	View looking north at sparse vegetation on south side of Airstrip Landfill South
Soil Sampling						
S13	P216_2036	4304	15/08/16	503171	7646266	Sampling location P216-13 located upgradient of Airstrip South Landfill
S13-1	P216_2037	4382	15/08/16	503166	7646265	View looking east at P216-13 located upgradient of Airstrip South Landfill
S14	P216_2030	3911	15/08/16	503234	7646249	Sampling location P216-14 located downgradient of Airstrip South Landfill
S14-1	P216_2031	4291	15/08/16	503234	7646245	View looking north at P216-14 located downgradient of Airstrip South Landfill
S15	P216_2032	4397	15/08/16	503245	7646296	Sampling location P216-15 located downgradient of Airstrip South Landfill
S15-1	P216_2033	4387	15/08/16	503249	7646296	View looking west at P216-15 located downgradient of Airstrip South Landfill
S16	P216_2034	4375	15/08/16	503221	7646337	Sampling location P216-16 located downgradient of Airstrip South Landfill
S16-1	P216_2035	4345	15/08/16	503220	7646342	View looking south at P216-16 located downgradient of Airstrip South Landfill

7.5 SOIL SAMPLE ANALYTICAL DATA

The soil chemical analysis results for the 2016 Airstrip South Landfill samples are presented in Table XXIV hereafter. Certificates of analyses and results of field duplicates collected as part of the QA/QC program are presented in Annexes 1 and 2 at the end of this report.

Table XXIV: Soil Chemical Analysis Results - Airstrip South Landfill

Sample #	Location	Depth (cm)	Parameters													
			As [mg/kg]	Cd [mg/kg]	Cr [mg/kg]	Co [mg/kg]	Cu [mg/kg]	Pb [mg/kg]	Ni [mg/kg]	Zn [mg/kg]	Hg [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_{34}-C_{50} [mg/kg]
Detection Limit			1.0	0.050	1.0	0.50	1.0	0.5	1.0	10	0.050	0.010	10	50	50	50
Upgradient Soil Samples																
P216-13A	P2-13	0-15	2.8	0.110	13.0	1.70	5.8	2.4	6.7	19	<0.050	<0.010	<12	<10	<50	<50
P216-13B		40-50	3.6	0.110	16.0	2.10	8.1	2.7	8.4	11	<0.050	<0.010	<12	<10	<50	<50
Downgradient Soil Samples																
P216-14A	P2-14	0-15	1.9	0.210	5.2	1.30	8.8	2.6	4.1	14	<0.050	<0.010	<12	<10	<50	<50
P216-BD6 (Intra-Lab Blind Duplicate)		0-15	1.7	0.180	8.4	1.30	8.2	2.6	5.4	13	<0.050	<0.010	<12	<10	<50	<50
P216-14A (Inter-Lab Blind Duplicate)		0-15	1.9	0.180	4.1	1.50	9.6	2.2	4.4	15	<0.050	<0.05	<10	<50	<50	<100
Average Value for P216-14A Sample		0-15	1.830 ± 0.12	0.19± 0.02	5.90 ± 2.23	1.37 ± 0.12	8.87± 0.70	2.47 ± 0.23	4.63 ± 0.68	14 ± 1.00	--	--	--	--	--	--
P216-14B		40-50	2.2	0.270	9.4	1.70	15	2.4	7.0	16	<0.050	<0.010	<12	<10	<50	<50
P216-15A	P2-15	0-15	4.5	0.089	8.5	1.10	3.3	3.3	4.6	12	<0.050	<0.010	<12	<10	<50	<50
P216-15B		40-50	5.1	0.083	14.0	0.88	2.6	3.4	6.5	13	<0.050	<0.010	<12	<10	<50	<50
P216-16A	P2-16	0-15	9.7 (1)	0.150 (1)	4.7 (1)	1.70 (1)	7.1 (1)	5.2 (1)	3.2 (1)	48 (1)	<0.10 (1)	<0.020 (1)	<12	<10	120	<50
P216-16B		40-50	4.6	0.071	9.4	2.70	6.7	3.8	6.0	16	<0.050	0.011	<12	<10	<50	<50

(1) Detection limit raised due to sample matrix for metals in sample P216-16A

8 PALLET LINE WEST LANDFILL

8.1 SUMMARY

On August 16, 2016 a visual inspection has been completed at the Pallet Line West Landfill. Soil samples have also been collected at four stations located upgradient and downgradient of the landfill. Shallow fractured bedrock was encountered at 0.4 m depth at downgradient location P2-10.

No PCB or high metal concentrations have been detected in any of the soil samples collected. Detectable concentrations of TPH (PHC F3 and F4 Fractions) have been noted in the depth sample collected at upgradient location P2-9 (respectively 210 mg/kg and 110 mg/kg) and TPH (PHC F3 Fraction) in the surface samples collected at downgradient locations P2-11 (82 mg/kg) and P2-12 (intralaboratory duplicate – 350 mg/kg). Slightly elevated concentrations of metals were also noted at specific sample locations, including arsenic in the depth sample at downgradient location P2-10 (9.9 mg/kg); chromium and copper in the depth sample at upgradient location P2-9 (respectively 16 mg/kg and 18 mg/kg); and zinc in the surface and depth samples also at upgradient location P2-9 (respectively 82 mg/kg and 75 mg/kg).

As of the 2016 monitoring event, no features were identified with “significant” or “unacceptable” severity ratings. Indications of minor settlement were noted at six locations, including linear depressions on the south crest (Feature A) and northwest crest (Feature B), three small localized depressions on the northeast crest (Feature C), and one newly observed pothole-type depression on the east crest (Feature D). Feature A was previously observed during the 2014 and 2015 assessments and Features B and C were observed during the 2015 assessment with no significant change noted with any of the features. Feature D was not noted during the previous 2015 assessment. An isolated area of sparse vegetation has also been noted on the north side slope of the landfill.

At this time, the overall performance of the landfill is rated as acceptable.

The Visual Inspection Checklist is included in Table XXV of this report and has been completed as per the TOR. Please refer to Figure PIN-2.6 for a sketch of the Pallet Line West Landfill detailing the location of photographs and features.

Table XXV: Visual Inspection Checklist / Report – Pallet Line West Landfill

Dew Line Cleanup Post Construction – Landfill Monitoring
Visual Inspection Checklist

Inspection Report – Page 1 of 2

SITE NAME: PIN-2 Cape Young
LANDFILL DESIGNATION: Pallet Line West Landfill (Existing Regrade Area)
DATE OF INSPECTION: August 16, 2016
DATE OF PREVIOUS INSPECTION: August 15, 2015
INSPECTED BY: A. Passalis
REPORT PREPARED BY: A. Passalis
MONITORING EVENT NUMBER: 5
The inspector/reporter represents to the best of his/her 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 XXV: PIN-2, CAPE YOUNG - PALLET LINE WEST LANDFILL (Page 2 of 2)

Site Name: PIN-2, CAPE YOUNG
Landfill: Pallet Line West Landfill
Designation: Existing Regrade Area
Date Inspected: August 16, 2016
Inspected by: Andrew Passalis, P.Eng.

Signature: 

Checklist Item	Present (Yes/No)	Location	Length	Width	Depth	Extent	Description	Photographic Record	Severity Rating	Additional Comments
Settlement	Yes	FEATURE A See Figure PIN-2.6 (S crest)	1 m	0.2 m	0.05 m	Isolated	Linear depression	PLW-15, 16	Acceptable	No significant change since first observation in 2014.
		FEATURE B See Figure PIN-2.6 (NW crest)	1.5 m	0.1 m	0.03 m	Isolated	Linear depression	PLW-6, 7	Acceptable	No significant change since first observation in 2015.
		FEATURE C See Figure PIN-2.6 (NE crest)	0.5 - 0.8 m	0.4 - 0.7 m	0.03 - 0.05 m	Isolated	3 localized depressions	PLW-24 - 27	Acceptable	No significant change since first observation in 2015.
		FEATURE D See Figure PIN-2.6 (E crest - New Obs.)	0.4 m	0.4 m	0.05 m	Isolated	Pothole-type depression	PLW-21, 22	Acceptable	New observation.
Erosion	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Frost Action	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Animal Burrows	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Vegetation	Yes	See Figure PIN-2.6 (N side slope - New Obs.)	5 m	4 m	N/A	Isolated	Sparse vegetation	PLW-4	N/A	New observation.
Staining	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Vegetation Stress	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Seepage Points	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Debris Exposed	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Presence/Condition of Monitoring Instruments	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Other Features of Note:	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Additional Photos	Yes	See Figure PIN-2.6 and Photographic Record	N/A	N/A	N/A	N/A	General Photographic Record	N/A	Not Observable	General photos for documentation, no additional features of note.
Overall Landfill Performance:	**Acceptable**									

8.2 PRELIMINARY STABILITY ASSESSMENT

The Preliminary Stability Assessment for Pallet Line West Landfill has been completed as per the TOR and is included as Table XXVI below.

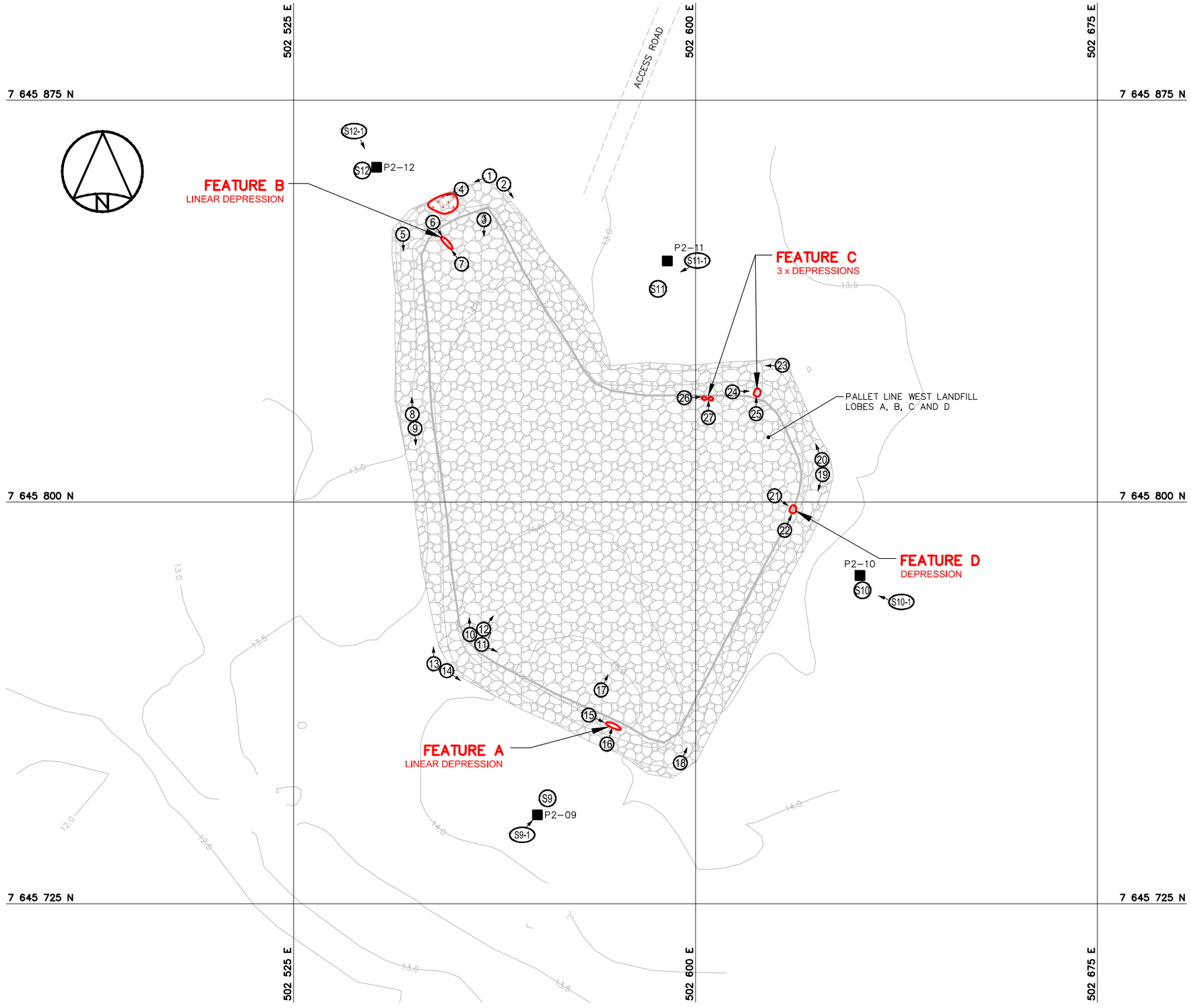
Table XXVI: Preliminary Stability Assessment – Pallet Line West Landfill

Feature	Severity Rating	Extent
Settlement	Acceptable	Isolated
Erosion	Not observed	None
Frost Action	Not observed	None
Staining	Not observed	None
Vegetation Stress	Not observed	None
Seepage/Ponded Water	Not observed	None
Debris exposure	Not observed	None
Overall Landfill Performance	**Acceptable**	

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

8.3 LOCATION PLAN

The Location Plan for the Pallet Line West Landfill has been completed as per the TOR and is presented in Figure PIN-2.6.



LEGEND

- MONITORING SOIL SAMPLE LOCATION (4)
- APPROX. PHOTOGRAPHIC VIEWPOINT
- MINOR SETTLEMENT (NTS)
- SPARSE VEGETATION (NTS)

0m 7.5m 15.0m 22.5m 30.0m 37.5m

NO.	VERSION	DATE	BY	VERIF.	APPR.
00	FINAL	17-03-03	J.P.	J.-P.P.	M.F.

Construction de Défense Canada
Defence Construction Canada

COLLECTION OF LANDFILL MONITORING DATA

PIN-2, CAPE YOUNG, NUNAVUT

PALLET LINE WEST LANDFILL

Englobe
1260 Lebourgneuf Boulevard
Suite 400
Quebec (Quebec) Canada, G2K 2G2
Phone : 418.704.8091
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MEASUREMENT UNIT	SCALE:	DATE (month-year):
Metre	1 : 750	JANUARY 2017
DRAWN BY:	VERIFIED BY:	APPROVED BY:
J. POULIN	J.-P. PELLETIER	M. FLEURY P. ENG
PROJECT NO:	DRAWING NO:	PAGE
P-0009730-0-05-503	P-0009730-0-05-503-PIN-2F-PL	PL

FIGURE PIN-2.6

8.4 PHOTOGRAPHIC RECORDS

The Photographic Record for the Pallet Line West Landfill has been completed as per the TOR and is included as Table XXVII hereafter. Full sized photographs are contained in the Addendum DVD-ROM.

Table XXVII: LANDFILL VISUAL INSPECTION PHOTO LOG

Site Name: PIN-2, Cape Young
Landfill: Pallet Line West Landfill
Date Inspected: August 16, 2016
Inspected by: Andrew Passalis, P.Eng.

Photo (PLW-)	Filename	Size (KB)	Date	Vantage Point		Caption
				Easting	Northing	
1	P216_2111	4,132	16/08/16	502562	645860	View looking southwest along north side of Pallet Line West Landfill
2	P216_2112	4,051	16/08/16	502564	645859	View looking southeast along northeast side of Pallet Line West Landfill
3	P216_2113	4,424	16/08/16	502560	645853	View looking south across north cover of Pallet Line West Landfill
4	P216_2114	4,324	16/08/16	502556	645858	View looking southwest at sparse vegetation on north side slope of Pallet Line West Landfill
5	P216_2115	4,309	16/08/16	502545	645850	View looking south along west side of Pallet Line West Landfill
6	P216_2116	4,307	16/08/16	502552	645851	View looking southeast at linear depression on northwest side of Pallet Line West Landfill - FEATURE B
7	P216_2117	4,126	16/08/16	502555	645846	View looking northwest at linear depression on northwest side of Pallet Line West Landfill - FEATURE B
8	P216_2118	4,389	16/08/16	502548	645816	View looking north along west crest of Pallet Line West Landfill
9	P216_2119	4,124	16/08/16	502548	645814	View looking south along west crest of Pallet Line West Landfill
10	P216_2120	4,238	16/08/16	502557	645775	View looking north along west crest of Pallet Line West Landfill
11	P216_2121	4,224	16/08/16	502559	645774	View looking southeast along southwest crest of Pallet Line West Landfill
12	P216_2122	4,327	16/08/16	502559	645776	View looking northeast across cover from southwest corner of Pallet Line West Landfill
13	P216_2123	4,265	16/08/16	502551	645769	View looking north along west toe of Pallet Line West Landfill
14	P216_2124	4,266	16/08/16	502553	645769	View looking southeast along southwest toe of Pallet Line West Landfill
15	P216_2125	4,090	16/08/16	502582	645760	View looking southeast at linear depression below south crest - FEATURE A
16	P216_2126	4,378	16/08/16	502584	645756	View looking north-northeast at linear depression below south crest - FEATURE A
17	P216_2127	4,252	16/08/16	502582	645765	View looking northeast across south cover of Pallet Line West Landfill
18	P216_2128	4,361	16/08/16	502596	645751	View looking northeast along east side from southeast corner of Pallet Line West Landfill
19	P216_2129	4,288	16/08/16	502624	645805	View looking southwest along east side of Pallet Line West Landfill
20	P216_2130	4,398	16/08/16	502623	645807	View looking northwest along northeast side of Pallet Line West Landfill
21	P216_2131	4,310	16/08/16	502615	645801	View looking southeast at minor pothole-type depression on east crest of Pallet Line West Landfill - FEATURE D (new)
22	P216_2132	4,119	16/08/16	502617	645795	View looking north at minor pothole-type depression on east crest of Pallet Line West Landfill - FEATURE D (new)
23	P216_2133	4,291	16/08/16	502615	645826	View looking west along north side of Pallet Line West Landfill
24	P216_2134	4,177	16/08/16	502607	645821	View looking east at depression below crest on northeast side of Pallet Line West Landfill - FEATURE C
25	P216_2135	4,169	16/08/16	502612	645818	View looking north at depression below crest on northeast side of Pallet Line West Landfill - FEATURE C
26	P216_2136	4,201	16/08/16	502598	645820	View looking east at two small depressions at crest on northeast side of Pallet Line West Landfill - FEATURE C
27	P216_2137	4,345	16/08/16	502602	645817	View looking northeast at two small depressions at crest on northeast side of Pallet Line West Landfill - FEATURE C
Soil Sampling						
S9	P216_2145	3,941	16/08/16	502570.1	645741.9	Sampling location P216-9 located upgradient of Pallet Line West Landfill
S9-1	P216_2146	4,356	16/08/16	502569	645739	View looking northeast at P216-9 located upgradient of Pallet Line West Landfill
S10	P216_2143	4,328	16/08/16	502632	645782	Sampling location P216-10 located downgradient of Pallet Line West Landfill
S10-1	P216_2144	4,317	16/08/16	502636	645782	View looking west-northwest at P216-10 located downgradient of Pallet Line West Landfill
S11	P216_2141	4,294	16/08/16	502596	645842	Sampling location P216-11 located downgradient of Pallet Line West Landfill
S11-1	P216_2142	4,429	16/08/16	502599	645844	View looking southwest at P216-11 located downgradient of Pallet Line West Landfill
S12	P216_2140	4,199	16/08/16	502539	645865	Sampling location P216-12 located downgradient of Pallet Line West Landfill
S12-1	P216_2139	4,333	16/08/16	502537	645868	View looking southeast at P216-12 located downgradient of Pallet Line West Landfill

8.5 SOIL SAMPLE ANALYTICAL DATA

The soil chemical analysis results for the 2016 Pallet Line West Landfill samples are presented in Table XXVIII hereafter. Certificates of analyses and results of field duplicates collected as part of the QA/QC program are presented in Annexes 1 and 2 at the end of this report.

Table XXVIII: Soil Chemical Analysis Results - Pallet Line West Landfill

Sample #	Location	Depth (cm)	Parameters													
			As [mg/kg]	Cd [mg/kg]	Cr [mg/kg]	Co [mg/kg]	Cu [mg/kg]	Pb [mg/kg]	Ni [mg/kg]	Zn [mg/kg]	Hg [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_{34}-C_{50} [mg/kg]
Detection Limit			1.0	0.050	1.0	0.50	1.0	0.5	1.0	10	0.050	0.010	12	10	50	50
Upgradient Soil Samples																
P216-9A	P2-9	0-15	2.8	0.081	4.3	2.00	12.0	4.5	4.0	82	<0.050	<0.010	<12	<10	<50	<50
P216-9B		40-50	2.6	0.081	16.0	1.80	18.0	4.8	8.6	75	<0.050	<0.010	<12 (4)	<10	210	110
Downgradient Soil Samples																
P216-10A	P2-10	0-15	3.2	0.240	12.0	2.50	4.9	3.1	8.0	20	<0.050	<0.020 (1)	<12	<10	<50	<50
P216-10B		30-40	9.9	0.180	6.0	2.70	3.3	4.7	5.2	31	<0.050	<0.010	<12	<10	<50	<50
P216-11A	P2-11	0-15	1.1	0.089	11.0	<0.50	2.3	1.1	5.1	<10	<0.050	<0.020 (1)	<12	<10	82	<50
P216-11B		40-50	2.2	0.085	4.7	0.99	1.8	2.1	2.7	<10	<0.050	<0.010	<12	<10	<50	<50
P216-12A	P2-12	0-15	<2.0 (3)	0.230 (3)	<2.0 (3)	<1.0 (3)	6.3 (3)	<1.0 (3)	<2.0 (3)	<20 (3)	<0.10 (3)	<0.030 (1)	<12	<30 (1)	<150 (1)	<150 (1)
P216-BD5 (Intra-Lab Blind Duplicate)		0-15	<2.0 (3)	0.260 (3)	<2.0 (3)	<1.0 (3)	11.0 (3)	<1.0 (3)	2.1 (3)	<20 (3)	0.100 (3)	<0.030 (1)	<37 (2)	<31(1)	350	<150 (1)
P216-12A (Inter-Lab Blind Duplicate)		0-15	0.4	0.280	1.0	0.60	5.5	0.5	1.7	25	0.120	<0.05	<10	<50	218	268
Average Value for P216-12A Sample		0-15	--	0.26 ± 0.03	--	--	7.60 ± 2.97	--	1.9 ± 0.28	--	0.11 ± 0.01	--	--	--	--	--
P216-12B		40-50	<2.0 (3)	0.370 (3)	<2.0 (3)	<1.0 (3)	9.1 (3)	1.1 (3)	3.5 (3)	<20 (3)	0.120 (3)	<0.030 (1)	<12	<25 (1)	<130 (1)	<130 (1)

Notes:

(1) DL raised due to high moisture content

(2) DL raised due to high moisture content > 50 %

(3) DL raised by Maxxam due to sample matrix for samples collected at P2-12

(4) Hold Time Exceeded

9 NON-HAZARDOUS WASTE LANDFILL

9.1 SUMMARY

On August 16, a visual inspection was completed at the Non-Hazardous Waste Landfill. Soil and groundwater sampling has been completed at four stations located upgradient and downgradient of the landfill. Shallow fractured bedrock was encountered at 0.35 m depth at downgradient location MW-7, and MW-8 was dry at the time of monitoring/sampling and could not be sampled.

No PCB, TPH or high metal concentrations have been detected in any of the soil samples collected. Slightly elevated concentrations of chromium and zinc have been noted in the surface and depth samples, collected at downgradient location MW-7 (respectively 15 mg/kg and 25 mg/kg).

No PCB, TPH or high metal concentrations have been detected in any of the groundwater samples collected. A slightly elevated concentration of zinc has been noted in downgradient well MW-6 (0.462 mg/L).

As of the 2016 monitoring event, no features were identified with “significant” or “unacceptable” severity ratings. Indications of minor settlement have been noted at five locations on the NHWLF, including one linear and one pothole-type depression on the southwest crest (Feature A); one linear depression on the southeast crest (Feature C); two pothole depressions on the north crest (Feature D); and one single pothole depression on the southwest side slope (Feature G). Features C and D appear consistent with findings from the previous 2015 assessment, however Feature A has been noted to have marginally increased in size (length, width and depth) and Feature G appears to have increased from 0.3 to 0.6 m in length and from 0.3 to 0.4 m in width from the previous 2015 assessment. Parallel depressions resembling tire tracks have also been noted on the east cover of the landfill (Feature F). The depressions appear consistent with findings from the previous 2014 and 2015 assessments. No exposed debris was noted.

Evidence of minor surface erosion has been noted at twelve locations on the NHWLF, including five areas on the southeast side slope (Feature B); three areas on the north side slope (Feature E); one single area on the southeast side slope (Feature H), one newly observed area on the southeast side slope (Feature I), one newly observed area on the southwest side slope (Feature J), and one single newly observed area on the north side slope (Feature K). The majority of locations consisted of shallow surface erosion of fines extending from the crest down slope. The landfill side slopes appear stable and self-armouring at all erosion locations, with only minor washing of fines noted. Minor increases have been noted at Feature B, including 0.1 m to up to 0.6 m in width and from 0.05 m to 0.10 m in depth. Similarly, minor increases have also been noted at Feature E, including 0.1 to 0.3 m in width and 0.05 to 0.10 m in depth. No changes have been noted at Feature H from the previous 2015 assessment. Features H, I and J were not observed during the previous 2015 assessment. Sparse vegetation growth was also noted across the southwest side slope of the NHWLF.

At this time, the overall performance of the landfill is rated as acceptable.

The Visual Inspection Checklist is included in Table XXIX of this report and has been completed as per the TOR. Please refer to Figure PIN-2.7 for a sketch of the NHWLF detailing the location of photographs and features.

Table XXIX: Visual Inspection Checklist / Report – NHWLF

Dew Line Cleanup Post Construction – Landfill Monitoring
Visual Inspection Checklist

Inspection Report – Page 1 of 2

SITE NAME: PIN-2 Cape Young
LANDFILL DESIGNATION: Non-Hazardous Waste Landfill (New Landfill)
DATE OF INSPECTION: August 16, 2016
DATE OF PREVIOUS INSPECTION: August 15, 2015
INSPECTED BY: A. Passalis
REPORT PREPARED BY: A. Passalis
MONITORING EVENT NUMBER: 5
The inspector/reporter represents to the best of his/her 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 XXIX: PIN-2, CAPE YOUNG - NON-HAZARDOUS WASTE LANDFILL (Page 2 of 2)

Site Name: PIN-2, CAPE YOUNG
Landfill: Non-Hazardous Waste Landfill
Designation: New landfill
Date Inspected: August 16, 2016
Inspected by: Andrew Passalis, P.Eng.

Signature: 

Checklist Item	Present (Yes/No)	Location	Length	Width	Depth	Extent	Description	Photographic Record	Severity Rating	Additional Comments
Settlement	Yes	FEATURE A See Figure PIN-2.7 (SW crest)	0.5 - 2.2 m	0.3 - 0.5 m	0.05 - 0.15 m	Occasional (<2 %)	Minor depressions	NHWLF-37, 38, 40, 41	Acceptable	Linear depression orientated parallel to crest and pothole-type depression 2.5 m below crest. Minor increase in length from 2.0 to 2.2 m, width from 0.4 to 0.5 m and depth from 0.10 to 0.15 m from previous 2015 assessment.
		FEATURE C See Figure PIN-2.7 (SE crest)	4 m	0.1 - 0.5 m	0.10 m		Minor depression	NHWLF-12, 13, 24	Acceptable	Linear depression orientated along crest. No change from previous 2015 assessment. Slope appears stable.
		FEATURE D See Figure PIN-2.7 (N crest)	0.4 m	0.5 m	0.05 m		Minor depressions	NHWLF-60, 61, 64	Acceptable	Two pothole-type depressions 1 m below north crest. No significant change from prevous 2014 and 2015 assessments. Slope appears stable.
		FEATURE G See Figure PIN-2.7 (SW side slope)	0.6 m	0.4 m	0.1 m		Minor depression	NHWLF-39	Acceptable	Single pothole-type depression below southwest crest. Minor increase in length from 0.3 to 0.6 m and width from 0.3 to 0.4 m from previous 2015 assessment.
Erosion	Yes	FEATURE B See Figure PIN-2.7 (SE side slope)	3 - 17 m	0.1 - 0.6 m	0.05 - 0.10 m	Occasional (<2 %)	Minor erosion	NHWLF-14, 16-19, 22, 23, 46, 47	Acceptable	5 areas of minor erosion, washing of fines, self armouring. Slope appears stable. Minor increase in width from 0.1 to up to 0.6 m and depth from 0.05 to 0.1 m of some features from previous 2015 assessment.
		FEATURE E See Figure PIN-2.7 (N side slope)	9 - 12 m	0.3 m	0.05 - 0.10 m		Minor erosion	NHWLF-57, 59, 62, 63	Acceptable	3 areas - washing of fines, self armouring. Slope appears stable. Minor increase in width from 0.1 to 0.3 m and depth from 0.05 to 0.10 m from 2015 assessment.
		FEATURE H See Figure PIN-2.7 (SE side slope)	3 m	0.15 m	0.05 m		Minor erosion	NHWLF-15	Acceptable	Washing of fines, self armouring.No significant change from initial observation in 2015.
		FEATURE I See Figure PIN-2.7 (SE side slope- New Obs.)	10 m	0.3 - 0.4 m	0.10 m		Minor erosion	NHWLF-10, 11	Acceptable	Washing of fines, self armouring. Slope appears stable. New observation.
		FEATURE J See Figure PIN-2.7 (SW side slope- New Obs.)	12 m	0.3 m	0.05 - 0.10 m		Minor erosion	NHWLF-44, 45	Acceptable	Washing of fines, self armouring. Slope appears stable. New observation.
		FEATURE K See Figure PIN-2.7 (N side slope- New Obs.)	10 m	0.2 m	0.05 m		Minor erosion	NHWLF-58	Acceptable	Self armouring. Slope appears stable. New observation.
Frost Action	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Animal Burrows	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Vegetation	Yes	See Figure PIN-2.7 a (SW side slope)	30 m	10 m	N/A	N/A	Sparse Vegetation	NHWLF-27	N/A	N/A
Staining	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Vegetation Stress	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Seepage Points	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Debris Exposed	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Presence/Condition of Monitoring Instruments	Yes	See Figure PIN-2.7 and Photographic Record	N/A	N/A	N/A	N/A	MW-5, 6, 7, 8	NHWLF-31, 42, 48, 1	Acceptable	N/A
Other Features of Note:	Yes	FEATURE F See Figure PIN-2.7 (E cover)	10 m	0.2 m	0.05 m	Isolated	Minor depressions	NHWLF-8, 9	Acceptable	Appears to be vehicle tracks extending parallel to east crest. No noticeable change from 2014 and 2015 assessments.
Additional Photos	Yes	See Figure PIN-2.7 and Photographic Record	N/A	N/A	N/A	N/A	General Photographic Record	N/A	Not Observable	General photos for documentation, no additional features of note.
Overall Landfill Performance:	**Acceptable**									

9.2 PRELIMINARY STABILITY ASSESSMENT

The Preliminary Stability Assessment for NHWLF has been completed as per the TOR and is included as Table XXX hereafter.

Table XXX: Preliminary Stability Assessment – NHWLF

Feature	Severity Rating	Extent
Settlement	Acceptable	Occasional
Erosion	Acceptable	Occasional
Frost Action	Not observed	None
Staining	Not observed	None
Vegetation Stress	Not observed	None
Seepage/Ponded Water	Not observed	None
Debris exposure	Not observed	None
Overall Landfill Performance	**Acceptable**	

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

9.3 LOCATION PLAN

The Location Plan for the NHWLF has been completed as per the TOR and is presented in Figure PIN-2.7.

503 000 E

503 100 E

503 200 E

7 645 300 N

7 645 200 N

FEATURE E
MINOR EROSION

FEATURE K
MINOR EROSION

FEATURE E
3 x MINOR EROSION

NON-HAZARDOUS
WASTE LANDFILL

FEATURE D
2 x DEPRESSIONS

FEATURE G
DEPRESSION

FEATURE F
VEHICLE TRACKS

FEATURE I
MINOR EROSION

ADDITIONAL TYPE 2
GRANULAR FILL
PLACEMENT

FEATURE C
DEPRESSION

FEATURE H
MINOR EROSION

FEATURE B
2 x MINOR EROSION

FEATURE A
2 x DEPRESSIONS

FEATURE J
MINOR EROSION

FEATURE B
3 x MINOR EROSION

MW-08

MW-05

MW-06

MW-07

17.5 18.0 18.5 19.0 17.0 16.5 16.0 21.0

LEGEND

- MONITORING SOIL SAMPLE LOCATION (4)
- MONITORING WELL LOCATION (3)
- BACKGROUND MONITORING WELL LOCATION (1)
- APPROX. PHOTOGRAPHIC VIEWPOINT
- MINOR SETTLEMENT (NTS)
- MINOR EROSION (NTS)
- VEHICLE TRACKS (NTS)
- SPARSE VEGETATION

0m 10m 20m 30m 40m 50m

NO.	VERSION	DATE	BY	VERIF.	APPR.
00	FINAL	17-03-03	J.P.	J.-P.P.	M.F.

Construction de Défense Canada
Defence Construction Canada

COLLECTION OF LANDFILL MONITORING DATA

PIN-2, CAPE YOUNG, NUNAVUT

NON-HAZARDOUS WASTE LANDFILL

Englobe
1260 Lebourgneuf Boulevard
Suite 400
Quebec (Quebec) Canada, G2K 2G2
Phone : 418.704.8091
www.englobecorp.com

MEASUREMENT UNIT	SCALE:	DATE (month-year):
Metre	1 : 1,000	JANUARY 2017
DRAWN BY: J. POULIN	VERIFIED BY: J.-P. PELLETIER	APPROVED BY: M. FLEURY P. ENG
PROJECT NO: P-0009730-0-05-503	DRAWING NO: P-0009730-0-05-503-PIN-2G-PL	PAGE PL

FIGURE PIN-2.7

G:\129\B-0010209-1_KITIK12_13\1_Livrables\0_LivrClient\1_OTP_1\PIN-2\2016\Final\Drawings\P-0009730-0-05-503-PIN-2G-PL.dwg, PL, 2017-03-03 15:43:25

9.4 PHOTOGRAPHIC RECORDS

The Photographic Record for the Non-Hazardous Waste Landfill has been completed as per the TOR and is included as Table XXXI hereafter. Full sized photographs are contained in the Addendum DVD-ROM.

Table XXXI: LANDFILL VISUAL INSPECTION PHOTO LOG (page 1 of 2)

Site Name: PIN-2, Cape Young
Landfill: Non-Hazardous Waste Landfill
Date Inspected: August 16, 2016
Inspected by: Andrew Passalis, P.Eng.

Photo (NHWLF-)	Filename	Size (KB)	Date	Vantage Point		Caption
				Easting	Northing	
A6	P216_1917	4128	15/08/16	502218	7645654	Aerial view looking southeast at NHWLF - Refer to Figure PIN-2.1
A7	P216_1918	4194	15/08/16	502256	7645263	Aerial view looking east at NHWLF - Refer to Figure PIN-2.1
1	P216_2038	4,362	16/08/16	503085	7645311	MW-8
2	P216_2039	4,410	16/08/16	503103	7645319	View looking southwest at northeast side of NHWLF
3	P216_2040	4,044	16/08/16	503117	7645280	View looking northwest along southeast toe of NHWLF
4	P216_2041	4,315	16/08/16	503117	7645278	View looking southwest along northeast toe of NHWLF
5	P216_2042	4,453	16/08/16	503099	7645271	View looking northwest along northeast crest of NHWLF
6	P216_2043	4,351	16/08/16	503099	7645270	View looking southwest along southeast crest of NHWLF
7	P216_2044	4,465	16/08/16	503097	7645270	View looking west-southwest across cover from east corner of NHWLF
8	P216_2045	3,994	16/08/16	503094	7645262	View looking southwest at vehicle ruts along southeast crest of NHWLF- FEATURE F
9	P216_2046	4,333	16/08/16	503088	7645248	View looking northeast at vehicle ruts along east crest of NHWLF - FEATURE F
10	P216_2047	4,188	16/08/16	503083	7645245	View looking southeast at minor erosion on southeast side slope of NHWLF - FEATURE I (new)
11	P216_2048	4,320	16/08/16	503103	7645238	View looking northwest at minor erosion on southeast side slope of NHWLF - FEATURE I (new)
12	P216_2049	4,015	16/08/16	503084	7645238	View looking southwest at linear depression along crest on southeast corner of NHWLF - FEATURE C
13	P216_2050	4,391	16/08/16	503078	7645234	View looking southeast at linear depression along crest on southeast corner of NHWLF - FEATURE C
14	P216_2051	4,013	16/08/16	503080	7645224	View looking southeast at minor erosion on southeast corner of NHWLF - FEATURE B
15	P216_2052	4,406	16/08/16	503078	7645230	View looking southeast at minor erosion on southeast corner of NHWLF - FEATURE H
16	P216_2053	4,295	16/08/16	503093	7645217	View looking northwest at minor erosion on southeast corner of NHWLF - FEATURE B
17	P216_2054	4,396	16/08/16	503091	7645207	View looking northwest at minor erosion on southeast corner of NHWLF - FEATURE B
18	P216_2055	4,116	16/08/16	503083	7645204	View looking north-northwest at minor erosion on southeast corner of NHWLF - FEATURE B
19	P216_2056	4,357	16/08/16	503079	7645204	View looking north at minor erosion on south corner slope of NHWLF - FEATURE B
20	P216_2057	4,416	16/08/16	503087	7645207	View looking northeast along southeast toe of NHWLF
21	P216_2058	4,335	16/08/16	503077	7645205	View looking west-northwest along southwest toe of NHWLF
22	P216_2059	4,332	16/08/16	503076	7645213	View looking southeast at minor erosion on southeast corner slope of NHWLF - FEATURE B
23	P216_2060	4,207	16/08/16	503078	7645220	View looking south-southeast at minor erosion on southeast corner slope of NHWLF - FEATURE B
24	P216_2061	3,968	16/08/16	503079	7645226	View looking northeast along southeast crest of NHWLF - Feature C
25	P216_2062	3,891	16/08/16	503076	7645224	View looking northwest along southwest crest of NHWLF
26	P216_2063	3,919	16/08/16	503075	7645228	View looking north across cover from southeast corner of NHWLF
27	P216_2064	4,237	16/08/16	503073	7645220	View looking west at vegetation on southwest side slope of NHWLF
28	P216_2067	4,005	16/08/16	503049	7645312	View looking southeast along northeast toe of NHWLF
29	P216_2068	4,176	16/08/16	503046	7645311	View looking southwest along northwest toe of NHWLF
30	P216_2069	4,435	16/08/16	502996	7645289	View looking southeast at northwest side of NHWLF
31	P216_2070	4,200	16/08/16	502999	7645229	MW-5
32	P216_2071	4,339	16/08/16	503008	7645238	View looking southeast along southwest toe of NHWLF
33	P216_2072	4,377	16/08/16	503007	7645241	View looking northeast along northwest toe of NHWLF
34	P216_2073	4,056	16/08/16	503032	7645247	View looking southeast along southwest crest of NHWLF
35	P216_2074	4,072	16/08/16	503030	7645249	View looking northeast along northwest crest of NHWLF
36	P216_2075	4,101	16/08/16	503033	7645249	View looking east-northeast across cover from west side of NHWLF
37	P216_2076	4,185	16/08/16	503028	7645240	View looking west at pothole depression 3 m below southwest crest of NHWLF - FEATURE A
38	P216_2077	4,346	16/08/16	503025	7645246	View looking south at pothole depression 3 m below southwest crest of NHWLF - FEATURE A
39	P216_2078	4,198	16/08/16	503029	7645255	View looking south-southwest at pothole depression below southwest crest of NHWLF - FEATURE G
40	P216_2079	4,201	16/08/16	503043	7645241	View looking northwest at linear depression on southwest crest of NHWLF - FEATURE A

Table XXXI: LANDFILL VISUAL INSPECTION PHOTO LOG (page 2 of 2)
Site Name: PIN-2, Cape Young
Landfill: Non-Hazardous Waste Landfill
Date Inspected: August 16, 2016
Inspected by: Andrew Passalis, P.Eng.

Photo (NHWLF-)	Filename	Size (KB)	Date	Vantage Point		Caption
				Easting	Northing	
41	P216_2080	4,164	16/08/16	503040	7645247	View looking southwest at linear depression on southwest crest of NHWLF - FEATURE A
42	P216_2083	4,323	16/08/16	503041	7645205	MW-6
43	P216_2084	4,376	16/08/16	503031	7645192	View looking northeast at southwest side of NHWLF
44	P216_2085	4,159	16/08/16	503065	7645234	View looking south at minor erosion on southwest side slope of NHWLF - FEATURE J (new)
45	P216_2086	4,310	16/08/16	503066	7645208	View looking north at minor erosion on southwest side slope of NHWLF - FEATURE J (new)
46	P216_2087	4,334	16/08/16	503059	7645212	View looking northeast at minor erosion on southwest side slope of NHWLF - FEATURE B
47	P216_2088	4303	16/08/16	503068	7645229	View looking southwest at minor erosion on southwest side slope of NHWLF - FEATURE B
48	P216_2091	4404	16/08/16	503077	7645192	MW-7
49	P216_2092	4273	16/08/16	503066	7645263	View looking north across cover from center of NHWLF
50	P216_2093	4277	16/08/16	503063	7645262	View looking west across cover from center of NHWLF
51	P216_2094	4323	16/08/16	503066	7645261	View looking south across cover from center of NHWLF
52	P216_2095	4319	16/08/16	503068	7645262	View looking east across cover from center of NHWLF
53	P216_2096	4128	16/08/16	503053	7645294	View looking southwest along northeast crest of NHWLF
54	P216_2097	3896	16/08/16	503056	7645294	View looking southeast along northeast crest of NHWLF
55	P216_2098	3967	16/08/16	503055	7645291	View looking south-southeast across cover from north corner of NHWLF
56	P216_2099	4210	16/08/16	503051	7645288	View looking north-northeast at uneven grading on north crest of NHWLF
57	P216_2100	4272	16/08/16	503054	7645297	View looking north at minor erosion on north side slope of NHWLF - FEATURE E
58	P216_2101	3983	16/08/16	503058	7645296	View looking north at minor erosion on north side slope of NHWLF - FEATURE K (new)
59	P216_2102	4023	16/08/16	503063	7645289	View looking north at minor erosion on north side slope of NHWLF - FEATURE E
60	P216_2103	4405	16/08/16	503074	7645288	View looking southeast at minor depression on north side slope of NHWLF - FEATURE D
61	P216_2104	4370	16/08/16	503079	7645290	View looking southwest at minor depression on north side slope of NHWLF - FEATURE D
62	P216_2105	4244	16/08/16	503077	7645282	View looking northeast at minor erosion on north side slope of NHWLF - FEATURE E
63	P216_2106	4416	16/08/16	503083	7645289	View looking southwest at minor erosion on north side slope of NHWLF - FEATURE E
64	P216_2107	4277	16/08/16	503085	7645282	View looking northwest at two depressions below north crest of NHWLF - FEATURE D
65	P216_2110	4090	16/08/16	503131	7645222	View looking northwest at southeast side of NHWLF
Soil Sampling						
S5	P216_2081	4,303	16/08/16	502998	7645226	Sampling location P216-5W located downgradient of NHWLF
S5-1	P216_2082	4,364	16/08/16	502998	7645220	View looking north at P216-5W located downgradient of NHWLF
S6	P216_2089	4363	16/08/16	503036	7645204	Sampling location P216-6W located downgradient of NHWLF
S6-1	P216_2090	4318	16/08/16	503030	7645204	View looking east at P216-6W located downgradient of NHWLF
S7	P216_2108	4080	16/08/16	503072	7645190	Sampling location P216-7W located downgradient of NHWLF
S7-1	P216_2109	4271	16/08/16	503068	7645187	View looking northeast at P216-7W located downgradient of NHWLF
S8	P216_2065	4,406	16/08/16	503092	7645312	Sampling location P216-8W located upgradient of NHWLF
S8-1	P216_2066	4,337	16/08/16	503099	7645311	View looking west at P216-8W located upgradient of NHWLF

9.5 SOIL SAMPLE ANALYTICAL DATA

The soil chemical analysis results for the 2016 Non-Hazardous Waste Landfill samples are presented in Table XXXII hereafter. Certificates of analyses and results of field duplicates collected as part of the QA/QC program are presented in Annexes 1 and 2 at the end of this report.

Table XXXII: Soil Chemical Analysis Results - NHWLF

Sample #	Location	Depth (cm)	Parameters												
			As [mg/kg]	Cd [mg/kg]	Cr [mg/kg]	Co [mg/kg]	Cu [mg/kg]	Pb [mg/kg]	Ni [mg/kg]	Zn [mg/kg]	Hg 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_{34}-C_{50} [mg/kg]
Detection Limit			1.0	0.050	1.0	0.50	1.0	0.5	1.0	10	0.050	0.010	12	10	50	50
Upgradient Soil Samples																
P216-5WA	MW-5	0-15	1.4	0.065	3.3	<0.50	2.2	1.8	1.8	<10	<0.050	<0.010	<12	<10	<50	<50
P216-BD2 (Intra-Lab Blind Duplicate)		0-15	1.8	0.077	2.1	0.54	3.0	1.9	1.4	<10	<0.050	<0.010	<12	<10	<50	<50
P216-5WA (Inter-Lab Blind Duplicate)		0-15	1.9	0.070	2.5	0.60	3.1	1.7	2.4	10	<0.050	<0.05	<10	<50	<50	<100
Average Value for P216-5WA Sample		0-15	1.70 ± 0.26	0.07 ± 0.01	2.36 ± 0.61	0.5 ± 0.06	2.77 ± 0.49	.371.80 ± 0.1	1.87 ± 0.50	--	--	--	--	--	--	--
P216-5WB		40-50	1.4	0.060	4.2	0.66	3.2	2.3	2.6	<10	<0.050	<0.010	<12	<10	<50	<50
Downgradient Soil Samples																
P216-6WA	MW-6	0-15	3.2	0.110	3.9	0.52	7.3	2.1	3.3	13	<0.050	<0.010	<12	<10	<50	<50
P216-6WB		40-50	2.1	0.070	6.6	0.86	8.8	3.2	4.4	12	<0.050	<0.010	<12	<10	<50	<50
P216-7WA	MW-7	0-15	2.2	0.081	15.0	2.80	8.3	3.4	9.0	20	<0.050	<0.010	<12	<10	<50	<50
P216-7WB		25-35	2.4	0.089	6.6	2.20	5.8	3.2	4.8	25	<0.050	<0.010	<12	<10	<50	<50
P216-8WA	MW-8	0-15	2.7	0.088	13.0	1.30	3.5	3.0	6.1	13	<0.050	<0.010	<12	<10	<50	<50
P216-8WB		40-50	3.1	0.060	7.5	1.30	3.3	2.2	4.3	<10	<0.050	<0.010	<12	<10	<50	<50

9.6 GROUNDWATER SAMPLE ANALYTICAL DATA

The groundwater chemical analysis results for the 2016 NHWLF samples are presented in Table XXXIII hereafter. Certificates of analyses are presented in Annex 1 at the end of this report.

Table XXXIII: Groundwater Chemical Analysis Results - Non-Hazardous Waste Landfill

Sample #	Location	Parameters												
		As [mg/L]	Cd [mg/L]	Cr [mg/L]	Co [mg/L]	Cu [mg/L]	Pb [mg/L]	Ni [mg/L]	Zn [mg/L]	Hg [mg/L]	PCB [mg/L]	F1 C_6-C_{10} [mg/L]	F2 C_{10}-C_{16} [mg/L]	F3 C_{16}-C_{34} [mg/L]
Detection Limit		0.00010	0.000010	0.0010	0.00050	0.00050	0.00020	0.0010	0.0050	0.000050	0.000050	0.1	0.1	0.2
Upgradient Groundwater Sample														
P216-8W	MW-8	Dry (not sampled)												
Downgradient Groundwater Samples														
P216-5W	MW-5	0.00031	0.000016	<0.0010	<0.00050	0.00116	<0.00020	0.0024	0.0110	<0.000050	<0.00005	<0.1	<0.1	<0.2
P216-6W	MW-6	0.00080	0.000041	0.0140	<0.00050	0.01260	0.00038	0.0203	0.4620	<0.000050	<0.00005	<0.1	<0.1	<0.2
P216-7W	MW-7	0.00045	0.000015	0.0044	<0.00050	0.00441	<0.00020	0.0040	0.0102	<0.000050	<0.00005	<0.1	<0.1	<0.2

9.7 MONITORING WELL SAMPLING / INSPECTION LOGS

The monitoring well sampling logs for MW-5 to MW-8 are presented in this section.

Monitoring Well Sampling Log

Site Name: PIN-2 Landfill Name: NHWLF

Monitoring Well ID: MW-5

Sample Number(s) include dups.: P216-6W

Bottles filled (by parameter type): 100 mL (Met), 2x500 L amber (PCB), 2x250 L amber/2 x 40 mL (PHC)

Date of Sampling Event: 17-Aug-16 Time: 12:40

Weather: 8 C, Cloudy, 15-25 km/h NW

Names of Samplers: A.Passalis

Description of Well Condition and Surrounding ground conditions (note ponding of water):

Good condition. no ponding

Lock (condition, presence, model, manufacturer): Good, KA1

Pre-Measured Data (From Water Well Record Log)

*Depth of well installation (cm)= 340 Diameter of well (cm)= 4

*Depth to top of screen (cm)= 40 Length screened section (cm)= 300

*note: *depths are from ground surface*

Field Measurements

Measurement method (interface probe, tape, etc): Interface

Well pipe height above ground (cm) (to top of pipe)= 54

Static water level (cm) from top of pipe = 209

Static water level (cm) (below ground surface) calculated = 155

Measured well refusal depth (cm) (measure after sampling)= 327

Thickness of water column (cm)= 118 Static volume of water in well (mL)= 1482

Free product thickness (mm)= 0 Evidence of sludge or siltation: No

Purging Information Summary*

Purging/sampling equipment, sampling technique and equipment calibration information: Peristaltic pump with dedicated 1/4" LDPE tubing, multimeter, turbidimeter with daily calibration check

Well purged (Y/N): Y Recharge Rate: >200 mL/min

Volume Purged (L) (note multiple purging events if applicable): 4.4

Parameter	Initial	Stabilized	Final	*Notes (if not stabilized)*
pH	8.4	8.3	8.3	
Conductivity (uS/cm)	539	526	527	
Turbidity (NTU)	20.2	6.47	6.16	
Temperature (degC)	3.1	2.6	2.6	

Visual/olfactory observations (incl. colour, odour, presence of free product/sheen/globules, siltation…): Clear, colourless, odourless

Decontamination of sampling equipment

Type of decontamination fluid (s): Non required, dedicated tubing

Number washes: N/A Number rinses: N/A

Other Relevant Comments:

* Complete field notes including full suite of water quality indicator parameters VS time as per EPA low flow sampling procedures should be appended to this summary.

Monitoring Well Sampling Log

Site Name: PIN-2 Landfill Name: NHWLF

Monitoring Well ID: MW-6

Sample Number(s) include dups.: P216-6W, P215-BDW1, P215-6W (Maxxam)

Bottles filled (by parameter type): 100 mL (Met), 2x500 L amber (PCB), 2x250 L amber/2 x 40 mL (PHC)

Date of Sampling Event: 17-Aug-16 Time: 13:30

Weather: 8 C, Cloudy, 15-25 km/h NW

Names of Samplers: A.Passalis

Description of Well Condition and Surrounding ground conditions (note ponding of water):

Good condition. no ponding

Lock (condition, presence, model, manufacturer): Good, KA1

Pre-Measured Data (From Water Well Record Log)

*Depth of well installation (cm)= 340 Diameter of well (cm)= 4

*Depth to top of screen (cm)= 40 Length screened section (cm)= 300

*note: *depths are from ground surface*

Field Measurements

Measurement method (interface probe, tape, etc): Interface

Well pipe height above ground (cm) (to top of pipe)= 48

Static water level (cm) from top of pipe = 222

Static water level (cm) (below ground surface) calculated = 174

Measured well refusal depth (cm) (measure after sampling)= 292

Thickness of water column (cm)= 70 Static volume of water in well (mL)= 879

Free product thickness (mm)= 0 Evidence of sludge or siltation: No

Purging Information Summary*

Purging/sampling equipment, sampling technique and equipment calibration information: Peristaltic pump with dedicated 1/4" LDPE tubing, multimeter, turbidimeter with daily calibration check

Well purged (Y/N): Y Recharge Rate: >200 mL/min

Volume Purged (L) (note multiple purging events if applicable): 2.7

Parameter	Initial	Stabilized	Final	*Notes (if not stabilized)*
pH	9.3	9.1	9.1	
Conductivity (uS/cm)	843	776	768	
Turbidity (NTU)	71.6	13.4	6.64	
Temperature (degC)	3.0	2.1	2.2	

Visual/olfactory observations (incl. colour, odour, presence of free product/sheen/globules, siltation…): Clear, colourless, odourless

Decontamination of sampling equipment

Type of decontamination fluid (s): Non required,dedicated tubing

Number washes: N/A Number rinses: N/A

Other Relevant Comments:

* Complete field notes including full suite of water quality indicator parameters VS time as per EPA low flow sampling procedures should be appended to this summary.

Monitoring Well Sampling Log

Site Name: PIN-2 Landfill Name: NHWLF

Monitoring Well ID: MW-7

Sample Number(s) include dups.: P216-7W

Bottles filled (by parameter type): 100 mL (Met), 2x500 L amber (PCB), 2x250 L amber/2 x 40 mL (PHC)

Date of Sampling Event: 17-Aug-16 Time: 14:10

Weather: 8 C, Cloudy, 15-25 km/h NW

Names of Samplers: A.Passalis

Description of Well Condition and Surrounding ground conditions (note ponding of water):

Good condition. no ponding

Lock (condition, presence, model, manufacturer): Good, KA1

Pre-Measured Data (From Water Well Record Log)

*Depth of well installation (cm)= 340 Diameter of well (cm)= 4

*Depth to top of screen (cm)= 40 Length screened section (cm)= 300

*note: *depths are from ground surface*

Field Measurements

Measurement method (interface probe, tape, etc): Interface

Well pipe height above ground (cm) (to top of pipe)= 50

Static water level (cm) from top of pipe = 253

Static water level (cm) (below ground surface) calculated = 203

Measured well refusal depth (cm) (measure after sampling)= 288

Thickness of water column (cm)= 35 Static volume of water in well (mL)= 440

Free product thickness (mm)= 0 Evidence of sludge or siltation: No

Purging Information Summary*

Purging/sampling equipment, sampling technique and equipment calibration information: Peristaltic pump with dedicated 1/4" LDPE tubing, multimeter, turbidimeter with daily calibration check

Well purged (Y/N): Y Recharge Rate: ~150 mL/min

Volume Purged (L) (note multiple purging events if applicable): 1.3

Parameter	Initial	Stabilized	Final	*Notes (if not stabilized)*
pH	8.9	8.3	8.3	
Conductivity (uS/cm)	646	618	619	
Turbidity (NTU)	31.6	14.2	14.6	
Temperature (degC)	2.9	2.6	2.6	

Visual/olfactory observations (incl. colour, odour, presence of free product/sheen/globules, siltation…): Clear, colourless, odourless

Decontamination of sampling equipment

Type of decontamination fluid (s): Non required,dedicated tubing

Number washes: N/A Number rinses: N/A

Other Relevant Comments:

* Complete field notes including full suite of water quality indicator parameters VS time as per EPA low flow sampling procedures should be appended to this summary.

Monitoring Well Sampling Log

Site Name: PIN-2 Landfill Name: NHWLF

Monitoring Well ID: MW-8

Sample Number(s) include dups.: P216-8W

Bottles filled (by parameter type): --

Date of Sampling Event: N.A (dry) Time: --

Weather: 8 C, Cloudy, 15-25 km/h NW

Names of Samplers: A.Passalis

Description of Well Condition and Surrounding ground conditions (note ponding of water):

Good condition. no ponding

Lock (condition, presence, model, manufacturer): Good, KA1

Pre-Measured Data (From Water Well Record Log)

*Depth of well installation (cm)= 440 Diameter of well (cm)= 4

*Depth to top of screen (cm)= 40 Length screened section (cm)= 200

*note: *depths are from ground surface*

Field Measurements

Measurement method (interface probe, tape, etc): Interface

Well pipe height above ground (cm) (to top of pipe)= 54

Static water level (cm) from top of pipe = N/A (dry)

Static water level (cm) (below ground surface) calculated = N/A

Measured well refusal depth (cm) (measure after sampling)= 147 (ice)

Thickness of water column (cm)= N/A Static volume of water in well (mL)= N/A

Free product thickness (mm)= 0 Evidence of sludge or siltation: No

Purging Information Summary*

Purging/sampling equipment, sampling technique and equipment calibration information: Peristaltic pump with dedicated 1/4" LDPE tubing, multimeter, turbidimeter with daily calibration check

Well purged (Y/N): N Recharge Rate: N/A

Volume Purged (L) (note multiple purging events if applicable): N/A

Parameter	Initial	Stabilized	Final	*Notes (if not stabilized)*
pH				
Conductivity (uS/cm)				
Turbidity (NTU)				
Temperature (degC)				

Visual/olfactory observations (incl. colour, odour, presence of free product/sheen/globules, siltation…): -

Decontamination of sampling equipment

Type of decontamination fluid (s): N/A

Number washes: N/A Number rinses: N/A

Other Relevant Comments:

* Complete field notes including full suite of water quality indicator parameters VS time as per EPA low flow sampling procedures should be appended to this summary.

10 SOUTH LANDFILL – EAST

10.1 SUMMARY

On August 15, a visual inspection has been completed at the South Landfill – East. Soil sampling has been completed at four stations located upgradient and downgradient of the landfill. Shallow fractured bedrock was encountered at 0.3 m depth at downgradient location P2-19.

No PCB or high metal concentrations have been detected in any of the soil samples collected. Detectable concentrations of TPH (PHC F3 Fraction) were noted in the surface samples collected at upgradient location P2-17 (330 mg/kg) and downgradient location P2-19 (120 mg/kg). Slightly elevated concentrations of zinc have been noted in the surface sample collected at upgradient location P2-17 (71 mg/kg), and chromium and nickel were noted in the surface sample collected at downgradient location P2-18 (respectively 23 mg/kg and 13 mg/kg).

As of the 2016 monitoring event, no features were identified with “significant” or “unacceptable” severity ratings. Indications of minor settlement have been noted at three locations on the South Landfill – East, including one linear depression on the northeast corner (Feature A); and two pothole-type depressions on the north side slope, and north central cover (Features C and D). Feature A appears consistent with the previous 2015 assessment, whereas Feature C appears to have marginally increased in length from 0.3 to 0.6 m. Feature D constitutes a new observation for the 2016 assessment. No exposed debris was noted.

Evidence of minor surface erosion has been noted at one existing location across the central cover of the South Landfill – East (Feature B). This feature was noted to have increased from 6 to 12 m in length from the previous 2015 assessment.

At this time, the overall performance of the landfill is rated as acceptable.

The Visual Inspection Checklist is included in Table XXXIV of this report and has been completed as per the TOR. Please refer to Figure PIN-2.8 for a sketch of the South Landfill – East.

Table XXXIV: Visual Inspection Checklist / Report – South Landfill – East

Dew Line Cleanup Post Construction – Landfill Monitoring
Visual Inspection Checklist

Inspection Report – Page 1 of 2

SITE NAME: PIN-2 Cape Young
LANDFILL DESIGNATION: South Landfill – East (Existing Regrade Area)
DATE OF INSPECTION: August 15, 2016
DATE OF PREVIOUS INSPECTION: August 15, 2015
INSPECTED BY: A. Passalis
REPORT PREPARED BY: A. Passalis
MONITORING EVENT NUMBER: 5
The inspector/reporter represents to the best of his/her 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 XXXIV: PIN-2, CAPE YOUNG - SOUTH LANDFILL - EAST (Page 2 of 2)

Site Name: PIN-2, CAPE YOUNG
Landfill: South Landfill - East
Designation: Existing Regrade Area
Date Inspected: August 15, 2016
Inspected by: Andrew Passalis, P.Eng.

Signature: 

Checklist Item	Present (Yes/No)	Location	Length	Width	Depth	Extent	Description	Photographic Record	Severity Rating	Additional Comments
Settlement	Yes	FEATURE A See Figure PIN-2.8 (NE corner)	6 m	0.2-0.3 m	0.1 m	Isolated	Minor depression	SLE-9-11	Acceptable	Linear depression. No visible change from previous 2015 assessment.
		FEATURE C See Figure PIN-2.8 (N side slope)	0.6 m	0.15 m	0.05 m	Isolated	Minor depression	SLE-14, 15	Acceptable	Pothole-type depression. Increase in length from 0.3 to 0.6 m from previous 2015 assessment.
		FEATURE D See Figure PIN-2.8 (N central cover - New obs.)	0.3 m	0.15 m	0.07 m	Isolated	Minor depression	SLE-24, 25	Acceptable	Pothole-type depression. New observation.
Erosion	Yes	FEATURE B See Figure PIN-2.8 (Central cover)	12 m	0.1 - 0.15 m	0.05 m	Isolated	Minor erosion	SLE-12, 13	Acceptable	Self armouring. Increase in length from 6 to 12 m from previous 2015 assessment.
Frost Action	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Animal Burrows	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Vegetation	Yes	See Figure PIN-2.8 (N side slope)	25 m	10 m	N/A	N/A	Very sparse vegetation	SLE-18	N/A	N/A
Staining	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Vegetation Stress	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Seepage Points	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Debris Exposed	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Presence/Condition of Monitoring Instruments	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Other Features of Note:	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Additional Photos	Yes	See Figure PIN-2.8 and Photographic Record	N/A	N/A	N/A	N/A	General Photographic Record	N/A	Not Observable	General photos for documentation, no additional features of note.
Overall Landfill Performance:	**Acceptable**									

10.2 PRELIMINARY STABILITY ASSESSMENT

The Preliminary Stability Assessment for South Landfill – East has been completed as per the TOR and is included in Table XXXV below.

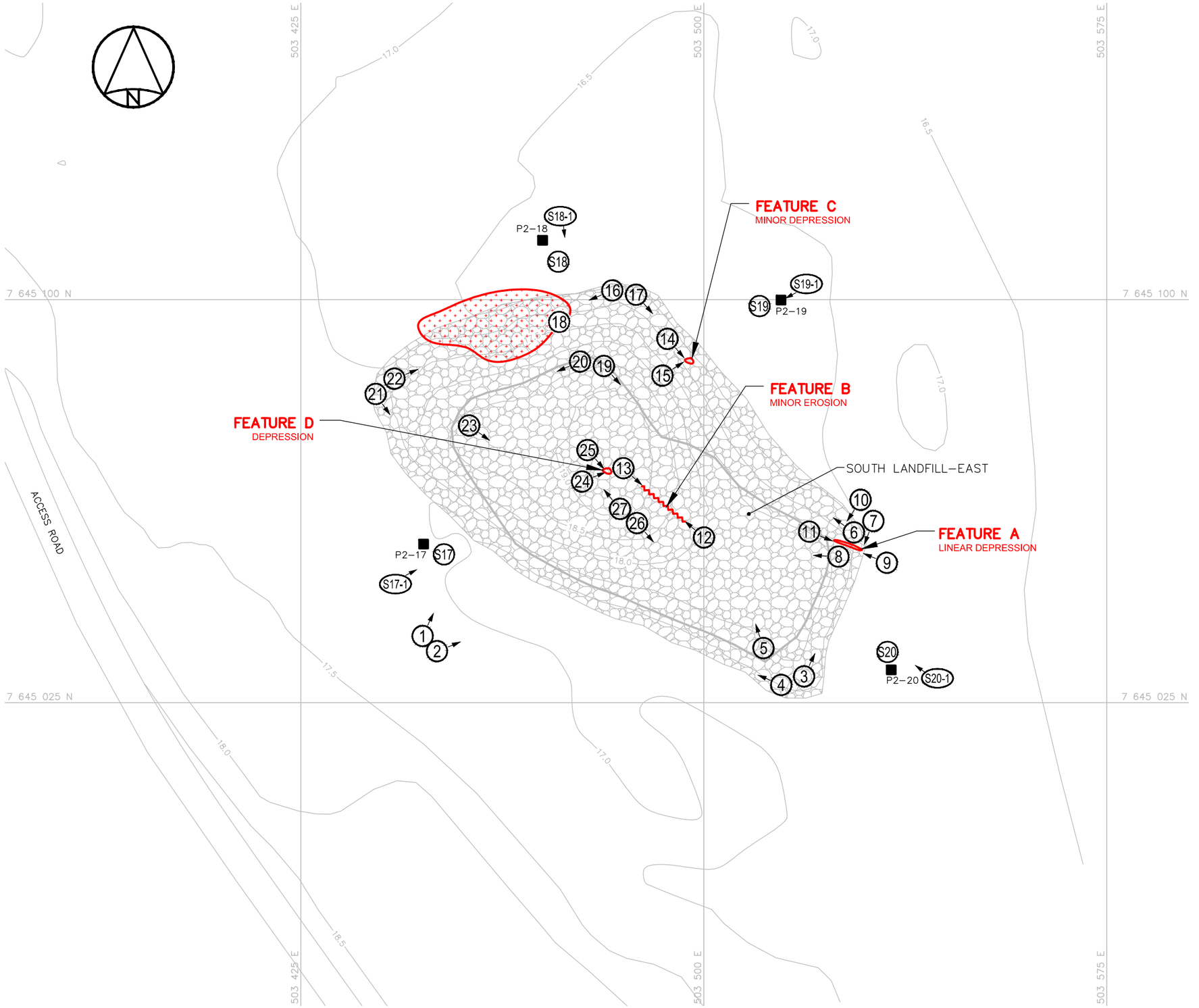
Table XXXV: Preliminary Stability Assessment – South Landfill – East

Feature	Severity Rating	Extent
Settlement	Acceptable	Isolated
Erosion	Acceptable	Isolated
Frost Action	Not observed	None
Staining	Not observed	None
Vegetation Stress	Not observed	None
Seepage/Ponded Water	Not observed	None
Debris exposure	Not observed	None
Overall Landfill Performance	**Acceptable**	

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

10.3 LOCATION PLAN

The Location Plan for the South Landfill – East has been completed as per the TOR and is presented in Figure PIN-2.8.



LEGEND

- MONITORING SOIL SAMPLE LOCATION (4)
- APPROX. PHOTOGRAPHIC VIEWPOINT
- MINOR SETTLEMENT (NTS)
- MINOR EROSION (NTS)
- SPARSE VEGETATION

0m 7.5m 15.0m 22.5m 30.0m 37.5m

NO.	VERSION	DATE	BY	VERIF.	APPR.
00	FINAL	17–03–03	J.P.	J.–P.P.	M.F.

Construction de Défense Canada
Defence Construction Canada

COLLECTION OF LANDFILL MONITORING DATA

PIN-2, CAPE YOUNG, NUNAVUT

SOUTH LANDFILL - EAST

Englobe
1260 Lebourgneuf Boulevard
Suite 400
Quebec (Quebec) Canada, G2K 2G2
Phone : 418.704.8091
www.englobecorp.com

MEASUREMENT UNIT	SCALE:	DATE (month–year):
Metre	1 : 750	JANUARY 2017
DRAWN BY:	VERIFIED BY:	APPROVED BY:
J. POULIN	J.–P. PELLETIER	M. FLEURY P. ENG
PROJECT NO:	DRAWING NO:	PAGE
P-0009730-0-05-503	P-0009730-0-05-503-PIN-2H-PL	PL

FIGURE PIN-2.8

G:\129\B-0010209-1_KITIK12_13\1_Livrables\0_LivrClient\1_OTP_1\PIN-2\2016\FinalDrawings\P-0009730-0-05-503-PIN-2H-PL.dwg, PL, 2017-03-03 15:43:46

10.4 PHOTOGRAPHIC RECORDS

The Photographic Record for the South Landfill – East has been completed as per the TOR and is included in Table XXXVI hereafter. Full sized photographs are contained in the Addendum DVD-ROM.

Table XXXVI: LANDFILL VISUAL INSPECTION PHOTO LOG

Site Name: PIN-2, Cape Young
Landfill: South Landfill - East
Date Inspected: August 15, 2016
Inspected by: Andrew Passalis, P.Eng.

Photo (SLE-)	Filename	Size (KB)	Date	Vantage Point		Caption
				Easting	Northing	
1	P216_1977	4403	16/08/15	503449	7645037	View looking northeast at south side of South Landfill - East
2	P216_1978	4,373	16/08/15	503450	7645035	View looking northeast at south side of South Landfill - East
3	P216_1979	4,168	16/08/15	503517	7645029	View looking northeast along southeast side of South Landfill - East
4	P216_1980	4,322	16/08/15	503516	7645029	View looking northwest along south side of South Landfill - East
5	P216_1981	4,444	16/08/15	503512	7645034	View looking northwest across cover from southeast corner of South Landfill - East
6	P216_1982	4,264	16/08/15	503529	7645056	View looking northwest along northeast side of South Landfill - East
7	P216_1983	4,360	16/08/15	503531	7645056	View looking southwest along east side of South Landfill - East
8	P216_1984	4,397	16/08/15	503524	7645054	View looking west across cover from northeast corner of South Landfill - East
9	P216_1986	4,420	16/08/15	503534	7645051	View looking northwest at linear depression on northeast corner of South Landfill - East - FEATURE A
10	P216_1987	4,367	16/08/15	503527	7645057	View looking southwest at linear depression on northeast corner of South Landfill - East - FEATURE A
11	P216_1988	4,298	16/08/15	503522	7645057	View looking southeast at linear depression on northeast corner of South Landfill - East - FEATURE A
12	P216_1989	4,416	16/08/15	503498	7645058	View looking northwest at minor erosion on central cover area of South Landfill - East - FEATURE B
13	P216_1990	4,401	16/08/15	503486	7645068	View looking southeast at minor erosion on central cover area of South Landfill - East - FEATURE B
14	P216_1991	4,391	16/08/15	503496	7645090	View looking southeast at pothole depression on northeast side slope of South Landfill - East - FEATURE C
15	P216_1992	4,310	16/08/15	503495	7645087	View looking northeast at pothole depression on northeast side slope of South Landfill - East - FEATURE C
16	P216_1993	4,352	16/08/15	503484	7645101	View looking southwest along north side of South Landfill - East
17	P216_1994	4,332	16/08/15	503487	7645101	View looking southeast along northeast side of South Landfill - East
18	P216_1995	4,232	16/08/15	503472	7645096	View of sparse vegetation on north side slope of South Landfill - East
19	P216_1996	4,324	16/08/15	503481	7645088	View looking southeast along northeast crest of South Landfill - East
20	P216_1997	4,375	16/08/15	503477	7645088	View looking southwest along north crest of South Landfill - East
21	P216_1998	4,101	16/08/15	503440	7645082	View looking southeast along southeast side of South Landfill - East
22	P216_1999	4,038	16/08/15	503442	7645084	View looking east-northeast along north side of South Landfill - East
23	P216_2000	4,436	16/08/15	503455	7645077	View looking southeast across north cover of South Landfill - East
24	P216_2003	4255	16/08/15	503479	7645067	View looking northeast at pothole depression on north central cover of South Landfill - East - FEATURE D (new)
25	P216_2004	4421	16/08/15	503479	7645071	View looking southeast at pothole depression on north central cover of South Landfill - East - FEATURE D (new)
26	P216_2005	4406	16/08/15	503487	7645059	View looking southeast across south cover of South Landfill - East
27	P216_2006	4252	16/08/15	503485	7645061	View looking northwest across north cover of South Landfill - East
Soil Sampling						
S17	P216_2001	4,401	16/08/15	503448	7645051	Sampling location P216-17 located upgradient of South Landfill - East
S17-1	P216_2002	4374	16/08/15	503444	7645048	View looking northeast at P216-17 located upgradient of South Landfill - East
S18	P216_2007	4359	16/08/15	503474	7645110	Sampling location P216-18 located downgradient of South Landfill - East
S18-1	P216_2008	4330	16/08/15	503473	7645115	View looking south at P216-18 located downgradient of South Landfill - East
S19	P216_2009	4288	16/08/15	503514	7645100	Sampling location P216-19 located downgradient of South Landfill - East
S19-1	P216_2010	4370	16/08/15	503517	7645102	View looking southwest at P216-19 located downgradient of South Landfill - East
S20	P216_2011	4437	16/08/15	503538	7645033	Sampling location P216-20 located downgradient of South Landfill - East
S20-1	P216_2012	4396	16/08/15	503542	7645030	View looking northwest at P216-20 located downgradient of South Landfill - East

10.5 SOIL SAMPLE ANALYTICAL DATA

The soil chemical analysis results for the 2016 South Landfill - East samples are presented in Table XXXVII hereafter. Certificates of analyses and results of field duplicates collected as part of the QA/QC program are presented in Annexes 1 and 2 at the end of this report.

Table XXXVII: Soil Chemical Analysis Results - South Landfill - East

Sample #	Location	Depth (cm)	Parameters										F1	F2	F3	F4
			As [mg/kg]	Cd [mg/kg]	Cr [mg/kg]	Co [mg/kg]	Cu [mg/kg]	Pb [mg/kg]	Ni [mg/kg]	Zn [mg/kg]	Hg [mg/kg]	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]
Detection Limit			1.0	0.050	1.0	0.50	1.0	0.5	1.0	10	0.050	0.010	12	10	50	50
Upgradient Soil Samples																
P216-17A	P2-17	0-15	3.1	0.770	12.0	2.90	9.9	9.2	6.8	71	<0.050	<0.020 (1)	<12	<10	330	<50
P216-17B		40-50	2.3	0.130	7.8	2.40	6.6	2.3	4.8	13	<0.050	<0.010	<12	<10	<50	<50
Downgradient Soil Samples																
P216-18A	P2-18	0-15	3.3	0.093	23.0	4.10	6.7	4.0	13.0	22	<0.050	<0.010	<12	<10	<50	<50
P216-BD7 (Intra-Lab Blind Duplicate)		0-15	2.2	0.082	6.9	3.00	5.0	3.1	4.8	17	<0.050	<0.010	<12	<10	<50	<50
P216-18A (Inter-Lab Blind Duplicate)		0-15	3.2	0.070	7.5	3.10	7.1	3.2	5.1	22	<0.050	<0.05	<10	<50	<50	<100
Average Value for P216-18A Sample		0-15	2.90 ± 0.61	0.08 ± 0.01	12.47± 9.13	3.40 ± 0.61	6.27 ± 1.12	3.43 ± 0.49	7.63 ± 4.65	20.33± 2.89	--	--	--	--	--	--
P216-18B		40-50	3.3	0.076	10.0	3.70	3.9	3.0	7.9	15	<0.050	<0.010	<12	<10	<50	<50
P216-19A	P2-19	0-15	1.7	0.350	9.6	1.40	5.1	5.4	4.4	31	<0.050	<0.010	<12	<10	120	<50
P216-19B		20-30	3.0	0.098	6.4	0.56	1.5	2.6	2.7	<10	<0.050	<0.010	<12	<10	<50	<50
P216-20A	P2-20	0-15	1.8	0.210	9.1	2.10	7.1	2.4	5.7	24	<0.050	<0.010	<12	<10	<50	<50
P216-20B		40-50	2.7	0.120	8.7	2.20	5.0	2.6	4.8	12	<0.050	<0.010	<12	<10	<50	<50

(1) DL raised due to high moisture content

11 SOUTH BORROW LANDFILL

11.1 SUMMARY

On August 15, a visual inspection was completed at the South Borrow Landfill. Soil sampling was completed at four stations located upgradient and downgradient of the landfill. Frozen ground conditions were observed at 0.5 m depth at downgradient location P2-28.

No PCB was detected in any of the soil samples collected. Elevated copper concentrations were noted in the depth samples collected at downgradient locations P2-28 and P2-29 (respectively 100 mg/kg and 55 mg/kg). Detectable concentrations of TPH (PHC F3 and F4 Fractions) were noted in the surface sample collected at downgradient location P2-27 (respectively 1,800 mg/kg and 450 mg/kg) and TPH (PHC F3 Fraction) in the surface and depth samples collected at downgradient locations P2-28 (respectively 280 mg/kg (intralaboratory duplicate sample) and 430 mg/kg) and P2-29 (respectively 350 mg/kg and 480 mg/kg). It should be noted that with the exception of the depth sample at P2-27, all downgradient soil samples consisted of organic material, and consequently, higher laboratory detection limits were required for the analysis of TPH parameters. Slightly elevated concentrations of metals were also noted at downgradient location P2-29, including arsenic in the surface sample (18 mg/kg), and chromium (21 mg/kg) and copper (55 mg/kg) in the depth sample.

As of the 2016 monitoring event, no features were identified with “significant” or “unacceptable” severity ratings. Indications of minor settlement were noted at seven locations, including two pothole-type depressions on the north side slope (Feature A), two small localized depressions on the east side slope and southeast cover (Feature D), one small localized depression on the south side (Feature F), a newly observed linear depression on the west cover (Feature G) and one newly observed pothole-type depression on the north cover (Feature H). Depressions at Feature A exhibited a marginal increase in length and width from the previously 2015 assessment, whereas there was no change noted at existing Features D and F from the 2015 assessment. Features G and H had not been noted during the previous 2015 assessment.

Evidence of minor surface erosion was noted at one existing location on the east side slope (Feature C). The erosion appears to have increased in length from 2 to 4 m from the previous 2014 and 2015 assessments.

Areas of ponded water were observed along the northwest and southwest corners of the landfill (Feature E). The ponding on the southwest corner appears to have decreased marginally from the 2015 assessment, bordering approximately 10 m of the landfill toe, whereas the northwest ponding appears consistent with previous observations, bordering approximately 2.5 m of the landfill toe. The ponding along the northwest and southwest corners of the landfill was not noted with a feature label during the 2014 assessment, and was subsequently added during the 2015 assessment. Evidence of minor rust coloured staining was noted within a wetted area along the southwest toe of the landfill (Feature B). The area of staining appeared consistent with the previous 2015 assessment, and smaller than observed during the 2012 - 2014 inspections. The non-hydrocarbon sheen noted on the water in 2015 was not observed at the time of the 2016 assessment. A newly observed area of minor rust coloured staining was also noted within the wetted area along the northwest toe of the landfill (Feature I). The ponded and stained areas extend to depths down to 0.6 m., and do not appear to be impacting the performance of the landfill cover. No exposed debris was noted.

At this time, the overall performance of the landfill is rated as acceptable.

The Visual Inspection Checklist is included in Table XXXVIII of this report and has been completed as per the TOR. Please refer to Figure PIN-2.9 for a sketch of the South Borrow Landfill detailing the location of photographs and features.

Table XXXVIII: Visual Inspection Checklist / Report – South Borrow Landfill
Dew Line Cleanup Post Construction – Landfill Monitoring
Visual Inspection Checklist

Inspection Report – Page 1 of 2

SITE NAME: PIN-2 Cape Young
LANDFILL DESIGNATION: South Borrow Landfill (Existing Regrade Area)
DATE OF INSPECTION: August 15, 2016
DATE OF PREVIOUS INSPECTION: August 15, 2015
INSPECTED BY: A. Passalis
REPORT PREPARED BY: A. Passalis
MONITORING EVENT NUMBER: 5
The inspector/reporter represents to the best of his/her 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 XXXVIII: PIN-2, CAPE YOUNG - SOUTH BORROW LANDFILL (Page 2 of 2)

Site Name: PIN-2, CAPE YOUNG
Landfill: South Borrow Landfill
Designation: Existing Regrade Area
Date Inspected: August 15, 2016
Inspected by: Andrew Passalis, P.Eng.

Signature: 

Checklist Item	Present (Yes/No)	Location	Length	Width	Depth	Extent	Description	Photographic Record	Severity Rating	Additional Comments
Settlement	Yes	FEATURE A See Figure PIN-2.9 (N side slope)	0.6 - 0.8 m	0.25 - 0.50 m	0.1 m	Occasional (<2 %)	Minor depressions	SBLF-3, 4, 11, 12	Acceptable	2 locations. Pothole-type. Minor increase in length (0.6 to 0.8 m) from 2015 observation.
		FEATURE D See Figure PIN-2.9 (SE cover and E side)	0.6 - 0.8 m	0.45 - 0.6 m	0.10 - 0.15 m		Minor depressions	SBLF-23, 24, 31, 32	Acceptable	2 locations. Pothole-type. No change from 2015 observation.
		FEATURE F See Figure PIN-2.9 (S side)	0.3 m	0.3 m	0.07 m		Minor depression	SBLF-25, 26	Acceptable	Pothole type. No change from 2015 observation.
		FEATURE G See Figure PIN-2.9 (W cover) - New Obs.	1.2 m	0.3 m	0.05 m		Minor depression	SBLF-13, 14	Acceptable	Linear depression. New observation.
		FEATURE H See Figure PIN-2.9 (N Cover) - New Obs.	0.3 m	0.3 m	0.1 m		Minor depression	SBLF-33, 34	Acceptable	Pothole type. New observation.
Erosion	Yes	FEATURE C See Figure PIN-2.9 (E side slope)	4 m	0.2 m	0.1 m	Isolated	Minor erosion	SBLF-29, 30	Acceptable	Washing of fines. Slope appears stable. Increase in length from 2 to 4 m from previous 2015 assessment.
Frost Action	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Animal Burrows	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Vegetation	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Staining	Yes	FEATURE B See Figure PIN-2.9 (SW toe)	5 m	0.8 m	Unknown	Isolated	Rust coloured staining in ponded area along toe	SBLF-17-18	Acceptable	Non-hydrocarbon sheen not noted on water. Area of rust colour staining consistent with 2015 observations.
		FEATURE I See Figure PIN-2.9 (NW toe) - New Obs.	3 m	0.5 - 1.0 m	Unknown	Isolated	Rust coloured staining in ponded area along toe	SBLF-5	Acceptable	New observation. No sheen or seepage noted in area.
Vegetation Stress	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Seepage Points	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Debris Exposed	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Presence/Condition of Monitoring Instruments	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Other Features of Note:	Yes	FEATURE E See Figure PIN-2.9 (NW and SW toe)	7 - 15 m	5 m	up to 0.6 m	N/A	Ponded areas northwest and southwest of landfill toe	SBLF-5, 15, 16, 35, 36	Acceptable	Naturally ponded areas northwest and southwest of landfill toe. In contact with approximately 2.5 m on northwest and 10 m around southwest toe. Side slopes appear stable. Ponded area northwest appears consistent, whereas ponded area southwest appears slightly smaller than previously noted in 2015 assessment.
Additional Photos	Yes	See Figure PIN-2.9 and Photographic Record	N/A	N/A	N/A	N/A	General Photographic Record	N/A	Not Observable	General photos for documentation, no additional features of note.
Overall Landfill Performance:	**Acceptable**									

11.2 PRELIMINARY STABILITY ASSESSMENT

The Preliminary Stability Assessment for South Borrow Landfill has been completed as per the TOR and is included in Table XXXIX hereafter.

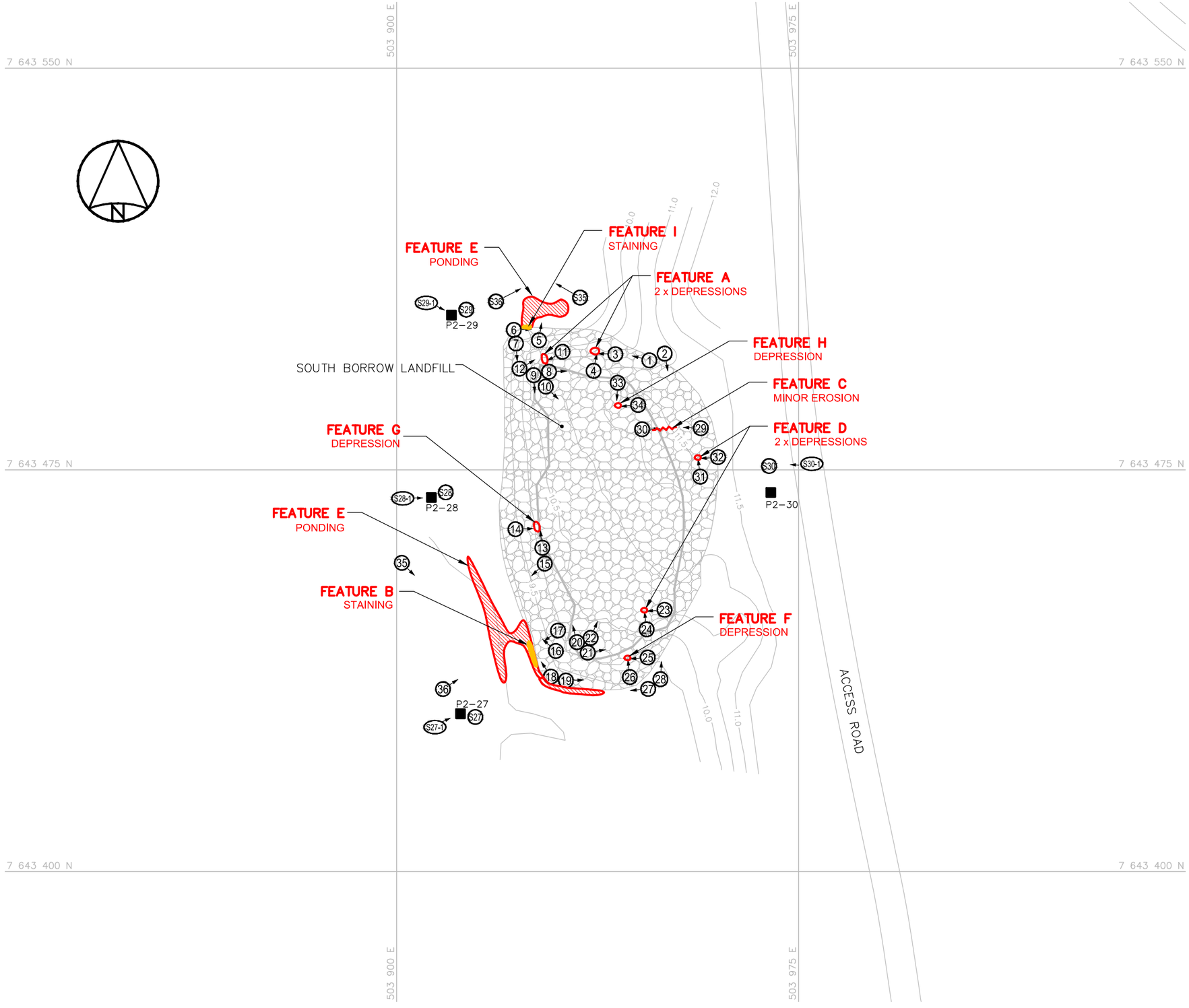
Table XXXIX: Preliminary Stability Assessment – South Borrow Landfill

Feature	Severity Rating	Extent
Settlement	Acceptable	Occasional
Erosion	Acceptable	Isolated
Frost Action	Not observed	None
Staining	Acceptable	Isolated
Vegetation Stress	Not observed	None
Seepage/Ponded Water	Acceptable	Isolated
Debris exposure	Not observed	None
Overall Landfill Performance	**Acceptable**	

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

11.3 LOCATION PLAN

The Location Plan for the South Borrow Landfill has been completed as per the TOR and is presented in Figure PIN-2.9.



LEGEND

- MONITORING SOIL SAMPLE LOCATION (4)
- APPROX. PHOTOGRAPHIC VIEWPOINT
- MINOR SETTLEMENT (NTS)
- STAINING (NTS)
- PONDING (NTS)
- MINOR EROSION (NTS)

0m 7.5m 15.0m 22.5m 30.0m 37.5m

NO.	VERSION	DATE	BY	VERIF.	APPR.
00	FINAL	17-03-03	J.P.	J.-P.P.	M.F.

Construction de Défense Canada
Defence Construction Canada

COLLECTION OF LANDFILL MONITORING DATA

PIN-2, CAPE YOUNG, NUNAVUT

SOUTH BORROW LANDFILL

Englobe
1260 Lebourgneuf Boulevard
Suite 400
Quebec (Quebec) Canada, G2K 2G2
Phone : 418.704.8091
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MEASUREMENT UNIT	SCALE:	DATE (month-year):
Metre	1 : 750	JANUARY 2017
DRAWN BY:	VERIFIED BY:	APPROVED BY:
J. POULIN	J.-P. PELLETIER	M. FLEURY P. ENG
PROJECT NO:	DRAWING NO:	PAGE
P-0009730-0-05-503	P-0009730-0-05-503-PIN-2I-PL	PL

FIGURE PIN-2.9

11.4 PHOTOGRAPHIC RECORDS

The Photographic Record for the South Borrow Landfill has been completed as per the TOR and is included in Table XL hereafter. Full-sized photographs are contained in the Addendum DVD-ROM.

Table XL: LANDFILL VISUAL INSPECTION PHOTO LOG

Site Name: PIN-2, Cape Young
Landfill: South Borrow Landfill
Date Inspected: August 15, 2016
Inspected by: Andrew Passalis, P.Eng.

Photo (SBLF-)	Filename	Size (KB)	Date	Vantage Point		Caption
				Easting	Northing	
A8	P216_1920	3,852	15/08/16	504966	7642957	Aerial view looking northwest at South Borrow Landfill - Refer to Figure PIN-2.1
A9	P216_1921	3,806	15/08/16	504963	7643418	Aerial view looking west at South Borrow Landfill - Refer to Figure PIN-2.1
1	P216_1932	4,364	15/08/16	503949	7643496	View looking west-northwest along north side of South Borrow Landfill
2	P216_1933	4,298	15/08/16	503948	7643496	View looking south along east side of South Borrow Landfill
3	P216_1934	4,460	15/08/16	503940	7643496	View looking west at minor depression on north side slope of South Borrow Landfill - FEATURE A
4	P216_1935	4,314	15/08/16	503937	7643495	View looking north-northeast at minor depression on north side slope of South Borrow Landfill - FEATURE A
5	P216_1936	4,386	15/08/16	503926	7643500	View looking north-northeast at ponded water on northwest corner of South Borrow Landfill - FEATURE E. Also note rust coloured staining along toe - FEATURE I (new)
6	P216_1937	4,410	15/08/16	503922	7643501	View looking east along north toe of South Borrow Landfill
7	P216_1938	4,104	15/08/16	503922	7643499	View looking south along west toe of South Borrow Landfill
8	P216_1939	4,279	15/08/16	503928	7643494	View looking east along north crest of South Borrow Landfill
9	P216_1940	4,472	15/08/16	503926	7643493	View looking south along west crest of South Borrow Landfill
10	P216_1941	4,454	15/08/16	503927	7643492	View looking southeast across cover from northwest corner of South Borrow Landfill
11	P216_1942	4,274	15/08/16	503930	7643496	View southwest at minor settlement on northwest corner of South Borrow Landfill - FEATURE A
12	P216_1943	4,319	15/08/16	503924	7643495	View looking northeast minor settlement on northwest corner of South Borrow Landfill - FEATURE A
13	P216_1945	4,364	15/08/16	503927	7643461	View looking north at linear depression on west cover of South Borrow Landfill - FEATURE G (new)
14	P216_1946	4,304	15/08/16	503924	7643464	View looking east at linear depression on west cover of South Borrow Landfill - FEATURE G (new)
15	P216_1947	4,190	15/08/16	503928	7643458	View looking southwest at ponded area on southwest toe of South Borrow Landfill - FEATURE E
16	P216_1948	4,441	15/08/16	503929	7643441	View looking northwest at ponded area on southwest toe of South Borrow Landfill - FEATURE E
17	P216_1949	4,342	15/08/16	503929	7643444	View looking southwest at iron coloured staining in ponded area on southwest corner of South Borrow Landfill - FEATURE B
18	P216_1950	4,446	15/08/16	503929	7643436	View looking northwest at iron coloured staining in ponded area on southwest corner of South Borrow Landfill - FEATURE B
19	P216_1951	4,355	15/08/16	503931	7643436	View looking east along south toe and side slope of South Borrow Landfill
20	P216_1952	4,424	15/08/16	503934	7643443	View looking northwest along west crest of South Borrow Landfill
21	P216_1953	4,349	15/08/16	503935	7643441	View looking east-northeast along south crest of South Borrow Landfill
22	P216_1954	4,367	15/08/16	503936	7643443	Panormamic view looking northeast across cover from southwest corner of South Borrow Landfill
23	P216_1955	4,230	15/08/16	503949	7643449	View looking west at depression on east crest of South Borrow Landfill - FEATURE D
24	P216_1956	4,282	15/08/16	503947	7643447	View looking north at depression on east crest of South Borrow Landfill - FEATURE D
25	P216_1957	4,307	15/08/16	503945	7643440	View looking west at localized pothole on south side slope of South Borrow Landfill - FEATURE F
26	P216_1958	4,332	15/08/16	503943	7643438	View looking north at localized pothole on south side slope of South Borrow Landfill - FEATURE F
27	P216_1959	4,360	15/08/16	503947	7643435	View looking west along south side slope of South Borrow Landfill
28	P216_1960	4,372	15/08/16	503948	7643436	View looking north along east side of South Borrow Landfill
29	P216_1961	4,443	15/08/16	503954	7643483	View looking west at minor erosion on east cover of South Borrow Landfill - FEATURE C
30	P216_1962	4,343	15/08/16	503948	7643483	View looking east at minor erosion on east cover of South Borrow Landfill - FEATURE C
31	P216_1963	4,283	15/08/16	503956	7643475	View looking north at two subtle depressions on east side of South Borrow Landfill - FEATURE D
32	P216_1964	4,321	15/08/16	503959	7643477	View looking west at two subtle depressions on east side of South Borrow Landfill - FEATURE D
33	P216_1965	4,294	15/08/16	503941	7643490	View looking south at pothole depression on north cover of South Borrow Landfill - FEATURE H (new)
34	P216_1966	4,334	15/08/16	503944	7643487	View looking west at pothole depression on north cover of South Borrow Landfill - FEATURE H (new)
35	P216_1967	4,071	15/08/16	503902	7643457	View looking southeast at ponded water on southwest corner of South Borrow Landfill - FEATURE E
36	P216_1968	3,994	15/08/16	503909	7643435	View looking northeast at ponded water on southwest corner of South Borrow Landfill - FEATURE E
Soil Sampling						
S27	P216_1973	4,416	15/08/16	503912	7643429	Sampling location P216-27 located downgradient of South Borrow Landfill
S27-1	P216_1974	4,271	15/08/16	503908	7643428	View looking northeast at P216-27 located downgradient of South Borrow Landfill
S28	P216_1971	4,370	15/08/16	503906	7643470	Sampling location P216-28 located downgradient of South Borrow Landfill
S28-1	P216_1972	4,336	15/08/16	503903	7643470	View looking east at P216-28 located downgradient of South Borrow Landfill
S29	P216_1969	4,337	15/08/16	503910	7643504	Sampling location P216-29 located downgradient of South Borrow Landfill
S29-1	P216_1970	4,406	15/08/16	503907	7643506	View looking southeast at P216-29 located downgradient of South Borrow Landfill
S30	P216_1975	4,365	15/08/16	503972	7643476	Sampling location P216-30 located upgradient of South Borrow Landfill
S30-1	P216_1976	4,396	15/08/16	503977	7643476	View looking west at P216-30 located upgradient of South Borrow Landfill

11.5 SOIL SAMPLE ANALYTICAL DATA

The soil chemical analysis results for the 2016 South Borrow Landfill samples are presented in Table XLI hereafter. Certificates of analyses and results of field duplicates collected as part of the QA/QC program are presented in Annexes 1 and 2 at the end of this report.

Table XLI: Soil Chemical Analysis Results - South Borrow Landfill

Sample #	Location	Depth (cm)	Parameters										F1	F2	F3	F4
			As [mg/kg]	Cd [mg/kg]	Cr [mg/kg]	Co [mg/kg]	Cu [mg/kg]	Pb [mg/kg]	Ni [mg/kg]	Zn [mg/kg]	Hg [mg/kg]	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]
Detection Limit			1.0	0.50	1.0	0.50	1.0	0.5	1.0	10	0.050	0.010	12	10	50	50
Upgradient Soil Samples																
P216-30A	P2-30	0-15	2.5	0.067	10.0	2.9	7.8	3.7	6.4	19	<0.050	<0.010	<12	<10	<50	<50
P216-30B		40-50	2.8	0.064	12.0	2.8	12.0	2.6	7.3	13	<0.050	<0.010	<12	<10	<50	<50
Downgradient Soil Samples																
P216-27A	P2-27	0-15	3.4 (1)	0.150 (1)	7.1 (1)	1.3 (1)	12.0 (1)	1.0 (1)	11.0 (1)	<20 (1)	<0.10 (1)	<0.050 (1)	<72 (2)	<57 (1)	1800 (1)	450 (1)
P216-27B		40-50	1.4	0.190	7.1	2.5	7.3	2.1	5.9	13	<0.050	<0.010	<12	<10	<50	<50
P216-28A	P2-28	0-15	6.2 (1)	0.150 (1)	5.2 (1)	4.3 (1)	13.0 (1)	2.3 (1)	10.0 (1)	40 (1)	<0.10 (1)	<0.040 (1)	<58 (2)	<44 (1)	<220 (1)	<220 (1)
P216-BD8 (Intra-Lab Blind Duplicate)		0-15	6.1 (1)	0.110 (1)	5.0 (1)	3.1 (1)	8.9	2.0 (1)	8.1 (1)	31 (1)	<0.10 (1)	<0.040 (1)	<67 (2)	<41 (1)	280 (1)	<210 (1)
P216-28A (Inter-Lab Blind Duplicate)		0-15	5.9	0.160	4.2	4.2	12.0	1.4	10.8	32	0.050	<0.05	<10	<50	113	<100
Average Value for P216-28A Sample		0-15	6.07 ± 0.15	0.14 ± 0.03	4.80 ± 0.53	3.87 ± 0.67	11.3 ± 2.14	1.90 ± 0.46	9.63 ± 1.39	34.33± 4.93	--	--	--	--	--	--
P216-28B		40-50	6.9 (1)	0.560 (1)	8.7 (1)	2.9 (1)	100.0 (1)	1.6 (1)	16.0 (1)	<20 (1)	<0.10 (1)	<0.050 (1)	<160 (2)	<70 (1)	430 (1)	<350 (1)
P216-29A	P2-29	0-15	18.0 (1)	<0.10 (1)	6.3 (1)	1.9 (1)	6.2 (1)	2.7 (1)	12.0 (1)	<20 (1)	<0.10 (1)	<0.040 (1)	<100 (2)	<57 (1)	350 (1)	<290 (1)
P216-29B		40-50	11.0 (1)	1.700 (1)	21.0 (1)	3.4 (1)	55.0 (1)	5.2 (1)	19.0 (1)	<20 (1)	<0.10 (1)	<0.070 (1)	<95 (2)	<69 (1)	480 (1)	<350 (1)

Notes:

(1) DL raised due to high moisture content

(2) DL raised due to moisture content > 50 %

ANNEX 1

Laboratory Results

Your P.O. #: 21110
Your Project #: 2016LFM-KITIK13
Site Location: PIN-2, CAPE YOUNG

Attention:Andrew Passalis

EnGlobe Corp
QUEBEC
1260, boul. Lebourgneuf Blvd
bureau/suite 250
Québec, QC
CANADA G2K 2G2

Your C.O.C. #: M002021, M008544, M008545, M008546

Report Date: 2016/10/13
Report #: R2281344
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B671091
Received: 2016/08/21, 10:25

Sample Matrix: Soil
Samples Received: 84

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
BTEX/F1 by HS GC/MS/FID (MeOH extract)	15	2016/08/22	2016/08/27	AB SOP-00039	CCME CWS/EPA 8260c m
BTEX/F1 by HS GC/MS/FID (MeOH extract)	12	2016/08/22	2016/08/28	AB SOP-00039	CCME CWS/EPA 8260c m
BTEX/F1 by HS GC/MS/FID (MeOH extract)	34	2016/08/23	2016/08/27	AB SOP-00039	CCME CWS/EPA 8260c m
BTEX/F1 by HS GC/MS/FID (MeOH extract)	5	2016/08/23	2016/08/28	AB SOP-00039	CCME CWS/EPA 8260c m
BTEX/F1 by HS GC/MS/FID (MeOH extract)	1	2016/08/23	2016/08/29	AB SOP-00039	CCME CWS/EPA 8260c m
BTEX/F1 by HS GC/MS/FID (MeOH extract)	1	2016/08/24	2016/08/24	AB SOP-00039	CCME CWS/EPA 8260c m
BTEX/F1 by HS GC/MS/FID (MeOH extract)	16	2016/08/27	2016/08/28	AB SOP-00039	CCME CWS/EPA 8260c m
PCB in Soil - Subcontract (1)	84	N/A	2016/08/31		
CCME Hydrocarbons (F2-F4 in soil) (2)	10	2016/08/22	2016/08/24	AB SOP-00036 / AB SOP-00040	CCME PHC-CWS m
CCME Hydrocarbons (F2-F4 in soil) (2)	10	2016/08/23	2016/08/26	AB SOP-00036 / AB SOP-00040	CCME PHC-CWS m
CCME Hydrocarbons (F2-F4 in soil) (2)	12	2016/08/23	2016/08/27	AB SOP-00036 / AB SOP-00040	CCME PHC-CWS m
CCME Hydrocarbons (F2-F4 in soil) (2)	18	2016/08/24	2016/08/26	AB SOP-00036 / AB SOP-00040	CCME PHC-CWS m
CCME Hydrocarbons (F2-F4 in soil) (2)	17	2016/08/26	2016/08/27	AB SOP-00036 / AB SOP-00040	CCME PHC-CWS m
CCME Hydrocarbons (F2-F4 in soil) (2)	16	2016/08/27	2016/08/28	AB SOP-00036 / AB SOP-00040	CCME PHC-CWS m
CCME Hydrocarbons (F2-F4 in soil) (2)	1	2016/08/29	2016/08/29	AB SOP-00036 / AB SOP-00040	CCME PHC-CWS m
Elements by ICPMS - Soils	59	2016/08/29	2016/08/29	AB SOP-00001 / AB SOP-00043	EPA 200.8 R5.4 m
Elements by ICPMS - Soils	1	2016/08/30	2016/08/30	AB SOP-00001 / AB SOP-00043	EPA 200.8 R5.4 m
Elements by ICPMS - Soils	23	2016/08/31	2016/08/31	AB SOP-00001 / AB SOP-00043	EPA 200.8 R5.4 m

Your P.O. #: 21110
Your Project #: 2016LFM-KITIK13
Site Location: PIN-2, CAPE YOUNG

Attention:Andrew Passalis

EnGlobe Corp
QUEBEC
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Québec, QC
CANADA G2K 2G2

Your C.O.C. #: M002021, M008544, M008545, M008546

Report Date: 2016/10/13
Report #: R2281344
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B671091
Received: 2016/08/21, 10:25

Sample Matrix: Soil
Samples Received: 84

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Elements by ICPMS - Soils	1	2016/09/01	2016/09/01	AB SOP-00001 / AB SOP-00043	EPA 200.8 R5.4 m
Moisture	23	N/A	2016/08/24	AB SOP-00002	CCME PHC-CWS m
Moisture	18	N/A	2016/08/25	AB SOP-00002	CCME PHC-CWS m
Moisture	42	N/A	2016/08/29	AB SOP-00002	CCME PHC-CWS m
Moisture	1	N/A	2016/08/30	AB SOP-00002	CCME PHC-CWS m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Maxxam Ontario (From Edmonton)
(2) All CCME results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Maxxam conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following Alberta Environment’s Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil, Validation of Performance-Based Alternative Methods September 2003. Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Sherlyne Sim, B.Eng, Project Manager
Email: SSim@maxxam.ca
Phone# (780)577-7113
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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B671091
Report Date: 2016/10/13

EnGlobe Corp
Client Project #: 2016LFM-KITIK13
Site Location: PIN-2, CAPE YOUNG
Your P.O. #: 21110
Sampler Initials: AP, KE

AT1 BTEX AND F1-F4 IN SOIL (SOIL)

Maxxam ID		PI0756	PI0756		PI0757		PI0758	PI0759	PI0760		
Sampling Date		2016/08/16	2016/08/16		2016/08/16		2016/08/16	2016/08/16	2016/08/16		
COC Number		M002021	M002021		M002021		M002021	M002021	M002021		
	UNITS	P216-1A	P216-1A Lab-Dup	RDL	P216-1B	QC Batch	P216-2A	P216-2B	P216-3A	RDL	QC Batch
Physical Properties											
Moisture	%	64	64	0.30	30	8373016	11	8.1	14	0.30	8373016
Ext. Pet. Hydrocarbon											
F2 (C10-C16 Hydrocarbons)	mg/kg	<28 (1)		28	<10	8376913	<10	<10	<10	10	8376913
F3 (C16-C34 Hydrocarbons)	mg/kg	160 (1)		140	<50	8376913	<50	<50	<50	50	8376913
F4 (C34-C50 Hydrocarbons)	mg/kg	<140 (1)		140	<50	8376913	<50	<50	<50	50	8376913
Reached Baseline at C50	mg/kg	Yes			Yes	8376913	Yes	Yes	Yes		8376913
Volatiles											
F1 (C6-C10) - BTEX	mg/kg	<30 (2)		30	<12	8378370	<12	<12	<12	12	8378356
F1 (C6-C10)	mg/kg	<30 (2)		30	<12	8378370	<12	<12	<12	12	8378356
Surrogate Recovery (%)											
1,4-Difluorobenzene (sur.)	%	101			101	8378370	100	104	104		8378356
4-Bromofluorobenzene (sur.)	%	94			98	8378370	98	100	100		8378356
D10-ETHYLBENZENE (sur.)	%	104			105	8378370	112	121	123		8378356
D4-1,2-Dichloroethane (sur.)	%	94			94	8378370	111	110	110		8378356
O-TERPHENYL (sur.)	%	114			121	8376913	78	119	125		8376913

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
(1) Detection limits raised due to high moisture content.
(2) Detection limits raised due to high moisture content, sample contains => 50% moisture.

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AT1 BTEX AND F1-F4 IN SOIL (SOIL)

Maxxam ID		PI0760	PI0761		PI0762		PI0763		PI0764		
Sampling Date		2016/08/16	2016/08/16		2016/08/16		2016/08/16		2016/08/16		
COC Number		M002021	M002021		M002021		M002021		M002021		
	UNITS	P216-3A Lab-Dup	P216-3B	QC Batch	P216-4A	QC Batch	P216-4B	RDL	P216-5A	RDL	QC Batch
Physical Properties											
Moisture	%		10	8373016	4.8	8373016	5.0	0.30	72	0.30	8373016
Ext. Pet. Hydrocarbon											
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	<10	8376913	<10	8376913	<10	10	<35 (1)	35	8376913
F3 (C16-C34 Hydrocarbons)	mg/kg	<50	<50	8376913	<50	8376913	<50	50	<180 (1)	180	8376913
F4 (C34-C50 Hydrocarbons)	mg/kg		<50	8376913	<50	8376913	<50	50	<180 (1)	180	8376913
Reached Baseline at C50	mg/kg	Yes	Yes	8376913	Yes	8376913	Yes		Yes		8376913
Volatiles											
F1 (C6-C10) - BTEX	mg/kg		<12	8378356	<12	8378456	<12	12	<38 (2)	38	8378356
F1 (C6-C10)	mg/kg		<12	8378356	<12	8378456	<12	12	<38 (2)	38	8378356
Surrogate Recovery (%)											
1,4-Difluorobenzene (sur.)	%		101	8378356	99	8378456	101		103		8378356
4-Bromofluorobenzene (sur.)	%		99	8378356	100	8378456	102		102		8378356
D10-ETHYLBENZENE (sur.)	%		93	8378356	91	8378456	121		112		8378356
D4-1,2-Dichloroethane (sur.)	%		112	8378356	97	8378456	118		114		8378356
O-TERPHENYL (sur.)	%	124	119	8376913	128	8376913	121		113		8376913

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
(1) Detection limits raised due to high moisture content.
(2) Detection limits raised due to high moisture content, sample contains => 50% moisture.

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AT1 BTEX AND F1-F4 IN SOIL (SOIL)

Maxxam ID		PI0765		PI0775		PI0776	PI0777		PI0778		
Sampling Date		2016/08/16		2016/08/16		2016/08/16	2016/08/16		2016/08/16		
COC Number		M002021		M008544		M008544	M008544		M008544		
	UNITS	P216-5B	RDL	P216-6A	RDL	P216-6B	P216-7A	QC Batch	P216-7B	RDL	QC Batch
Physical Properties											
Moisture	%	7.6	0.30	58	0.30	7.4	8.2	8373016	11	0.30	8374458
Ext. Pet. Hydrocarbon											
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	10	<24 (1)	24	<10	<10	8376913	<10	10	8375686
F3 (C16-C34 Hydrocarbons)	mg/kg	<50	50	<120 (1)	120	<50	<50	8376913	<50	50	8375686
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	50	<120 (1)	120	<50	<50	8376913	<50	50	8375686
Reached Baseline at C50	mg/kg	Yes		Yes		Yes	Yes	8376913	Yes		8375686
Volatiles											
F1 (C6-C10) - BTEX	mg/kg	<12	12	<25 (2)	25	<12	<12	8378356	<12	12	8378456
F1 (C6-C10)	mg/kg	<12	12	<25 (2)	25	<12	<12	8378356	<12	12	8378456
Surrogate Recovery (%)											
1,4-Difluorobenzene (sur.)	%	102		105		105	106	8378356	100		8378456
4-Bromofluorobenzene (sur.)	%	99		101		102	102	8378356	101		8378456
D10-ETHYLBENZENE (sur.)	%	108		130		113	119	8378356	118		8378456
D4-1,2-Dichloroethane (sur.)	%	113		117		111	113	8378356	97		8378456
O-TERPHENYL (sur.)	%	124		117		123	124	8376913	114		8375686

RDL = Reportable Detection Limit
(1) Detection limits raised due to high moisture content.
(2) Detection limits raised due to high moisture content, sample contains => 50% moisture.

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AT1 BTEX AND F1-F4 IN SOIL (SOIL)

Maxxam ID		PI0779	PI0780		PI0781	PI0781		PI0782		
Sampling Date		2016/08/16	2016/08/16		2016/08/16	2016/08/16		2016/08/16		
COC Number		M008544	M008544		M008544	M008544		M008544		
	UNITS	P216-8A	P216-8B	QC Batch	P216-9A	P216-9A Lab-Dup	QC Batch	P216-9B	RDL	QC Batch
Physical Properties										
Moisture	%	9.6	4.0	8374458	2.9		8373016	3.7	0.30	8374458
Ext. Pet. Hydrocarbon										
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	<10	8375686	<10		8376913	<10	10	8375686
F3 (C16-C34 Hydrocarbons)	mg/kg	<50	<50	8375686	<50		8376913	210	50	8375686
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	<50	8375686	<50		8376913	110	50	8375686
Reached Baseline at C50	mg/kg	Yes	Yes	8375686	Yes		8376913	Yes		8375686
Volatiles										
F1 (C6-C10) - BTEX	mg/kg	<12	<12	8378456	<12	<12	8378356	<12	12	8375488
F1 (C6-C10)	mg/kg	<12	<12	8378456	<12	<12	8378356	<12	12	8375488
Surrogate Recovery (%)										
1,4-Difluorobenzene (sur.)	%	99	99	8378456	101	105	8378356	102		8375488
4-Bromofluorobenzene (sur.)	%	100	99	8378456	99	102	8378356	98		8375488
D10-ETHYLBENZENE (sur.)	%	109	111	8378456	147 (1)	116	8378356	99		8375488
D4-1,2-Dichloroethane (sur.)	%	98	99	8378456	113	117	8378356	102		8375488
O-TERPHENYL (sur.)	%	116	117	8375686	120		8376913	116		8375686

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
(1) Surrogate recovery exceeds acceptance criteria (high recovery). As results are non-detect, there is no impact on data quality.

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AT1 BTEX AND F1-F4 IN SOIL (SOIL)

Maxxam ID		PI0783	PI0783	PI0784	PI0785	PI0785	PI0786		PI0787		
Sampling Date		2016/08/16	2016/08/16	2016/08/16	2016/08/16	2016/08/16	2016/08/16		2016/08/16		
COC Number		M008544	M008544	M008544	M008544	M008544	M008544		M008544		
	UNITS	P216-10A	P216-10A Lab-Dup	P216-10B	P216-11A	P216-11A Lab-Dup	P216-11B	RDL	P216-12A	RDL	QC Batch
Physical Properties											
Moisture	%	40	34	8.6	46		10	0.30	66	0.30	8374458
Ext. Pet. Hydrocarbon											
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	<10	<10	<10		<10	10	<30 (1)	30	8375686
F3 (C16-C34 Hydrocarbons)	mg/kg	<50	<50	<50	82		<50	50	<150 (1)	150	8375686
F4 (C34-C50 Hydrocarbons)	mg/kg	<50		<50	<50		<50	50	<150 (1)	150	8375686
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes		Yes		Yes		8375686
Volatiles											
F1 (C6-C10) - BTEX	mg/kg	<12		<12	<12	<12	<12	12	<12	12	8378456
F1 (C6-C10)	mg/kg	<12		<12	<12	<12	<12	12	<12	12	8378456
Surrogate Recovery (%)											
1,4-Difluorobenzene (sur.)	%	99		99	99	101	99		101		8378456
4-Bromofluorobenzene (sur.)	%	102		101	100	104	100		101		8378456
D10-ETHYLBENZENE (sur.)	%	122		120	112	116	106		115		8378456
D4-1,2-Dichloroethane (sur.)	%	97		98	95	98	98		101		8378456
O-TERPHENYL (sur.)	%	111	114	107	104		108		77		8375686

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
(1) Detection limits raised due to high moisture content.

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AT1 BTEX AND F1-F4 IN SOIL (SOIL)

Maxxam ID		PI0788			PI0789	PI0790	PI0791		PI0792		
Sampling Date		2016/08/16			2016/08/15	2016/08/15	2016/08/15		2016/08/15		
COC Number		M008544			M008544	M008544	M008544		M008544		
	UNITS	P216-12B	RDL	QC Batch	P216-13A	P216-13B	P216-14A	QC Batch	P216-14B	RDL	QC Batch
Physical Properties											
Moisture	%	61	0.30	8374458	13	8.1	10	8378799	11	0.30	8378799
Ext. Pet. Hydrocarbon											
F2 (C10-C16 Hydrocarbons)	mg/kg	<25 (1)	25	8375686	<10	<10	<10	8378960	<10	10	8378960
F3 (C16-C34 Hydrocarbons)	mg/kg	<130 (1)	130	8375686	<50	<50	<50	8378960	<50	50	8378960
F4 (C34-C50 Hydrocarbons)	mg/kg	<130 (1)	130	8375686	<50	<50	<50	8378960	<50	50	8378960
Reached Baseline at C50	mg/kg	Yes		8375686	Yes	Yes	Yes	8378960	Yes		8378960
Volatiles											
F1 (C6-C10) - BTEX	mg/kg	<12	12	8378456	<12	<12	<12	8378356	<12	12	8378370
F1 (C6-C10)	mg/kg	<12	12	8378456	<12	<12	<12	8378356	<12	12	8378370
Surrogate Recovery (%)											
1,4-Difluorobenzene (sur.)	%	102		8378456	103	103	102	8378356	100		8378370
4-Bromofluorobenzene (sur.)	%	102		8378456	102	101	101	8378356	98		8378370
D10-ETHYLBENZENE (sur.)	%	113		8378456	114	114	118	8378356	103		8378370
D4-1,2-Dichloroethane (sur.)	%	99		8378456	117	118	120	8378356	96		8378370
O-TERPHENYL (sur.)	%	96		8375686	104	102	106	8378960	103		8378960

RDL = Reportable Detection Limit
(1) Detection limits raised due to high moisture content.

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AT1 BTEX AND F1-F4 IN SOIL (SOIL)

Maxxam ID		PI0792		PI0793		PI0794	PI0805	PI0806		
Sampling Date		2016/08/15		2016/08/15		2016/08/15	2016/08/15	2016/08/15		
COC Number		M008544		M008544		M008544	M008545	M008545		
	UNITS	P216-14B Lab-Dup	QC Batch	P216-15A	QC Batch	P216-15B	P216-16A	P216-16B	RDL	QC Batch
Physical Properties										
Moisture	%	11	8378799	5.0	8378799	6.2	37	10	0.30	8378799
Ext. Pet. Hydrocarbon										
F2 (C10-C16 Hydrocarbons)	mg/kg		8378960	<10	8378960	<10	<10	<10	10	8378960
F3 (C16-C34 Hydrocarbons)	mg/kg		8378960	<50	8378960	<50	120	<50	50	8378960
F4 (C34-C50 Hydrocarbons)	mg/kg		8378960	<50	8378960	<50	<50	<50	50	8378960
Reached Baseline at C50	mg/kg		8378960	Yes	8378960	Yes	Yes	Yes		8378960
Volatiles										
F1 (C6-C10) - BTEX	mg/kg		8378370	<12	8378456	<12	<12	<12	12	8378356
F1 (C6-C10)	mg/kg		8378370	<12	8378456	<12	<12	<12	12	8378356
Surrogate Recovery (%)										
1,4-Difluorobenzene (sur.)	%		8378370	100	8378456	108	103	106		8378356
4-Bromofluorobenzene (sur.)	%		8378370	101	8378456	102	100	101		8378356
D10-ETHYLBENZENE (sur.)	%		8378370	112	8378456	128	115	126		8378356
D4-1,2-Dichloroethane (sur.)	%		8378370	96	8378456	119	113	119		8378356
O-TERPHENYL (sur.)	%		8378960	100	8378960	105	106	108		8378960

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

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AT1 BTEX AND F1-F4 IN SOIL (SOIL)

Maxxam ID		PI0807		PI0808	PI0808		PI0809	PI0810		
Sampling Date		2016/08/15		2016/08/15	2016/08/15		2016/08/15	2016/08/15		
COC Number		M008545		M008545	M008545		M008545	M008545		
	UNITS	P216-17A	QC Batch	P216-17B	P216-17B Lab-Dup	QC Batch	P216-18A	P216-18B	RDL	QC Batch
Physical Properties										
Moisture	%	31	8378799	8.2		8378799	6.4	3.7	0.30	8378799
Ext. Pet. Hydrocarbon										
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	8378960	<10	<10	8378960	<10	<10	10	8378960
F3 (C16-C34 Hydrocarbons)	mg/kg	330	8378960	<50	<50	8378960	<50	<50	50	8378960
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	8378960	<50		8378960	<50	<50	50	8378960
Reached Baseline at C50	mg/kg	Yes	8378960	Yes	Yes	8378960	Yes	Yes		8378960
Volatiles										
F1 (C6-C10) - BTEX	mg/kg	<12	8378456	<12		8378356	<12	<12	12	8378370
F1 (C6-C10)	mg/kg	<12	8378456	<12		8378356	<12	<12	12	8378370
Surrogate Recovery (%)										
1,4-Difluorobenzene (sur.)	%	99	8378456	106		8378356	99	100		8378370
4-Bromofluorobenzene (sur.)	%	100	8378456	101		8378356	99	98		8378370
D10-ETHYLBENZENE (sur.)	%	107	8378456	123		8378356	100	100		8378370
D4-1,2-Dichloroethane (sur.)	%	97	8378456	118		8378356	96	96		8378370
O-TERPHENYL (sur.)	%	102	8378960	99	113	8378960	105	102		8378960

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

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AT1 BTEX AND F1-F4 IN SOIL (SOIL)

Maxxam ID		PI0811		PI0812		PI0813	PI0814		PI0815		
Sampling Date		2016/08/15		2016/08/15		2016/08/15	2016/08/15		2016/08/16		
COC Number		M008545		M008545		M008545	M008545		M008545		
	UNITS	P216-19A	QC Batch	P216-19B	QC Batch	P216-20A	P216-20B	QC Batch	P216-21A	RDL	QC Batch
Physical Properties											
Moisture	%	23	8378799	5.8	8378799	13	8.7	8378799	4.3	0.30	8374458
Ext. Pet. Hydrocarbon											
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	8378960	<10	8378960	<10	<10	8378960	<10	10	8375686
F3 (C16-C34 Hydrocarbons)	mg/kg	120	8378960	<50	8378960	<50	<50	8378960	<50	50	8375686
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	8378960	<50	8378960	<50	<50	8378960	<50	50	8375686
Reached Baseline at C50	mg/kg	Yes	8378960	Yes	8378960	Yes	Yes	8378960	Yes		8375686
Volatiles											
F1 (C6-C10) - BTEX	mg/kg	<12	8378370	<12	8378356	<12	<12	8379015	<12	12	8378456
F1 (C6-C10)	mg/kg	<12	8378370	<12	8378356	<12	<12	8379015	<12	12	8378456
Surrogate Recovery (%)											
1,4-Difluorobenzene (sur.)	%	100	8378370	106	8378356	101	102	8379015	100		8378456
4-Bromofluorobenzene (sur.)	%	98	8378370	101	8378356	99	100	8379015	100		8378456
D10-ETHYLBENZENE (sur.)	%	108	8378370	119	8378356	116	115	8379015	110		8378456
D4-1,2-Dichloroethane (sur.)	%	101	8378370	117	8378356	112	112	8379015	98		8378456
O-TERPHENYL (sur.)	%	99	8378960	100	8378960	107	99	8378960	107		8375686

RDL = Reportable Detection Limit

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EnGlobe Corp
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Site Location: PIN-2, CAPE YOUNG
Your P.O. #: 21110
Sampler Initials: AP, KE

AT1 BTEX AND F1-F4 IN SOIL (SOIL)

Maxxam ID		PI0816	PI0817	PI0818	PI0819	PI0820	PI0821	PI0822		
Sampling Date		2016/08/16	2016/08/16	2016/08/16	2016/08/16	2016/08/16	2016/08/16	2016/08/16		
COC Number		M008545	M008545	M008545	M008545	M008545	M008545	M008545		
	UNITS	P216-21B	P216-22A	P216-22B	P216-23A	P216-23B	P216-24A	P216-24B	RDL	QC Batch
Physical Properties										
Moisture	%	3.3	1.4	1.5	5.3	3.9	1.8	2.6	0.30	8374458
Ext. Pet. Hydrocarbon										
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	<10	<10	<10	<10	<10	<10	10	8375686
F3 (C16-C34 Hydrocarbons)	mg/kg	<50	<50	<50	<50	<50	<50	<50	50	8375686
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	<50	<50	<50	<50	<50	<50	50	8375686
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	Yes	Yes	Yes		8375686
Volatiles										
F1 (C6-C10) - BTEX	mg/kg	<12	<12	<12	<12	<12	<12	<12	12	8378456
F1 (C6-C10)	mg/kg	<12	<12	<12	<12	<12	<12	<12	12	8378456
Surrogate Recovery (%)										
1,4-Difluorobenzene (sur.)	%	100	97	94	97	98	98	101		8378456
4-Bromofluorobenzene (sur.)	%	101	100	101	100	98	100	101		8378456
D10-ETHYLBENZENE (sur.)	%	105	112	97	107	104	107	116		8378456
D4-1,2-Dichloroethane (sur.)	%	96	95	103	99	93	100	104		8378456
O-TERPHENYL (sur.)	%	110	110	110	119	115	111	113		8375686

RDL = Reportable Detection Limit

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AT1 BTEX AND F1-F4 IN SOIL (SOIL)

Maxxam ID		PI0823		PI0824	PI0831	PI0832			PI0833		
Sampling Date		2016/08/16		2016/08/16	2016/08/16	2016/08/16			2016/08/15		
COC Number		M008545		M008545	M008546	M008546			M008546		
	UNITS	P216-25A	QC Batch	P216-25B	P216-26A	P216-26B	RDL	QC Batch	P216-27A	RDL	QC Batch
Physical Properties											
Moisture	%	2.1	8374143	1.4	1.8	1.4	0.30	8374143	83	0.30	8381127
Ext. Pet. Hydrocarbon											
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	8376905	<10	<10	<10	10	8376905	<57 (1)	57	8378960
F3 (C16-C34 Hydrocarbons)	mg/kg	<50	8376905	<50	<50	<50	50	8376905	1800 (1)	290	8378960
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	8376905	<50	<50	<50	50	8376905	450 (1)	290	8378960
Reached Baseline at C50	mg/kg	Yes	8376905	Yes	Yes	Yes		8376905	Yes		8378960
Volatiles											
F1 (C6-C10) - BTEX	mg/kg	<12	8379015	<12	<12	<12	12	8379007	<72 (2)	72	8378356
F1 (C6-C10)	mg/kg	<12	8379015	<12	<12	<12	12	8379007	<72 (2)	72	8378356
Surrogate Recovery (%)											
1,4-Difluorobenzene (sur.)	%	106	8379015	103	103	103		8379007	106		8378356
4-Bromofluorobenzene (sur.)	%	99	8379015	99	100	98		8379007	103		8378356
D10-ETHYLBENZENE (sur.)	%	119	8379015	134 (3)	147 (3)	124		8379007	120		8378356
D4-1,2-Dichloroethane (sur.)	%	115	8379015	120	125	118		8379007	117		8378356
O-TERPHENYL (sur.)	%	110	8376905	110	100	102		8376905	80		8378960

RDL = Reportable Detection Limit
(1) Detection limits raised due to high moisture content.
(2) Detection limits raised due to high moisture content, sample contains => 50% moisture.
(3) Surrogate recovery exceeds acceptance criteria (high recovery). As results are non-detect, there is no impact on data quality.

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AT1 BTEX AND F1-F4 IN SOIL (SOIL)

Maxxam ID		PI0834		PI0835		PI0836		PI0837		
Sampling Date		2016/08/15		2016/08/15		2016/08/15		2016/08/15		
COC Number		M008546		M008546		M008546		M008546		
	UNITS	P216-27B	RDL	P216-28A	RDL	P216-28B	RDL	P216-29A	RDL	QC Batch
Physical Properties										
Moisture	%	17	0.30	77	0.30	86	0.30	83	0.30	8378734
Ext. Pet. Hydrocarbon										
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	10	<44 (1)	44	<70 (1)	70	<57 (1)	57	8372820
F3 (C16-C34 Hydrocarbons)	mg/kg	<50	50	<220 (1)	220	430 (1)	350	350 (1)	290	8372820
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	50	<220 (1)	220	<350 (1)	350	<290 (1)	290	8372820
Reached Baseline at C50	mg/kg	Yes		Yes		Yes		Yes		8372820
Volatiles										
F1 (C6-C10) - BTEX	mg/kg	<12	12	<58 (2)	58	<160 (2)	160	<100 (2)	100	8379013
F1 (C6-C10)	mg/kg	<12	12	<58 (3)	58	<160 (3)	160	<100 (3)	100	8379013
Surrogate Recovery (%)										
1,4-Difluorobenzene (sur.)	%	100		100		99		102		8379013
4-Bromofluorobenzene (sur.)	%	94		94		92		93		8379013
D10-ETHYLBENZENE (sur.)	%	113		117		134 (4)		119		8379013
D4-1,2-Dichloroethane (sur.)	%	97		100		102		97		8379013
O-TERPHENYL (sur.)	%	94		101		95		90		8372820

RDL = Reportable Detection Limit

(1) Detection limits raised due to high moisture content.

(2) Detection limits raised due to high moisture content, samples contain => 50% moisture.

(3) Detection limits raised due to high moisture content, sample contains => 50% moisture.

(4) Surrogate recovery exceeds acceptance criteria (high recovery). As results are non-detect, there is no impact on data quality.

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AT1 BTEX AND F1-F4 IN SOIL (SOIL)

Maxxam ID		PI0838			PI0839	PI0840			PI0841		
Sampling Date		2016/08/15			2016/08/15	2016/08/15			2016/08/16		
COC Number		M008546			M008546	M008546			M008546		
	UNITS	P216-29B	RDL	QC Batch	P216-30A	P216-30B	RDL	QC Batch	P216-BD1	RDL	QC Batch
Physical Properties											
Moisture	%	86	0.30	8378799	7.4	6.9	0.30	8378734	61	0.30	8374143
Ext. Pet. Hydrocarbon											
F2 (C10-C16 Hydrocarbons)	mg/kg	<69 (1)	69	8372820	<10	<10	10	8372820	<26 (1)	26	8376905
F3 (C16-C34 Hydrocarbons)	mg/kg	480 (1)	350	8372820	<50	<50	50	8372820	<130 (1)	130	8376905
F4 (C34-C50 Hydrocarbons)	mg/kg	<350 (1)	350	8372820	<50	<50	50	8372820	<130 (1)	130	8376905
Reached Baseline at C50	mg/kg	Yes		8372820	Yes	Yes		8372820	Yes		8376905
Volatiles											
F1 (C6-C10) - BTEX	mg/kg	<95 (2)	95	8379013	<12	<12	12	8379013	<29 (3)	29	8379007
F1 (C6-C10)	mg/kg	<95 (3)	95	8379013	<12	<12	12	8379013	<29 (3)	29	8379007
Surrogate Recovery (%)											
1,4-Difluorobenzene (sur.)	%	101		8379013	101	101		8379013	105		8379007
4-Bromofluorobenzene (sur.)	%	95		8379013	93	93		8379013	100		8379007
D10-ETHYLBENZENE (sur.)	%	128		8379013	121	117		8379013	140 (4)		8379007
D4-1,2-Dichloroethane (sur.)	%	102		8379013	99	99		8379013	118		8379007
O-TERPHENYL (sur.)	%	99		8372820	90	98		8372820	84		8376905

RDL = Reportable Detection Limit
(1) Detection limits raised due to high moisture content.
(2) Detection limits raised due to high moisture content, samples contain => 50% moisture.
(3) Detection limits raised due to high moisture content, sample contains => 50% moisture.
(4) Surrogate recovery exceeds acceptance criteria (high recovery). As results are non-detect, there is no impact on data quality.

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AT1 BTEX AND F1-F4 IN SOIL (SOIL)

Maxxam ID		PI0842		PI0843		PI0844		PI0845		
Sampling Date		2016/08/16		2016/08/16		2016/08/16		2016/08/16		
COC Number		M008546		M008546		M008546		M008546		
	UNITS	P216-BD2	RDL	P216-BD3	RDL	P216-BD4	RDL	P216-BD5	RDL	QC Batch
Physical Properties										
Moisture	%	11	0.30	64	0.30	56	0.30	67	0.30	8374143
Ext. Pet. Hydrocarbon										
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	10	<28 (1)	28	<23 (1)	23	<31 (1)	31	8376905
F3 (C16-C34 Hydrocarbons)	mg/kg	<50	50	150 (1)	140	<110 (1)	110	350 (1)	150	8376905
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	50	<140 (1)	140	<110 (1)	110	<150 (1)	150	8376905
Reached Baseline at C50	mg/kg	Yes		Yes		Yes		Yes		8376905
Volatiles										
F1 (C6-C10) - BTEX	mg/kg	<12	12	<32 (2)	32	<23 (2)	23	<37 (2)	37	8379007
F1 (C6-C10)	mg/kg	<12	12	<32 (2)	32	<23 (2)	23	<37 (2)	37	8379007
Surrogate Recovery (%)										
1,4-Difluorobenzene (sur.)	%	105		104		103		103		8379007
4-Bromofluorobenzene (sur.)	%	99		100		99		100		8379007
D10-ETHYLBENZENE (sur.)	%	121		134 (3)		126		172 (3)		8379007
D4-1,2-Dichloroethane (sur.)	%	119		119		117		122		8379007
O-TERPHENYL (sur.)	%	108		90		102		91		8376905

RDL = Reportable Detection Limit

(1) Detection limits raised due to high moisture content.

(2) Detection limits raised due to high moisture content, sample contains => 50% moisture.

(3) Surrogate recovery exceeds acceptance criteria (high recovery). As results are non-detect, there is no impact on data quality.

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AT1 BTEX AND F1-F4 IN SOIL (SOIL)

Maxxam ID		PI0846	PI0847			PI0848			PI0849		
Sampling Date		2016/08/15	2016/08/15			2016/08/15			2016/08/15		
COC Number		M008546	M008546			M008546			M008546		
	UNITS	P216-BD6	P216-BD7	RDL	QC Batch	P216-BD8	RDL	QC Batch	P216-1WA	RDL	QC Batch
Physical Properties											
Moisture	%	11	6.9	0.30	8378734	76	0.30	8378799	59	0.30	8379042
Ext. Pet. Hydrocarbon											
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	<10	10	8372820	<41 (1)	41	8372820	<24 (1)	24	8379161
F3 (C16-C34 Hydrocarbons)	mg/kg	<50	<50	50	8372820	280 (1)	210	8372820	<120 (1)	120	8379161
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	<50	50	8372820	<210 (1)	210	8372820	<120 (1)	120	8379161
Reached Baseline at C50	mg/kg	Yes	Yes		8372820	Yes		8372820	Yes		8379161
Volatiles											
F1 (C6-C10) - BTEX	mg/kg	<12	<12	12	8379013	<67 (2)	67	8379013	<26 (3)	26	8379614
F1 (C6-C10)	mg/kg	<12	<12	12	8379013	<67 (3)	67	8379013	<26 (3)	26	8379614
Surrogate Recovery (%)											
1,4-Difluorobenzene (sur.)	%	97	97		8379013	101		8379013	100		8379614
4-Bromofluorobenzene (sur.)	%	93	95		8379013	93		8379013	95		8379614
D10-ETHYLBENZENE (sur.)	%	143 (4)	154 (4)		8379013	133 (4)		8379013	101		8379614
D4-1,2-Dichloroethane (sur.)	%	108	111		8379013	102		8379013	100		8379614
O-TERPHENYL (sur.)	%	97	96		8372820	110		8372820	94		8379161

RDL = Reportable Detection Limit
(1) Detection limits raised due to high moisture content.
(2) Detection limits raised due to high moisture content, samples contain => 50% moisture.
(3) Detection limits raised due to high moisture content, sample contains => 50% moisture.
(4) Surrogate recovery exceeds acceptance criteria (high recovery). As results are non-detect, there is no impact on data quality.

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AT1 BTEX AND F1-F4 IN SOIL (SOIL)

Maxxam ID		PI0850	PI0851	PI0852	PI0853	PI0854	PI0855	PI0856		
Sampling Date		2016/08/15	2016/08/15	2016/08/15	2016/08/15	2016/08/15	2016/08/15	2016/08/15		
COC Number		M008546	M008546	M008546	M008546	M008546	M008546	M008546		
	UNITS	P216-1WB	P216-2WA	P216-2WB	P216-3WA	P216-3WB	P216-4WA	P216-4WB	RDL	QC Batch
Physical Properties										
Moisture	%	8.8	33	8.9	18	11	25	11	0.30	8379042
Ext. Pet. Hydrocarbon										
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	<10	<10	<10	<10	<10	<10	10	8379161
F3 (C16-C34 Hydrocarbons)	mg/kg	<50	100	<50	<50	<50	<50	<50	50	8379161
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	<50	<50	<50	<50	<50	<50	50	8379161
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	Yes	Yes	Yes		8379161
Volatiles										
F1 (C6-C10) - BTEX	mg/kg	<12	<12	<12	<12	<12	<12	<12	12	8379614
F1 (C6-C10)	mg/kg	<12	<12	<12	<12	<12	<12	<12	12	8379614
Surrogate Recovery (%)										
1,4-Difluorobenzene (sur.)	%	100	98	98	98	98	100	99		8379614
4-Bromofluorobenzene (sur.)	%	96	94	94	95	94	95	97		8379614
D10-ETHYLBENZENE (sur.)	%	94	97	97	105	98	99	96		8379614
D4-1,2-Dichloroethane (sur.)	%	102	102	104	108	104	105	108		8379614
O-TERPHENYL (sur.)	%	101	101	103	108	96	94	102		8379161

RDL = Reportable Detection Limit

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AT1 BTEX AND F1-F4 IN SOIL (SOIL)

Maxxam ID		PI0857	PI0857	PI0858	PI0859	PI0860	PI0861	PI0862		
Sampling Date		2016/08/15	2016/08/15	2016/08/15	2016/08/15	2016/08/15	2016/08/15	2016/08/15		
COC Number		M008546	M008546	M008546	M008546	M008546	M008546	M008546		
	UNITS	P216-5WA	P216-5WA Lab-Dup	P216-5WB	P216-6WA	P216-6WB	P216-7WA	P216-7WB	RDL	QC Batch
Physical Properties										
Moisture	%	10	9.6	9.6	13	9.8	13	14	0.30	8379042
Ext. Pet. Hydrocarbon										
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	<10	<10	<10	<10	<10	<10	10	8379161
F3 (C16-C34 Hydrocarbons)	mg/kg	<50	<50	<50	<50	<50	<50	<50	50	8379161
F4 (C34-C50 Hydrocarbons)	mg/kg	<50		<50	<50	<50	<50	<50	50	8379161
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	Yes	Yes	Yes		8379161
Volatiles										
F1 (C6-C10) - BTEX	mg/kg	<12	<12	<12	<12	<12	<12	<12	12	8379614
F1 (C6-C10)	mg/kg	<12	<12	<12	<12	<12	<12	<12	12	8379614
Surrogate Recovery (%)										
1,4-Difluorobenzene (sur.)	%	99	98	98	99	99	100	98		8379614
4-Bromofluorobenzene (sur.)	%	95	95	95	95	95	96	96		8379614
D10-ETHYLBENZENE (sur.)	%	98	101	104	104	100	106	111		8379614
D4-1,2-Dichloroethane (sur.)	%	106	110	107	109	107	110	111		8379614
O-TERPHENYL (sur.)	%	97	101	101	95	97	98	94		8379161

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

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Sampler Initials: AP, KE

AT1 BTEX AND F1-F4 IN SOIL (SOIL)

Maxxam ID		PI0863	PI0864		
Sampling Date		2016/08/15	2016/08/15		
COC Number		M008546	M008546		
	UNITS	P216-8WA	P216-8WB	RDL	QC Batch
Physical Properties					
Moisture	%	1.1	2.8	0.30	8379042
Ext. Pet. Hydrocarbon					
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	<10	10	8379161
F3 (C16-C34 Hydrocarbons)	mg/kg	<50	<50	50	8379161
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	<50	50	8379161
Reached Baseline at C50	mg/kg	Yes	Yes		8379161
Volatiles					
F1 (C6-C10) - BTEX	mg/kg	<12	<12	12	8379614
F1 (C6-C10)	mg/kg	<12	<12	12	8379614
Surrogate Recovery (%)					
1,4-Difluorobenzene (sur.)	%	99	101		8379614
4-Bromofluorobenzene (sur.)	%	96	94		8379614
D10-ETHYLBENZENE (sur.)	%	102	106		8379614
D4-1,2-Dichloroethane (sur.)	%	112	106		8379614
O-TERPHENYL (sur.)	%	97	100		8379161
RDL = Reportable Detection Limit					

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EnGlobe Corp
Client Project #: 2016LFM-KITIK13
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Your P.O. #: 21110
Sampler Initials: AP, KE

RESULTS OF CHEMICAL ANALYSES OF SOIL

Maxxam ID		PI0756	PI0757	PI0758	PI0759	PI0760	PI0761	
Sampling Date		2016/08/16	2016/08/16	2016/08/16	2016/08/16	2016/08/16	2016/08/16	
COC Number		M002021	M002021	M002021	M002021	M002021	M002021	
	UNITS	**P216-1A**	**P216-1B**	**P216-2A**	**P216-2B**	**P216-3A**	**P216-3B**	**QC Batch**
Parameter								
Subcontract Parameter	N/A	ATTACHED	ATTACHED	ATTACHED	ATTACHED	ATTACHED	ATTACHED	8386508

Maxxam ID		PI0762	PI0763	PI0764	PI0765	PI0775	PI0776	
Sampling Date		2016/08/16	2016/08/16	2016/08/16	2016/08/16	2016/08/16	2016/08/16	
COC Number		M002021	M002021	M002021	M002021	M008544	M008544	
	UNITS	**P216-4A**	**P216-4B**	**P216-5A**	**P216-5B**	**P216-6A**	**P216-6B**	**QC Batch**
Parameter								
Subcontract Parameter	N/A	ATTACHED	ATTACHED	ATTACHED	ATTACHED	ATTACHED	ATTACHED	8386508

Maxxam ID		PI0777	PI0778	PI0779	PI0780	PI0781	PI0782	
Sampling Date		2016/08/16	2016/08/16	2016/08/16	2016/08/16	2016/08/16	2016/08/16	
COC Number		M008544	M008544	M008544	M008544	M008544	M008544	
	UNITS	**P216-7A**	**P216-7B**	**P216-8A**	**P216-8B**	**P216-9A**	**P216-9B**	**QC Batch**
Parameter								
Subcontract Parameter	N/A	ATTACHED	ATTACHED	ATTACHED	ATTACHED	ATTACHED	ATTACHED	8386508

Maxxam ID		PI0783	PI0784	PI0785	PI0786	PI0787	PI0788	
Sampling Date		2016/08/16	2016/08/16	2016/08/16	2016/08/16	2016/08/16	2016/08/16	
COC Number		M008544	M008544	M008544	M008544	M008544	M008544	
	UNITS	**P216-10A**	**P216-10B**	**P216-11A**	**P216-11B**	**P216-12A**	**P216-12B**	**QC Batch**
Parameter								
Subcontract Parameter	N/A	ATTACHED	ATTACHED	ATTACHED	ATTACHED	ATTACHED	ATTACHED	8386508

Maxxam ID		PI0789	PI0790	PI0791	PI0792	PI0793	PI0794	
Sampling Date		2016/08/15	2016/08/15	2016/08/15	2016/08/15	2016/08/15	2016/08/15	
COC Number		M008544	M008544	M008544	M008544	M008544	M008544	
	UNITS	**P216-13A**	**P216-13B**	**P216-14A**	**P216-14B**	**P216-15A**	**P216-15B**	**QC Batch**
Parameter								
Subcontract Parameter	N/A	ATTACHED	ATTACHED	ATTACHED	ATTACHED	ATTACHED	ATTACHED	8386508

Maxxam ID		PI0805	PI0806	PI0807	PI0808	PI0809	PI0810	
Sampling Date		2016/08/15	2016/08/15	2016/08/15	2016/08/15	2016/08/15	2016/08/15	
COC Number		M008545	M008545	M008545	M008545	M008545	M008545	
	UNITS	**P216-16A**	**P216-16B**	**P216-17A**	**P216-17B**	**P216-18A**	**P216-18B**	**QC Batch**
Parameter								
Subcontract Parameter	N/A	ATTACHED	ATTACHED	ATTACHED	ATTACHED	ATTACHED	ATTACHED	8386519

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RESULTS OF CHEMICAL ANALYSES OF SOIL

Maxxam ID		PI0811	PI0812	PI0813	PI0814	PI0815	PI0816	
Sampling Date		2016/08/15	2016/08/15	2016/08/15	2016/08/15	2016/08/16	2016/08/16	
COC Number		M008545	M008545	M008545	M008545	M008545	M008545	
	UNITS	P216-19A	P216-19B	P216-20A	P216-20B	P216-21A	P216-21B	QC Batch
Parameter								
Subcontract Parameter	N/A	ATTACHED	ATTACHED	ATTACHED	ATTACHED	ATTACHED	ATTACHED	8386519

Maxxam ID		PI0817	PI0818	PI0819	PI0820	PI0821	PI0822	
Sampling Date		2016/08/16	2016/08/16	2016/08/16	2016/08/16	2016/08/16	2016/08/16	
COC Number		M008545	M008545	M008545	M008545	M008545	M008545	
	UNITS	P216-22A	P216-22B	P216-23A	P216-23B	P216-24A	P216-24B	QC Batch
Parameter								
Subcontract Parameter	N/A	ATTACHED	ATTACHED	ATTACHED	ATTACHED	ATTACHED	ATTACHED	8386519

Maxxam ID		PI0823	PI0824	PI0831	PI0832	PI0833	PI0834	
Sampling Date		2016/08/16	2016/08/16	2016/08/16	2016/08/16	2016/08/15	2016/08/15	
COC Number		M008545	M008545	M008546	M008546	M008546	M008546	
	UNITS	P216-25A	P216-25B	P216-26A	P216-26B	P216-27A	P216-27B	QC Batch
Parameter								
Subcontract Parameter	N/A	ATTACHED	ATTACHED	ATTACHED	ATTACHED	ATTACHED	ATTACHED	8386519

Maxxam ID		PI0835	PI0836	PI0837	PI0838	PI0839	PI0840	
Sampling Date		2016/08/15	2016/08/15	2016/08/15	2016/08/15	2016/08/15	2016/08/15	
COC Number		M008546	M008546	M008546	M008546	M008546	M008546	
	UNITS	P216-28A	P216-28B	P216-29A	P216-29B	P216-30A	P216-30B	QC Batch
Parameter								
Subcontract Parameter	N/A	ATTACHED	ATTACHED	ATTACHED	ATTACHED	ATTACHED	ATTACHED	8386519

Maxxam ID		PI0841	PI0842	PI0843	PI0844	PI0845	PI0846	
Sampling Date		2016/08/16	2016/08/16	2016/08/16	2016/08/16	2016/08/16	2016/08/15	
COC Number		M008546	M008546	M008546	M008546	M008546	M008546	
	UNITS	P216-BD1	P216-BD2	P216-BD3	P216-BD4	P216-BD5	P216-BD6	QC Batch
Parameter								
Subcontract Parameter	N/A	ATTACHED	ATTACHED	ATTACHED	ATTACHED	ATTACHED	ATTACHED	8386523

Maxxam ID		PI0847	PI0848	PI0849	PI0850	PI0851	PI0852	
Sampling Date		2016/08/15	2016/08/15	2016/08/15	2016/08/15	2016/08/15	2016/08/15	
COC Number		M008546	M008546	M008546	M008546	M008546	M008546	
	UNITS	P216-BD7	P216-BD8	P216-1WA	P216-1WB	P216-2WA	P216-2WB	QC Batch
Parameter								
Subcontract Parameter	N/A	ATTACHED	ATTACHED	ATTACHED	ATTACHED	ATTACHED	ATTACHED	8386523

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Sampler Initials: AP, KE

RESULTS OF CHEMICAL ANALYSES OF SOIL

Maxxam ID		PI0853	PI0854	PI0855	PI0856	PI0857	PI0858	
Sampling Date		2016/08/15	2016/08/15	2016/08/15	2016/08/15	2016/08/15	2016/08/15	
COC Number		M008546	M008546	M008546	M008546	M008546	M008546	
	UNITS	P216-3WA	P216-3WB	P216-4WA	P216-4WB	P216-5WA	P216-5WB	QC Batch
Parameter								
Subcontract Parameter	N/A	ATTACHED	ATTACHED	ATTACHED	ATTACHED	ATTACHED	ATTACHED	8386523

Maxxam ID		PI0859	PI0860	PI0861	PI0862	PI0863	PI0864	
Sampling Date		2016/08/15	2016/08/15	2016/08/15	2016/08/15	2016/08/15	2016/08/15	
COC Number		M008546	M008546	M008546	M008546	M008546	M008546	
	UNITS	P216-6WA	P216-6WB	P216-7WA	P216-7WB	P216-8WA	P216-8WB	QC Batch
Parameter								
Subcontract Parameter	N/A	ATTACHED	ATTACHED	ATTACHED	ATTACHED	ATTACHED	ATTACHED	8386523

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Sampler Initials: AP, KE

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		PI0756	PI0757			PI0758		PI0759	PI0760		
Sampling Date		2016/08/16	2016/08/16			2016/08/16		2016/08/16	2016/08/16		
COC Number		M002021	M002021			M002021		M002021	M002021		
	UNITS	P216-1A	P216-1B	RDL	QC Batch	P216-2A	QC Batch	P216-2B	P216-3A	RDL	QC Batch
Elements											
Total Arsenic (As)	mg/kg	<2.0	<2.0	2.0	8382754	3.3	8381425	20	2.3	1.0	8382754
Total Cadmium (Cd)	mg/kg	0.26	<0.10	0.10	8382754	0.083	8381425	0.19	0.10	0.050	8382754
Total Chromium (Cr)	mg/kg	3.9	4.3	2.0	8382754	7.8	8381425	8.0	3.8	1.0	8382754
Total Cobalt (Co)	mg/kg	1.1	1.3	1.0	8382754	2.9	8381425	2.6	1.6	0.50	8382754
Total Copper (Cu)	mg/kg	11	5.9	2.0	8382754	5.5	8381425	7.0	6.2	1.0	8382754
Total Lead (Pb)	mg/kg	3.3	2.6	1.0	8382754	3.9	8381425	5.4	2.6	0.50	8382754
Total Mercury (Hg)	mg/kg	0.14	<0.10	0.10	8382754	<0.050	8381425	<0.050	<0.050	0.050	8382754
Total Nickel (Ni)	mg/kg	2.9	2.7	2.0	8382754	5.9	8381425	5.7	3.2	1.0	8382754
Total Zinc (Zn)	mg/kg	22	<20	20	8382754	23	8381425	25	19	10	8382754

RDL = Reportable Detection Limit

Maxxam ID		PI0761	PI0762	PI0762	PI0763		PI0764		PI0765		
Sampling Date		2016/08/16	2016/08/16	2016/08/16	2016/08/16		2016/08/16		2016/08/16		
COC Number		M002021	M002021	M002021	M002021		M002021		M002021		
	UNITS	P216-3B	P216-4A	P216-4A Lab-Dup	P216-4B	RDL	P216-5A	RDL	P216-5B	RDL	QC Batch
Elements											
Total Arsenic (As)	mg/kg	2.6	5.6	5.2	4.2	1.0	<2.0	2.0	2.5	1.0	8382754
Total Cadmium (Cd)	mg/kg	0.070	0.12	0.14	0.11	0.050	0.46	0.10	0.082	0.050	8382754
Total Chromium (Cr)	mg/kg	6.8	87 (1)	140 (2)	13	1.0	3.6	2.0	4.4	1.0	8382754
Total Cobalt (Co)	mg/kg	3.2	2.0	2.5	2.1	0.50	1.6	1.0	1.6	0.50	8382754
Total Copper (Cu)	mg/kg	4.8	56 (1)	6.5 (2)	5.4	1.0	11	2.0	2.6	1.0	8382754
Total Lead (Pb)	mg/kg	3.0	24	25	4.8	0.50	2.2	1.0	2.1	0.50	8382754
Total Mercury (Hg)	mg/kg	<0.050	<0.050	<0.050	<0.050	0.050	<0.10	0.10	<0.050	0.050	8382754
Total Nickel (Ni)	mg/kg	4.9	38 (1)	58 (2)	7.3	1.0	2.7	2.0	2.9	1.0	8382754
Total Zinc (Zn)	mg/kg	12	16	17	14	10	55	20	10	10	8382754

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
(1) Duplicate exceeds acceptance criteria due to sample non homogeneity. Reanalysis yields similar results.
(2) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		PI0775		PI0776	PI0777		PI0778		PI0779		
Sampling Date		2016/08/16		2016/08/16	2016/08/16		2016/08/16		2016/08/16		
COC Number		M008544		M008544	M008544		M008544		M008544		
	UNITS	P216-6A	RDL	P216-6B	P216-7A	QC Batch	P216-7B	QC Batch	P216-8A	RDL	QC Batch
Elements											
Total Arsenic (As)	mg/kg	4.3	2.0	2.5	2.9	8382754	3.8	8380517	2.9	1.0	8379896
Total Cadmium (Cd)	mg/kg	0.34	0.10	0.10	0.16	8382754	0.14	8380517	0.088	0.050	8379896
Total Chromium (Cr)	mg/kg	14	2.0	4.6	3.2	8382754	6.7	8380517	7.5	1.0	8379896
Total Cobalt (Co)	mg/kg	5.0	1.0	1.3	1.1	8382754	0.76	8380517	1.1	0.50	8379896
Total Copper (Cu)	mg/kg	9.4	2.0	2.0	4.2	8382754	2.7	8380517	4.2	1.0	8379896
Total Lead (Pb)	mg/kg	7.9	1.0	3.4	3.0	8382754	2.9	8380517	2.8	0.50	8379896
Total Mercury (Hg)	mg/kg	<0.10	0.10	<0.050	<0.050	8382754	<0.050	8380517	<0.050	0.050	8379896
Total Nickel (Ni)	mg/kg	7.7	2.0	2.4	2.0	8382754	3.0	8380517	3.7	1.0	8379896
Total Zinc (Zn)	mg/kg	26	20	11	21	8382754	12	8380517	17	10	8379896
RDL = Reportable Detection Limit											

Maxxam ID		PI0780		PI0781		PI0782	PI0783		PI0784		
Sampling Date		2016/08/16		2016/08/16		2016/08/16	2016/08/16		2016/08/16		
COC Number		M008544		M008544		M008544	M008544		M008544		
	UNITS	P216-8B	QC Batch	P216-9A	QC Batch	P216-9B	P216-10A	QC Batch	P216-10B	RDL	QC Batch
Elements											
Total Arsenic (As)	mg/kg	2.4	8379896	2.8	8382754	2.6	3.2	8380517	9.9	1.0	8379896
Total Cadmium (Cd)	mg/kg	0.072	8379896	0.081	8382754	0.081	0.24	8380517	0.18	0.050	8379896
Total Chromium (Cr)	mg/kg	5.0	8379896	4.3	8382754	16	12	8380517	6.0	1.0	8379896
Total Cobalt (Co)	mg/kg	1.1	8379896	2.0	8382754	1.8	2.5	8380517	2.7	0.50	8379896
Total Copper (Cu)	mg/kg	2.1	8379896	12	8382754	18	4.9	8380517	3.3	1.0	8379896
Total Lead (Pb)	mg/kg	2.4	8379896	4.5	8382754	4.8	3.1	8380517	4.7	0.50	8379896
Total Mercury (Hg)	mg/kg	<0.050	8379896	<0.050	8382754	<0.050	<0.050	8380517	<0.050	0.050	8379896
Total Nickel (Ni)	mg/kg	2.4	8379896	4.0	8382754	8.6	8.0	8380517	5.2	1.0	8379896
Total Zinc (Zn)	mg/kg	<10	8379896	82	8382754	75	20	8380517	31	10	8379896
RDL = Reportable Detection Limit											

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ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		PI0785		PI0786		PI0787		PI0788		
Sampling Date		2016/08/16		2016/08/16		2016/08/16		2016/08/16		
COC Number		M008544		M008544		M008544		M008544		
	UNITS	P216-11A	QC Batch	P216-11B	RDL	P216-12A	QC Batch	P216-12B	RDL	QC Batch
Elements										
Total Arsenic (As)	mg/kg	1.1	8380517	2.2	1.0	<2.0	8379896	<2.0	2.0	8380517
Total Cadmium (Cd)	mg/kg	0.089	8380517	0.085	0.050	0.23	8379896	0.37	0.10	8380517
Total Chromium (Cr)	mg/kg	11	8380517	4.7	1.0	<2.0	8379896	<2.0	2.0	8380517
Total Cobalt (Co)	mg/kg	<0.50	8380517	0.99	0.50	<1.0	8379896	<1.0	1.0	8380517
Total Copper (Cu)	mg/kg	2.3	8380517	1.8	1.0	6.3	8379896	9.1	2.0	8380517
Total Lead (Pb)	mg/kg	1.1	8380517	2.1	0.50	<1.0	8379896	1.1	1.0	8380517
Total Mercury (Hg)	mg/kg	<0.050	8380517	<0.050	0.050	<0.10	8379896	0.12	0.10	8380517
Total Nickel (Ni)	mg/kg	5.1	8380517	2.7	1.0	<2.0	8379896	3.5	2.0	8380517
Total Zinc (Zn)	mg/kg	<10	8380517	<10	10	<20	8379896	<20	20	8380517

RDL = Reportable Detection Limit

Maxxam ID		PI0789		PI0790	PI0791	PI0791	PI0792	PI0793		
Sampling Date		2016/08/15		2016/08/15	2016/08/15	2016/08/15	2016/08/15	2016/08/15		
COC Number		M008544		M008544	M008544	M008544	M008544	M008544		
	UNITS	P216-13A	QC Batch	P216-13B	P216-14A	P216-14A Lab-Dup	P216-14B	P216-15A	RDL	QC Batch
Elements										
Total Arsenic (As)	mg/kg	2.8	8379896	3.6	1.9	1.7	2.2	4.5	1.0	8379893
Total Cadmium (Cd)	mg/kg	0.11	8379896	0.11	0.21	0.19	0.27	0.089	0.050	8379893
Total Chromium (Cr)	mg/kg	13	8379896	16	5.2	5.2	9.4	8.5	1.0	8379893
Total Cobalt (Co)	mg/kg	1.7	8379896	2.1	1.3	1.3	1.7	1.1	0.50	8379893
Total Copper (Cu)	mg/kg	5.8	8379896	8.1	8.8	7.8	15	3.3	1.0	8379893
Total Lead (Pb)	mg/kg	2.4	8379896	2.7	2.6	2.4	2.4	3.3	0.50	8379893
Total Mercury (Hg)	mg/kg	<0.050	8379896	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8379893
Total Nickel (Ni)	mg/kg	6.7	8379896	8.4	4.1	4.1	7.0	4.6	1.0	8379893
Total Zinc (Zn)	mg/kg	19	8379896	11	14	13	16	12	10	8379893

RDL = Reportable Detection Limit
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Sampler Initials: AP, KE

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		PI0794			PI0805			PI0806	PI0807		
Sampling Date		2016/08/15			2016/08/15			2016/08/15	2016/08/15		
COC Number		M008544			M008545			M008545	M008545		
	UNITS	P216-15B	RDL	QC Batch	P216-16A	RDL	QC Batch	P216-16B	P216-17A	RDL	QC Batch
Elements											
Total Arsenic (As)	mg/kg	5.1	1.0	8379893	9.7	2.0	8384011	4.6	3.1	1.0	8379893
Total Cadmium (Cd)	mg/kg	0.083	0.050	8379893	0.15	0.10	8384011	0.071	0.77	0.050	8379893
Total Chromium (Cr)	mg/kg	14	1.0	8379893	4.7	2.0	8384011	9.4	12	1.0	8379893
Total Cobalt (Co)	mg/kg	0.88	0.50	8379893	1.7	1.0	8384011	2.7	2.9	0.50	8379893
Total Copper (Cu)	mg/kg	2.6	1.0	8379893	7.1	2.0	8384011	6.7	9.9	1.0	8379893
Total Lead (Pb)	mg/kg	3.4	0.50	8379893	5.2	1.0	8384011	3.8	9.2	0.50	8379893
Total Mercury (Hg)	mg/kg	<0.050	0.050	8379893	<0.10	0.10	8384011	<0.050	<0.050	0.050	8379893
Total Nickel (Ni)	mg/kg	6.5	1.0	8379893	3.2	2.0	8384011	6.0	6.8	1.0	8379893
Total Zinc (Zn)	mg/kg	13	10	8379893	48	20	8384011	16	71	10	8379893
RDL = Reportable Detection Limit											

Maxxam ID		PI0808		PI0809	PI0810	PI0811	PI0812		
Sampling Date		2016/08/15		2016/08/15	2016/08/15	2016/08/15	2016/08/15		
COC Number		M008545		M008545	M008545	M008545	M008545		
	UNITS	P216-17B	QC Batch	P216-18A	P216-18B	P216-19A	P216-19B	RDL	QC Batch
Elements									
Total Arsenic (As)	mg/kg	2.3	8379896	3.3	3.3	1.7	3.0	1.0	8379893
Total Cadmium (Cd)	mg/kg	0.13	8379896	0.093	0.076	0.35	0.098	0.050	8379893
Total Chromium (Cr)	mg/kg	7.8	8379896	23	10	9.6	6.4	1.0	8379893
Total Cobalt (Co)	mg/kg	2.4	8379896	4.1	3.7	1.4	0.56	0.50	8379893
Total Copper (Cu)	mg/kg	6.6	8379896	6.7	3.9	5.1	1.5	1.0	8379893
Total Lead (Pb)	mg/kg	2.3	8379896	4.0	3.0	5.4	2.6	0.50	8379893
Total Mercury (Hg)	mg/kg	<0.050	8379896	<0.050	<0.050	<0.050	<0.050	0.050	8379893
Total Nickel (Ni)	mg/kg	4.8	8379896	13	7.9	4.4	2.7	1.0	8379893
Total Zinc (Zn)	mg/kg	13	8379896	22	15	31	<10	10	8379893
RDL = Reportable Detection Limit									

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Maxxam Job #: B671091
Report Date: 2016/10/13

EnGlobe Corp
Client Project #: 2016LFM-KITIK13
Site Location: PIN-2, CAPE YOUNG
Your P.O. #: 21110
Sampler Initials: AP, KE

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		PI0813		PI0814		PI0815	PI0816	PI0817		
Sampling Date		2016/08/15		2016/08/15		2016/08/16	2016/08/16	2016/08/16		
COC Number		M008545		M008545		M008545	M008545	M008545		
	UNITS	P216-20A	QC Batch	P216-20B	QC Batch	P216-21A	P216-21B	P216-22A	RDL	QC Batch
Elements										
Total Arsenic (As)	mg/kg	1.8	8379896	2.7	8379893	2.9	2.9	5.2	1.0	8379896
Total Cadmium (Cd)	mg/kg	0.21	8379896	0.12	8379893	<0.050	0.055	<0.050	0.050	8379896
Total Chromium (Cr)	mg/kg	9.1	8379896	8.7	8379893	3.5	16	2.9	1.0	8379896
Total Cobalt (Co)	mg/kg	2.1	8379896	2.2	8379893	0.53	0.73	0.69	0.50	8379896
Total Copper (Cu)	mg/kg	7.1	8379896	5.0	8379893	2.8	3.7	2.2	1.0	8379896
Total Lead (Pb)	mg/kg	2.4	8379896	2.6	8379893	3.1	2.7	3.9	0.50	8379896
Total Mercury (Hg)	mg/kg	<0.050	8379896	<0.050	8379893	<0.050	<0.050	<0.050	0.050	8379896
Total Nickel (Ni)	mg/kg	5.7	8379896	4.8	8379893	1.7	6.0	1.9	1.0	8379896
Total Zinc (Zn)	mg/kg	24	8379896	12	8379893	<10	<10	<10	10	8379896
RDL = Reportable Detection Limit										

Maxxam ID		PI0818		PI0819	PI0820		PI0821		PI0822		
Sampling Date		2016/08/16		2016/08/16	2016/08/16		2016/08/16		2016/08/16		
COC Number		M008545		M008545	M008545		M008545		M008545		
	UNITS	P216-22B	QC Batch	P216-23A	P216-23B	QC Batch	P216-24A	QC Batch	P216-24B	RDL	QC Batch
Elements											
Total Arsenic (As)	mg/kg	5.6	8380517	7.5	6.9	8379896	6.4	8380517	7.2	1.0	8379896
Total Cadmium (Cd)	mg/kg	<0.050	8380517	<0.050	<0.050	8379896	<0.050	8380517	<0.050	0.050	8379896
Total Chromium (Cr)	mg/kg	5.5	8380517	9.0	5.1	8379896	14	8380517	10	1.0	8379896
Total Cobalt (Co)	mg/kg	0.79	8380517	0.97	0.88	8379896	0.70	8380517	0.71	0.50	8379896
Total Copper (Cu)	mg/kg	1.9	8380517	3.8	3.5	8379896	2.7	8380517	2.7	1.0	8379896
Total Lead (Pb)	mg/kg	3.6	8380517	5.3	4.9	8379896	3.7	8380517	4.7	0.50	8379896
Total Mercury (Hg)	mg/kg	<0.050	8380517	<0.050	<0.050	8379896	<0.050	8380517	<0.050	0.050	8379896
Total Nickel (Ni)	mg/kg	3.2	8380517	5.6	3.7	8379896	6.4	8380517	5.1	1.0	8379896
Total Zinc (Zn)	mg/kg	<10	8380517	<10	<10	8379896	<10	8380517	<10	10	8379896
RDL = Reportable Detection Limit											

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Report Date: 2016/10/13

EnGlobe Corp
Client Project #: 2016LFM-KITIK13
Site Location: PIN-2, CAPE YOUNG
Your P.O. #: 21110
Sampler Initials: AP, KE

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		PI0823		PI0824		PI0831		PI0832		
Sampling Date		2016/08/16		2016/08/16		2016/08/16		2016/08/16		
COC Number		M008545		M008545		M008546		M008546		
	UNITS	P216-25A	QC Batch	P216-25B	QC Batch	P216-26A	QC Batch	P216-26B	RDL	QC Batch
Elements										
Total Arsenic (As)	mg/kg	7.3	8382647	6.6	8382754	5.2	8382647	5.3	1.0	8382754
Total Cadmium (Cd)	mg/kg	<0.050	8382647	0.052	8382754	0.052	8382647	<0.050	0.050	8382754
Total Chromium (Cr)	mg/kg	2.5	8382647	2.3	8382754	2.3	8382647	2.4	1.0	8382754
Total Cobalt (Co)	mg/kg	1.1	8382647	0.97	8382754	0.72	8382647	0.77	0.50	8382754
Total Copper (Cu)	mg/kg	5.8	8382647	8.1	8382754	3.2	8382647	5.3	1.0	8382754
Total Lead (Pb)	mg/kg	6.0	8382647	5.2	8382754	4.8	8382647	6.1	0.50	8382754
Total Mercury (Hg)	mg/kg	0.10	8382647	<0.050	8382754	0.065	8382647	<0.050	0.050	8382754
Total Nickel (Ni)	mg/kg	3.0	8382647	2.5	8382754	1.6	8382647	1.6	1.0	8382754
Total Zinc (Zn)	mg/kg	<10	8382647	10	8382754	<10	8382647	<10	10	8382754
RDL = Reportable Detection Limit										

Maxxam ID		PI0833			PI0834			PI0835		PI0836		
Sampling Date		2016/08/15			2016/08/15			2016/08/15		2016/08/15		
COC Number		M008546			M008546			M008546		M008546		
	UNITS	P216-27A	RDL	QC Batch	P216-27B	RDL	QC Batch	P216-28A	QC Batch	P216-28B	RDL	QC Batch
Elements												
Total Arsenic (As)	mg/kg	3.4	2.0	8382754	1.4	1.0	8379893	6.2	8379896	6.9	2.0	8379893
Total Cadmium (Cd)	mg/kg	0.15	0.10	8382754	0.19	0.050	8379893	0.15	8379896	0.56	0.10	8379893
Total Chromium (Cr)	mg/kg	7.1	2.0	8382754	7.1	1.0	8379893	5.2	8379896	8.7	2.0	8379893
Total Cobalt (Co)	mg/kg	1.3	1.0	8382754	2.5	0.50	8379893	4.3	8379896	2.9	1.0	8379893
Total Copper (Cu)	mg/kg	12	2.0	8382754	7.3	1.0	8379893	13	8379896	100	2.0	8379893
Total Lead (Pb)	mg/kg	1.0	1.0	8382754	2.1	0.50	8379893	2.3	8379896	1.6	1.0	8379893
Total Mercury (Hg)	mg/kg	<0.10	0.10	8382754	<0.050	0.050	8379893	<0.10	8379896	<0.10	0.10	8379893
Total Nickel (Ni)	mg/kg	11	2.0	8382754	5.9	1.0	8379893	10	8379896	16	2.0	8379893
Total Zinc (Zn)	mg/kg	<20	20	8382754	13	10	8379893	40	8379896	<20	20	8379893
RDL = Reportable Detection Limit												

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EnGlobe Corp
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Sampler Initials: AP, KE

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		PI0837		PI0838		PI0839		PI0840		
Sampling Date		2016/08/15		2016/08/15		2016/08/15		2016/08/15		
COC Number		M008546		M008546		M008546		M008546		
	UNITS	P216-29A	QC Batch	P216-29B	RDL	P216-30A	QC Batch	P216-30B	RDL	QC Batch
Elements										
Total Arsenic (As)	mg/kg	18	8379893	11	2.0	2.5	8379896	2.8	1.0	8379893
Total Cadmium (Cd)	mg/kg	<0.10	8379893	1.7	0.10	0.067	8379896	0.064	0.050	8379893
Total Chromium (Cr)	mg/kg	6.3	8379893	21	2.0	10	8379896	12	1.0	8379893
Total Cobalt (Co)	mg/kg	1.9	8379893	3.4	1.0	2.9	8379896	2.8	0.50	8379893
Total Copper (Cu)	mg/kg	6.2	8379893	55	2.0	7.8	8379896	12	1.0	8379893
Total Lead (Pb)	mg/kg	2.7	8379893	5.2	1.0	3.7	8379896	2.6	0.50	8379893
Total Mercury (Hg)	mg/kg	<0.10	8379893	<0.10	0.10	<0.050	8379896	<0.050	0.050	8379893
Total Nickel (Ni)	mg/kg	12	8379893	19	2.0	6.4	8379896	7.3	1.0	8379893
Total Zinc (Zn)	mg/kg	<20	8379893	<20	20	19	8379896	13	10	8379893
RDL = Reportable Detection Limit										

Maxxam ID		PI0841			PI0842		PI0843	PI0844	PI0845		
Sampling Date		2016/08/16			2016/08/16		2016/08/16	2016/08/16	2016/08/16		
COC Number		M008546			M008546		M008546	M008546	M008546		
	UNITS	P216-BD1	RDL	QC Batch	P216-BD2	RDL	P216-BD3	P216-BD4	P216-BD5	RDL	QC Batch
Elements											
Total Arsenic (As)	mg/kg	5.0	2.0	8382880	1.8	1.0	<2.0	4.2	<2.0	2.0	8382754
Total Cadmium (Cd)	mg/kg	0.62	0.10	8382880	0.077	0.050	0.24	0.35	0.26	0.10	8382754
Total Chromium (Cr)	mg/kg	5.8	2.0	8382880	2.1	1.0	3.4	14	<2.0	2.0	8382754
Total Cobalt (Co)	mg/kg	2.2	1.0	8382880	0.54	0.50	<1.0	5.0	<1.0	1.0	8382754
Total Copper (Cu)	mg/kg	12	2.0	8382880	3.0	1.0	11	9.1	11	2.0	8382754
Total Lead (Pb)	mg/kg	3.0	1.0	8382880	1.9	0.50	3.1	8.0	<1.0	1.0	8382754
Total Mercury (Hg)	mg/kg	0.14	0.10	8382880	<0.050	0.050	0.12	<0.10	0.10	0.10	8382754
Total Nickel (Ni)	mg/kg	7.4	2.0	8382880	1.4	1.0	2.6	7.8	2.1	2.0	8382754
Total Zinc (Zn)	mg/kg	<20	20	8382880	<10	10	21	26	<20	20	8382754
RDL = Reportable Detection Limit											

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Sampler Initials: AP, KE

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		PI0846		PI0847			PI0848			PI0849		
Sampling Date		2016/08/15		2016/08/15			2016/08/15			2016/08/15		
COC Number		M008546		M008546			M008546			M008546		
	UNITS	P216-BD6	QC Batch	P216-BD7	RDL	QC Batch	P216-BD8	RDL	QC Batch	P216-1WA	RDL	QC Batch
Elements												
Total Arsenic (As)	mg/kg	1.7	8379893	2.2	1.0	8379896	6.1	2.0	8379893	4.4	1.0	8380344
Total Cadmium (Cd)	mg/kg	0.18	8379893	0.082	0.050	8379896	0.11	0.10	8379893	0.59	0.050	8380344
Total Chromium (Cr)	mg/kg	8.4	8379893	6.9	1.0	8379896	5.0	2.0	8379893	4.6	1.0	8380344
Total Cobalt (Co)	mg/kg	1.3	8379893	3.0	0.50	8379896	3.1	1.0	8379893	1.9	0.50	8380344
Total Copper (Cu)	mg/kg	8.2	8379893	5.0	1.0	8379896	8.9	2.0	8379893	12	1.0	8380344
Total Lead (Pb)	mg/kg	2.6	8379893	3.1	0.50	8379896	2.0	1.0	8379893	2.7	0.50	8380344
Total Mercury (Hg)	mg/kg	<0.050	8379893	<0.050	0.050	8379896	<0.10	0.10	8379893	0.19	0.050	8380344
Total Nickel (Ni)	mg/kg	5.4	8379893	4.8	1.0	8379896	8.1	2.0	8379893	6.5	1.0	8380344
Total Zinc (Zn)	mg/kg	13	8379893	17	10	8379896	31	20	8379893	20	10	8380344
RDL = Reportable Detection Limit												

Maxxam ID		PI0850	PI0851	PI0852		PI0853	PI0854	PI0855		
Sampling Date		2016/08/15	2016/08/15	2016/08/15		2016/08/15	2016/08/15	2016/08/15		
COC Number		M008546	M008546	M008546		M008546	M008546	M008546		
	UNITS	P216-1WB	P216-2WA	P216-2WB	QC Batch	P216-3WA	P216-3WB	P216-4WA	RDL	QC Batch
Elements										
Total Arsenic (As)	mg/kg	3.7	2.8	6.2	8380093	2.0	2.6	1.7	1.0	8380344
Total Cadmium (Cd)	mg/kg	0.24	0.23	0.21	8380093	0.17	0.088	0.17	0.050	8380344
Total Chromium (Cr)	mg/kg	12	6.6	11	8380093	8.8	6.4	7.5	1.0	8380344
Total Cobalt (Co)	mg/kg	2.2	1.9	2.6	8380093	1.1	1.8	1.1	0.50	8380344
Total Copper (Cu)	mg/kg	5.2	8.0	5.4	8380093	3.7	3.0	2.5	1.0	8380344
Total Lead (Pb)	mg/kg	4.2	2.6	2.7	8380093	2.6	2.8	2.6	0.50	8380344
Total Mercury (Hg)	mg/kg	<0.050	<0.050	<0.050	8380093	<0.050	<0.050	<0.050	0.050	8380344
Total Nickel (Ni)	mg/kg	7.2	6.4	6.3	8380093	4.5	3.9	4.1	1.0	8380344
Total Zinc (Zn)	mg/kg	15	17	17	8380093	19	13	11	10	8380344
RDL = Reportable Detection Limit										

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ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		PI0856		PI0857		PI0858		PI0859		
Sampling Date		2016/08/15		2016/08/15		2016/08/15		2016/08/15		
COC Number		M008546		M008546		M008546		M008546		
	UNITS	P216-4WB	QC Batch	P216-5WA	QC Batch	P216-5WB	QC Batch	P216-6WA	RDL	QC Batch
Elements										
Total Arsenic (As)	mg/kg	1.8	8380344	1.4	8380093	1.4	8380344	3.2	1.0	8380093
Total Cadmium (Cd)	mg/kg	0.11	8380344	0.065	8380093	0.060	8380344	0.11	0.050	8380093
Total Chromium (Cr)	mg/kg	4.6	8380344	3.3	8380093	4.2	8380344	3.9	1.0	8380093
Total Cobalt (Co)	mg/kg	1.3	8380344	<0.50	8380093	0.66	8380344	0.52	0.50	8380093
Total Copper (Cu)	mg/kg	1.9	8380344	2.2	8380093	3.2	8380344	7.3	1.0	8380093
Total Lead (Pb)	mg/kg	2.8	8380344	1.8	8380093	2.3	8380344	2.1	0.50	8380093
Total Mercury (Hg)	mg/kg	<0.050	8380344	<0.050	8380093	<0.050	8380344	<0.050	0.050	8380093
Total Nickel (Ni)	mg/kg	3.0	8380344	1.8	8380093	2.6	8380344	3.3	1.0	8380093
Total Zinc (Zn)	mg/kg	<10	8380344	<10	8380093	<10	8380344	13	10	8380093
RDL = Reportable Detection Limit										

Maxxam ID		PI0860		PI0861		PI0862	PI0863	PI0864		
Sampling Date		2016/08/15		2016/08/15		2016/08/15	2016/08/15	2016/08/15		
COC Number		M008546		M008546		M008546	M008546	M008546		
	UNITS	P216-6WB	QC Batch	P216-7WA	QC Batch	P216-7WB	P216-8WA	P216-8WB	RDL	QC Batch
Elements										
Total Arsenic (As)	mg/kg	2.1	8380344	2.2	8380093	2.4	2.7	3.1	1.0	8380344
Total Cadmium (Cd)	mg/kg	0.070	8380344	0.081	8380093	0.089	0.088	0.060	0.050	8380344
Total Chromium (Cr)	mg/kg	6.6	8380344	15	8380093	6.6	13	7.5	1.0	8380344
Total Cobalt (Co)	mg/kg	0.86	8380344	2.8	8380093	2.2	1.3	1.3	0.50	8380344
Total Copper (Cu)	mg/kg	8.8	8380344	8.3	8380093	5.8	3.5	3.3	1.0	8380344
Total Lead (Pb)	mg/kg	3.2	8380344	3.4	8380093	3.2	3.0	2.2	0.50	8380344
Total Mercury (Hg)	mg/kg	<0.050	8380344	<0.050	8380093	<0.050	<0.050	<0.050	0.050	8380344
Total Nickel (Ni)	mg/kg	4.4	8380344	9.0	8380093	4.8	6.1	4.3	1.0	8380344
Total Zinc (Zn)	mg/kg	12	8380344	20	8380093	25	13	<10	10	8380344
RDL = Reportable Detection Limit										

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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	4.3°C
Package 2	5.0°C
Package 3	3.0°C
Package 4	2.0°C
Package 5	3.7°C

Report reissued to include F4 as per client request received on 2016/10/12.

Sample PI0756-01 : Detection limits raised due to sample matrix. Parameters affected are As, Cd, Cr, Co, Cu, Pb, Hg, Ni, Zn.

Sample PI0757-01 : Detection limits raised due to sample matrix. Parameters affected are As, Cd, Cr, Co, Cu, Pb, Hg, Ni, Zn.

Sample PI0764-01 : Detection limits raised due to sample matrix. Parameters affected are As, Cd, Cr, Co, Cu, Pb, Hg, Ni, Zn.

Sample PI0775-01 : Detection limits raised due to sample matrix. Parameters affected are As, Cd, Cr, Co, Cu, Pb, Hg, Ni, Zn.

Sample PI0782-01 : Sample extracted past 7 day hold time for BTEX/F1.

Sample PI0787-01 : Detection limits raised due to sample matrix. Parameters affected are Cr, Co, Cu, Pb, Ni, As, Zn, Cd, Hg.

Sample PI0788-01 : Detection limits raised due to sample matrix. Parameters affected are Cr, Co, Cu, Pb, Ni, As, Zn, Cd, Hg.

Sample PI0805-01 : Detection limits raised due to sample matrix. Parameters affected are Ni, As, Cd, Cr, Co, Cu, Pb, Hg, Zn.

Sample PI0833-01 : Detection limits raised due to sample matrix. Parameters affected are As, Cd, Cr, Co, Cu, Pb, Hg, Ni, Zn.

Sample PI0835-01 : Detection limits raised due to sample matrix. Parameters affected are Cr, Co, Cu, Pb, Ni, As, Zn, Cd, Hg.

Sample PI0836-01 : Detection limits raised due to sample matrix. Parameters affected are Cr, Co, Cd, Cu, Pb, Ni, As, Zn, Hg.

Sample PI0837-01 : Detection limits raised due to sample matrix. Parameters affected are Cr, Co, Cd, Cu, Pb, Ni, As, Zn, Hg.

Sample PI0838-01 : Detection limits raised due to sample matrix. Parameters affected are Cr, Co, Cu, Pb, Ni, As, Zn, Cd, Hg.

Sample PI0841-01 : Detection limits raised due to sample matrix. Parameters affected are As, Cd, Cr, Co, Cu, Pb, Hg, Ni, Zn.

Sample PI0843-01 : Detection limits raised due to sample matrix. Parameters affected are As, Cd, Cr, Co, Cu, Pb, Hg, Ni, Zn.

Sample PI0844-01 : Detection limits raised due to sample matrix. Parameters affected are As, Cd, Cr, Co, Cu, Pb, Hg, Ni, Zn.

Sample PI0845-01 : Detection limits raised due to sample matrix. Parameters affected are As, Cd, Cr, Co, Cu, Pb, Hg, Ni, Zn.

Sample PI0848-01 : Detection limits raised due to sample matrix. Parameters affected are Cr, Co, Cd, Cu, Pb, Ni, As, Zn, Hg.

Results relate only to the items tested.

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Maxxam Job #: B671091
Report Date: 2016/10/13

EnGlobe Corp
Client Project #: 2016LFM-KITIK13
Site Location: PIN-2, CAPE YOUNG
Your P.O. #: 21110
Sampler Initials: AP, KE

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8372820	GG3	Matrix Spike	O-TERPHENYL (sur.)	2016/08/24		125	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2016/08/24		118	%	50 - 130
			F3 (C16-C34 Hydrocarbons)	2016/08/24		121	%	50 - 130
			F4 (C34-C50 Hydrocarbons)	2016/08/24		120	%	50 - 130
8372820	GG3	Spiked Blank	O-TERPHENYL (sur.)	2016/08/24		126	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2016/08/24		119	%	70 - 130
			F3 (C16-C34 Hydrocarbons)	2016/08/24		123	%	70 - 130
			F4 (C34-C50 Hydrocarbons)	2016/08/24		123	%	70 - 130
8372820	GG3	Method Blank	O-TERPHENYL (sur.)	2016/08/24		113	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2016/08/24	<10		mg/kg	
			F3 (C16-C34 Hydrocarbons)	2016/08/24	<50		mg/kg	
			F4 (C34-C50 Hydrocarbons)	2016/08/24	<50		mg/kg	
8372820	GG3	RPD	F2 (C10-C16 Hydrocarbons)	2016/08/24	NC		%	50
			F3 (C16-C34 Hydrocarbons)	2016/08/24	NC		%	50
			F4 (C34-C50 Hydrocarbons)	2016/08/24	NC		%	50
8373016	HP5	Method Blank	Moisture	2016/08/24	<0.30		%	
8373016	HP5	RPD [PI0756-01]	Moisture	2016/08/24	0.16		%	20
8374143	HP5	Method Blank	Moisture	2016/08/24	<0.30		%	
8374143	HP5	RPD	Moisture	2016/08/24	6.2		%	20
8374458	HP5	Method Blank	Moisture	2016/08/25	<0.30		%	
8374458	HP5	RPD [PI0783-01]	Moisture	2016/08/25	17		%	20
8375488	SES	Matrix Spike	1,4-Difluorobenzene (sur.)	2016/08/24		102	%	60 - 140
			4-Bromofluorobenzene (sur.)	2016/08/24		100	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2016/08/24		109	%	60 - 130
			D4-1,2-Dichloroethane (sur.)	2016/08/24		97	%	60 - 140
			F1 (C6-C10)	2016/08/24		100	%	60 - 140
8375488	SES	Spiked Blank	1,4-Difluorobenzene (sur.)	2016/08/24		103	%	60 - 140
			4-Bromofluorobenzene (sur.)	2016/08/24		100	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2016/08/24		106	%	60 - 130
			D4-1,2-Dichloroethane (sur.)	2016/08/24		96	%	60 - 140
			F1 (C6-C10)	2016/08/24		104	%	60 - 140
8375488	SES	Method Blank	1,4-Difluorobenzene (sur.)	2016/08/24		100	%	60 - 140
			4-Bromofluorobenzene (sur.)	2016/08/24		99	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2016/08/24		109	%	60 - 130
			D4-1,2-Dichloroethane (sur.)	2016/08/24		97	%	60 - 140
			F1 (C6-C10) - BTEX	2016/08/24	<12		mg/kg	
			F1 (C6-C10)	2016/08/24	<12		mg/kg	
8375488	SES	RPD	F1 (C6-C10) - BTEX	2016/08/24	NC		%	50
			F1 (C6-C10)	2016/08/24	NC		%	50
8375686	GG3	Matrix Spike [PI0783-01]	O-TERPHENYL (sur.)	2016/08/26		115	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2016/08/26		104	%	50 - 130
			F3 (C16-C34 Hydrocarbons)	2016/08/26		101	%	50 - 130
			F4 (C34-C50 Hydrocarbons)	2016/08/26		94	%	50 - 130
8375686	GG3	Spiked Blank	O-TERPHENYL (sur.)	2016/08/26		120	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2016/08/26		108	%	70 - 130
			F3 (C16-C34 Hydrocarbons)	2016/08/26		104	%	70 - 130
			F4 (C34-C50 Hydrocarbons)	2016/08/26		100	%	70 - 130
8375686	GG3	Method Blank	O-TERPHENYL (sur.)	2016/08/26		96	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2016/08/26	<10		mg/kg	
			F3 (C16-C34 Hydrocarbons)	2016/08/26	<50		mg/kg	
			F4 (C34-C50 Hydrocarbons)	2016/08/26	<50		mg/kg	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8375686	GG3	RPD [PI0783-01]	F2 (C10-C16 Hydrocarbons)	2016/08/26	NC		%	50
			F3 (C16-C34 Hydrocarbons)	2016/08/26	NC		%	50
8376905	GG3	Matrix Spike	O-TERPHENYL (sur.)	2016/08/27		103	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2016/08/27		NC	%	50 - 130
			F3 (C16-C34 Hydrocarbons)	2016/08/27		NC	%	50 - 130
			F4 (C34-C50 Hydrocarbons)	2016/08/27		100	%	50 - 130
8376905	GG3	Spiked Blank	O-TERPHENYL (sur.)	2016/08/27		107	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2016/08/27		109	%	70 - 130
			F3 (C16-C34 Hydrocarbons)	2016/08/27		109	%	70 - 130
			F4 (C34-C50 Hydrocarbons)	2016/08/27		107	%	70 - 130
8376905	GG3	Method Blank	O-TERPHENYL (sur.)	2016/08/27		107	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2016/08/27	<10		mg/kg	
			F3 (C16-C34 Hydrocarbons)	2016/08/27	<50		mg/kg	
			F4 (C34-C50 Hydrocarbons)	2016/08/27	<50		mg/kg	
8376905	GG3	RPD	F2 (C10-C16 Hydrocarbons)	2016/08/27	7.0		%	50
			F3 (C16-C34 Hydrocarbons)	2016/08/27	3.5		%	50
			F4 (C34-C50 Hydrocarbons)	2016/08/27	2.2		%	50
8376913	KK5	Matrix Spike [PI0760-01]	O-TERPHENYL (sur.)	2016/08/26		122	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2016/08/26		107	%	50 - 130
			F3 (C16-C34 Hydrocarbons)	2016/08/26		107	%	50 - 130
			F4 (C34-C50 Hydrocarbons)	2016/08/26		107	%	50 - 130
8376913	KK5	Spiked Blank	O-TERPHENYL (sur.)	2016/08/26		127	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2016/08/26		100	%	70 - 130
			F3 (C16-C34 Hydrocarbons)	2016/08/26		100	%	70 - 130
			F4 (C34-C50 Hydrocarbons)	2016/08/26		99	%	70 - 130
8376913	KK5	Method Blank	O-TERPHENYL (sur.)	2016/08/26		128	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2016/08/26	<10		mg/kg	
			F3 (C16-C34 Hydrocarbons)	2016/08/26	<50		mg/kg	
			F4 (C34-C50 Hydrocarbons)	2016/08/26	<50		mg/kg	
8376913	KK5	RPD [PI0760-01]	F2 (C10-C16 Hydrocarbons)	2016/08/26	NC		%	50
			F3 (C16-C34 Hydrocarbons)	2016/08/26	NC		%	50
8378356	NSE	Matrix Spike [PI0781-01]	1,4-Difluorobenzene (sur.)	2016/08/27		102	%	60 - 140
			4-Bromofluorobenzene (sur.)	2016/08/27		103	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2016/08/27		121	%	60 - 130
			D4-1,2-Dichloroethane (sur.)	2016/08/27		111	%	60 - 140
			F1 (C6-C10)	2016/08/27		93	%	60 - 140
8378356	NSE	Spiked Blank	1,4-Difluorobenzene (sur.)	2016/08/27		102	%	60 - 140
			4-Bromofluorobenzene (sur.)	2016/08/27		102	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2016/08/27		110	%	60 - 130
			D4-1,2-Dichloroethane (sur.)	2016/08/27		111	%	60 - 140
			F1 (C6-C10)	2016/08/27		90	%	60 - 140
8378356	NSE	Method Blank	1,4-Difluorobenzene (sur.)	2016/08/28		101	%	60 - 140
			4-Bromofluorobenzene (sur.)	2016/08/28		99	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2016/08/28		111	%	60 - 130
			D4-1,2-Dichloroethane (sur.)	2016/08/28		108	%	60 - 140
			F1 (C6-C10) - BTEX	2016/08/28	<12		mg/kg	
			F1 (C6-C10)	2016/08/28	<12		mg/kg	
8378356	NSE	RPD [PI0781-01]	F1 (C6-C10) - BTEX	2016/08/27	NC		%	50
			F1 (C6-C10)	2016/08/27	NC		%	50
8378370	NSE	Matrix Spike	1,4-Difluorobenzene (sur.)	2016/08/27		101	%	60 - 140
			4-Bromofluorobenzene (sur.)	2016/08/27		101	%	60 - 140

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			D10-ETHYLBENZENE (sur.)	2016/08/27		104	%	60 - 130
			D4-1,2-Dichloroethane (sur.)	2016/08/27		98	%	60 - 140
			F1 (C6-C10)	2016/08/27		104	%	60 - 140
8378370	NSE	Spiked Blank	1,4-Difluorobenzene (sur.)	2016/08/27		102	%	60 - 140
			4-Bromofluorobenzene (sur.)	2016/08/27		99	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2016/08/27		113	%	60 - 130
			D4-1,2-Dichloroethane (sur.)	2016/08/27		98	%	60 - 140
			F1 (C6-C10)	2016/08/27		101	%	60 - 140
8378370	NSE	Method Blank	1,4-Difluorobenzene (sur.)	2016/08/27		99	%	60 - 140
			4-Bromofluorobenzene (sur.)	2016/08/27		99	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2016/08/27		106	%	60 - 130
			D4-1,2-Dichloroethane (sur.)	2016/08/27		100	%	60 - 140
			F1 (C6-C10) - BTEX	2016/08/27	<12		mg/kg	
			F1 (C6-C10)	2016/08/27	<12		mg/kg	
8378370	NSE	RPD	F1 (C6-C10) - BTEX	2016/08/27	NC		%	50
			F1 (C6-C10)	2016/08/27	NC		%	50
8378456	NSE	Matrix Spike [PI0785-01]	1,4-Difluorobenzene (sur.)	2016/08/27		100	%	60 - 140
			4-Bromofluorobenzene (sur.)	2016/08/27		101	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2016/08/27		112	%	60 - 130
			D4-1,2-Dichloroethane (sur.)	2016/08/27		96	%	60 - 140
			F1 (C6-C10)	2016/08/27		103	%	60 - 140
8378456	NSE	Spiked Blank	1,4-Difluorobenzene (sur.)	2016/08/27		101	%	60 - 140
			4-Bromofluorobenzene (sur.)	2016/08/27		101	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2016/08/27		106	%	60 - 130
			D4-1,2-Dichloroethane (sur.)	2016/08/27		97	%	60 - 140
			F1 (C6-C10)	2016/08/27		102	%	60 - 140
8378456	NSE	Method Blank	1,4-Difluorobenzene (sur.)	2016/08/27		98	%	60 - 140
			4-Bromofluorobenzene (sur.)	2016/08/27		101	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2016/08/27		108	%	60 - 130
			D4-1,2-Dichloroethane (sur.)	2016/08/27		97	%	60 - 140
			F1 (C6-C10) - BTEX	2016/08/27	<12		mg/kg	
			F1 (C6-C10)	2016/08/27	<12		mg/kg	
8378456	NSE	RPD [PI0785-01]	F1 (C6-C10) - BTEX	2016/08/27	NC		%	50
			F1 (C6-C10)	2016/08/27	NC		%	50
8378734	REE	Method Blank	Moisture	2016/08/29	<0.30		%	
8378734	REE	RPD	Moisture	2016/08/29	1.5		%	20
8378799	REE	Method Blank	Moisture	2016/08/29	<0.30		%	
8378799	REE	RPD [PI0792-01]	Moisture	2016/08/29	3.6		%	20
8378960	AK8	Matrix Spike [PI0808-01]	O-TERPHENYL (sur.)	2016/08/27		98	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2016/08/27		96	%	50 - 130
			F3 (C16-C34 Hydrocarbons)	2016/08/27		96	%	50 - 130
			F4 (C34-C50 Hydrocarbons)	2016/08/27		94	%	50 - 130
8378960	AK8	Spiked Blank	O-TERPHENYL (sur.)	2016/08/27		98	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2016/08/27		96	%	70 - 130
			F3 (C16-C34 Hydrocarbons)	2016/08/27		96	%	70 - 130
			F4 (C34-C50 Hydrocarbons)	2016/08/27		96	%	70 - 130
8378960	AK8	Method Blank	O-TERPHENYL (sur.)	2016/08/27		100	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2016/08/27	<10		mg/kg	
			F3 (C16-C34 Hydrocarbons)	2016/08/27	<50		mg/kg	
			F4 (C34-C50 Hydrocarbons)	2016/08/27	<50		mg/kg	
8378960	AK8	RPD [PI0808-01]	F2 (C10-C16 Hydrocarbons)	2016/08/27	NC		%	50

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			F3 (C16-C34 Hydrocarbons)	2016/08/27	NC		%	50
8379007	NSE	Matrix Spike	1,4-Difluorobenzene (sur.)	2016/08/27		103	%	60 - 140
			4-Bromofluorobenzene (sur.)	2016/08/27		100	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2016/08/27		122	%	60 - 130
			D4-1,2-Dichloroethane (sur.)	2016/08/27		115	%	60 - 140
			F1 (C6-C10)	2016/08/27		100	%	60 - 140
8379007	NSE	Spiked Blank	1,4-Difluorobenzene (sur.)	2016/08/27		103	%	60 - 140
			4-Bromofluorobenzene (sur.)	2016/08/27		101	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2016/08/27		125	%	60 - 130
			D4-1,2-Dichloroethane (sur.)	2016/08/27		116	%	60 - 140
			F1 (C6-C10)	2016/08/27		100	%	60 - 140
8379007	NSE	Method Blank	1,4-Difluorobenzene (sur.)	2016/08/27		103	%	60 - 140
			4-Bromofluorobenzene (sur.)	2016/08/27		99	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2016/08/27		123	%	60 - 130
			D4-1,2-Dichloroethane (sur.)	2016/08/27		119	%	60 - 140
			F1 (C6-C10) - BTEX	2016/08/27	<12		mg/kg	
			F1 (C6-C10)	2016/08/27	<12		mg/kg	
8379007	NSE	RPD	F1 (C6-C10) - BTEX	2016/08/27	NC		%	50
			F1 (C6-C10)	2016/08/27	NC		%	50
8379013	NSE	Matrix Spike	1,4-Difluorobenzene (sur.)	2016/08/27		101	%	60 - 140
			4-Bromofluorobenzene (sur.)	2016/08/27		95	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2016/08/27		113	%	60 - 130
			D4-1,2-Dichloroethane (sur.)	2016/08/27		97	%	60 - 140
			F1 (C6-C10)	2016/08/27		101	%	60 - 140
8379013	NSE	Spiked Blank	1,4-Difluorobenzene (sur.)	2016/08/27		100	%	60 - 140
			4-Bromofluorobenzene (sur.)	2016/08/27		95	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2016/08/27		118	%	60 - 130
			D4-1,2-Dichloroethane (sur.)	2016/08/27		98	%	60 - 140
			F1 (C6-C10)	2016/08/27		99	%	60 - 140
8379013	NSE	Method Blank	1,4-Difluorobenzene (sur.)	2016/08/27		99	%	60 - 140
			4-Bromofluorobenzene (sur.)	2016/08/27		94	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2016/08/27		130	%	60 - 130
			D4-1,2-Dichloroethane (sur.)	2016/08/27		102	%	60 - 140
			F1 (C6-C10) - BTEX	2016/08/27	<12		mg/kg	
			F1 (C6-C10)	2016/08/27	<12		mg/kg	
8379013	NSE	RPD	F1 (C6-C10) - BTEX	2016/08/27	NC		%	50
			F1 (C6-C10)	2016/08/27	NC		%	50
8379015	NSE	Matrix Spike	1,4-Difluorobenzene (sur.)	2016/08/27		103	%	60 - 140
			4-Bromofluorobenzene (sur.)	2016/08/27		101	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2016/08/27		121	%	60 - 130
			D4-1,2-Dichloroethane (sur.)	2016/08/27		114	%	60 - 140
			F1 (C6-C10)	2016/08/27		95	%	60 - 140
8379015	NSE	Spiked Blank	1,4-Difluorobenzene (sur.)	2016/08/28		104	%	60 - 140
			4-Bromofluorobenzene (sur.)	2016/08/28		99	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2016/08/28		125	%	60 - 130
			D4-1,2-Dichloroethane (sur.)	2016/08/28		113	%	60 - 140
			F1 (C6-C10)	2016/08/28		93	%	60 - 140
8379015	NSE	Method Blank	1,4-Difluorobenzene (sur.)	2016/08/27		104	%	60 - 140
			4-Bromofluorobenzene (sur.)	2016/08/27		100	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2016/08/27		109	%	60 - 130
			D4-1,2-Dichloroethane (sur.)	2016/08/27		117	%	60 - 140

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			F1 (C6-C10) - BTEX	2016/08/27	<12		mg/kg	
			F1 (C6-C10)	2016/08/27	<12		mg/kg	
8379015	NSE	RPD	F1 (C6-C10) - BTEX	2016/08/28	NC		%	50
			F1 (C6-C10)	2016/08/28	NC		%	50
8379042	REE	Method Blank	Moisture	2016/08/29	<0.30		%	
8379042	REE	RPD [PI0857-01]	Moisture	2016/08/29	8.0		%	20
8379161	AK8	Matrix Spike [PI0857-01]	O-TERPHENYL (sur.)	2016/08/28		101	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2016/08/28		98	%	50 - 130
			F3 (C16-C34 Hydrocarbons)	2016/08/28		97	%	50 - 130
			F4 (C34-C50 Hydrocarbons)	2016/08/28		94	%	50 - 130
8379161	AK8	Spiked Blank	O-TERPHENYL (sur.)	2016/08/28		102	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2016/08/28		100	%	70 - 130
			F3 (C16-C34 Hydrocarbons)	2016/08/28		99	%	70 - 130
			F4 (C34-C50 Hydrocarbons)	2016/08/28		96	%	70 - 130
8379161	AK8	Method Blank	O-TERPHENYL (sur.)	2016/08/28		98	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2016/08/28	<10		mg/kg	
			F3 (C16-C34 Hydrocarbons)	2016/08/28	<50		mg/kg	
			F4 (C34-C50 Hydrocarbons)	2016/08/28	<50		mg/kg	
8379161	AK8	RPD [PI0857-01]	F2 (C10-C16 Hydrocarbons)	2016/08/28	NC		%	50
			F3 (C16-C34 Hydrocarbons)	2016/08/28	NC		%	50
8379614	JGI	Matrix Spike [PI0857-01]	1,4-Difluorobenzene (sur.)	2016/08/28		102	%	60 - 140
			4-Bromofluorobenzene (sur.)	2016/08/28		94	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2016/08/28		98	%	60 - 130
			D4-1,2-Dichloroethane (sur.)	2016/08/28		99	%	60 - 140
			F1 (C6-C10)	2016/08/28		102	%	60 - 140
8379614	JGI	Spiked Blank	1,4-Difluorobenzene (sur.)	2016/08/28		106	%	60 - 140
			4-Bromofluorobenzene (sur.)	2016/08/28		94	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2016/08/28		103	%	60 - 130
			D4-1,2-Dichloroethane (sur.)	2016/08/28		94	%	60 - 140
			F1 (C6-C10)	2016/08/28		98	%	60 - 140
8379614	JGI	Method Blank	1,4-Difluorobenzene (sur.)	2016/08/28		99	%	60 - 140
			4-Bromofluorobenzene (sur.)	2016/08/28		95	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2016/08/28		90	%	60 - 130
			D4-1,2-Dichloroethane (sur.)	2016/08/28		103	%	60 - 140
			F1 (C6-C10) - BTEX	2016/08/28	<12		mg/kg	
			F1 (C6-C10)	2016/08/28	<12		mg/kg	
8379614	JGI	RPD [PI0857-01]	F1 (C6-C10) - BTEX	2016/08/28	NC		%	50
			F1 (C6-C10)	2016/08/28	NC		%	50
8379893	HM3	Matrix Spike [PI0791-01]	Total Arsenic (As)	2016/08/29		94	%	75 - 125
			Total Cadmium (Cd)	2016/08/29		98	%	75 - 125
			Total Chromium (Cr)	2016/08/29		90	%	75 - 125
			Total Cobalt (Co)	2016/08/29		86	%	75 - 125
			Total Copper (Cu)	2016/08/29		80	%	75 - 125
			Total Lead (Pb)	2016/08/29		87	%	75 - 125
			Total Mercury (Hg)	2016/08/29		82	%	75 - 125
			Total Nickel (Ni)	2016/08/29		84	%	75 - 125
			Total Zinc (Zn)	2016/08/29		84	%	75 - 125
8379893	HM3	QC Standard	Total Arsenic (As)	2016/08/29		98	%	53 - 147
			Total Chromium (Cr)	2016/08/29		81	%	59 - 141
			Total Cobalt (Co)	2016/08/29		89	%	58 - 142
			Total Copper (Cu)	2016/08/29		95	%	83 - 117

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Lead (Pb)	2016/08/29		105	%	79 - 121
			Total Nickel (Ni)	2016/08/29		101	%	79 - 121
			Total Zinc (Zn)	2016/08/29		98	%	79 - 121
8379893	HM3	Spiked Blank	Total Arsenic (As)	2016/08/29		101	%	75 - 125
			Total Cadmium (Cd)	2016/08/29		101	%	75 - 125
			Total Chromium (Cr)	2016/08/29		96	%	75 - 125
			Total Cobalt (Co)	2016/08/29		94	%	75 - 125
			Total Copper (Cu)	2016/08/29		96	%	75 - 125
			Total Lead (Pb)	2016/08/29		99	%	75 - 125
			Total Mercury (Hg)	2016/08/29		94	%	75 - 125
			Total Nickel (Ni)	2016/08/29		95	%	75 - 125
			Total Zinc (Zn)	2016/08/29		97	%	75 - 125
8379893	HM3	Method Blank	Total Arsenic (As)	2016/08/29	<1.0		mg/kg	
			Total Cadmium (Cd)	2016/08/29	<0.050		mg/kg	
			Total Chromium (Cr)	2016/08/29	<1.0		mg/kg	
			Total Cobalt (Co)	2016/08/29	<0.50		mg/kg	
			Total Copper (Cu)	2016/08/29	<1.0		mg/kg	
			Total Lead (Pb)	2016/08/29	<0.50		mg/kg	
			Total Mercury (Hg)	2016/08/29	<0.050		mg/kg	
			Total Nickel (Ni)	2016/08/29	<1.0		mg/kg	
			Total Zinc (Zn)	2016/08/29	<10		mg/kg	
8379893	HM3	RPD [PI0791-01]	Total Arsenic (As)	2016/08/29	NC		%	35
			Total Cadmium (Cd)	2016/08/29	NC		%	35
			Total Chromium (Cr)	2016/08/29	0.16		%	35
			Total Cobalt (Co)	2016/08/29	NC		%	35
			Total Copper (Cu)	2016/08/29	13		%	35
			Total Lead (Pb)	2016/08/29	NC		%	35
			Total Mercury (Hg)	2016/08/29	NC		%	35
			Total Nickel (Ni)	2016/08/29	NC		%	35
			Total Zinc (Zn)	2016/08/29	NC		%	35
8379896	JPG	Matrix Spike	Total Arsenic (As)	2016/08/29		98	%	75 - 125
			Total Cadmium (Cd)	2016/08/29		100	%	75 - 125
			Total Chromium (Cr)	2016/08/29		91	%	75 - 125
			Total Cobalt (Co)	2016/08/29		99	%	75 - 125
			Total Copper (Cu)	2016/08/29		97	%	75 - 125
			Total Lead (Pb)	2016/08/29		95	%	75 - 125
			Total Mercury (Hg)	2016/08/29		91	%	75 - 125
			Total Nickel (Ni)	2016/08/29		NC	%	75 - 125
			Total Zinc (Zn)	2016/08/29		NC	%	75 - 125
8379896	JPG	QC Standard	Total Arsenic (As)	2016/08/29		103	%	53 - 147
			Total Chromium (Cr)	2016/08/29		90	%	59 - 141
			Total Cobalt (Co)	2016/08/29		101	%	58 - 142
			Total Copper (Cu)	2016/08/29		107	%	83 - 117
			Total Lead (Pb)	2016/08/29		112	%	79 - 121
			Total Nickel (Ni)	2016/08/29		110	%	79 - 121
			Total Zinc (Zn)	2016/08/29		109	%	79 - 121
8379896	JPG	Spiked Blank	Total Arsenic (As)	2016/08/29		102	%	75 - 125
			Total Cadmium (Cd)	2016/08/29		105	%	75 - 125
			Total Chromium (Cr)	2016/08/29		102	%	75 - 125
			Total Cobalt (Co)	2016/08/29		101	%	75 - 125
			Total Copper (Cu)	2016/08/29		102	%	75 - 125

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QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Lead (Pb)	2016/08/29		99	%	75 - 125
			Total Mercury (Hg)	2016/08/29		98	%	75 - 125
			Total Nickel (Ni)	2016/08/29		100	%	75 - 125
			Total Zinc (Zn)	2016/08/29		102	%	75 - 125
8379896	JPG	Method Blank	Total Arsenic (As)	2016/08/29	<1.0		mg/kg	
			Total Cadmium (Cd)	2016/08/29	<0.050		mg/kg	
			Total Chromium (Cr)	2016/08/29	<1.0		mg/kg	
			Total Cobalt (Co)	2016/08/29	<0.50		mg/kg	
			Total Copper (Cu)	2016/08/29	<1.0		mg/kg	
			Total Lead (Pb)	2016/08/29	<0.50		mg/kg	
			Total Mercury (Hg)	2016/08/29	<0.050		mg/kg	
			Total Nickel (Ni)	2016/08/29	<1.0		mg/kg	
			Total Zinc (Zn)	2016/08/29	<10		mg/kg	
8379896	JPG	RPD	Total Arsenic (As)	2016/08/29	2.6		%	35
			Total Cadmium (Cd)	2016/08/29	51 (1)		%	35
			Total Chromium (Cr)	2016/08/29	28		%	35
			Total Cobalt (Co)	2016/08/29	0.19		%	35
			Total Copper (Cu)	2016/08/29	0.24		%	35
			Total Lead (Pb)	2016/08/29	4.5		%	35
			Total Mercury (Hg)	2016/08/29	NC		%	35
			Total Nickel (Ni)	2016/08/29	3.4		%	35
			Total Zinc (Zn)	2016/08/29	2.9		%	35
8380093	JPG	Matrix Spike	Total Arsenic (As)	2016/08/29		98	%	75 - 125
			Total Cadmium (Cd)	2016/08/29		101	%	75 - 125
			Total Chromium (Cr)	2016/08/29		97	%	75 - 125
			Total Cobalt (Co)	2016/08/29		98	%	75 - 125
			Total Copper (Cu)	2016/08/29		95	%	75 - 125
			Total Lead (Pb)	2016/08/29		91	%	75 - 125
			Total Mercury (Hg)	2016/08/29		94	%	75 - 125
			Total Nickel (Ni)	2016/08/29		NC	%	75 - 125
			Total Zinc (Zn)	2016/08/29		NC	%	75 - 125
8380093	JPG	QC Standard	Total Arsenic (As)	2016/08/29		101	%	53 - 147
			Total Chromium (Cr)	2016/08/29		91	%	59 - 141
			Total Cobalt (Co)	2016/08/29		101	%	58 - 142
			Total Copper (Cu)	2016/08/29		107	%	83 - 117
			Total Lead (Pb)	2016/08/29		118	%	79 - 121
			Total Nickel (Ni)	2016/08/29		108	%	79 - 121
			Total Zinc (Zn)	2016/08/29		109	%	79 - 121
8380093	JPG	Spiked Blank	Total Arsenic (As)	2016/08/29		104	%	75 - 125
			Total Cadmium (Cd)	2016/08/29		104	%	75 - 125
			Total Chromium (Cr)	2016/08/29		102	%	75 - 125
			Total Cobalt (Co)	2016/08/29		103	%	75 - 125
			Total Copper (Cu)	2016/08/29		103	%	75 - 125
			Total Lead (Pb)	2016/08/29		103	%	75 - 125
			Total Mercury (Hg)	2016/08/29		106	%	75 - 125
			Total Nickel (Ni)	2016/08/29		102	%	75 - 125
			Total Zinc (Zn)	2016/08/29		102	%	75 - 125
8380093	JPG	Method Blank	Total Arsenic (As)	2016/08/29	<1.0		mg/kg	
			Total Cadmium (Cd)	2016/08/29	<0.050		mg/kg	
			Total Chromium (Cr)	2016/08/29	<1.0		mg/kg	
			Total Cobalt (Co)	2016/08/29	<0.50		mg/kg	

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QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Copper (Cu)	2016/08/29	<1.0		mg/kg	
			Total Lead (Pb)	2016/08/29	<0.50		mg/kg	
			Total Mercury (Hg)	2016/08/29	<0.050		mg/kg	
			Total Nickel (Ni)	2016/08/29	<1.0		mg/kg	
			Total Zinc (Zn)	2016/08/29	<10		mg/kg	
8380093	JPG	RPD	Total Arsenic (As)	2016/08/29	16		%	35
			Total Cadmium (Cd)	2016/08/29	NC		%	35
			Total Chromium (Cr)	2016/08/29	6.9		%	35
			Total Cobalt (Co)	2016/08/29	0.25		%	35
			Total Copper (Cu)	2016/08/29	2.4		%	35
			Total Lead (Pb)	2016/08/29	2.7		%	35
			Total Mercury (Hg)	2016/08/29	NC		%	35
			Total Nickel (Ni)	2016/08/29	2.9		%	35
			Total Zinc (Zn)	2016/08/29	2.3		%	35
8380344	JPG	Matrix Spike	Total Arsenic (As)	2016/08/29		96	%	75 - 125
			Total Cadmium (Cd)	2016/08/29		101	%	75 - 125
			Total Chromium (Cr)	2016/08/29		99	%	75 - 125
			Total Cobalt (Co)	2016/08/29		94	%	75 - 125
			Total Copper (Cu)	2016/08/29		NC	%	75 - 125
			Total Lead (Pb)	2016/08/29		90	%	75 - 125
			Total Mercury (Hg)	2016/08/29		93	%	75 - 125
			Total Nickel (Ni)	2016/08/29		NC	%	75 - 125
			Total Zinc (Zn)	2016/08/29		NC	%	75 - 125
8380344	JPG	QC Standard	Total Arsenic (As)	2016/08/29		107	%	53 - 147
			Total Chromium (Cr)	2016/08/29		83	%	59 - 141
			Total Cobalt (Co)	2016/08/29		99	%	58 - 142
			Total Copper (Cu)	2016/08/29		106	%	83 - 117
			Total Lead (Pb)	2016/08/29		115	%	79 - 121
			Total Nickel (Ni)	2016/08/29		110	%	79 - 121
			Total Zinc (Zn)	2016/08/29		109	%	79 - 121
8380344	JPG	Spiked Blank	Total Arsenic (As)	2016/08/29		100	%	75 - 125
			Total Cadmium (Cd)	2016/08/29		104	%	75 - 125
			Total Chromium (Cr)	2016/08/29		98	%	75 - 125
			Total Cobalt (Co)	2016/08/29		100	%	75 - 125
			Total Copper (Cu)	2016/08/29		99	%	75 - 125
			Total Lead (Pb)	2016/08/29		97	%	75 - 125
			Total Mercury (Hg)	2016/08/29		102	%	75 - 125
			Total Nickel (Ni)	2016/08/29		98	%	75 - 125
			Total Zinc (Zn)	2016/08/29		99	%	75 - 125
8380344	JPG	Method Blank	Total Arsenic (As)	2016/08/29	<1.0		mg/kg	
			Total Cadmium (Cd)	2016/08/29	<0.050		mg/kg	
			Total Chromium (Cr)	2016/08/29	<1.0		mg/kg	
			Total Cobalt (Co)	2016/08/29	<0.50		mg/kg	
			Total Copper (Cu)	2016/08/29	<1.0		mg/kg	
			Total Lead (Pb)	2016/08/29	<0.50		mg/kg	
			Total Mercury (Hg)	2016/08/29	0.072, RDL=0.050		mg/kg	
			Total Nickel (Ni)	2016/08/29	<1.0		mg/kg	
			Total Zinc (Zn)	2016/08/29	<10		mg/kg	
8380344	JPG	RPD	Total Arsenic (As)	2016/08/29	6.3		%	35
			Total Chromium (Cr)	2016/08/29	19		%	35

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			Total Copper (Cu)	2016/08/29	7.8		%	35
			Total Lead (Pb)	2016/08/29	9.2		%	35
			Total Zinc (Zn)	2016/08/29	8.9		%	35
8380517	HM3	Matrix Spike	Total Arsenic (As)	2016/08/29		100	%	75 - 125
			Total Cadmium (Cd)	2016/08/29		102	%	75 - 125
			Total Chromium (Cr)	2016/08/29		98	%	75 - 125
			Total Cobalt (Co)	2016/08/29		101	%	75 - 125
			Total Copper (Cu)	2016/08/29		93	%	75 - 125
			Total Lead (Pb)	2016/08/29		96	%	75 - 125
			Total Mercury (Hg)	2016/08/29		89	%	75 - 125
			Total Nickel (Ni)	2016/08/29		95	%	75 - 125
			Total Zinc (Zn)	2016/08/29		NC	%	75 - 125
8380517	HM3	QC Standard	Total Arsenic (As)	2016/08/29		102	%	53 - 147
			Total Chromium (Cr)	2016/08/29		81	%	59 - 141
			Total Cobalt (Co)	2016/08/29		91	%	58 - 142
			Total Copper (Cu)	2016/08/29		100	%	83 - 117
			Total Lead (Pb)	2016/08/29		108	%	79 - 121
			Total Nickel (Ni)	2016/08/29		103	%	79 - 121
			Total Zinc (Zn)	2016/08/29		102	%	79 - 121
8380517	HM3	Spiked Blank	Total Arsenic (As)	2016/08/29		97	%	75 - 125
			Total Cadmium (Cd)	2016/08/29		97	%	75 - 125
			Total Chromium (Cr)	2016/08/29		93	%	75 - 125
			Total Cobalt (Co)	2016/08/29		91	%	75 - 125
			Total Copper (Cu)	2016/08/29		91	%	75 - 125
			Total Lead (Pb)	2016/08/29		93	%	75 - 125
			Total Mercury (Hg)	2016/08/29		88	%	75 - 125
			Total Nickel (Ni)	2016/08/29		92	%	75 - 125
			Total Zinc (Zn)	2016/08/29		94	%	75 - 125
8380517	HM3	Method Blank	Total Arsenic (As)	2016/08/29	<1.0		mg/kg	
			Total Cadmium (Cd)	2016/08/29	<0.050		mg/kg	
			Total Chromium (Cr)	2016/08/29	<1.0		mg/kg	
			Total Cobalt (Co)	2016/08/29	<0.50		mg/kg	
			Total Copper (Cu)	2016/08/29	<1.0		mg/kg	
			Total Lead (Pb)	2016/08/29	<0.50		mg/kg	
			Total Mercury (Hg)	2016/08/29	<0.050		mg/kg	
			Total Nickel (Ni)	2016/08/29	<1.0		mg/kg	
			Total Zinc (Zn)	2016/08/29	<10		mg/kg	
8380517	HM3	RPD	Total Arsenic (As)	2016/08/29	NC		%	35
			Total Cadmium (Cd)	2016/08/29	NC		%	35
			Total Chromium (Cr)	2016/08/29	3.7		%	35
			Total Cobalt (Co)	2016/08/29	3.6		%	35
			Total Copper (Cu)	2016/08/29	3.1		%	35
			Total Lead (Pb)	2016/08/29	2.9		%	35
			Total Mercury (Hg)	2016/08/29	NC		%	35
			Total Nickel (Ni)	2016/08/29	6.2		%	35
			Total Zinc (Zn)	2016/08/29	NC		%	35
8381127	REE	Method Blank	Moisture	2016/08/30	<0.30		%	
8381127	REE	RPD	Moisture	2016/08/30	2.7		%	20
8381425	APY	Matrix Spike	Total Arsenic (As)	2016/08/30		105	%	75 - 125
			Total Cadmium (Cd)	2016/08/30		117	%	75 - 125
			Total Chromium (Cr)	2016/08/30		263 (1)	%	75 - 125

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QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Cobalt (Co)	2016/08/30		114	%	75 - 125
			Total Copper (Cu)	2016/08/30		382 (1)	%	75 - 125
			Total Lead (Pb)	2016/08/30		687 (1)	%	75 - 125
			Total Mercury (Hg)	2016/08/30		105	%	75 - 125
			Total Nickel (Ni)	2016/08/30		149 (1)	%	75 - 125
			Total Zinc (Zn)	2016/08/30		755 (1)	%	75 - 125
8381425	APY	QC Standard	Total Arsenic (As)	2016/08/30		112	%	53 - 147
			Total Chromium (Cr)	2016/08/30		93	%	59 - 141
			Total Cobalt (Co)	2016/08/30		107	%	58 - 142
			Total Copper (Cu)	2016/08/30		117	%	83 - 117
			Total Lead (Pb)	2016/08/30		121	%	79 - 121
			Total Nickel (Ni)	2016/08/30		121	%	79 - 121
			Total Zinc (Zn)	2016/08/30		121	%	79 - 121
8381425	APY	Spiked Blank	Total Arsenic (As)	2016/08/30		99	%	75 - 125
			Total Cadmium (Cd)	2016/08/30		99	%	75 - 125
			Total Chromium (Cr)	2016/08/30		97	%	75 - 125
			Total Cobalt (Co)	2016/08/30		96	%	75 - 125
			Total Copper (Cu)	2016/08/30		96	%	75 - 125
			Total Lead (Pb)	2016/08/30		96	%	75 - 125
			Total Mercury (Hg)	2016/08/30		92	%	75 - 125
			Total Nickel (Ni)	2016/08/30		96	%	75 - 125
			Total Zinc (Zn)	2016/08/30		99	%	75 - 125
8381425	APY	Method Blank	Total Arsenic (As)	2016/08/30	<1.0		mg/kg	
			Total Cadmium (Cd)	2016/08/30	<0.050		mg/kg	
			Total Chromium (Cr)	2016/08/30	<1.0		mg/kg	
			Total Cobalt (Co)	2016/08/30	<0.50		mg/kg	
			Total Copper (Cu)	2016/08/30	<1.0		mg/kg	
			Total Lead (Pb)	2016/08/30	<0.50		mg/kg	
			Total Mercury (Hg)	2016/08/30	<0.050		mg/kg	
			Total Nickel (Ni)	2016/08/30	<1.0		mg/kg	
			Total Zinc (Zn)	2016/08/30	<10		mg/kg	
8381425	APY	RPD	Total Arsenic (As)	2016/08/30	0.10		%	35
			Total Cadmium (Cd)	2016/08/30	NC		%	35
			Total Chromium (Cr)	2016/08/30	9.5		%	35
			Total Cobalt (Co)	2016/08/30	10		%	35
			Total Copper (Cu)	2016/08/30	NC		%	35
			Total Lead (Pb)	2016/08/30	16		%	35
			Total Mercury (Hg)	2016/08/30	NC		%	35
			Total Nickel (Ni)	2016/08/30	5.4		%	35
			Total Zinc (Zn)	2016/08/30	NC		%	35
8382647	APY	Matrix Spike	Total Arsenic (As)	2016/08/31		100	%	75 - 125
			Total Cadmium (Cd)	2016/08/31		106	%	75 - 125
			Total Chromium (Cr)	2016/08/31		NC	%	75 - 125
			Total Cobalt (Co)	2016/08/31		95	%	75 - 125
			Total Copper (Cu)	2016/08/31		NC	%	75 - 125
			Total Lead (Pb)	2016/08/31		93	%	75 - 125
			Total Mercury (Hg)	2016/08/31		93	%	75 - 125
			Total Nickel (Ni)	2016/08/31		NC	%	75 - 125
			Total Zinc (Zn)	2016/08/31		NC	%	75 - 125
8382647	APY	QC Standard	Total Arsenic (As)	2016/08/31		107	%	53 - 147
			Total Chromium (Cr)	2016/08/31		86	%	59 - 141

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EnGlobe Corp
Client Project #: 2016LFM-KITIK13
Site Location: PIN-2, CAPE YOUNG
Your P.O. #: 21110
Sampler Initials: AP, KE

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Cobalt (Co)	2016/08/31		100	%	58 - 142
			Total Copper (Cu)	2016/08/31		105	%	83 - 117
			Total Lead (Pb)	2016/08/31		114	%	79 - 121
			Total Nickel (Ni)	2016/08/31		111	%	79 - 121
			Total Zinc (Zn)	2016/08/31		110	%	79 - 121
8382647	APY	Spiked Blank	Total Arsenic (As)	2016/08/31		107	%	75 - 125
			Total Cadmium (Cd)	2016/08/31		106	%	75 - 125
			Total Chromium (Cr)	2016/08/31		110	%	75 - 125
			Total Cobalt (Co)	2016/08/31		108	%	75 - 125
			Total Copper (Cu)	2016/08/31		107	%	75 - 125
			Total Lead (Pb)	2016/08/31		106	%	75 - 125
			Total Mercury (Hg)	2016/08/31		110	%	75 - 125
			Total Nickel (Ni)	2016/08/31		107	%	75 - 125
			Total Zinc (Zn)	2016/08/31		107	%	75 - 125
8382647	APY	Method Blank	Total Arsenic (As)	2016/08/31	<1.0		mg/kg	
			Total Cadmium (Cd)	2016/08/31	<0.050		mg/kg	
			Total Chromium (Cr)	2016/08/31	<1.0		mg/kg	
			Total Cobalt (Co)	2016/08/31	<0.50		mg/kg	
			Total Copper (Cu)	2016/08/31	<1.0		mg/kg	
			Total Lead (Pb)	2016/08/31	<0.50		mg/kg	
			Total Mercury (Hg)	2016/08/31	<0.050		mg/kg	
			Total Nickel (Ni)	2016/08/31	<1.0		mg/kg	
			Total Zinc (Zn)	2016/08/31	<10		mg/kg	
8382647	APY	RPD	Total Arsenic (As)	2016/08/31	2.1		%	35
			Total Chromium (Cr)	2016/08/31	0.68		%	35
			Total Copper (Cu)	2016/08/31	0.77		%	35
			Total Lead (Pb)	2016/08/31	0.25		%	35
			Total Zinc (Zn)	2016/08/31	1.3		%	35
8382754	JPG	Matrix Spike [PI0762-01]	Total Arsenic (As)	2016/08/31		98	%	75 - 125
			Total Cadmium (Cd)	2016/08/31		99	%	75 - 125
			Total Chromium (Cr)	2016/08/31		NC	%	75 - 125
			Total Cobalt (Co)	2016/08/31		93	%	75 - 125
			Total Copper (Cu)	2016/08/31		NC	%	75 - 125
			Total Lead (Pb)	2016/08/31		84	%	75 - 125
			Total Mercury (Hg)	2016/08/31		93	%	75 - 125
			Total Nickel (Ni)	2016/08/31		NC	%	75 - 125
			Total Zinc (Zn)	2016/08/31		94	%	75 - 125
8382754	JPG	QC Standard	Total Arsenic (As)	2016/08/31		104	%	53 - 147
			Total Chromium (Cr)	2016/08/31		82	%	59 - 141
			Total Cobalt (Co)	2016/08/31		95	%	58 - 142
			Total Copper (Cu)	2016/08/31		105	%	83 - 117
			Total Lead (Pb)	2016/08/31		108	%	79 - 121
			Total Nickel (Ni)	2016/08/31		110	%	79 - 121
			Total Zinc (Zn)	2016/08/31		106	%	79 - 121
8382754	JPG	Spiked Blank	Total Arsenic (As)	2016/08/31		95	%	75 - 125
			Total Cadmium (Cd)	2016/08/31		95	%	75 - 125
			Total Chromium (Cr)	2016/08/31		97	%	75 - 125
			Total Cobalt (Co)	2016/08/31		94	%	75 - 125
			Total Copper (Cu)	2016/08/31		95	%	75 - 125
			Total Lead (Pb)	2016/08/31		95	%	75 - 125
			Total Mercury (Hg)	2016/08/31		97	%	75 - 125

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EnGlobe Corp
Client Project #: 2016LFM-KITIK13
Site Location: PIN-2, CAPE YOUNG
Your P.O. #: 21110
Sampler Initials: AP, KE

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Nickel (Ni)	2016/08/31		94	%	75 - 125
			Total Zinc (Zn)	2016/08/31		97	%	75 - 125
8382754	JPG	Method Blank	Total Arsenic (As)	2016/08/31	<1.0		mg/kg	
			Total Cadmium (Cd)	2016/08/31	<0.050		mg/kg	
			Total Chromium (Cr)	2016/08/31	<1.0		mg/kg	
			Total Cobalt (Co)	2016/08/31	<0.50		mg/kg	
			Total Copper (Cu)	2016/08/31	<1.0		mg/kg	
			Total Lead (Pb)	2016/08/31	0.80, RDL=0.50		mg/kg	
			Total Mercury (Hg)	2016/08/31	<0.050		mg/kg	
			Total Nickel (Ni)	2016/08/31	<1.0		mg/kg	
			Total Zinc (Zn)	2016/08/31	<10		mg/kg	
8382754	JPG	RPD [PI0762-01]	Total Arsenic (As)	2016/08/31	8.3		%	35
			Total Cadmium (Cd)	2016/08/31	NC		%	35
			Total Chromium (Cr)	2016/08/31	45 (1)		%	35
			Total Cobalt (Co)	2016/08/31	NC		%	35
			Total Copper (Cu)	2016/08/31	159 (1)		%	35
			Total Lead (Pb)	2016/08/31	6.3		%	35
			Total Mercury (Hg)	2016/08/31	NC		%	35
			Total Nickel (Ni)	2016/08/31	42 (1)		%	35
			Total Zinc (Zn)	2016/08/31	NC		%	35
8382880	JPG	Matrix Spike	Total Arsenic (As)	2016/08/31		95	%	75 - 125
			Total Cadmium (Cd)	2016/08/31		98	%	75 - 125
			Total Chromium (Cr)	2016/08/31		99	%	75 - 125
			Total Cobalt (Co)	2016/08/31		92	%	75 - 125
			Total Copper (Cu)	2016/08/31		NC	%	75 - 125
			Total Lead (Pb)	2016/08/31		NC	%	75 - 125
			Total Mercury (Hg)	2016/08/31		93	%	75 - 125
			Total Nickel (Ni)	2016/08/31		NC	%	75 - 125
			Total Zinc (Zn)	2016/08/31		NC	%	75 - 125
8382880	JPG	QC Standard	Total Arsenic (As)	2016/08/31		102	%	53 - 147
			Total Chromium (Cr)	2016/08/31		85	%	59 - 141
			Total Cobalt (Co)	2016/08/31		95	%	58 - 142
			Total Copper (Cu)	2016/08/31		107	%	83 - 117
			Total Lead (Pb)	2016/08/31		108	%	79 - 121
			Total Nickel (Ni)	2016/08/31		107	%	79 - 121
			Total Zinc (Zn)	2016/08/31		108	%	79 - 121
8382880	JPG	Spiked Blank	Total Arsenic (As)	2016/08/31		100	%	75 - 125
			Total Cadmium (Cd)	2016/08/31		99	%	75 - 125
			Total Chromium (Cr)	2016/08/31		100	%	75 - 125
			Total Cobalt (Co)	2016/08/31		98	%	75 - 125
			Total Copper (Cu)	2016/08/31		100	%	75 - 125
			Total Lead (Pb)	2016/08/31		99	%	75 - 125
			Total Mercury (Hg)	2016/08/31		97	%	75 - 125
			Total Nickel (Ni)	2016/08/31		99	%	75 - 125
			Total Zinc (Zn)	2016/08/31		100	%	75 - 125
8382880	JPG	Method Blank	Total Arsenic (As)	2016/08/31	<1.0		mg/kg	
			Total Cadmium (Cd)	2016/08/31	<0.050		mg/kg	
			Total Chromium (Cr)	2016/08/31	<1.0		mg/kg	
			Total Cobalt (Co)	2016/08/31	<0.50		mg/kg	
			Total Copper (Cu)	2016/08/31	<1.0		mg/kg	

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EnGlobe Corp
Client Project #: 2016LFM-KITIK13
Site Location: PIN-2, CAPE YOUNG
Your P.O. #: 21110
Sampler Initials: AP, KE

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Lead (Pb)	2016/08/31	<0.50		mg/kg	
			Total Mercury (Hg)	2016/08/31	<0.050		mg/kg	
			Total Nickel (Ni)	2016/08/31	<1.0		mg/kg	
			Total Zinc (Zn)	2016/08/31	<10		mg/kg	
8382880	JPG	RPD	Total Arsenic (As)	2016/08/31	8.6		%	35
			Total Cadmium (Cd)	2016/08/31	3.9		%	35
			Total Chromium (Cr)	2016/08/31	8.1		%	35
			Total Cobalt (Co)	2016/08/31	3.7		%	35
			Total Copper (Cu)	2016/08/31	5.9		%	35
			Total Lead (Pb)	2016/08/31	7.6		%	35
			Total Mercury (Hg)	2016/08/31	NC		%	35
			Total Nickel (Ni)	2016/08/31	1.6		%	35
			Total Zinc (Zn)	2016/08/31	2.5		%	35
8384011	JPG	Matrix Spike	Total Arsenic (As)	2016/09/01		100	%	75 - 125
			Total Cadmium (Cd)	2016/09/01		100	%	75 - 125
			Total Chromium (Cr)	2016/09/01		101	%	75 - 125
			Total Cobalt (Co)	2016/09/01		93	%	75 - 125
			Total Copper (Cu)	2016/09/01		97	%	75 - 125
			Total Lead (Pb)	2016/09/01		96	%	75 - 125
			Total Mercury (Hg)	2016/09/01		97	%	75 - 125
			Total Nickel (Ni)	2016/09/01		96	%	75 - 125
			Total Zinc (Zn)	2016/09/01		NC	%	75 - 125
8384011	JPG	QC Standard	Total Arsenic (As)	2016/09/01		138	%	53 - 147
			Total Chromium (Cr)	2016/09/01		92	%	59 - 141
			Total Cobalt (Co)	2016/09/01		97	%	58 - 142
			Total Copper (Cu)	2016/09/01		106	%	83 - 117
			Total Lead (Pb)	2016/09/01		109	%	79 - 121
			Total Nickel (Ni)	2016/09/01		111	%	79 - 121
			Total Zinc (Zn)	2016/09/01		108	%	79 - 121
8384011	JPG	Spiked Blank	Total Arsenic (As)	2016/09/01		97	%	75 - 125
			Total Cadmium (Cd)	2016/09/01		94	%	75 - 125
			Total Chromium (Cr)	2016/09/01		95	%	75 - 125
			Total Cobalt (Co)	2016/09/01		92	%	75 - 125
			Total Copper (Cu)	2016/09/01		95	%	75 - 125
			Total Lead (Pb)	2016/09/01		93	%	75 - 125
			Total Mercury (Hg)	2016/09/01		95	%	75 - 125
			Total Nickel (Ni)	2016/09/01		93	%	75 - 125
			Total Zinc (Zn)	2016/09/01		98	%	75 - 125
8384011	JPG	Method Blank	Total Arsenic (As)	2016/09/01	<1.0		mg/kg	
			Total Cadmium (Cd)	2016/09/01	<0.050		mg/kg	
			Total Chromium (Cr)	2016/09/01	<1.0		mg/kg	
			Total Cobalt (Co)	2016/09/01	<0.50		mg/kg	
			Total Copper (Cu)	2016/09/01	<1.0		mg/kg	
			Total Lead (Pb)	2016/09/01	<0.50		mg/kg	
			Total Mercury (Hg)	2016/09/01	<0.050		mg/kg	
			Total Nickel (Ni)	2016/09/01	<1.0		mg/kg	
			Total Zinc (Zn)	2016/09/01	<10		mg/kg	
8384011	JPG	RPD	Total Arsenic (As)	2016/09/01	NC		%	35
			Total Cadmium (Cd)	2016/09/01	2.3		%	35
			Total Chromium (Cr)	2016/09/01	6.1		%	35
			Total Cobalt (Co)	2016/09/01	9.0		%	35

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Sampler Initials: AP, KE

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Copper (Cu)	2016/09/01	12		%	35
			Total Lead (Pb)	2016/09/01	5.5		%	35
			Total Nickel (Ni)	2016/09/01	4.6		%	35
			Total Zinc (Zn)	2016/09/01	4.5		%	35

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 spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of 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 (one or both samples < 5x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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EnGlobe Corp
Client Project #: 2016LFM-KITIK13
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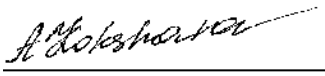
Your P.O. #: 21110
Sampler Initials: AP, KE

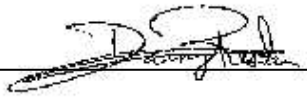
VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

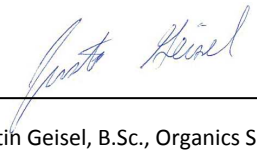
Amanda Dwyer, Project Manager Assistant



Anna Koksharova, M.Sc., Organics Senior Analyst



Daniel Reslan, cCT, QP, Organics Supervisor



Justin Geisel, B.Sc., Organics Supervisor

Maria Magdalena Florescu, Ph.D., P.Chem., QP, Inorganics Senior Analyst

Suwan Fock, B.Sc., QP, Inorganics Senior Analyst

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Your P.O. #: N/A
Your Project #: B671091
Your C.O.C. #: n

Attention:Sherlyne Sim

Maxxam Analytics
Edmonton - Environmental
9331 48th St
Edmonton, AB
T6B 2R4

Report Date: 2016/09/01
Report #: R4151382
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6H8755
Received: 2016/08/23, 10:54

Sample Matrix: Soil
Samples Received: 84

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Moisture	80	N/A	2016/08/25	CAM SOP-00445	Carter 2nd ed 51.2 m
Moisture	4	N/A	2016/08/26	CAM SOP-00445	Carter 2nd ed 51.2 m
Polychlorinated Biphenyl in Soil	4	2016/08/25	2016/08/26	CAM SOP-00309	EPA 8082A m
Polychlorinated Biphenyl in Soil	11	2016/08/27	2016/08/28	CAM SOP-00309	EPA 8082A m
Polychlorinated Biphenyl in Soil	9	2016/08/27	2016/08/29	CAM SOP-00309	EPA 8082A m
Polychlorinated Biphenyl in Soil	1	2016/08/29	2016/08/30	CAM SOP-00309	EPA 8082A m
Polychlorinated Biphenyl in Soil	19	2016/08/29	2016/08/31	CAM SOP-00309	EPA 8082A m
Polychlorinated Biphenyl in Soil	16	2016/08/31	2016/08/31	CAM SOP-00309	EPA 8082A m
Polychlorinated Biphenyl in Soil	24	2016/08/31	2016/09/01	CAM SOP-00309	EPA 8082A m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Andrea Rieth, Project Manager
Email: ARieth@maxxam.ca
Phone# (905)817-5806
==========
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Maxxam Job #: B6H8755
Report Date: 2016/09/01

Maxxam Analytics
Client Project #: B671091
Your P.O. #: N/A

RESULTS OF ANALYSES OF SOIL

Maxxam ID		CXY301	CXY302	CXY303	CXY304	CXY305		
Sampling Date		2016/08/16	2016/08/16	2016/08/16	2016/08/16	2016/08/16		
COC Number		n	n	n	n	n		
	UNITS	PI0756/P216-1A	PI0757/P216-1B	PI0758/P216-2A	PI0759/P216-2B	PI0760/P216-3A	RDL	QC Batch
Inorganics								
Moisture	%	61	32	11	7.2	15	1.0	4634962

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		CXY306	CXY307		CXY308		CXY309		
Sampling Date		2016/08/16	2016/08/16		2016/08/16		2016/08/16		
COC Number		n	n		n		n		
	UNITS	PI0761/P216-3B	PI0762/P216-4A	QC Batch	PI0763/P216-4B	QC Batch	PI0764/P216-5A	RDL	QC Batch
Inorganics									
Moisture	%	9.7	4.0	4634962	4.6	4634892	73	1.0	4634962

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		CXY310		CXY311	CXY312	CXY313		
Sampling Date		2016/08/16		2016/08/16	2016/08/16	2016/08/16		
COC Number		n		n	n	n		
	UNITS	PI0765/P216-5B	QC Batch	PI0775/P216-6A	PI0776/P216-6B	PI0777/P216-7A	RDL	QC Batch
Inorganics								
Moisture	%	5.6	4634817	55	9.5	6.8	1.0	4634962

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		CXY314	CXY315	CXY316	CXY317		
Sampling Date		2016/08/16	2016/08/16	2016/08/16	2016/08/16		
COC Number		n	n	n	n		
	UNITS	PI0778/P216-7B	PI0779/P216-8A	PI0780/P216-8B	PI0781/P216-9A	RDL	QC Batch
Inorganics							
Moisture	%	9.4	8.9	3.7	2.9	1.0	4634962

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		CXY318	CXY319	CXY320	CXY321		
Sampling Date		2016/08/16	2016/08/16	2016/08/16	2016/08/16		
COC Number		n	n	n	n		
	UNITS	PI0782/P216-9B	PI0783/P216-10A	PI0784/P216-10B	PI0785/P216-11A	RDL	QC Batch
Inorganics							
Moisture	%	3.7	39	7.2	54	1.0	4634817

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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RESULTS OF ANALYSES OF SOIL

Maxxam ID		CXY322	CXY323	CXY324		CXY325		
Sampling Date		2016/08/16	2016/08/16	2016/08/16		2016/08/15		
COC Number		n	n	n		n		
	UNITS	PI0786/P216-11B	PI0787/P216-12A	PI0788/P216-12B	QC Batch	PI0789/P216-13A	RDL	QC Batch
Inorganics								
Moisture	%	6.4	63	61	4634962	21	1.0	4634817

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		CXY326	CXY327	CXY328	CXY329	CXY330		
Sampling Date		2016/08/15	2016/08/15	2016/08/15	2016/08/15	2016/08/15		
COC Number		n	n	n	n	n		
	UNITS	PI0790/P216-13B	PI0791/P216-14A	PI0792/P216-14B	PI0793/P216-15A	PI0794/P216-15B	RDL	QC Batch
Inorganics								
Moisture	%	8.2	11	12	5.7	6.3	1.0	4634817

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		CXY331		CXY332		CXY333	CXY334		
Sampling Date		2016/08/15		2016/08/15		2016/08/15	2016/08/15		
COC Number		n		n		n	n		
	UNITS	PI0805/P216-16A	QC Batch	PI0806/P216-16B	QC Batch	PI0807/P216-17A	PI0808/P216-17B	RDL	QC Batch
Inorganics									
Moisture	%	33	4634962	12	4634892	40	6.9	1.0	4634817

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		CXY335	CXY336		CXY337	CXY338		
Sampling Date		2016/08/15	2016/08/15		2016/08/15	2016/08/15		
COC Number		n	n		n	n		
	UNITS	PI0809/P216-18A	PI0810/P216-18B	QC Batch	PI0811/P216-19A	PI0812/P216-19B	RDL	QC Batch
Inorganics								
Moisture	%	6.8	4.2	4634817	27	6.5	1.0	4634930

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		CXY339		CXY340		CXY341	CXY342		
Sampling Date		2016/08/15		2016/08/15		2016/08/16	2016/08/16		
COC Number		n		n		n	n		
	UNITS	PI0813/P216-20A	QC Batch	PI0814/P216-20B	QC Batch	PI0815/P216-21A	PI0816/P216-21B	RDL	QC Batch
Inorganics									
Moisture	%	17	4634962	8.5	4634892	4.2	4.0	1.0	4634817

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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RESULTS OF ANALYSES OF SOIL

Maxxam ID		CXY343	CXY344	CXY345		CXY346		
Sampling Date		2016/08/16	2016/08/16	2016/08/16		2016/08/16		
COC Number		n	n	n		n		
	UNITS	PI0817/P216-22A	PI0818/P216-22B	PI0819/P216-23A	QC Batch	PI0820/P216-23B	RDL	QC Batch
Inorganics								
Moisture	%	1.3	1.7	5.1	4634817	1.9	1.0	4634930

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		CXY347		CXY348	CXY349	CXY350		
Sampling Date		2016/08/16		2016/08/16	2016/08/16	2016/08/16		
COC Number		n		n	n	n		
	UNITS	PI0821/P216-24A	QC Batch	PI0822/P216-24B	PI0823/P216-25A	PI0824/P216-25B	RDL	QC Batch
Inorganics								
Moisture	%	1.7	4634930	2.4	2.0	1.4	1.0	4634892

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		CXY351		CXY352	CXY353	CXY354		
Sampling Date		2016/08/16		2016/08/16	2016/08/15	2016/08/15		
COC Number		n		n	n	n		
	UNITS	PI0831/P216-26A	QC Batch	PI0832/P216-26B	PI0833/P216-27A	PI0834/P216-27B	RDL	QC Batch
Inorganics								
Moisture	%	1.9	4634892	1.8	79	22	1.0	4634930

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		CXY355	CXY356		CXY357		CXY358		
Sampling Date		2016/08/15	2016/08/15		2016/08/15		2016/08/15		
COC Number		n	n		n		n		
	UNITS	PI0835/P216-28A	PI0836/P216-28B	QC Batch	PI0837/P216-29A	QC Batch	PI0838/P216-29B	RDL	QC Batch
Inorganics									
Moisture	%	75	79	4634930	73	4635112	84	1.0	4634892

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		CXY359	CXY360		CXY361	CXY362		
Sampling Date		2016/08/15	2016/08/15		2016/08/16	2016/08/16		
COC Number		n	n		n	n		
	UNITS	PI0839/P216-30A	PI0840/P216-30B	QC Batch	PI0841/P216-BD1	PI0842/P216-BD2	RDL	QC Batch
Inorganics								
Moisture	%	7.4	6.3	4634892	57	11	1.0	4634930

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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RESULTS OF ANALYSES OF SOIL

Maxxam ID		CXY363	CXY364		CXY365	CXY366		
Sampling Date		2016/08/16	2016/08/16		2016/08/16	2016/08/15		
COC Number		n	n		n	n		
	UNITS	PI0843/P216-BD3	PI0844/P216-BD4	QC Batch	PI0845/P216-B45	PI0846/P216-BD6	RDL	QC Batch
Inorganics								
Moisture	%	63	54	4634930	65	11	1.0	4634892

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		CXY367	CXY368	CXY369		CXY370		
Sampling Date		2016/08/15	2016/08/15					
COC Number		n	n	n		n		
	UNITS	PI0847/P216-BD7	PI0848/P216-BD8	PI0849/P216-1WA	QC Batch	PI0850/P216-1WB	RDL	QC Batch
Inorganics								
Moisture	%	7.0	75	59	4634892	11	1.0	4634930

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		CXY371	CXY372		CXY373	CXY374		
Sampling Date								
COC Number		n	n		n	n		
	UNITS	PI0851/P216-2WA	PI0852/P216-2WB	QC Batch	PI0853/P216-3WA	PI0854/P216-3WB	RDL	QC Batch
Inorganics								
Moisture	%	26	9.7	4634930	18	9.9	1.0	4634892

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		CXY375		CXY376	CXY377		
Sampling Date							
COC Number		n		n	n		
	UNITS	PI0855/P216-4WA	QC Batch	PI0856/P216-4WB	PI0857/P216-5WA	RDL	QC Batch
Inorganics							
Moisture	%	16	4634892	10	11	1.0	4635112

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		CXY378	CXY379	CXY380	CXY381		
Sampling Date							
COC Number		n	n	n	n		
	UNITS	PI0858/P216-5WB	PI0859/P216-6WA	PI0860/P216-6WB	PI0861/P216-7WA	RDL	QC Batch
Inorganics							
Moisture	%	7.3	13	9.8	12	1.0	4634930

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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RESULTS OF ANALYSES OF SOIL

Maxxam ID		CXY382		CXY383		CXY384		
Sampling Date								
COC Number		n		n		n		
	UNITS	PI0862/P216-7WB	QC Batch	PI0863/P216-8WA	QC Batch	PI0864/P216-8WB	RDL	QC Batch
Inorganics								
Moisture	%	15	4634892	1.5	4635112	3.2	1.0	4634892

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		CXY301		CXY302		CXY303	CXY304		
Sampling Date		2016/08/16		2016/08/16		2016/08/16	2016/08/16		
COC Number		n		n		n	n		
	UNITS	PI0756/P216-1A	RDL	PI0757/P216-1B	RDL	PI0758/P216-2A	PI0759/P216-2B	RDL	QC Batch
PCBs									
Aroclor 1016	ug/g	<0.030	0.030	<0.020	0.020	<0.010	<0.010	0.010	4639580
Aroclor 1221	ug/g	<0.030	0.030	<0.020	0.020	<0.010	<0.010	0.010	4639580
Aroclor 1232	ug/g	<0.030	0.030	<0.020	0.020	<0.010	<0.010	0.010	4639580
Aroclor 1242	ug/g	<0.030	0.030	<0.020	0.020	<0.010	<0.010	0.010	4639580
Aroclor 1248	ug/g	<0.030	0.030	<0.020	0.020	<0.010	<0.010	0.010	4639580
Aroclor 1254	ug/g	<0.030	0.030	<0.020	0.020	<0.010	<0.010	0.010	4639580
Aroclor 1260	ug/g	<0.030	0.030	<0.020	0.020	<0.010	<0.010	0.010	4639580
Aroclor 1262	ug/g	<0.030	0.030	<0.020	0.020	<0.010	<0.010	0.010	4639580
Aroclor 1268	ug/g	<0.030	0.030	<0.020	0.020	<0.010	<0.010	0.010	4639580
Total PCB	ug/g	<0.030	0.030	<0.020	0.020	<0.010	<0.010	0.010	4639580
Surrogate Recovery (%)									
Decachlorobiphenyl	%	85		102		92	88		4639580

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		CXY305	CXY306	CXY307		CXY308		
Sampling Date		2016/08/16	2016/08/16	2016/08/16		2016/08/16		
COC Number		n	n	n		n		
	UNITS	PI0760/P216-3A	PI0761/P216-3B	PI0762/P216-4A	QC Batch	PI0763/P216-4B	RDL	QC Batch
PCBs								
Aroclor 1016	ug/g	<0.010	<0.010	<0.010	4639580	<0.010	0.010	4642156
Aroclor 1221	ug/g	<0.010	<0.010	<0.010	4639580	<0.010	0.010	4642156
Aroclor 1232	ug/g	<0.010	<0.010	<0.010	4639580	<0.010	0.010	4642156
Aroclor 1242	ug/g	<0.010	<0.010	<0.010	4639580	<0.010	0.010	4642156
Aroclor 1248	ug/g	<0.010	<0.010	<0.010	4639580	<0.010	0.010	4642156
Aroclor 1254	ug/g	<0.010	<0.010	0.40	4639580	0.22	0.010	4642156
Aroclor 1260	ug/g	<0.010	<0.010	0.026	4639580	<0.010	0.010	4642156
Aroclor 1262	ug/g	<0.010	<0.010	<0.010	4639580	<0.010	0.010	4642156
Aroclor 1268	ug/g	<0.010	<0.010	<0.010	4639580	<0.010	0.010	4642156
Total PCB	ug/g	<0.010	<0.010	0.42	4639580	0.22	0.010	4642156
Surrogate Recovery (%)								
Decachlorobiphenyl	%	92	92	95	4639580	89		4642156

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		CXY309			CXY310			CXY311		
Sampling Date		2016/08/16			2016/08/16			2016/08/16		
COC Number		n			n			n		
	UNITS	PI0764/P216-5A	RDL	QC Batch	PI0765/P216-5B	RDL	QC Batch	PI0775/P216-6A	RDL	QC Batch
PCBs										
Aroclor 1016	ug/g	<0.040	0.040	4639580	<0.010	0.010	4637980	<0.030	0.030	4639580
Aroclor 1221	ug/g	<0.040	0.040	4639580	<0.010	0.010	4637980	<0.030	0.030	4639580
Aroclor 1232	ug/g	<0.040	0.040	4639580	<0.010	0.010	4637980	<0.030	0.030	4639580
Aroclor 1242	ug/g	<0.040	0.040	4639580	<0.010	0.010	4637980	<0.030	0.030	4639580
Aroclor 1248	ug/g	<0.040	0.040	4639580	<0.010	0.010	4637980	<0.030	0.030	4639580
Aroclor 1254	ug/g	<0.040	0.040	4639580	<0.010	0.010	4637980	<0.030	0.030	4639580
Aroclor 1260	ug/g	<0.040	0.040	4639580	<0.010	0.010	4637980	<0.030	0.030	4639580
Aroclor 1262	ug/g	<0.040	0.040	4639580	<0.010	0.010	4637980	<0.030	0.030	4639580
Aroclor 1268	ug/g	<0.040	0.040	4639580	<0.010	0.010	4637980	<0.030	0.030	4639580
Total PCB	ug/g	<0.040	0.040	4639580	<0.010	0.010	4637980	<0.030	0.030	4639580
Surrogate Recovery (%)										
Decachlorobiphenyl	%	99		4639580	85		4637980	93		4639580

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		CXY312	CXY313	CXY314	CXY315	CXY316		
Sampling Date		2016/08/16	2016/08/16	2016/08/16	2016/08/16	2016/08/16		
COC Number		n	n	n	n	n		
	UNITS	PI0776/P216-6B	PI0777/P216-7A	PI0778/P216-7B	PI0779/P216-8A	PI0780/P216-8B	RDL	QC Batch
PCBs								
Aroclor 1016	ug/g	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4639580
Aroclor 1221	ug/g	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4639580
Aroclor 1232	ug/g	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4639580
Aroclor 1242	ug/g	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4639580
Aroclor 1248	ug/g	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4639580
Aroclor 1254	ug/g	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4639580
Aroclor 1260	ug/g	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4639580
Aroclor 1262	ug/g	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4639580
Aroclor 1268	ug/g	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4639580
Total PCB	ug/g	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4639580
Surrogate Recovery (%)								
Decachlorobiphenyl	%	106	92	114	100	112		4639580

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		CXY317		CXY318		CXY319		
Sampling Date		2016/08/16		2016/08/16		2016/08/16		
COC Number		n		n		n		
	UNITS	PI0781/P216-9A	QC Batch	PI0782/P216-9B	RDL	PI0783/P216-10A	RDL	QC Batch
PCBs								
Aroclor 1016	ug/g	<0.010	4639580	<0.010	0.010	<0.020	0.020	4637980
Aroclor 1221	ug/g	<0.010	4639580	<0.010	0.010	<0.020	0.020	4637980
Aroclor 1232	ug/g	<0.010	4639580	<0.010	0.010	<0.020	0.020	4637980
Aroclor 1242	ug/g	<0.010	4639580	<0.010	0.010	<0.020	0.020	4637980
Aroclor 1248	ug/g	<0.010	4639580	<0.010	0.010	<0.020	0.020	4637980
Aroclor 1254	ug/g	<0.010	4639580	<0.010	0.010	<0.020	0.020	4637980
Aroclor 1260	ug/g	<0.010	4639580	<0.010	0.010	<0.020	0.020	4637980
Aroclor 1262	ug/g	<0.010	4639580	<0.010	0.010	<0.020	0.020	4637980
Aroclor 1268	ug/g	<0.010	4639580	<0.010	0.010	<0.020	0.020	4637980
Total PCB	ug/g	<0.010	4639580	<0.010	0.010	<0.020	0.020	4637980
Surrogate Recovery (%)								
Decachlorobiphenyl	%	87	4639580	69		77		4637980

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		CXY320		CXY321			CXY322		
Sampling Date		2016/08/16		2016/08/16			2016/08/16		
COC Number		n		n			n		
	UNITS	PI0784/P216-10B	RDL	PI0785/P216-11A	RDL	QC Batch	PI0786/P216-11B	RDL	QC Batch
PCBs									
Aroclor 1016	ug/g	<0.010	0.010	<0.020	0.020	4637980	<0.010	0.010	4639580
Aroclor 1221	ug/g	<0.010	0.010	<0.020	0.020	4637980	<0.010	0.010	4639580
Aroclor 1232	ug/g	<0.010	0.010	<0.020	0.020	4637980	<0.010	0.010	4639580
Aroclor 1242	ug/g	<0.010	0.010	<0.020	0.020	4637980	<0.010	0.010	4639580
Aroclor 1248	ug/g	<0.010	0.010	<0.020	0.020	4637980	<0.010	0.010	4639580
Aroclor 1254	ug/g	<0.010	0.010	<0.020	0.020	4637980	<0.010	0.010	4639580
Aroclor 1260	ug/g	<0.010	0.010	<0.020	0.020	4637980	<0.010	0.010	4639580
Aroclor 1262	ug/g	<0.010	0.010	<0.020	0.020	4637980	<0.010	0.010	4639580
Aroclor 1268	ug/g	<0.010	0.010	<0.020	0.020	4637980	<0.010	0.010	4639580
Total PCB	ug/g	<0.010	0.010	<0.020	0.020	4637980	<0.010	0.010	4639580
Surrogate Recovery (%)									
Decachlorobiphenyl	%	71		76		4637980	102		4639580

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		CXY323	CXY324			CXY325	CXY326		
Sampling Date		2016/08/16	2016/08/16			2016/08/15	2016/08/15		
COC Number		n	n			n	n		
	UNITS	PI0787/P216-12A	PI0788/P216-12B	RDL	QC Batch	PI0789/P216-13A	PI0790/P216-13B	RDL	QC Batch
PCBs									
Aroclor 1016	ug/g	<0.030	<0.030	0.030	4639580	<0.010	<0.010	0.010	4637980
Aroclor 1221	ug/g	<0.030	<0.030	0.030	4639580	<0.010	<0.010	0.010	4637980
Aroclor 1232	ug/g	<0.030	<0.030	0.030	4639580	<0.010	<0.010	0.010	4637980
Aroclor 1242	ug/g	<0.030	<0.030	0.030	4639580	<0.010	<0.010	0.010	4637980
Aroclor 1248	ug/g	<0.030	<0.030	0.030	4639580	<0.010	<0.010	0.010	4637980
Aroclor 1254	ug/g	<0.030	<0.030	0.030	4639580	<0.010	<0.010	0.010	4637980
Aroclor 1260	ug/g	<0.030	<0.030	0.030	4639580	<0.010	<0.010	0.010	4637980
Aroclor 1262	ug/g	<0.030	<0.030	0.030	4639580	<0.010	<0.010	0.010	4637980
Aroclor 1268	ug/g	<0.030	<0.030	0.030	4639580	<0.010	<0.010	0.010	4637980
Total PCB	ug/g	<0.030	<0.030	0.030	4639580	<0.010	<0.010	0.010	4637980
Surrogate Recovery (%)									
Decachlorobiphenyl	%	113	111		4639580	81	83		4637980

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		CXY327	CXY328	CXY329	CXY330		
Sampling Date		2016/08/15	2016/08/15	2016/08/15	2016/08/15		
COC Number		n	n	n	n		
	UNITS	PI0791/P216-14A	PI0792/P216-14B	PI0793/P216-15A	PI0794/P216-15B	RDL	QC Batch
PCBs							
Aroclor 1016	ug/g	<0.010	<0.010	<0.010	<0.010	0.010	4637980
Aroclor 1221	ug/g	<0.010	<0.010	<0.010	<0.010	0.010	4637980
Aroclor 1232	ug/g	<0.010	<0.010	<0.010	<0.010	0.010	4637980
Aroclor 1242	ug/g	<0.010	<0.010	<0.010	<0.010	0.010	4637980
Aroclor 1248	ug/g	<0.010	<0.010	<0.010	<0.010	0.010	4637980
Aroclor 1254	ug/g	<0.010	<0.010	<0.010	<0.010	0.010	4637980
Aroclor 1260	ug/g	<0.010	<0.010	<0.010	<0.010	0.010	4637980
Aroclor 1262	ug/g	<0.010	<0.010	<0.010	<0.010	0.010	4637980
Aroclor 1268	ug/g	<0.010	<0.010	<0.010	<0.010	0.010	4637980
Total PCB	ug/g	<0.010	<0.010	<0.010	<0.010	0.010	4637980
Surrogate Recovery (%)							
Decachlorobiphenyl	%	82	79	88	83		4637980

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Report Date: 2016/09/01

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POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		CXY331			CXY332			CXY333		
Sampling Date		2016/08/15			2016/08/15			2016/08/15		
COC Number		n			n			n		
	UNITS	PI0805/P216-16A	RDL	QC Batch	PI0806/P216-16B	RDL	QC Batch	PI0807/P216-17A	RDL	QC Batch
PCBs										
Aroclor 1016	ug/g	<0.020	0.020	4639580	<0.010	0.010	4642156	<0.020	0.020	4637980
Aroclor 1221	ug/g	<0.020	0.020	4639580	<0.010	0.010	4642156	<0.020	0.020	4637980
Aroclor 1232	ug/g	<0.020	0.020	4639580	<0.010	0.010	4642156	<0.020	0.020	4637980
Aroclor 1242	ug/g	<0.020	0.020	4639580	<0.010	0.010	4642156	<0.020	0.020	4637980
Aroclor 1248	ug/g	<0.020	0.020	4639580	0.011	0.010	4642156	<0.020	0.020	4637980
Aroclor 1254	ug/g	<0.020	0.020	4639580	<0.010	0.010	4642156	<0.020	0.020	4637980
Aroclor 1260	ug/g	<0.020	0.020	4639580	<0.010	0.010	4642156	<0.020	0.020	4637980
Aroclor 1262	ug/g	<0.020	0.020	4639580	<0.010	0.010	4642156	<0.020	0.020	4637980
Aroclor 1268	ug/g	<0.020	0.020	4639580	<0.010	0.010	4642156	<0.020	0.020	4637980
Total PCB	ug/g	<0.020	0.020	4639580	0.011	0.010	4642156	<0.020	0.020	4637980
Surrogate Recovery (%)										
Decachlorobiphenyl	%	89		4639580	95		4642156	70		4637980

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		CXY334	CXY335	CXY336		CXY337		
Sampling Date		2016/08/15	2016/08/15	2016/08/15		2016/08/15		
COC Number		n	n	n		n		
	UNITS	PI0808/P216-17B	PI0809/P216-18A	PI0810/P216-18B	QC Batch	PI0811/P216-19A	RDL	QC Batch
PCBs								
Aroclor 1016	ug/g	<0.010	<0.010	<0.010	4637980	<0.010	0.010	4642168
Aroclor 1221	ug/g	<0.010	<0.010	<0.010	4637980	<0.010	0.010	4642168
Aroclor 1232	ug/g	<0.010	<0.010	<0.010	4637980	<0.010	0.010	4642168
Aroclor 1242	ug/g	<0.010	<0.010	<0.010	4637980	<0.010	0.010	4642168
Aroclor 1248	ug/g	<0.010	<0.010	<0.010	4637980	<0.010	0.010	4642168
Aroclor 1254	ug/g	<0.010	<0.010	<0.010	4637980	<0.010	0.010	4642168
Aroclor 1260	ug/g	<0.010	<0.010	<0.010	4637980	<0.010	0.010	4642168
Aroclor 1262	ug/g	<0.010	<0.010	<0.010	4637980	<0.010	0.010	4642168
Aroclor 1268	ug/g	<0.010	<0.010	<0.010	4637980	<0.010	0.010	4642168
Total PCB	ug/g	<0.010	<0.010	<0.010	4637980	<0.010	0.010	4642168
Surrogate Recovery (%)								
Decachlorobiphenyl	%	81	84	82	4637980	91		4642168

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		CXY338		CXY339		CXY340		
Sampling Date		2016/08/15		2016/08/15		2016/08/15		
COC Number		n		n		n		
	UNITS	PI0812/P216-19B	QC Batch	PI0813/P216-20A	QC Batch	PI0814/P216-20B	RDL	QC Batch
PCBs								
Aroclor 1016	ug/g	<0.010	4642168	<0.010	4639580	<0.010	0.010	4642156
Aroclor 1221	ug/g	<0.010	4642168	<0.010	4639580	<0.010	0.010	4642156
Aroclor 1232	ug/g	<0.010	4642168	<0.010	4639580	<0.010	0.010	4642156
Aroclor 1242	ug/g	<0.010	4642168	<0.010	4639580	<0.010	0.010	4642156
Aroclor 1248	ug/g	<0.010	4642168	<0.010	4639580	<0.010	0.010	4642156
Aroclor 1254	ug/g	<0.010	4642168	<0.010	4639580	<0.010	0.010	4642156
Aroclor 1260	ug/g	<0.010	4642168	<0.010	4639580	<0.010	0.010	4642156
Aroclor 1262	ug/g	<0.010	4642168	<0.010	4639580	<0.010	0.010	4642156
Aroclor 1268	ug/g	<0.010	4642168	<0.010	4639580	<0.010	0.010	4642156
Total PCB	ug/g	<0.010	4642168	<0.010	4639580	<0.010	0.010	4642156
Surrogate Recovery (%)								
Decachlorobiphenyl	%	81	4642168	96	4639580	91		4642156

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		CXY341	CXY342	CXY343	CXY344	CXY345		
Sampling Date		2016/08/16	2016/08/16	2016/08/16	2016/08/16	2016/08/16		
COC Number		n	n	n	n	n		
	UNITS	PI0815/P216-21A	PI0816/P216-21B	PI0817/P216-22A	PI0818/P216-22B	PI0819/P216-23A	RDL	QC Batch
PCBs								
Aroclor 1016	ug/g	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4637980
Aroclor 1221	ug/g	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4637980
Aroclor 1232	ug/g	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4637980
Aroclor 1242	ug/g	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4637980
Aroclor 1248	ug/g	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4637980
Aroclor 1254	ug/g	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4637980
Aroclor 1260	ug/g	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4637980
Aroclor 1262	ug/g	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4637980
Aroclor 1268	ug/g	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4637980
Total PCB	ug/g	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4637980
Surrogate Recovery (%)								
Decachlorobiphenyl	%	89	82	81	84	79		4637980

RDL = Reportable Detection Limit
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POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		CXY346	CXY347		CXY348	CXY349		
Sampling Date		2016/08/16	2016/08/16		2016/08/16	2016/08/16		
COC Number		n	n		n	n		
	UNITS	PI0820/P216-23B	PI0821/P216-24A	QC Batch	PI0822/P216-24B	PI0823/P216-25A	RDL	QC Batch
PCBs								
Aroclor 1016	ug/g	<0.010	<0.010	4642168	<0.010	<0.010	0.010	4642156
Aroclor 1221	ug/g	<0.010	<0.010	4642168	<0.010	<0.010	0.010	4642156
Aroclor 1232	ug/g	<0.010	<0.010	4642168	<0.010	<0.010	0.010	4642156
Aroclor 1242	ug/g	<0.010	<0.010	4642168	<0.010	<0.010	0.010	4642156
Aroclor 1248	ug/g	<0.010	<0.010	4642168	<0.010	<0.010	0.010	4642156
Aroclor 1254	ug/g	<0.010	<0.010	4642168	<0.010	<0.010	0.010	4642156
Aroclor 1260	ug/g	<0.010	<0.010	4642168	<0.010	<0.010	0.010	4642156
Aroclor 1262	ug/g	<0.010	<0.010	4642168	<0.010	<0.010	0.010	4642156
Aroclor 1268	ug/g	<0.010	<0.010	4642168	<0.010	<0.010	0.010	4642156
Total PCB	ug/g	<0.010	<0.010	4642168	<0.010	<0.010	0.010	4642156
Surrogate Recovery (%)								
Decachlorobiphenyl	%	87	80	4642168	88	92		4642156

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		CXY350	CXY351		CXY352		CXY353		
Sampling Date		2016/08/16	2016/08/16		2016/08/16		2016/08/15		
COC Number		n	n		n		n		
	UNITS	PI0824/P216-25B	PI0831/P216-26A	QC Batch	PI0832/P216-26B	RDL	PI0833/P216-27A	RDL	QC Batch
PCBs									
Aroclor 1016	ug/g	<0.010	<0.010	4642156	<0.010	0.010	<0.050	0.050	4642168
Aroclor 1221	ug/g	<0.010	<0.010	4642156	<0.010	0.010	<0.050	0.050	4642168
Aroclor 1232	ug/g	<0.010	<0.010	4642156	<0.010	0.010	<0.050	0.050	4642168
Aroclor 1242	ug/g	<0.010	<0.010	4642156	<0.010	0.010	<0.050	0.050	4642168
Aroclor 1248	ug/g	<0.010	<0.010	4642156	<0.010	0.010	<0.050	0.050	4642168
Aroclor 1254	ug/g	<0.010	<0.010	4642156	<0.010	0.010	<0.050	0.050	4642168
Aroclor 1260	ug/g	<0.010	<0.010	4642156	<0.010	0.010	<0.050	0.050	4642168
Aroclor 1262	ug/g	<0.010	<0.010	4642156	<0.010	0.010	<0.050	0.050	4642168
Aroclor 1268	ug/g	<0.010	<0.010	4642156	<0.010	0.010	<0.050	0.050	4642168
Total PCB	ug/g	<0.010	<0.010	4642156	<0.010	0.010	<0.050	0.050	4642168
Surrogate Recovery (%)									
Decachlorobiphenyl	%	96	96	4642156	91		109		4642168

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		CXY354		CXY355		CXY356		
Sampling Date		2016/08/15		2016/08/15		2016/08/15		
COC Number		n		n		n		
	UNITS	PI0834/P216-27B	RDL	PI0835/P216-28A	RDL	PI0836/P216-28B	RDL	QC Batch
PCBs								
Aroclor 1016	ug/g	<0.010	0.010	<0.040	0.040	<0.050	0.050	4642168
Aroclor 1221	ug/g	<0.010	0.010	<0.040	0.040	<0.050	0.050	4642168
Aroclor 1232	ug/g	<0.010	0.010	<0.040	0.040	<0.050	0.050	4642168
Aroclor 1242	ug/g	<0.010	0.010	<0.040	0.040	<0.050	0.050	4642168
Aroclor 1248	ug/g	<0.010	0.010	<0.040	0.040	<0.050	0.050	4642168
Aroclor 1254	ug/g	<0.010	0.010	<0.040	0.040	<0.050	0.050	4642168
Aroclor 1260	ug/g	<0.010	0.010	<0.040	0.040	<0.050	0.050	4642168
Aroclor 1262	ug/g	<0.010	0.010	<0.040	0.040	<0.050	0.050	4642168
Aroclor 1268	ug/g	<0.010	0.010	<0.040	0.040	<0.050	0.050	4642168
Total PCB	ug/g	<0.010	0.010	<0.040	0.040	<0.050	0.050	4642168
Surrogate Recovery (%)								
Decachlorobiphenyl	%	89		97		93		4642168

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		CXY357		CXY358		CXY359	CXY360		
Sampling Date		2016/08/15		2016/08/15		2016/08/15	2016/08/15		
COC Number		n		n		n	n		
	UNITS	PI0837/P216-29A	RDL	PI0838/P216-29B	RDL	PI0839/P216-30A	PI0840/P216-30B	RDL	QC Batch
PCBs									
Aroclor 1016	ug/g	<0.040	0.040	<0.070	0.070	<0.010	<0.010	0.010	4642156
Aroclor 1221	ug/g	<0.040	0.040	<0.070	0.070	<0.010	<0.010	0.010	4642156
Aroclor 1232	ug/g	<0.040	0.040	<0.070	0.070	<0.010	<0.010	0.010	4642156
Aroclor 1242	ug/g	<0.040	0.040	<0.070	0.070	<0.010	<0.010	0.010	4642156
Aroclor 1248	ug/g	<0.040	0.040	<0.070	0.070	<0.010	<0.010	0.010	4642156
Aroclor 1254	ug/g	<0.040	0.040	<0.070	0.070	<0.010	<0.010	0.010	4642156
Aroclor 1260	ug/g	<0.040	0.040	<0.070	0.070	<0.010	<0.010	0.010	4642156
Aroclor 1262	ug/g	<0.040	0.040	<0.070	0.070	<0.010	<0.010	0.010	4642156
Aroclor 1268	ug/g	<0.040	0.040	<0.070	0.070	<0.010	<0.010	0.010	4642156
Total PCB	ug/g	<0.040	0.040	<0.070	0.070	<0.010	<0.010	0.010	4642156
Surrogate Recovery (%)									
Decachlorobiphenyl	%	95		97		88	99		4642156

RDL = Reportable Detection Limit
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POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		CXY361		CXY362		CXY363		CXY364		
Sampling Date		2016/08/16		2016/08/16		2016/08/16		2016/08/16		
COC Number		n		n		n		n		
	UNITS	PI0841/P216-BD1	RDL	PI0842/P216-BD2	RDL	PI0843/P216-BD3	RDL	PI0844/P216-BD4	RDL	QC Batch
PCBs										
Aroclor 1016	ug/g	<0.020	0.020	<0.010	0.010	<0.030	0.030	<0.020	0.020	4642168
Aroclor 1221	ug/g	<0.020	0.020	<0.010	0.010	<0.030	0.030	<0.020	0.020	4642168
Aroclor 1232	ug/g	<0.020	0.020	<0.010	0.010	<0.030	0.030	<0.020	0.020	4642168
Aroclor 1242	ug/g	<0.020	0.020	<0.010	0.010	<0.030	0.030	<0.020	0.020	4642168
Aroclor 1248	ug/g	<0.020	0.020	<0.010	0.010	<0.030	0.030	<0.020	0.020	4642168
Aroclor 1254	ug/g	<0.020	0.020	<0.010	0.010	<0.030	0.030	<0.020	0.020	4642168
Aroclor 1260	ug/g	<0.020	0.020	<0.010	0.010	<0.030	0.030	<0.020	0.020	4642168
Aroclor 1262	ug/g	<0.020	0.020	<0.010	0.010	<0.030	0.030	<0.020	0.020	4642168
Aroclor 1268	ug/g	<0.020	0.020	<0.010	0.010	<0.030	0.030	<0.020	0.020	4642168
Total PCB	ug/g	<0.020	0.020	<0.010	0.010	<0.030	0.030	<0.020	0.020	4642168
Surrogate Recovery (%)										
Decachlorobiphenyl	%	91		89		96		95		4642168

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		CXY365		CXY366		CXY367		
Sampling Date		2016/08/16		2016/08/15		2016/08/15		
COC Number		n		n		n		
	UNITS	PI0845/P216-B45	RDL	PI0846/P216-BD6	QC Batch	PI0847/P216-BD7	RDL	QC Batch
PCBs								
Aroclor 1016	ug/g	<0.030	0.030	<0.010	4642156	<0.010	0.010	4635743
Aroclor 1221	ug/g	<0.030	0.030	<0.010	4642156	<0.010	0.010	4635743
Aroclor 1232	ug/g	<0.030	0.030	<0.010	4642156	<0.010	0.010	4635743
Aroclor 1242	ug/g	<0.030	0.030	<0.010	4642156	<0.010	0.010	4635743
Aroclor 1248	ug/g	<0.030	0.030	<0.010	4642156	<0.010	0.010	4635743
Aroclor 1254	ug/g	<0.030	0.030	<0.010	4642156	<0.010	0.010	4635743
Aroclor 1260	ug/g	<0.030	0.030	<0.010	4642156	<0.010	0.010	4635743
Aroclor 1262	ug/g	<0.030	0.030	<0.010	4642156	<0.010	0.010	4635743
Aroclor 1268	ug/g	<0.030	0.030	<0.010	4642156	<0.010	0.010	4635743
Total PCB	ug/g	<0.030	0.030	<0.010	4642156	<0.010	0.010	4635743
Surrogate Recovery (%)								
Decachlorobiphenyl	%	97		90	4642156	80		4635743

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B6H8755
Report Date: 2016/09/01

Maxxam Analytics
Client Project #: B671091
Your P.O. #: N/A

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		CXY368			CXY369			CXY370		
Sampling Date		2016/08/15								
COC Number		n			n			n		
	UNITS	PI0848/P216-BD8	RDL	QC Batch	PI0849/P216-1WA	RDL	QC Batch	PI0850/P216-1WB	RDL	QC Batch
PCBs										
Aroclor 1016	ug/g	<0.040	0.040	4642156	<0.030	0.030	4635743	<0.010	0.010	4642168
Aroclor 1221	ug/g	<0.040	0.040	4642156	<0.030	0.030	4635743	<0.010	0.010	4642168
Aroclor 1232	ug/g	<0.040	0.040	4642156	<0.030	0.030	4635743	<0.010	0.010	4642168
Aroclor 1242	ug/g	<0.040	0.040	4642156	<0.030	0.030	4635743	<0.010	0.010	4642168
Aroclor 1248	ug/g	<0.040	0.040	4642156	<0.030	0.030	4635743	<0.010	0.010	4642168
Aroclor 1254	ug/g	<0.040	0.040	4642156	<0.030	0.030	4635743	<0.010	0.010	4642168
Aroclor 1260	ug/g	<0.040	0.040	4642156	<0.030	0.030	4635743	<0.010	0.010	4642168
Aroclor 1262	ug/g	<0.040	0.040	4642156	<0.030	0.030	4635743	<0.010	0.010	4642168
Aroclor 1268	ug/g	<0.040	0.040	4642156	<0.030	0.030	4635743	<0.010	0.010	4642168
Total PCB	ug/g	<0.040	0.040	4642156	<0.030	0.030	4635743	<0.010	0.010	4642168
Surrogate Recovery (%)										
Decachlorobiphenyl	%	106		4642156	85		4635743	88		4642168

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		CXY371	CXY372		CXY373	CXY374		
Sampling Date								
COC Number		n	n		n	n		
	UNITS	PI0851/P216-2WA	PI0852/P216-2WB	QC Batch	PI0853/P216-3WA	PI0854/P216-3WB	RDL	QC Batch
PCBs								
Aroclor 1016	ug/g	<0.010	<0.010	4642168	<0.010	<0.010	0.010	4642156
Aroclor 1221	ug/g	<0.010	<0.010	4642168	<0.010	<0.010	0.010	4642156
Aroclor 1232	ug/g	<0.010	<0.010	4642168	<0.010	<0.010	0.010	4642156
Aroclor 1242	ug/g	<0.010	<0.010	4642168	<0.010	<0.010	0.010	4642156
Aroclor 1248	ug/g	<0.010	<0.010	4642168	<0.010	<0.010	0.010	4642156
Aroclor 1254	ug/g	<0.010	<0.010	4642168	<0.010	<0.010	0.010	4642156
Aroclor 1260	ug/g	<0.010	<0.010	4642168	<0.010	<0.010	0.010	4642156
Aroclor 1262	ug/g	<0.010	<0.010	4642168	<0.010	<0.010	0.010	4642156
Aroclor 1268	ug/g	<0.010	<0.010	4642168	<0.010	<0.010	0.010	4642156
Total PCB	ug/g	<0.010	<0.010	4642168	<0.010	<0.010	0.010	4642156
Surrogate Recovery (%)								
Decachlorobiphenyl	%	88	91	4642168	90	99		4642156

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		CXY375		CXY376		CXY377		
Sampling Date								
COC Number		n		n		n		
	UNITS	PI0855/P216-4WA	QC Batch	PI0856/P216-4WB	QC Batch	PI0857/P216-5WA	RDL	QC Batch
PCBs								
Aroclor 1016	ug/g	<0.010	4642156	<0.010	4635743	<0.010	0.010	4642156
Aroclor 1221	ug/g	<0.010	4642156	<0.010	4635743	<0.010	0.010	4642156
Aroclor 1232	ug/g	<0.010	4642156	<0.010	4635743	<0.010	0.010	4642156
Aroclor 1242	ug/g	<0.010	4642156	<0.010	4635743	<0.010	0.010	4642156
Aroclor 1248	ug/g	<0.010	4642156	<0.010	4635743	<0.010	0.010	4642156
Aroclor 1254	ug/g	<0.010	4642156	<0.010	4635743	<0.010	0.010	4642156
Aroclor 1260	ug/g	<0.010	4642156	<0.010	4635743	<0.010	0.010	4642156
Aroclor 1262	ug/g	<0.010	4642156	<0.010	4635743	<0.010	0.010	4642156
Aroclor 1268	ug/g	<0.010	4642156	<0.010	4635743	<0.010	0.010	4642156
Total PCB	ug/g	<0.010	4642156	<0.010	4635743	<0.010	0.010	4642156
Surrogate Recovery (%)								
Decachlorobiphenyl	%	93	4642156	75	4635743	111		4642156

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		CXY378	CXY379	CXY380	CXY381		
Sampling Date							
COC Number		n	n	n	n		
	UNITS	PI0858/P216-5WB	PI0859/P216-6WA	PI0860/P216-6WB	PI0861/P216-7WA	RDL	QC Batch
PCBs							
Aroclor 1016	ug/g	<0.010	<0.010	<0.010	<0.010	0.010	4642168
Aroclor 1221	ug/g	<0.010	<0.010	<0.010	<0.010	0.010	4642168
Aroclor 1232	ug/g	<0.010	<0.010	<0.010	<0.010	0.010	4642168
Aroclor 1242	ug/g	<0.010	<0.010	<0.010	<0.010	0.010	4642168
Aroclor 1248	ug/g	<0.010	<0.010	<0.010	<0.010	0.010	4642168
Aroclor 1254	ug/g	<0.010	<0.010	<0.010	<0.010	0.010	4642168
Aroclor 1260	ug/g	<0.010	<0.010	<0.010	<0.010	0.010	4642168
Aroclor 1262	ug/g	<0.010	<0.010	<0.010	<0.010	0.010	4642168
Aroclor 1268	ug/g	<0.010	<0.010	<0.010	<0.010	0.010	4642168
Total PCB	ug/g	<0.010	<0.010	<0.010	<0.010	0.010	4642168
Surrogate Recovery (%)							
Decachlorobiphenyl	%	94	87	88	81		4642168

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B6H8755
Report Date: 2016/09/01

Maxxam Analytics
Client Project #: B671091
Your P.O. #: N/A

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		CXY382	CXY383		CXY384		
Sampling Date							
COC Number		n	n		n		
	UNITS	PI0862/P216-7WB	PI0863/P216-8WA	QC Batch	PI0864/P216-8WB	RDL	QC Batch
PCBs							
Aroclor 1016	ug/g	<0.010	<0.010	4642156	<0.010	0.010	4635743
Aroclor 1221	ug/g	<0.010	<0.010	4642156	<0.010	0.010	4635743
Aroclor 1232	ug/g	<0.010	<0.010	4642156	<0.010	0.010	4635743
Aroclor 1242	ug/g	<0.010	<0.010	4642156	<0.010	0.010	4635743
Aroclor 1248	ug/g	<0.010	<0.010	4642156	<0.010	0.010	4635743
Aroclor 1254	ug/g	<0.010	<0.010	4642156	<0.010	0.010	4635743
Aroclor 1260	ug/g	<0.010	<0.010	4642156	<0.010	0.010	4635743
Aroclor 1262	ug/g	<0.010	<0.010	4642156	<0.010	0.010	4635743
Aroclor 1268	ug/g	<0.010	<0.010	4642156	<0.010	0.010	4635743
Total PCB	ug/g	<0.010	<0.010	4642156	<0.010	0.010	4635743
Surrogate Recovery (%)							
Decachlorobiphenyl	%	115	96	4642156	85		4635743

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B6H8755
Report Date: 2016/09/01

Maxxam Analytics
Client Project #: B671091
Your P.O. #: N/A

GENERAL COMMENTS

PCB Analysis: Detection limits were adjusted for high moisture content for some samples.

Sample CXY357-01 : PCB Analysis: Detection limits were adjusted for high moisture content.

Sample CXY358-01 : PCB Analysis: Detection limits were adjusted for high moisture content.

Sample CXY365-01 : PCB Analysis: Detection limits were adjusted for high moisture content.

Sample CXY368-01 : PCB Analysis: Detection limits were adjusted for high moisture content.

Sample CXY369-01 : PCB Analysis: Detection limits were adjusted for high moisture content.

Results relate only to the items tested.

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Maxxam Job #: B6H8755
Report Date: 2016/09/01

QUALITY ASSURANCE REPORT

Maxxam Analytics
Client Project #: B671091
Your P.O. #: N/A

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4635743	Decachlorobiphenyl	2016/08/26	78	60 - 130	67	60 - 130	73	%		
4637980	Decachlorobiphenyl	2016/08/28	80	60 - 130	79	60 - 130	88	%		
4639580	Decachlorobiphenyl	2016/08/30	95	60 - 130	95	60 - 130	97	%		
4642156	Decachlorobiphenyl	2016/09/01	100	60 - 130	94	60 - 130	88	%		
4642168	Decachlorobiphenyl	2016/08/31	99	60 - 130	83	60 - 130	87	%		
4634817	Moisture	2016/08/25							0	20
4634892	Moisture	2016/08/25							0	20
4634930	Moisture	2016/08/25							2.6	20
4634962	Moisture	2016/08/25							0.93	20
4635112	Moisture	2016/08/26							1.2	20
4635743	Aroclor 1016	2016/08/26					<0.010	ug/g		
4635743	Aroclor 1221	2016/08/26					<0.010	ug/g		
4635743	Aroclor 1232	2016/08/26					<0.010	ug/g		
4635743	Aroclor 1242	2016/08/26					<0.010	ug/g	NC	50
4635743	Aroclor 1248	2016/08/26					<0.010	ug/g	NC	50
4635743	Aroclor 1254	2016/08/26					<0.010	ug/g	NC	50
4635743	Aroclor 1260	2016/08/26	80	60 - 130	73	60 - 130	<0.010	ug/g	NC	50
4635743	Aroclor 1262	2016/08/26					<0.010	ug/g		
4635743	Aroclor 1268	2016/08/26					<0.010	ug/g		
4635743	Total PCB	2016/08/26	80	60 - 130	73	60 - 130	<0.010	ug/g	23	50
4637980	Aroclor 1016	2016/08/28					<0.010	ug/g	NC	50
4637980	Aroclor 1221	2016/08/28					<0.010	ug/g	NC	50
4637980	Aroclor 1232	2016/08/28					<0.010	ug/g	NC	50
4637980	Aroclor 1242	2016/08/28					<0.010	ug/g	NC	50
4637980	Aroclor 1248	2016/08/28					<0.010	ug/g	NC	50
4637980	Aroclor 1254	2016/08/28					<0.010	ug/g	NC	50
4637980	Aroclor 1260	2016/08/28	82	60 - 130	80	60 - 130	<0.010	ug/g	NC	50
4637980	Aroclor 1262	2016/08/28					<0.010	ug/g	NC	50
4637980	Aroclor 1268	2016/08/28					<0.010	ug/g	NC	50
4637980	Total PCB	2016/08/28	82	60 - 130	80	60 - 130	<0.010	ug/g	NC	50
4639580	Aroclor 1016	2016/08/31					<0.010	ug/g	NC	50

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4639580	Aroclor 1221	2016/08/31					<0.010	ug/g	NC	50
4639580	Aroclor 1232	2016/08/31					<0.010	ug/g	NC	50
4639580	Aroclor 1242	2016/08/31					<0.010	ug/g	NC	50
4639580	Aroclor 1248	2016/08/31					<0.010	ug/g	NC	50
4639580	Aroclor 1254	2016/08/31					<0.010	ug/g	24	50
4639580	Aroclor 1260	2016/08/31	120	60 - 130	105	60 - 130	<0.010	ug/g	NC	50
4639580	Aroclor 1262	2016/08/31					<0.010	ug/g	NC	50
4639580	Aroclor 1268	2016/08/31					<0.010	ug/g	NC	50
4639580	Total PCB	2016/08/31	120	60 - 130	105	60 - 130	<0.010	ug/g	25	50
4642156	Aroclor 1016	2016/09/01					<0.010	ug/g	NC	50
4642156	Aroclor 1221	2016/09/01					<0.010	ug/g	NC	50
4642156	Aroclor 1232	2016/09/01					<0.010	ug/g	NC	50
4642156	Aroclor 1242	2016/09/01					<0.010	ug/g	NC	50
4642156	Aroclor 1248	2016/09/01					<0.010	ug/g	NC	50
4642156	Aroclor 1254	2016/09/01					<0.010	ug/g	NC	50
4642156	Aroclor 1260	2016/09/01	106	60 - 130	99	60 - 130	<0.010	ug/g	NC	50
4642156	Aroclor 1262	2016/09/01					<0.010	ug/g	NC	50
4642156	Aroclor 1268	2016/09/01					<0.010	ug/g	NC	50
4642156	Total PCB	2016/09/01	106	60 - 130	99	60 - 130	<0.010	ug/g	NC	50
4642168	Aroclor 1016	2016/08/31					<0.010	ug/g	NC	50
4642168	Aroclor 1221	2016/08/31					<0.010	ug/g	NC	50
4642168	Aroclor 1232	2016/08/31					<0.010	ug/g	NC	50
4642168	Aroclor 1242	2016/08/31					<0.010	ug/g	NC	50
4642168	Aroclor 1248	2016/08/31					<0.010	ug/g	NC	50
4642168	Aroclor 1254	2016/08/31					<0.010	ug/g	NC	50
4642168	Aroclor 1260	2016/08/31	95	60 - 130	85	60 - 130	<0.010	ug/g	NC	50
4642168	Aroclor 1262	2016/08/31					<0.010	ug/g	NC	50
4642168	Aroclor 1268	2016/08/31					<0.010	ug/g	NC	50

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4642168	Total PCB	2016/08/31	95	60 - 130	85	60 - 130	<0.010	ug/g	NC	50

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.

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 (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 (one or both samples < 5x RDL).

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Maxxam Analytics
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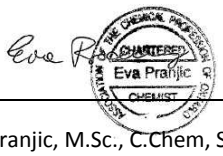
VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Cristina Carriere, Scientific Services



Ewa Pranjic, M.Sc., C.Chem, Scientific Specialist

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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23-Aug-16 10:54
Andrea Rieth
B6H8755
GK1 ENV-1148

EnGlobe Corp - QUEBEC
Maxxam PM Sherlyne Sim

To: Maxxam Ontario (From Edmonton)

Job# B671091

Yes / No International Sample/BioHazard (if yes, add copy of Movement Cert., heat treat is required prior to disposal)
Yes / No Special Protocol (if yes, Protocol _____)

Sample ID	Matrix	Test(s) Required	Container	Date Sampled	Date Required
PI0756-02R\P216-1A	S	PCB in Soil - Subcontract	1-EOR2	2016/08/16	2016/08/29
PI0757-02R\P216-1B	S	PCB in Soil - Subcontract	1-EOR2	2016/08/16	2016/08/29
PI0758-02R\P216-2A	S	PCB in Soil - Subcontract	1-EOR2	2016/08/16	2016/08/29
PI0759-02R\P216-2B	S	PCB in Soil - Subcontract	1-EOR2	2016/08/16	2016/08/29
PI0760-02R\P216-3A	S	PCB in Soil - Subcontract	1-EOR2	2016/08/16	2016/08/29
PI0761-02R\P216-3B	S	PCB in Soil - Subcontract	1-EOR2	2016/08/16	2016/08/29
PI0762-02R\P216-4A	S	PCB in Soil - Subcontract	1-EOR2	2016/08/16	2016/08/29
PI0763-02R\P216-4B	S	PCB in Soil - Subcontract	1-EOR2	2016/08/16	2016/08/29
PI0764-02R\P216-5A	S	PCB in Soil - Subcontract	1-EOR2	2016/08/16	2016/08/29
PI0765-02R\P216-5B	S	PCB in Soil - Subcontract	1-EOR2	2016/08/16	2016/08/29
PI0775-02R\P216-6A	S	PCB in Soil - Subcontract	1-EOR2	2016/08/16	2016/08/29
PI0776-02R\P216-6B	S	PCB in Soil - Subcontract	1-EOR2	2016/08/16	2016/08/29
PI0777-02R\P216-7A	S	PCB in Soil - Subcontract	1-EOR2	2016/08/16	2016/08/29
PI0778-02R\P216-7B	S	PCB in Soil - Subcontract	1-EOR2	2016/08/16	2016/08/29
PI0779-02R\P216-8A	S	PCB in Soil - Subcontract	1-EOR2	2016/08/16	2016/08/29
PI0780-02R\P216-8B	S	PCB in Soil - Subcontract	1-EOR2	2016/08/16	2016/08/29
PI0781-02R\P216-9A	S	PCB in Soil - Subcontract	1-EOR2	2016/08/16	2016/08/29
PI0782-02R\P216-9B	S	PCB in Soil - Subcontract	1-EOR2	2016/08/16	2016/08/29
PI0783-02R\P216-10A	S	PCB in Soil - Subcontract	1-EOR2	2016/08/16	2016/08/29
PI0784-02R\P216-10B	S	PCB in Soil - Subcontract	1-EOR2	2016/08/16	2016/08/29
PI0785-02R\P216-11A	S	PCB in Soil - Subcontract	1-EOR2	2016/08/16	2016/08/29
PI0786-02R\P216-11B	S	PCB in Soil - Subcontract	1-EOR2	2016/08/16	2016/08/29
PI0787-02R\P216-12A	S	PCB in Soil - Subcontract	1-EOR2	2016/08/16	2016/08/29
PI0788-02R\P216-12B	S	PCB in Soil - Subcontract	1-EOR2	2016/08/16	2016/08/29
PI0789-02R\P216-13A	S	PCB in Soil - Subcontract	1-EOR2	2016/08/15	2016/08/29
PI0790-02R\P216-13B	S	PCB in Soil - Subcontract	1-EOR2	2016/08/15	2016/08/29
PI0791-02R\P216-14A	S	PCB in Soil - Subcontract	1-EOR2	2016/08/15	2016/08/29
PI0792-02R\P216-14B	S	PCB in Soil - Subcontract	1-EOR2	2016/08/15	2016/08/29
PI0793-02R\P216-15A	S	PCB in Soil - Subcontract	1-EOR2	2016/08/15	2016/08/29
PI0794-02R\P216-15B	S	PCB in Soil - Subcontract	1-EOR2	2016/08/15	2016/08/29
PI0805-02R\P216-16A	S	PCB in Soil - Subcontract	1-EOR2	2016/08/15	2016/08/29
PI0806-02R\P216-16B	S	PCB in Soil - Subcontract	1-EOR2	2016/08/15	2016/08/29
PI0807-02R\P216-17A	S	PCB in Soil - Subcontract	1-EOR2	2016/08/15	2016/08/29
PI0808-02R\P216-17B	S	PCB in Soil - Subcontract	1-EOR2	2016/08/15	2016/08/29
PI0809-02R\P216-18A	S	PCB in Soil - Subcontract	1-EOR2	2016/08/15	2016/08/29

MAXXAM ANALYTICS
9331 - 48th Street
Edmonton, Alberta, T6B 2R4
(780) 577-7100
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Maxxam
A Bureau Veritas Group Company

EnGlobe Corp - QUEBEC
Maxxam PM Sherlyne Sim

SUBCONTRACTING REQUEST FORM

PI0810-02R\P216-18B	S	PCB in Soil - Subcontract	1-EOR2	2016/08/15	2016/08/29
PI0811-02R\P216-19A	S	PCB in Soil - Subcontract	1-EOR2	2016/08/15	2016/08/29
PI0812-02R\P216-19B	S	PCB in Soil - Subcontract	1-EOR2	2016/08/15	2016/08/29
PI0813-02R\P216-20A	S	PCB in Soil - Subcontract	1-EOR2	2016/08/15	2016/08/29
PI0814-02R\P216-20B	S	PCB in Soil - Subcontract	1-EOR2	2016/08/15	2016/08/29
PI0815-02R\P216-21A	S	PCB in Soil - Subcontract	1-EOR2	2016/08/16	2016/08/29
PI0816-02R\P216-21B	S	PCB in Soil - Subcontract	1-EOR2	2016/08/16	2016/08/29
PI0817-02R\P216-22A	S	PCB in Soil - Subcontract	1-EOR2	2016/08/16	2016/08/29
PI0818-02R\P216-22B	S	PCB in Soil - Subcontract	1-EOR2	2016/08/16	2016/08/29
PI0819-02R\P216-23A	S	PCB in Soil - Subcontract	1-EOR2	2016/08/16	2016/08/29
PI0820-02R\P216-23B	S	PCB in Soil - Subcontract	1-EOR2	2016/08/16	2016/08/29
PI0821-02R\P216-24A	S	PCB in Soil - Subcontract	1-EOR2	2016/08/16	2016/08/29
PI0822-02R\P216-24B	S	PCB in Soil - Subcontract	1-EOR2	2016/08/16	2016/08/29
PI0823-02R\P216-25A	S	PCB in Soil - Subcontract	1-EOR2	2016/08/16	2016/08/29
PI0824-02R\P216-25B	S	PCB in Soil - Subcontract	1-EOR2	2016/08/16	2016/08/29
PI0831-02R\P216-26A	S	PCB in Soil - Subcontract	1-EOR2	2016/08/16	2016/08/29
PI0832-02R\P216-26B	S	PCB in Soil - Subcontract	1-EOR2	2016/08/16	2016/08/29
PI0833-02R\P216-27A	S	PCB in Soil - Subcontract	1-EOR2	2016/08/15	2016/08/29
PI0834-02R\P216-27B	S	PCB in Soil - Subcontract	1-EOR2	2016/08/15	2016/08/29
PI0835-02R\P216-28A	S	PCB in Soil - Subcontract	1-EOR2	2016/08/15	2016/08/29
PI0836-02R\P216-28B	S	PCB in Soil - Subcontract	1-EOR2	2016/08/15	2016/08/29
PI0837-02R\P216-29A	S	PCB in Soil - Subcontract	1-EOR2	2016/08/15	2016/08/29
PI0838-02R\P216-29B	S	PCB in Soil - Subcontract	1-EOR2	2016/08/15	2016/08/29
PI0839-02R\P216-30A	S	PCB in Soil - Subcontract	1-EOR2	2016/08/15	2016/08/29
PI0840-02R\P216-30B	S	PCB in Soil - Subcontract	1-EOR2	2016/08/15	2016/08/29
PI0841-02R\P216-BD1	S	PCB in Soil - Subcontract	1-EOR2	2016/08/16	2016/08/29
PI0842-02R\P216-BD2	S	PCB in Soil - Subcontract	1-EOR2	2016/08/16	2016/08/29
PI0843-02R\P216-BD3	S	PCB in Soil - Subcontract	1-EOR2	2016/08/16	2016/08/29
PI0844-02R\P216-BD4	S	PCB in Soil - Subcontract	1-EOR2	2016/08/16	2016/08/29
PI0845-02R\P216-BD5	S	PCB in Soil - Subcontract	1-EOR2	2016/08/16	2016/08/29
PI0846-02R\P216-BD6	S	PCB in Soil - Subcontract	1-EOR2	2016/08/15	2016/08/29
PI0847-02R\P216-BD7	S	PCB in Soil - Subcontract	1-EOR2	2016/08/15	2016/08/29
PI0848-02R\P216-BD8	S	PCB in Soil - Subcontract	1-EOR2	2016/08/15	2016/08/29
PI0849-02R\P216-1WA	S	PCB in Soil - Subcontract	1-EOR2		2016/08/29
PI0850-02R\P216-1WB	S	PCB in Soil - Subcontract	1-EOR2		2016/08/29
PI0851-02R\P216-2WA	S	PCB in Soil - Subcontract	1-EOR2		2016/08/29
PI0852-02R\P216-2WB	S	PCB in Soil - Subcontract	1-EOR2		2016/08/29
PI0853-02R\P216-3WA	S	PCB in Soil - Subcontract	1-EOR2		2016/08/29
PI0854-02R\P216-3WB	S	PCB in Soil - Subcontract	1-EOR2		2016/08/29
PI0855-02R\P216-4WA	S	PCB in Soil - Subcontract	1-EOR2		2016/08/29
PI0856-02R\P216-4WB	S	PCB in Soil - Subcontract	1-EOR2		2016/08/29
PI0857-02R\P216-5WA	S	PCB in Soil - Subcontract	1-EOR2		2016/08/29
PI0858-02R\P216-5WB	S	PCB in Soil - Subcontract	1-EOR2		2016/08/29

Your Project #: 2016 LFM-KITIK13
Site Location: PIN-2 CAPE YOUNG
Your C.O.C. #: M002022

Attention:Andrew Passalis

EnGlobe Corp
QUEBEC
1260, boul. Lebourgneuf Blvd
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Québec, QC
CANADA G2K 2G2

Report Date: 2016/08/30
Report #: R2250166
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B671100
Received: 2016/08/21, 10:25

Sample Matrix: Water
Samples Received: 10

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
BTEX/F1 in Water by HS GC/MS/FID	8	N/A	2016/08/24	AB SOP-00039	CCME CWS/EPA 8260c m
BTEX/F1 in Water by HS GC/MS/FID	2	N/A	2016/08/27	AB SOP-00039	CCME CWS/EPA 8260c m
PCB in Water - Subcontract (1)	10	N/A	2016/08/26		
CCME Hydrocarbons (F2-F4 in water)	10	2016/08/26	2016/08/28	AB SOP-00037 / AB SOP-00040	CCME PHC-CWS m
Elements by CRC ICPMS (total) (2)	2	2016/08/25	2016/08/26	BBY7SOP-00003,	BCLM2005,EPA6020bR2m
Elements by CRC ICPMS (total) (2)	8	2016/08/25	2016/08/27	BBY7SOP-00003,	BCLM2005,EPA6020bR2m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Maxxam Ontario (From Edmonton)
(2) This test was performed by Maxxam Vancouver

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Sherlyne Sim, B.Eng, Project Manager
Email: SSim@maxxam.ca
Phone# (780)577-7113
==========
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Analytics International Corporation o/a Maxxam Analytics Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Maxxam Job #: B671100
Report Date: 2016/08/30

EnGlobe Corp
Client Project #: 2016 LFM-KITIK13
Site Location: PIN-2 CAPE YOUNG
Sampler Initials: AP, KE

AT1 BTEX AND F1-F4 IN WATER (WATER)

Maxxam ID		PI0893	PI0893	PI0894		PI0895	PI0896	PI0897		
Sampling Date		2016/08/17 13:00	2016/08/17 13:00	2016/08/17 12:15		2016/08/17 11:30	2016/08/17 10:50	2016/08/17 10:20		
COC Number		M002022	M002022	M002022		M002022	M002022	M002022		
	UNITS	P216-1W	P216-1W Lab-Dup	P216-2W	QC Batch	P216-3W	P216-4W	P216-5W	RDL	QC Batch
Ext. Pet. Hydrocarbon										
F2 (C10-C16 Hydrocarbons)	mg/L	<0.10	<0.10	<0.10	8378441	<0.10	<0.10	<0.10	0.10	8378441
F3 (C16-C34 Hydrocarbons)	mg/L	<0.20	<0.20	<0.20	8378441	<0.20	<0.20	<0.20	0.20	8378441
Reached Baseline at C50	mg/L	Yes	Yes	Yes	8378441	Yes	Yes	Yes		8378441
Volatiles										
Benzene	ug/L	<0.40		<0.40	8375389	<0.40	<0.40	<0.40	0.40	8375386
Toluene	ug/L	0.49		0.47	8375389	0.46	0.55	0.46	0.40	8375386
Ethylbenzene	ug/L	<0.40		<0.40	8375389	<0.40	<0.40	<0.40	0.40	8375386
m & p-Xylene	ug/L	<0.80		<0.80	8375389	<0.80	<0.80	<0.80	0.80	8375386
o-Xylene	ug/L	<0.40		<0.40	8375389	<0.40	<0.40	<0.40	0.40	8375386
Xylenes (Total)	ug/L	<0.80		<0.80	8375389	<0.80	<0.80	<0.80	0.80	8375386
F1 (C6-C10) - BTEX	ug/L	<100		<100	8375389	<100	<100	<100	100	8375386
F1 (C6-C10)	ug/L	<100		<100	8375389	<100	<100	<100	100	8375386
Surrogate Recovery (%)										
1,4-Difluorobenzene (sur.)	%	100		99	8375389	97	97	96		8375386
4-Bromofluorobenzene (sur.)	%	95		97	8375389	97	100	97		8375386
D4-1,2-Dichloroethane (sur.)	%	104		105	8375389	93	96	95		8375386
O-TERPHENYL (sur.)	%	114	102	103	8378441	107	101	102		8378441

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

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Maxxam Job #: B671100
Report Date: 2016/08/30

EnGlobe Corp
Client Project #: 2016 LFM-KITIK13
Site Location: PIN-2 CAPE YOUNG
Sampler Initials: AP, KE

AT1 BTEX AND F1-F4 IN WATER (WATER)

Maxxam ID		PI0898	PI0899	PI0900	PI0901	PI0902		
Sampling Date		2016/08/17 09:40	2016/08/17 09:00	2016/08/17 12:15	2016/08/17	2016/08/17		
COC Number		M002022	M002022	M002022	M002022	M002022		
	UNITS	P216-6W	P216-7W	P216-BDW1	P216-FB	P216-TB	RDL	QC Batch
Ext. Pet. Hydrocarbon								
F2 (C10-C16 Hydrocarbons)	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	8378441
F3 (C16-C34 Hydrocarbons)	mg/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	8378441
Reached Baseline at C50	mg/L	Yes	Yes	Yes	Yes	Yes		8378441
Volatiles								
Benzene	ug/L	<0.40	<0.40	<0.40	<0.40	<0.40	0.40	8375386
Toluene	ug/L	0.63	0.47	<0.40	<0.40	<0.40	0.40	8375386
Ethylbenzene	ug/L	<0.40	<0.40	<0.40	<0.40	<0.40	0.40	8375386
m & p-Xylene	ug/L	<0.80	<0.80	<0.80	<0.80	<0.80	0.80	8375386
o-Xylene	ug/L	<0.40	<0.40	<0.40	<0.40	<0.40	0.40	8375386
Xylenes (Total)	ug/L	<0.80	<0.80	<0.80	<0.80	<0.80	0.80	8375386
F1 (C6-C10) - BTEX	ug/L	<100	<100	<100	<100	<100	100	8375386
F1 (C6-C10)	ug/L	<100	<100	<100	<100	<100	100	8375386
Surrogate Recovery (%)								
1,4-Difluorobenzene (sur.)	%	98	98	96	99	99		8375386
4-Bromofluorobenzene (sur.)	%	98	95	99	97	102		8375386
D4-1,2-Dichloroethane (sur.)	%	92	94	94	96	103		8375386
O-TERPHENYL (sur.)	%	108	100	101	104	99		8378441

RDL = Reportable Detection Limit

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Maxxam Job #: B671100
Report Date: 2016/08/30

EnGlobe Corp
Client Project #: 2016 LFM-KITIK13
Site Location: PIN-2 CAPE YOUNG
Sampler Initials: AP, KE

RESULTS OF CHEMICAL ANALYSES OF WATER

Maxxam ID		PI0893	PI0894	PI0895	PI0896	PI0897	PI0898	
Sampling Date		2016/08/17 13:00	2016/08/17 12:15	2016/08/17 11:30	2016/08/17 10:50	2016/08/17 10:20	2016/08/17 09:40	
COC Number		M002022	M002022	M002022	M002022	M002022	M002022	
	UNITS	P216-1W	P216-2W	P216-3W	P216-4W	P216-5W	P216-6W	QC Batch
Parameter								
Subcontract Parameter	N/A	ATTACHED	ATTACHED	ATTACHED	ATTACHED	ATTACHED	ATTACHED	8382322

Maxxam ID		PI0899	PI0900	PI0901	PI0902	
Sampling Date		2016/08/17 09:00	2016/08/17 12:15	2016/08/17	2016/08/17	
COC Number		M002022	M002022	M002022	M002022	
	UNITS	P216-7W	P216-BDW1	P216-FB	P216-TB	QC Batch
Parameter						
Subcontract Parameter	N/A	ATTACHED	ATTACHED	ATTACHED	ATTACHED	8382322

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Maxxam Job #: B671100
Report Date: 2016/08/30

EnGlobe Corp
Client Project #: 2016 LFM-KITIK13
Site Location: PIN-2 CAPE YOUNG
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ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		PI0893		PI0894	PI0895	PI0896	PI0897		
Sampling Date		2016/08/17 13:00		2016/08/17 12:15	2016/08/17 11:30	2016/08/17 10:50	2016/08/17 10:20		
COC Number		M002022		M002022	M002022	M002022	M002022		
	UNITS	P216-1W	QC Batch	P216-2W	P216-3W	P216-4W	P216-5W	RDL	QC Batch
Total Metals by ICPMS									
Total Arsenic (As)	ug/L	1.35	8376441	0.58	0.33	0.26	0.31	0.10	8376680
Total Cadmium (Cd)	ug/L	0.020	8376441	0.013	0.027	0.017	0.016	0.010	8376680
Total Chromium (Cr)	ug/L	3.3	8376441	<1.0	<1.0	<1.0	<1.0	1.0	8376680
Total Cobalt (Co)	ug/L	<0.50	8376441	<0.50	<0.50	<0.50	<0.50	0.50	8376680
Total Copper (Cu)	ug/L	19.3	8376441	1.25	1.37	1.20	1.16	0.50	8376680
Total Lead (Pb)	ug/L	0.51	8376441	<0.20	<0.20	<0.20	<0.20	0.20	8376680
Total Mercury (Hg)	ug/L	<0.050	8376441	<0.050	<0.050	<0.050	<0.050	0.050	8376680
Total Nickel (Ni)	ug/L	6.7	8376441	2.6	3.0	3.0	2.4	1.0	8376680
Total Zinc (Zn)	ug/L	25.3	8376441	<5.0	<5.0	<5.0	11.0	5.0	8376680
RDL = Reportable Detection Limit									

Maxxam ID		PI0898	PI0899		PI0900		PI0901	PI0902		
Sampling Date		2016/08/17 09:40	2016/08/17 09:00		2016/08/17 12:15		2016/08/17	2016/08/17		
COC Number		M002022	M002022		M002022		M002022	M002022		
	UNITS	P216-6W	P216-7W	QC Batch	P216-BDW1	QC Batch	P216-FB	P216-TB	RDL	QC Batch
Total Metals by ICPMS										
Total Arsenic (As)	ug/L	0.80	0.45	8376441	0.60	8376680	<0.10	<0.10	0.10	8377006
Total Cadmium (Cd)	ug/L	0.041	0.015	8376441	0.021	8376680	<0.010	<0.010	0.010	8377006
Total Chromium (Cr)	ug/L	14.0	4.4	8376441	<1.0	8376680	<1.0	<1.0	1.0	8377006
Total Cobalt (Co)	ug/L	<0.50	<0.50	8376441	<0.50	8376680	<0.50	<0.50	0.50	8377006
Total Copper (Cu)	ug/L	12.6	4.41	8376441	1.12	8376680	<0.50	<0.50	0.50	8377006
Total Lead (Pb)	ug/L	0.38	<0.20	8376441	<0.20	8376680	<0.20	<0.20	0.20	8377006
Total Mercury (Hg)	ug/L	<0.050	<0.050	8376441	<0.050	8376680	<0.050	<0.050	0.050	8377006
Total Nickel (Ni)	ug/L	20.3	4.0	8376441	2.8	8376680	<1.0	<1.0	1.0	8377006
Total Zinc (Zn)	ug/L	462	10.2	8376441	<5.0	8376680	<5.0	<5.0	5.0	8377006
RDL = Reportable Detection Limit										

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Maxxam Job #: B671100
Report Date: 2016/08/30

EnGlobe Corp
Client Project #: 2016 LFM-KITIK13
Site Location: PIN-2 CAPE YOUNG
Sampler Initials: AP, KE

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	4.3°C
Package 2	5.0°C
Package 3	3.0°C
Package 4	2.0°C
Package 5	3.7°C

Results relate only to the items tested.

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Maxxam Job #: B671100
Report Date: 2016/08/30

EnGlobe Corp
Client Project #: 2016 LFM-KITIK13
Site Location: PIN-2 CAPE YOUNG
Sampler Initials: AP, KE

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8375386	SES	Matrix Spike	1,4-Difluorobenzene (sur.)	2016/08/25		98	%	70 - 130
			4-Bromofluorobenzene (sur.)	2016/08/25		113	%	70 - 130
			D4-1,2-Dichloroethane (sur.)	2016/08/25		99	%	70 - 130
			Benzene	2016/08/25		102	%	70 - 130
			Toluene	2016/08/25		100	%	70 - 130
			Ethylbenzene	2016/08/25		105	%	70 - 130
			m & p-Xylene	2016/08/25		106	%	70 - 130
			o-Xylene	2016/08/25		104	%	70 - 130
			F1 (C6-C10)	2016/08/25		59 (1)	%	70 - 130
8375386	SES	Spiked Blank	1,4-Difluorobenzene (sur.)	2016/08/24		97	%	70 - 130
			4-Bromofluorobenzene (sur.)	2016/08/24		94	%	70 - 130
			D4-1,2-Dichloroethane (sur.)	2016/08/24		97	%	70 - 130
			Benzene	2016/08/24		86	%	70 - 130
			Toluene	2016/08/24		86	%	70 - 130
			Ethylbenzene	2016/08/24		93	%	70 - 130
			m & p-Xylene	2016/08/24		92	%	70 - 130
			o-Xylene	2016/08/24		91	%	70 - 130
			F1 (C6-C10)	2016/08/24		92	%	70 - 130
8375386	SES	Method Blank	1,4-Difluorobenzene (sur.)	2016/08/24		99	%	70 - 130
			4-Bromofluorobenzene (sur.)	2016/08/24		98	%	70 - 130
			D4-1,2-Dichloroethane (sur.)	2016/08/24		97	%	70 - 130
			Benzene	2016/08/24	<0.40		ug/L	
			Toluene	2016/08/24	<0.40		ug/L	
			Ethylbenzene	2016/08/24	<0.40		ug/L	
			m & p-Xylene	2016/08/24	<0.80		ug/L	
			o-Xylene	2016/08/24	<0.40		ug/L	
			Xylenes (Total)	2016/08/24	<0.80		ug/L	
			F1 (C6-C10) - BTEX	2016/08/24	<100		ug/L	
			F1 (C6-C10)	2016/08/24	<100		ug/L	
8375386	SES	RPD	Benzene	2016/08/24	NC		%	40
			Toluene	2016/08/24	NC		%	40
			Ethylbenzene	2016/08/24	NC		%	40
			m & p-Xylene	2016/08/24	NC		%	40
			o-Xylene	2016/08/24	NC		%	40
			Xylenes (Total)	2016/08/24	NC		%	40
			F1 (C6-C10) - BTEX	2016/08/24	NC		%	40
			F1 (C6-C10)	2016/08/24	NC		%	40
8375389	NSE	Matrix Spike	1,4-Difluorobenzene (sur.)	2016/08/27		101	%	70 - 130
			4-Bromofluorobenzene (sur.)	2016/08/27		97	%	70 - 130
			D4-1,2-Dichloroethane (sur.)	2016/08/27		104	%	70 - 130
			Benzene	2016/08/27		106	%	70 - 130
			Toluene	2016/08/27		103	%	70 - 130
			Ethylbenzene	2016/08/27		108	%	70 - 130
			m & p-Xylene	2016/08/27		102	%	70 - 130
			o-Xylene	2016/08/27		104	%	70 - 130
			F1 (C6-C10)	2016/08/27		89	%	70 - 130
8375389	NSE	Spiked Blank	1,4-Difluorobenzene (sur.)	2016/08/27		101	%	70 - 130
			4-Bromofluorobenzene (sur.)	2016/08/27		94	%	70 - 130
			D4-1,2-Dichloroethane (sur.)	2016/08/27		100	%	70 - 130
			Benzene	2016/08/27		93	%	70 - 130
			Toluene	2016/08/27		90	%	70 - 130
			Ethylbenzene	2016/08/27		94	%	70 - 130

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Maxxam Job #: B671100
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EnGlobe Corp
Client Project #: 2016 LFM-KITIK13
Site Location: PIN-2 CAPE YOUNG
Sampler Initials: AP, KE

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			m & p-Xylene	2016/08/27		92	%	70 - 130
			o-Xylene	2016/08/27		92	%	70 - 130
			F1 (C6-C10)	2016/08/27		98	%	70 - 130
8375389	NSE	Method Blank	1,4-Difluorobenzene (sur.)	2016/08/27		99	%	70 - 130
			4-Bromofluorobenzene (sur.)	2016/08/27		95	%	70 - 130
			D4-1,2-Dichloroethane (sur.)	2016/08/27		101	%	70 - 130
			Benzene	2016/08/27	<0.40		ug/L	
			Toluene	2016/08/27	<0.40		ug/L	
			Ethylbenzene	2016/08/27	<0.40		ug/L	
			m & p-Xylene	2016/08/27	<0.80		ug/L	
			o-Xylene	2016/08/27	<0.40		ug/L	
			Xylenes (Total)	2016/08/27	<0.80		ug/L	
			F1 (C6-C10) - BTEX	2016/08/27	<100		ug/L	
			F1 (C6-C10)	2016/08/27	<100		ug/L	
8375389	NSE	RPD	Benzene	2016/08/27	NC		%	40
			Toluene	2016/08/27	NC		%	40
			Ethylbenzene	2016/08/27	NC		%	40
			m & p-Xylene	2016/08/27	NC		%	40
			o-Xylene	2016/08/27	NC		%	40
			Xylenes (Total)	2016/08/27	NC		%	40
			F1 (C6-C10) - BTEX	2016/08/27	NC		%	40
			F1 (C6-C10)	2016/08/27	NC		%	40
8376441	AD5	Matrix Spike	Total Arsenic (As)	2016/08/27		101	%	80 - 120
			Total Cadmium (Cd)	2016/08/27		103	%	80 - 120
			Total Chromium (Cr)	2016/08/27		NC	%	80 - 120
			Total Cobalt (Co)	2016/08/27		101	%	80 - 120
			Total Copper (Cu)	2016/08/27		NC	%	80 - 120
			Total Lead (Pb)	2016/08/27		99	%	80 - 120
			Total Mercury (Hg)	2016/08/27		106	%	80 - 120
			Total Nickel (Ni)	2016/08/27		NC	%	80 - 120
			Total Zinc (Zn)	2016/08/27		NC	%	80 - 120
8376441	AD5	Spiked Blank	Total Arsenic (As)	2016/08/27		103	%	80 - 120
			Total Cadmium (Cd)	2016/08/27		104	%	80 - 120
			Total Chromium (Cr)	2016/08/27		101	%	80 - 120
			Total Cobalt (Co)	2016/08/27		101	%	80 - 120
			Total Copper (Cu)	2016/08/27		106	%	80 - 120
			Total Lead (Pb)	2016/08/27		97	%	80 - 120
			Total Mercury (Hg)	2016/08/27		100	%	80 - 120
			Total Nickel (Ni)	2016/08/27		103	%	80 - 120
			Total Zinc (Zn)	2016/08/27		104	%	80 - 120
8376441	AD5	Method Blank	Total Arsenic (As)	2016/08/29	<0.10		ug/L	
			Total Cadmium (Cd)	2016/08/29	0.013, RDL=0.010		ug/L	
			Total Chromium (Cr)	2016/08/29	<1.0		ug/L	
			Total Cobalt (Co)	2016/08/29	<0.50		ug/L	
			Total Copper (Cu)	2016/08/29	<0.50		ug/L	
			Total Lead (Pb)	2016/08/29	<0.20		ug/L	
			Total Mercury (Hg)	2016/08/29	<0.050		ug/L	
			Total Nickel (Ni)	2016/08/29	<1.0		ug/L	
			Total Zinc (Zn)	2016/08/29	<5.0		ug/L	
8376441	AD5	RPD	Total Arsenic (As)	2016/08/27	0.37		%	20
			Total Cadmium (Cd)	2016/08/27	2.2		%	20

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EnGlobe Corp
Client Project #: 2016 LFM-KITIK13
Site Location: PIN-2 CAPE YOUNG
Sampler Initials: AP, KE

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Chromium (Cr)	2016/08/27	4.8		%	20
			Total Cobalt (Co)	2016/08/27	NC		%	20
			Total Copper (Cu)	2016/08/27	0.081		%	20
			Total Lead (Pb)	2016/08/27	2.2		%	20
			Total Nickel (Ni)	2016/08/27	6.1		%	20
			Total Zinc (Zn)	2016/08/27	0.0038		%	20
8376680	AD5	Matrix Spike	Total Arsenic (As)	2016/08/27		105	%	80 - 120
			Total Cadmium (Cd)	2016/08/27		107	%	80 - 120
			Total Chromium (Cr)	2016/08/27		105	%	80 - 120
			Total Cobalt (Co)	2016/08/27		105	%	80 - 120
			Total Copper (Cu)	2016/08/27		NC	%	80 - 120
			Total Lead (Pb)	2016/08/27		102	%	80 - 120
			Total Mercury (Hg)	2016/08/27		107	%	80 - 120
			Total Nickel (Ni)	2016/08/27		105	%	80 - 120
			Total Zinc (Zn)	2016/08/27		108	%	80 - 120
8376680	AD5	Spiked Blank	Total Arsenic (As)	2016/08/27		106	%	80 - 120
			Total Cadmium (Cd)	2016/08/27		103	%	80 - 120
			Total Chromium (Cr)	2016/08/27		108	%	80 - 120
			Total Cobalt (Co)	2016/08/27		107	%	80 - 120
			Total Copper (Cu)	2016/08/27		106	%	80 - 120
			Total Lead (Pb)	2016/08/27		104	%	80 - 120
			Total Mercury (Hg)	2016/08/27		103	%	80 - 120
			Total Nickel (Ni)	2016/08/27		107	%	80 - 120
			Total Zinc (Zn)	2016/08/27		108	%	80 - 120
8376680	AD5	Method Blank	Total Arsenic (As)	2016/08/27	<0.10		ug/L	
			Total Cadmium (Cd)	2016/08/27	<0.010		ug/L	
			Total Chromium (Cr)	2016/08/27	<1.0		ug/L	
			Total Cobalt (Co)	2016/08/27	<0.50		ug/L	
			Total Copper (Cu)	2016/08/27	<0.50		ug/L	
			Total Lead (Pb)	2016/08/27	<0.20		ug/L	
			Total Mercury (Hg)	2016/08/27	<0.050		ug/L	
			Total Nickel (Ni)	2016/08/27	<1.0		ug/L	
			Total Zinc (Zn)	2016/08/27	<5.0		ug/L	
8376680	AD5	RPD	Total Arsenic (As)	2016/08/27	NC		%	20
			Total Cadmium (Cd)	2016/08/27	NC		%	20
			Total Chromium (Cr)	2016/08/27	NC		%	20
			Total Cobalt (Co)	2016/08/27	NC		%	20
			Total Copper (Cu)	2016/08/27	3.4		%	20
			Total Lead (Pb)	2016/08/27	NC		%	20
			Total Mercury (Hg)	2016/08/27	NC		%	20
			Total Nickel (Ni)	2016/08/27	NC		%	20
			Total Zinc (Zn)	2016/08/27	NC		%	20
8377006	GS2	Matrix Spike	Total Arsenic (As)	2016/08/26		107	%	80 - 120
			Total Cadmium (Cd)	2016/08/26		104	%	80 - 120
			Total Chromium (Cr)	2016/08/26		97	%	80 - 120
			Total Cobalt (Co)	2016/08/26		94	%	80 - 120
			Total Copper (Cu)	2016/08/26		NC	%	80 - 120
			Total Lead (Pb)	2016/08/26		97	%	80 - 120
			Total Mercury (Hg)	2016/08/26		106	%	80 - 120
			Total Nickel (Ni)	2016/08/26		93	%	80 - 120
			Total Zinc (Zn)	2016/08/26		NC	%	80 - 120
8377006	GS2	Spiked Blank	Total Arsenic (As)	2016/08/26		100	%	80 - 120

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EnGlobe Corp
Client Project #: 2016 LFM-KITIK13
Site Location: PIN-2 CAPE YOUNG
Sampler Initials: AP, KE

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Cadmium (Cd)	2016/08/26		100	%	80 - 120
			Total Chromium (Cr)	2016/08/26		99	%	80 - 120
			Total Cobalt (Co)	2016/08/26		99	%	80 - 120
			Total Copper (Cu)	2016/08/26		98	%	80 - 120
			Total Lead (Pb)	2016/08/26		101	%	80 - 120
			Total Mercury (Hg)	2016/08/26		100	%	80 - 120
			Total Nickel (Ni)	2016/08/26		99	%	80 - 120
			Total Zinc (Zn)	2016/08/26		99	%	80 - 120
8377006	GS2	Method Blank	Total Arsenic (As)	2016/08/26	<0.10		ug/L	
			Total Cadmium (Cd)	2016/08/26	<0.010		ug/L	
			Total Chromium (Cr)	2016/08/26	<1.0		ug/L	
			Total Cobalt (Co)	2016/08/26	<0.50		ug/L	
			Total Copper (Cu)	2016/08/26	<0.50		ug/L	
			Total Lead (Pb)	2016/08/26	<0.20		ug/L	
			Total Mercury (Hg)	2016/08/26	<0.050		ug/L	
			Total Nickel (Ni)	2016/08/26	<1.0		ug/L	
			Total Zinc (Zn)	2016/08/26	<5.0		ug/L	
8378441	PK4	Matrix Spike [PI0894-03]	O-TERPHENYL (sur.)	2016/08/28		100	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2016/08/28		98	%	50 - 130
			F3 (C16-C34 Hydrocarbons)	2016/08/28		98	%	50 - 130
8378441	PK4	Spiked Blank	O-TERPHENYL (sur.)	2016/08/28		102	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2016/08/28		101	%	70 - 130
			F3 (C16-C34 Hydrocarbons)	2016/08/28		101	%	70 - 130
8378441	PK4	Method Blank	O-TERPHENYL (sur.)	2016/08/28		107	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2016/08/28	<0.10		mg/L	
			F3 (C16-C34 Hydrocarbons)	2016/08/28	<0.20		mg/L	
8378441	PK4	RPD [PI0893-03]	F2 (C10-C16 Hydrocarbons)	2016/08/28	NC		%	40
			F3 (C16-C34 Hydrocarbons)	2016/08/28	NC		%	40

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.

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 spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of 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 (one or both samples < 5x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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Client Project #: 2016 LFM-KITIK13
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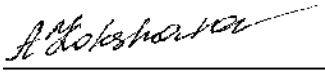
Sampler Initials: AP, KE

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

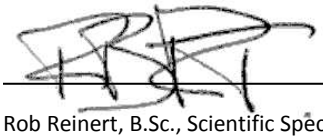
Amanda Dwyer, Project Manager Assistant



Anna Koksharova, M.Sc., Organics Senior Analyst

Daniel Reslan, cCT, QP, Organics Supervisor

Poonam Sharma, cCT, Organics Senior Analyst



Rob Reinert, B.Sc., Scientific Specialist

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Your P.O. #: N/A
Your Project #: B671100
Your C.O.C. #: n/a

Attention:Sherlyne Sim

Maxxam Analytics
Edmonton - Environmental
9331 48th St
Edmonton, AB
T6B 2R4

Report Date: 2016/08/30
Report #: R4147486
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6H8677
Received: 2016/08/23, 10:49

Sample Matrix: Water
Samples Received: 10

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Polychlorinated Biphenyl in Water	10	2016/08/25	2016/08/26	CAM SOP-00309	EPA 8082A m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Andrea Rieth, Project Manager
Email: ARieth@maxxam.ca
Phone# (905)817-5806
==========
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Maxxam Job #: B6H8677
Report Date: 2016/08/30

Maxxam Analytics
Client Project #: B671100
Your P.O. #: N/A

POLYCHLORINATED BIPHENYLS BY GC-ECD (WATER)

Maxxam ID		CXY003	CXY004	CXY005	CXY006	CXY007		
Sampling Date		2016/08/17	2016/08/17	2016/08/17	2016/08/17	2016/08/17		
COC Number		n/a	n/a	n/a	n/a	n/a		
	UNITS	PI0893\P216-1W	PI0894\P216-2W	PI0895\P216-3W	PI0896\P216-4W	PI0897\P216-5W	RDL	QC Batch
PCBs								
Aroclor 1016	ug/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	4635216
Aroclor 1221	ug/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	4635216
Aroclor 1232	ug/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	4635216
Aroclor 1242	ug/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	4635216
Aroclor 1248	ug/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	4635216
Aroclor 1254	ug/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	4635216
Aroclor 1260	ug/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	4635216
Aroclor 1262	ug/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	4635216
Aroclor 1268	ug/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	4635216
Total PCB	ug/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	4635216
Surrogate Recovery (%)								
Decachlorobiphenyl	%	76	72	88	82	84		4635216

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		CXY008	CXY009	CXY010	CXY011	CXY012		
Sampling Date		2016/08/17	2016/08/17	2016/08/17	2016/08/17	2016/08/17		
COC Number		n/a	n/a	n/a	n/a	n/a		
	UNITS	PI0898\P216-6W	PI0899\P216-7W	PI0900\P216-BDW1	PI0901\P216-FB	PI0902\P216-TB	RDL	QC Batch
PCBs								
Aroclor 1016	ug/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	4635216
Aroclor 1221	ug/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	4635216
Aroclor 1232	ug/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	4635216
Aroclor 1242	ug/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	4635216
Aroclor 1248	ug/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	4635216
Aroclor 1254	ug/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	4635216
Aroclor 1260	ug/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	4635216
Aroclor 1262	ug/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	4635216
Aroclor 1268	ug/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	4635216
Total PCB	ug/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	4635216
Surrogate Recovery (%)								
Decachlorobiphenyl	%	85	76	56 (1)	74	70		4635216

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) The Surrogate recovery was below the control limit as stipulated by Ontario Regulation 153, however, this recovery is still within Maxxam's performance based limits. Results reported with surrogate recoveries within this range are still valid but may have an associated low bias.

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Maxxam Job #: B6H8677
Report Date: 2016/08/30

Maxxam Analytics
Client Project #: B671100
Your P.O. #: N/A

GENERAL COMMENTS

Results relate only to the items tested.

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Maxxam Job #: B6H8677
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QUALITY ASSURANCE REPORT

Maxxam Analytics
Client Project #: B671100
Your P.O. #: N/A

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4635216	Decachlorobiphenyl	2016/08/26	81	60 - 130	104	60 - 130	85	%		
4635216	Aroclor 1016	2016/08/26					<0.05	ug/L	NC	40
4635216	Aroclor 1221	2016/08/26					<0.05	ug/L	NC	40
4635216	Aroclor 1232	2016/08/26					<0.05	ug/L	NC	40
4635216	Aroclor 1242	2016/08/26					<0.05	ug/L	NC	30
4635216	Aroclor 1248	2016/08/26					<0.05	ug/L	NC	30
4635216	Aroclor 1254	2016/08/26					<0.05	ug/L	NC	30
4635216	Aroclor 1260	2016/08/26	69	60 - 130	70	60 - 130	<0.05	ug/L	NC	30
4635216	Aroclor 1262	2016/08/26					<0.05	ug/L	NC	40
4635216	Aroclor 1268	2016/08/26					<0.05	ug/L	NC	40
4635216	Total PCB	2016/08/26	69	60 - 130	70	60 - 130	<0.05	ug/L	NC	40

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.

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 (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 (one or both samples < 5x RDL).

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Report Date: 2016/08/30

Maxxam Analytics
Client Project #: B671100
Your P.O. #: N/A

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Cristina Carriere

Cristina Carriere, Scientific Services

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Report Transmission Cover Page

Bill To:	Englobe	Project:		Lot ID:	**1156775**
Report To:	Englobe	ID:	2016-LFM KITIK13	Control Number:	C0008952
	Office 400	Name:	Cape Young	Date Received:	Aug 23, 2016
	1260, Lebourgneuf Boulevard	Location:	PIN-2	Date Reported:	Sep 21, 2016
	Quebec, QC, Canada	LSD:		Report Number:	2133731
	G2K 2G2	P.O.:			
Attn:	Jean-Pierre Pelletier	Acct code:			
Sampled By:	A. Passalis/K. Epilon				
Company:	Englobe				

Contact & Affiliation	Address	Delivery Commitments
Andrew Passalis SILA Remediation	350, rue Franquet Sainte-Foy, Quebec G1P 4P3 Phone: (204) 791-4938 Fax: (418) 653-3583 Email: andrew.passalis@gmail.com	On [Report Approval] send (Test Report) by Email - Merge Reports On [Report Approval] send (Test Report, COC) by Email - Merge Reports
Jean-Pierre Pelletier Englobe	1260, Lebourgneuf Boulevard, Office 400 Quebec, Quebec G2K 2G2 Phone: (418) 704-8091 Fax: null Email: jean-pierre.pelletier@englobecorp.com	On [Lot Verification] send (COA, COC) by Email - Merge Reports On [Report Approval] send (Test Report, COC) by Email - Merge Reports On [Report Approval] send (Test Report) by Email - Merge Reports On [Lot Approval and Final Test Report Approval] send (Test Report, Invoice, COC) by Email - Merge Reports On [Lot Approval and Final Test Report Approval] send (Test Report, COC) by Email - Merge Reports

Notes To Clients:

- Report was issued to include different QC report format as requested by Jean-Pierre Pelletier of Englobe on Sept.21, 2016. Previous report 2127203.
- Upon receipt, samples 1156775 (1-8) had exceeded recommended holding time for BTEX/F1 analysis.

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Analytical Report

Bill To:	Englobe	Project:		Lot ID:	**1156775**
Report To:	Englobe	ID:	2016-LFM KITIK13	Control Number:	C0008952
	Office 400	Name:	Cape Young	Date Received:	Aug 23, 2016
	1260, Lebourgneuf Boulevard	Location:	PIN-2	Date Reported:	Sep 21, 2016
	Quebec, QC, Canada	LSD:		Report Number:	2133731
	G2K 2G2	P.O.:			
Attn:	Jean-Pierre Pelletier	Acct code:			
Sampled By:	A. Passalis/K. Epilon				
Company:	Englobe				

Reference Number	1156775-1	1156775-2	1156775-3
Sample Date	Aug 16, 2016	Aug 16, 2016	Aug 16, 2016
Sample Time	NA	NA	NA
Sample Location			
Sample Description	P216-1WA	P216-5WA	P216-1A
Matrix	Soil	Soil	Soil

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Metals Strong Acid Digestion						
Antimony	Strong Acid Extractable	mg/kg	<0.2	<0.2	<0.2	0.2
Arsenic	Strong Acid Extractable	mg/kg	5.0	1.9	1.3	0.2
Barium	Strong Acid Extractable	mg/kg	60	5	17	1
Beryllium	Strong Acid Extractable	mg/kg	0.2	<0.1	<0.1	0.1
Cadmium	Strong Acid Extractable	mg/kg	0.57	0.07	0.22	0.01
Chromium	Strong Acid Extractable	mg/kg	4.6	2.5	2.8	0.5
Cobalt	Strong Acid Extractable	mg/kg	2.0	0.6	0.8	0.1
Copper	Strong Acid Extractable	mg/kg	11.2	3.1	9.1	1
Lead	Strong Acid Extractable	mg/kg	2.3	1.7	2.0	0.1
Mercury	Strong Acid Extractable	mg/kg	0.10	<0.05	0.10	0.05
Molybdenum	Strong Acid Extractable	mg/kg	<1.0	<1.0	<1.0	1
Nickel	Strong Acid Extractable	mg/kg	6.9	2.4	2.3	0.5
Selenium	Strong Acid Extractable	mg/kg	0.9	<0.3	0.5	0.3
Silver	Strong Acid Extractable	mg/kg	<0.1	<0.1	<0.1	0.1
Thallium	Strong Acid Extractable	mg/kg	0.09	<0.05	<0.05	0.05
Tin	Strong Acid Extractable	mg/kg	<1.0	<1.0	<1.0	1
Uranium	Strong Acid Extractable	mg/kg	2.8	0.5	1.2	0.5
Vanadium	Strong Acid Extractable	mg/kg	11.7	7.8	6.6	0.1
Zinc	Strong Acid Extractable	mg/kg	21	10	24	1
Mono-Aromatic Hydrocarbons - Soil						
Benzene	Dry Weight	mg/kg	<0.005	<0.005	<0.005	0.005
Toluene	Dry Weight	mg/kg	<0.02	<0.02	<0.02	0.02
Ethylbenzene	Dry Weight	mg/kg	<0.005	<0.005	<0.005	0.005
Total Xylenes (m,p,o)	Dry Weight	mg/kg	<0.03	<0.03	<0.03	0.03
Volatile Petroleum Hydrocarbons - Soil						
Extraction Date	Volatiles		24-Aug-16	24-Aug-16	24-Aug-16	
F1 C6-C10	Dry Weight	mg/kg	<10	<10	<10	10
F1 -BTEX	Dry Weight	mg/kg	<10	<10	<10	10
Extractable Petroleum Hydrocarbons - Soil						
Extraction Date	Total Extractables		24-Aug-16	24-Aug-16	24-Aug-16	
F2c C10-C16	Dry Weight	mg/kg	<50	<50	<50	50
F3c C16-C34	Dry Weight	mg/kg	56	<50	82	50
F4c C34-C50	Dry Weight	mg/kg	<100	<100	<100	100
F4HTGCc C34-C50+	Dry Weight	mg/kg	<100	<100	<100	100
% C50+		%	<5	<5	8.2	

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Analytical Report

Bill To:	Englobe	Project:	
Report To:	Englobe	ID:	2016-LFM KITIK13
	Office 400	Name:	Cape Young
	1260, Lebourgneuf Boulevard	Location:	PIN-2
	Quebec, QC, Canada	LSD:	
	G2K 2G2	P.O.:	
Attn:	Jean-Pierre Pelletier	Acct code:	
Sampled By:	A. Passalis/K. Epilon		
Company:	Englobe		

Lot ID:	**1156775**
Control Number:	C0008952
Date Received:	Aug 23, 2016
Date Reported:	Sep 21, 2016
Report Number:	2133731

		Reference Number	1156775-1	1156775-2	1156775-3
		Sample Date	Aug 16, 2016	Aug 16, 2016	Aug 16, 2016
		Sample Time	NA	NA	NA
		Sample Location			
		Sample Description	P216-1WA	P216-5WA	P216-1A
		Matrix	Soil	Soil	Soil
Analyte		**Units**	**Results**	**Results**	**Results**	Nominal Detection Limit
Silica Gel Cleanup						
Silica Gel Cleanup			Done	Done	Done	
Soil % Moisture						
Moisture	Soil % Moisture	% by weight	58.50	10.60	63.70	
Polychlorinated Biphenyls - Soil						
Aroclor 1016	Dry Weight	mg/kg	<0.05	<0.05	<0.05	0.05
Aroclor 1221	Dry Weight	mg/kg	<0.05	<0.05	<0.05	0.05
Aroclor 1232	Dry Weight	mg/kg	<0.05	<0.05	<0.05	0.05
Aroclor 1242	Dry Weight	mg/kg	<0.05	<0.05	<0.05	0.05
Aroclor 1248	Dry Weight	mg/kg	<0.05	<0.05	<0.05	0.05
Aroclor 1254	Dry Weight	mg/kg	<0.05	<0.05	<0.05	0.05
Aroclor 1260	Dry Weight	mg/kg	<0.05	<0.05	<0.05	0.05
Aroclor 1262	Dry Weight	mg/kg	<0.05	<0.05	<0.05	0.05
Aroclor 1268	Dry Weight	mg/kg	<0.05	<0.05	<0.05	0.05
Total PCBs	Dry Weight	mg/kg	<0.05	<0.05	<0.05	0.05
Polychlorinated Biphenyls - Soil - Surrogate						
Decachlorobiphenyl	Surrogate	%	113	120	117	50-150

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Analytical Report

Bill To:	Englobe	Project:		Lot ID:	**1156775**
Report To:	Englobe	ID:	2016-LFM KITIK13	Control Number:	C0008952
	Office 400	Name:	Cape Young	Date Received:	Aug 23, 2016
	1260, Lebourgneuf Boulevard	Location:	PIN-2	Date Reported:	Sep 21, 2016
	Quebec, QC, Canada	LSD:		Report Number:	2133731
	G2K 2G2	P.O.:			
Attn:	Jean-Pierre Pelletier	Acct code:			
Sampled By:	A. Passalis/K. Epilon				
Company:	Englobe				

Reference Number	1156775-4	1156775-5	1156775-6
Sample Date	Aug 16, 2016	Aug 16, 2016	Aug 15, 2016
Sample Time	NA	NA	NA
Sample Location			
Sample Description	P216-6A	P216-12A	P216-14A
Matrix	Soil	Soil	Soil

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Metals Strong Acid Digestion						
Antimony	Strong Acid Extractable	mg/kg	<0.2	<0.2	<0.2	0.2
Arsenic	Strong Acid Extractable	mg/kg	4.8	0.4	1.9	0.2
Barium	Strong Acid Extractable	mg/kg	34	11	13	1
Beryllium	Strong Acid Extractable	mg/kg	0.3	<0.1	<0.1	0.1
Cadmium	Strong Acid Extractable	mg/kg	0.37	0.28	0.18	0.01
Chromium	Strong Acid Extractable	mg/kg	13.2	1.0	4.1	0.5
Cobalt	Strong Acid Extractable	mg/kg	4.7	0.6	1.5	0.1
Copper	Strong Acid Extractable	mg/kg	9.4	5.5	9.6	1
Lead	Strong Acid Extractable	mg/kg	6.6	0.5	2.2	0.1
Mercury	Strong Acid Extractable	mg/kg	0.08	0.12	<0.05	0.05
Molybdenum	Strong Acid Extractable	mg/kg	<1.0	<1.0	<1.0	1
Nickel	Strong Acid Extractable	mg/kg	7.8	1.7	4.4	0.5
Selenium	Strong Acid Extractable	mg/kg	0.8	0.3	<0.3	0.3
Silver	Strong Acid Extractable	mg/kg	<0.1	<0.1	<0.1	0.1
Thallium	Strong Acid Extractable	mg/kg	0.07	<0.05	0.07	0.05
Tin	Strong Acid Extractable	mg/kg	<1.0	<1.0	<1.0	1
Uranium	Strong Acid Extractable	mg/kg	2.2	<0.5	0.6	0.5
Vanadium	Strong Acid Extractable	mg/kg	23.6	2.1	14.1	0.1
Zinc	Strong Acid Extractable	mg/kg	32	25	15	1
Mono-Aromatic Hydrocarbons - Soil						
Benzene	Dry Weight	mg/kg	<0.005	<0.005	<0.005	0.005
Toluene	Dry Weight	mg/kg	<0.02	<0.02	<0.02	0.02
Ethylbenzene	Dry Weight	mg/kg	<0.005	<0.005	<0.005	0.005
Total Xylenes (m,p,o)	Dry Weight	mg/kg	<0.03	<0.03	<0.03	0.03
Volatile Petroleum Hydrocarbons - Soil						
Extraction Date	Volatiles		24-Aug-16	24-Aug-16	24-Aug-16	
F1 C6-C10	Dry Weight	mg/kg	<10	<10	<10	10
F1 -BTEX	Dry Weight	mg/kg	<10	<10	<10	10
Extractable Petroleum Hydrocarbons - Soil						
Extraction Date	Total Extractables		24-Aug-16	24-Aug-16	24-Aug-16	
F2c C10-C16	Dry Weight	mg/kg	<50	<50	<50	50
F3c C16-C34	Dry Weight	mg/kg	55	218	<50	50
F4c C34-C50	Dry Weight	mg/kg	<100	150	<100	100
F4HTGCc C34-C50+	Dry Weight	mg/kg	<100	268	<100	100
% C50+		%	9.5	16.8	<5	

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Analytical Report

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Report To:	Englobe	ID:	2016-LFM KITIK13
	Office 400	Name:	Cape Young
	1260, Lebourgneuf Boulevard	Location:	PIN-2
	Quebec, QC, Canada	LSD:	
	G2K 2G2	P.O.:	
Attn:	Jean-Pierre Pelletier	Acct code:	
Sampled By:	A. Passalis/K. Epilon		
Company:	Englobe		

Lot ID:	**1156775**
Control Number:	C0008952
Date Received:	Aug 23, 2016
Date Reported:	Sep 21, 2016
Report Number:	2133731

		Reference Number	1156775-4	1156775-5	1156775-6
		Sample Date	Aug 16, 2016	Aug 16, 2016	Aug 15, 2016
		Sample Time	NA	NA	NA
		Sample Location			
		Sample Description	P216-6A	P216-12A	P216-14A
		Matrix	Soil	Soil	Soil
Analyte		**Units**	**Results**	**Results**	**Results**	Nominal Detection Limit
Silica Gel Cleanup						
Silica Gel Cleanup			Done	Done	Done	
Soil % Moisture						
Moisture	Soil % Moisture	% by weight	56.50	65.60	9.48	
Polychlorinated Biphenyls - Soil						
Aroclor 1016	Dry Weight	mg/kg	<0.05	<0.05	<0.05	0.05
Aroclor 1221	Dry Weight	mg/kg	<0.05	<0.05	<0.05	0.05
Aroclor 1232	Dry Weight	mg/kg	<0.05	<0.05	<0.05	0.05
Aroclor 1242	Dry Weight	mg/kg	<0.05	<0.05	<0.05	0.05
Aroclor 1248	Dry Weight	mg/kg	<0.05	<0.05	<0.05	0.05
Aroclor 1254	Dry Weight	mg/kg	<0.05	<0.05	<0.05	0.05
Aroclor 1260	Dry Weight	mg/kg	<0.05	<0.05	<0.05	0.05
Aroclor 1262	Dry Weight	mg/kg	<0.05	<0.05	<0.05	0.05
Aroclor 1268	Dry Weight	mg/kg	<0.05	<0.05	<0.05	0.05
Total PCBs	Dry Weight	mg/kg	<0.05	<0.05	<0.05	0.05
Polychlorinated Biphenyls - Soil - Surrogate						
Decachlorobiphenyl	Surrogate	%	112	111	122	50-150

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	1260, Lebourgneuf Boulevard	Location:	PIN-2	Date Reported:	Sep 21, 2016
	Quebec, QC, Canada	LSD:		Report Number:	2133731
	G2K 2G2	P.O.:			
Attn:	Jean-Pierre Pelletier	Acct code:			
Sampled By:	A. Passalis/K. Epilon				
Company:	Englobe				

Reference Number	1156775-7	1156775-8
Sample Date	Aug 15, 2016	Aug 15, 2016
Sample Time	NA	NA
Sample Location		
Sample Description	P216-18A	P216-28A
Matrix	Soil	Soil

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Metals Strong Acid Digestion						
Antimony	Strong Acid Extractable	mg/kg	<0.2	<0.2		0.2
Arsenic	Strong Acid Extractable	mg/kg	3.2	5.9		0.2
Barium	Strong Acid Extractable	mg/kg	13	61		1
Beryllium	Strong Acid Extractable	mg/kg	0.1	0.2		0.1
Cadmium	Strong Acid Extractable	mg/kg	0.07	0.16		0.01
Chromium	Strong Acid Extractable	mg/kg	7.5	4.2		0.5
Cobalt	Strong Acid Extractable	mg/kg	3.1	4.2		0.1
Copper	Strong Acid Extractable	mg/kg	7.1	12.0		1
Lead	Strong Acid Extractable	mg/kg	3.2	1.4		0.1
Mercury	Strong Acid Extractable	mg/kg	<0.05	0.05		0.05
Molybdenum	Strong Acid Extractable	mg/kg	<1.0	1.4		1
Nickel	Strong Acid Extractable	mg/kg	5.1	10.8		0.5
Selenium	Strong Acid Extractable	mg/kg	<0.3	0.9		0.3
Silver	Strong Acid Extractable	mg/kg	<0.1	<0.1		0.1
Thallium	Strong Acid Extractable	mg/kg	<0.05	<0.05		0.05
Tin	Strong Acid Extractable	mg/kg	<1.0	<1.0		1
Uranium	Strong Acid Extractable	mg/kg	<0.5	3.4		0.5
Vanadium	Strong Acid Extractable	mg/kg	30.4	26.1		0.1
Zinc	Strong Acid Extractable	mg/kg	22	32		1
Mono-Aromatic Hydrocarbons - Soil						
Benzene	Dry Weight	mg/kg	<0.005	<0.005		0.005
Toluene	Dry Weight	mg/kg	<0.02	<0.02		0.02
Ethylbenzene	Dry Weight	mg/kg	<0.005	<0.005		0.005
Total Xylenes (m,p,o)	Dry Weight	mg/kg	<0.03	<0.03		0.03
Volatile Petroleum Hydrocarbons - Soil						
Extraction Date	Volatiles		24-Aug-16	24-Aug-16		
F1 C6-C10	Dry Weight	mg/kg	<10	<10		10
F1 -BTEX	Dry Weight	mg/kg	<10	<10		10
Extractable Petroleum Hydrocarbons - Soil						
Extraction Date	Total Extractables		24-Aug-16	24-Aug-16		
F2c C10-C16	Dry Weight	mg/kg	<50	<50		50
F3c C16-C34	Dry Weight	mg/kg	<50	113		50
F4c C34-C50	Dry Weight	mg/kg	<100	<100		100
F4HTGCc C34-C50+	Dry Weight	mg/kg	<100	<100		100
% C50+		%	<5	9.4		

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Analytical Report

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Report To:	Englobe	ID:	2016-LFM KITIK13
	Office 400	Name:	Cape Young
	1260, Lebourgneuf Boulevard	Location:	PIN-2
	Quebec, QC, Canada	LSD:	
	G2K 2G2	P.O.:	
Attn:	Jean-Pierre Pelletier	Acct code:	
Sampled By:	A. Passalis/K. Epilon		
Company:	Englobe		

Lot ID:	**1156775**
Control Number:	C0008952
Date Received:	Aug 23, 2016
Date Reported:	Sep 21, 2016
Report Number:	2133731

		Reference Number	1156775-7	1156775-8		
		Sample Date	Aug 15, 2016	Aug 15, 2016		
		Sample Time	NA	NA		
		Sample Location				
		Sample Description	P216-18A	P216-28A		
		Matrix	Soil	Soil		
Analyte		**Units**	**Results**	**Results**	**Results**	Nominal Detection Limit
Silica Gel Cleanup						
Silica Gel Cleanup			Done	Done		
Soil % Moisture						
Moisture	Soil % Moisture	% by weight	7.37	76.20		
Polychlorinated Biphenyls - Soil						
Aroclor 1016	Dry Weight	mg/kg	<0.05	<0.05		0.05
Aroclor 1221	Dry Weight	mg/kg	<0.05	<0.05		0.05
Aroclor 1232	Dry Weight	mg/kg	<0.05	<0.05		0.05
Aroclor 1242	Dry Weight	mg/kg	<0.05	<0.05		0.05
Aroclor 1248	Dry Weight	mg/kg	<0.05	<0.05		0.05
Aroclor 1254	Dry Weight	mg/kg	<0.05	<0.05		0.05
Aroclor 1260	Dry Weight	mg/kg	<0.05	<0.05		0.05
Aroclor 1262	Dry Weight	mg/kg	<0.05	<0.05		0.05
Aroclor 1268	Dry Weight	mg/kg	<0.05	<0.05		0.05
Total PCBs	Dry Weight	mg/kg	<0.05	<0.05		0.05
Polychlorinated Biphenyls - Soil - Surrogate						
Decachlorobiphenyl	Surrogate	%	112	108		50-150

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Report To:	Englobe	ID:	2016-LFM KITIK13	Control Number:	C0008952
	Office 400	Name:	Cape Young	Date Received:	Aug 23, 2016
	1260, Lebourgneuf Boulevard	Location:	PIN-2	Date Reported:	Sep 21, 2016
	Quebec, QC, Canada	LSD:		Report Number:	2133731
	G2K 2G2	P.O.:			
Attn:	Jean-Pierre Pelletier	Acct code:			
Sampled By:	A. Passalis/K. Epilon				
Company:	Englobe				

Reference Number	1156775-9
Sample Date	Aug 17, 2016
Sample Time	NA
Sample Location	
Sample Description	P216-2W
Matrix	Water

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Metals Total						
Aluminum	Total	mg/L	<0.02			0.02
Calcium	Total	mg/L	92.7			0.2
Iron	Total	mg/L	<0.05			0.05
Magnesium	Total	mg/L	37.9			0.2
Manganese	Total	mg/L	<0.005			0.005
Potassium	Total	mg/L	3.1			0.4
Silicon	Total	mg/L	1.35			0.05
Sodium	Total	mg/L	21.6			0.4
Sulfur	Total	mg/L	60.9			0.3
Mercury	Total	mg/L	0.000009			0.000005
Antimony	Total	mg/L	0.0002			0.0002
Arsenic	Total	mg/L	0.0006			0.0002
Barium	Total	mg/L	0.017			0.001
Beryllium	Total	mg/L	<0.0001			0.0001
Bismuth	Total	mg/L	<0.0005			0.0005
Boron	Total	mg/L	0.065			0.002
Cadmium	Total	mg/L	0.00002			0.00001
Chromium	Total	mg/L	<0.0005			0.0005
Cobalt	Total	mg/L	<0.0001			0.0001
Copper	Total	mg/L	<0.001			0.001
Lead	Total	mg/L	<0.0001			0.0001
Lithium	Total	mg/L	0.004			0.001
Molybdenum	Total	mg/L	0.016			0.001
Nickel	Total	mg/L	0.0030			0.0005
Selenium	Total	mg/L	0.0008			0.0002
Silver	Total	mg/L	<0.00001			0.00001
Strontium	Total	mg/L	0.149			0.001
Thallium	Total	mg/L	0.00007			0.00005
Tin	Total	mg/L	<0.001			0.001
Titanium	Total	mg/L	<0.0005			0.0005
Uranium	Total	mg/L	0.0096			0.0005
Vanadium	Total	mg/L	0.0001			0.0001
Zinc	Total	mg/L	0.003			0.001
Zirconium	Total	mg/L	<0.001			0.001
Mono-Aromatic Hydrocarbons - Water						
Benzene		mg/L	<0.001			0.001

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Analytical Report

Bill To:	Englobe	Project:		Lot ID:	**1156775**
Report To:	Englobe	ID:	2016-LFM KITIK13	Control Number:	C0008952
	Office 400	Name:	Cape Young	Date Received:	Aug 23, 2016
	1260, Lebourgneuf Boulevard	Location:	PIN-2	Date Reported:	Sep 21, 2016
	Quebec, QC, Canada	LSD:		Report Number:	2133731
	G2K 2G2	P.O.:			
Attn:	Jean-Pierre Pelletier	Acct code:			
Sampled By:	A. Passalis/K. Epilon				
Company:	Englobe				

Reference Number	1156775-9
Sample Date	Aug 17, 2016
Sample Time	NA
Sample Location	
Sample Description	P216-2W
Matrix	Water

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Mono-Aromatic Hydrocarbons - Water - Continued						
Toluene		mg/L	<0.0004			0.0004
Ethylbenzene		mg/L	<0.0010			0.0010
Total Xylenes (m,p,o)		mg/L	<0.001			0.001
Volatile Petroleum Hydrocarbons - Water						
F1 -BTEX		mg/L	<0.1			0.1
F1 C6-C10		mg/L	<0.1			
F2 C10-C16		mg/L	<0.1			0.1
Extractable Petroleum Hydrocarbons - Water						
F3 C16-C34		mg/L	<0.1			0.1
F4 C34-C50		mg/L	<0.1			0.1
F4HTGC C34-C50+		mg/L	<0.1			0.1
Polychlorinated Biphenyls - Water						
Aroclor 1016		ug/L	<0.05			0.05
Aroclor 1221		ug/L	<0.05			0.05
Aroclor 1232		ug/L	<0.05			0.05
Aroclor 1242		ug/L	<0.05			0.05
Aroclor 1248		ug/L	<0.05			0.05
Aroclor 1254		ug/L	<0.05			0.05
Aroclor 1260		ug/L	<0.05			0.05
Aroclor 1262		ug/L	<0.05			0.05
Aroclor 1268		ug/L	<0.05			0.05
Total PCBs		ug/L	<0.05			0.05
Polychlorinated Biphenyls - Water - Surrogate						
Decachlorobiphenyl	Surrogate	%	105			50-150

Approved by:

Anthony Neumann, MSc
Laboratory Operations Manager

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Methodology and Notes

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Company:	Englobe		

Lot ID:	**1156775**
Control Number:	C0008952
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Method of Analysis

Method Name	Reference		Method	Date Analysis Started	Location
BTEX-CCME - Soil	CCME	*	Reference Method for Canada-Wide Standard for PHC in Soil, CWS PHCS TIER 1	24-Aug-16	Exova Calgary
BTEX-CCME - Soil	US EPA	*	Volatile Organic Compounds in Various Sample Matrices Using Equilibrium Headspace Analysis/Gas Chromatography Mass Spectrometry, 5021/8260	24-Aug-16	Exova Calgary
BTEX-CCME - Water	US EPA	*	Volatile Organic Compounds in Various Sample Matrices Using Equilibrium Headspace Analysis/Gas Chromatography Mass Spectrometry, 5021/8260	25-Aug-16	Exova Calgary
Mercury (Total) in water	US EPA	*	Determination of Hg in Sediment by Cold Vapor Atomic Absorption Spec, 245.5	24-Aug-16	Exova Edmonton
Metals ICP (Hot Block) in soil	EPA	*	Sample Preparation Procedure for Spectrochemical Determination of Total Recoverable Elements, October 1999, 200.2	24-Aug-16	Exova Edmonton
Metals ICP (Hot Block) in soil	US EPA	*	Determination of Trace Elements in Waters and Wastes by ICP-MS, 200.8	24-Aug-16	Exova Edmonton
Metals ICP-MS (Total) in water	US EPA	*	Determination of Trace Elements in Waters and Wastes by ICP-MS, 200.8	24-Aug-16	Exova Edmonton
Metals Trace (Total) in water	APHA	*	Inductively Coupled Plasma (ICP) Method, 3120 B	24-Aug-16	Exova Edmonton
PCB - Soil - Low	US EPA	*	Polychlorinated Biphenyls (PCBs) by Gas Chromatography, 8082A	26-Aug-16	Exova Calgary
PCB - Water - Low	US EPA	*	Polychlorinated Biphenyls (PCBs) by Gas Chromatography, 8082A	26-Aug-16	Exova Calgary
TEH-CCME - Water	EPA/CCME	*	Separatory Funnel Liquid-liquid Extraction/CCME, EPA 3510/CCME	26-Aug-16	Exova Calgary
TEH-CCME-Soil (Shake)	CCME	*	Reference Method for Canada-Wide Standard for PHC in Soil, CWS PHCS TIER 1	24-Aug-16	Exova Calgary

** Reference Method Modified*

References

APHA	Standard Methods for the Examination of Water and Wastewater
APHA/USEPA	Standard Methods For Water/ Environmental Protection Agency
CCME	Canadian Council of Ministers of the Environment
EPA	Environmental Protection Agency Test Methods - US
EPA/CCME	Environmental Protection Agency Test Methods - US/CCME
US EPA	US Environmental Protection Agency Test Methods

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Methodology and Notes

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	Quebec, QC, Canada	LSD:	
	G2K 2G2	P.O.:	
Attn:	Jean-Pierre Pelletier	Acct code:	
Sampled By:	A. Passalis/K. Epilon		
Company:	Englobe		

Lot ID:	**1156775**
Control Number:	C0008952
Date Received:	Aug 23, 2016
Date Reported:	Sep 21, 2016
Report Number:	2133731

Comments:

- Report was issued to include different QC report format as requested by Jean-Pierre Pelletier of Englobe on Sept.21, 2016. Previous report 2127203.
- Upon receipt, samples 1156775 (1-8) had exceeded recommended holding time for BTEX/F1 analysis.

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Analytical Report

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Lot ID:	**1156775**
Control Number:	C0008952
Date Received:	Aug 23, 2016
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Petroleum Hydrocarbons in Soil

Batch Notes

1. The method used complies with the Reference Method for the Canada Wide Standards for Petroleum Hydrocarbons in Soil - Tier 1, April 2001, including Addendum 1, and is accredited for use in Exova.
2. Modifications of the method: See Notes and Methodology for nonconformances (if applicable).
3. Qualifications on results: See Notes and Methodology for nonconformances (if applicable).
4. Silica gel treatment is performed for fractions F2, F3, F4.
5. F1-BTEX: BTEX has been subtracted from the F1 fraction.
6. If analyzed, naphthalene has been subtracted from fraction F2 and selected PAHs have been subtracted from fraction F3.
7. F4HTGC is reported when more than 5% of the total carbon envelope elutes past C_{50}.
8. Exova does not routinely report Gravimetric Heavy Hydrocarbons (F4G or F4G-sg), F4HTGC through extended range high temperature GC is reported instead.
9. When both F4(C_{34}-C_{50}) and F4HTGC are reported, F4HTGC is the final F4 that is to be used for interpreting the CWS.
10. Quality criteria met for the batch: Data is reported in Quality Control Section of report (if requested).
    -nC_6 and nC_{10} response factors (RF) are within 30% of RF for toluene
    -nC_{10}, nC_{16} and nC_{34} RFs are within 10% of each other
    -nC_{50} RF is within 30% of the average RF for nC_{10}+nC_{16}+nC_{34}
    -linearity is within 15% for each of the calibrated carbon ranges
11. Batch data for analytical quality control are available on request.
12. Extraction and analysis holding times were met: See Notes and Methodology for nonconformances (if applicable).

Approved by:

Anthony Neumann, MSc
Laboratory Operations Manager

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Quality Control

Bill To:	Englobe	Project:		Lot ID:	**1156775**
Report To:	Englobe	ID:	2016-LFM KITIK13	Control Number:	C0008952
	Office 400	Name:	Cape Young	Date Received:	Aug 23, 2016
	1260, Lebourgneuf Boulevard	Location:	PIN-2	Date Reported:	Sep 21, 2016
	Quebec, QC, Canada	LSD:		Report Number:	2133731
	G2K 2G2	P.O.:			
Attn:	Jean-Pierre Pelletier	Acct code:			
Sampled By:	A. Passalis/K. Epilon				
Company:	Englobe				

Extractable Petroleum Hydrocarbons - Soil

Blanks	Units	Measured	Lower Limit	Upper Limit		Passed QC
1569875-14		August 24, 2016				
F2c C10-C16	ug/mL	0	-10	10		yes
F3c C16-C34	ug/mL	0	-30	30		yes
F4c C34-C50	ug/mL	0	-20	20		yes
F4HTGCc C34-C50+	ug/mL	0	-20	20		yes
Calibration Check	**Units**	**% Recovery**	**Lower Limit**	**Upper Limit**		**Passed QC**
1569875-13		August 24, 2016				
F2c C10-C16	ug/mL	104.66	85	115		yes
F3c C16-C34	ug/mL	106.94	85	115		yes
F4c C34-C50	ug/mL	103.72	85	115		yes
F4HTGCc C34-C50+	ug/mL	96.95	85	115		yes
Client Sample Replicates	**Units**	**Replicate 1**	**Replicate 2**	**% RSD Criteria**	**Absolute Criteria**	**Passed QC**
1569875-4		August 24, 2016				
F2c C10-C16	mg/kg	<50	<50	50	10	yes
F3c C16-C34	mg/kg	<50	<50	50	10	yes
F4c C34-C50	mg/kg	<100	<100	50	10	yes
F4HTGCc C34-C50+	mg/kg	<100	<100	50	10	yes
Matrix Spike	**Units**	**% Recovery**	**Lower Limit**	**Upper Limit**		**Passed QC**
1569875-3		August 24, 2016				
F2c C10-C16	mg/kg	88	65	135		yes
F3c C16-C34	mg/kg	97	65	135		yes
F4c C34-C50	mg/kg	104	65	135		yes
F4HTGCc C34-C50+	mg/kg	103	65	135		yes

Extractable Petroleum Hydrocarbons - Water

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
1570628-8		August 26, 2016			
F2 C10-C16	ug/mL	0	-0.2	0.2	yes
F3 C16-C34	ug/mL	0	-0.2	0.2	yes
F3+ C34+	ug/mL	0	-0.2	0.2	yes
F4 C34-C50	ug/mL	0	-0.2	0.2	yes
F4HTGC C34-C50+	ug/mL	0	-0.2	0.2	yes
Calibration Check	**Units**	**% Recovery**	**Lower Limit**	**Upper Limit**	**Passed QC**
1570628-7		August 26, 2016			
F2 C10-C16	ug/mL	95.50	85	115	yes
F3 C16-C34	ug/mL	98.76	85	115	yes
F3+ C34+	ug/mL	87.23	85	115	yes
F4 C34-C50	ug/mL	92.59	85	115	yes
F4HTGC C34-C50+	ug/mL	87.23	85	115	yes

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Quality Control

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	G2K 2G2	P.O.:	
Attn:	Jean-Pierre Pelletier	Acct code:	
Sampled By:	A. Passalis/K. Epilon		
Company:	Englobe		

Lot ID:	**1156775**
Control Number:	C0008952
Date Received:	Aug 23, 2016
Date Reported:	Sep 21, 2016
Report Number:	2133731

Extractable Petroleum Hydrocarbons - Water - Continued

Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
1570628-5		August 26, 2016				
F2 C10-C16	mg/L	87.0	86.7	15	0.2	yes
F3 C16-C34	mg/L	93.1	93.0	15	0.2	yes
F3+ C34+	mg/L	84.6	83.7	15	0.2	yes
F4 C34-C50	mg/L	87.6	87.0	15	0.2	yes
F4HTGC C34-C50+	mg/L	84.6	83.7	15	0.2	yes

Matrix Spike	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
1570628-3		August 26, 2016			
F2 C10-C16	mg/L	87	80	120	yes
F3 C16-C34	mg/L	93	80	120	yes
F3+ C34+	mg/L	85	80	120	yes
F4 C34-C50	mg/L	88	80	120	yes
F4HTGC C34-C50+	mg/L	85	80	120	yes

Metals Strong Acid Digestion

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
1569610-2		August 24, 2016			
Antimony	ug/L	-0.0073021	-0.1	0.2	yes
Arsenic	ug/L	0.000222937	-0.2	0.2	yes
Barium	ug/L	0.11052	-1	1	yes
Beryllium	ug/L	-0.003736	-0.1	0.1	yes
Cadmium	ug/L	2.52281e-005	-0.01	0.01	yes
Chromium	ug/L	-0.302978	-0.5	0.5	yes
Cobalt	ug/L	0.00105891	-0.1	0.1	yes
Copper	ug/L	0.0696554	-0.6	1.2	yes
Lead	ug/L	-0.0701499	-5.0	5.0	yes
Mercury	ug/L	0.0011107	-0.04	0.04	yes
Molybdenum	ug/L	0.0191089	-1.0	1.0	yes
Nickel	ug/L	-0.0167198	-0.4	0.7	yes
Selenium	ug/L	-0.0394988	-0.3	0.3	yes
Silver	ug/L	-0.000435262	-0.09	0.14	yes
Thallium	ug/L	0.00156897	-0.04	0.04	yes
Tin	ug/L	-0.00373174	-0.4	0.4	yes
Uranium	ug/L	0.00255105	-0.5	0.5	yes
Vanadium	ug/L	-0.0231922	-0.1	0.1	yes
Zinc	ug/L	0.00343969	-1	1	yes

Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
1569610-4		August 24, 2016				
Antimony	mg/kg	0.4	0.4	20	0.4	yes
Arsenic	mg/kg	9.0	8.4	20	0.4	yes
Barium	mg/kg	211	203	20	2	yes

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Lot ID:	**1156775**
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Date Received:	Aug 23, 2016
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Metals Strong Acid Digestion - Continued

Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Beryllium	mg/kg	0.7	0.6	20	0.2	yes
Cadmium	mg/kg	0.37	0.35	20	0.02	yes
Chromium	mg/kg	18.5	18.7	20	1.1	yes
Cobalt	mg/kg	8.7	8.4	20	0.2	yes
Copper	mg/kg	17.3	17.1	20	2.2	yes
Lead	mg/kg	9.9	9.7	20	0.2	yes
Mercury	mg/kg	<0.05	<0.05	20	0.05	yes
Molybdenum	mg/kg	<1.0	<1.0	20	2.2	yes
Nickel	mg/kg	22.2	22.1	20	1.1	yes
Selenium	mg/kg	0.5	0.5	20	0.7	yes
Silver	mg/kg	<0.1	<0.1	20	0.22	yes
Thallium	mg/kg	0.19	0.19	20	0.11	yes
Tin	mg/kg	<1.0	<1.0	20	2.2	yes
Uranium	mg/kg	0.8	0.8	20	1.1	yes
Vanadium	mg/kg	30.7	29.6	20	0.2	yes
Zinc	mg/kg	80	78	20	2	yes

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
1569610-1		August 24, 2016			
Antimony	mg/kg	39.3	36.1	43.9	yes
Arsenic	mg/kg	39.2	36.3	43.9	yes
Barium	mg/kg	198	183	225	yes
Beryllium	mg/kg	20.4	17.4	22.2	yes
Cadmium	mg/kg	2.03	1.88	2.28	yes
Chromium	mg/kg	100	94.2	107.8	yes
Cobalt	mg/kg	19.3	17.0	23.0	yes
Copper	mg/kg	204	179.5	210.5	yes
Lead	mg/kg	20.4	18.6	21.8	yes
Mercury	mg/kg	3.06	2.24	4.16	yes
Molybdenum	mg/kg	207	174.8	234.8	yes
Nickel	mg/kg	100	91.6	108.4	yes
Selenium	mg/kg	39.0	36.6	43.4	yes
Silver	mg/kg	19.8	18.70	22.90	yes
Thallium	mg/kg	10.2	9.20	11.00	yes
Tin	mg/kg	203	185.9	215.9	yes
Uranium	mg/kg	106	86.0	116.0	yes
Vanadium	mg/kg	20.1	18.4	22.4	yes
Zinc	mg/kg	200	170	230	yes
1569610-3		August 24, 2016			
Antimony	mg/kg	4.3	3.4	5.8	yes
Arsenic	mg/kg	99.7	88.0	124.0	yes
Barium	mg/kg	239	202	292	yes
Beryllium	mg/kg	0.7	0.1	0.9	yes

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Metals Strong Acid Digestion - Continued

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
Cadmium	mg/kg	2.15	1.81	2.71	yes
Chromium	mg/kg	37.1	31.6	46.6	yes
Cobalt	mg/kg	13.4	11.6	15.6	yes
Copper	mg/kg	217	175.0	283.0	yes
Lead	mg/kg	129	106.0	154.0	yes
Mercury	mg/kg	0.29	0.25	0.45	yes
Molybdenum	mg/kg	2.5	1.9	3.7	yes
Nickel	mg/kg	63.9	51.8	84.2	yes
Selenium	mg/kg	0.7	0.3	0.9	yes
Silver	mg/kg	1	0.73	1.39	yes
Thallium	mg/kg	0.32	0.26	0.48	yes
Tin	mg/kg	2.9	2.2	5.2	yes
Uranium	mg/kg	1.2	1.0	1.5	yes
Vanadium	mg/kg	45.3	34.2	55.8	yes
Zinc	mg/kg	588	460	748	yes

Metals Total

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
1569645-5		August 24, 2016			
Antimony	ug/L	0.000257881	-0.2	0.2	yes
Arsenic	ug/L	0.00375983	-0.2	0.2	yes
Barium	ug/L	0.00309365	-1	1	yes
Beryllium	ug/L	0.000952585	-0.1	0.1	yes
Bismuth	ug/L	0.00401763	-0.5	0.5	yes
Boron	ug/L	0.667325	-1	3	yes
Cadmium	ug/L	0.000380282	-0.007	0.012	yes
Chromium	ug/L	-0.00887206	-0.7	0.3	yes
Cobalt	ug/L	-0.0134661	-0.1	0.1	yes
Copper	ug/L	0.297909	-1	1	yes
Lead	ug/L	-0.00917724	-0.1	0.1	yes
Lithium	ug/L	0.0408753	-1	1	yes
Molybdenum	ug/L	0.000537744	-1	1	yes
Nickel	ug/L	-0.016637	-0.5	0.5	yes
Selenium	ug/L	0.0044956	-0.2	0.2	yes
Silver	ug/L	-0.000952934	-0.02	0.10	yes
Strontium	ug/L	-0.00285773	-1	1	yes
Thallium	ug/L	0.000262931	-0.05	0.05	yes
Tin	ug/L	-0.0129552	-1	1	yes
Titanium	ug/L	0.0360934	-0.5	0.5	yes
Uranium	ug/L	0.0006663	-0.5	0.5	yes
Vanadium	ug/L	0.00304443	-0.1	0.1	yes
Zinc	ug/L	-0.0955784	-0	1	yes
Zirconium	ug/L	-0.00150478	-1	1	yes

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Quality Control

Bill To:	Englobe	Project:		Lot ID:	**1156775**
Report To:	Englobe	ID:	2016-LFM KITIK13	Control Number:	C0008952
	Office 400	Name:	Cape Young	Date Received:	Aug 23, 2016
	1260, Lebourgneuf Boulevard	Location:	PIN-2	Date Reported:	Sep 21, 2016
	Quebec, QC, Canada	LSD:		Report Number:	2133731
	G2K 2G2	P.O.:			
Attn:	Jean-Pierre Pelletier	Acct code:			
Sampled By:	A. Passalis/K. Epilon				
Company:	Englobe				

Metals Total - Continued

Blanks	Units	Measured	Lower Limit	Upper Limit		Passed QC
1569646-5		August 24, 2016				
Aluminum	mg/L	0.0019	-0.01	0.02		yes
Calcium	mg/L	-0.0251	-0.1	0.1		yes
Iron	mg/L	0.0026	-0.01	0.02		yes
Magnesium	mg/L	-0.003	-0.04	0.04		yes
Manganese	mg/L	0.0004	-0.003	0.003		yes
Potassium	mg/L	-0.0003	-0.1	0.2		yes
Silicon	mg/L	-0.0104	-0.03	0.04		yes
Sodium	mg/L	-0.0122	-0.1	0.2		yes
Sulfur	mg/L	-0.0174	-0.1	0.2		yes
1569722-5		August 24, 2016				
Mercury	ug/L	0.0038	-0.038000	0.070000		yes
Client Sample Replicates	**Units**	**Replicate 1**	**Replicate 2**	**% RSD Criteria**	**Absolute Criteria**	**Passed QC**
1569645-13		August 24, 2016				
Antimony	ug/L	<0.2	<0.2	15	0.4	yes
Arsenic	ug/L	3.9	4.0	15	0.4	yes
Barium	ug/L	36	37	15	2	yes
Beryllium	ug/L	<0.1	<0.1	15	0.2	yes
Bismuth	ug/L	<0.5	<0.5	15	1.1	yes
Boron	ug/L	98	100	15	4	yes
Cadmium	ug/L	<0.01	<0.01	15	0.022	yes
Chromium	ug/L	<0.5	<0.5	15	1.1	yes
Cobalt	ug/L	0.5	0.5	15	0.2	yes
Copper	ug/L	<1	<1	15	2	yes
Lead	ug/L	0.1	0.1	15	0.2	yes
Lithium	ug/L	42	43	15	2	yes
Molybdenum	ug/L	<1	<1	15	2	yes
Nickel	ug/L	2.7	2.8	15	1.1	yes
Selenium	ug/L	<0.2	<0.2	15	0.4	yes
Silver	ug/L	<0.01	<0.01	15	0.22	yes
Strontium	ug/L	545	556	15	2	yes
Thallium	ug/L	<0.05	<0.05	15	0.11	yes
Tin	ug/L	<1	<1	15	2	yes
Titanium	ug/L	5.5	5.5	15	1.1	yes
Uranium	ug/L	0.9	0.9	15	1.1	yes
Vanadium	ug/L	1.4	1.4	15	0.2	yes
Zinc	ug/L	2	2	15	2	yes
Zirconium	ug/L	<1	1	15	2	yes
1569646-7		August 24, 2016				
Aluminum	mg/L	<0.50	<0.50	15	0.03	yes
Calcium	mg/L	439	455	15	0.6	yes
Iron	mg/L	87.0	92.9	15	0.20	yes

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Quality Control

Bill To:	Englobe	Project:	
Report To:	Englobe	ID:	2016-LFM KITIK13
	Office 400	Name:	Cape Young
	1260, Lebourgneuf Boulevard	Location:	PIN-2
	Quebec, QC, Canada	LSD:	
	G2K 2G2	P.O.:	
Attn:	Jean-Pierre Pelletier	Acct code:	
Sampled By:	A. Passalis/K. Epilon		
Company:	Englobe		

Lot ID:	**1156775**
Control Number:	C0008952
Date Received:	Aug 23, 2016
Date Reported:	Sep 21, 2016
Report Number:	2133731

Metals Total - Continued

Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Magnesium	mg/L	401	412	15	0.40	yes
Manganese	mg/L	1.1	1.2	15	0.010	yes
Potassium	mg/L	436	452	15	1.2	yes
Silicon	mg/L	6.95	7.37	15	0.10	yes
Sodium	mg/L	15400	16100	15	1.2	yes
Sulfur	mg/L	<8	<8	15	0.1	yes
1569646-23		August 24, 2016				
Aluminum	mg/L	1.04	1.03	15	0.03	yes
Calcium	mg/L	46.9	46.5	15	0.6	yes
Iron	mg/L	1.29	1.29	15	0.20	yes
Magnesium	mg/L	13.4	13.3	15	0.40	yes
Manganese	mg/L	0.050	0.049	15	0.010	yes
Potassium	mg/L	1.4	1.4	15	1.2	yes
Silicon	mg/L	3.92	3.92	15	0.10	yes
Sodium	mg/L	7.2	7.2	15	1.2	yes
Sulfur	mg/L	17.3	17.0	15	0.1	yes
1569722-6		August 24, 2016				
Mercury	mg/L	0.00001	0.000009	10	0.000300	yes
1569722-23		August 24, 2016				
Mercury	mg/L	0.000034	0.000036	10	0.000300	yes

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
1569645-4		August 24, 2016			
Antimony	ug/L	12.2	10.8	13.2	yes
Arsenic	ug/L	12.3	10.8	12.9	yes
Barium	ug/L	61	54	68	yes
Beryllium	ug/L	6.0	4.9	6.8	yes
Bismuth	ug/L	29.6	26.2	35.8	yes
Boron	ug/L	124	102	139	yes
Cadmium	ug/L	0.605	0.567	0.687	yes
Chromium	ug/L	30.9	26.5	33.7	yes
Cobalt	ug/L	6.1	5.2	6.8	yes
Copper	ug/L	61	53	67	yes
Lead	ug/L	5.9	5.2	7.1	yes
Lithium	ug/L	61	53	77	yes
Molybdenum	ug/L	60	56	66	yes
Nickel	ug/L	31.4	28.9	33.1	yes
Selenium	ug/L	11.8	9.9	13.5	yes
Silver	ug/L	6.25	5.39	7.13	yes
Strontium	ug/L	61	54	69	yes
Thallium	ug/L	3.10	2.81	3.89	yes
Tin	ug/L	64	56	66	yes
Titanium	ug/L	30.9	26.6	35.7	yes

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Quality Control

Bill To:	Englobe	Project:		Lot ID:	**1156775**
Report To:	Englobe	ID:	2016-LFM KITIK13	Control Number:	C0008952
	Office 400	Name:	Cape Young	Date Received:	Aug 23, 2016
	1260, Lebourgneuf Boulevard	Location:	PIN-2	Date Reported:	Sep 21, 2016
	Quebec, QC, Canada	LSD:		Report Number:	2133731
	G2K 2G2	P.O.:			
Attn:	Jean-Pierre Pelletier	Acct code:			
Sampled By:	A. Passalis/K. Epilon				
Company:	Englobe				

Metals Total - Continued

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
Uranium	ug/L	30.3	25.7	36.3	yes
Vanadium	ug/L	6.2	5.1	7.2	yes
Zinc	ug/L	61	53	67	yes
Zirconium	ug/L	59	53	67	yes
1569646-4		August 24, 2016			
Aluminum	mg/L	4.12	3.61	4.45	yes
Calcium	mg/L	53.1	47.9	57.9	yes
Iron	mg/L	2.14	1.91	2.27	yes
Magnesium	mg/L	20.6	18.14	22.14	yes
Manganese	mg/L	0.537	0.472	0.568	yes
Potassium	mg/L	53.5	46.8	56.8	yes
Silicon	mg/L	2.25	1.90	2.30	yes
Sodium	mg/L	53.8	47.6	57.6	yes
Sulfur	mg/L	10.6	9.2	11.2	yes
1569722-4		August 24, 2016			
Mercury	mg/L	0.000752	0.000600	0.000960	yes
1569645-3		August 24, 2016			
Antimony	ug/L	39.8	37.5	43.1	yes
Arsenic	ug/L	40.2	36.5	43.5	yes
Barium	ug/L	196	186	216	yes
Beryllium	ug/L	18.9	17.1	21.9	yes
Bismuth	ug/L	94.1	91.3	106.3	yes
Boron	ug/L	386	343	436	yes
Cadmium	ug/L	2.06	1.915	2.205	yes
Chromium	ug/L	100	90.0	110.0	yes
Cobalt	ug/L	19.6	18.1	21.7	yes
Copper	ug/L	203	182	214	yes
Lead	ug/L	19.9	18.0	24.0	yes
Lithium	ug/L	193	173	222	yes
Molybdenum	ug/L	196	189	225	yes
Nickel	ug/L	102	90.0	110.0	yes
Selenium	ug/L	39.6	37.2	43.6	yes
Silver	ug/L	20.1	18.00	22.00	yes
Strontium	ug/L	199	171	231	yes
Thallium	ug/L	9.63	9.16	10.96	yes
Tin	ug/L	205	191	213	yes
Titanium	ug/L	97.6	91.5	106.3	yes
Uranium	ug/L	94.2	90.2	109.0	yes
Vanadium	ug/L	19.9	16.9	22.1	yes
Zinc	ug/L	203	183	218	yes
1569645-29		August 24, 2016			
Antimony	ug/L	39.4	37.5	43.1	yes

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Report To:	Englobe	ID:	2016-LFM KITIK13
	Office 400	Name:	Cape Young
	1260, Lebourgneuf Boulevard	Location:	PIN-2
	Quebec, QC, Canada	LSD:	
	G2K 2G2	P.O.:	
Attn:	Jean-Pierre Pelletier	Acct code:	
Sampled By:	A. Passalis/K. Epilon		
Company:	Englobe		

Lot ID:	**1156775**
Control Number:	C0008952
Date Received:	Aug 23, 2016
Date Reported:	Sep 21, 2016
Report Number:	2133731

Metals Total - Continued

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
Arsenic	ug/L	40.1	36.5	43.5	yes
Barium	ug/L	202	186	216	yes
Beryllium	ug/L	19.4	17.1	21.9	yes
Bismuth	ug/L	97.0	91.3	106.3	yes
Boron	ug/L	397	343	436	yes
Cadmium	ug/L	2.04	1.915	2.205	yes
Chromium	ug/L	101	90.0	110.0	yes
Cobalt	ug/L	19.9	18.1	21.7	yes
Copper	ug/L	206	182	214	yes
Lead	ug/L	20.5	18.0	24.0	yes
Lithium	ug/L	192	173	222	yes
Molybdenum	ug/L	207	189	225	yes
Nickel	ug/L	103	90.0	110.0	yes
Selenium	ug/L	39.6	37.2	43.6	yes
Silver	ug/L	20.5	18.00	22.00	yes
Strontium	ug/L	199	171	231	yes
Thallium	ug/L	9.99	9.16	10.96	yes
Tin	ug/L	204	191	213	yes
Titanium	ug/L	99.1	91.5	106.3	yes
Uranium	ug/L	100	90.2	109.0	yes
Vanadium	ug/L	20.0	16.9	22.1	yes
Zinc	ug/L	204	183	218	yes
1569722-3		August 24, 2016			
Mercury	mg/L	0.00290	0.002600	0.003200	yes
1569722-30		August 24, 2016			
Mercury	mg/L	0.00293	0.002600	0.003200	yes
1569645-2		August 24, 2016			
Antimony	ug/L	11.8	10.8	13.2	yes
Arsenic	ug/L	12.7	10.8	13.2	yes
Barium	ug/L	62	55	67	yes
Beryllium	ug/L	6.0	5.2	6.5	yes
Bismuth	ug/L	28.9	27.5	33.5	yes
Boron	ug/L	127	108	132	yes
Cadmium	ug/L	0.628	0.560	0.692	yes
Chromium	ug/L	31.3	27.0	33.0	yes
Cobalt	ug/L	6.2	5.4	6.6	yes
Copper	ug/L	62	54	66	yes
Lead	ug/L	5.9	5.4	6.6	yes
Lithium	ug/L	65	53	66	yes
Molybdenum	ug/L	61	54	66	yes
Nickel	ug/L	31.8	27.0	33.0	yes
Selenium	ug/L	12.0	10.3	13.4	yes

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Quality Control

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	Office 400	Name:	Cape Young
	1260, Lebourgneuf Boulevard	Location:	PIN-2
	Quebec, QC, Canada	LSD:	
	G2K 2G2	P.O.:	
Attn:	Jean-Pierre Pelletier	Acct code:	
Sampled By:	A. Passalis/K. Epilon		
Company:	Englobe		

Lot ID:	**1156775**
Control Number:	C0008952
Date Received:	Aug 23, 2016
Date Reported:	Sep 21, 2016
Report Number:	2133731

Metals Total - Continued

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
Silver	ug/L	6.16	5.40	6.60	yes
Strontium	ug/L	61	54	66	yes
Thallium	ug/L	2.91	0.00	6.00	yes
Tin	ug/L	63	54	66	yes
Titanium	ug/L	31.7	27.0	33.0	yes
Uranium	ug/L	29.8	27.0	33.0	yes
Vanadium	ug/L	6.3	5.4	6.6	yes
Zinc	ug/L	65	57	69	yes
Zirconium	ug/L	61	54	66	yes
1569645-28		August 24, 2016			
Antimony	ug/L	11.9	10.8	13.2	yes
Arsenic	ug/L	12.1	10.8	13.2	yes
Barium	ug/L	61	55	67	yes
Beryllium	ug/L	6.0	5.2	6.5	yes
Bismuth	ug/L	30.5	27.5	33.5	yes
Boron	ug/L	120	108	132	yes
Cadmium	ug/L	0.638	0.560	0.692	yes
Chromium	ug/L	30.5	27.0	33.0	yes
Cobalt	ug/L	6.0	5.4	6.6	yes
Copper	ug/L	61	54	66	yes
Lead	ug/L	6.2	5.4	6.6	yes
Lithium	ug/L	61	53	66	yes
Molybdenum	ug/L	59	54	66	yes
Nickel	ug/L	31.4	27.0	33.0	yes
Selenium	ug/L	12.0	10.3	13.4	yes
Silver	ug/L	6.24	5.40	6.60	yes
Strontium	ug/L	60	54	66	yes
Thallium	ug/L	3.07	0.00	6.00	yes
Tin	ug/L	63	54	66	yes
Titanium	ug/L	30.6	27.0	33.0	yes
Uranium	ug/L	31.4	27.0	33.0	yes
Vanadium	ug/L	6.1	5.4	6.6	yes
Zinc	ug/L	62	57	69	yes
Zirconium	ug/L	59	54	66	yes
1569722-2		August 24, 2016			
Mercury	mg/L	0.000825	0.000700	0.000880	yes
1569722-29		August 24, 2016			
Mercury	mg/L	0.000824	0.000700	0.000880	yes
1569645-1		August 24, 2016			
Antimony	ug/L	2.0	1.8	2.2	yes
Arsenic	ug/L	2.0	1.7	2.2	yes
Barium	ug/L	10	9	11	yes

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	Office 400	Name:	Cape Young
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Attn:	Jean-Pierre Pelletier	Acct code:	
Sampled By:	A. Passalis/K. Epilon		
Company:	Englobe		

Lot ID:	**1156775**
Control Number:	C0008952
Date Received:	Aug 23, 2016
Date Reported:	Sep 21, 2016
Report Number:	2133731

Metals Total - Continued

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
Beryllium	ug/L	1	0.8	1.1	yes
Bismuth	ug/L	5.0	4.8	5.7	yes
Boron	ug/L	20	17	23	yes
Cadmium	ug/L	0.103	0.089	0.113	yes
Chromium	ug/L	5.1	4.6	5.4	yes
Cobalt	ug/L	1	0.9	1.1	yes
Copper	ug/L	10	9	11	yes
Lead	ug/L	0.9	0.9	1.1	yes
Lithium	ug/L	10	9	11	yes
Molybdenum	ug/L	10	9	11	yes
Nickel	ug/L	5.2	4.5	5.5	yes
Selenium	ug/L	1.9	1.6	2.2	yes
Silver	ug/L	1.03	0.89	1.13	yes
Strontium	ug/L	10	9	11	yes
Thallium	ug/L	0.50	0.47	0.57	yes
Tin	ug/L	10	9	11	yes
Titanium	ug/L	5.1	4.2	5.7	yes
Uranium	ug/L	4.9	4.5	5.5	yes
Vanadium	ug/L	1	0.9	1.2	yes
Zinc	ug/L	10	9	11	yes
Zirconium	ug/L	11	9	11	yes
1569645-27		August 24, 2016			
Antimony	ug/L	1.9	1.8	2.2	yes
Arsenic	ug/L	2.0	1.7	2.2	yes
Barium	ug/L	10	9	11	yes
Beryllium	ug/L	1	0.8	1.1	yes
Bismuth	ug/L	4.8	4.8	5.7	yes
Boron	ug/L	21	17	23	yes
Cadmium	ug/L	0.104	0.089	0.113	yes
Chromium	ug/L	5.0	4.6	5.4	yes
Cobalt	ug/L	1	0.9	1.1	yes
Copper	ug/L	10	9	11	yes
Lead	ug/L	0.9	0.9	1.1	yes
Lithium	ug/L	10	9	11	yes
Molybdenum	ug/L	10	9	11	yes
Nickel	ug/L	5.0	4.5	5.5	yes
Selenium	ug/L	1.9	1.6	2.2	yes
Silver	ug/L	1.01	0.89	1.13	yes
Strontium	ug/L	10	9	11	yes
Thallium	ug/L	0.49	0.47	0.57	yes
Tin	ug/L	10	9	11	yes
Titanium	ug/L	5.0	4.2	5.7	yes

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	Office 400	Name:	Cape Young
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Attn:	Jean-Pierre Pelletier	Acct code:	
Sampled By:	A. Passalis/K. Epilon		
Company:	Englobe		

Lot ID:	**1156775**
Control Number:	C0008952
Date Received:	Aug 23, 2016
Date Reported:	Sep 21, 2016
Report Number:	2133731

Metals Total - Continued

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
Uranium	ug/L	4.9	4.5	5.5	yes
Vanadium	ug/L	1.1	0.9	1.2	yes
Zinc	ug/L	10	9	11	yes
Zirconium	ug/L	10	9	11	yes
1569722-1		August 24, 2016			
Mercury	mg/L	0.000081	0.000064	0.000093	yes
1569722-28		August 24, 2016			
Mercury	mg/L	0.000081	0.000064	0.000093	yes
1569646-3		August 24, 2016			
Aluminum	mg/L	19.8	18.80	20.60	yes
Calcium	mg/L	247	236.0	263.6	yes
Iron	mg/L	9.85	9.07	10.15	yes
Magnesium	mg/L	99.0	92.78	104.72	yes
Manganese	mg/L	2.45	2.290	2.590	yes
Potassium	mg/L	256	234.2	261.8	yes
Silicon	mg/L	10.6	9.13	10.93	yes
Sodium	mg/L	255	228.8	269.4	yes
Sulfur	mg/L	152	135.5	165.3	yes
1569646-2		August 24, 2016			
Aluminum	mg/L	4.11	3.49	4.47	yes
Calcium	mg/L	52.9	46.5	56.5	yes
Iron	mg/L	2.12	1.87	2.27	yes
Magnesium	mg/L	20.6	18.05	22.07	yes
Manganese	mg/L	0.535	0.466	0.568	yes
Potassium	mg/L	53.2	45.4	55.5	yes
Silicon	mg/L	2.02	1.93	2.24	yes
Sodium	mg/L	53.6	45.9	55.9	yes
Sulfur	mg/L	10.5	9.3	11.3	yes
1569646-1		August 24, 2016			
Aluminum	mg/L	0.41	0.36	0.44	yes
Calcium	mg/L	5.3	4.8	5.8	yes
Iron	mg/L	0.21	0.19	0.25	yes
Magnesium	mg/L	2.0	1.84	2.20	yes
Manganese	mg/L	0.054	0.047	0.059	yes
Potassium	mg/L	5.4	4.7	5.7	yes
Silicon	mg/L	0.22	0.17	0.23	yes
Sodium	mg/L	5.4	4.8	5.6	yes
Sulfur	mg/L	3.1	2.8	3.3	yes

Mono-Aromatic Hydrocarbons - Soil

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC

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Quality Control

Bill To:	Englobe	Project:		Lot ID:	**1156775**
Report To:	Englobe	ID:	2016-LFM KITIK13	Control Number:	C0008952
	Office 400	Name:	Cape Young	Date Received:	Aug 23, 2016
	1260, Lebourgneuf Boulevard	Location:	PIN-2	Date Reported:	Sep 21, 2016
	Quebec, QC, Canada	LSD:		Report Number:	2133731
	G2K 2G2	P.O.:			
Attn:	Jean-Pierre Pelletier	Acct code:			
Sampled By:	A. Passalis/K. Epilon				
Company:	Englobe				

Mono-Aromatic Hydrocarbons - Soil

Blanks	Units	Measured	Lower Limit	Upper Limit		Passed QC
1569878-14		August 24, 2016				
Benzene	ng	0	-0.005	0.005		yes
Toluene	ng	0	-0.06	0.06		yes
Ethylbenzene	ng	0	-0.030	0.030		yes
Total Xylenes (m,p,o)	ng	0	-0.09	0.09		yes
Styrene	ng	0	-0.030	0.030		yes
Calibration Check	**Units**	**% Recovery**	**Lower Limit**	**Upper Limit**		**Passed QC**
1569878-13		August 24, 2016				
Benzene	ng	100.60	85	115		yes
Toluene	ng	97.20	85	115		yes
Ethylbenzene	ng	99.80	85	115		yes
Total Xylenes (m,p,o)	ng	94.67	85	115		yes
Styrene	ng	91.20	85	115		yes
Client Sample Replicates	**Units**	**Replicate 1**	**Replicate 2**	**% RSD Criteria**	**Absolute Criteria**	**Passed QC**
1569878-6		August 24, 2016				
Benzene	mg/kg	<0.005	<0.005	50	0.010	yes
Toluene	mg/kg	<0.02	<0.02	50	0.04	yes
Ethylbenzene	mg/kg	<0.005	<0.005	50	0.020	yes
m,p-Xylene	mg/kg	<0.02	<0.02	50	0.04	yes
o-Xylene	mg/kg	<0.02	<0.02	50	0.04	yes
Total Xylenes (m,p,o)	mg/kg	<0.03	<0.03	50	0.06	yes
Styrene	mg/kg	<0.01	<0.01	50	0.020	yes

Mono-Aromatic Hydrocarbons - Water

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
1570359-4		August 25, 2016			
Benzene	ng	0	-0.002	0.002	yes
Toluene	ng	0	-0.0015	0.0015	yes
Ethylbenzene	ng	0	-0.0015	0.0015	yes
Total Xylenes (m,p,o)	ng	0	-0.002	0.002	yes
Calibration Check	**Units**	**% Recovery**	**Lower Limit**	**Upper Limit**	**Passed QC**
1570359-3		August 25, 2016			
Benzene	ng	100.60	85	115	yes
Toluene	ng	97.20	85	115	yes
Ethylbenzene	ng	99.80	85	115	yes
Total Xylenes (m,p,o)	ng	94.67	85	115	yes

Polychlorinated Biphenyls - Soil

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
1570556-14		August 26, 2016			
Aroclor 1016	ug/mL	0	-0.00	0.00	yes
Aroclor 1221	ug/mL	0	-0.00	0.00	yes

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Quality Control

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Attn:	Jean-Pierre Pelletier	Acct code:			
Sampled By:	A. Passalis/K. Epilon				
Company:	Englobe				

Polychlorinated Biphenyls - Soil - Continued

Blanks	Units	Measured	Lower Limit	Upper Limit		Passed QC
Aroclor 1232	ug/mL	0	-0.00	0.00		yes
Aroclor 1242	ug/mL	0	-0.00	0.00		yes
Aroclor 1248	ug/mL	0	-0.00	0.00		yes
Aroclor 1254	ug/mL	0	-0.00	0.00		yes
Aroclor 1260	ug/mL	0	-0.00	0.00		yes
Aroclor 1262	ug/mL	0	-0.00	0.00		yes
Aroclor 1268	ug/mL	0	-0.00	0.00		yes
Calibration Check	**Units**	**% Recovery**	**Lower Limit**	**Upper Limit**		**Passed QC**
1570556-13		August 26, 2016				
Aroclor 1260	ug/mL	110.00	80	120		yes
Client Sample Replicates	**Units**	**Replicate 1**	**Replicate 2**	**% RSD Criteria**	**Absolute Criteria**	**Passed QC**
1570556-6		August 26, 2016				
Aroclor 1016	mg/kg	<0.05	<0.05	50	0.10	yes
Aroclor 1221	mg/kg	<0.05	<0.05	50	0.10	yes
Aroclor 1232	mg/kg	<0.05	<0.05	50	0.10	yes
Aroclor 1242	mg/kg	<0.05	<0.05	50	0.10	yes
Aroclor 1248	mg/kg	<0.05	<0.05	50	0.10	yes
Aroclor 1254	mg/kg	<0.05	<0.05	50	0.10	yes
Aroclor 1260	mg/kg	<0.05	<0.05	50	0.10	yes
Aroclor 1262	mg/kg	<0.05	<0.05	50	0.10	yes
Aroclor 1268	mg/kg	<0.05	<0.05	50	0.10	yes
Total PCBs	mg/kg	<0.05	<0.05	50	0.10	yes
Matrix Spike	**Units**	**% Recovery**	**Lower Limit**	**Upper Limit**		**Passed QC**
1570556-5		August 26, 2016				
Aroclor 1260	mg/kg	106	10	190		yes

Polychlorinated Biphenyls - Soil - Surrogate

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
1570556-14		August 26, 2016			
Decachlorobiphenyl	%	102.685	50	150	yes

Polychlorinated Biphenyls - Water

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
1570559-8		August 26, 2016			
Aroclor 1016	ug/mL	0	-0.00	0.00	yes
Aroclor 1221	ug/mL	0	-0.00	0.00	yes
Aroclor 1232	ug/mL	0	-0.00	0.00	yes
Aroclor 1242	ug/mL	0	-0.00	0.00	yes
Aroclor 1248	ug/mL	0	-0.00	0.00	yes
Aroclor 1254	ug/mL	0	-0.00	0.00	yes

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Quality Control

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Report To:	Englobe	ID:	2016-LFM KITIK13	Control Number:	C0008952
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	Quebec, QC, Canada	LSD:		Report Number:	2133731
	G2K 2G2	P.O.:			
Attn:	Jean-Pierre Pelletier	Acct code:			
Sampled By:	A. Passalis/K. Epilon				
Company:	Englobe				

Polychlorinated Biphenyls - Water - Continued

Blanks	Units	Measured	Lower Limit	Upper Limit		Passed QC
Aroclor 1260	ug/mL	0	-0.00	0.00		yes
Aroclor 1262	ug/mL	0	-0.00	0.00		yes
Aroclor 1268	ug/mL	0	-0.00	0.00		yes
Calibration Check	**Units**	**% Recovery**	**Lower Limit**	**Upper Limit**		**Passed QC**
1570559-7		August 26, 2016				
Aroclor 1260	ug/mL	110.00	80	120		yes
Replicates	**Units**	**Replicate 1**	**Replicate 2**	**% RSD Criteria**	**Absolute Criteria**	**Passed QC**
1570559-5		August 26, 2016				
Aroclor 1016	ug/L	<0.05	<0.05	20	0.01	yes
Aroclor 1221	ug/L	<0.05	<0.05	20	0.01	yes
Aroclor 1232	ug/L	<0.05	<0.05	20	0.01	yes
Aroclor 1242	ug/L	<0.05	<0.05	20	0.01	yes
Aroclor 1248	ug/L	<0.05	<0.05	20	0.01	yes
Aroclor 1254	ug/L	<0.05	<0.05	20	0.01	yes
Aroclor 1260	ug/L	1.90	1.90	20	0.01	yes
Aroclor 1262	ug/L	<0.05	<0.05	20	0.01	yes
Aroclor 1268	ug/L	<0.05	<0.05	20	0.01	yes
Matrix Spike	**Units**	**% Recovery**	**Lower Limit**	**Upper Limit**		**Passed QC**
1570559-3		August 26, 2016				
Aroclor 1260	ug/L	95	50	150		yes

Polychlorinated Biphenyls - Water - Surrogate

Blanks	Units	Measured	Lower Limit	Upper Limit		Passed QC
1570559-8		August 26, 2016				
Decachlorobiphenyl	%	101.765	50	150		yes

Volatile Petroleum Hydrocarbons - Soil

Blanks	Units	Measured	Lower Limit	Upper Limit		Passed QC
1569878-14		August 24, 2016				
F1 C6-C10	ng	0	-10	10		yes
Client Sample Replicates	**Units**	**Replicate 1**	**Replicate 2**	**% RSD Criteria**	**Absolute Criteria**	**Passed QC**
1569878-6		August 24, 2016				
F1 C6-C10	mg/kg	<10	<10	50	0	yes
F1 -BTEX	mg/kg	<10	<10	50	0	yes
Matrix Spike	**Units**	**% Recovery**	**Lower Limit**	**Upper Limit**		**Passed QC**
1569878-5		August 24, 2016				
F1 C6-C10	mg/kg	106	80	120		yes

Volatile Petroleum Hydrocarbons - Water

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Quality Control

Bill To:	Englobe	Project:	
Report To:	Englobe	ID:	2016-LFM KITIK13
	Office 400	Name:	Cape Young
	1260, Lebourgneuf Boulevard	Location:	PIN-2
	Quebec, QC, Canada	LSD:	
	G2K 2G2	P.O.:	
Attn:	Jean-Pierre Pelletier	Acct code:	
Sampled By:	A. Passalis/K. Epilon		
Company:	Englobe		

Lot ID:	**1156775**
Control Number:	C0008952
Date Received:	Aug 23, 2016
Date Reported:	Sep 21, 2016
Report Number:	2133731

Volatile Petroleum Hydrocarbons - Water

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
1570359-4		August 25, 2016			
F1 -BTEX	ng	0	-0.3	0.3	yes
F1 C6-C10	ng	0	-0.300	0.300	yes
F2 C10-C16	ng	0	-0.3	0.3	yes
Calibration Check	**Units**	**% Recovery**	**Lower Limit**	**Upper Limit**	**Passed QC**
1570359-5		August 25, 2016			
F2 C10-C16	ng	100.00	80	120	yes

Samples and Related Quality Checks

1156775-1

BTEX-CCME - Soil

Spike	1569878-5
Duplicate - Cli	1569878-6
Calibration Ck	1569878-13
Blank	1569878-14

Metals ICP (Hot Block) in soil

Internal Std	1569610-1
Blank	1569610-2
Internal Std	1569610-3
Duplicate - Cli	1569610-4

PCB - Soil - Low

Spike	1570556-5
Duplicate - Cli	1570556-6
Calibration Ck	1570556-13
Blank	1570556-14

TEH-CCME-Soil (Shake)

Spike	1569875-3
Duplicate - Cli	1569875-4
Calibration Ck	1569875-13
Blank	1569875-14

1156775-2

BTEX-CCME - Soil

Spike	1569878-5

Duplicate - Cli	1569878-6
Calibration Ck	1569878-13
Blank	1569878-14

Metals ICP (Hot Block) in soil

Internal Std	1569610-1
Blank	1569610-2
Internal Std	1569610-3
Duplicate - Cli	1569610-4

PCB - Soil - Low

Spike	1570556-5
Duplicate - Cli	1570556-6
Calibration Ck	1570556-13
Blank	1570556-14

TEH-CCME-Soil (Shake)

Spike	1569875-3
Duplicate - Cli	1569875-4
Calibration Ck	1569875-13
Blank	1569875-14

1156775-3

BTEX-CCME - Soil

Spike	1569878-5
Duplicate - Cli	1569878-6
Calibration Ck	1569878-13
Blank	1569878-14

Metals ICP (Hot Block) in soil

Internal Std	1569610-1
Blank	1569610-2
Internal Std	1569610-3
Duplicate - Cli	1569610-4

PCB - Soil - Low

Spike	1570556-5
Duplicate - Cli	1570556-6
Calibration Ck	1570556-13
Blank	1570556-14

TEH-CCME-Soil (Shake)

Spike	1569875-3
Duplicate - Cli	1569875-4
Calibration Ck	1569875-13
Blank	1569875-14

1156775-4

BTEX-CCME - Soil

Spike	1569878-5
Duplicate - Cli	1569878-6
Calibration Ck	1569878-13
Blank	1569878-14

Metals ICP (Hot Block) in soil

Internal Std	1569610-1
Blank	1569610-2
Internal Std	1569610-3
Duplicate - Cli	1569610-4
PCB - Soil - Low	
Spike	1570556-5
Duplicate - Cli	1570556-6
Calibration Ck	1570556-13
Blank	1570556-14
TEH-CCME-Soil (Shake)	
Spike	1569875-3
Duplicate - Cli	1569875-4
Calibration Ck	1569875-13
Blank	1569875-14

1156775-5

BTEX-CCME - Soil	
Spike	1569878-5
Duplicate - Cli	1569878-6
Calibration Ck	1569878-13
Blank	1569878-14
Metals ICP (Hot Block) in soil	
Internal Std	1569610-1
Blank	1569610-2
Internal Std	1569610-3
Duplicate - Cli	1569610-4
PCB - Soil - Low	
Spike	1570556-5
Duplicate - Cli	1570556-6
Calibration Ck	1570556-13
Blank	1570556-14
TEH-CCME-Soil (Shake)	
Spike	1569875-3
Duplicate - Cli	1569875-4
Calibration Ck	1569875-13
Blank	1569875-14

1156775-6

BTEX-CCME - Soil	
Spike	1569878-5
Duplicate - Cli	1569878-6
Calibration Ck	1569878-13
Blank	1569878-14
Metals ICP (Hot Block) in soil	
Internal Std	1569610-1
Blank	1569610-2
Internal Std	1569610-3
Duplicate - Cli	1569610-4

PCB - Soil - Low
- Spike 1570556-5
- Duplicate - Cli 1570556-6
- Calibration Ck 1570556-13
- Blank 1570556-14

TEH-CCME-Soil (Shake)
- Spike 1569875-3
- Duplicate - Cli 1569875-4
- Calibration Ck 1569875-13
- Blank 1569875-14

1156775-7

BTEX-CCME - Soil
- Spike 1569878-5
- Duplicate - Cli 1569878-6
- Calibration Ck 1569878-13
- Blank 1569878-14

Metals ICP (Hot Block) in soil
- Internal Std 1569610-1
- Blank 1569610-2
- Internal Std 1569610-3
- Duplicate - Cli 1569610-4

PCB - Soil - Low
- Spike 1570556-5
- Duplicate - Cli 1570556-6
- Calibration Ck 1570556-13
- Blank 1570556-14

TEH-CCME-Soil (Shake)
- Spike 1569875-3
- Duplicate - Cli 1569875-4
- Calibration Ck 1569875-13
- Blank 1569875-14

1156775-8

BTEX-CCME - Soil
- Spike 1569878-5
- Duplicate - Cli 1569878-6
- Calibration Ck 1569878-13
- Blank 1569878-14

Metals ICP (Hot Block) in soil
- Internal Std 1569610-1
- Blank 1569610-2
- Internal Std 1569610-3
- Duplicate - Cli 1569610-4

PCB - Soil - Low
- Spike 1570556-5
- Duplicate - Cli 1570556-6
- Calibration Ck 1570556-13

Blank	1570556-14
TEH-CCME-Soil (Shake)	
Spike	1569875-3
Duplicate - Cli	1569875-4
Calibration Ck	1569875-13
Blank	1569875-14

1156775-9

BTEX-CCME - Water	
Calibration Ck	1570359-3
Blank	1570359-4
Calibration Ck	1570359-5
Mercury (Total) in water	
Internal Std	1569722-1
Internal Std	1569722-2
Internal Std	1569722-3
Internal Std	1569722-4
Blank	1569722-5
Duplicate - Cli	1569722-6
Duplicate - Cli	1569722-23
Internal Std	1569722-28
Internal Std	1569722-29
Internal Std	1569722-30
Metals ICP-MS (Total) in water	
Internal Std	1569645-1
Internal Std	1569645-2
Internal Std	1569645-3
Internal Std	1569645-4
Blank	1569645-5
Duplicate - Cli	1569645-13
Internal Std	1569645-27
Internal Std	1569645-28
Internal Std	1569645-29
Metals Trace (Total) in water	
Internal Std	1569646-1
Internal Std	1569646-2
Internal Std	1569646-3
Internal Std	1569646-4
Blank	1569646-5
Duplicate - Cli	1569646-7
Duplicate - Cli	1569646-23
PCB - Water - Low	
Spike	1570559-3
Int. Duplicate	1570559-5
Calibration Ck	1570559-7
Blank	1570559-8
TEH-CCME - Water	

Spike	1570628-3
Int. Duplicate	1570628-5
Calibration Ck	1570628-7
Blank	1570628-8

ANNEX 2

QA/QC Discussion

QUALITY ASSURANCE / QUALITY CONTROL

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 insure that sampling data and analysis results are complete, precise, exact, representative and comparable. The review consisted of evaluating sample collection/handling methodology, general laboratory comments, field (blind) duplicate samples, and inter-laboratory duplicate samples.

1. LABORATORIES

Samples collected during the monitoring program were submitted to laboratories accredited by the Canadian Association for Laboratory Accreditation (CALA):

- **Main Laboratory**
  Maxxam Analytics International Corporation
  o/a Maxxam Analytics Edmonton
  9331 - 48th Street T6B 2R4
  CALA Registration number: 2996
- **Quality Assurance Laboratory**
  EXOVA
  7217 Roper Road NW
  Edmonton, Alberta
  T6B 3J4, Canada
  CALA Registration number: 2602

2. FIELD QA/QC

Standard sample collection techniques were implemented to decrease the likelihood of compromising collected samples. For details, the reader is referred to the standard operating procedures (SOP) produced by Englobe. No deviation was noted from the SOP.

The general comments section from Maxxam's certificates of analysis (provided in Annex 1) indicates that all samples received were acceptable for analysis. It should be noted that some PHC analyses were performed after method recommended holding time by Maxxam and Exova (Fraction F1).

The following is a summary of the analytical QA/QC procedure implemented in the field:

- 10% field Blind Duplicate Samples of soil and water were sent to Maxxam: 8 blind duplicate soil sample (P216-BD1 to BD8) and one blind duplicate groundwater sample (P216-BDW1) were submitted, as an independent check on data reproducibility, and to

assess the field QA/QC protocols. One field blank (P216-FB) and one travel blank (P216-TB) were submitted for analysis.

- 10% Inter-laboratory Duplicate Samples were sent to Exova: 8 blind duplicate soil sample (P216-1WA, 5WA, 1A, 6A, 12A, 14A, 18A and 28A)) and one blind duplicate groundwater sample (P216-2W) were submitted (to determine if variation in procedures may cause significant difference in analytical results).
- 10% Archival samples of soil were sent to ESG.

3. LABORATORIES QA/QC

Quality assurance documents from Maxxam indicate that the soil samples were in the following batches:

- Batches 8382754, 8381425, 8380517, 8379896, 8379893, 8384011, 8382647, 8382880, 8380344, 8380093 for metals
- Batches 4639580, 4642156, 4637980, 4642168, 4635743 for PCBs
- Batches 8376913, 8378370, 8378356, 8378456, 8375686, 8375488, 8378960, 8379015, 8376905, 8379007, 8372820, 8379013, 8379161, 8379614 for PHCs

The water samples were analyzed was analyzed the following batches:

- Batches 8376441, 8376680, 8377006 for metals
- Batch 4635216 for PCBs
- Batches 8378441, 8375389. 8375386 for PHCs

Quality assurance documents from Exova indicate that the soil samples were in the following batches:

- Batch 1569610 for metals
- Batch 1570556 for PCBs
- Batch 1569875 for PHCs

The water samples were analyzed was analyzed the following batches:

- Batches 1569645 and 1569646 for most metals
  - Batch 1569722 for mercury
- Batch 1570559 for PCBs
- Batch 1570628 for PHCs

4. DATA MANAGEMENT AND INTERPRETATION

4.1. FIELD WORK

The relative percent difference (RPD) is used to evaluate the sample result variability. Average RPD values of 30% for each parameter analyzed from the same laboratory are considered an

indication of acceptable duplicate sample variability. For groundwater samples, an RPD of greater than 30% may reflect difference in sample turbidity or variance in the sample procedures. These performance criteria are applicable when the concentrations of the original and duplicate sample are five times or greater than the laboratory method detection limit, since the uncertainty increases dramatically as the concentration approaches the detection limit. Table I provides the detection limit for each parameter and the associated minimum concentration to be reached in order to be eligible for RPD calculation.

Table I: Minimum Concentration for QA/QC RPD Calculation

		Soil			Water		
Parameter	**Laboratory**	**Units**	**MDL**	**RPD Minimum***	**Units**	**MDL**	**RPD Minimum***
As	Exova	mg/kg	0.2	1.0	mg/L	0.0002	0.0010
	Maxxam	mg/kg	1.0	5.0	mg/L	0.00010	0.00050
Cd	Exova	mg/kg	0.01	0.05	mg/L	0.00001	0.0001
	Maxxam	mg/kg	0.10	0.50	mg/L	0.000010	0.000050
Cr	Exova	mg/kg	0.5	2.5	mg/L	0.0005	0.0025
	Maxxam	mg/kg	1.0	5.0	mg/L	0.0010	0.0050
Co	Exova	mg/kg	0.1	0.5	mg/L	0.0001	0.0005
	Maxxam	mg/kg	1.0	5.0	mg/L	0.00050	0.00250
Cu	Exova	mg/kg	1.0	5.0	mg/L	0.0010	0.0050
	Maxxam	mg/kg	1.0	5.0	mg/L	0.00050	0.00250
Pb	Exova	mg/kg	0.1	0.5	mg/L	0.0001	0.0005
	Maxxam	mg/kg	1.0	5.0	mg/L	0.00020	0.00100
Ni	Exova	mg/kg	0.5	2.5	mg/L	0.0005	0.0025
	Maxxam	mg/kg	1.0	5.0	mg/L	0.0010	0.0050
Zn	Exova	mg/kg	1	5.0	mg/L	0.001	0.005
	Maxxam	mg/kg	10	50.0	mg/L	0.0050	0.0250
Hg	Exova	mg/kg	0.05	0.3	ug/L	0.005	0.025
	Maxxam	mg/kg	0.05	0.3	ug/L	0.050	0.250
Total PCBs	Exova	mg/kg	0.05	0.3	ug/L	0.05	0.2500
	Maxxam	mg/kg	0.01	0.05	ug/L	0.050	0.250
PHC F1	Exova	mg/kg	10	50.0	mg/L	0.1	0.5
	Maxxam	mg/kg	12	60.0	mg/L	0.100	0.500
PHC F2	Exova	mg/kg	50	250.0	mg/L	0.10	0.50
	Maxxam	mg/kg	10	50.0	mg/L	0.10	0.50
PHC F3	Exova	mg/kg	50	250.0	mg/L	0.1	0.5000
	Maxxam	mg/kg	50	250.0	mg/L	0.20	1.00

* : The RPD Minimum is the minimum concentration to be reached for QA/QC Relative Percent Difference Calculation

4.1.1. SOIL SAMPLES

Eight blind duplicate soil samples were submitted for intra- and inter-laboratory comparisons. The original and duplicate intra- and inter-laboratory metal, PCB and PHC soil sample results are summarized in Tables II, along with the calculated RPD for each parameter. As noted in the tables, several of the results from the original and/or duplicate samples were below or within five

times the laboratory method detection limits, and therefore RPD values were not calculated for these parameters.

Review of results indicated relatively isolated differences in metal concentrations within the intra-laboratory duplicate samples for one or two parameters in 4 samples. Even though the RPD could not be calculated for most other parameters in those samples, their concentration are very similar and lead to any conclusion associated with the elevated RPD calculated for copper, chromium and cobalt.

As for the intra-laboratory duplicates, results from the inter-laboratory duplicate samples show isolated (3) RPD exceedances for arsenic and lead.

4.1.2. WATER SAMPLES

One blind duplicate groundwater sample (P216-BDW1 / P216-2W) was submitted for intra- and inter-laboratory comparisons. The original and duplicate intra- and inter-laboratory metal, PCB and PHC sample results are summarized in Table III, along with the calculated RPD for each parameter and average RPD for each sample. As noted in the table, the great majority of metals and all organic parameters from the original and/or duplicate samples were below or within five times the laboratory method detection limits, and therefore RPD values were not calculated for these parameters.

Review of both intra and inter-laboratory results indicated minor differences in most metal concentrations and calculated RPD values between the original and intra-laboratory duplicate sample (between 0 and 14.3%).

Overall, the soil and groundwater sample results are coherent and within the same range of results for intra- and inter-laboratory samples. The analytical results are considered to be acceptable and representative of the site conditions. The results also validate the field QA/QC procedures.

The results from field blank sample (P216-FB) and travel blank sample (P216-TB) that were submitted for metals, PCB and PHC analyses are also summarized in Tables III. All parameter concentrations were below the detection limit.

4.2. LABORATORIES

QA/QC results from both laboratories do not raise any concern or provide any explanation concerning the concentration difference noticed in the inter-laboratory duplicate samples.

It should be noted that inter-laboratory variations are common. QA/QC results from both laboratories are appended.

4.2.1. BLANKS

All blanks from both laboratories, for both matrices and for all parameters were below the detection limits.

4.2.2. ANALYTICAL DUPLICATES

All analytical duplicates from both laboratories, for both matrices and for all parameters had RSD's at or below 20%.

4.2.3. CONTROL SAMPLES

All control samples from both laboratories, for both matrices and for all parameters had concentrations between the upper and lower concentration established for each parameter.

Table II: Soil Chemical Analysis Results - Quality Assurance Samples

Sample #	Laboratory	Parameters												
		As [mg/kg]	Cd [mg/kg]	Cr [mg/kg]	Co [mg/kg]	Cu [mg/kg]	Pb [mg/kg]	Ni [mg/kg]	Zn [mg/kg]	Hg [mg/kg]	PCBs [mg/kg]	F1 C_6-C_{10} [mg/kg]	F2 C_{10}-C_{16} [mg/kg]	F3 C_{16}-C_{34} [mg/kg]
MDL (Exova)		0.2	0.01	0.5	0.1	1.0	0.1	0.5	1	0.05	0.05	10	50	50
RPD Minimum (Exova)		1.0	0.05	2.5	0.5	5.0	0.5	2.5	5	0.25	0.25	50	250	250
MDL (Maxxam)		1.0	0.050	1.0	0.50	1.0	0.5	1.0	10	0.050	0.010	12	10	50
RPD Minimum (Maxxam)		5.0	0.250	5.0	2.50	5.0	2.5	5.0	50	0.250	0.050	60	50	250
Intra-Lab Duplicate Samples (Exova)														
P216-1WA	Maxxam	4.4	0.590	4.6	1.90	12.0	2.7	6.5	20	0.190	<0.030*	<26*	<24*	<120*
P216-BD1		5.0	0.620	5.8	2.20	12.0	3.0	7.4	<20*	0.140	<0.020*	<29*	<26*	<130*
Relative % Difference		NA	5.0	NA	NA	0.0	10.5	12.9	NA	NA	NA	NA	NA	NA
P216-5WA	Maxxam	1.4	0.065	3.3	<0.50	2.2	1.8	1.8	<10	<0.050	<0.010	<12	<10	<50
P216-BD2		1.8	0.077	2.1	0.54	3.0	1.9	1.4	<10	<0.050	<0.010	<12	<10	<50
Relative % Difference		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
P216-1A	Maxxam	<2.0	0.260	3.9	1.10	11.0	3.3	2.9	22	0.140	<0.030*	<30*	<28*	160
P216-BD3		<2.0*	0.240	3.4	<1.00*	11.0	3.1	2.6	21	0.120	<0.030*	<32*	<28*	150
Relative % Difference		NA	NA	NA	NA	0.0	6.2	NA	NA	NA	NA	NA	NA	NA
P216-6A	Maxxam	4.3	0.340	14.0	5.00	9.4	7.9	7.7	26	<0.100*	<0.030*	<25*	<24*	<120*
P216-BD4		4.2	0.350	14.0	5.00	9.1	8.0	7.8	26	<0.100*	<0.020*	<23*	<23*	<110*
Relative % Difference		NA	2.9	0.0	0.0	3.2	1.3	1.3	NA	NA	NA	NA	NA	NA
P216-12A	Maxxam	<2.0*	0.230	<2.0*	<1.00*	6.3	<1.0*	<2.0*	<20*	<0.100*	<0.030*	<12	<30*	<150*
P216-BD5		<2.0*	0.260	<2.0*	<1.00*	11.0	<1.0*	2.1	<20*	<0.100*	<0.030*	<37*	<31*	350
Relative % Difference		NA	NA	NA	NA	54.3	NA	NA	NA	NA	NA	NA	NA	NA
P216-14A	Maxxam	1.9	0.210	5.2	1.30	8.8	2.6	4.1	14	<0.050	<0.010	<12	<10	<50
P216-BD6		1.7	0.180	8.4	1.30	8.2	2.6	5.4	13	<0.050	<0.010	<12	<10	<50
Relative % Difference		NA	NA	47.1	NA	7.1	0.0	NA	NA	NA	NA	NA	NA	NA
P216-18A	Maxxam	3.3	0.093	23	4.10	6.7	4.0	13.0	22	<0.050	<0.010	<12	<10	<50
P216-BD7		2.2	0.082	6.9	3.00	5.0	3.1	4.8	17	<0.050	<0.010	<12	<10	<50
Relative % Difference		NA	NA	107.7	31.0	29.1	25.4	NA	NA	NA	NA	NA	NA	NA
P216-28A	Maxxam	6.2	0.150	5.2	4.30	13.0	2.3	10.0	40	<0.100*	<0.040*	<12	<10	<50
P216-BD8		6.1	0.110	5.0	3.10	8.9	2.0	8.1	31	<0.100*	<0.040*	<67*	<41*	280
Relative % Difference		1.6	NA	3.9	32.4	37.4	NA	21.0	NA	NA	NA	NA	NA	NA

* DL adjusted due to high moisture content

Table II: Soil Chemical Analysis Results - Quality Assurance Samples (page 2 of 2)

Sample #	Laboratory	Parameters												
												F1	F2	F3
		As [mg/kg]	Cd [mg/kg]	Cr [mg/kg]	Co [mg/kg]	Cu [mg/kg]	Pb [mg/kg]	Ni [mg/kg]	Zn [mg/kg]	Hg [mg/kg]	PCBs [mg/kg]	C_6-C_{10} [mg/kg]	C_{10}-C_{16} [mg/kg]	C_{16}-C_{34} [mg/kg]
MDL (Exova)		0.2	0.01	0.5	0.1	1.0	0.1	0.5	1	0.05	0.05	10	50	50
RPD Minimum (Exova)		1.0	0.05	2.5	0.5	5.0	0.5	2.5	5	0.25	0.25	50	250	250
MDL (Maxxam)		1.0	0.050	1.0	0.50	1.0	0.5	1.0	10	0.050	0.010	12	10	50
RPD Minimum (Maxxam)		5.0	0.250	5.0	2.50	5.0	2.5	5.0	50	0.250	0.050	60	50	250
Inter-Lab Duplicate Samples (Exova-Maxxam)														
P216-1WA	Exova	5.0	0.57	4.6	2.0	11.2	2.3	6.9	21	0.10	<0.05	<10	<50	56
	Maxxam	4.4	0.590	4.6	1.90	12.0	2.7	6.5	20	0.190	<0.30*	<26*	<24*	<120*
Relative % Difference		NA	3.4	NA	NA	6.9	16.0	6.0	NA	NA	NA	NA	NA	NA
P216-5WA	Exova	1.9	0.07	2.5	0.6	3.1	1.7	2.4	10	<0.05	<0.05	<10	<50	<50
	Maxxam	1.4	0.065	3.30	<0.50	2.2	1.8	1.8	<10	<0.050	<0.10	<12	<10	<50
Relative % Difference		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
P216-1A	Exova	1.3	0.22	2.8	0.8	0.1	2.0	2.3	24	0.10	<0.05	<10	<50	82
	Maxxam	<2.0	0.260	3.9	1.10	11.0	3.3	2.90	22	0.140	<0.30*	<30*	<28*	160
Relative % Difference		NA	16.7	NA	NA	NA	49.1	NA	NA	NA	NA	NA	NA	NA
P216-6A	Exova	4.8	0.37	13.2	4.7	9.4	6.6	7.8	32	0.08	<0.05	<10	<50	55
	Maxxam	4.3	0.340	14.0	5.00	9.4	7.9	7.7	26	<0.100*	<0.30*	<25*	<24*	<120*
Relative % Difference		NA	8.5	5.9	6.2	0.0	17.9	1.3	NA	NA	NA	NA	NA	NA
P216-12A	Exova	0.4	0.28	1.0	0.6	5.5	0.5	1.7	25	0.12	<0.05	<10	<50	218
	Maxxam	<2.0*	0.230	<2.0*	1.00	6.3	<1.0	<2.0*	<20*	<0.100*	<0.30	<12	<30*	<150*
Relative % Difference		NA	NA	NA	NA	13.6	NA	NA	NA	NA	NA	NA	NA	NA
P216-14A	Exova	1.9	0.18	4.1	1.5	9.6	2.2	4.4	15	<0.05	<0.05	<10	<50	<50
	Maxxam	1.9	0.210	5.2	1.30	8.8	2.6	4.1	14	<0.050	<0.010	<12	<10	<50
Relative % Difference		NA	NA	23.7	NA	8.7	NA	NA	NA	NA	NA	NA	NA	NA
P216-18A	Exova	3.2	0.07	7.5	3.1	7.1	3.2	5.1	22	<0.05	<0.05	<10	<50	<50
	Maxxam	3.3	0.093	23	4.10	6.7	4.0	13.0	22	<0.050	<0.010	<12	<10	<50
Relative % Difference		NA	NA	101.6	27.8	5.8	22.2	87.3	NA	NA	NA	NA	NA	NA
P216-28A	Exova	5.9	0.16	4.2	4.2	12.0	1.4	10.8	32	0.05	<0.05	<10	<50	113
	Maxxam	6.2	0.150	5.2	4.30	13.0	2.3	10.0	40	<0.100*	<0.40*	<58*	<44*	<220*
Relative % Difference		5.0	NA	21.3	2.4	8.0	NA	7.7	NA	NA	NA	NA	NA	NA

* DL adjusted due to high moisture content

Table III: Groundwater Chemical Analysis Results - Quality Control Samples

Sample #	Laboratory	Parameters												
		As [mg/L]	Cd [mg/L]	Cr [mg/L]	Co [mg/L]	Cu [mg/L]	Pb [mg/L]	Ni [mg/L]	Zn [mg/L]	Hg [ug/L]	PCBs [ug/L]	F1 C_6-C_{10} [mg/L]	F2 C_{10}-C_{16} [mg/L]	F3 C_{10}-C_{34} [mg/L]
MDL (Exova)		0.0002	0.00001	0.0005	0.0001	0.0010	0.0001	0.0005	0.001	0.005	0.05	0.1	0.1	0.1
RPD Minimum (Exova)		0.0010	0.00005	0.0025	0.0005	0.0050	0.0005	0.0025	0.005	0.025	0.25	0.5	0.5	0.5
MDL (Maxxam)		0.00010	0.000010	0.0010	0.00050	0.00050	0.00020	0.00100	0.0050	0.0500	0.05	0.100	0.10	0.20
RPD Minimum (Maxxam)		0.00050	0.000050	0.0050	0.00250	0.00250	0.00100	0.00500	0.0250	0.2500	0.25	0.500	0.50	1.00
Intra-Lab Duplicate Samples (Exova)														
P216-2W	Maxxam	0.00058	0.000013	<0.0010	<0.00050	0.00125	<0.00020	0.0026	<0.0050	<0.050	<0.05	<0.100	<0.10	<0.20
P216-BDW1		0.00060	0.000021	<0.0010	<0.00050	0.00112	<0.00020	0.0028	<0.0050	<0.050	<0.05	<0.100	<0.10	<0.20
Relative % Difference		NA	NA	NA	NA	NA	NA	7.4	NA	NA	NA	NA	NA	NA
Inter-Lab Duplicate Samples (Exova-Maxxam)														
P216-2W	Exova	0.0006	0.00002	<0.0005	<0.0001	<0.001	<0.0001	0.0030	0.003	0.009	<0.05	<0.1	<0.1	<0.1
	Maxxam	0.00058	0.000013	<0.0010	<0.00050	0.00125	<0.00020	0.00260	<0.0050	<0.050	<0.05	<0.100	<0.10	<0.20
Relative % Difference		NA	NA	NA	NA	NA	NA	14.3	NA	NA	NA	NA	NA	NA
P216-FB	Field Blank	<0.00010	<0.000010	<0.0010	<0.00050	<0.00050	<0.00020	<0.0010	<0.0050	<0.050	<0.05	<0.100	<0.10	<0.20
P216-TB	Travel Blank	<0.00010	<0.000010	<0.0010	<0.00050	<0.00050	<0.00020	<0.0010	<0.0050	<0.050	<0.05	<0.100	<0.10	<0.20

ANNEX 3

Field Notes and Chain of Custody Forms

(9)

STATION LF WEST

111 V-NW ALONG N SIDE OF RACCOON
112 V-SE " V-N
113 V-E/W Feat N- NOT OBS.
114 V-SE SE SIDE.
115 V-NW @ Feat D @ TOE - Same
116 V-SE. R
Feat A, Lin depr V-NE/NW
Same
117 Feat A pothole, V-E/N
0.3 x 0.4 x 15↓
118 Feat F - star 0,5 x 0.3
Same
119 V-E/SW @ NW CRNR
120 V-NE/SE/EE @ SE CRNR
121 Feature G, Lin depr @ crest
Same V-NE/NW
122 Feature H, depr below crest
V-NE/NW same
123 V-NE/NW ACROSS COVER
124 V-N.E/NW @ S CRNR
125 V-NW/NE @ Feat B, some
126 V-SW/NE & NW @ Feat E, less
pronounced, armoured 0.05↓
Barely noticeable

(10)

126 Feat I 2x Lin Sett.
V-SW/NE. 3 NE Some x.
0.05-0.1↓ incr depth
127 Feat. C, pothole before.
V-W/S 60 x 40 x 10↓ Same
128 New depr 1m² x 30w x 5↓
V-W/S
129 V-SW ROOF N SIDE OF RD

USAF LF

130 V-NE/NW @ SW CRNR
131 V-NE/SE @ NW CRNR
132 V-NE/SW
133 V-SE/NW + AT CRACK.
CROSSES LF COVER 13m L,
up to 5cm ↔ 4cm ↑↓ LARGER
134 V-SE/SW FROM NE CRNR
135 POSSIBLE SETTLEMENT ON E
SIDE SLOPE 2m x 1.5m x 10↓
V-SE/SW -NEW
136 V-S @ E toe
137 V-SE @ toe
138 V-SE @ SEEPAGE PTS (DRY)
139 V-NW @ "

LEVEL

140. V-NE @ MOST SW SEEP (DRY)
141 V-W @ SEEPS (DRY)

AIRSTRIP LF

142 V-SE @ NW CRNR
143 V-SW @ N-SIDE
144 V-W @ ACCESS RD (DRY)
145 V-W @ S TOE (DRY)
146 V-NW across cover
~~147~~ V-SW AT DRY PONDED AREA
V-NE/NW @ TOE
147 V-S/NW @ NE CRNR
148 V-SE/N @ SW CRNR, V-ENE
ACROSS COVER
V-SW @ MINOR POND @ TOE
2mL x 0.5W x 0.3↓
w/ MIN IRON STAINING @ toe
V-SW @ 1x0.5 iron stain (dry)
@ former ponded area @ toe
149 - Feat A. 1.8L x 0.6 x 15 ~~I~~ 0.2
Slightly longer
150 Feat C. Infilled crack
V-E/W, 5cm depression only
5-10 W.

151. @ Jac 8/4 in eros.
V-W/E - same, fresh washed
1-2↓ Feat B 0.3W - wider
by shallower, less pronounced

730 PLANE ARRIVES
800 DEPARTURE TO CB

AUGUST 15/16

PIN-2 CAPE YOUNG

15°C, Clear w/ Periods of fog

PM-Cloudy -12°C 15KM N.

10³⁰ MOB FROM CB → PIN-2 11³⁰

SETUP CAMP - LUNCH - 15⁰⁰

SOUTH BORROW LF.

153 V- NW/S ALONG TOE
154 V. W/N @ FEAT A. 80x50x10↓
155 V- NW @ PONDING @ TOE
156 V- N @ " " 6x9m x 60↓ upto
157 V- E/S ALONG TOE & NW TOE
NO STAINING OR SEEP AT TOE.
SOME IRON PRECIP @ E SIDE TOE -
+ STAINING 3m x 1m 50- W.
158 V- E/S ALONG N' CREST
V-SE ACROSS CREST
V-SW/NE @ LIN DEPR.
PONDS IN AREA ALSO EXHIBIT SAME
ORANGE STAINING (50m W)
60x25x5↓
159 V- N/E @ LIN DEPR @ TOP SLOPE
12mL x 3 x 5↓ (NEW)

160 V- SW @ PONDED AREA ON SW
CRNR OF LF.
161 V- NW/SW @ IRON PRECIP IN
PONDS
162 V- NW/E @ SW TOE
WATER SAME EXCEPT NOT AROUND
SW TOE, STAINING SAME.
1-1.5 W.
163 V- N/E/NE.
164 FEAT D. V-W/N. 40x50x10↓
165 FEAT F V- N/W SAME
166 V- W/N @ SE TOE
167 V- W/E @ FEAT C 4mL x 0.2 x 0.1↓
2x length increase
168 FEAT D - SAME; V- N/W
- SUBTLE
169 NEW DEPR 30x30x10↓.
V- S/W
170. V- SE @ PONDED ℄ ON SW CRNR
171 V- NE @ " "
172 P216-29 A/B ℄ @ 0.1
BLK ORG V- SE
173 P216-28 A/B. ℄ @ 0.15
FROZEN @ 0.5. V-E
28A - BD8

(15) VENE

174 P216-27A/B. ΣE@0.25.
0.25 BLK ORG 25+ grey silty sand
175 —
176 P216-30 A/B ✓ V-W
grey stg dry

SOUTH LANDFILL EAST

177 V- N/E @ WEST SIDE
178 V- NE/NW/N @ SW CRNR
179 V- NW/SW/W @ SE CRNR
180 FEAT A. V-SE/~~SW~~/E SAME
181 V - NW @ FEAT B
182 V-SE @ 12mL 2x longer
x 0.1-0.15 x 5↓
183 FEAT C 0.6 x 0.15 x 5↓
2x longer V-SE/NE
184 V- WSW/SE @ NE TOE
185 V. SPARSE VEG ON COVER/SIDE SLOPES
186 V-SE/SW ACROSS TOP
187 V-SE/ENE @ NW CRNR
188 V- SE ACROSS COVER
189 P216-17A/B. 0-10 ORG
10+ BRN stg, Dry

NEW (16)

190 50x60 DEPR x5↓ V- NE/SE
191 V- SE/NW @ C
192 P216-18 A/B 18A-BD7
BRN/GREY S, some G, dry
18B - FRACTURED B/R @0.4m.
195 P216-19 A/B.
Grey/brn gravel/rock w/some sand.
F. B/R @0.3m 0-10/ 20-30
196. P216-20 A/B dk brn stg, tr org

AIRSTRIP SOUTH LF

192 V- N/SW @ FORMER PONDED AREA
S OF LF (DRY) V-NNW
ACROSS COVER
198 V- S/W @ NE CRNR
199 V- E/S @ NW CRNR
200 V- SE ACROSS COVER
201 FEATURE A - LIN DEP. V-W/E
6x0.3x0.1↓ SAME.
202 POTHOLE DEPR (NEW) 30x30x10↓
V-W/S
203 LIN. DEPR @ EDGE 80x30x15↓
V-N/E (NEW)
204 V- NNW/E @ SW CRNR
205 Veg. on S. side

LEVEL

206 (17) P216-14 A/B | Ltbrn f-g sand, silt
dry. 14A-BD6

207 P216-15 A/B Stg, dry

208 P216-16 A/B. G+Cbls+org
dry.

209 P216-13 A/B
gravel+org, tr sand.

20 RETRIEVE DATALOGGERS FROM TIER II DF

DOWNLOAD ALL THERMISTORS

EVENING-HEAVY FOG (MIST)
LT RAIN

AUGUST 16, 2016 | 15-25 km/h NW | 8°C, CLOUDY (18)

NHWLF

WD 210 3.1m E

MW-8 SWP 74-20=54cm

Σ dry both 1.47 ica

211 V-SW-e NE SIDE

212 V-NW/SW@ NE TOE

213 V-NW/SW/W@NE TURN

214 V-SW@ VEHICLE TRACKS-SAME

215 V-NE@

216 V-SE@ MINEROS (NEW). TOP-TOE
30-40@ W, 5-10↓ - fines wash 217 V-NW

219 V-SW/SE@ (IN DEPR FEAT C.
70W x 220L x 5-7↓, LARGER

220 V-SE FEAT B, TOP-TOE.
10W x 5±10↓

221 V-SE@ FEAT H. TOP-7mL(mid)
15W x 5↓ V-NW 222

223 V-NW@ BOT OF FEAT B

224 V-N@ FEAT B 3mL x 20W
x10↓

225 V-N@ FEAT B @ 5 CRNR 5-8mL 10-15W 5-10↓
V-NE/NW@ TOE

226 V-ESE@

(19)

~~227~~ V-S @ FEAT B | 5 TOP CRN
V- NE/NW/NE 5' TOP
V-W @ VEG ON ~~S~~W SLOPE

P216-8W A/B V-W
BRN/GRY GRAVEL, DRY

227 V-SE/SW @ N TOE
228 V-SE @ NW SIDE
229 MW-5 grey sand some grav.
P216-5W A/B 5WA-BD2
SLup 86-32 = 54
2.98m BE B 209 bott 327
300
1240
T 3.1/2.9/2.9/2.7/2.6/2.6
us COND 539/519/514/529/526/527
pH 8.4/8.3/8.4/8.3/8.3
TURB 20.2/7.37/6.47/6.16 (4.4L)

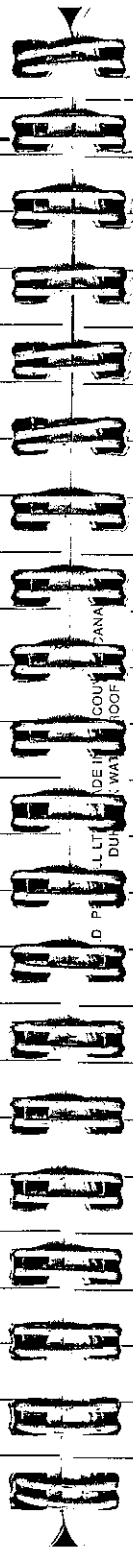
230 V-SE/NE @ W TOE
231 V-SE/NE/E @ W CRNR TOP
232 FEAT A V-W/S 2.5m below
DEPR 50x50x15↓ slope
233 FEAT G V-S 60x40x10↓
3m below crest LARGER
234 FEAT G ON CREST V-SW/SE
4mL x 3mW x 5-10 SAME
0.1-0.5

(20)
Refusal @ 0.35 -FRACT BIR gr...
235 MW-06 | P216-6W A/B 3mW
1330 SLup 86-28 ∇ 222 bot 292
T 3.6/2.2/2.1/2.1/2.2
us COND 843/833/829/808/785/776/768
pH 9.3/9.2/9.1/9.1/9.1
TURB 71.6/27.9/13.4/6.64/ (2.7L)
grey gravel, some sidy
236 V-NE @ SW SIDE
237 MIN EROS AT S. CRNR
TOP-TOE, WASH FINES SELF ARM.
ORIENT IN S. DIR V-S.
238 V-N
* ~~OTHER FEAT B ON SE SLOPE NOT OBS~~
239 V-NE @ MIN EROS FEAT B
~~240~~ V-SE @ ↗ 30-60W, 2↓
1410
grey gravel
240 MW-7 P216-7A/B 25-35 (0-10)
2.5m SW, Refusal on fract BIR @ 0.35
grey gravel & cobs
SLup 83-33 = 50 ∇ 253 bot 288
T 2.9/2.8/3.0/3.1/2.8/2.6/2.6
COND 646/614/618/619
pH 8.9/8.8/8.7/8.5/8.3/8.3
TURB 31.6/20.8/14.2/14.6 (1.3L)
241 - V-N/W/S/E TO CRNRS

LEVEL

242 V SW/SE/S/N @ N TOP CRNR
UNEVEN GRADING ON N CRNR SLOPE
243 V-N @ MIN EROS FEAT E.
FINE WASH/SELF ARM 30W x
5-10L
244 V-NNE @ MIN EROS. (NEW)
20W x 5L TOP-TOE
245 V-NNE @ FEAT E 20-30W,
5 YOL
246 FEAT D - depr below crest
50 x 40 x 5L V-SE/SW
247 MIN EROS 2.5mL below crest
(NEW) 40W, 5L V-NNE/SW
V-NW @ 2 depr @ crest Feat D.
248 V-NW @ SE SIDE.

PALLET - LINE WEST LF.
- 12A-BD5
249 P216-12A/B BLK ORG + CBLS
250 V-W/SE @ NE TOE
251 V-SSE ACROSS COVER
252 PHOTO OF VEG AT TOE.
253 V-S



254 FEAT B, 1.6 mL, 0.10 x 5L Same
V-SE/NW.
255 V-N/S DOWN W SIDE
256 V-N/SE/NE @ SW CRNR TOP
257 V-N/SE @ SW TOE
258 FEAT A. LIN DEPR.
Same V-SE/NE 1mL x 0.2 x 5L
259 V-NE ACROSS TOP
260 V-NE ALONG SE SIDE, SE TOE
261 V-SW/NW @ E PT.
262 SMALL DEPR @ CREST, (NEW)
40 x 40 x 5L V-W/N
263 V-W @ N SIDE/TOE
264 FEAT C @ CREST below V-E/N.
0.8 x 0.7 x 5L Same
265 Feat C @ CREST 2x depr
0.6 x 0.4 x 3L V-E/N
266 P216-11A/B 0-30 BLK ORG
30+ Gry Sand + g. dry
267 P216-10A/B 0-16, 30-40
Refusal on Fract BRK @ 0.4m
BRN ROCK, some sand
268 P216-9A/B BRN Cl Some Sand
dry

LEVEL

TIER II DF

269 MW-3 SWL 94.36 = 58
& 215 bot 294
900 P216-3W A/B 2.3m SW.
T 2.3/2.1/2.1/2.2/2.2 ✓
ws. COND 744/767/753/751 ✓
pH 8.2/8.1/8.1/8.0/8.0 ✓
TURB 18.8/11.5/6.33/5.96 ✓ (3.5 L)

270 V-NW @ SE SIDE
271 V-NE/NW @ S TOE
272 V-NE/NW @ MID SLOPE
273 V-NE/NW/N @ S CRNR TOP
274 V-NW/SW @ FEAT A - DEPR
SAME 1m x 20 x 10 ↓
275 V-SE @ FEAT C - MIN EROS.
TOP 1/3 SLOPE V 20W 2-5 ↓
276 V-NW SELF ARM.
277 V-SE @ FEAT C. MIN EROS 8m
TOP - L 20-30W. 2-5 ↓ down
278 - V-NW SELF ARM. 1/2 slope
279 V-SE @ FEAT C, MIN EROS.
TOP - 5m L 10W, 5 ↓
280 V-NW.

281 VT-4
282 V- NW/SW/W @ E CRNR TOP
V- SE/NE @ DEPR BELOW CREST
2.5 x 0.8 x 5 (FEAT D)
283 V- NW/SW MID SLOPE
~~284~~ V- NW/SW @ E TOE

284 MW-2 P216-2W A/B 2.9m SW
940 & - 162 bot - 305
SWL 87-24 = 63
* (BDW1) + INTERLAB DUP.
T 2.2/2.2/2.1/2.1/2.2 ✓
COND 796/784/785/784
pH 8.0/7.9/7.8/7.8/7.8 ✓
TURB 10.7/7.61/6.00/4.55/4.61 ✓ (5.0)

BMS dup

285 V-NE @ SW SIDE " (NEW)?
286 DEPR @ CREST V-SW/SE 30x30x10 ↓
287 " " SE/SW " " 40x40x10 ↓
ALSO LIN DEPR @ CREST ↓ 2m L x
↳ PART EROS? 20 x 5 ↓ V-SW/NW
288 SUBTLE DEPR. BELOW CREST 1.5x2.0
(NEW?) V-SE/NE 5-7 ↓
289 - VT-1

LEVEL

290 FEAT A/B NOW EROS @ VT-1
V- SW/SE 15-30 w, 5-10↓
" " 2mL+ downslope 8m
292 V-NE
293 V- SE/NE/E @ W CRNR TOP
V- NW @ FEAT C, WASHE FINES
SAME
294 V- SE/NE MID W SLOPE
295 V- SE/NE @ W TOE
296 V SE @ EROS - SELF ARM 1-2↓
297 MW-1 P216-1WA/B
1WA - BP 2m NW
S/UP 87-33 ∇ 229 bott 245
0-40 BUK over CREST 10m
T 1.7/1.6/1.3/1.2/1.2 ✓
COND 738/867/997/1014 ✓
PH 8.3/8.3/8.2/8.1/8.1 ✓
TURB 114/88.7/81.74/172.6 ✓ (3.5L)
298 V- SE @ FEAT G 0.2-0.4↓
5↓ wider TOP-TOE
300 V- NW ↗
299 V- NW @ Feat E, starts 1m above
crest, no fines, self arm, 5↓
30-50w - 15mL V-SE end

Boulder Rock Some Broke Fract
Ratepoint for Sonos
0 - 30

301 V- NW @ FEAT E, MIN EROS
8mL, 30w, 5-10↓ CREST ↓
302 V- SW/SE/S @ N. CRNR TOP
303 V-SW/NE @ FEAT F SAME
304 V- SW/NE " Feat F - Same
305
306 - VT-3
307 V- SW/SE MID N CRNR
- V- SW/SE @ TOE N.
308 MIN EROS (NEW), N CRNR
3mL 6m up from TOE
10-30w 5-10↓ V-S/NE
309 Feat H, V- NE/SW-
MIN EROS @ CREST + 30w;
5-10↓ larger 10mL - 310
311 MW-4 P216-4WA/B 3.5NE
S/UP 90-34-56 bott 315
∇ 187
T 3.0/2.7/2.7/2.6
COND 727/722/720/726
PH 8.2/8.0/8.0/8.1
TURB 17.0/5.02/6.12 (4.7L)
312 - BM, B/W T11 + HANGAR

LEVEL

AFTERNOON - WIND FROM NW
10-20 km/h, FOG.

USAF LANDFILL

3B V-WSW. @ E SIDE
~~3??~~ V-SW/SE @ NE CRNR
314 V-SE/NE @ NW CRNR
315 FEAT A, DEPR ON SIDE SLOPE
0.4 x 0.3 x 20+ Same V-SE/NE
Sl. deeper
316 LIN DEPR (NEW) V-SE/NE
2m LG x 25cm x 5-10+
317 V-SE/NW @ ℄
318 V-NW/NE @ SW CRNR
319 V-NW ALONG E TOE FROM SE CNR
320 P216-4A/B BRN S+G. DRY
321 P216-1 NB 0-30 ORG.
1A-BD3. 30+ ROCK dry
322 P216-2A/B BRN S+G, 9+ FRACT ROCK 20+
323 D216-3A/B BRN G, SOME S dry
℄ TO LF.

STATION WEST LANDFILL

324
P216-8A/B dry, 0-20 ORG + Rock, 9+ @20+
325 V-W @ E SIDE
326 V-NW/SE NE CRNR TOE
~~3??~~ V-NW/S/SW @ NE TOP
32~~?~~ V-SE/SW @ N END
328 V-SE @ ℄
~~3??~~ V-SSE ALONG W TOE
329 V-NW
330 V-NW ACROSS COVER
331 V-SE @ WALL UP TO 30+.
2m. BELOW crest + on Slope
332 TIRE TRACKS V-SW Same
333 P216-7A/B BRN GRAVEL, SOMES DRY
334 P216-6A/B 0-15 ORG
15+ Rock/Sand
-6A-BD4
335 V-N/E @ SW TOE
336 V-N/E/NE @ SW TOP CRNR
337 V-ENE @ W SIDE.
338 P216-5A/B. 0-15 ORG
15+ SAND/Stones dry

AIRSTRIP LANDFILL

LOBE A

339 V-N/E @ SW CRNR TOE
340 V-NE ACROSS COVER
341 V-SE " "
342 V-N/S/NE FROM W CREST
343 V-SE/NNE/NW
344 FEAT B, LIN DEPR.
2.2mL, 0.3-0.5W x 10-15↓
Larger V-E/N
345 V-S/E @ NW CRNR TOP
346 V-S/E @ NW TOE
347 P216-21A/B: LT BRN SAND, DRY
348 P216-22A/B. LT BRN GVL
Some sand, dry
349 V-W/E ALONG N TOE
350 V-W/E/SE MID SLOPE
351 LIN DEPR (NEW) V-N/E
BIW TYPE 2/1 COVER 2.0mL, 50W
COARSE ROCK-NO FINES 10↓
352 MIN EROS (NEW) V-N/S
Softform. 353- 2-5↓ 9mL
354 V-S @ N SIDE
355 P216-23 A/B
BRN GRAVEL, TR SAND, DRY/CG

356 V-SSW/W/SE @ NE TOE
357 V- NE/SE TOP CRNR LOBE E/F
358 V- SE/WSW @ NE TOE ↗
359 PIECE OF MISC METAL
FEAT D-SAME
360 FEAT A-SAME NEAR P2-23.
361 0-10 BLK ROCK (COBBLES/GRAV)
P216-24A 10-20 } LT BRN SAND
B 40-50
362 MISC METAL SURFACE DEBRIS
40x25x2 - 1/2 PAINTED LID
363 V-NW/S ALONG E TOE
364 V-W/NW ACROSS COVER
365 V-NW ALONG E
366 FEAT C-LIN DEPR
3mx20x 5-10↓ SL wider/deep
V-S/E
367 P216-25A/B: LT BRN GRAVEL
< SOME SAND, DRY
368 V-W @ LOBE A, V-NW/E ALONG
TOE
369 STRAPPING
370 "
371 "

$151.45

372 P216-26A/B 1 LT BOTTLE
CBLS & GRAVEL, SOME SAND, DRY

6pm - P. Cloudy - fog lifted
373 V - W/S @ SE CRNR

HAZARDOUS WASTE STORAGE AREA

374 SW CRNR, V-N/E/NE
375 PIECE OF METAL SIDING
ALUMINUM. 30 x 40. from hangar
V-NE
376 MISC. WOOD DEBRIS - SMALL
377 2 x PCB STORAGE AREA SIGNS
V-N.
→ STREWN OVER AREA
378 SE CRNR V-W/N/NW
379 NE CRNR V-S/W/SW
380 ERECT SIGN POST V-S
381 NW CRNR V-E/S/SE
382 SIGN POST W/ HOLE - V-E
383 CENTER V-N/W/S/E
384 - SM PIECES OF METAL DEBRIS
V-N, S. EDGE OF SEA CANS

830 LEAVE TO RE-INSTALL DATALOGGERS

TAKE MANUAL READINGS OF BEADS + MONITOR TEMP. ✓

STRIATIONS. S OF UT-3. PHOTOS.

QA PIN-2
BD1 - 1WA
BD2 - 5WA
BD3 - 1A
BD4 - 6A
BD5 - 12A
BD6 - 14A
BD7 - 18A
BD8 - 28A
BDW1 - 2W 245-YCB-49284546

16-08-18 SHIPPING FIRST AIR MAXXAM
11AM 107.4 kg - 5 COOLERS -
245-YCB-4924535 EXOVA - 1 COOLER 18kg
VIA CANADIAN NORTH ← ESG - 1 COOLER.
518-31881076

Exova — Testing, calibrating, advising

www.exova.com ED 120-02

Invoice to:

Company: ENGLOBE CORP
Address: 1260 Boul Lebourgneuf SUITE 400, QUEBEC
Attention: J.P. Pelletier
Phone: 1-418-704-8091
Cell: +224 628 65 60 64
Fax: 1-418-647-2540
E-mail: jean-pierre.pelletier@englobecorp.com
Agreement ID:
Copy of report: andrew.passalis@egma.ca.com

Report To:

Company:
Address:
Attention: ANDREW PASSALIS
Phone:
Cell: (204) 791-4938
Fax:
E-mail 1:
E-mail 2: andrew.passalis@egma.ca.com
Copy of invoice:

Report Results		Regulatory Requirement	
E-Mail	X	HCDWQG	
Mail	X	Ab Tier 1	
Online		SPIGEC	
Fax		BCCSR	
PDF	X	Other (list below)	
Excel	X		
QA/QC	X		

Project Information

Project ID:
Project Name: 2016-LFM KITKI3
Project Location: CAPE YOUNG.
Legal Location: PIN-2
PO/AFE#:
Proj. Acct. Code:
Quote # 20433

Sample Custody (please print)

Sampled by: N. PASSALIS/ KEPILON
Company: ENGLOBE

RUSH Priority

- Emergency (contact lab for turnaround and pricing)
- Priority 1-2 working days (100% surcharge)
- Urgent 2-3 working days (50% surcharge)

When "ASAP" is requested, turn around will default to a 100% RUSH priority, with pricing and turn around time to match. Please contact the lab prior to submitting RUSH samples. If not all samples require RUSH, please indicate in the special instructions.

Date Required: REGULAR TAT Signature:

This section for Lab use only

Date/Time stamp: AUG 23 PM 4:02

Special Instructions/Comments (please include contact information including ph. # if different from above).

ACT MNGR - ANGELA LYSTER

	Site I.D.	Sample Description	Depth start (cm)	Depth end (m)	Date/Time Sampled	Matrix	Sampling Method	Number of Containers	F1-F3	TOTAL PCBS	Metals (As, Cr, Cd, Co, Cu, Ni, Pb, Zn, Hg)	Total Metals (As, Cr, Cd, Co, Cu, Ni, Pb, Zn, Hg)
1		P216-1WA			2016-08-16	Soil		2	X	X	X	
2		P216-5WA						2	X	X	X	
3		P216-1A						2	X	X	X	
4		P216-6A						2	X	X	X	
5		P216-12A						2	X	X	X	
6		P216-14A			2016-08-15			2	X	X	X	
7		P216-18A						2	X	X	X	
8		P216-28A						2	X	X	X	
9		P216-[redacted]2W			2016-08-17	Water		7	X	X		X
10												
11												
12												
13												
14												
15												

Enter tests above (√ relevant samples below)

Indicate in the space allotted any deficiencies by the corresponding number.

1. Indicate any samples that were not packaged well
2. Indicate any samples not received in Exova supplies
3. Indicate any samples that were not clearly labeled
4. Indicate any samples not received within the required hold time or temp.
5. Indicate any missing or extra samples
6. Indicate any samples that were received broken
7. Indicate any samples where sufficient volume was not received
8. Indicate any samples received in an inappropriate container

ED 120-02

Submission of this form acknowledges acceptance of Exova's Standard Terms and Conditions (http://www.exova.com/about/terms-and-conditions/)

Please indicate any potentially hazardous samples

Page 1 of 1 Control # C 0008952

Lot: 1156775 COC

Shipping: COD Y/ N
and size of coolers 1 Large
Temp. received: 5.9
Delivery Method: First A.R
Waybill: 245-XCB-492453
Received by:

999

Maxxam
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Calgary: 4000 19th St. NE, T2E 6P8. Toll Free (800) 386-7247
Edmonton: 9331-48 St. T6B 2R4. Toll Free (800) 386-7247
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CHAIN OF CUSTODY RECORD

M 002021

Page 1 of 4

Invoice Information	Report Information (if differs from invoice)	Project Information	Turnaround Time (TAT) Required
Company: ENGLOBE CORP.	Company:	Quotation #: B30371	[X] 5 - 7 Days Regular (Most analyses)
Contact Name: J.P. Pelletier	Contact Name: ANDREW PASSALIS	P.O. #/ AFE#:	PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS
Address: 1260 Boul. Lebourgneuf. Blvd Suite 400, Quebec G2K2G2	Address:	Project #: 2016 LFM - KITIKI3	Rush TAT (Surcharges will be applied)
Phone: +2246286556064	Phone: 204-791-4938	Site Location: PIN-2, CAPE YOUNG	[ ] Same Day [ ] 2 Days [ ] 1 Day [ ] 3-4 Days
Email: jean-pierre.pelletier@englobecorp.com	Email: andrew.passalis@gmail.com	Site #:	Date Required:
Copies: andrew.passalis@gmail.com	Copies:	Sampled By: A.PASSALIS / K.EPILON	Rush Confirmation #:

RECEIVED IN YELLOWKNIFE
By: Burke Michelle Suite

Laboratory Use Only

	YES	NO	Cooler ID			
Seal Present			Temp	See ACTR		
Seal Intact						
Cooling Media						
	YES	NO	Cooler ID			
Seal Present			Temp			
Seal Intact						
Cooling Media						
	YES	NO	Cooler ID			
Seal Present			Temp			
Seal Intact						
Cooling Media						

Depot Reception 10:25
2016 -08- 21
4-4-5
5-4-6
Temp: 3 3 3 / 2 2 2 / 4 4 3

Analysis Requested

	Sample Identification	Depth (Unit)	Date Sampled (YYYY/MM/DD)	Time Sampled (HH:MM)	Matrix	# of containers	BTEX F1 ☐ VOC ☐	BTEX F1-F2	BTEX F1-F4	Routine Water	Regulated Metals Tot ☐ Diss ☐	Mercury Total ☐ Dissolved ☐	Salinity 4	Sieve (75 micron)	Texture (% Sand, Silt, Clay)	Basic Class II Landfill	F1-F3	TOTAL PCBs	Metals (As, Co, Cu, Cr, Cd, Pb, Ni, Zn, Hg)					HOLD - DO NOT ANALYZE
1	P216-1A		2016/8/16		SOIL	2											X	X	X					
2	P216-1B					2											X	X	X					
3	P216-2A					2											X	X	X					
4	P216-2B					2											X	X	X					
5	P216-3A					2											X	X	X					
6	P216-3B					2											X	X	X					
7	P216-4A					2											X	X	X					
8	P216-4B					2											X	X	X					
9	P216-5A					2											X	X	X					
10	P216-5B					2											X	X	X					

Please indicate Filtered, Preserved or Both (F, P, F/P) →

Regulatory Criteria

- [ ] AT1/CCME
- [ ] Drinking Water
- [ ] Saskatchewan
- [ ] D50 (Drilling Waste)
- [ ] Other:

Special Instructions

Relinquished by: (Signature/ Print)	DATE (YYYY/MM/DD)	Time (HH:MM)	Received by: (Signature/ Print)	DATE (YYYY/MM/DD)	Time (HH:MM)	Maxxam Job #
A.PASSALIS	2016/08/18	900.	Jennah Walter	2016/08/22	1156	B671091 DMG

AB FCD-00331/6

Maxxam
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Edmonton: 9331-48 St. T6B 2R4. Toll Free (800) 386-7247
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CHAIN OF CUSTODY RECORD

M 008544

Report Information	Comments	Same as CoC
Company: ENGLOBE CORP Contact: J.P. Pelletier/A. PASSALIS Phone: Email: Sampled by: A. PASSALIS/K. EPILON.		Project/LSD Special Instructions

	Sample Identification	Depth (Unit)	Date Sampled (YYYY/MM/DD)	Time Sampled (HH:MM)	Matrix	# of containers	BTEX F1 ☐ VOC ☐	BTEX F1-F2	BTEX F1-F4	Routine Water	Regulated Metals Tot ☐ Diss ☐	Mercury Total ☐ Dissolved ☐	Salinity 4	Sieve (75 micron)	Texture (% Sand, Silt, Clay)	Basic Class II Landfill	F1-F3	TOTAL PCBs	METALS (As, Cr, Cd, Co, Cu, Ni, Pb, Zn, Hg)					HOLD - DO NOT ANALYZE
11	P216-6A		2016/8/16		SOIL	2											X	X	X					
12	P216-6B					2											X	X	X					
13	P216-7A					2											X	X	X					
14	P216-7B					2											X	X	X					
15	P216-8A					2											X	X	X					
16	P216-8B					2											X	X	X					
17	P216-9A					2											X	X	X					
18	P216-9B					2											X	X	X					
19	P216-10A					2											X	X	X					
20	P216-10B					2											X	X	X					
21	P216-11A					2											X	X	X					
22	P216-11B					2											X	X	X					
23	P216-12A					2											X	X	X					
24	P216-12B					2											X	X	X					
25	P216-13A		2016/8/15			2											X	X	X					
26	P216-13B					2											X	X	X					
27	P216-14A					2											X	X	X					
28	P216-14B					2											X	X	X					
29	P216-15A					2											X	X	X					
30	P216-15B					2											X	X	X					

Please indicate Filtered, Preserved or Both (F, P, F/P) →

RECEIVED IN YELLOWKNIFE
By: Michelle Gaule 10:25
2016-08-21

Temp: 4-4-5 / 5 4 6 / 3 1 3 / 2 2 2 / 4 4 3

See ACTR

Relinquished by: (Signature/ Print)	DATE (YYYY/MM/DD)	Time (HH:MM)	Received by: (Signature/ Print)	DATE (YYYY/MM/DD)	Time (HH:MM)	Maxxam Job #
A PASSALIS	2016/08/18	900	Jenna Walter	20160822	1156	B671091 DMG

AB FCD-00331/6

Maxxam
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maxxam.ca

CHAIN OF CUSTODY RECORD

M 008545

Page 3 of 4

Report Information

Company: ENGLOBE CORP
Contact: J.P. Pelletier / A. PASSALIS
Phone:
Email:
Sampled by: A. PASSALIS / K. EPILON

Comments

Analysis Requested

Same as CoC

Project/LSD

Special Instructions

	Sample Identification	Depth (Unit)	Date Sampled (YYYY/MM/DD)	Time Sampled (HH:MM)	Matrix	# of containers	BTEX F1 ☐ VOC ☐	BTEX F1-F2	BTEX F1-F4	Routine Water	Regulated Metals Tot ☐ Diss ☐	Mercury Total ☐ Dissolved ☐	Salinity 4	Sieve (75 micron)	Texture (% Sand, Silt, Clay)	Basic Class II Landfill	F1-F3	TOTAL PCBs	METALS (As, Cr, Cd, Co, Cu, Ni, Pb, Zn, Hg)				HOLD - DO NOT ANALYZE
11	P216-16A		2016/8/15		SOIL	2											X	X	X				
12	-16B					2											X	X	X				
13	-17A					2											X	X	X				
14	-17B					2											X	X	X				
15	-18A					2											X	X	X				
16	-18B					2											X	X	X				
17	-19A					2											X	X	X				
18	-19B					2											X	X	X				
19	-20A					2											X	X	X				
20	-20B					2											X	X	X				
21	-21A		2016/8/16			2											X	X	X				
22	-21B					2											X	X	X				
23	-22A					2											X	X	X				
24	-22B					2											X	X	X				
25	-23A					2											X	X	X				
26	-23B					2											X	X	X				
27	-24A					2											X	X	X				
28	-24B					2											X	X	X				
29	-25A					2											X	X	X				
30	-25B					2											X	X	X				

Please indicate Filtered, Preserved or Both (F, P, F/P) →

RECEIVED IN YELLOWKNIFE
By: Michelle Smith
10:25
2016-08-21
4-4-5
5-4-6

Temp: 3 1 3 1 3
2-2-2
4-4-3

See ACTR

Relinquished by: (Signature/ Print)	DATE (YYYY/MM/DD)	Time (HH:MM)	Received by: (Signature/ Print)	DATE (YYYY/MM/DD)	Time (HH:MM)	Maxxam Job #
A. PASSALIS	2016/8/18	900	Jenna Wallace	2016/08/22	1156	B671091 DMG

AB FCD-00331/6

Maxxam
A Bureau Veritas Group Company

Calgary: 4000 19th St. NE, T2E 6P8. Toll Free (800) 386-7247
Edmonton: 9331-48 St. T6B 2R4. Toll Free (800) 386-7247
maxxam.ca

CHAIN OF CUSTODY RECORD

M 008546

Report Information

Company: ENGLOBE CORP
Contact: J.P. Pelletier / A. PASSALIS
Phone:
Email:
Sampled by: A. PASSALIS / K. EPILON

Comments:

Same as CoC

Project/LSD

Analysis Requested: # of containers; BTEX F1 ☐ VOC ☐; BTEX F1-F2; BTEX F1-F4; Routine Water; Regulated Metals Tot ☐ Diss ☐; Mercury Total ☐ Dissolved ☐; Salinity 4; Sieve (75 micron); Texture (% Sand, Silt, Clay); Basic Class II Landfill; F1-F3; TOTAL PCBS; Metals (As, Cr, Cd, Co, Cu, Pb, Ni, Zn, Hg); HOLD - DO NOT ANALYZE

#	Sample Identification	Depth (Unit)	Date Sampled (YYYY/MM/DD)	Time Sampled (HH:MM)	Matrix	# of containers	F1-F3	TOTAL PCBS	Metals	Special Instructions
11	P216-26A		2016/8/16		SOIL	2	X	X	X	
12	P216-26B		"			2	X	X	X	
13	P216-27A		2016/8/15			2	X	X	X	
14	P216-27B					2	X	X	X	
15	P216-28A					2	X	X	X	
16	P216-28B					2	X	X	X	
17	P216-29A					2	X	X	X	
18	P216-29B					2	X	X	X	
19	P216-30A					2	X	X	X	
20	P216-30B					2	X	X	X	
21	P216-BD1		2016/8/16			2	X	X	X	
22	P216-BD2					2	X	X	X	
23	P216-BD3					2	X	X	X	
24	P216-BD4					2	X	X	X	
25	P216-BD5					2	X	X	X	
26	P216-BD6		2016/8/15			2	X	X	X	
27	P216-BD7					2	X	X	X	
28	P216-BD8					2	X	X	X	
29										
30										See ACTN

RECEIVED IN YELLOWKNIFE
By: Michelle Cuicle
2016-08-21 10:25
Temp: 4-4-5 / 5-4-6 / 3/3/3 / 2-2-2 / 4-4-3

Please indicate Filtered, Preserved or Both (F, P, F/P) →

Relinquished by: (Signature/ Print)	DATE (YYYY/MM/DD)	Time (HH:MM)	Received by: (Signature/ Print)	DATE (YYYY/MM/DD)	Time (HH:MM)	Maxxam Job #
A. PASSALIS	2016/8/18	900	Jena Walter	20160822	1156	B671091 DMG

AB FCD-00331/6

ANNEX 4

Scope of the Report and Limitation of Liability

SCOPE OF THE REPORT AND LIMITATION OF LIABILITY

A – Recipient and Use

This report ("Report") was prepared by Englobe Corp. ("Englobe") at the request and for the sole benefit of the Client ("Client"), and is intended to be used exclusively by the Client.

B –Site Conditions

Any description of the target site ("Site"), soil and/or groundwater included in the Report is only provided as an indication to the Client, and unless otherwise specifically mentioned in the Report such description shall not at any time and under any circumstances be used for purposes other than to gain a better understanding of the Site and to fulfil the requirements of the mandate assigned to Englobe by the Client ("Mandate").

All information, including but not limiting the comprehensiveness of the data, charts, descriptions, drawings, tables, analysis results, compilations, and any conclusion and recommendation included in the Report, shall arise from the direct observation of the Site during a specific period, namely the fulfilment of the Mandate, and from the interpretation of such information and data available during the same period.

The content of the Report shall not apply in any way or to any part of the Site or to any parameter, material or analysis excluded from the Mandate.

Englobe shall not be held responsible for the presence of any substance or material of a different nature, or of a similar nature but with different concentrations, as those indicated in the Report, and this in any part or parts of the Site excluded from the Mandate.

The content of the Report, including its conclusions and recommendations, shall not apply to any period preceding or following the Mandate. The physiochemical conditions of the Site, and the type and degree of contamination identified on the Site, may vary within a given period depending on a number of factors, especially the current activities taking place on the Site and/or on lands adjacent to the Site.

A review of the Report and/or changes in the parameters, conclusions and/or recommendations may prove to be necessary in the event of a change in the Site conditions or the discovery of pertinent information subsequent to the production of the Report.

C - Legislation, Regulations, Guidelines and Policies

The interpretation of the data and observations concerning the Site, as well as the conclusions and recommendations resulting from these, shall take into account the laws, regulations, standards, policies and/or guidelines applicable to the Project and that are in effect at the time of the fulfilment of the Mandate. In the event no current law, regulation, policy, guideline or standard applies to the project, Englobe shall take into account proven environmental and professional rules and practices when drawing up the Report.

Any change in the legislation, regulations, standards, policies and/or guidelines applicable to the project may result in the need to review the Report and/or modify its parameters, conclusions and/or recommendations.

D – Use of Report

The Report is intended for the exclusive use of the Client and shall only be used for the purpose it was meant for.

The content of the Report and its conclusions and recommendations only apply to the Site and may not, at any time and under any circumstances, apply to any land adjacent to the Site or to any other land located in the vicinity of the Site.

Any reproduction in any form whatsoever and any distribution or use of the Report, in whole or in part, by a person other that the Client, is strictly forbidden without the prior written consent of Englobe. Englobe makes no declaration and pledges no responsibility towards any person other than the Client with regard to the content of the Report and the conclusions and recommendations expressed therein.

Englobe is in no way responsible for any loss, fine or penalty, or for any expense, damage or other prejudice of any type whatsoever, sustained by a person other than the Client as a result of the unauthorized use of the Report.

No provision of the Report shall be construed as or considered to be a legal opinion of Englobe’s.