THE COLLECTION OF LANDFILL MONITORING DATA AT THE FORMER CAM-3 DEW LINE SITE

Shepherd Bay, Nunavut

FINAL REPORT– 2009 SEASON

(O/Ref.: CD9229) (Y/Ref.: DLC MON (Kitik 09)

DEFENCE CONSTRUCTION CANADA

February 2010

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DEFENCE CONSTRUCTION CANADA

February 2010

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1 INTRODUCTION

1.1 LOCATION AND SITE FEATURES

The CAM-3 Shepherd Bay DEW Line site is located on the southwest coast of the Boothia Peninsula in Nunavut at 68º 48' 38" N and 96º 26' 01" W. The site is located approximately 60 kilometres southeast of the community of Taloyoak and about 10 kilometres inland from the shore of Shepherd Bay.

The CAM-3 site is a former auxiliary radar site within the original DEW Line system that was converted to an North Warning System (NWS) Long Range Radar (LRR) site in 1989 as part of the North American Aerospace Defence Modernization Program.

Cleanup of the CAM-3 DEW Line site was completed in 2007. Infrastructure required as part of the NWS LRR remains on site.

The clean-up included the closure and remediation of five existing landfills, the construction of a landfill for the disposal of non-hazardous wastes generated from demolition and collection of site debris (NHWLF) as well as the construction of a second facility to contain Tier II soils. Monitoring activities were carried out at the following landfill areas, as shown on the overall site plan (Figure CAM-3.1) at the end of this section:

- Beach Landfill
- Non-Hazardous Waste Landfill
- Station Landfill
- Tier II Soil Disposal Facility
- Northeast Landfill
- USAF Landfill
- NWS Landfill

In accordance with the NTI-DND Cooperation Agreement, landfill monitoring is carried out following the site clean-up. Table I hereafter provides a synopsis of field activities performed during the 2009 Landfill Monitoring Program at CAM-3 – Shepherd Bay.

Table I: 2009 Monitoring Requirements for CAM-3 Landfills

Landfill	Visual Inspection	Soil Sampling	Groundwater Sampling	Thermal Monitoring
Beach Landfill	✓			
Non-Hazardous Waste Landfill	✓			
Station Landfill	✓			
Tier II Disposal Facility	✓	✓	✓	✓
Northeast Landfill	✓			
USAF Landfill	✓	✓	✓	✓
NWS Landfill	✓			

1.2 OBJECTIVES AND SCOPE OF WORK

The objective of the DCC Landfill Monitoring Program is to collect sufficient information to assess the landfill's performance from geotechnical and environmental perspectives. DCC has specified the requirements for the Landfill Monitoring Program in the document *Terms of Reference (ToR) – Consulting Services for the Collection of Landfill Monitoring Data – PIN-3 Lady Franklin Point, PIN-4 Byron Bay, CAM-1 Jenny Lind Island, CAM-2 Gladman Point, CAM-3 Shepherd Bay, and CAM-4 Pelly Bay DEW LINE SITES, NUNAVUT TERRITORY, KITIKMEOT REGION DCC PROJECT #: DLC MON*, October 7, 2008. (ToR, reference B).

The scope of work for the Landfill Monitoring Program is defined in the ToR and in Biogenie's accepted proposal dated April 2009 (reference C) that was submitted to DCC. The scope of work generally includes the following activities:

- Landfill Monitoring for each of the CAM-3 Landfills
- Visual inspection
- Soil and groundwater sampling (DCC Tier II Disposal Facility and USAF Landfill)
- Thermal monitoring (DCC Tier II Disposal Facility and USAF Landfill)
- Create photographic record
- Draft and Final reports

1.3 REPORT FORMAT

This report describes the work carried out in August 2009 at seven landfill sites at CAM-3 Shepherd Bay. Results from soil and groundwater sampling, thermal monitoring, and visual inspection of the sites are also presented in the formats described in the ToR. An electronic version of the report and its component tables, figures and data files is included in an Addendum DVD-ROM, which is appended to the report.

The report is organized with a separate chapter for each of the landfill areas. Each chapter contains all relevant information gathered for that landfill during the 2009 Landfill Monitoring Program. The following information is provided for each landfill:

- Visual inspection check-list
- Visual inspection drawing mark-up
- A selection of visual inspection photos
- Thermal monitoring summary (where applicable)
- Summary of 2009 soil analytical data (where applicable)
- Evaluation of 2009 soil analytical data, as compared to baseline conditions (where applicable)
- Summary of 2009 groundwater analytical data (where applicable)
- Monitoring well development/sampling reports (where applicable)

For the photographic record, the printed copy of the report only includes an index and thumbnail image of photos for each of the landfill areas. The actual photos are included in electronic format in the Addendum DVD-ROM to the report. Certificates of Analysis, QA/QC analytical results and field notes are attached in appendices.

1.4 PROJECT REFERENCES

The following references are specifically relevant to the 2009 Landfill Monitoring activities:

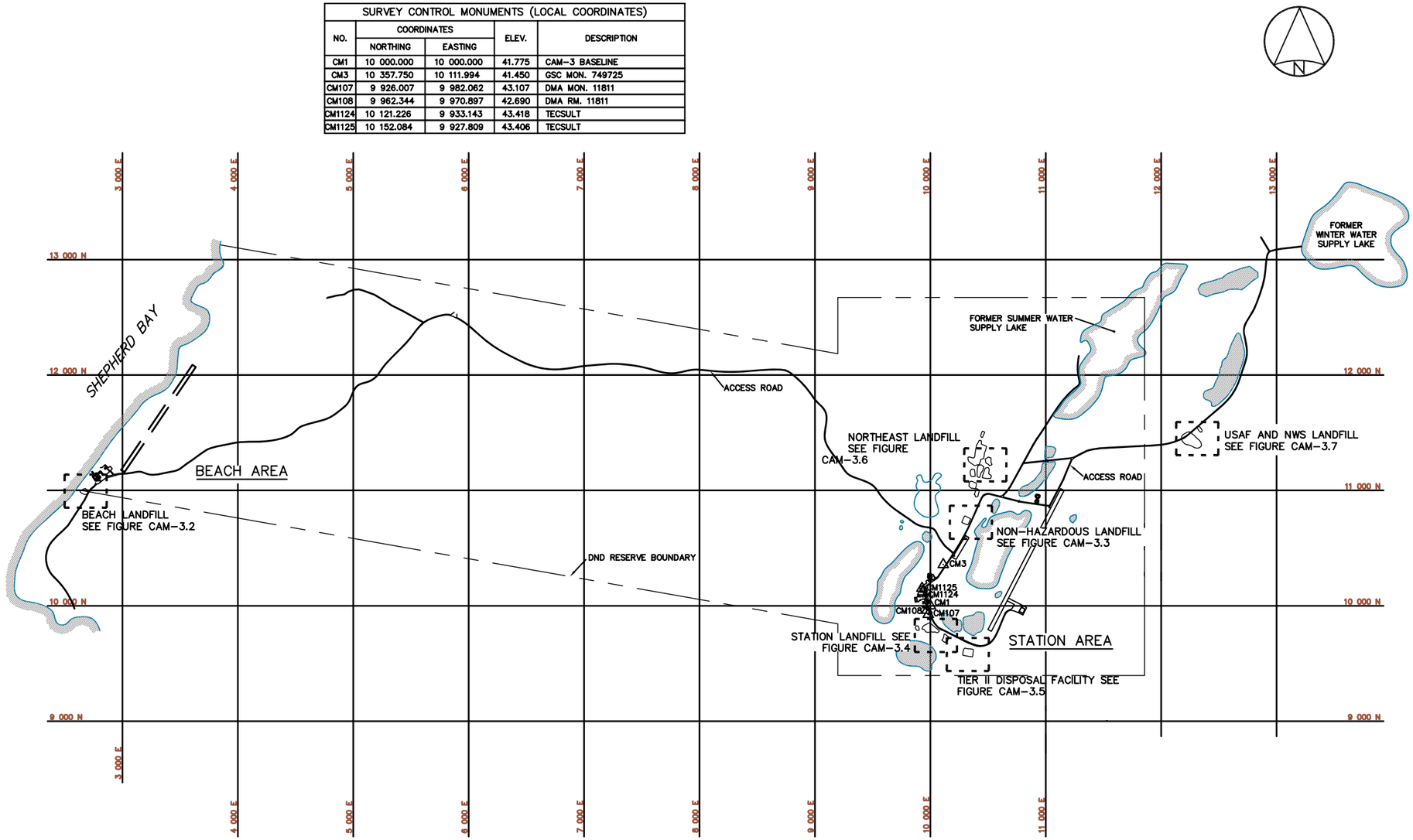
A. *Request for Abbreviated Proposal- Consultant Services – Collection of Landfill Monitoring Data for the DEW Line Sites: PIN-3 Lady Franklin Point, PIN-4 Byron Bay, CAM-1 Jenny Lind Island, CAM-2 Gladman Point, CAM-3 Shepherd Bay, and CAM-4 Pelly Bay, Nunavut Territory - Kitikmeot Region. DCC Project # DLC MON (Kitik 09)*, February 19, 2009.

B. Terms of Reference – Consulting Services for the Collection of Landfill Monitoring Data – PIN-3 Lady Franklin Point, PIN-4 Byron Bay, CAM-1 Jenny Lind Island, CAM-2 Gladman Point, CAM-3 Shepherd Bay, and CAM-4 Pelly Bay DEW LINE SITES, NUNAVUT TERRITORY, KITIKMEOT REGION DCC PROJECT #: DLC MON, October 7, 2008.

C. Technical Proposal – The Collection of Landfill Monitoring Data for the DEW Line Sites: *PIN-3 Lady Franklin Point, PIN-4 Byron Bay, CAM-1 Jenny Lind Island, CAM-2 Gladman Point, CAM-3 Shepherd Bay, and CAM-4 Pelly Bay DEW LINE SITES, Kitikmeot Region, Nunavut. Project Ref 6121-060,* February 2008.

D. *Post-Field Progress Report, CAM-3 Landfill Monitoring 2009*, August 26, 2009.

SURVEY CONTROL MONUMENTS (LOCAL COORDINATES)				
NO.	COORDINATES		ELEV.	DESCRIPTION
	NORTHING	EASTING		
CM1	10 000.000	10 000.000	41.775	CAM–3 BASELINE
CM3	10 357.750	10 111.994	41.450	GSC MON. 749725
CM107	9 926.007	9 982.062	43.107	DMA MON. 11811
CM108	9 962.344	9 970.897	42.690	DMA RM. 11811
CM1124	10 121.226	9 933.143	43.418	TECSULT
CM1125	10 152.084	9 927.809	43.406	TECSULT



LEGEND

CM1 △ SURVEY CONTROL MONUMENT

0 400m 800m 1200m 1600m 2000m

NO.	VERSION	DATE	BY	VERIF.	APPR.
A	FINAL VERSION	10–02–26	P.L.	A.P.	J.P.P.

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FINAL REPORT
COLLECTION OF LANDFILL MONITORING DATA
CAM-3, SHEPHERD BAY, NUNAVUT

OVERALL SITE PLAN

SITE REMEDIATION SOLUTIONS

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MEASUREMENT UNIT	SCALE:	DATE (month–year):
Meter	1 : 40,000	FEBRUARY 2010
DRAWN BY: P. LÉGARÉ	VERIFIED BY: A. PASSALIS	APPROVED BY: J.–P. PELLETIER
PROJECT NO: CD9229_001_160	DRAWING NO: CD9229_001_160-CAM-3_1	PAGE LS

FIGURE CAM-3.1

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2 OUTLINE AND METHODOLOGY

2.1 FIELD PROGRAM STAFF

The 2009 on-site field program at CAM-3 Shepherd Bay took place from August 13 to 15, 2009. Biogenie sub-contracted Sila Remediation Inc. from Igloolik, Nunavut to perform the field work. The Sila field program was executed by Mr. Andrew Passalis and four local Inuit representatives.

The team was made up of the following individuals:

- Andrew Passalis, Project Engineer
- Robert Maksagak, Field Technician
- Byron McCallum, Field Technician
- Joe Koaha, Wildlife Monitor
- Susie Koaha, Cook/Attendant

2.2 2009 WEATHER CONDITIONS

Seasonally cool weather conditions were observed during the CAM-3 Shepherd Bay monitoring event with daytime temperatures ranging between 2-5ºC during the first two days and warming up to a daytime high of 12ºC on the final day of monitoring (August 15). Skies were overcast upon arrival to site on August 13, with heavy fog observed the following morning. Skies eventually cleared later that evening and remained clear until departure from site the following day (August 15). Winds generally decreased over the three days, ranging from 30 to less than 20 km/hr from the NW direction. No precipitation was observed during the monitoring event.

2.3 VISUAL INSPECTION

Data and information collected during the visual inspection of the CAM-3 landfills are included in the visual inspection datasheets. These data sheets include such inspection data 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 tag to be used consistently each year in an effort to track changes in condition for each specific feature. New features are added to the checklist and are noted as new observations. This letter is shown on the figures for each landfill along with the symbol for the particular feature.

Digital photos with a measure of scale were taken to show the actual general state of the landfills as well as features of interest. Annotated sketches/diagrams are included in the present report for each landfill. Some photos are provided for supplemental purposes only and do not warrant placement on the Figures (i.e., they are not specifically referenced in the report or within the tables).

The photos were taken with a Canon PowerShot A590 8.0 megapixel (MP) digital camera. Full resolution digital jpg copies are furnished on a DVD-ROM appended with the final report. The photo log, including the local coordinates from where the photo was taken, orientation (relative to map north), feature of note and picture numbers are included with each landfill report.

2.4 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 93 (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 93 (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 (http://www.ccme.ca/publications/ceqg_rcqe.html)

For the 2009 monitoring event, 4 soil-sampling stations were visited. One surface sample (0-15 cm depth below surface) and one subsurface sample (40-50 cm depth below surface) were taken at each sampling station. No frozen ground or frost was encountered at the soil stations during the August 2009 sampling.

As specified in the ToR, the following soil sampling procedures were adhered to:

- Where required, the soil samples were collected from locations between two to four meter radius of the monitoring wells
- Blind field duplicates (10 %) were collected for Quality Assurance and Quality Control purposes
- Duplicate samples (10 %) were also taken and sent to a second laboratory for quality control purposes
- An additional ten percent of soil samples taken were sent to the owner's representative (ESG OPS CENTRE) in Kingston for archiving as specified by DCC

The soil samples were analyzed for requested parameters (TPH (F1-F3), total metals and PCBs) as specified by DCC. Table II below summarizes the soil sampling at CAM-3 during the August, 2009 field program.

Table II: Summary of Soil Sampling at CAM-3 – August 2009

Landfill Site	**Soil Sample Locations**			
Tier II Disposal Facility	MW-4	MW-5	MW-6	MW-7
USAF Landfill	MW-12	MW-13	MW-14	MW-15

Notes:
Soil samples annotated as "MW" were collected as per the ToR between 2-4 metres from monitoring wells.
All soil samples were collected from two depths (0-15 cm and 40-50 cm). For 2009 sampling, total no. of soil samples = 22 samples (8 samples x 2 depths + 2 QA/QC + 2 (Inter-laboratory comparison) + 2 for Owner's Representative (ESG Archives)

2.5 GROUNDWATER SAMPLING

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

- CCME EPC-NCS62E Guidance Manual on Sampling, Analysis, and Data Management for Contaminated Sites - Volume I: Main Report, Dec 93 (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 93 (CCME catalogue - http://www.ccme.ca/pdfs/cat_eng.pdf).

Wells were purged as specified and measurements of *in situ* temperature, conductivity and pH were taken. Sampling took place when these parameters were stabilized. Turbidity readings were also collected at each station. The samples were not acidified and were not filtered (as directed in ToR).

The 2009 field program included sampling only 6 of the 8 monitoring wells at CAM-3. Two well locations were dry at the time of monitoring and consequently could not be sampled. A summary of the status of the monitoring wells and the attempts made are summarized in Table III.

In sampled wells, no sign of free phase hydrocarbon product was detected. Monitoring Well Development and Sampling Record forms are included in appropriate sections of this report.

Table III: Summary of Groundwater Sampling at CAM-3 – August 2009

Landfill Site	**Groundwater Sample Locations**		
Tier II Disposal Facility	MW-5	MW-6	MW-7
USAF Landfill	MW-13	MW-14	MW-15

Notes:
All monitoring wells were inspected and found to be in good condition with no significant concerns identified.
For 2009 sampling, total no. of water samples = 9 samples (6 monitoring well samples + 1 blind duplicate + 1 inter-laboratory duplicate + 1 field blank) + 1 travel blank.

The detection limits were raised due to interference in the sample that made it difficult/impossible to see a specific metal at the usual calibration range. In order to differentiate between the interference and the analytes of interest, a dilution was necessary (see notes on Certificates of Analysis).

2.6 THERMAL MONITORING

All thermistors at the Tier II Disposal Facility were inspected and found to be in good condition with no significant concerns identified. Locations of data loggers and thermistor strings corresponding to VT-7 and VT-8 were mislabelled on the site plans provided. Similarly, data loggers at the USAF Landfill were inspected and found that the datalogger at VT-4 had been removed in 2008 and was not replaced. In addition, poor batteries and possible hardware errors at VT-1 resulted in data not being retrieved. With the exception of VT-1 and VT-4 noted above, all analogues/thermocouples were observed to be functioning properly. Data from all functioning thermistors was successfully retrieved and battery levels in VT-2, VT-7 and VT-8 were noted to be “fair” and will require replacement in 2010. Internal memories were reset and clocks were synchronized using the Prolog software. The datalogger from VT-1 was removed and transported south for repair.

Specific detailed information regarding temperature data is contained in the report section on the Tier II Disposal Facility and USAF Landfill. Raw data retrieved directly from the dataloggers were provided to DCC with the field progress report on August 26, 2009. The manual thermal monitoring data is presented in tabular form on the thermistor inspection sheets for each landfill

2.7 FIELD NOTES AND DATA

Field notes from the 2009 landfill monitoring program, including soil and water sampling are included in Appendix B for reference. Notes were written on waterproof field sheet and in field books and the notes scanned to an Adobe pdf document for future reference and back up. Locations of all observations and features for the visual inspection were recorded using a hand-held Garmin Oregon 300 GPS device, which included a combination of continuous tracks and discrete waypoints. Data packages collected from the individual vertical thermistors were downloaded directly to a field laptop computer.

2.8 QUALITY CONTROL

Sila implemented standard sample collection techniques to decrease the likelihood of compromising collected samples. The methods used for sample collection are summarized in Sections 2.4 and 2.5 of this report. The following measures were taken to minimize sample cross-contamination:

- All samples were placed directly into the appropriate laboratory supplied containers (for the particular analysis)
- Soil samples were collected with the use of decontaminated sampling equipment and/or nitrile gloves that were used only once
- Water samples were collected through the use of dedicated Waterra foot valves and tubing
- All samples were stored in chilled coolers/refrigerators throughout the field program and chilled coolers during subsequent transfer to the respective laboratory.

Chains of Custody (COC) forms were completed by the Project Engineer after sample collection. The samples were refrigerated prior to off-site shipment by First Air Cargo directly to Maxxam (via Yellowknife) and Exova in Edmonton and ESG, via Ottawa to Kingston, Ontario where they were checked in by laboratory representatives. All analysis was completed as specified on COC forms.

2.9 QA/QC PROCEDURES

Sila used 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% Blind Duplicate Samples of soil and water were sent to Maxxam
- 10% Interlab Duplicate Samples were sent to Exova (looking for variation in procedures causing significant difference in analytical result). Results for both the blind duplicates and the interlab duplicates can be found in Appendix C, as actual values and relative percent differences
- 10% Archival Samples of soil to ESG (soils).

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, and is used to monitor for process contamination.

Exova follows similar in-house QA/QC procedures. Maxxam and Exova QA/QC reports can be found in Appendix C.

3 BEACH LANDFILL

3.1 BACKGROUND AND MONITORING PROGRAM

The Beach Landfill area is located approximately 100 m south of the Beach POL tanks and 50 m east of the ocean. The landfill is located within a relatively flat lying area that historically had been used for material storage. The landfill has one regrade area and, including engineered cover, encompasses a footprint of approximately 2,500 m^2 with the final cover extending approximately 0.75 m above the surrounding grade. Based on existing information regarding this landfill as a source of contamination, its potential migration pathways and receptors, the Beach Landfill was classified as low potential environmental risk. The remediation consisted of regrading with the placement of additional granular fill.

The long term monitoring plan consists of visual monitoring and collection of soil samples. The 2009 monitoring of this landfill includes a visual inspection to assess landfill performance. There is no instrumentation installed at this landfill.

3.2 VISUAL INSPECTION REPORT

The visual inspection of the Beach Landfill was conducted on August 14, 2009. The Visual Inspection Checklist/Report has been completed as per the ToR and is included as Table IV of this report.

Settlement
Indications of minor settlement were noted at several locations, including one sizeable (9 x 7 m) depression situated on the northwest area of the landfill surface (Feature A). Several smaller depressions were also noted along the north, east and south sides of the landfill surface (Feature A and B). These features have an acceptable severity rating.

Erosion
Two areas of erosion were noted on the southeast side of the Beach Landfill (Feature C), including one elongated feature extending across the southeast corner and one relatively localized area on the side slope to the northeast. Both areas appear to be associated with possible minor settlement that has resulted in directed runoff and washing of fines from the landfill cover. Both features appear to be self-armouring and have an acceptable severity rating.

Minor erosion was also noted along the constructed drainage channel extending around the northeast side of the landfill and appears consistent with planned remedial measures to direct flow around the landfill. The erosion is not in direct contact with the landfill. Minor runoff flow was observed in the channel at the time of the inspection.

Frost Action
Evidence of frost action was not noted.

Evidence of Burrowing Animals
Indications of burrowing animals were not noted.

Re-establishment of Vegetation
Evidence of vegetation was not noted on the landfill.

Staining
Evidence of staining was not noted on or around the landfill.

Seepage Points
Although several areas of ponded water were observed around the sides of the landfill, no specific areas of seepage were noted at the landfill.

Debris
Evidence of debris was not noted at the landfill.

Presence/Condition of Monitoring Instruments
There is no monitoring instrumentation installed at this landfill.

Other Features of Note
No other features were noted at the landfill.

Discussion
The Beach Landfill performance with respect to containment of the debris within the landfill is rated as acceptable. A visual inspection report, including supporting photos and drawing, is presented in the following pages.

It was noted that surface runoff has resulted in minor erosional features on the southeast side of the landfill surface. These features appear to be consistent with findings from the 2008 inspection and appear to be self armouring along the downgradient slope.

Table IV: Visual Inspection Checklist / Report – Beach Landfill

DEW LINE CLEANUP: POST-CONSTRUCTION – LANDFILL MONITORING
VISUAL INSPECTION CHECKLIST
INSPECTION REPORT – PAGE 1 of 2

SITE NAME: CAM-3 – Shephard Bay
LANDFILL DESIGNATION: Beach Landfill (Regrade Landfill)
DATE OF INSPECTION: August 14, 2009
DATE OF PREVIOUS INSPECTION: August 6, 2008
INSPECTED BY: A. Passalis
REPORT PREPARED BY: A. Passalis
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.

LANDFILL VISUAL INSPECTION

Site Name: Cam-3 Shepherd BAY
Landfill: Beach Landfill
Designation:
Date Inspected: August 14, 2009
Inspected by: Andrew Passalis, P.Eng.
Sila Remediation Inc.

Signature: 

TABLE IV: CAM-3 BEACH LANDFILL

Page 2/2

Checklist Item	Present (Yes/No)	Location	Length	Width	Depth	Extent	Description	Photographic Record	Severity Rating	Additional Comments
Settlement	Yes	FEATURE A See Figure CAM-3.2 (west and south sides)	9 m 2 m 1 m 2 m	7 m 0.6 m 0.5 m 0.25 m	5 - 10 cm 3 cm 5 cm 3 - 5 cm	Occassional	Numerous subtle depressions on across surface and side slopes	BLF-13, 14, 4, 15	Acceptable	Subtle depressions on landfill surface likely resulting from poor compaction during regrading.
		FEATURE B See Figure CAM-3.2 (north and east sides)	1.2 m 0.8 m 10 m	1 m 0.5 m 0.7 m	10 cm 5 - 8 cm 5 cm	Occassional		BLF- 16, 19		
Erosion	Yes	FEATURE C See Figure CAM-3.2 (south cover and slope)	15 m 2.2 m	0.25 m 0.3 m	2 - 3 cm	Isolated	Minor surface erosion	BLF- 3, 17, 18	Acceptable	Erosion and subtle depression likely due to washing of fines. Self armouring
Frost Action	No	N/A	N/A	N/A	N/A	None	N/A	N/A	Not Observable	N/A
Animal Burrows	No	N/A	N/A	N/A	N/A	None	N/A	N/A	Not Observable	N/A
Vegetation	No	N/A	N/A	N/A	N/A	None	N/A	N/A	Not Observable	N/A
Staining	No	N/A	N/A	N/A	N/A	None	N/A	N/A	Not Observable	N/A
Vegetation Stress	No	N/A	N/A	N/A	N/A	None	N/A	N/A	Not Observable	N/A
Seepage Points	No	N/A	N/A	N/A	N/A	None	N/A	N/A	Not Observable	N/A
Debris Exposed	No	N/A	N/A	N/A	N/A	None	N/A	N/A	Not Observable	N/A
Presence/Condition of Monitoring Instruments	No	N/A	N/A	N/A	N/A	None	N/A	N/A	Not Observable	N/A
Other Features of Note:	No	N/A	N/A	N/A	N/A	None	N/A	N/A	Not Observable	N/A
Additional Photos	Yes	See Figure CAM-3.2 and Photographic Record	N/A	N/A	N/A	N/A	General Photographic Record	N/A	N/A	General photos for documentation, no features of note.
Overall Landfill Performance:	**Acceptable**									

3.3 PRELIMINARY STABILITY ASSESSMENT

The Preliminary Stability Assessment for Beach Landfill has been completed as per the ToR and is included as Table V below.

Table V: Preliminary Stability Assessment – Beach Landfill

Feature	Severity Rating	Extent
Settlement	Acceptable	Occasional
Erosion	Acceptable	Isolated
Frost Action	Not observed	None
Staining	Not observed	None
Vegetation Stress	Not observed	None
Seepage/Ponded Water	Acceptable	Occasional
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

3.4 LOCATION PLAN

The Location Plan for the Beach Landfill has been completed as per the ToR and is presented in Figure CAM-3.2.

SHEPHERD BAY

49 625 E
49 650 E
49 675 E
49 700 E
49 725 E

39 800 N
39 775 N
39 750 N
39 725 N
49 600 E

BOULDER WAVE BREAK

DND RESERVE BOUNDARY

ROAD

FEATURE A

FEATURE B

FEATURE C

LEGEND

- PICTURE NUMBER VIEWPOINT
- SETTLEMENT
- PONDING
- EROSION

0 5m 10m 15m 20m 25m

NO.	VERSION	DATE	BY	VERIF.	APPR.
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FINAL REPORT
COLLECTION OF LANDFILL MONITORING DATA

CAM-3, SHEPHERD BAY, NUNAVUT

BEACH LANDFILL

SITE REMEDIATION SOLUTIONS

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PROJECT NO: CD9229_001_160	DRAWING NO: CD9229_001_160-CAM-3_2	PAGE PL

FIGURE CAM-3.2

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3.5 PHOTOGRAPHIC RECORDS

The Photographic Record for Beach Landfill has been completed as per the ToR and is included as Table VI hereafter. The Photographic Record contains only an index and “thumbnail” photographs. Full sized photographs are contained in the Addendum DVD-ROM.

LANDFILL VISUAL INSPECTION PHOTO LOG

Site Name: CAM-3, Shepherd Bay
Landfill: Beach Landfill
Date Inspected: August 14, 2009
Inspected by: Andrew Passalis, P.Eng.

Photo (BLF-)	Thumbnail	Filename	Size (KB)	Date	Vantage Point		Caption
					Easting	Northing	
1		C309_3655	2,619 KB	14/08/2009	49684	39736	Panoramic view N to W from southwest of landfill. Note ponding along south and west sides.
		C309_3656	2,408 KB	14/08/2009			
		C309_3657	2,082 KB	14/08/2009			
		C309_3658	1,702 KB	14/08/2009			
2		C309_3659	3,043 KB	14/08/2009	49678	39744	Panoramic view N to W from southwest corner of landfill. Note ponding along south and west sides
		C309_3661	3,072 KB	14/08/2009			
		C309_3662	2,664 KB	14/08/2009			
		C309_3663	2,289 KB	14/08/2009			
3		C309_3664	3,220 KB	14/08/2009	49696	39774	Panoramic view SW to NW from southeast corner of landfill. Note hummocky surface along south cover.
		C309_3665	2,542 KB	14/08/2009			
		C309_3666	2,198 KB	14/08/2009			
		C309_3667	2,966 KB	14/08/2009			
4		C309_3668	5,069 KB	14/08/2009	49689	39765	View of minor depression on southeast corner of landfill
5		C309_3669	2,372 KB	14/08/2009	49692	39769	View SW along south side of landfill. Note localized ponding along adjacent roadway.
6		C309_3670	3,342 KB	14/08/2009	49703	39777	View N along drainage feature extending east of landfill
7		C309_3671	2,317 KB	14/08/2009	49703	39777	View NW along east side of landfill
8		C309_3672	2,897 KB	14/08/2009	49670	39897	Panoramic view SE to NW from northeast corner of landfill
		C309_3673	3,144 KB	14/08/2009			
		C309_3674	3,139 KB	14/08/2009			
		C309_3675	2,966 KB	14/08/2009			
		C309_3676	2,475 KB	14/08/2009			
		C309_3677	2,041 KB	14/08/2009			
		C309_3678	2,716 KB	14/08/2009			
9		C309_3679	3,777 KB	14/08/2009	49662	39799	View NW at ponded water and drainage north of landfill toe
10		C309_3680	2,036 KB	14/08/2009	49656	39808	Panoramic view SW to SE from east end of boulder wave break
		C309_3681	2,366 KB	14/08/2009			
		C309_3682	3,020 KB	14/08/2009			
		C309_3683	3,066 KB	14/08/2009			
		C309_3684	2,654 KB	14/08/2009			
11		C309_3685	2,465 KB	14/08/2009	49620	39781	Panoramic view NE to SE from west end of boulder wave break. Note ponding on northwest toe.
		C309_3686	2,638 KB	14/08/2009			
		C309_3687	2,776 KB	14/08/2009			
		C309_3688	2,955 KB	14/08/2009			
		C309_3689	3,191 KB	14/08/2009			
12		C309_3690	2,691 KB	14/08/2009	49632	39771	Panoramic view NE to SE from northwest corner of landfill
		C309_3691	2,585 KB	14/08/2009			
		C309_3692	2,786 KB	14/08/2009			
		C309_3693	2,842 KB	14/08/2009			
13		C309_3694	3,468 KB	14/08/2009	49652	39769	View SW at minor depression on northwest corner of landfill
14		C309_3695	3,065 KB	14/08/2009	49650	39762	View NW at minor depression on northwest corner of landfill
15		C309_3696	4,749 KB	14/08/2009	49674	39768	View NE at minor depression on southeast area of landfill
16		C309_3697	3,240 KB	14/08/2009	49657	39786	View SW at minor depressions along north side of landfill at top of armouring.
17		C309_3698	3,488 KB	14/08/2009	49678	39774	View SE at minor erosion on southeast corner of landfill
18		C309_3699	2,606 KB	14/08/2009	49687	39764	View NW at minor erosion on southeast corner of landfill
19		C309_3700	3,921 KB	14/08/2009	49682	39781	View SE at minor settlement on east side of landfill cover

4 NON-HAZARDOUS WASTE LANDFILL

4.1 BACKGROUND AND MONITORING PROGRAM

The Non-Hazardous Waste Landfill (NHWLF) is located approximately 650 m north-northeast of the module train and 200 m south of Northeast Landfill. The landfill, including granular cover, encompasses a footprint of approximately 3,600 m^2 with the final cover extending between 2.5 to 4.0 m above the surrounding grade. This landfill was constructed for the disposal of non-hazardous wastes, site debris and DCC Tier I and Type A hydrocarbon impacted soil. Landfill materials are contained by a granular perimeter berm and cover. Three groundwater monitoring wells are installed at the landfill perimeter.

The long term monitoring plan consists of visual monitoring, and periodic collection of soil and groundwater samples. The 2009 monitoring of this landfill includes a visual inspection to assess landfill performance.

4.2 VISUAL INSPECTION REPORT

The visual inspection of the NHWLF was conducted on August 15, 2009. The Visual Inspection Checklist/Report has been completed as per the ToR and is included as Table VII of this report.

Settlement
Indications of localized settlement were noted at two areas (Feature A) on the landfill surface, including: one circular depression below the crest at the top of the southwest facing slope; and one elongated shallow depression near the crest on the northwest facing slope. These features appear consistent with the 2008 inspection and have an acceptable severity rating.

Erosion
Evidence of erosion was not noted.

Frost Action
Evidence of frost action was not noted.

Evidence of Burrowing Animals
Indications of burrowing animals were not noted.

Re-establishment of Vegetation
Evidence of vegetation was not noted.

Staining
Areas of staining were not observed at the time of the inspection.

Seepage Points
There was no seepage point observed at this landfill.

Debris
One partially exposed piece of metal debris was noted on the landfill surface (Feature B), consisting of a 15 x 5 cm exposed piece of angular metal (bed rail). There was no other indication of debris at the landfill.

Presence/Condition of Monitoring Instruments
All monitoring well installations were found to be in good condition at the landfill.

Other Features of Note
There was no other feature noted.

Discussion
The NHWLF performance with respect to containment of the debris within the landfill is rated as acceptable. A visual inspection report, including supporting photos and drawing, is presented in the following pages.

Table VII: Visual Inspection Checklist / Report – NHWLF

DEW LINE CLEANUP: POST-CONSTRUCTION – LANDFILL MONITORING
VISUAL INSPECTION CHECKLIST
INSPECTION REPORT – PAGE 1 of 2

SITE NAME: CAM-3 Shephard Bay
LANDFILL DESIGNATION: NHWLF (New Landfill)
DATE OF INSPECTION: August 15, 2009
DATE OF PREVIOUS INSPECTION: August 6, 2008
INSPECTED BY: A. Passalis
REPORT PREPARED BY: A. Passalis
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.

LANDFILL VISUAL INSPECTION

Site Name: CAM-3 Shepherd Bay
Landfill: Non-Hazardous Waste Landfill
Designation:
Date Inspected: August 15, 2009
Inspected by: Andrew Passalis, P.Eng.
Sila Remediation Inc.

Signature: 

TABLE VI: CAM-3 NON - HAZARDOUS WASTE LANDFILL
Page 2/2

Checklist Item	Present (Yes/No)	Location	Length	Width	Depth	Extent	Description	Photographic Record	Severity Rating	Additional Comments
Settlement	Yes	FEATURE A See Figure CAM-3.3 (south and west crests)	4 m 5 m	4 m 2 m	5 - 10 cm 2 cm	Isolated	Subtle depressions	NHWLF-26 NHWLF-38, 39	Acceptable	Subtle depressions along south and west sides of landfill cover, possibly due to improper compaction along crest during construction.
Erosion	No	N/A	N/A	N/A	N/A	None	N/A	N/A	Not Observable	N/A
Frost Action	No	N/A	N/A	N/A	N/A	None	N/A	N/A	Not Observable	N/A
Animal Burrows	No	N/A	N/A	N/A	N/A	None	N/A	N/A	Not Observable	N/A
Vegetation	No	N/A	N/A	N/A	N/A	None	N/A	N/A	Not Observable	N/A
Staining	No	N/A	N/A	N/A	N/A	None	N/A	N/A	Not Observable	N/A
Vegetation Stress	No	N/A	N/A	N/A	N/A	None	N/A	N/A	Not Observable	N/A
Seepage Points	No	N/A	N/A	N/A	N/A	None	N/A	N/A	Not Observable	N/A
Debris Exposed	Yes	FEATURE B See Figure CAM-3.3 (centre of cover)	0.15 m exposed	5 cm exposed	Unknown	Isolated	Metal bed rail	NHWLF-232, 33	Acceptable	Partially exposed metal debris observed at one location.
Presence/Condition of Monitoring Instruments	Yes	See Figure CAM 3.3 MW-1 to MW-3	N/A	N/A	N/A	N/A	N/A	Pictures 33-34, 37-39, 50, 50A on CD	Acceptable	The monitoring wells were in good condition.
Other Features of Note:	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Overall Landfill Performance:	**Acceptable**									

4.3 PRELIMINARY STABILITY ASSESSMENT

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

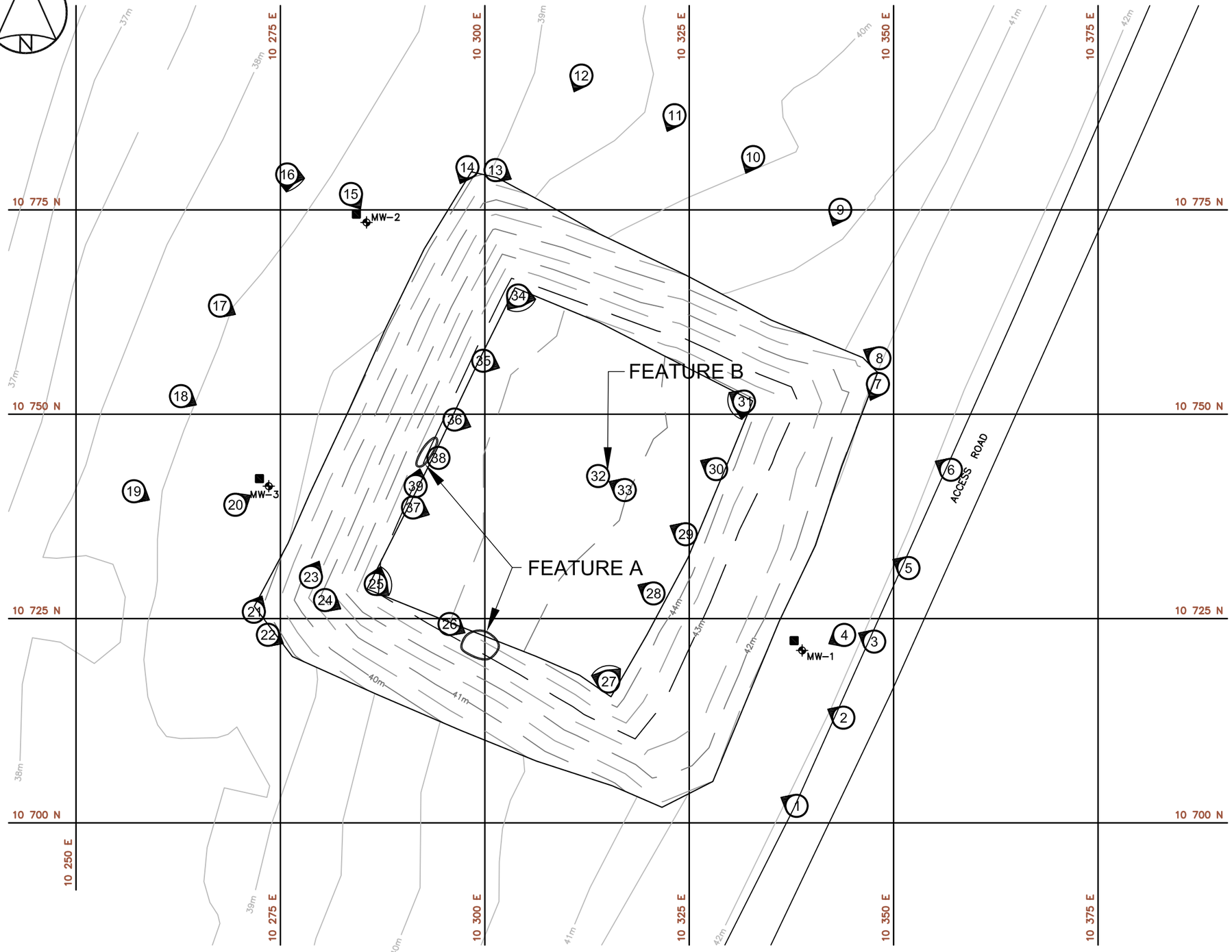
Table VIII: Preliminary Stability Assessment – NHWLF

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	Acceptable	Isolated
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

4.4 LOCATION PLAN

The Location Plan for the NHWLF has been completed as per the ToR and is presented in Figure CAM-3.3.



LEGEND

- PICTURE NUMBER VIEWPOINT
- MONITORING WELL LOCATION
- MONITORING SOIL SAMPLE LOCATION
- SETTLEMENT (NTS)

0 5m 10m 15m 20m 25m

NO.	VERSION	DATE	BY	VERIF.	APPR.
A	FINAL VERSION	10-02-26	P.L.	A.P.	J.P.P.

Construction de Défense Canada
Defence Construction Canada

FINAL REPORT
COLLECTION OF LANDFILL MONITORING DATA
CAM-3, SHEPHERD BAY, NUNAVUT

NON-HAZARDOUS WASTE LANDFILL

SITE REMEDIATION SOLUTIONS

Biogenie, a division of EnGlobe Corp.
4495 Wilfrid-Hamel Blvd., Suite 200
Quebec (Quebec) CANADA G1P 2J7
Phone: (418) 653-4422 Fax.: (418) 653-3583

MEASUREMENT UNIT	SCALE:	DATE (month-year):
Meter	1 : 500	FEBRUARY 2010
DRAWN BY: P. LÉGARÉ	VERIFIED BY: A. PASSALIS	APPROVED BY: J.-P. PELLETIER
PROJECT NO: CD9229_001_160	DRAWING NO: CD9229_001_160-CAM-3_3	PAGE PL

FIGURE CAM-3.3

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4.5 PHOTOGRAPHIC RECORDS

The Photographic Record for NHWLF has been completed as per the ToR and is included as Table IX hereafter. The Photographic Record contains only an index and “thumbnail” photographs. Full sized photographs are contained in the Addendum DVD-ROM.

LANDFILL VISUAL INSPECTION PHOTO LOG

Site Name: CAM-3, Shepherd Bay
Landfill: Non-Hazardous Waste Landfill
Date Inspected: August 15, 2009
Inspected by: Andrew Passalis, P.Eng.

Photo (NHWLF-)	Thumbnail	Filename	Size (KB)	Date	Vantage Point		Caption
					Easting	Northing	
1		C309_3784	2,268 KB	15/08/2009	10338	10702	View NW at east side of landfill
2		C309_3785	2,462 KB	15/08/2009	10344	10713	View NW at east side of landfill
3		C309_3786	2,427 KB	15/08/2009	10348	10722	View NW at east side of landfill
4		C309_3787	3,566 KB	15/08/2009	10344	10723	View W at MW-1
5		C309_3788	2,453 KB	15/08/2009	10352	10731	View NW at east side of landfill
6		C309_3790	2,430 KB	15/08/2009	10357	10743	View NW at east side of landfill
7		C309_3791	2,986 KB	15/08/2009	10348	10754	View SW along east toe of landfill
8		C309_3792	2,964 KB	15/08/2009	10348	10757	View NW along north toe of landfill
9		C309_3793	3,184 KB	15/08/2009	10343	10775	View SW at north side of landfill
10		C309_3794	3,147 KB	15/08/2009	10333	10781	View SW at north side of landfill
11		C309_3795	2,675 KB	15/08/2009	10323	10787	View SW at north side of landfill
12		C309_3796	2,687 KB	15/08/2009	10312	10791	View SW at west side of landfill
13		C309_3797	2,414 KB	15/08/2009	10301	10779	View SE along north toe of landfill
14		C309_3798	2,705 KB	15/08/2009	10298	10780	View SW along west toe of landfill
15		C309_3799	4,202 KB	15/08/2009	10284	10777	View SE at MW-2
16		C309_3800 C309_3801 C309_3802	2,384 KB 2,224 KB 2,198 KB	15/08/2009 15/08/2009 15/08/2009	10276	10780	Panoramic view E to S from northeast of landfill
17		C309_3803	2,811 KB	15/08/2009	10268	10763	View SE at west side of landfill
18		C309_3804	2,807 KB	15/08/2009	10263	10752	View SE at west side of landfill
19		C309_3805	2,433 KB	15/08/2009	10257	10741	View SE at west side of landfill. MW-3 in foreground.
20		C309_3806	4,524 KB	15/08/2009	10269	10739	View NE at MW-3

LANDFILL VISUAL INSPECTION PHOTO LOG

Site Name: CAM-3, Shepherd Bay
Landfill: Non-Hazardous Waste Landfill
Date Inspected: August 15, 2009
Inspected by: Andrew Passalis, P.Eng.

Photo (NHWLF-)	Thumbnail	Filename	Size (KB)	Date	Vantage Point		Caption
					Easting	Northing	
21		C309_3807	3,221 KB	15/08/2009	10272	10726	View NE along west toe of landfill
22		C309_3808	2,896 KB	15/08/2009	10273	10723	View SE along south toe of landfill
23		C309_3809	3,470 KB	15/08/2009	10279	10730	View NE along north slope of landfill
24		C309_3810	3,078 KB	15/08/2009	10280	10727	View SE along south slope of landfill
25		C309_3811	2,972 KB	15/08/2009	10287	10729	Panoramic view NE to SE from southwest corner of landfill
		C309_3812	3,103 KB	15/08/2009			
		C309_3813	2,939 KB	15/08/2009			
		C309_3814	2,728 KB	15/08/2009			
26		C309_3815	3,287 KB	15/08/2009	10296	10724	View SE at minor depression on south crest of landfill
27		C309_3816	2,896 KB	15/08/2009	10315	10717	Panoramic view NW to NE from southeast corner of landfill
		C309_3817	2,734 KB	15/08/2009			
		C309_3818	2,868 KB	15/08/2009			
		C309_3819	2,996 KB	15/08/2009			
28		C309_3820	2,765 KB	15/08/2009	10321	10728	View NW across landfill cover
29		C309_3821	2,594 KB	15/08/2009	10325	10735	View NW across landfill cover
30		C309_3822	2,851 KB	15/08/2009	10328	10743	View NW across landfill cover
31		C309_3823	2,816 KB	15/08/2009	10332	10751	Panoramic view NW to SW from northeast corner of landfill
		C309_3824	3,105 KB	15/08/2009			
		C309_3825	3,077 KB	15/08/2009			
		C309_3826	2,840 KB	15/08/2009			
32		C309_3827	4,302 KB	15/08/2009	10314	10742	View of partially exposed metal bedrail in centre of landfill cover
33		C309_3828	3,521 KB	15/08/2009	10317	10741	View NW at partially exposed metal debris
34		C309_3829	2,803 KB	15/08/2009	10304	10765	Panoramic view SE to SW from northwest corner of landfill
		C309_3830	2,740 KB	15/08/2009			
		C309_3831	2,931 KB	15/08/2009			
		C309_3832	3,101 KB	15/08/2009			
35		C309_3833	2,588 KB	15/08/2009	10300	10757	View SE across landfill cover
36		C309_3834	2,727 KB	15/08/2009	10296	10749	View SE across landfill cover
37		C309_3835	3,090 KB	15/08/2009	10291	10739	View SE across landfill cover
38		C309_3836	5,009 KB	15/08/2009	10293	10745	Minor depression on west crest of landfill cover
39		C309_3837	3,637 KB	15/08/2009	10292	10741	View NE at minor depression on west crest of landfill

5 STATION LANDFILL

5.1 BACKGROUND AND MONITORING PROGRAM

The Station Landfill area is located approximately 200 m south of the module train along a bedrock controlled ridge on the south side of the access road that extends between the airstrip and station areas. The landfill has three separate regrade areas (labelled as Lobes A through C for reference), and, including engineered cover, encompasses a footprint of approximately 11,000 m^2 with the final cover extending approximately 0.75 m to 2.0 m above the surrounding grade. Based on existing information regarding this landfill as a source of contamination, its potential migration pathways and receptors, the Station Landfill was classified as low potential environmental risk. The remediation consisted of excavation of surface contaminated soils, removal of large pieces of exposed debris and regrading with the placement of additional granular fill.

The long term monitoring plan consists of visual monitoring and periodic collection of soil samples. The 2009 monitoring of this landfill includes a visual inspection to assess landfill performance. There is no instrumentation installed at this landfill.

5.2 VISUAL INSPECTION REPORT

The visual inspection of the Station Landfill was conducted on August 15, 2009. The Visual Inspection Checklist/Report has been completed as per the ToR and is included as Table X of this report.

Settlement
Indications of settlement were noted at two locations (Feature A) on the north side of Lobe B and a single location (Feature B) on the northwest surface of Lobe C. All three areas consisted of relatively small localized depressions on the landfill surface. The features have an acceptable severity rating.

Erosion
Three general areas of erosion were noted on the surface or sides of the Station Landfill, including one within a constructed erosion channel extending along the north end of Lobe B (Feature C), several localized areas of shallow erosion on the south cover and south facing slope of Lobe B (Feature D); and surface runoff resulting in erosion along the west toe of Lobe C (Feature E). Surface runoff in each area has resulted in the washing of fines from the more resistant gravel and cobble matrix. All features appear to be self-armouring and have an acceptable severity rating.

Frost Action
Evidence of frost action was not noted.

Evidence of Burrowing Animals
Indications of burrowing animals were not noted.

Re-establishment of Vegetation
Evidence of vegetation was not noted on the landfill.

Staining
Three relatively small and localized areas of rust-coloured staining (Feature F) were noted along the east toe of Lobe A. The staining was associated with a large area of ponded water bordering the east side of the lobe. The staining appears consistent with findings from the 2008 inspection. There was no sheen associated with the staining at the time of the inspection.

Seepage Points
Evidence of specific seepage points was not noted.

Debris
Evidence of debris was not noted at the landfill.

Presence/Condition of Monitoring Instruments
There are no monitoring instruments installed at this landfill.

Other Features of Note
There was no other feature of note at the landfill.

Discussion
The Station Landfill performance with respect to containment of the debris within the landfill is rated as acceptable. A visual inspection report, including supporting photos and drawing, is presented in the following pages.

Minor settlement features were noted in isolated areas on the surface of Lobes B and C. It was noted that surface runoff has resulted in minor erosional features on the south side of Lobe B and along the west side of Lobe C. Surface runoff upgradient of Lobe B is directed along a drainage channel that extends around the north end of the lobe. These features appear to be consistent with findings from the 2008 inspection and appear to be self armouring along the cross and downgradient slopes. Rust-coloured staining and adjacent ponding on the east side of Lobe A also appear consistent with 2008 observations.

Table X: Visual Inspection Checklist / Report – Station Landfill

DEW LINE CLEANUP: POST-CONSTRUCTION – LANDFILL MONITORING
VISUAL INSPECTION CHECKLIST
INSPECTION REPORT – PAGE 1 of 2

SITE NAME: CAM-3 Shephard Bay
LANDFILL DESIGNATION: Station Landfill (Regrade Landfill)
DATE OF INSPECTION: August 15, 2009
DATE OF PREVIOUS INSPECTION: August 6, 2008
INSPECTED BY: A. Passalis
REPORT PREPARED BY: A. Passalis
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.

LANDFILL VISUAL INSPECTION

Site Name: CAM-3 Shepherd Bay
Landfill: Station Landfill
Designation:
Date Inspected: August 15, 2009
Inspected by: Andrew Passalis, P.Eng.
Sila Remediation Inc.

Signature: 

TABLE VIII: CAM-3 Station Landfill

Checklist Item	Present (Yes/No)	Location	Length	Width	Depth	Extent	Description	Photographic Record	Severity Rating	Additional Comments
Settlement	Yes	FEATURE A See Figure CAM-3.4 (Lobe B)	2 m 1 m	1 m 0.5 m	2-5 cm 5 cm	Isolated	Two small depressions on cover	SLF-20, 21	Acceptable	Isolated depressions on north side of lobe.
		FEATURE B See Figure CAM-3.4 (Lobe C)	0.5 m	0.5 m	15 cm	Isolated	Single depression	SLF-32	Acceptable	Isolated depression/pot hole on northwest cover of lobe.
Erosion	Yes	FEATURE C See Figure CAM-3.4 (Lobe B)	25 m	1 m	10 cm	Isolated	Erosion in the northwest side ditch	SLF-23	Acceptable	Erosion confired to constructed runoff channel extending around north end of lobe. Channel appears to be self armouring.
		FEATURE D See Figure CAM-3.4 (Lobe B)	6 - 20 m	0.2 - 3 m	2 - 10 cm	Occassional	Erosion on landfill surface south sideslope	SLF-11 to -16	Acceptable	Minor erosion on landfill surface due to channelling of surface runoff. Cover appears stable and self armouring.
		FEATURE E See Figure CAM-3.4 (Lobe C)	30 m	0.6 m	5 - 10 cm	Occassional	Erosion along west toe	SLF-25, 26	Acceptable	Erosion forming armoured channel along edge of west toe. Not in contact with lobe.
Frost Action	No	N/A	N/A	N/A	N/A	Not Observed	N/A	N/A	N/A	N/A
Animal Burrows	No	N/A	N/A	N/A	N/A	Not Observed	N/A	N/A	N/A	N/A
Vegetation	No	N/A	N/A	N/A	N/A	Not Observed	N/A	N/A	N/A	N/A
Staining	Yes	FEATURE F See Figure CAM-3.4 (Lobe A)	0.5 - 3 m	0.5 - 1 m	N/A	Isolated	3 areas of staining along west toe	SLF-3, 4	Acceptable	Localized rust coloured staining at the toe of slope. No sheen observed.
Vegetation Stress	No	N/A	N/A	N/A	N/A	Not Observed	N/A	N/A	N/A	N/A
Seepage Points	No	N/A	N/A	N/A	N/A	Not Observed	N/A	N/A	N/A	N/A
Debris Exposed	No	N/A	N/A	N/A	N/A	Not Observed	N/A	N/A	N/A	N/A
Presence/Condition of Monitoring Instruments	No	N/A	N/A	N/A	N/A	Not Observed	N/A	N/A	N/A	N/A
Other Features of Note:	No	N/A	N/A	N/A	N/A	Not Observed	N/A	N/A	N/A	N/A
Additional Photos	Yes	See Figure CAM-3.4 and Photographic Record	N/A	N/A	N/A	N/A	General Photographic Record	N/A	N/A	General photos for documentation, no features of note.
Overall Landfill Performance:	**Acceptable**									

5.3 PRELIMINARY STABILITY ASSESSMENT

The Preliminary Stability Assessment for Station Landfill has been completed as per the ToR and is included as Table XI hereafter.

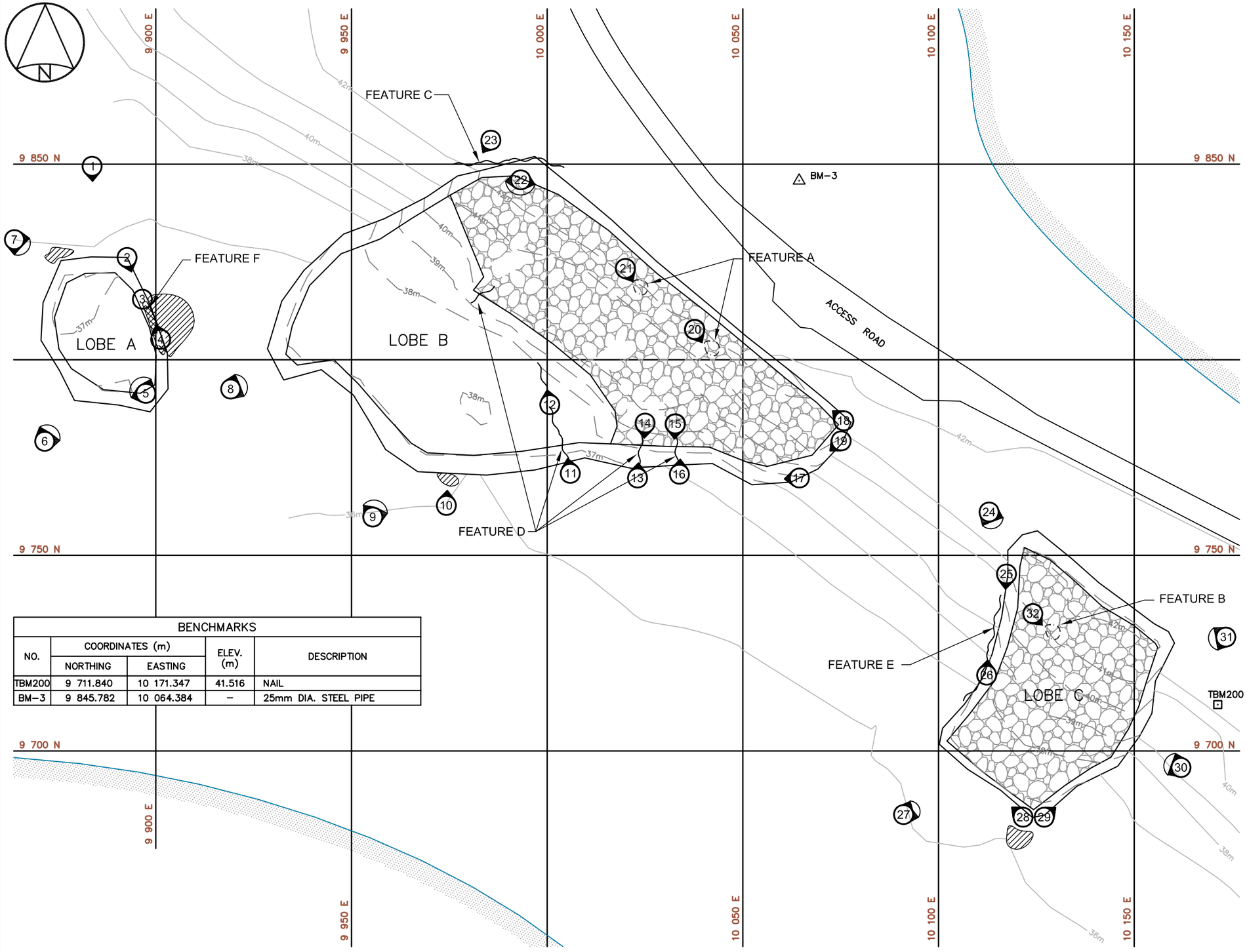
Table XI: Preliminary Stability Assessment – Station Landfill

Feature	Severity Rating	Extent
Settlement	Acceptable	Isolated
Erosion	Acceptable	Occasional
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

5.4 LOCATION PLAN

The Location Plan for the Station Landfill has been completed as per the ToR and is presented in Figure CAM-3.4.



LEGEND

- PICTURE NUMBER VIEWPOINT
- CM27 SURVEY CONTROL MONUMENT
- TBM20 TEMPORARY BENCHMARK
- EROSION
- SETTLEMENT
- PONDING
- STAINING

0 10m 20m 30m 40m 50m

BENCHMARKS				
NO.	COORDINATES (m)		ELEV. (m)	DESCRIPTION
	NORTHING	EASTING		
TBM200	9 711.840	10 171.347	41.516	NAIL
BM-3	9 845.782	10 064.384	–	25mm DIA. STEEL PIPE

NO.	VERSION	DATE	BY	VERIF.	APPR.
A	FINAL VERSION	10-02-26	P.L.	A.P.	J.P.P.

Construction de Défense Canada
Defence Construction Canada

FINAL REPORT
COLLECTION OF LANDFILL MONITORING DATA
CAM-3, SHEPHERD BAY, NUNAVUT

STATION LANDFILL

SITE REMEDIATION SOLUTIONS

Biogenie, a division of EnGlobe Corp.
4495 Wilfrid-Hamel Blvd., Suite 200
Quebec (Quebec) CANADA G1P 2J7
Phone: (418) 653-4422 Fax.: (418) 653-3583

MEASUREMENT UNIT	SCALE:	DATE (month-year):
Meter	1 : 1,000	FEBRUARY 2010
DRAWN BY: P. LÉGARÉ	VERIFIED BY: A. PASSALIS	APPROVED BY: J.-P. PELLETIER
PROJECT NO: CD9229_001_160	DRAWING NO: CD9229_001_160-CAM-3_4	PAGE PL

FIGURE CAM-3.4

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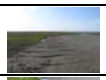
5.5 PHOTOGRAPHIC RECORDS

The Photographic Record for Station Landfill has been completed as per the ToR and is included as Table XII hereafter. The Photographic Record contains only an index and “thumbnail” photographs. Full sized photographs are contained in the Addendum DVD-ROM.

LANDFILL VISUAL INSPECTION PHOTO LOG

Site Name: CAM-3, Shepherd Bay
Landfill: Station Landfill
Date Inspected: August 15, 2009
Inspected by: Andrew Passalis, P.Eng.

Photo (SLF-)	Thumbnail	Filename	Size (KB)	Date	Vantage Point Easting	Vantage Point Northing	Caption
LOBE A							
1		C309_3712	2,526 KB	15/08/2009	9884	9849	View S at Lobe A
		C309_3713	2,780 KB	15/08/2009			
2		C309_3714	2,910 KB	15/08/2009	9893	9826	View SE along west side of Lobe A
3		C309_3715	4,947 KB	15/08/2009	9897	9815	Minor staining and ponding on west side of Lobe A
4		C309_3716	3,390 KB	15/08/2009	9901	9805	View NW at staining and ponding on west side of Lobe A
5		C309_3723	3,057 KB	15/08/2009	9897	9791	Panoramic view W to N from southeast corner of Lobe A
		C309_3724	2,805 KB	15/08/2009			
		C309_3725	2,796 KB	15/08/2009			
		C309_3726	2,906 KB	15/08/2009			
6		C309_3727	2,554 KB	15/08/2009	9872	9779	Panoramic view N to W from southwest of Lobe A
		C309_3728	2,590 KB	15/08/2009			
		C309_3729	2,352 KB	15/08/2009			
7		C309_3730	2,550 KB	15/08/2009	9864	9831	Panormamic view S to E from northwest of Lobe A
		C309_3731	2,353 KB	15/08/2009			
		C309_3732	2,222 KB	15/08/2009			
LOBE B							
8		IMG_3733	2,942 KB	15/08/2009	9919	9793	Panoramic view NE to SE from southwest of Lobe B
		IMG_3734	2,731 KB	15/08/2009			
		IMG_3735	2,409 KB	15/08/2009			
9		IMG_3736	2,584 KB	15/08/2009	9955	9760	Panoramic view NW to NE from south side of Lobe B
		IMG_3737	2,771 KB	15/08/2009			
		IMG_3738	2,666 KB	15/08/2009			
		IMG_3739	2,459 KB	15/08/2009			
		IMG_3740	2,135 KB	15/08/2009			
10		IMG_3741	3,696 KB	15/08/2009	9974	9763	View N at ponding along south toe of Lobe B
11		IMG_3742	2,930 KB	15/08/2009	10005	9774	View NW at erosion on south side of Lobe B
12		IMG_3743	2,672 KB	15/08/2009	10001	9789	View NW at minor erosion on surface of Lobe B
13		IMG_3744	3,324 KB	15/08/2009	10023	9770	View N at minor erosion on southeast side of Lobe B
14		IMG_3745	4,498 KB	15/08/2009	10025	9783	View S at minor erosion on southeast side of Lobe B
15		IMG_3746	4,302 KB	15/08/2009	10033	9784	View S at minor dendritic erosion on southeast side of Lobe B
16		IMG_3747	3,743 KB	15/08/2009	10034	9771	View N at minor dendritic erosion on southeast side of Lobe B
17		IMG_3748	2,372 KB	15/08/2009	10064	9770	View E along southeast toe of Lobe B
18		IMG_3749	2,674 KB	15/08/2009	10076	9784	View NW along north side of Lobe B

LANDFILL VISUAL INSPECTION PHOTO LOG

Site Name: CAM-3, Shepherd Bay
Landfill: Station Landfill
Date Inspected: August 15, 2009
Inspected by: Andrew Passalis, P.Eng.

Photo (SLF-)	Thumbnail	Filename	Size (KB)	Date	Vantage Point		Caption
					Easting	Northing	
19		IMG_3750	4,000 KB	15/08/2009	10075	9779	View SW along south toe of Lobe B
20		IMG_3751	3,523 KB	15/08/2009	10038	9808	View SE at minor settlement on north side of Lobe B
21		IMG_3752	3,747 KB	15/08/2009	10019	9823	View SE at minor settlement on north side of Lobe B
22		IMG_3753	3,067 KB	15/08/2009	9993	9846	Panoramic view SE to W across Lobe B
		IMG_3754	3,264 KB	15/08/2009			
		IMG_3755	3,316 KB	15/08/2009			
		IMG_3756	3,385 KB	15/08/2009			
		IMG_3757	3,199 KB	15/08/2009			
23		IMG_3760	3,393 KB	15/08/2009	9991	9854	View SW along drainage channel on northwest side of Lobe B
LOBE C							
24		IMG_3763	2,485 KB	15/08/2009	10113	9761	Panoramic view SE to S across Lobe C
		IMG_3764	2,605 KB	15/08/2009			
		IMG_3765	2,787 KB	15/08/2009			
25		IMG_3766	4,412 KB	15/08/2009	10118	9745	View S along west side of Lobe C. Note minor settlement along slope
26		IMG_3767	3,816 KB	15/08/2009	10112	9719	View N along west side of Lobe C. Minor erosion on toe of landfill.
27		IMG_3768	2,543 KB	15/08/2009	10091	9683	Panoramic view NE to E from southest side of Lobe C
		IMG_3769	2,432 KB	15/08/2009			
		IMG_3770	2,332 KB	15/08/2009			
28		IMG_3771	3,119 KB	15/08/2009	10122	9683	View NW along south toe of Lobe C
29		IMG_3772	3,835 KB	15/08/2009	10127	9683	View NE along east toe of Lobe C
30		IMG_3776	2,541 KB	15/08/2009	10162	9696	Panoramic view SW to NW at east side of Lobe C
		IMG_3777	2,439 KB	15/08/2009			
		IMG_3778	2,632 KB	15/08/2009			
		IMG_3779	2,831 KB	15/08/2009			
31		IMG_3780	2,584 KB	15/08/2009	10173	9729	Panoramic view NW to SW from northeast of Lobe C
		IMG_3781	2,752 KB	15/08/2009			
		IMG_3782	3,021 KB	15/08/2009			
32		IMG_3783	4,025 KB	15/08/2009	10123	9736	View SE at minor settlement on northwest corner of Lobe C

6 TIER II DISPOSAL FACILITY

6.1 BACKGROUND AND MONITORING PROGRAM

The Tier II Disposal Facility is constructed on the south side of the U-shaped ridge that extends between the airstrip and station areas. The facility is situated approximately 175 m southeast of the Station Landfill and 225 m southwest of the south end of the airstrip. The landfill was constructed with a double containment system consisting of a geomembrane liner system and the placement of sufficient surface fill to promote freezing of the landfill contents.

The facility encompasses a footprint of approximately 5,500 m^2 with the final cover extending between 4-5 m above the surrounding grade.

Four groundwater monitoring wells are installed at the landfill perimeter, and four thermistors are installed within the landfill footprint to monitor freeze back conditions.

The long term monitoring plan consists of visual monitoring, collection of soil and groundwater samples and monitoring of subsurface ground temperatures.

The 2009 monitoring of this landfill includes visual inspection to verify for evidence of settlement or erosion, collection of soil and groundwater samples to monitor for the presence of leachate and retrieval of data from the thermistors. Locations of groundwater monitoring wells, soil samples and thermistor installations are identified on Figure CAM-3.5.

Soil at all stations was sampled as specified. Groundwater from each of the monitoring wells was sampled as per the ToR, with the exception of MW-4 which was dry at the time of sampling.

6.2 VISUAL INSPECTION REPORT

The visual inspection of the Tier II Disposal Facility was conducted on August 13 and 14, 2009. The Visual Inspection Checklist/Report has been completed as per the ToR and is included as Table XIII of this report.

Settlement
Indications of minor settlement were noted at several locations along the northwest, west and southwest sides (Feature A) and northeast and southeast corners (Feature B) on the facility surface. Feature A consists of 5 minor depressions extending along the crest in the southwest corner (2), west side (2) and northwest corner (1), whereas Feature B consists of two small depressions on the southeast crest and one near the northeast toe. All features appear unchanged from the previous 2008 inspection and have an acceptable severity rating.

Erosion
Evidence of minor surface erosion was noted at two locations (Feature C) on the south facing slope of the facility. Both locations consisted of shallow surface erosion that extended perpendicular to the slope from crest to toe. The areas affected appear to be self-armouring and have an acceptable severity rating. Overall, the facility cover appears stable. These features were not present / observed during the 2008 inspection.

Frost Action
Several thin tension cracks were noted extending parallel to the slope and within 5-6 m of the toe on the south side of the facility (Feature D). The frequency and magnitude of cracks appear to be consistent with that observed in 2008 with the exception of one crack on the southeast corner of the facility that appears to have widened. The increase in magnitude is possibly due to additional freeze/thaw and movement along the southeast corner of the facility. No other indications of desiccation/movement were noted.

Evidence of Burrowing Animals
Indications of burrowing animals were not noted.

Re-establishment of Vegetation
Indications of vegetation were not noted.

Staining
Areas of staining were not observed at the time of the inspection.

Seepage Points
Evidence of seepage was not noted

Debris
Evidence of exposed debris was not noted.

Presence/Condition of Monitoring Instruments
All monitoring well and thermistor installations were found to be in good condition at the facility.

Other Features of Note
There was no other feature of note.

Discussion
The Tier II Disposal Facility performance with respect to containment of the debris within the landfill is rated as acceptable. Visual inspection report, including supporting photos and drawing, is presented in the following pages.

Table XIII: Visual Inspection Checklist / Report – Tier II Disposal Facility

DEW LINE CLEANUP: POST-CONSTRUCTION - LANDFILL MONITORING
VISUAL INSPECTION CHECKLIST
INSPECTION REPORT – PAGE 1 of 2

SITE NAME: CAM-3 Shephard Bay
LANDFILL DESIGNATION: Tier II Disposal Facility (New Landfill)
DATE OF INSPECTION: August 13-14, 2009
DATE OF PREVIOUS INSPECTION: August 4, 2008
INSPECTED BY: A. Passalis
REPORT PREPARED BY: A. Passalis
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.

LANDFILL VISUAL INSPECTION

Site Name: CAM-3 Shepherd Bay
Landfill: Tier II Disposal
Designation: New Landfill
Date Inspected: August 14, 2009
Inspected by: Andrew Passalis, P.Eng.
Sila Remediation Inc.

Signature: 

TABLE XIII: CAM-3 TIER II DISPOSAL FACILITY

Checklist Item	Present (Yes/No)	Location	Length	Width	Depth	Extent	Description	Photographic Record	Severity Rating	Additional Comments
Settlement	Yes	FEATURE A See Figure CAM-3.5 (west side)	0.9 - 4 m	0.5 - 2 m	2 - 15 cm	Occassional	Minor surface depressions	Tier II-51, 52, 53, 54, 57, 58	Acceptable	Minor depressions along crest and northwestand southwest corners.
		FEATURE B See Figure CAM-3.5 (northeast and southeast corners)	0.6 - 1.5 m	0.4 - 1 m	10 - 15 cm	Occassional	Minor surface depressions	Tier II-48, 60, 61	Acceptable	Minor depressions on southeast corner and northeast toe.
Erosion	Yes	FEATURE C See Figure CAM-3.5 (south side)	18 m	0.6 - 1.3 m	5 cm	Isolated	Minor surface erosion	Tier II-37, 40, 56	Acceptable	Two areas of minor erosion noted along south facing slope. Slope appears stable and self armouring.
Frost Action	Yes	FEATURE D See Figure CAM-3.5 (south side)	5 - 15 m	2 - 5 mm up to 50 mm	up to 10 cm	Occassional	Numerous tension cracks	Tier II-35, 36, 38, 39, 41 to 46	Acceptable	Tension cracks approximately 2-5 mm wide extending parallel to south facing slope. Cracks generally noted within 5-6 m of base of slope. Some infilling observed. Large crack observed on southeast corner.
Animal Burrows	No	N/A	N/A	N/A	N/A	Not Observed	N/A	N/A	N/A	N/A
Vegetation	No	N/A	N/A	N/A	N/A	Not Observed	N/A	N/A	N/A	N/A
Staining	No	N/A	N/A	N/A	N/A	Not Observed	N/A	N/A	N/A	N/A
Vegetation Stress	No	N/A	N/A	N/A	N/A	Not Observed	N/A	N/A	N/A	N/A
Seepage Points	No	N/A	N/A	N/A	N/A	Not Observed	N/A	N/A	N/A	N/A
Debris Exposed	No	N/A	N/A	N/A	N/A	Not Observed	N/A	N/A	N/A	N/A
Presence/Condition of Monitoring Instruments	Yes	See Figure CAM 3.5	N/A	N/A	N/A	N/A	VT-5, 6, 7, 8 MW-4, 5, 6, 7	Tier II-1 to 4 Tieri II-6, 8, 10, 12, 13	Acceptable	Ground temperature cables and data loggers were in good condition and all data was downloaded. VT 7 and -8 locations mislabelled on drawing. The protective casings for thermistors cables and monitoring wells were also in good condition.
Other Features of Note:	No	N/A	N/A	N/A	N/A	Not Observed	N/A	N/A	N/A	N/A
Additional Photos	Yes	See Figure CAM-3.5 and Photographic Record	N/A	N/A	N/A	N/A	General Photographic Record	N/A	N/A	General photos for documentation, no features of note.
Overall Landfill Performance:	**Acceptable**									

6.3 PRELIMINARY STABILITY ASSESSMENT

The Preliminary Stability Assessment for Tier II Disposal Facility has been completed as per the ToR and is included as Table XIV hereafter.

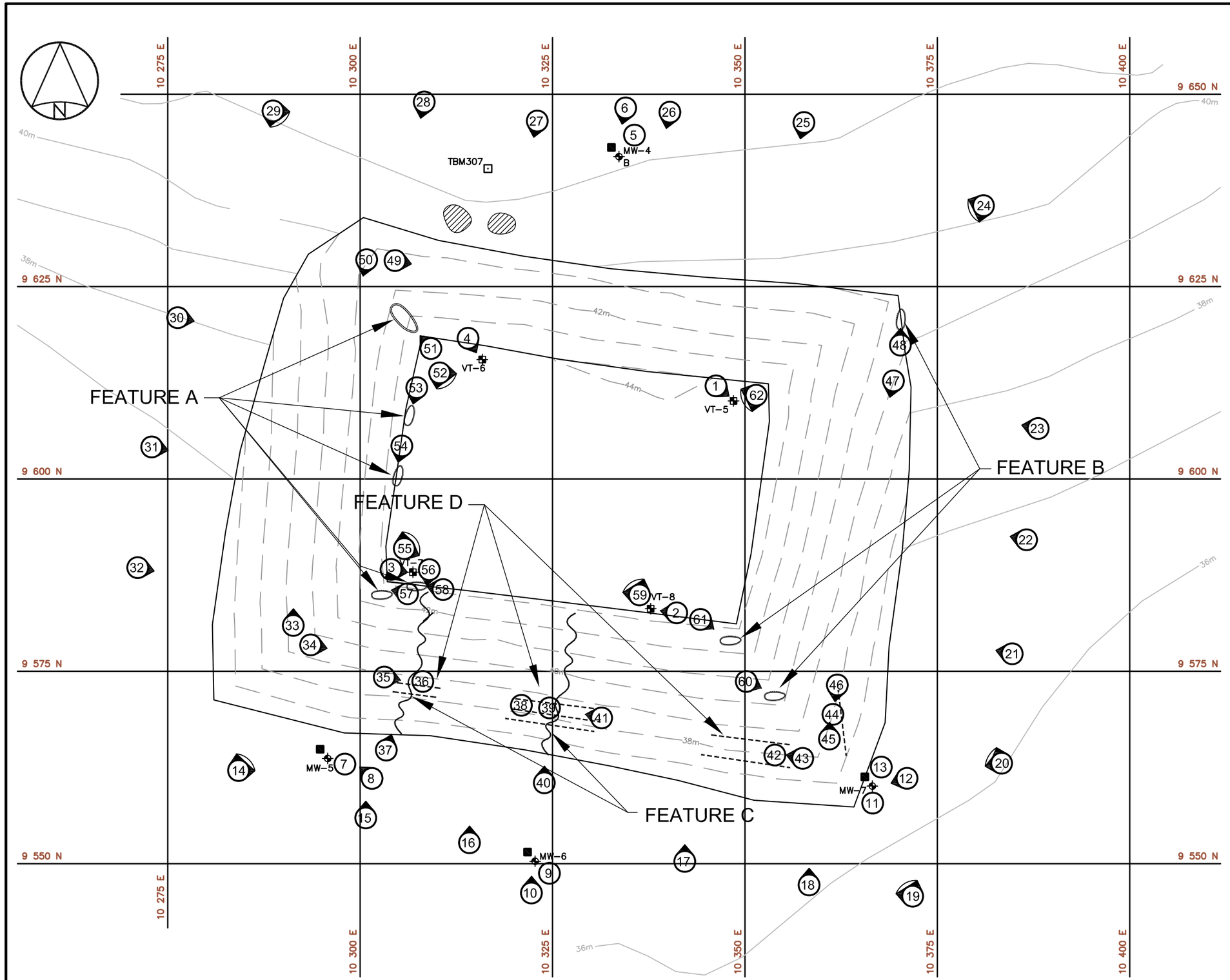
Table XIV: Preliminary Stability Assessment – Tier II Disposal Facility

Feature	Severity Rating	Extent
Settlement	Acceptable	Occasional
Erosion	Acceptable	Isolated
Frost Action	Acceptable	Occasional
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

6.4 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 CAM-3.5.



LEGEND

- PICTURE NUMBER VIEWPOINT
- TBM20 — TEMPORARY BENCHMARK
- MONITORING WELL LOCATION
- VT — VERTICAL THERMISTOR
- MONITORING SOIL SAMPLE LOCATION
- SETTLEMENT (NTS)
- EROSION (NTS)
- CRACKS (NTS)
- PONDING

0 5m 10m 15m 20m 25m

NO.	VERSION	DATE	BY	VERIF.	APPR.
A	FINAL VERSION	10-02-26	P.L	A.P.	J.P.P.

Construction de Défense Canada
Defence Construction Canada

FINAL REPORT
COLLECTION OF LANDFILL MONITORING DATA
CAM-3, SHEPHERD BAY, NUNAVUT

TIER II DISPOSAL FACILITY

SITE REMEDIATION SOLUTIONS

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MEASUREMENT UNIT	SCALE:	DATE (month-year):
Meter	1 : 500	FEBRUARY 2010
DRAWN BY: P. LÉGARÉ	VERIFIED BY: A. PASSALIS	APPROVED BY: J.-P. PELLETIER
PROJECT NO: CD9229_001_160	DRAWING NO: CD9229_001_160-CAM-3_5	PAGE PL

FIGURE CAM-3.5

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6.5 PHOTOGRAPHIC RECORDS

The Photographic Record for Tier II Disposal Facility has been completed as per the ToR and is included as Table XV hereafter. The Photographic Record contains only an index and “thumbnail” photographs. Full-sized photographs are contained in the Addendum DVD-ROM.

LANDFILL VISUAL INSPECTION PHOTO LOG

Site Name: CAM-3, Shepherd Bay
Landfill: Tier II Disposal Facility
Date Inspected: August 14, 2009
Inspected by: Andrew Passalis, P.Eng.

Photo (Tier II-)	Thumbnail	Filename	Size (KB)	Date	Vantage Point Easting	Vantage Point Northing	Caption
1		IMG_3421	2,731 KB	2009-08-13	10346	9612	View SE at VT-5
2		IMG_3423	2,315 KB	2009-08-13	10341	9583	View W at VT-7 (VT-8 on drawing)
3		IMG_3426	2,409 KB	2009-08-13	10304	9588	View E at VT-8 (VT-7 on drawing)
4		IMG_3428	2,226 KB	2009-08-13	10314	9618	View SE at VT-6 (VT-7 in background)
5		IMG_3429	3,582 KB	2009-08-13	10336	9645	C309-4W
6		IMG_3430	2,660 KB	2009-08-13	10334	9648	View S at MW-4
7		IMG_3431	3,688 KB	2009-08-13	10298	9563	C309-5W
8		IMG_3432	3,420 KB	2009-08-13	10302	9561	View NW at MW-5
9		IMG_3433	4,141 KB	2009-08-13	10325	9549	C309-6W, VT-7 in background
10		IMG_3434	2,244 KB	2009-08-13	10322	9546	View N at MW-6, VT-7 in background
11		IMG_3435	3,811 KB	2009-08-13	10367	9558	C309-7W
12		IMG_3436	3,351 KB	2009-08-13	10371	9559	View W at MW-7
13		IMG_3437	3,271 KB	2009-08-13	10367	9560	Frost action around MW-7
14		C309_3576 C309_3577 C309_3578	2,002 KB 2,267 KB 2,126 KB	14/08/2009 14/08/2009 14/08/2009	10284	9562	Panoramic view N to E from southwest of landfill
15		C309_3579	2,127 KB	14/08/2009	10301	9556	View N at south side of landfill
16		C309_3580	2,362 KB	14/08/2009	10314	9553	View N at south side of landfill
17		C309_3582	2,133 KB	14/08/2009	10342	9550	View N at south side of landfill
18		C309_3583	2,009 KB	14/08/2009	10358	9547	View N at south side of landfill. VT-7 in left background
19		C309_3584 C309_3585 C309_3586	1,452 KB 1,983 KB 2,134 KB	14/08/2009 14/08/2009 14/08/2009	10372	9546	Panoramic view W to N from southeast of landfill
20		C309_3587 C309_3588	1,602 KB 2,062 KB	14/08/2009 14/08/2009	10383	9563	View W to NW from southeast corner of landfill. MW-7 in foreground
21		C309_3589	1,559 KB	14/08/2009	10385	9577	View W at east side of landfill
22		C309_3590	1,674 KB	14/08/2009	10387	9592	View W at east side of landfill
23		C309_3591	1,734 KB	14/08/2009	10388	9607	View W at east side of landfill
24		C309_3592 C309_3593	2,065 KB 1,981 KB	14/08/2009 14/08/2009	10381	9636	Panoramic view S to W from northeast of landfill

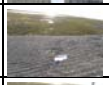
LANDFILL VISUAL INSPECTION PHOTO LOG

Site Name: CAM-3, Shepherd Bay
Landfill: Tier II Disposal Facility
Date Inspected: August 14, 2009
Inspected by: Andrew Passalis, P.Eng.

Photo (Tier II-)	Thumbnail	Filename	Size (KB)	Date	Vantage Point		Caption
					Easting	Northing	
		C309_3594	1,896 KB	14/08/2009			
25		C309_3595	2,082 KB	14/08/2009	10358	9646	View S at north side of landfill
26		C309_3596	2,185 KB	14/08/2009	10340	9648	View S at north side of landfill
27		C309_3597	2,092 KB	14/08/2009	10323	9647	View S at north side of landfill
28		C309_3598	2,095 KB	14/08/2009	10308	9649	View S at north side of landfill
29		C309_3599	2,050 KB	14/08/2009	10289	9648	Panoramic view S to E from northwest of landfill
		C309_3600	2,200 KB	14/08/2009			
		C309_3601	2,275 KB	14/08/2009			
30		C309_3602	2,298 KB	14/08/2009	10276	9621	View E at west side of landfill
31		C309_3603	2,331 KB	14/08/2009	10273	9604	View E at west side of landfill
32		C309_3604	2,067 KB	14/08/2009	10271	9588	View E at west side of landfill
33		C309_3605	2,748 KB	14/08/2009	10291	9581	View N along west slope of landfill
34		C309_3606	2,527 KB	14/08/2009	10294	9578	View E along south slope of landfill
35		C309_3608	3,014 KB	14/08/2009	10303	9575	View E at tension cracks extending along south toe of landfill
36		C309_3609	3,143 KB	14/08/2009	10308	9575	Tension crack on southwest slope of landfill
37		C309_3610	2,685 KB	14/08/2009	10303	9565	View N at minor erosion on southwest side of landfill
38		C309_3612	3,605 KB	14/08/2009	10326	9571	Tension cracks on southwest slope of landfill
39		C309_3613	3,349 KB	14/08/2009	10332	9570	Tension cracks on southwest slope of landfill
40		C309_3614	3,062 KB	14/08/2009	10324	9561	View N at minor erosion on south central side of landfill
41		C309_3615	2,806 KB	14/08/2009	10331	9570	View W at tension cracks extending along south side of landfill
42		C309_3616	2,915 KB	14/08/2009	10354	9564	Tension crack on south slope of landfill
43		C309_3618	2,994 KB	14/08/2009	10358	9564	View W at tension cracks extending along southeast side of landfill

LANDFILL VISUAL INSPECTION PHOTO LOG

Site Name: CAM-3, Shepherd Bay
Landfill: Tier II Disposal Facility
Date Inspected: August 14, 2009
Inspected by: Andrew Passalis, P.Eng.

Photo (Tier II-)	Thumbnail	Filename	Size (KB)	Date	Vantage Point Easting	Vantage Point Northing	Caption
44		C309_3619	3,920 KB	14/08/2009	10354	9564	Tension cracks and minor sink holes noted on southeast corner of landfill
45		C309_3622	3,815 KB	14/08/2009	10361	9566	View N at large tension crack on southeast corner of landfill
46		C309_3623	4,010 KB	14/08/2009	10362	9573	View S at large tension crack on southeast corner of landfill
47		C309_3624	2,461 KB	14/08/2009	10369	9613	View S along east slope of landfill
48		C309_3626	3,451 KB	14/08/2009	10370	9617	View N at minor settlement located on northeast toe of landfill
49		C309_3628	2,410 KB	14/08/2009	10303	9628	View E along north side of landfill
50		C309_3629	2,728 KB	14/08/2009	10303	9628	View S along west side of landfill
51		C309_3630	4,104 KB	14/08/2009	10309	9617	View NW at minor depression noted on northwest corner of landfill
52		C309_3631	2,437 KB	14/08/2009	10310	9614	Panoramic view E to S from northwest corner of landfill
		C309_3632	2,710 KB	14/08/2009			
		C309_3633	2,864 KB	14/08/2009			
		C309_3634	2,938 KB	14/08/2009			
53		C309_3635	4,466 KB	14/08/2009	10307	9612	View S at minor depression noted near crest on west side of landfill
54		C309_3636	4,448 KB	14/08/2009	10305	9604	View S at minor depression noted near crest on west side of landfill
55		C309_3637	2,898 KB	14/08/2009	10306	9591	Panoramic view N to E from southwest corner of landfill
		C309_3638	2,776 KB	14/08/2009			
		C309_3639	2,519 KB	14/08/2009			
		C309_3640	2,804 KB	14/08/2009			
56		C309_3641	3,780 KB	14/08/2009	10308	9585	View S at minor erosion on south side of landfill southeast of VT-8
57		C309_3642	3,746 KB	14/08/2009	10307	9585	View W at minor depression noted on southwest corner of landfill south of VT-8
58		C309_3643	3,925 KB	14/08/2009	10311	9586	View W at minor depression located on southeast corner of landfill southeast of VT-8
59		C309_3644	2,239 KB	14/08/2009	10336	9585	Panoramic view W to N from VT-7 (vVT-8 on drawing) on southeast of landfill
		C309_3645	2,718 KB	14/08/2009			
		C309_3646	3,301 KB	14/08/2009			
		C309_3647	3,400 KB	14/08/2009			
60		C309_3648	3,650 KB	14/08/2009	10350	9574	View SE at minor depression noted mid slope on southeast corner of landfill
61		C309_3650	3,814 KB	14/08/2009	10348	9582	View SE at minor depressions noted on southeast corner of landfill
62		C309_3651	3,231 KB	14/08/2009	10351	9611	Panoramic view S to W from northeast corner of landfill
		C309_3652	2,983 KB	14/08/2009			
		C309_3653	2,179 KB	14/08/2009			
		C309_3654	2,324 KB	14/08/2009			

6.6 THERMAL MONITORING DATA

All thermistors at the Tier II Disposal Facility were inspected and found to be in good condition with no significant concerns identified. Data from all thermistors was successfully retrieved and all analogues/thermocouples were observed to be functioning properly at the time of the inspection. Further review of the downloaded data identified an isolated error in temperature readings obtained from VT-6 sensors 4 through 12 in March 2009. All clocks exhibited slight drifts and were synchronized using the Prolog software.

As noted in Section 2.6, the location of the VT-7 and VT-8 dataloggers did not correspond with the locations illustrated on the supplied drawings (i.e., datalogger labelled as VT-7 was found at the VT-8 location and vice-versa). It is unclear at this point whether the dataloggers were interchanged during a previous monitoring event or if there was a mislabelling of thermistor locations on the drawings. Dataloggers were left at their existing location following data retrieval and thermistor maintenance reports were updated with the current coordinates.

Fair battery levels were noted at VT-7 and VT-8 and will require replacement during the next monitoring period scheduled for 2010.

6.7 LANDFILL TEMPERATURE DATA FROM DATALOGGERS

Manual resistive and temperature data readings were 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 included in the report. A complete datalogger RAW data set for 2008-2009 period has been forwarded to DCC as per the ToR.

6.8 SOIL SAMPLE ANALYTICAL DATA

The soil chemical analysis results and the evaluation of analytical data for the 2009 Tier II Disposal Facility samples are presented in Tables XVI and XVII below. Field and inter-laboratory duplicates collected as part of the QA/QC program are presented in Appendix C at the end of this report.

Table XVI: Soil Chemical Analysis Results – Tier II Disposal Facility

Sample #	Location	Depth (cm)	Cu [mg/kg]	Ni [mg/kg]	Co [mg/kg]	Cd [mg/kg]	Pb [mg/kg]	Zn [mg/kg]	Cr [mg/kg]	As [mg/kg]	Hg [mg/kg]	PCBs [µg/g]	F1 C_8-C_{10} [mg/kg]	F2 C_{10}-C_{16} [mg/kg]	F3 C_{16}-C_{34} [mg/kg]	TPH C_6-C_{34} [mg/kg]
C309-4WA	MW-4	0-15	<5	15	2	<0.1	5	<10	32	3	<0.05	<0.01	<12	<10	11	11
C309-4WB		40-50	<5	17	3	<0.1	4	<10	37	4	<0.05	<0.01	<12	<10	12	12
C309-5WA	MW-5	0-15	6	10	3	<0.1	5	<10	16	3	<0.05	<0.01	<12	<10	46	46
C309-5WB		40-50	6	10	4	<0.1	6	<10	17	3	<0.05	<0.01	<12	<10	25	25
C309-6WA	MW-6	0-15	<5	5	2	0.3	4	<10	9	2	<0.05	<0.01	<12	<10	56	56
C309-6WB		40-50	6	6	2	0.3	4	<10	5	3	<0.05	<0.01	<12	<10	78	78
C309-7WA	MW-7	0-15	<5	8	3	<0.1	4	<10	13	4	<0.05	<0.01	<12	<10	<10	ND
C309-7WB		40-50	<5	18	2	<0.1	3	<10	38	4	<0.05	<0.01	<12	<10	19	19
C309-BD1	C309-6WB	40-50	<5	5	2	0.2	3	<10	5	3	<0.05	<0.01	<12	<10	62	62

TPH: Sum of the concentrations of F1, F2 and F3. Concentrations below method detection limits are excluded from the total.
ND: Not Detected

S/P/CD/9229/T/09-Soil and GW-results(Soil-Tier II).xls

Table XVII: Evaluation of 2009 Soil Analytical Data – Tier II Disposal Facility

Parameter	2009
Copper	Concentrations ranged between <5-6 mg/kg with detectable concentrations noted in shallow and depth samples at MW-5 and in the depth sample at MW-6. Concentrations at the MW-4 (upgradient location) and MW-7 (downgradient location) were less than the detection limit of 5 mg/kg.
Nickel	Concentrations ranged between 5-18 mg/kg with a mean of 11.1. The most elevated concentrations were observed at depth in MW-7 (downgradient location) and in both shallow and depth samples at MW-4 (upgradient location). Detectable concentrations between 5-10 mg/kg observed at all other locations.
Cobalt	Concentrations ranged between 2-4 mg/kg with a mean of 2.6 with detectable concentrations noted at all locations. The highest concentration was observed at depth in MW-5 (downgradient location).
Cadmium	With the exception of samples obtained from MW-6 (downgradient location), all reported concentrations were less than the method detection limit (0.1 mg/kg). Detectable concentrations of 0.3 mg/kg were noted at both shallow and depth sample locations at MW-6.
Lead	Concentrations ranged between 3-6 mg/kg with a mean of 4.4. Trace concentrations were observed at all locations with higher concentrations noted at depth at MW-5 (downgradient location). Concentrations of 5 mg/kg were also noted at surface at MW-4 (upgradient location) and MW-5.
Zinc	All reported concentrations were less than the method detection limit (10 mg/kg)
Chromium	Concentrations ranged between 5-38 mg/kg with a mean of 20.9. Elevated concentrations of 37 and 38 mg/kg were observed at depth in upgradient location MW-4 and downgradient location MW-7, respectively. The lowest concentrations of 9 (surface) and 5 (depth) mg/kg were noted at MW-6.
Arsenic	Detectable concentrations were noted at all sample locations, ranging between 2-4 mg/kg and having a mean of 3.3. The highest concentration of 4 mg/kg were noted at depth at MW-4 (upgradient location) and both surface and depth at MW-7 (downgradient location).
Mercury	All reported concentrations were less than the method detection limit (0.05 mg/kg)
PCBs	All reported concentrations were less than the method detection limit (0.01 mg/kg).
TPH	Concentrations ranged between <12-78 mg/kg with detectable F3 concentrations noted at the majority of surface and depth sample locations. The most elevated concentration was noted downgradient in MW-6 (56 and 78 mg/kg), whereas the lowest concentrations were generally noted in the upgradient location MW-4.

6.9 GROUNDWATER SAMPLE ANALYTICAL DATA

The groundwater chemical analysis results and evaluation of analytical data for the 2009 Tier II Disposal Facility samples are presented in Tables XVIII and XIX. As noted above, MW-4 (upgradient location) was dry at the time of monitoring and consequently no groundwater sample was collected at this location. Certificates of analysis and groundwater samples collected as part of the QA/QC program are presented in Appendix C.

Table XVIII: Groundwater Chemical Analysis Results – Tier II Disposal Facility

Sample #	Location	Cu [mg/L]	Ni [mg/L]	Co [mg/L]	Cd [mg/L]	Pb [mg/L]	Zn [mg/L]	Cr [mg/L]	As [mg/L]	Hg [µg/L]	PCBs [µg/L]	F1 C_6-C_{10} [mg/L]	F2 C_{10}-C_{16} [mg/L]	F3 C_{16}-C_{34} [mg/L]	TPH C_6-C_{34} [mg/L]
C309-5W	MW-5	0.019	0.050	0.0052	0.00016	0.0035	5.7	0.12	0.0030	0.011	<0.05	<0.1	<0.1	<0.1	ND
C309-6W	MW-6	0.031	0.043	0.011	0.00032	0.012	0.042	0.044	0.0057	0.020	<0.05	<0.1	<0.1	<0.1	ND
C309-7W	MW-7	0.019	0.028	0.0029	0.00030	0.0034	3.0	0.081	0.0027	0.007	<0.05	<0.1	<0.1	<0.1	ND

TPH: Sum of the concentrations of F1, F2 and F3. Concentrations below method detection limits are excluded from the total.
ND: Not Detected
S/P/CD/9229/T/09-Soil and GW-results(GW-Tier II).xls

Table XIX: Evaluation of 2009 Groundwater Analytical Data – Tier II Disposal Facility

Parameter	2009
Copper	Concentrations ranged between 0.019-0.031 mg/L, with the most elevated concentration noted at downgradient location MW-6. The remaining downgradient well locations MW-5 and MW-7 both recorded concentrations of 0.019 mg/L.
Nickel	Concentrations ranged between 0.028-0.050 mg/L, with the highest and lowest concentrations noted at MW-5 and MW-7, respectively.
Cobalt	Concentrations ranged between 0.0029-0.011 mg/L, with the highest and lowest concentrations noted at MW-6 and MW-7, respectively.
Cadmium	Concentrations ranged between 0.00016-0.00032 mg/L. The highest concentrations were noted at MW-6.
Lead	Concentrations ranged between 0.0034-0.012 mg/L, with the highest concentration noted at MW-6. The concentration at MW-6 was approximately 3.5x higher than the concentrations observed at the other two downgradient well locations.
Zinc	Concentrations ranged between 0.042-5.7 mg/L. Elevated concentrations were noted at both MW-5 and MW-7, nearly two orders of magnitude higher than the concentration at the other downgradient location MW-6.
Chromium	Concentrations ranged between 0.044-0.12 mg/L, with the highest concentration observed at MW-5, approximately 1.5-2.5x higher than the two other downgradient well locations.
Arsenic	Concentrations ranged between 0.0027-0.0057 mg/L, with the highest and lowest concentrations noted at MW-7 and MW-6, respectively.
Mercury	Concentrations ranged between 0.000007-0.000020 mg/L, with the highest concentration observed at MW-6 and lowest concentration at MW-7.
PCBs	All reported concentrations were less than the method detection limit (0.00005 mg/L).
TPH	All reported concentrations were less than the method detection limit (0.1 mg/L).

6.10 THERMISTOR ANNUAL MAINTENANCE REPORTS

The thermistor annual maintenance reports VT-5 to VT-8 are presented in this section.

Thermistor Annual Maintenance Report

Contractor Name:	**Sila Remediation Inc.**	Inspection Date:	**13/08/2009**
Prepared By:	**A.Passalis**		

Thermistor Information

Site Name:	**CAM-3**	Thermistor Location		**Tier II Disposal Facility**			
Thermistor Number:	**VT-5**	Inclination		**Vertical**			
Install Date:	**08/26/2007**	First Date Event		**05/08/2008**	Last Date Event		**05/08/2008**
Coordinates and Elevation	N	**9610.4**	E	**10348.5**	Elev		**43.7**
Length of Cable (m)	**9.5**	Cable Lead Above Ground (m)	**3.20**	Nodal Points			**13**
Datalogger Serial #	**02020218**			Cable Serial Number			

Thermistor Inspection

	Good	Needs Maintenance	
Casing	**Yes**	**No**	
Cover	**Yes**	**No**	
Data Logger	**Yes**	**No**	
Cable	**Yes**	**No**	
Beads	**Yes**	**No**	
Battery Installation Date	**08/18/2008**		
Battery Levels	Main **11.34**	Aux **12.77**	

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	12.553	5.3710
2	12.918	4.7897
3	13.831	3.3943
4	15.216	1.5128
5	16.72	-0.3515
6	17.871	-1.6380
7	19.348	-3.1884
8	20.48	-4.3996

Bead	ohms	Degrees C
9	21.67	-5.5271
10	22.61	-6.3489
11	23.4	-7.0821
12	24.13	-7.6631
13	24.58	-8.1688

Observations and Proposed Maintenance

Thermistor Annual Maintenance Report

Contractor Name:	**Sila Remediation Inc.**	Inspection Date:	**13/08/2009**
Prepared By:	**A.Passalis**		

Thermistor Information

Site Name:	**CAM-3**	Thermistor Location		**Tier II Disposal Facility**			
Thermistor Number:	**VT-6**	Inclination		**Vertical**			
Install Date:	**08/26/2007**	First Date Event		**05/08/2008**	Last Date Event		**05/08/2008**
Coordinates and Elevation	N	**7615.4**	E	**10315.6**	Elev		**44**
Length of Cable (m)	**9.3**	Cable Lead Above Ground (m)	**3.20**	Nodal Points			**13**
Datalogger Serial #	**02020219**			Cable Serial Number			

Thermistor Inspection

	Good	Needs Maintenance	
Casing	**Yes**	**No**	
Cover	**Yes**	**No**	
Data Logger	**Yes**	**No**	
Cable	**Yes**	**No**	
Beads	**Yes**	**No**	
Battery Installation Date	**08/18/2008**		
Battery Levels	Main **11.34**	Aux **12.90**	

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	12.349	5.1340
2	12.551	5.1340
3	13.317	3.8913
4	14.625	2.2883
5	16.175	0.2898
6	17.751	-1.5380
7	19.320	-3.1884
8	20.69	-4.6667

Bead	ohms	Degrees C
9	21.88	-5.7068
10	23.00	-6.6722
11	23.87	-7.4311
12	24.71	-8.1381
13	25.31	-8.6198

Observations and Proposed Maintenance

Thermistor Annual Maintenance Report

Contractor Name:	**Sila Remediation Inc.**	Inspection Date:	**13/08/2009**
Prepared By:	**A.Passalis**		

Thermistor Information

Site Name:	**CAM-3**	Thermistor Location		**Tier II Disposal Facility**			
Thermistor Number:	**VT-7**	Inclination		**Vertical**			
Install Date:	**08/26/2007**	First Date Event		**05/08/2008**	Last Date Event		**05/08/2008**
Coordinates and Elevation	N	**9588.2**	E	**10307**	Elev		**43.1**
Length of Cable (m)	**10.4**	Cable Lead Above Ground (m)	**3.20**	Nodal Points			**15**
Datalogger Serial #	**02020360**			Cable Serial Number			

Thermistor Inspection

	Good	Needs Maintenance	
Casing	**Yes**	**No**	
Cover	**Yes**	**No**	
Data Logger	**Yes**	**No**	
Cable	**Yes**	**No**	
Beads	**Yes**	**No**	
Battery Installation Date	**08/26/2008**		
Battery Levels	Main **11.34**	Aux	**11.80 (fair)**

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	12.275	5.7903
2	12.429	5.4509
3	13.315	4.0910
4	14.467	2.4011
5	16.021	0.3834
6	16.844	-0.8656
7	18.503	-2.5215
8	19.855	-3.8365

Bead	ohms	Degrees C
9	21.04	-5.0358
10	22.01	-5.8977
11	22.94	-6.7294
12	23.58	-7.3733
13	24.29	-7.9627
14	24.66	-8.3365
15	25.16	-8.6198

Observations and Proposed Maintenance

Recommend battery replacement during 2010 monitoring event.

Thermistor Annual Maintenance Report

Contractor Name:	**Sila Remediation Inc.**	Inspection Date:	**13/08/2008**
Prepared By:	**A.Passalis**		

Thermistor Information

Site Name:	**CAM-3**	Thermistor Location		**Tier II Disposal Facility**			
Thermistor Number:	**VT-8**	Inclination		**Vertical**			
Install Date:	**08/26/2007**	First Date Event		**05/08/2008**	Last Date Event		**05/08/2008**
Coordinates and Elevation	N	**9583.7**	E	**10307.5**	Elev		**43.3**
Length of Cable (m)	**10.3**	Cable Lead Above Ground (m)	**3.30**	Nodal Points			**15**
Datalogger Serial #	**02120062**			Cable Serial Number			

Thermistor Inspection

	Good	Needs Maintenance	
Casing	**Yes**	**No**	
Cover	**Yes**	**No**	
Data Logger	**Yes**	**No**	
Cable	**Yes**	**No**	
Beads	**Yes**	**No**	
Battery Installation Date	**08/26/2008**		
Battery Levels	Main **11.34**	Aux **11.92** (fair)	

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	12.692	5.2313
2	12.653	5.2588
3	13.417	4.0511
4	14.700	2.2182
5	16.266	0.1633
6	17.475	-1.2078
7	18.643	-2.7053
8	20.14	-4.0934

Bead	ohms	Degrees C
9	21.27	-5.1876
10	22.41	-6.1729
11	23.34	-6.9616
12	24.14	-7.6631
13	24.78	-8.2358
14	25.28	-8.6424
15	25.87	-9.0972

Observations and Proposed Maintenance

Recommend battery replacement during 2010 monitoring event.

6.11 MONITORING WELL SAMPLING/INSPECTION LOGS

The monitoring well sampling and inspection logs for MW-4 to MW-7 are presented in this section.

2009 Monitoring Well Sampling Log (MW-4)

Site name:	CAM-3
Date of sampling event:	13-Aug-09
Names of samplers:	Andrew Passalis
Monitoring well ID:	MW-4
Facility:	Tier II Disposal Facility

Known Data	
Depth of installation* (m):	3.48
Length of screened section (m):	2.00
Depth to top of screen* (m):	0.48

Measured Data			
Condition of well:	Good	Procedure/Equipment:	Interface Meter
Procedure/Equipment:	Measuring Tape	Depth to water surface (m):	dry
Well height above ground (m):	0.51	Depth to bottom (m):	1.93
Diameter of well (m):	0.04	Free product thickness (mm):	-

Calculations		Notes	
Depth of water (m):	-	Evidence of sludge:	no
Well volume of water (L):	-	Evidence of freezing/siltation:	no
Static water level* (m):	-		
Length of screen collecting water (m):	-		

Development/Purging Information

Equipment: n/a

Date & Time	Volume Removed (L)	Temperature (^{o}C)	pH	Conductivity (µS/cm)	Turbidity (NTU)	Description of Water
-	-	-	-	-	-	-

Water Sampling		Soil Sampling	
Date & Time Collected:		Date and Time Collected:	14-Aug-09
Sample Number - Water:		Sample Number - Soil:	C309-4WA
			C309-4WB
Sample Containers:		Sample Containers:	2x125mL glass/bag
			2x125mL glass/bag
Procedure/Equipment:		Procedure/Equipment:	Steel & Plastic Trowels
Water Description:		Soil Description:	Light brown sand and gravel, some cobbles
Sampling Equipment Decontamination (Y/N):	n/a	Sampling Equipment Decontamination (Y/N):	Y
Number Washes:	0	Number Washes:	1
Number Rinses:	0	Number Rinses:	1

*From ground surface. Unless this is stated, all measurments are assumed to be from the top of the casing.
n/a=not applicable
SS=Stainless Steel

2009 Monitoring Well Sampling Log (MW-5)

Site name:	CAM-3
Date of sampling event:	13-Aug-09
Names of samplers:	Andrew Passalis
Monitoring well ID:	MW-5
Facility:	Tier ll Soil Disposal Facility

Known Data	
Depth of installation* (m):	3.40
Length of screened section (m):	2.00
Depth to top of screen* (m):	0.40

Measured Data			
Condition of well:	Good	Procedure/Equipment:	Interface Meter
Procedure/Equipment:	Measuring Tape	Depth to water surface (m):	0.77
Well height above ground (m):	0.58	Depth to bottom (m):	1.62
Diameter of well (m):	0.04	Free product thickness (mm):	-

Calculations		Notes	
Depth of water (m):	0.85	Evidence of sludge:	no
Well volume of water (L):	0.91	Evidence of freezing/siltation:	no
Static water level* (m):	0.19		
Length of screen collecting water (m):	0.64		

Development/Purging Information

Equipment: Dedicated waterra tubing and foot valve

Date & Time	Volume Removed (L)	Temperature (^{o}C)	pH	Conductivity (µS/cm)	Turbidity (NTU)	Description of Water
14-Aug-08	1.0	2.5	7.2	4.4	41	C&C, N/O

Water Sampling		Soil Sampling	
Date & Time Collected:	14-Aug-09	Date and Time Collected:	14-Aug-09
Sample Number - Water:	C309-5W	Sample Number - Soil:	C309-5WA
	(& interlab dup)		C309-5WB
Sample Containers:	2x250 mL plastic	Sample Containers:	2x125mL glass/bag
	2x250 mL & 3x1L amber		2x125mL glass/bag
	6x40 mL vials		
Procedure/Equipment:	Waterra tubing & foot valve YSI 556 Mulitmeter, Hach Turbidimeter	Procedure/Equipment:	Steel & Plastic Trowels
Water Description:	C&C, N/O	Soil Description:	Tan brown silt, some clay, trace fine sand wet @ 0.4 m
Sampling Equipment Decontamination (Y/N):	N, dedicated	Sampling Equipment Decontamination (Y/N):	Y
Number Washes:	0	Number Washes:	1
Number Rinses:	0	Number Rinses:	1

*From ground surface. Unless this is stated, all measurments are assumed to be from the top of the casing.
n/a=not applicable
SS=Stainless Steel

2009 Monitoring Well Sampling Log (MW-6)

Site name:	CAM-3
Date of sampling event:	13-Aug-09
Names of samplers:	Andrew Passalis
Monitoring well ID:	MW-6
Facility:	Tier ll Soil Disposal Facility

Known Data	
Depth of installation* (m):	4.00
Length of screened section (m):	2.00
Depth to top of screen* (m):	0.51

Measured Data			
Condition of well:	Good	Procedure/Equipment:	Interface Meter
Procedure/Equipment:	Measuring Tape	Depth to water surface (m):	0.77
Well height above ground (m):	0.65	Depth to bottom (m):	1.32
Diameter of well (m):	0.04	Free product thickness (mm):	-

Calculations		Notes	
Depth of water (m):	0.55	Evidence of sludge:	no
Well volume of water (L):	0.59	Evidence of freezing/siltation:	no
Static water level* (m):	0.12		
Length of screen collecting water (m):	0.16		

Development/Purging Information

Equipment: Dedicated waterra tubing and foot valve

Date & Time	Volume Removed (L)	Temperature (^{o}C)	pH	Conductivity (µS/cm)	Turbidity (NTU)	Description of Water
14-Aug-08	0.8	1.1	7.3	0.9	69	C&C, N/O

Water Sampling		Soil Sampling	
Date & Time Collected:	14-Aug-09	Date and Time Collected:	14-Aug-09
Sample Number - Water:	C309-6W	Sample Number - Soil:	C309-6WA
	(& interlab dup)		C309-6WB (BD1)
Sample Containers:	1x250 mL plastic	Sample Containers:	2x125mL glass/bag
	2x250 mL & 1x1L amber		7x125mL glass/bag
	3x40 mL vials		
Procedure/Equipment:	Waterra tubing & foot valve YSI 556 Mulitmeter, Hach Turbidimeter	Procedure/Equipment:	Steel & Plastic Trowels
Water Description:	C&C, N/O	Soil Description:	0 - black org with silt 20 - brown silt, some clay, wet @ 0.38
Sampling Equipment Decontamination (Y/N):	N, dedicated	Sampling Equipment Decontamination (Y/N):	Y
Number Washes:	0	Number Washes:	1
Number Rinses:	0	Number Rinses:	1

*From ground surface. Unless this is stated, all measurments are assumed to be from the top of the casing.
n/a=not applicable
SS=Stainless Steel

2009 Monitoring Well Sampling Log (MW-7)

Site name:	CAM-3
Date of sampling event:	13-Aug-09
Names of samplers:	Andrew Passalis
Monitoring well ID:	MW-7
Facility:	Tier ll Soil Disposal Facility

Known Data	
Depth of installation* (m):	3.42
Length of screened section (m):	2.00
Depth to top of screen* (m):	0.42

Measured Data			
Condition of well:	Good	Procedure/Equipment:	Interface Meter
Procedure/Equipment:	Measuring Tape	Depth to water surface (m):	1.09
Well height above ground (m):	0.47	Depth to bottom (m):	1.87
Diameter of well (m):	0.04	Free product thickness (mm):	-

Calculations		Notes	
Depth of water (m):	0.78	Evidence of sludge:	no
Well volume of water (L):	0.84	Evidence of freezing/siltation:	no
Static water level* (m):	0.62		
Length of screen collecting water (m):	0.78		

Development/Purging Information

Equipment: Dedicated waterra tubing and foot valve

Date & Time	Volume Removed (L)	Temperature (^{o}C)	pH	Conductivity (µS/cm)	Turbidity (NTU)	Description of Water
14-Aug-08	1.1	1.9	7.4	1.0	37	C&C, N/O

Water Sampling		Soil Sampling	
Date & Time Collected:	14-Aug-09	Date and Time Collected:	14-Aug-09
Sample Number - Water:	C309-7W	Sample Number - Soil:	C309-7WA
			C309-7WB
Sample Containers:	1x250 mL plastic	Sample Containers:	2x125mL glass/bag
	2x250 mL & 1x1L amber		2x125mL glass/bag
	3x40 mL vials		
Procedure/Equipment:	Waterra tubing & foot valve YSI 556 Mulitmeter, Hach Turbidimeter	Procedure/Equipment:	Steel & Plastic Trowels
Water Description:	C&C, N/O	Soil Description:	Light brown silt, some gravel, trace clay and sand
Sampling Equipment Decontamination (Y/N):	N, dedicated	Sampling Equipment Decontamination (Y/N):	Y
Number Washes:	0	Number Washes:	1
Number Rinses:	0	Number Rinses:	1

*From ground surface. Unless this is stated, all measurments are assumed to be from the top of the casing.
n/a=not applicable
SS=Stainless Steel

7 NORTHEAST LANDFILL

7.1 BACKGROUND AND MONITORING PROGRAM

The Northeast Landfill (NELF) area is located approximately 1 km north of the module train and 650 m southwest of the water lake. The NELF is situated along the crest of a former beach ridge that slopes gently to a low lying area that borders the west side of the landfill. The landfill has eight separate regrade areas (labelled as Lobes A through H for reference), and including engineered cover, encompasses a footprint of approximately 45,000 m^2 with the final cover extending approximately 0.75 m to 1.0 m above the surrounding grade. Based on existing information regarding this landfill as a source of contamination, its potential migration pathways and receptors, the Northeast Landfill was classified as low potential environmental risk. The remediation consisted of removal of surface debris and localized contaminated areas, and regrading with the placement of additional granular fill.

The long term monitoring plan consists of visual monitoring and periodic collection of soil samples. The 2009 monitoring of this landfill includes a visual inspection to assess landfill performance. There is no instrumentation installed at this landfill.

7.2 VISUAL INSPECTION REPORT

The visual inspection of the Northeast Landfill was conducted on August 15, 2009. The Visual Inspection Checklist/Report has been completed as per the ToR and is included as Table XX of this report.

Settlement
Indications of minor localized settlement were noted on the surface of Lobes A, B, C, D, E and H. The majority of features consisted of relatively small subtle depressions located along the margins of the regrade areas. One relatively large depression was also noted on the south side of Lobe E (Feature F) that may be partially attributed to infiltration of ponded water that borders the south side of the lobe. All settlement features have an acceptable severity rating.

Erosion
Six general areas of erosion (Features H through M) were noted on the surface or sides of the Northeast Landfill, including: several small features along the west side of Lobe A (Feature H); on the west and northwest sides of Lobe B (Feature I); along the north toe of Lobe B (Feature J); along the south toe of Lobe C (Feature K); on the south and east sides of Lobe E (Feature L); and on the north side of Lobe G (Feature M). With the exception of the feature on the south side of Lobe G, surface runoff has resulted in the washing of fines from the more resistant sand and gravel cover material in each area. Erosion along the south side of Lobe G is the result of ponded water lapping against the side of the granular fill resulting in minor scouring along the side of the regrade. All features appear to be self-armouring and have an acceptable severity rating.

Frost Action
A single tension crack (Feature O) was noted extending parallel to the slope on the west side of Lobe C. Several cracks were noted at the same location during the 2008 program, however only a single crack was observed in 2009, likely due to infilling. The magnitude of the crack appears to be consistent with that observed in 2008. No other indications of desiccation/movement were noted.

Evidence of Burrowing Animals
Indications of burrowing animals were not noted.

Re-establishment of Vegetation
Evidence of vegetation was not noted on the landfill.

Staining
One relatively small and localized area of rust-coloured staining (Feature N) was noted along the northwest toe of Lobe C. The staining was associated with localized water ponding along the downgradient side of the lobe. The staining appears consistent with findings from the 2008 inspection. There was no sheen associated with the staining at the time of the inspection.

Seepage Points
Evidence of specific seepage points was not noted.

Debris
Evidence of debris was not noted at the landfill.

Presence/Condition of Monitoring Instruments
There are no monitoring instruments installed at this landfill.

Other Features of Note
There was no other feature of note at the landfill.

Discussion
The Northeast Landill performance with respect to containment of the debris within the landfill is rated as acceptable. A visual inspection report, including supporting photos and drawing, is presented in the following pages.

Minor settlement features were noted on the surface of Lobes A, B, C, D, E and H. Localized runoff has also resulted in minor erosional features on the surface and along the margins of numerous regrade areas. These features appear to be consistent with findings from the 2008 inspection with no significant increase in erosion noted. Rust-coloured staining and adjacent ponding on the west side of Lobe C also appears consistent with 2008 observations. Ponding and associated erosion along the south side of Lobe E appears to be a recent addition from the previous assessment.

Table XX: Visual Inspection Checklist / Report – Northeast Landfill

DEW LINE CLEANUP: POST-CONSTRUCTION - LANDFILL MONITORING
VISUAL INSPECTION CHECKLIST
INSPECTION REPORT – PAGE 1 OF 2

SITE NAME: CAM-3 Shephard Bay
LANDFILL DESIGNATION: Northeast Landfill (Regrade Landfill)
DATE OF INSPECTION: August 15, 2009
DATE OF PREVIOUS INSPECTION: August 6, 2008
INSPECTED BY: A. Passalis
REPORT PREPARED BY: A. Passalis
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.

LANDFILL VISUAL INSPECTION

Site Name: CAM-3 Shepherd Bay
Landfill: Northeast Landfill
Designation: Regrade Landfill
Date Inspected: August 15, 2009
Inspected by: Andrew Passalis, P.Eng.
Sila Remediation Inc.

Signature: 

TABLE XX: CAM-3 NORTHEAST LANDFILL

Checklist Item	Present (Yes/No)	Location	Length	Width	Depth	Extent	Description	Photographic Record	Severity Rating	Additional Comments
Settlement	Yes	FEATURE A See Figure CAM-3.6 (Lobe A)	4 m	1 m	5 cm	Isolated	Minor surface depression	NELF-12	Acceptable	Minor depression on northeast corner of lobe
		FEATURE B See Figure CAM-3.6 (Lobe B)	7 m	1 m	4 cm	Isolated	Minor surface depression	NELF-14		Minor linear depression on northwest cover of lobe
		FEATURE C See Figure CAM-3.6 (Lobe C)	0.5 - 0.8 m	0,3	5 - 10 cm	Isolated	Minor surface depression	NELF-35		Three small potholes on southwest corner of lobe
		FEATURE D See Figure CAM-3.6 (Lobe D)	4 m	0.6 m	2 cm	Isolated	Minor surface depression	NELF-41		Minor depression on southeast corner of lobe
		FEATURE E See Figure CAM-3.6 (Lobe E)	5 m	0.3 m	5 - 10 cm	Isolated	Linear depression	NELF-44, 45		Minor linear depression on northwest cover of lobe
		FEATURE F See Figure CAM-3.6 (Lobe E)	30 m	20 m	30 cm	Occasional (3%)	Large bowl shaped depression on west side of lobe	NELF-46, 50		Large bowl shaped depression on west side of lobe. Adjacent to large ponded area.
		FEATURE G See Figure CAM-3.6 (Lobe H)	4 m	0.4 m	3 cm	Isolated	Minor surface depression	NELF-89		Minor depression on north side of lobe
Erosion	Yes	FEATURE H See Figure CAM-3.6 (Lobe A)	3 m	0.3 - 0.4 m	5 - 8 cm	Occassional (5%)	Minor surface erosion. Numerous locations enxtending along north side of lobe	NELF-7 - 11	Acceptable	Small erosion channels were observed on te sideslopes at many occassions. The erosion is due to migration of fines from the erosion resistant Type 2 material. Small erosion channels were also observed on sideslopes at many locations.
		FEATURE I See Figure CAM-3.6 (Lobe B)	6 m	0.2 - 1.3 m	3 cm	Occassional (1%)	Minor surface erosion. Multiple locations on north and northeast side of lobe.	NELF-17, 19 - 22		
		FEATURE J See Figure CAM-3.6 (Lobe B)	35 m	1 m	5 cm	Occassional (<1%)	Minor eroson along east slope toe. Not in contact with lobe.	NELF-22		Erosion channels along margins of the lobes appear stable and self armouring.
		FEATURE K See Figure CAM-3.6 (Lobe C)	30 m	0.4 - 0.6 m	3 cm	Isolated	Minor eroson along west slope toe. Not in contact with lobe.	NELF-24		
		FEATURE L See Figure CAM-3.6 (Lobe E)	6 m	1 m	2 - 3 cm	Isolated	Minor erosion on west side of lobe adjacent to ponded area	NELF-46, 50		Minor erosion due to elevated water level in adjacent pond area. Also see Feature F
			6 m	1 m	1 - 3 cm	Isolated	Minor surface erosion on south side of lobe	NELF-51, 52		Minor erosion, washing of fines.
		FEATURE M See Figure CAM-3.6 (Lobe G)	3 m	0.3 m	3 cm	Isolated	Minor surface erosion on southeast side of lobe	NELF-82		Minor erosion, washing of fines.
Frost Action	Yes	FEATURE N See Figure CAM-3.6 (Lobe C)	2 m	2 mm	Unknown	Isolated	Single tension crack extending parallel to slope	NELF-28, 29	Acceptable	Single crack appears to be a new feature. Some infilling. No further indications of desication/movement noted.
Animal Burrows	No	N/A	N/A	N/A	N/A	None	N/A	N/A	Not Observable	N/A
Vegetation	No	N/A	N/A	N/A	N/A	None	N/A	N/A	Not Observable	N/A
Staining	Yes	FEATURE O See Figure CAM-3.6 (Lobe C)	4 m	3 m	Unknown	Isolated	Localized rust coloured staining on northeast toe	NELF-31, 32	Acceptable	Small area of rust coloured staining associated with water ponding along northeast toe.
Vegetation Stress	No	N/A	N/A	N/A	N/A	None	N/A	N/A	Not Observable	N/A
Seepage Points	No	N/A	N/A	N/A	N/A	None	N/A	N/A	Not Observable	N/A
Debris Exposed	No	N/A	N/A	N/A	N/A	None	N/A	N/A	Not Observable	N/A
Presence/Condition of Monitoring Instruments	No	N/A	N/A	N/A	N/A	None	N/A	N/A	Not Observable	N/A
Other Features of Note:	No	N/A	N/A	N/A	N/A	None	N/A	N/A	Not Observable	N/A
Additional Photos	Yes	See Figure CAM-3.6 and Photographic Record	N/A	N/A	N/A	N/A	General Photographic Record	N/A	N/A	General photos for documentation, no features of note.
Overall Landfill Performance:	**Acceptable**									

7.3 PRELIMINARY STABILITY ASSESSMENT

The Preliminary Stability Assessment for Northeast Landfill has been completed as per the ToR and is included as Table XXI hereafter.

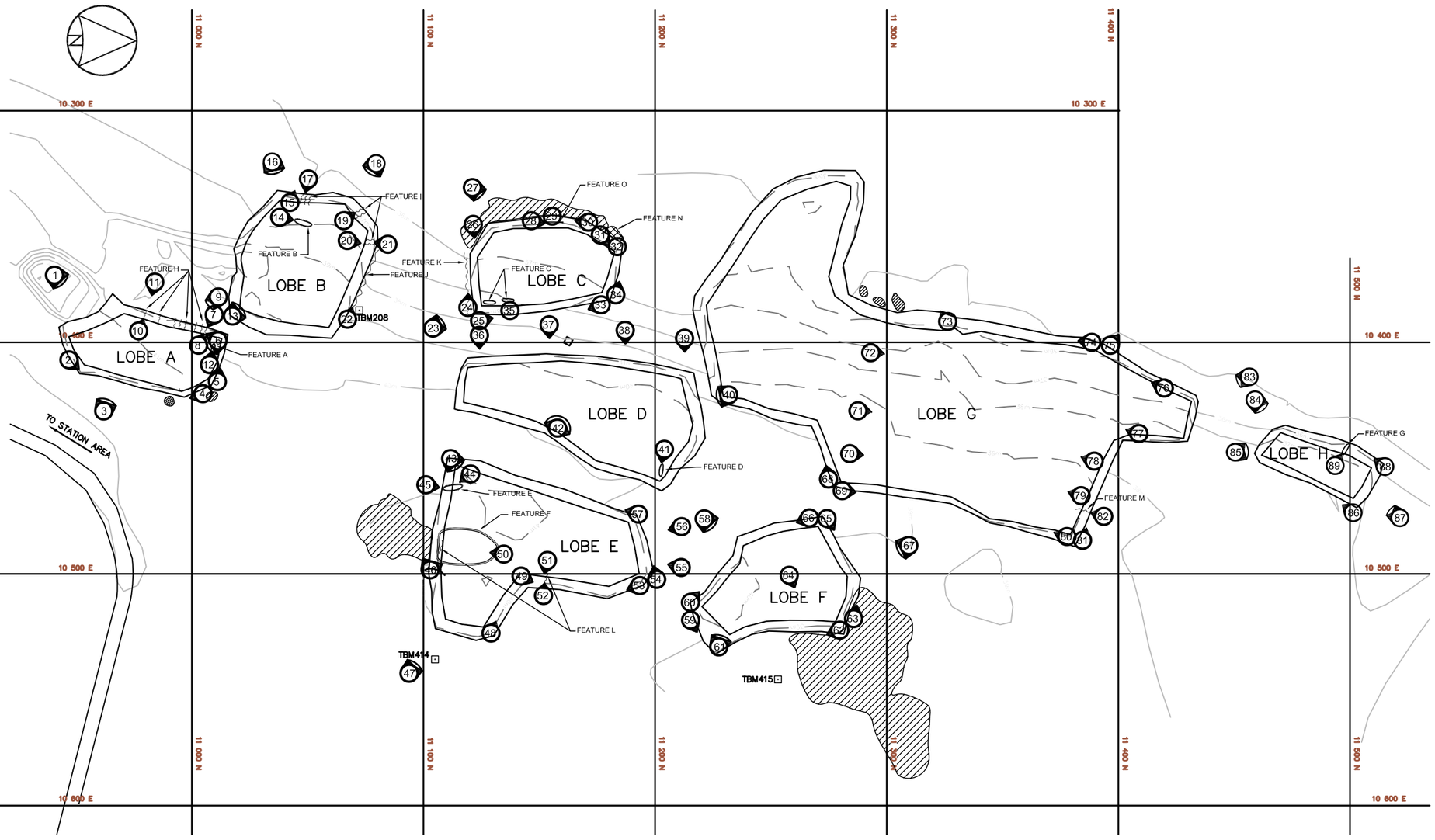
Table XXI: Preliminary Stability Assessment – Northeast Landfill

Feature	Severity Rating	Extent
Settlement	Acceptable	Occassional
Erosion	Acceptable	Occasional
Frost Action	Acceptable	Isolated
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

7.4 LOCATION PLAN

The Location Plan for the Northeast Landfill has been completed as per the ToR and is presented in Figure CAM-3.6.



LEGEND

- PICTURE NUMBER VIEWPOINT
- TBM20 TEMPORARY BENCHMARK
- MONITORING SOIL SAMPLE LOCATION
- SETTLEMENT
- EROSION
- CRACKS (2–5 mm WIDE)
- PONDING
- STAINING

0 20m 40m 60m 80m 100m

NO.	VERSION	DATE	BY	VERIF.	APPR.
A	FINAL VERSION	10–02–26	P.L.	A.P.	J.P.P.

Construction de Défense Canada
Defence Construction Canada

FINAL REPORT
COLLECTION OF LANDFILL MONITORING DATA
CAM-3, SHEPHERD BAY, NUNAVUT

NORTHEAST LANDFILL

SITE REMEDIATION SOLUTIONS

Biogenie, a division of EnGlobe Corp.
4495 Wilfrid-Hamel Blvd., Suite 200
Quebec (Quebec) CANADA G1P 2J7
Phone: (418) 653-4422 Fax.: (418) 653-3583

MEASUREMENT UNIT	SCALE:	DATE (month–year):
Meter	1 : 2,000	FEBRUARY 2010
DRAWN BY: P. LÉGARÉ	VERIFIED BY: A. PASSALIS	APPROVED BY: J.–P. PELLETIER
PROJECT NO: CD9229_001_160	DRAWING NO: CD9229_001_160-CAM-3_6	PAGE PL

FIGURE CAM-3.6

G:\CD9229\2009\CAM-3\FINAL\CD9229_001_160-CAM-3_6.dwg, PL, 2010-02-26 15:15:43

7.5 PHOTOGRAPHIC RECORDS

The Photographic Record for Northeast Landfill has been completed as per the ToR and is included as Table XXII hereafter. The Photographic Record contains only an index and “thumbnail” photographs. Full-sized photographs are contained in the Addendum DVD-ROM.

LANDFILL VISUAL INSPECTION PHOTO LOG

Site Name: CAM-3, Shepherd Bay
Landfill: Northeast Landfill
Date Inspected: August 14, 2009
Inspected by: Andrew Passalis, P.Eng.

Photo (NELF-)	Thumbnail	Filename	Size (KB)	Date	Vantage Point Easting	Vantage Point Northing	Caption
Lobe A							
1		C309_3838	2,635 KB	15/08/2009	10744	11913	Panoramic view N to E from gravel pile located south of Lobe A
		C309_3839	2,924 KB	15/08/2009			
		C309_3840	3,004 KB	15/08/2009			
		C309_3841	2,974 KB	15/08/2009			
		C309_3842	2,841 KB	15/08/2009	10752	11894	View E along south side of Lobe A
2		C309_3843	2,787 KB	15/08/2009	10755	11877	View NE along east side of Lobe A
3		C309_3844	2,916 KB	15/08/2009	10771	11855	Panoramic view SW to NW from east side of Lobe A
		C309_3845	2,836 KB	15/08/2009			
		C309_3846	2,495 KB	15/08/2009			
		C309_3847	2,438 KB	15/08/2009			
4		C309_3848	2,953 KB	15/08/2009	10795	11855	View SE at ponded area on northeast toe of Lobe A
5		C309_3849	2,915 KB	15/08/2009	10813	11862	View W along north side of Lobe A
6		C309_3850	3,097 KB	15/08/2009	10819	11867	Panoramic view E to S from northwest corner of Lobe A
		C309_3851	2,913 KB	15/08/2009			
		C309_3852	2,837 KB	15/08/2009			
		C309_3853	3,115 KB	15/08/2009			
7		C309_3854	4,286 KB	15/08/2009	10819	11885	View NW at minor eroson on west side of Lobe A
8		C309_3855	4,628 KB	15/08/2009	10811	11883	View SE at minor eroson on west side of Lobe A
9		C309_3856	2,824 KB	15/08/2009	10820	11904	View SE to S at west side of Lobe A. Note several locations of erosion along side slope.
		C309_3857	2,835 KB	15/08/2009			
		C309_3858	2,720 KB	15/08/2009			
10		C309_3859	4,260 KB	15/08/2009	10785	11889	View NW at minor eroson on west side of Lobe A
11		C309_3860	2,796 KB	15/08/2009	10792	11910	View SE at minor eroson on west side of Lobe A
12		C309_3861	3,793 KB	15/08/2009	10816	11875	View NNE at minor depression on northwest surface of Lobe A
Lobe B							
13		C309_3862	2,552 KB	15/08/2009	10826	11896	Panormamic view W to N from southeast corner of Lobe B
		C309_3863	2,254 KB	15/08/2009			
		C309_3864	2,267 KB	15/08/2009			
		C309_3865	3,363 KB	15/08/2009	10831	11926	Panoramic view W to N to E from mid south side of Lobe B
		C309_3866	2,953 KB	15/08/2009			
		C309_3867	2,873 KB	15/08/2009			
		C309_3868	3,194 KB	15/08/2009			
		C309_3869	3,381 KB	15/08/2009			
		C309_3870	3,311 KB	15/08/2009			
		C309_3871	3,241 KB	15/08/2009			
14		C309_3872	3,270 KB	15/08/2009	10846	11938	View N at minor depresson on southeast cover of Lobe B
15		C309_3873	2,761 KB	15/08/2009	10851	11945	View NW at existing drainage channel extending west of Lobe B
16		C309_3874	2,751 KB	15/08/2009	10843	11962	Panoramic view SE to NE from southeast of Lobe B
		C309_3875	2,602 KB	15/08/2009			
		C309_3876	2,545 KB	15/08/2009			
17		C309_3877	3,147 KB	15/08/2009	10858	11954	View W at minor erosion on west slope of Lobe B
18		C309_3878	2,569 KB	15/08/2009	10888	11962	Panoramic view E to S from northwest of Lobe B
		C309_3879	2,348 KB	15/08/2009			
		C309_3880	2,112 KB	15/08/2009			
19		C309_3881	3,875 KB	15/08/2009	10874	11937	View NW at minor erosion on northwest side of Lobe B
20		C309_3882	3,554 KB	15/08/2009	10875	11928	View N at minor erosion on northwest side of Lobe B
21		C309_3883	3,546 KB	15/08/2009	10890	11926	View S at minor erosion on northwest side of Lobe B
22		C309_3884	3,343 KB	15/08/2009	10874	11894	View NW at minor erosion extending along north toe of Lobe B
		C309_3885	2,303 KB	15/08/2009	10897	11894	Panoramic view SE to W from northeast of Lobe B
		C309_3886	2,591 KB	15/08/2009			
		C309_3887	2,740 KB	15/08/2009			
		C309_3888	2,820 KB	15/08/2009			

LANDFILL VISUAL INSPECTION PHOTO LOG

Site Name: CAM-3, Shepherd Bay
Landfill: Northeast Landfill
Date Inspected: August 14, 2009
Inspected by: Andrew Passalis, P.Eng.

Photo (NELF-)	Thumbnail	Filename	Size (KB)	Date	Vantage Point Easting	Vantage Point Northing	Caption
Lobe C							
23		C309_3889	2,564 KB	15/08/2009	10912	11890	Panoramic view W to N from southeast of Lobe C
		C309_3890	2,393 KB	15/08/2009			
		C309_3891	2,446 KB	15/08/2009			
24		C309_3892	3,181 KB	15/08/2009	10927	11899	View W along south side of Lobe C
25		C309_3893	2,469 KB	15/08/2009	10932	11894	View N along east side of Lobe C
26		C309_3894	2,607 KB	15/08/2009	10930	11935	View E along south side of Lobe C. Note ponding at southeast toe.
27		C309_3895	2,841 KB	15/08/2009	10929	11951	Panormamic view E to N from southeast of Lobe C. Note low lying wet area southeast of lobe.
		C309_3896	2,828 KB	15/08/2009			
		C309_3897	2,728 KB	15/08/2009			
28		C309_3898	3,578 KB	15/08/2009	10955	11937	View N at tension crack on west side of Lobe C.
29		C309_3900	3,147 KB	15/08/2009	10965	11937	Close up of tension crack on west side of Lobe C
30		C309_3901	2,697 KB	15/08/2009	10979	11936	View S along west side of Lobe C
31		C309_3902	2,972 KB	15/08/2009	10987	11933	View NE along northwest side of Lobe C. Note ponding and rust coloured staining on northwest corner.
32		C309_3903	4,224 KB	15/08/2009	10994	11927	Ponded water and rust coloured staining on northwest toe of Lobe C
		C309_3904	3,311 KB	15/08/2009	10988	11923	Panoramic view SW to E from northwest corner of Lobe C
		C309_3905	2,960 KB	15/08/2009			
		C309_3906	2,590 KB	15/08/2009			
		C309_3907	2,768 KB	15/08/2009			
		C309_3908	3,265 KB	15/08/2009			
33		C309_3909	2,641 KB	15/08/2009	10985	11901	View S along east side of Lobe C. Note minor erosion along toe.
34		C309_3910	3,558 KB	15/08/2009	10991	11905	View W along north side of Lobe C
		C309_3911	3,327 KB	15/08/2009	10935	11901	View N at minor depression on southeast cover of landfill
		C309_3912	4,441 KB	15/08/2009	10953	11903	View S at minor depression on southeast side of landfill
35		C309_3913	4,898 KB	15/08/2009	10945	11901	View S at minor depression on southeast side of landfill
Lobe D							
36		C309_3914	3,152 KB	15/08/2009	10932	11887	View E at west side of Lobe D
		C309_3916	2,855 KB	15/08/2009	10950	11890	View E at west side of Lobe D
37		C309_3917	2,893 KB	15/08/2009	10962	11892	View E at west side of Lobe D
		C309_3918	2,931 KB	15/08/2009	10978	11891	View E at west side of Lobe D
38		C309_3919	2,961 KB	15/08/2009	10995	11890	View E at west side of Lobe D
		C309_3920	2,855 KB	15/08/2009	11011	11888	View E at west side of Lobe D
39		C309_3921	2,830 KB	15/08/2009	11021	11886	View E at west side of Lobe D
40		C309_3922	2,222 KB	15/08/2009	11040	11861	Panoramic view SE to SW from north of Lobe D
		C309_3923	2,123 KB	15/08/2009			
		C309_3924	2,209 KB	15/08/2009			
		C309_3925	2,506 KB	15/08/2009			
41		C309_3926	3,860 KB	15/08/2009	11012	11838	View E at minor depression on northeast corner of Lobe D
42		C309_3927	3,004 KB	15/08/2009	10966	11847	Panoramic view S to W to N from mid east side of Lobe D.
		C309_3928	3,319 KB	15/08/2009			
		C309_3929	3,541 KB	15/08/2009			
		C309_3930	3,436 KB	15/08/2009			
		C309_3931	2,929 KB	15/08/2009			
		C309_3932	2,801 KB	15/08/2009			
		C309_3933	2,908 KB	15/08/2009			
		C309_3934	3,353 KB	15/08/2009			

LANDFILL VISUAL INSPECTION PHOTO LOG

Site Name: CAM-3, Shepherd Bay
Landfill: Northeast Landfill
Date Inspected: August 14, 2009
Inspected by: Andrew Passalis, P.Eng.

Photo (NELF-)	Thumbnail	Filename	Size (KB)	Date	Vantage Point Easting	Vantage Point Northing	Caption
Lobe E							
43		C309_3935	3,237 KB	15/08/2009	10920	11834	View E to N from southeast corner of Lobe E
		C309_3936	3,197 KB	15/08/2009			
		C309_3937	2,939 KB	15/08/2009			
		C309_3938	2,604 KB	15/08/2009			
44		C309_3939	4,239 KB	15/08/2009	10927	11825	View SE at linear depression on southeast corner of Lobe E
45		C309_3940	2,992 KB	15/08/2009	10909	11823	View N at linear depression on southeast corner of Lobe E
46		C309_3941	2,653 KB	15/08/2009	10911	11786	Panoramic view SW to NW at ponded water and depression on south side of Lobe E. Minor erosion noted on side of lobe.
		C309_3942	3,139 KB	15/08/2009			
		C309_3943	3,248 KB	15/08/2009			
		C309_3944	3,070 KB	15/08/2009			
47		C309_3945	2,614 KB	15/08/2009	10902	11742	Panoramic view W to NW from northeast of Lobe E
		C309_3946	2,559 KB	15/08/2009			
		C309_3947	2,496 KB	15/08/2009			
48		C309_3948	3,043 KB	15/08/2009	10937	11759	View W along north side of Lobe E
49		C309_3949	2,853 KB	15/08/2009	10950	11783	View N along east side of Lobe E
50		C309_3950	2,840 KB	15/08/2009	10943	11793	View S at large depression on south side of Lobe E. Ponding extends beyond toe in background.
51		C309_3951	4,532 KB	15/08/2009	10962	11790	View E at minor erosion on east side of Lobe E
52		C309_3952	3,669 KB	15/08/2009	10960	11775	View W at minor erosion on east side of Lobe E
53		C309_3953	3,367 KB	15/08/2009	11002	11779	View S along east side of Lobe E
54		C309_3954	3,513 KB	15/08/2009	11009	11782	View W along north side of Lobe E
		C309_3955	2,783 KB	15/08/2009	11014	11773	View SW at north side of Lobe E
55		C309_3956	2,126 KB	15/08/2009	11019	11787	View S at north side of Lobe E
56		C309_3957	2,190 KB	15/08/2009	11020	11804	View S at north side of Lobe E
		C309_3958	2,360 KB	15/08/2009	11015	11817	View SE at north side of Lobe E
57		C309_3959	2,690 KB	15/08/2009	11000	11810	View S along west side of Lobe E
Lobe F							
58		C309_3961	2,723 KB	15/08/2009	11029	11808	Panoramic view N to E from southeast of Lobe F
		C309_3962	2,971 KB	15/08/2009			
		C309_3963	3,101 KB	15/08/2009			
		C309_3964	3,132 KB	15/08/2009			
59		C309_3965	3,197 KB	15/08/2009	11023	11764	View NE along southeast side of Lobe F
60		C309_3966	2,924 KB	15/08/2009	11023	11772	View NW along south side of Lobe F
61		C309_3967	2,871 KB	15/08/2009	11036	11753	Panoramic view NW to SW from southeast corner of Lobe F
		C309_3968	3,068 KB	15/08/2009			
		C309_3969	3,114 KB	15/08/2009			
		C309_3970	3,115 KB	15/08/2009			
62		C309_3971	2,582 KB	15/08/2009	11088	11760	View S along east side of Lobe F. Note ponding along northeast toe.
63		C309_3972	3,280 KB	15/08/2009	11094	11765	View W along north side of Lobe F. Note poinding along northeast toe.
64		C309_3973	2,631 KB	15/08/2009	11066	11784	View NE at ponding northeast of Lobe F
		C309_3974	2,796 KB	15/08/2009			
65		C309_3975	3,323 KB	15/08/2009	11082	11808	View NE along north side of Lobe F
66		C309_3976	2,927 KB	15/08/2009	11075	11809	View SE along west side of Lobe F
67		C309_3977	2,775 KB	15/08/2009	11118	11797	Panoramic view SE to SW from northwest of Lobe F. Note significant ponding northeast of lobe.
		C309_3978	2,319 KB	15/08/2009			
		C309_3979	2,309 KB	15/08/2009			

LANDFILL VISUAL INSPECTION PHOTO LOG

Site Name: CAM-3, Shepherd Bay
Landfill: Northeast Landfill
Date Inspected: August 14, 2009
Inspected by: Andrew Passalis, P.Eng.

Photo (NELF-)	Thumbnail	Filename	Size (KB)	Date	Vantage Point Easting	Vantage Point Northing	Caption
Lobe G							
68		C309_3981	3,360 KB	15/08/2009	11083	11825	View SW along southeast side of Lobe G
69		C309_3982	3,002 KB	15/08/2009	11089	11820	View ESE along east side of Lobe G
		C309_3983	2,719 KB	15/08/2009	11091	11828	View N across cover of Lobe G
70		C309_3984	2,593 KB	15/08/2009	11092	11836	View N across cover of Lobe G
		C309_3985	2,478 KB	15/08/2009	11093	11844	View N across cover of Lobe G
71		C309_3986	2,440 KB	15/08/2009	11096	11855	View N across cover of Lobe G
		C309_3987	2,593 KB	15/08/2009	11098	11867	View N across cover of Lobe G
72		C309_3988	2,538 KB	15/08/2009	11101	11880	View N across cover of Lobe G
		C309_3989	2,521 KB	15/08/2009	11103	11891	View N across cover of Lobe G
73		C309_3990	2,816 KB	15/08/2009	11134	11893	View SW at southeast corner of Lobe G
74		C309_3991	3,044 KB	15/08/2009	11197	11884	View WNW along west side of Lobe G. Note isolated ponding at toe.
75		C309_3992	3,419 KB	15/08/2009	11205	11883	View NW at drainage feature located west of Lobe G
76		C309_3993	2,522 KB	15/08/2009	11228	11865	View S across cover of Lobe G
		C309_3994	2,194 KB	15/08/2009	11225	11858	View S across cover of Lobe G
		C309_3995	2,135 KB	15/08/2009	11221	11851	View S across cover of Lobe G
77		C309_3996	1,938 KB	15/08/2009	11217	11845	View S across cover of Lobe G
		C309_3997	2,668 KB	15/08/2009	11204	11840	View S across cover of Lobe G
78		C309_3998	2,143 KB	15/08/2009	11198	11833	View S across cover of Lobe G
		C309_3999	2,048 KB	15/08/2009	11195	11824	View S across cover of Lobe G
79		C309_4000	1,857 KB	15/08/2009	11192	11818	View S across cover of Lobe G
		C309_4001	2,381 KB	15/08/2009	11189	11809	View S across cover of Lobe G
80		C309_4002	2,411 KB	15/08/2009	11186	11801	View S along east side of Lobe G
81		C309_4003	3,253 KB	15/08/2009	11192	11799	View W along north side of Lobe G
82		C309_4004	3,641 KB	15/08/2009	11202	11809	View S at minor erosion on northeast side of Lobe G
		C309_4005	2,573 KB	15/08/2009	11252	11856	Panoramic view SW to SE from northwest of Lobe G
		C309_4006	2,639 KB	15/08/2009			
		C309_4007	2,833 KB	15/08/2009			
83		C309_4008	2,292 KB	15/08/2009	11265	11870	View SE from northwest of Lobe G
		C309_4009	1,987 KB	15/08/2009			

LANDFILL VISUAL INSPECTION PHOTO LOG

Site Name: CAM-3, Shepherd Bay
Landfill: Northeast Landfill
Date Inspected: August 14, 2009
Inspected by: Andrew Passalis, P.Eng.

Photo (NELF-)	Thumbnail	Filename	Size (KB)	Date	Vantage Point		Caption
					Easting	Northing	
Lobe H							
85		C309_4010	2,832 KB	15/08/2009	11267	11860	View NE to E from southeast of Lobe H
		C309_4011	2,923 KB	15/08/2009			
		C309_4012	2,808 KB	15/08/2009	11259	11837	View N to NW from southeast of Lobe H
		C309_4013	2,879 KB	15/08/2009			
86		C309_4014	2,796 KB	15/08/2009	11269	11828	View NE along east side of Lobe H
		C309_4015	3,344 KB	15/08/2009	11310	11810	View SW along east side of Lobe H
87		C309_4016	2,327 KB	15/08/2009	11330	11809	View S to SW from northeast of Lobe H
		C309_4017	2,714 KB	15/08/2009			
88		C309_4018	2,657 KB	15/08/2009	11324	11830	View SW along west side of Lobe H
89		C309_4019	4,563 KB	15/08/2009	11302	11831	View NW at minor erosion on west side of Lobe H

8 USAF LANDFILL

8.1 BACKGROUND AND MONITORING PROGRAM

The USAF Landfill is constructed approximately 2.5 km northeast of the main station area and 1.2 km northeast of the airstrip along the east side of the Winter Water Lake road. The landfill, including engineered cover, encompasses an area of approximately 15,000 m^2 with the final cover extending approximately 4-5 m above existing grade. Based on existing information regarding this landfill as a source of contamination, its potential migration pathways and receptors, the USAF Landfill was classified as moderate potential environmental risk.

The remediation consisted of excavating contaminated soil downgradient of the landfill, and installation of a modified leachate containment system that would effectively encapsulate Tier II contaminated soil present on the surface of the landfill. The design consisted of a synthetic liner system and the placement of sufficient granular fill at surface to cause aggradation of permafrost through the landfill contents. Four groundwater monitoring wells are installed at the landfill perimeter and four thermistors are installed within the landfill footprint to monitor freeze back conditions.

The long term monitoring plan consists of visual monitoring, collection of soil and groundwater samples and monitoring of subsurface ground temperatures.

The 2009 monitoring of this landfill includes visual inspection to verify for evidence of settlement or erosion, collection of soil and groundwater samples to monitor for the presence of leachate and retrieval of data from the thermistors. Groundwater monitoring wells, soil sample and thermistor installation locations are identified on Figure CAM-3.7.

Soil and groundwater at all stations and monitoring wells were sampled as specified. Groundwater from each of the monitoring wells was sampled as per the ToR, with the exception of MW-12 which was dry at the time of sampling.

8.2 VISUAL INSPECTION REPORT

The visual inspection of the USAF Landfill was conducted on August 13 and 14, 2009. The Visual Inspection Checklist/Report has been completed as per the ToR and is included as Table XXIII of this report.

Settlement
Indications of settlement were not noted.

Erosion
Evidence of minor surface erosion was noted in two areas (Feature A) on the east facing slope of the landfill. Both locations consisted of shallow surface erosion that extended perpendicular to the slope from crest to toe. The areas affected appear to be self-armouring and have an acceptable severity rating. Overall, the facility cover appears stable and consistent with observations with the 2008 inspection.

Frost Action
Several thin tension cracks were noted extending parallel to the south facing slope side of the landfill (Feature C). The frequency and magnitude of cracks appear to be consistent with that observed in 2008. No other indications of desiccation/movement were noted.

Evidence of Burrowing Animals
Indications of burrowing animals were not noted.

Re-establishment of Vegetation
Indications of vegetation were not noted.

Staining
Areas of staining were not observed at the time of the inspection.

Seepage Points
Minor ponding was noted along the north side of the landfill and in lower lying areas to the east with no evidence of direct seepage from the landfill noted.

Debris
A partially exposed metal drum (Feature B) was noted on the north facing slope of the landfill. The crushed drum was embedded in the landfill cover with a 0.4 x 0.4 m area exposed at surface.

Presence/Condition of Monitoring Instruments
All monitoring well and thermistor installations were found to be in good condition at the facility.

Other Features of Note
There was no other feature of note.

Discussion
The USAF Landfill performance with respect to containment of the debris within the landfill is rated as acceptable. Visual inspection report, including supporting photos and drawing, is presented in the following pages.

Table XXIII: Visual Inspection Checklist / Report – USAF Landfill

DEW LINE CLEANUP: POST-CONSTRUCTION - LANDFILL MONITORING
VISUAL INSPECTION CHECKLIST
INSPECTION REPORT – PAGE 1 OF 2

SITE NAME: CAM-3 Shephard Bay
LANDFILL DESIGNATION: USAF Landfill (Leachate Containment Landfill)
DATE OF INSPECTION: August 15, 2009
DATE OF PREVIOUS INSPECTION: August 4, 2008
INSPECTED BY: A. Passalis
REPORT PREPARED BY: A. Passalis
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.

LANDFILL VISUAL INSPECTION

Site Name: CAM-3 Shepherd Bay
Landfill: USAF Landfill
Designation:
Date Inspected: August 14, 2009
Inspected by: Andrew Passalis, P.Eng.
Sila Remediation Inc.

Signature: 

TABLE XVIII: CAM-3 USAF Landfill
Page 2/2

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	Not Observed	N/A	N/A	N/A	N/A
Erosion	Yes	FEATURE A See Figure CAM-3.7 (east slope)	15 m	0.5 m	5 - 10 cm	Isolated	Two aeras of minor surface eroson on side slope	USAF-50, 51, 53, 54	Acceptable	Surface runoff has resulted in erosion of two shallowl channels on the east slope of the landfill. Slope appears stable and self armouring.
Frost Action	Yes	FEATURE C See Figure CAM-3.7 (south and east slopes)	15 - 60 m	2 - 6 mm	Unknown	Occasional (<2%)	Several tension cracks extending parallel to slope	USAF-37 to 49	Not Observed	Cracks appear to be consistent with 2008 observations. Some infilling. No further indications of desication/movement noted.
Animal Burrows	No	N/A	N/A	N/A	N/A	Not Observed	N/A	N/A	N/A	N/A
Vegetation	No	N/A	N/A	N/A	N/A	Not Observed	N/A	N/A	N/A	N/A
Staining	No	N/A	N/A	N/A	N/A	Not Observed	N/A	N/A	N/A	N/A
Vegetation Stress	No	N/A	N/A	N/A	N/A	Not Observed	N/A	N/A	N/A	N/A
Seepage Points	No	N/A	N/A	N/A	N/A	Not Observed	N/A	N/A	N/A	N/A
Debris Exposed	Yes	FEATURE B See Figure CAM-3.7 (north slope)	0.4 m	0.4 m	Unknown	Isolated	Crushed metal drum	USAF-55, 56	Acceptable	Partiall exposed on slope.
Presence/Condition of Monitoring Instruments	Yes	See Figure CAM 3.7	N/A	N/A	N/A	Not Observed	o VT-4 and MW-12 to	USAF-1, 2, 11, 12 and 4, 6, 8, 10	Acceptable	VT-3 datalogger not present in casing. The protective casings for all instuments were also in good condition. and all data was downloaded with exception of VT-3. Low battery and possible hardware problems prevented downloading of VT 3. VT-3 datalogger brought south for servicing.
Other Features of Note:	No	N/A	N/A	N/A	N/A	Not Observed	N/A	N/A	N/A	N/A
Additional Photos	Yes	See Figure CAM-3.7 and Photographic Record	N/A	N/A	N/A	N/A	General Photographic Record	N/A	N/A	General photos for documentation, no features of note.
Overall Landfill Performance:	**Acceptable**									

8.3 PRELIMINARY STABILITY ASSESSMENT

The Preliminary Stability Assessment for USAF Landfill has been completed as per the ToR and is included as Table XXIV hereafter.

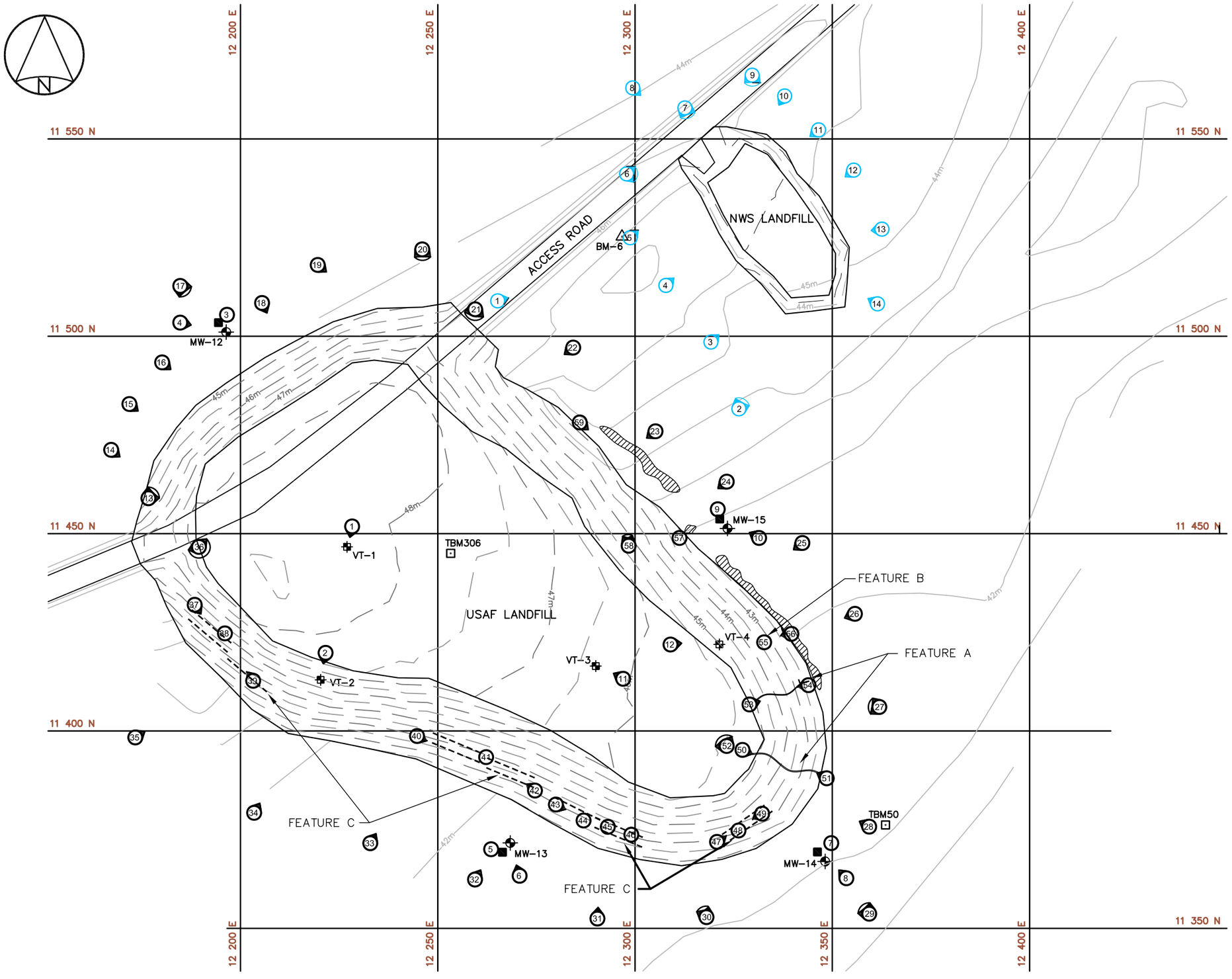
Table XXIV: Preliminary Stability Assessment – USAF Landfill

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

8.4 LOCATION PLAN

The Location Plan for the USAF Landfill has been completed as per the ToR and is presented in Figure CAM-3.7.



LEGEND

- PICTURE NUMBER VIEWPOINT (NWS)
- PICTURE NUMBER VIEWPOINT (USAF)
- CM27 SURVEY CONTROL MONUMENT
- TBM20 TEMPORARY BENCHMARK
- MONITORING WELL LOCATION
- VT VERTICAL THERMISTOR
- PONDING
- EROSION
- CRACKS (3–6 mm WIDE)

NO.	VERSION	DATE	BY	VERIF.	APPR.
A	FINAL VERSION	10–02–26	P.L.	A.P.	J.P.P.

Construction de Défense Canada
Defence Construction Canada

FINAL REPORT
COLLECTION OF LANDFILL MONITORING DATA
CAM-3, SHEPHERD BAY, NUNAVUT

USAF AND NWS LANDFILLS

SITE REMEDIATION SOLUTIONS

Biogenie, a division of EnGlobe Corp.
4495 Wilfrid-Hamel Blvd., Suite 200
Quebec (Quebec) CANADA G1P 2J7
Phone: (418) 653-4422 Fax.: (418) 653-3583

MEASUREMENT UNIT	SCALE:	DATE (month–year):
Meter	1 : 1,000	FEBRUARY 2010
DRAWN BY: P. LÉGARÉ	VERIFIED BY: A. PASSALIS	APPROVED BY: J.–P. PELLETIER
PROJECT NO: CD9229_001_160	DRAWING NO: CD9229_001_160-CAM-3_7	PAGE PL

FIGURE CAM-3.7

G:\CD9229\2009\CAM-3\FINAL\CD9229_001_160-CAM-3_7.dwg, PL, 2010-02-26 15:17:57

8.5 PHOTOGRAPHIC RECORDS

The Photographic Record for USAF Landfill has been completed as per the ToR and is included as Table XXV hereafter. The Photographic Record only contains an index and “thumbnail” photographs. Full-sized photographs are contained in the Addendum DVD-ROM.

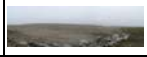
LANDFILL VISUAL INSPECTION PHOTO LOG

Site Name: CAM-3, Shepherd Bay
Landfill: USAF Landfill
Date Inspected: August 14, 2009
Inspected by: Andrew Passalis, P.Eng.

Photo (USAF-)	Thumbnail	Filename	Size (KB)	Date	Vantage Point Easting	Vantage Point Northing	Caption
		C309_3438	1,976	14/08/2009	12223	11450	VT-1
1		C309_3439	2,112	14/08/2009	12228	11451	View S at VT-1
2		C309_3440	2,300	14/08/2009	12221	11419	View S at VT-2
		C309_3441	1,819	14/08/2009	12215	11415	View SW at VT-2
3		C309_3442	4,441	14/08/2009	12193	11502	C309-12W
4		C309_3444	2,296	14/08/2009	12184	11503	View E at MW-12
5		C309_3445	4,267	14/08/2009	12265	11370	C309-13W
6		C309_3446	2,607	14/08/2009	12270	11363	View NW at MW-13
7		C309_3447	4,324	14/08/2009	12347	11370	C309-14W
8		C309_3448	2,124	14/08/2009	12353	11362	View NW at MW-14
9		C309_3449	3,979	14/08/2009	12320	11452	C309-15W
10		C309_3450	2,119	14/08/2009	12331	11448	View NW at MW-15
11		C309_3451	2,384	14/08/2009	12296	11413	View NW at VT-3
		C309_3452	2,237	14/08/2009	12287	11420	View SW at VT-3
12		C309_3453	2,251	14/08/2009	12308	11421	View E at VT-4
13		C309_3454 C309_3455 C309_3456	2,402 2,319 2,222	14/08/2009 14/08/2009 14/08/2009	12176	11458	Panoramic view N to NE along west side of landfill
14		C309_3457	2,283	14/08/2009	12167	11471	View SE at west side of landfill
15		C309_3458	2,553	14/08/2009	12172	11482	View SE at west side of landfill
16		C309_3459	2,457	14/08/2009	12180	11493	View SE at west side of landfill
		C309_3460	2,187	14/08/2009	12195	11502	View SE at west side of landfill
17		C309_3461 C309_3462 C309_3463	2,155 2,136 2,021	14/08/2009 14/08/2009 14/08/2009	12183	11514	Panoramic view E to S from west side of landfill
18		C309_3464	2,293	14/08/2009	12205	11508	View SE at east side of landfill
19		C309_3465	2,324	14/08/2009	12219	11518	View SE at east side of landfill
20		C309_3466 C309_3467 C309_3468	2,507 2,394 2,353	14/08/2009 14/08/2009 14/08/2009	12246	11522	Panoramic view SE to SW from northwest of landfill
21		C309_3471 C309_3472 C309_3473 C309_3474	2,000 2,354 2,478 2,462	14/08/2009 14/08/2009 14/08/2009 14/08/2009	12259	11506	Panoramic view SE to SW from access road on northwest side of landfill
22		C309_3476	2,123	14/08/2009	12284	11497	View SW at east side of landfill
		C309_3477	2,003	14/08/2009	12293	11487	View SW at east side of landfill

LANDFILL VISUAL INSPECTION PHOTO LOG

Site Name: CAM-3, Shepherd Bay
Landfill: USAF Landfill
Date Inspected: August 14, 2009
Inspected by: Andrew Passalis, P.Eng.

Photo (USAF-)	Thumbnail	Filename	Size (KB)	Date	Vantage Point		Caption
					Easting	Northing	
23		C309_3478	2,178	14/08/2009	12305	11475	View SW at east side of landfill
		C309_3479	2,057	14/08/2009	12313	11468	View SW at east side of landfill
24		C309_3480	1,966	14/08/2009	12323	11462	View SW at east side of landfill
		C309_3481	1,826	14/08/2009	12333	11455	View SW at east side of landfill
25		C309_3482	1,841	14/08/2009	12342	11447	View W at east side of landfill
		C309_3483	1,810	14/08/2009	12349	11439	View W at east side of landfill
26		C309_3484	1,846	14/08/2009	12355	11429	View W at east side of landfill
		C309_3485	1,883	14/08/2009	12361	11416	View W at east side of landfill
27		C309_3486	1,818	14/08/2009	12361	11406	Panoramic view NW to SW from southeast of landfill
		C309_3487	1,928	14/08/2009			
		C309_3488	1,829	14/08/2009			
		C309_3489	2,075	14/08/2009	12361	11390	View W at east side of landfill
28		C309_3490	2,148	14/08/2009	12359	11375	View W at east side of landfill
29		C309_3491	1,731	14/08/2009	12359	11353	Panoramic view W to N from southeast of landfil. MW-14 in view.
		C309_3492	2,010	14/08/2009			
		C309_3493	2,054	14/08/2009			
		C309_3494	2,169	14/08/2009	12334	11357	View NW at south side of landfill
30		C309_3495	2,112	14/08/2009	12318	11352	Panoramic view N to W along south side of landfill
		C309_3496	2,086	14/08/2009			
		C309_3497	1,919	14/08/2009			
		C309_3498	2,120	14/08/2009	12302	11352	View N at south side of landfill
31		C309_3499	2,080	14/08/2009	12290	11352	View N at south side of landfill
		C309_3500	2,109	14/08/2009	12274	11356	View NE at south side of landfill
32		C309_3501	2,159	14/08/2009	12259	11362	View NE at south side of landfill
		C309_3502	2,164	14/08/2009	12245	11366	View NE at south side of landfill
33		C309_3503	2,157	14/08/2009	12232	11371	View NE at south side of landfill
		C309_3504	2,157	14/08/2009	12221	11375	View NE at south side of landfill
34		C309_3505	2,242	14/08/2009	12203	11379	View NE at south side of landfill
		C309_3506	2,292	14/08/2009	12185	11386	View NE at south side of landfill
35		C309_3507	2,229	14/08/2009	12173	11398	View NE at south side of landfill
		C309_3508	2,221	14/08/2009	12161	11420	Panoramic view N to E at west end of landfill. VT-2 visible on right.
		C309_3509	2,113	14/08/2009			
		C309_3510	2,137	14/08/2009			
36		C309_3511	2,505	14/08/2009	12189	11446	Panoramic view NE to S from access road on southwest corner of landfill
		C309_3512	2,609	14/08/2009			
		C309_3513	2,704	14/08/2009			
		C309_3514	2,903	14/08/2009			
		C309_3515	2,935	14/08/2009			
		C309_3516	2,614	14/08/2009	12189	11446	Panoramic view S to SW from access road on southwest corner of landfill
		C309_3517	2,512	14/08/2009			

LANDFILL VISUAL INSPECTION PHOTO LOG

Site Name: CAM-3, Shepherd Bay
Landfill: USAF Landfill
Date Inspected: August 14, 2009
Inspected by: Andrew Passalis, P.Eng.

Photo (USAF-)	Thumbnail	Filename	Size (KB)	Date	Vantage Point		Caption
					Easting	Northing	
37		C309_3518	3,274	14/08/2009	12188	11431	View SE at tension crack on west corner of landfill, VT-2 in left background.
38		C309_3519	3,651	14/08/2009	12196	11424	Close up view of tension crack on west corner of landfill
39		C309_3520	3,961	14/08/2009	12203	11413	View NW at tension crack on west corner of landfill
40		C309_3521	3,825	14/08/2009	12245	11399	View SE at tension cracks extending along west side of landfill.
41		C309_3522	4,084	14/08/2009	12262	11394	Close up view of tension crack on west corner of landfill
42		C309_3523	3,102	14/08/2009	12275	11385	View NW at tension crack on west corner of landfill, VT-2 in left background.
43		C309_3524	4,086	14/08/2009	12280	11381	View SE at tension crack on west corner of landfill
44		C309_3525	2,701	14/08/2009	12287	11377	Close up view of tension cracks extending along west side of landfill
45		C309_3526	4,097	14/08/2009	12293	11376	Close up view of tension cracks extending along west side of landfill
46		C309_3527	4,062	14/08/2009	12298	11373	Close up view of tension cracks extending along west side of landfill
47		C309_3528	4,195	14/08/2009	12321	11372	View NE at tension crack on west corner of landfill
48		C309_3529	4,287	14/08/2009	12326	11375	Close up view of tension crack on southeast corner of landfill
49		C309_3530	4,284	14/08/2009	12332	11379	View SW at tension crack on west corner of landfill
50		C309_3531	4,195	14/08/2009	12327	11395	View SE at minor erosion on east slope of landfill
51		C309_3532	3,803	14/08/2009	12349	11388	View NW at minor erosion on east slope of landfill
52		C309_3533 C309_3534 C309_3535 C309_3536	2,645 2,477 2,408 2,456	14/08/2009 14/08/2009 14/08/2009 14/08/2009	12323	11396	Panoramic view W to NE from east end of landfill. VT-1 and 3 visible in centre back and VT-4 on right.
53		C309_3537	2,503	14/08/2009	12329	11407	View E at minor erosion on east end of landfill
54		C309_3538	3,677	14/08/2009	12344	11412	View W at minor erosion on east end of landfill
55		C309_3539	3,045	14/08/2009	12333	11422	Partially exposed crushed drum on northeast slope of landfill
56		C309_3540	4,216	14/08/2009	12340	11425	View W at partially exposed drum on northeast slope of landfill
57		C309_3541	2,465	14/08/2009	12312	11450	Ponding at northeast toe of landfill. Bacterial sheen noted on surface of water.
58		C309_3542 C309_3543	3,584 2,850	14/08/2009 14/08/2009	12269	11462	View N-NW at ponded water along northeast toe of landfill
		C309_3544 C309_3545 C309_3546 C309_3547 C309_3548 C309_3549	3,023 2,740 2,929 2,757 2,706 2,513	14/08/2009 14/08/2009 14/08/2009 14/08/2009 14/08/2009 14/08/2009	12269	11462	Panoramic view E to S to W from east side of landfill. Note ponded water along northeast toe (left side of photo).
59		C309_3550	2,537	14/08/2009	12285	11478	View SE at ponded water along northeast toe of landfill

8.6 THERMAL MONITORING DATA

All thermistors installed at the USAF Landfill were inspected and found to be in good condition, with the exception of the datalogger at VT-1 (Serial # 02020211) which would not communicate with the field computer. On-site troubleshooting and discussions with the manufacturers' technical representative indicated the datalogger batteries had likely failed during the 2008/09 monitoring period, in addition to a possible hardware failure that could not be resolved on-site. The VT-1 unit was consequently disconnected and shipped south for repair. Further assessment by Lakewood Systems (manufacturer) could not retrieve any 2008-09 monitoring data from the VT-1 unit. In addition, the datalogger for the VT-4 location was reportedly removed from site during the 2008 assessment and not provided for reinstallation in 2009

Data from thermistors VT-2 and VT-3 was successfully retrieved and all analogues/thermocouples were observed to be functioning properly at the time of the inspection. Further review of the downloaded data identified no errors in temperature readings at these locations. All clocks exhibited slight drift and were synchronized using the Prolog software

Inspection of the datalogger batteries indicated a manufacturer's installation date of June 2005, inconsistent with the battery installation date indicated on the 2008 Thermistor Annual Maintenance Reports. It is recommended that all thermistor batteries undergo replacement during the next monitoring period scheduled for 2010.

8.7 LANDFILL TEMPERATURE DATA FROM DATALOGGERS

Manual resistive and temperature data readings were 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 included in the report. A complete datalogger RAW data set for 2008-2009 period has been forwarded to DCC as per the ToR.

8.8 SOIL SAMPLE ANALYTICAL DATA

The soil chemical analysis results and the evaluation of the analytical data for the 2009 USAF Landfill samples are presented in Tables XXVI and XXVII below. Field and inter-laboratory duplicates collected as part of the QA/QC program are presented in Appendix C at the end of this report.

Table XXVI: Soil Chemical Analysis Results – USAF Landfill

Sample #	Location	Depth (cm)	Cu [mg/kg]	Ni [mg/kg]	Co [mg/kg]	Cd [mg/kg]	Pb [mg/kg]	Zn [mg/kg]	Cr [mg/kg]	As [mg/kg]	Hg [mg/kg]	PCBs [µg/g]	F1 C_8-C_{10} [mg/kg]	F2 C_{10}-C_{16} [mg/kg]	F3 C_{16}-C_{34} [mg/kg]	TPH C_6-C_{34} [mg/kg]
C309-12WA	MW-12	0-15	<5	<1	<1	<0.1	1	<10	2	<1	<0.05	<0.01	<12	<10	27	27
C309-12WB		40-50	<5	<1	<1	<0.1	<1	<10	2	<1	<0.05	<0.01	<12	13	23	36
C309-13WA	MW-13	0-15	<5	10	1	<0.1	2	<10	22	<1	<0.05	<0.01	<12	<10	20	20
C309-13WB		40-50	<5	5	2	<0.1	3	<10	11	1	<0.05	<0.01	<12	<10	<10	ND
C309-14WA	MW-14	0-15	6	18	4	<0.1	6	14	38	3	<0.05	<0.01	<12	<10	13	13
C309-14WB		40-50	6	12	4	<0.1	5	17	23	2	<0.05	<0.01	<12	<10	10	10
C309-15WA	MW-15	0-15	<5	13	2	<0.1	3	<10	28	2	<0.05	<0.01	<12	<10	21	21
C309-15WB		40-50	<5	38	2	<0.1	3	<10	84	1	0.05	<0.01	<12	<10	12	12
C309-BD2	C309-13WB	40-50	5	10	3	<0.1	5	13	19	2	<0.05	<0.01	<12	<10	14	14

TPH: Sum of the concentrations of F1, F2 and F3. Concentrations below method detection limits are excluded from the total.
ND: Not Detected

S/P/CD/9229/T/09-Soil and GW-results(Soil-USAF).xls

Table XXVII: Evaluation of 2009 Soil Analytical Data – USAF Landfill

Parameter	2009
Copper	Concentrations ranged between <5-6 mg/kg with detectable concentrations only noted at downgradient location MW-14 (surface and depth).
Nickel	Concentrations ranged between <1-38 mg/kg with a mean of 12.1. The most elevated concentration was observed at depth in MW-15 (downgradient location), whereas both shallow and depth samples at MW-12 (upgradient location) were below the detection limit.
Cobalt	Concentrations ranged between <1-4 mg/kg with a mean of 2. The most elevated concentration was observed at surface and depth in MW-14 (downgradient location), whereas both shallow and depth samples at MW-12 (upgradient location) were below the detection limit.
Cadmium	All reported concentrations were less than the method detection limit (0.1 mg/kg)
Lead	Concentrations ranged between <1-6 mg/kg with a mean of 3.3. The highest concentration of 5 mg/kg and 6 mg/kg were respectively noted at surface and depth at MW-14 (downgradient location). The lowest concentrations of 1 mg/kg and <1 mg/kg were noted at surface and depth at MW-12, upgradient of the landfill.
Zinc	All reported concentrations were less than the method detection limit (10 mg/kg), with the exception of downgradient location MW-14, which had concentrations of 14 mg/kg (surface) and 17 mg/kg (depth).
Chromium	Concentrations ranged between 2-84 mg/kg with a mean of 26.3. The most elevated concentration was observed at depth in MW-15 (downgradient location), whereas trace only concentrations were noted at the upgradient location MW-12.
Arsenic	Detectable concentrations ranging between 1-3 mg/kg were noted at all the majority of sample locations, with the exception of MW-12 and the surface sample at MW-13 which were below the method detection limit (1 mg/kg). The highest concentration of 3 mg/kg was noted at surface at MW-14 (downgradient location).
Mercury	All reported concentrations were less than the method detection limit (0.05 mg/kg)
PCBs	All reported concentrations were less than the method detection limit (0.01 mg/kg).
TPH	Concentrations ranged between 12-36 mg/kg with detectable F3 concentrations noted at the majority of surface and depth sample locations. The most elevated concentration was noted upgradient in MW-12 (27 and 36 mg/kg).

8.9 GROUNDWATER SAMPLE ANALYTICAL DATA

The groundwater chemical analysis results and the evaluation of analytical data for the 2009 USAF Landfill samples are presented in Tables XXVIII and XXIX. As noted above, MW-12 (upgradient location) was dry at the time of monitoring and consequently no groundwater samples were collected at this location. Groundwater samples collected as part of the QA/QC program are presented in Appendix C at the end of the report.

Table XXVIII: Groundwater Chemical Analysis Results – USAF Landfill

Sample #	Location	Cu [mg/L]	Ni [mg/L]	Co [mg/L]	Cd [mg/L]	Pb [mg/L]	Zn [mg/L]	Cr [mg/L]	As [mg/L]	Hg [µg/L]	PCBs [µg/L]	F1 C_6-C_{10} [mg/L]	F2 C_{10}-C_{16} [mg/L]	F3 C_{16}-C_{34} [mg/L]	TPH C_6-C_{34} [mg/L]
C309-13W	MW-13	0.011	0.013	0.0042	0.00038	0.0061	0.33	0.021	0.0035	<0.005	<0.05	<0.1	<0.1	<0.1	ND
C309-14W	MW-14	0.049	0.052	0.0046	0.00023	0.012	1.8	0.038	0.0045	0.015	<0.05	<0.1	<0.1	<0.1	ND
C309-15W	MW-15	0.025	0.044	0.0082	0.00051	0.011	0.044	0.084	0.0073	0.013	<0.05	<0.1	<0.1	<0.1	ND
C309-BD1W	C309-13W	0.0086	0.011	0.0034	0.00033	0.0047	0.27	0.017	0.0030	<0.005	<0.05	<0.1	<0.1	<0.1	ND

TPH: Sum of the concentrations of F1, F2 and F3. Concentrations below method detection limits are excluded from the total.
ND: Not Detected
S/P/CD/9229/T/09-Soil and GW-results(GW-USAF).xls

Table XXIX: Evaluation of 2009 Groundwater Analytical Data – USAF Landfill

Parameter	2009
Copper	Concentrations ranged between 0.011-0.049 mg/L, with the most elevated concentration noted at downgradient location MW-14.
Nickel	Concentrations ranged between 0.013-0.052 mg/L, with the highest and lowest concentrations noted at MW-14 and MW-13, respectively.
Cobalt	Concentrations ranged between 0.0042-0.0082 mg/L, with the highest and lowest concentrations noted at MW-15 and MW-13, respectively.
Cadmium	Concentrations ranged between 0.00023-0.00051 mg/L. The highest and lowest concentrations were noted at MW-15 and MW-14, respectively.
Lead	Concentrations ranged between 0.0061-0.012 mg/L, with elevated concentrations noted at MW-14 (0.012 mg/L) and MW-15 (0.011 mg/L).
Zinc	Concentrations ranged between 0.044-1.8 mg/L, spanning almost two orders of magnitude between the highest concentration at MW-14 and lowest concentration at MW-15.
Chromium	Concentrations ranged between 0.021-0.084 mg/L, with the highest concentration observed at MW-15, approximately 2-4x higher than the two other downgradient well locations.
Arsenic	Concentrations ranged between 0.0035-0.0073 mg/L, with the highest and lowest concentrations noted at MW-15 and MW-13, respectively.
Mercury	Concentrations ranged between <0.000005-0.000015 mg/L, with the highest concentration observed at MW-14 and lowest concentration at MW-13.
PCBs	All reported concentrations were less than the method detection limit (0.00005 mg/L).
TPH	All reported concentrations were less than the method detection limit (0.1 mg/L).

8.10 THERMISTOR ANNUAL MAINTENANCE REPORTS

The thermistor annual maintenance reports for VT-1 to VT-4 are presented in this section.

Thermistor Annual Maintenance Report

Contractor Name:	**Sila Remediation Inc.**	Inspection Date:	**14/08/2009**
Prepared By:	**A.Passalis**		

Thermistor Information

Site Name:	**CAM-3**	Thermistor Location		**USAF Landfill**			
Thermistor Number:	**VT-1**	Inclination		**Vertical**			
Install Date:	**08/18/2007**	First Date Event		**05/08/2008**	Last Date Event		**05/08/2008**
Coordinates and Elevation	N	**11447**	E	**12226.9**	Elev		**48.8**
Length of Cable (m)	**5.8**	Cable Lead Above Ground (m)	**3.10**	Nodal Points			**6**
Datalogger Serial #	**02020211**			Cable Serial Number			

Thermistor Inspection

	Good	Needs Maintenance	
Casing	**Yes**	**No**	
Cover	**Yes**	**No**	
Data Logger	**Yes**	**No**	
Cable	**Yes**	**No**	
Beads	**Yes**	**No**	
Battery Installation Date	**08/18/2008**		
Battery Levels	Main **-**	Aux **-**	

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	12.639	
2	12.367	
3	13.147	
4	14.574	
5	17.025	
6	18.585	

Bead	ohms	Degrees C

Observations and Proposed Maintenance

Unable to communicate with datalogger. Batteries and possible hardware malfunction. ULB-5 battery indicates a manufactured date of June 05 which contradicts last installation date information provided by previous maintenance report. Troubleshoot with manufacturer while on-site, however still unable to communicate. Bring datalogger south for diagnosis/repair.

Thermistor Annual Maintenance Report

Contractor Name:	**Sila Remediation Inc.**	Inspection Date:	**14/08/2009**
Prepared By:	**A.Passalis**		

Thermistor Information

Site Name:	**CAM-3**	Thermistor Location		**USAF Landfill**			
Thermistor Number:	**VT-2**	Inclination		**Vertical**			
Install Date:	**08/18/2007**	First Date Event		**05/08/2008**	Last Date Event		**05/08/2008**
Coordinates and Elevation	N	**11412.9**	E	**12220.3**	Elev		**46.6**
Length of Cable (m)	**6.7**	Cable Lead Above Ground (m)	**3.05**	Nodal Points			**8**
Datalogger Serial #	**02020216**			Cable Serial Number			

Thermistor Inspection

	Good	Needs Maintenance	
Casing	**Yes**	**No**	
Cover	**Yes**	**No**	
Data Logger	**Yes**	**No**	
Cable	**Yes**	**No**	
Beads	**Yes**	**No**	
Battery Installation Date	**08/18/2008**		
Battery Levels	Main **11.34**	Aux **11.31**	

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	12.802	6.0249
2	12.473	5.8042
3	13.375	4.1285
4	15.014	1.7364
5	16.474	-0.0597
6	17.567	1.3536
7	18.515	-2.4595
8	19.707	-3.6034

Bead	ohms	Degrees C

Observations and Proposed Maintenance

Auxillary battery level reading is fair. Suggest battery replacement during 2010 event.

Thermistor Annual Maintenance Report

Contractor Name:	**Sila Remediation Inc.**	Inspection Date:	**14/08/2009**
Prepared By:	**A.Passalis**		

Thermistor Information

Site Name:	**CAM-3**	Thermistor Location		**USAF Landfill**			
Thermistor Number:	**VT-3**	Inclination		**Vertical**			
Install Date:	**08/18/2007**	First Date Event		**05/08/2008**	Last Date Event		**05/08/2008**
Coordinates and Elevation	N	**11416.6**	E	**12289.8**	Elev		**46.4**
Length of Cable (m)	**6.8**	Cable Lead Above Ground (m)	**3.10**	Nodal Points			**8**
Datalogger Serial #	**02020213**			Cable Serial Number			

Thermistor Inspection

	Good	Needs Maintenance	
Casing	**Yes**	**No**	
Cover	**Yes**	**No**	
Data Logger	**Yes**	**No**	
Cable	**Yes**	**No**	
Beads	**Yes**	**No**	
Battery Installation Date	**08/18/2008**		
Battery Levels	Main **11.34**	Aux **12.41**	

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	12.505	5.8851
2	12.715	5.2563
3	13.686	3.6541
4	15.088	1.6711
5	16.503	-0.1205
6	17.631	-1.4099
7	18.990	-2.8583
8	21.59	-5.4601

Bead	ohms	Degrees C

Observations and Proposed Maintenance

Thermistor Annual Maintenance Report

Contractor Name:	**Sila Remediation Inc.**	Inspection Date:	**14/08/2009**
Prepared By:	**A.Passalis**		

Thermistor Information

Site Name:	**CAM-3**	Thermistor Location		**USAF Landfill**			
Thermistor Number:	**VT-4**	Inclination		**Vertical**			
Install Date:	**08/19/2007**	First Date Event		**05/08/2008**	Last Date Event		**05/08/2008**
Coordinates and Elevation	N	**11422.1**	E	**12321.3**	Elev		**45.1**
Length of Cable (m)	**6.5**	Cable Lead Above Ground (m)	**2.90**	Nodal Points			**8**
Datalogger Serial #	**00207019**			Cable Serial Number			

Thermistor Inspection

	Good	Needs Maintenance	
Casing	**Yes**	**No**	
Cover	**Yes**	**No**	
Data Logger	**Yes**	**No**	
Cable	**Yes**	**No**	
Beads	**Yes**	**No**	
Battery Installation Date	**08/18/2008**		
Battery Levels	Main **-**	Aux **-**	

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1		
2		
3		
4		
5		
6		
7		
8		

Bead	ohms	Degrees C

Observations and Proposed Maintenance

Datalogger repaired over 2008/09 season, however not provided for re-installation during 2009 monitoring event.

8.11 MONITORING WELL SAMPLING/INSPECTION LOGS

The monitoring well sampling and inspection logs for MW-12 to MW-15 are included in this section.

2009 Monitoring Well Sampling Log (MW-12)

Site name:	CAM-3
Date of sampling event:	14-Aug-09
Names of samplers:	Andrew Passalis
Monitoring well ID:	MW-12
Facility:	USAF Landfill

Known Data	
Depth of installation* (m):	3.53
Length of screened section (m):	2.00
Depth to top of screen* (m):	0.53

Measured Data			
Condition of well:	Good	Procedure/Equipment:	Interface Meter
Procedure/Equipment:	Measuring Tape	Depth to water surface (m):	dry
Well height above ground (m):	0.38	Depth to bottom (m):	1.37
Diameter of well (m):	0.04	Free product thickness (mm):	-

Calculations		Notes	
Depth of water (m):	-	Evidence of sludge:	no
Well volume of water (L):	-	Evidence of freezing/siltation:	no
Static water level* (m):	-		
Length of screen collecting water (m):	-		

Development/Purging Information

Equipment: n/a

Date & Time	Volume Removed (L)	Temperature (^{o}C)	pH	Conductivity (µS/cm)	Turbidity (NTU)	Description of Water
-	-	-	-	-	-	-

Water Sampling		Soil Sampling	
Date & Time Collected:		Date and Time Collected:	14-Aug-09
Sample Number - Water:		Sample Number - Soil:	C309-12WA
			C309-12WB
Sample Containers:		Sample Containers:	2x125mL glass/bag
			2x125mL glass/bag
Procedure/Equipment:		Procedure/Equipment:	Steel & Plastic Trowels
Water Description:		Soil Description:	Brown sand, some silt, trace gravel
Sampling Equipment Decontamination (Y/N):	n/a	Sampling Equipment Decontamination (Y/N):	Y
Number Washes:	0	Number Washes:	1
Number Rinses:	0	Number Rinses:	1

*From ground surface. Unless this is stated, all measurments are assumed to be from the top of the casing.
n/a=not applicable
SS=Stainless Steel

2009 Monitoring Well Sampling Log (MW-13)

Site name:	CAM-3
Date of sampling event:	14-Aug-09
Names of samplers:	Andrew Passalis
Monitoring well ID:	MW-13
Facility:	USAF Landfill

Known Data	
Depth of installation* (m):	3.60
Length of screened section (m):	2.00
Depth to top of screen* (m):	0.60

Measured Data			
Condition of well:	Good	Procedure/Equipment:	Interface Meter
Procedure/Equipment:	Measuring Tape	Depth to water surface (m):	0.50
Well height above ground (m):	0.26	Depth to bottom (m):	1.62
Diameter of well (m):	0.04	Free product thickness (mm):	-

Calculations		Notes	
Depth of water (m):	1.13	Evidence of sludge:	no
Well volume of water (L):	1.21	Evidence of freezing/siltation:	no
Static water level* (m):	0.24		
Length of screen collecting water (m):	0.76		

Development/Purging Information

Equipment: Dedicated waterra tubing and foot valve

Date & Time	Volume Removed (L)	Temperature (^{o}C)	pH	Conductivity (µS/cm)	Turbidity (NTU)	Description of Water
14-Aug-08	1.4	2.7	7.2	1.1	37	C&C, N/O

Water Sampling		Soil Sampling	
Date & Time Collected:	14-Aug-09	Date and Time Collected:	14-Aug-09
Sample Number - Water:	C309-13W (BDW1)	Sample Number - Soil:	C309-13WA
			C309-13WB
Sample Containers:	2x250 mL plastic	Sample Containers:	2x125mL glass/bag
	4x250 mL & 2x1L amber		2x125mL glass/bag
	6x40 mL vials		
Procedure/Equipment:	Waterra tubing & foot valve YSI 556 Mulitmeter, Hach Turbidimeter	Procedure/Equipment:	Steel & Plastic Trowels
Water Description:	C&C, N/O	Soil Description:	Brown/grey sand, some gravel, wet @ 0.2
Sampling Equipment Decontamination (Y/N):	N, dedicated	Sampling Equipment Decontamination (Y/N):	Y
Number Washes:	0	Number Washes:	1
Number Rinses:	0	Number Rinses:	1

*From ground surface. Unless this is stated, all measurments are assumed to be from the top of the casing.
n/a=not applicable
SS=Stainless Steel

2009 Monitoring Well Sampling Log (MW-14)

Site name:	CAM-3
Date of sampling event:	14-Aug-09
Names of samplers:	Andrew Passalis
Monitoring well ID:	MW-14
Facility:	USAF Landfill

Known Data	
Depth of installation* (m):	3.51
Length of screened section (m):	2.00
Depth to top of screen* (m):	0.51

Measured Data			
Condition of well:	Good	Procedure/Equipment:	Interface Meter
Procedure/Equipment:	Measuring Tape	Depth to water surface (m):	0.70
Well height above ground (m):	0.43	Depth to bottom (m):	1.52
Diameter of well (m):	0.04	Free product thickness (mm):	-

Calculations		Notes	
Depth of water (m):	0.82	Evidence of sludge:	no
Well volume of water (L):	0.88	Evidence of freezing/siltation:	no
Static water level* (m):	0.27		
Length of screen collecting water (m):	0.58		

Development/Purging Information

Equipment: Dedicated waterra tubing and foot valve

Date & Time	Volume Removed (L)	Temperature (^{o}C)	pH	Conductivity (µS/cm)	Turbidity (NTU)	Description of Water
14-Aug-08	1.0	2.6	7.1	1.7	79	C&C, N/O

Water Sampling		Soil Sampling	
Date & Time Collected:	14-Aug-09	Date and Time Collected:	14-Aug-09
Sample Number - Water:	C309-14W	Sample Number - Soil:	C309-14WA
			C309-14WB
Sample Containers:	2x250 mL plastic	Sample Containers:	2x125mL glass/bag
	4x250 mL & 2x1L amber		2x125mL glass/bag
	6x40 mL vials		
Procedure/Equipment:	Waterra tubing & foot valve YSI 556 Mulitmeter, Hach Turbidimeter	Procedure/Equipment:	Steel & Plastic Trowels
Water Description:	C&C, N/O	Soil Description:	Grey silt, some sand, trace clay and gravel wet @ 0.45
Sampling Equipment Decontamination (Y/N):	N, dedicated	Sampling Equipment Decontamination (Y/N):	Y
Number Washes:	0	Number Washes:	1
Number Rinses:	0	Number Rinses:	1

*From ground surface. Unless this is stated, all measurments are assumed to be from the top of the casing.
n/a=not applicable
SS=Stainless Steel

2009 Monitoring Well Sampling Log (MW-15)

Site name:	CAM-3
Date of sampling event:	14-Aug-09
Names of samplers:	Andrew Passalis
Monitoring well ID:	MW-15
Facility:	USAF Landfill

Known Data	
Depth of installation* (m):	3.43
Length of screened section (m):	2.00
Depth to top of screen* (m):	0.43

Measured Data			
Condition of well:	Good	Procedure/Equipment:	Interface Meter
Procedure/Equipment:	Measuring Tape	Depth to water surface (m):	0.60
Well height above ground (m):	0.42	Depth to bottom (m):	1.65
Diameter of well (m):	0.04	Free product thickness (mm):	-

Calculations		Notes	
Depth of water (m):	1.05	Evidence of sludge:	no
Well volume of water (L):	1.13	Evidence of freezing/siltation:	no
Static water level* (m):	0.18		
Length of screen collecting water (m):	0.80		

Development/Purging Information

Equipment: Dedicated waterra tubing and foot valve

Date & Time	Volume Removed (L)	Temperature (^{o}C)	pH	Conductivity (µS/cm)	Turbidity (NTU)	Description of Water
14-Aug-08	1.2	1.9	7.2	2.0	43	C&C, N/O

Water Sampling		Soil Sampling	
Date & Time Collected:	14-Aug-09	Date and Time Collected:	14-Aug-09
Sample Number - Water:	C309-15W	Sample Number - Soil:	C309-15WA
			C309-15WB
Sample Containers:	2x250 mL plastic	Sample Containers:	2x125mL glass/bag
	4x250 mL & 2x1L amber		2x125mL glass/bag
	6x40 mL vials		
Procedure/Equipment:	Waterra tubing & foot valve YSI 556 Mulitmeter, Hach Turbidimeter	Procedure/Equipment:	Steel & Plastic Trowels
Water Description:	C&C, N/O	Soil Description:	Grey sand, some silt and gravel, wet @ 0.25
Sampling Equipment Decontamination (Y/N):	N, dedicated	Sampling Equipment Decontamination (Y/N):	Y
Number Washes:	0	Number Washes:	1
Number Rinses:	0	Number Rinses:	1

*From ground surface. Unless this is stated, all measurments are assumed to be from the top of the casing.
n/a=not applicable
SS=Stainless Steel

9 NWS LANDFILL

9.1 BACKGROUND AND MONITORING PROGRAM

The NWS Landfill is located east of the Winter Water Lake road approximately 60 m northeast of the USAF Landfill. With cover material, the single regrade area of the landfill encompasses a footprint of approximately 1,200 m^2 with the final cover extending approximately 0.75 m above the surrounding grade. Based on existing information regarding this landfill as a source of contamination, its potential migration pathways and receptors, the NWS Landfill was classified as low potential environmental risk. The remediation consisted of regrading with the placement of additional granular fill.

The long term monitoring plan consists of visual monitoring and periodic collection of soil samples. The 2009 monitoring of this landfill includes a visual inspection to assess landfill performance. There is no instrumentation installed at this landfill.

9.2 VISUAL INSPECTION REPORT

The visual inspection of the NWS Landfill was conducted on August 14, 2009. The Visual Inspection Checklist/Report has been completed as per the ToR and is included as Table XXX of this report.

Settlement
Indications of settlement were not noted.

Erosion
Indications of erosion were not noted.

Frost Action
Evidence of frost action was not noted.

Evidence of Burrowing Animals
Indications of burrowing animals were not noted.

Re-establishment of Vegetation
Evidence of vegetation was not noted.

Staining
Areas of staining were not observed at the time of the inspection.

Seepage Points
There is no seepage point observed at this landfill.

Debris
There was no debris noted.

Presence/Condition of Monitoring Instruments
There is no monitoring instrument installed at this landfill.

Other Features of Note
There was no other feature of note.

Discussion
The NWS Landfill performance with respect to containment of the debris within the landfill is rated as acceptable. A visual inspection report, including supporting photos and drawing, is presented in the following pages.

Table XXX: Visual Inspection Checklist / Report – NWS Landfill

DEW LINE CLEANUP: POST-CONSTRUCTION - LANDFILL MONITORING
VISUAL INSPECTION CHECKLIST
INSPECTION REPORT – PAGE 1 of 2

SITE NAME: CAM-3 Shephard Bay
LANDFILL DESIGNATION: NWS Landfill (Regrade Landfill)
DATE OF INSPECTION: August 14, 2009
DATE OF PREVIOUS INSPECTION: August 5, 2008
INSPECTED BY: A. Passalis
REPORT PREPARED BY: A. Passalis
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.

LANDFILL VISUAL INSPECTION

Site Name: CAM-3 Shepherd Bay
Landfill: NWS Landfill
Designation:
Date Inspected: August 14, 2009
Inspected by: Andrew Passalis, P.Eng.
Sila Remediation Inc.

Signature: 

TABLE XXIV: CAM-3 NWS LANDFILL
Page 2/2

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 Observed	N/A
Erosion	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observed	N/A
Frost Action	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observed	N/A
Animal Burrows	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observed	N/A
Vegetation	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observed	N/A
Staining	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observed	N/A
Vegetation Stress	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observed	N/A
Seepage Points	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observed	N/A
Debris Exposed	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observed	N/A
Presence/Condition of Monitoring Instruments	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observed	N/A
Other Features of Note:	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observed	N/A
Additional Photos	Yes	See Figure CAM-3.7 and Photographic Record	N/A	N/A	N/A	N/A	General Photographic Record	N/A	N/A	General photos for documentation, no features of note.
Overall Landfill Performance:	**Acceptable**									

9.3 PRELIMINARY STABILITY ASSESSMENT

The Preliminary Stability Assessment for NWS Landfill has been completed as per the ToR and is included as Table XXXI hereafter.

Table XXXI: Preliminary Stability Assessment – NWS 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

9.4 LOCATION PLAN

The Location Plan for the NWS Landfill has been completed as per the ToR and is presented in Figure CAM-3.7.

Figure 8 : CAM-3.8 Location Plan of NWS Landfill

9.5 PHOTOGRAPHIC RECORDS

The Photographic Record for the NWS Landfill has been completed as per the ToR and is included as Table XXXII hereafter. The Photographic Record contains only an index and “thumbnail” photographs. Full-sized photographs are contained in the Addendum DVD-ROM.

LANDFILL VISUAL INSPECTION PHOTO LOG

Site Name: CAM-3, Shepherd Bay
Landfill: NWS Landfill
Date Inspected: August 14, 2009
Inspected by: Andrew Passalis, P.Eng.

Photo (NWS-)	Thumbnail	Filename	Size (KB)	Date	Vantage Point Easting	Vantage Point Northing	Caption
1		C309_3469	2,323	14/08/2009	12265	11509	View E at NWS landfill from access road at USAF landfill
		C309_3470	2,235	14/08/2009			
2		C309_3552	2,614 KB	14/08/2009	12326	11482	Panoramic view N to E from southwest of landfill
		C309_3553	2,634 KB	14/08/2009			
		C309_3554	2,592 KB	14/08/2009			
3		C309_3555	2,597 KB	14/08/2009	12361	11508	View NE at west side of landfill
		C309_3556	2,529 KB	14/08/2009	12362	11527	View NE at west side of landfill
4		C309_3557	2,068 KB	14/08/2009	12355	11542	View NE at west side of landfill
		C309_3558	2,171 KB	14/08/2009	12346	11552	View NE at west side of landfill
5		C309_3559	2,337 KB	14/08/2009	12337	11560	View NE at west side of landfill
6		C309_3560	2,135 KB	14/08/2009	12329	11566	Panoramic view NE to SE from access road northwest of landfill
		C309_3561	2,392 KB	14/08/2009			
		C309_3562	2,528 KB	14/08/2009			
7		C309_3563	2,693 KB	14/08/2009	12312	11557	Panoramic view SW to SE from access road north of landfill
		C309_3564	2,593 KB	14/08/2009			
		C309_3565	2,556 KB	14/08/2009			
8		C309_3566	2,875 KB	14/08/2009	12300	11562	View SE from north side of access road north of landfill
9		C309_3567	2,647 KB	14/08/2009	12297	11541	Panoramic view SW to SE from access road northeast of landfill
		C309_3568	2,640 KB	14/08/2009			
		C309_3569	2,706 KB	14/08/2009			
10		C309_3570	2,495 KB	14/08/2009	12298	11524	View SW at east side of landfill
11		C309_3571	2,448 KB	14/08/2009	12302	11518	View SW at east side of landfill
12		C309_3572	2,650 KB	14/08/2009	12307	11512	View SW at east side of landfill
13		C309_3573	2,799 KB	14/08/2009	12313	11506	View W at east side of landfill
14		C309_3574	2,796 KB	14/08/2009	12319	11499	View NW at south side of landfill

APPENDIX A

Range of the Report and Limitation of Responsibilities

RANGE OF THE REPORT AND LIMITATION OF RESPONSIBILITIES

A – Recipient and Use

This report ("Report") was prepared by Biogenie S.R.D.C. Inc. ("Biogenie") 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 Biogenie 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.

Biogenie 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, Biogenie 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 Biogenie. Biogenie 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.

Biogenie 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 Biogenie’s.

APPENDIX B

Field Notes

CAM 3 SHEPHERD BAY
5°C OVERCAST, 30K-1h. NW.

TIER II DF.
MW-04 N SIDE (UP GRADIENT)

SLU = 0.51 ▽ - dry
FIP-Φ FROZENE 1.93m
1½" Φ. 10

VT-5 NE CORNER OF D F.
WP 135.
download data ✓
reset clock ✓
restart datalogger ✓

VT-7 SE CORNER
WP 136.
download data ✓
reset clock ✓
restart datalogger. ✓

SITE PLAN HAS VT-7 + VT-8
LOCATIONS MIXED UP.

LEVEL

VT-8 . SW CORNER.
WP 137
download data ✓
reset clock ✓
restart datalogger ✓

VT-6 NW CORNER
WP 138
download data ✓
reset clock ✓
restart data loggers ✓

MW-4. N. SIDE. WP 139.
3.5m N of MW.

0 - lt brown sand + gravel, med-cs gr, tr. fines some cbls, dry

C309-4WA 0-15.
B 40-50

MW-5 SW CORNER
WP 140

Slump 0.58 V = 0.773
FIP = 0 FROZEN = 1.162.
frost heaving around base
0.70m ⌀

3.4m S of MW

0 - TAN BRN SILT, some clay, tr. f. sand, ~~firm~~ soft, low plast, damp to wet @ 0.4m.

C309-5WA 0-15.
B 40-50

14/8/09

MAXXAM + EXOVA

T	2.3/2.5	2x250 pL
Cond	518/443	3x1L AM
pH	7.32/7.24	
TDS	3.36/2.88	
DO	4.4./4.5	
TURB	39.2/41.2	

LEVEL

MW-6 South central side
WP 141

slup Σ = 0.768
F/P = ϕ FROLENE 1.32
frost heave crond mw = 0.6m ϕ.
2.9 SSE of mw.

0 - BLACK ORGANICS, FIBROUS, ROOTLETS, WITH SILT, DAMP.
20 ~~GREY~~ BROWN SILT, SOME CLAY, LOW PLAST, DAMP TO WET.
0.38.

C309-6WA 0-15.
B 40-50 → BD1

14/8/09

			COLLECT
T	1.5/0.9/1.1		1 x 250 mL
Cond	1.08/0.95/0.92		1 x 1 L AM
pH	7.35/7.35/7.34		2 x 250 AM
TDS	0.70/0.61/0.60		3 x 40 mL
DO	4.3/3.4/2.4		
TURB	45.6/60.9/69.2		

64.17

MW-7 ESE SIDE OF DF
WP 142

slup 0.47 Σ = 1.086
F/P = ϕ Frolene 1.865

3.4 m NE of mw.
frost heave ~0.65 m ϕ

0 lt. brown silt, tr. clay + f. sand, some gravel size; non plastic, damp.

C309-7wA 0-15
B 40-50

		COLLECT
T	2.3/2.4/1.9	1 x 250 pl.
Cond.	0.84/0.96/1.03	1 x 1 L AM
pH	7.37/7.38/7.4	2 x 250 AM
TDS	0.55/0.62/0.67	3 x 40 AM
DO	12.6/10.9/10.6	
TURB	29.0/29.4/36.1	

6°C - Fog, 30-40km/h NW (50)

August 14, 2009

MW-12

USAF LF WP 147

WEST SIDE OF LF (UP GRADIENT).

Slug 0.38m ∇ - dry

FIP = 0 Frozen @ 1.365.

4.0m W of MW.

0 - BROWN SAND, MED GR., PG, SOME SILT @ 0-20, trace @ 20+, damp, tr. gravel, tr org @ 0-15

C309-12WA 0-15

12WA 40-50

(51)

MW-13 WP 148

SOUTH OF LF

Slug 0.26m ∇ = 0.495

FIP = 0 FROZEN 1.62m

34m SE OF MW.

0 - BRN/GREY SAND, TR SILT, DAMP-WET @ 0.2, SOME GRAVEL, PG,

C309-13WA 0-15

B 40-50 BD2.

		COLLECT + BOIL
T	2.8/3.4/2.7	
pH	7.05/7.13/7.17	2 x 250mL
Cond	1.03/1.02/1.07	2 x 1L AM
TDS	0.67/0.66/0.70	4 x 250m AM
DO	4.8/4.2/3.7	6 x 40mL
TURB	41.5/45.6/368	

dry after 2x250/1-1L AM

LEVEL

MW-14 SE SIDE OF LF
WP 149.

Slup = 0.43m $\bar{x}$ = 0.703
FIP= ∅ FROZEN @ 1.52.
2.5m N @ MW

0-5 BLACK ORGANICS, SOME SILT, TR SAND + GRAVEL, DAMP
5- GREY SILT, ~~CLAY~~ TR. CLAY, SOME WITH SAND, TR GRAVEL., DAMP, F.PM., TR. $\bar{x}$ @ 0.45.

C309-15WA 0-15
B 40-50

		COLLECT
T	2.4/2.6	1 x 250
cond	1.84/1.65	1 x 1L AM
pH	7.1/7.14	2 x 250 AM
TDS	1.20/1.07	3 x 40 mL
DO	3.7/3.2	
TURB.	65.4/79.2	

MW15 ENE OF LF.
WP 150.

Slup = 0.42. $\bar{x}$ = 0.597
FIP= ∅ FROZEN @ 1.65.

2.7m E @ MW.

0- grey sand, some silt & gravel, f-m gr., damp to wet @ 0.25 rootlets to 0.15

C309-15WA 0-15
B 40-50

		COLLECT
T	1.8/1.9	1 x 250 pL
Cond	2.43/2.03	1 x 1L AM
pH	7.18/7.18	2 x 250 AM
TDS	1.58/1.32	3 x 40 mL
DO	3.6/4.02.	
TURB	36.3/43.3	

COMPLETE MANUAL READINGS AT THERMISTORS. AT USAF LF.

NO DATALOGGER FOR VT-4, 2008 LOG INDICATES IT WAS RETURNED TO MANUFACTURER
↳ NOT PROVIDED BY DCC

VT-3 download ✓
reset clock ✓
restart datalogger ✓

VT-2 download ✓
reset clock ✓
restart datalogger ✓

VT-1 - unable to communicate -
Jenis @ Lakewood - hardware
problem + batteries

USAF LF

153 PAN NE-N.
154 E
155 E
156 SE
157 SE
158 PAN E-SSE @ UPGRAD SIDE.
159 SE
160 SE
161 PAN SE-SW.
162 NE @ NWS LF (FROM ROAD)
PAN SE-SW @ USAF
163 NE
164 SW.]"
165, 166, 167, 168, 169, 170, 171
172 - W
173 PAN W-NW ALON N-S SIDE
174 - W, 175 - NNW
176 PAN W-NW FROM END
177 NNW
178 PAN N-NW. ALONG S SIDE
179 N, 180, 181, 182
183 NE - to 188.
~~188~~ PAN N-E-SE from top
189 PAN NE-SE-SW. from top.

LEVEL

191 Start of cracks Photo SE
walk along crack 191 - 2nd starts
2-5m. consistent upl 2008
192 END OF CRACK. Mostly ⊥ to slope
Photo NW
Minor Ponding in low areas along S. toe, not localized.
photo SE
193 Start of another crack, parallel(?)
to 194, 3mm ↔.
195 - 1m long
196 Photo NW along sideslope
197 Start to 198, 3mm
199 2-4 mm, 2m long ⊥ slope
200 - 201 Series of cracks 3-6m ↔
⊥ to slope, photos E + W.
202-203 TOP SLOPE - MINOR EROSION
20-50 cm W, 5-10 cm Deep, top-toe.
203 PAN W-N.
204 MINOR EROSION TOP-TOE, 30 ↔ 5 ↕
205 EXPOSED METAL DEBRIS - RUSTED
CRUSHED CAN/DRUM?. 40cm x 40cm
AT SURFACE
PONDING ALONG NE TOE W/ BACTI IRON SHEEN
206 Small dugout, pond w/ sheen (rep)(typ)

207 NW-N - drainage along toe of LF. (N. side).
208 PAN E-SE-SW
209 SE - ponding/drainage

NW S LANDFILL

210 PAN NW-NE
211 NW
212 SW - 215
216 PAN SW-SE from ROAD.
217 PAN SE-S.
218 SE
219 PAN E-SE
220 BM-6
221 - 225 NE

TIER II D.F.

WP	
226	NE - E PAN
227 - 231	N. ⊥
232	NNW - N PAN
233	W - NW PAN
234	W. + 236 ⊥
237	PAN S - W.
238	241 S - ⊥
239	PAN E - S.
240 - 245	E - ⊥
246	N + E - @ TOE, START OF CRACKS 3mm. // CRACKS ~ 40cm apart ⊥ Slope 347 start @ 3 // cracks 50-70 apart 5mm Avg
248	EROSION. TOP-TOE, in equip tracks 60cm W x 2-5cm deep ALSO UPTO 5 // Cracks to E. of erosion ext. up 4-5 from toe.
249	down to 1 cracks 5-6mm
250	Erosion top toe 1.3m wide x 5cm photo N-, ALSO GW along Cracks
251	Uppermost crack S of 4 // down to 3 above toe 4-7mm.
252	Photo W.

252	Eastern most ext. of cracks, ext 5 up from toe, depth unknown, at least 10cm @ east end. - ph. E. + close up
253	W + N., crack along E side up to 50mm., close up. Ph. only 5m long, ph N + S. to 254
	Minor ponding along S toe in equip tracks, no staining
255	S + W
256	PUT HOLE / MINOR SETTLEMENT V. NW 1x1.5m x 0.15 ↕
257	W @ PONDING @
258 ←?	E + S. ALONG TOE.
260	MINOR SETTLEMENT @ CORNER PAN E - S, VIEW NW 2x1x15cm PREG SHAPE
261	MINOR SETTLEMENT 1m x 0.5 x 5cm.
262	" " V. - S 0.8x0.8x3cm.
263	PAN N-SE
264	MINOR EROSION TOP-TOE 50cm W, UP TO 2-4cm DEEP.
265	SETTLEMENT 1.2x0.8x10cm V. W
266	" 90 x 0.45 x 10-12cm V. W
267 + 268	tops of erosion ch.

LEVEL

Minor erosion along top & S end of LF surface

269 PAN W TO N - NE.

270 Settlement - isol. 80x40x3-5cm ph NE

271 35x60x0.1 " ph NE

272 PH - SE @ 270+271.

273 PAN S - NE.

BEACH LF

274 PAN NE - W. from ROAD.

275 SE TOE PAN NE - W.

276 MINOR SETTLEMENT 2m x 0.6 x 3cm
|| to slope

277 NE TOP PAN SW - NE.

278 SETTLEMENT. 5m ALONG TOP OF SLOPE x 0.6-1m W x 5cm D.

279 " 1m x 0.5 x 3-5cm. oval
V - SW.

280 V - SW + NE ALONG TOES. + track
DR. CH. / START OF DRAIN CH - 282

282 PAN SE, S - W, NW from toe

283. PONDING ON NE CORNER DOWNSL.

284 ARMOURING START

285 PAN SW - SE. WALK ALONG BOULDERS

286 END OF BLDRS. PAN NE - SE.

287 TOP. PAN NE - SE

288 CLENT OF SETTLEMENT. V - SW.
9x7m x 5-10cm.

289 N. PART OF SETTLEMENT, V-NW

290 MINOR SETTLE/EROS. V - NE
2.2 x 30cm x 2-3 cm.

291 2 loc. settlem 1x1.2x10cm / 0.6x0.8x5c
at top & armouring

292 - 293 Narrow erosion 25cm x 2-3cm & V - SE/NW

294 10m x 0.7m x 5cm settle - 295

296 PAN SW - NW.

/80m.

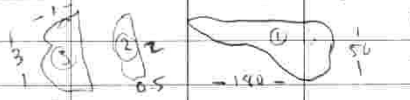
August 15, 2009 Sunny, 7°C 20-30 km/h E

STATION LE - LOBE A.

297 S - SW. (2)

298 S ALONG E SIDE (MINOR PONDING)

299 STAINING (RUST) 50cm x 18m.



V + SSE.

300 S END OF STAINING (3 DISCR. AREAS)

AT EDGE OF POND. ^ 15m N-S, 2m E-W

301 V NW (TOUCHING EDGE OF LF) V - NW - N (2)

→ ALSO VIEW NE - SE @ LOBE B

PAN W - N (4)

302 PAN N - E (3)

303 PAN S - E (3)

304 E EXT. OF PONDING

LOBE B

305 PAN N - E (3)

306 PAN NW - E (5)

307 AREA OF PONDING (16 x 10m)

V - N. @ C3-6 LOC.

308 LOW AREA IN LF ON DWG, NO PONDING BUT POT., V. N FROM TOE.

309 MINOR EROS. 1m W, 5m L, 5cm ↕ at toe, V - N.

toe top

310 - 311 MINOR EROSION 15cm W, 10m L, 2-5cm D. UP from toe., V. N-S.

top toe

312 - 313 EROSION 1.5 - 2.5 W, 15m L, V. S - N. 5-7cm ↕ WASHING OF FINES.

314 V. W ALONG TOE

315 V NW + SW ALONG TOES, SE CORNER OF LF, MINOR EROS ALONG DESIGNED TOE ON SE SIDE, 5cm ↕ 0.8m W.

316 MINOR SETT. 1x2 m x 2-5cm ↕ V - SE

317 " 1x0.5 x 5cm ↕ V. SE

Poss. from grading + blders

318 PAN SW - SE (6)

319 Start of perm erosion V - NW

320, 321 PH OTS ALONG DR. - designed/Nat. a'mound

No stg cutting,

322 V. S - SW (2)

LOBE C

323 PAN SE - SSW.

324 V. S MINOR EROSION ALONG TOE. 30m L, 0.6m W, 5-10cm ↕ - 325 end V. N

326 PAN N - ENE.

327 SE TOE, POSS. WASHING OF FINES @ TOE SE (MINOR EROS.) - V NW, NE SIDE

LEVEL

328 PAN NW - NE.
329 NW - SW PAN. (4)
330 W + SW (3)
331 MINOR SETTLE. @ SLOP 0.5×0.5×15cm V - NW.

NON-HAZARDOUS WASTE LF

332 NW 333, 334, 336, 337.
335 NW - 1.
338 NE TOE, V. SW, NW.
339 SW ⇒342
343 NW TOE V. SE, SW
344 NW - 2.
345 PAN SE - S (3)
346 SE → 348.
349 NW - 3
350 SW CORNER V. NE, SE.
351 " ½ WAY UP SLOPE V - NE, SE
~~352~~ TOP SW CORNER PAN NE - SE (4)
352 SETTLEMENT NEAR TOP (M.D) SW SLOPE. ~5×5×5-15 cm ↕ V - SE.
253 PAN NW - NE (4)
254 NW → 247 + PAN NW - SW (4) NE TOP. CORNER
258 metal Bed RAIL P. EXP V - NW.

359 NW TOP V-SE ↯, PAN SE. SW.
↳ 362 V - SE.
363 minor pothole 20×50×7cm ↕
364 ?? settlement, minor 2cm. 5m × 2m area ⊥ slope. poss. grading?

NORTHEAST LANDFILL.

LOBE A

265 PAN NE SE (4) ATOP GRAVEL PILE
366 V - SE
367 PONDING 5×1.5 along toe
~~368~~ V. E former pond, minor erosion noted on 2000 1-2cm along toe 30cm W ~15m L
368 PAN NW - NE (4)
369 3×5 m ponded area.
370 4×2 m " " V. S at both
371 V - N along toe.
372 NE TOP CORNER PAN S - NNW (4)
373 EROSION ON SLOPE 3m L, 30cm W, (TYP.) up to 5cm ↕ V N+S.
374 PAN S - W (3)
375 - 382 ALL INDIV. EROSION CH. MOST TYP 30-40cm W., 5cm ↕
381-382 (4 areas //) up to 8m ∫ × 5m L.
383 V. S. @ 381-82 area.

LEVEL

384 4x1 m sl. depression 5cm ↕
on east side. V-N

LOBE B

385 PAN N-E (3)
386 PAN N-S (7)
387 SETTLE - 7x1 x 2-4cm ⊥ slope V-E
L ALSO V. S AT DR. CHANNEL [illegible] FROM
S S. SIDE OF LF.
388 PAN S-ESE (3)
~~389~~ EROSION - 3 AREAS. PONDING, V-S
AS'2 20-1.3 W, 6L, up to 3cm ↕
389. PAN SW-W (3)
390 MINOR EROSION (2 areas) 20-40 W,
6L, 1-3 ↕, V-NE
391 " 2 areas. 7L x 30W x 1-2 ↕ V ENE/[illegible]
392 RUNOFF ALONG E SIDE OF LF
V-M. 1m W x 35m L. ~ 5cm ↕
393 PAN W-NW (4)

LOBE C

394 PAN NE-E (3)
395 V-N + E, EROSION ALONG W TOE
40-60 W, entire length, 2-3 cm.
to ponded area 396

397 PAN S-SE across ponded area.
398 2 single mm crack 2m long ⊥ slope, V-E
399 V-W + E along toe, no erosion noted
400 Stony 4x3m @ toe, [illegible] V-E
No sheen
401 NE TOP. PAN. S-NW
~~402~~ SE CORNER TOE V-W + N.
MINOR EROS. OF FINES ALONG TOE
0.4 1m W, 5cm ↕
402 30x50x10 cm depression } V-E + W.
403 20x40x7cm "
404 30x80x 6cm " V-W

LOBE D

405 S → 412
413. PAN NE SE
414 MINOR SETTLE ⊥ area 4x0.6m x 2-3 cm
V-S
415 V-W PAN W-N-E

LOBE E

416. PAN S-E (4).
417 5m L, 30cm W x 5-10cm ↕ ~~[illegible]~~ /
Settlement? V. W+E.

LEVEL

418 Selfheal (larger) area, walk/track limits
↳ 420. 30×20 m area × 30 cm ↕ bowl shape

419 PH- PAN NW-NE (4), evid of erosion from adj. ponded area on W side of LF cover. (pond appears to have been 50± cm higher

422 PAN NW-NE

423. V-NE

424 V ESE

425 V W & BOWL

426 MINOR EROS / WASH 1/2 OF E NES. 6m×1m, 1-3 cm, V-S, N

427 V SW, NNW

428 NW – 430 W, WSW

431 NW ALONG TOE

LOBE F

432 PAN E-S (4)

433 V SE, NE ALONG TOE

434 PAN E-NNW

435 SE CORNER. V-W, N.

436. V-SE AT POND (DOT) (2)

~~437~~ V SE, SW ALONG toe.

437 PAN SW-NW (3)

LOBE G

438 V NNW, SE ALONG TOES

439 445 V. ESE ALONG TOP OF LF
↳ V N

446 SM PONDED AREA ISOL., V-W

447 GULLY EXIST. EXT. N. from LF / V-N

448 - 457 WNW

458 V WNW, NNE ALONG TOE

459 MINOR EROSION 3m×30 × 3cm V-W.

460 PAN NW-SW (3)
EXIST GULLY ON E END, NO EROSION/IMPACT

461 PAN S-W (2)

462 PAN SW-S (2)

463 V SE (2) -E

LOBE H.

464 V SE

465 V. NW along toe

466 V. NW.

467 " "

468 MINOR SETTL 1m×20-40 W. × 2-3 d. cm
V NE

LEVEL

APPENDIX C

Maxxam and Exova QA/QC Reports and Certificates of Analysis

1 QUALITY ASSURANCE / QUALITY CONTROL

The Quality Assurance/Quality Control (QA/QC) program was implemented to monitor the quality of the analytical results. The main objective of this QA/QC program is to ensure that sampling data and analysis results are complete, precise, representative and comparable. The review consisted of evaluating sample collection/handling methodology, general laboratory comments, field (blind) duplicate samples, and inter-laboratory duplicate samples. Samples collected during the monitoring program were submitted to laboratories accredited by the Canadian Association for Environmental Analytical Laboratories (CAEAL).

All samples were collected following strict Biogenie sampling procedures. Samples were uniquely labelled and control was maintained through use of chain of custody forms. All samples were collected in laboratory supplied containers and preserved in insulated coolers. Appropriate QA/QC procedures were adhered to at all times.

Blind duplicate samples were submitted to Maxxam for intra-laboratory analysis, with additional duplicate samples were sent to Exova for interlaboratory comparison purposes. Both laboratories are situated in Edmonton, Alberta.

The relative percent difference (RPD) is used to evaluate the sample result variability. Average RPD values of less than 100% for soil samples and 30% for groundwater samples 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. Individual RPD values greater than 50% are not considered to reflect acceptable variability. RPD values are not used to evaluate those compounds that are present at concentrations less than five times the method detection limit (MDL).

1.1 SOIL SAMPLES

In case of soil samples, some minor differences were noted within the Maxxam and Exova metals and TPH results when duplicates were compared, although all differences are considered to be well within acceptable limits. It should be noted that the majority of individual parameter concentrations were less than five times the MDL. In case of PCBs, all reported concentrations were below the MDL.

1.2 GROUNDWATER

In the case of groundwater samples, a blind duplicate sample was submitted for intra and inter-laboratory comparison. The TPH and the PCB results were similar between the sample and the intra-lab duplicate and below the MDL in the inter-lab duplicate comparison.

Comparison of intralaboratory results (BDW1) for total metals indicate RPDs well within acceptable limits for all parameters, however the inter-laboratory results for C309-13W indicate slightly higher RPDs for the majority of metal parameters including cadmium, chromium, copper, lead, nickel and zinc.

Results from one field blank indicated all concentrations below the MDL with the exception of copper, lead and zinc which exhibited trace concentrations of 0.0077 mg/L, 0.0003 mg/L, and 0.003 mg/L, respectively.

Overall, the soil and groundwater sample results are coherent and within the same range of results for both laboratories. In general, the reliability of both the soil and groundwater analytical results is considered as good. The laboratory comparisons for TPH and PCBs in groundwater are coherent, whereas the interlab comparison for select total metals was outside the acceptable range, suggesting a possible variance in turbidity of the sample.

Your Project #: CAM-3
Site: SHEPHERD BAY
Your C.O.C. #: 83437, 83438

Attention: ANDREW PASSALIS
SILA REMEDIATION
4495 BL. WILFRED-HAMEL BUR 100
QUEBEC, PQ
CANADA GIP 2T7

Report Date: 2009/10/29
This report supersedes all previous reports with the same Maxxam job number

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A944529
Received: 2009/08/20, 13:02

Sample Matrix: Soil
Samples Received: 18

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Boron (Hot Water Soluble) (1)	18	2009/08/24	2009/08/24	CAL SOP-00192	EPA SW846/6010B
BTEX/F1 by HS GC/MS (MeOH extract) (1)	18	2009/08/20	2009/08/24	EENVSOP-00005 EENVSOP-00002	EPA 8260C/CCME
Hexavalent Chromium (1)	18	2009/08/21	2009/08/21	EENVSOP-00131	SM 3500-Cr B
CCME Hydrocarbons (F2-F4 in soil) (1)	18	2009/08/20	2009/08/24	EENVSOP-00007 EENVSOP-00006	CCME PHC-CWS
Elements by ICPMS - Soils (1)	18	2009/08/23	2009/08/24	CAL SOP-00191	EPA SW-846-6020A
Moisture (1)	18	N/A	2009/08/20	EENVSOP-00139	Carter SSMA 51.2

Sample Matrix: Water
Samples Received: 9

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
BTEX/F1 in Water by HS GC/MS (1)	8	N/A	2009/08/22	EENVSOP-00004 EENVSOP-00002	EPA 8260C/CCME
BTEX/F1 in Water by HS GC/MS (1)	1	N/A	2009/08/23	EENVSOP-00004 EENVSOP-00002	EPA 8260C/CCME
CCME Hydrocarbons (F2-F4 in water) (1)	8	2009/08/21	2009/08/24	EENVSOP-00009 EENVSOP-00008	EPA3510C/CCME PHCCWS
Mercury (Total) (1)	8	2009/08/24	2009/08/24	EENVSOP-00031	EPA 245.1
Elements by ICPMS - Total (1)	8	2009/08/24	2009/08/26	CAL SOP-00191	EPA SW-846 6020A

(1) This test was performed by Maxxam Edmonton Environmental

../2

Your Project #: CAM-3
Site: SHEPHERD BAY
Your C.O.C. #: 83437, 83438

Attention: ANDREW PASSALIS
SILA REMEDIATION
4495 BL. WILFRED-HAMEL BUR 100
QUEBEC, PQ
CANADA GIP 2T7

Report Date: 2009/10/29
This report supersedes all previous reports with the same Maxxam job number

CERTIFICATE OF ANALYSIS

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

ALAINA HUNTER, Project Manager
Email: alaina.hunter@maxxamanalytics.com
Phone# (403) 291-3077

==========

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. SCC and CALA have approved this reporting process and electronic report format.

For Service Group specific validation please refer to the Validation Signature Page

Total cover pages: 2

Maxxam Job #: A944529
Report Date: 2009/10/29

SILA REMEDIATION
Client Project #: CAM-3
Site Reference: SHEPHERD BAY
Sampler Initials: AP

AT1 BTEX AND F1-F4 IN SOIL (SOIL)

Maxxam ID		Q33791	Q33792	Q33794	Q33795		
Sampling Date		2009/08/13	2009/08/13	2009/08/13	2009/08/13		
COC Number		83437	83437	83437	83437		
	Units	**C309-4WA**	**C309-4WB**	**C309-5WA**	**C309-5WB**	**RDL**	**QC Batch**
Physical Properties							
Moisture	%	4.3	4.4	13	15	0.3	3364806
Ext. Pet. Hydrocarbon							
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	<10	<10	<10	10	3363751
F3 (C16-C34 Hydrocarbons)	mg/kg	11	12	46	25	10	3363751
F4 (C34-C50 Hydrocarbons)	mg/kg	<10	<10	28	15	10	3363751
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes		3363751
Volatiles							
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	3363745
Toluene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	3363745
Ethylbenzene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	3363745
Xylenes (Total)	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	3363745
m & p-Xylene	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	3363745
o-Xylene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	3363745
F1 (C6-C10) - BTEX	mg/kg	<12	<12	<12	<12	12	3363745
(C6-C10)	mg/kg	<12	<12	<12	<12	12	3363745
Surrogate Recovery (%)							
4-BROMOFLUOROBENZENE (sur.)	%	97	100	99	104		3363745
D10-ETHYLBENZENE (sur.)	%	94	92	92	93		3363745
D4-1,2-DICHLOROETHANE (sur.)	%	96	94	95	101		3363745
D8-TOLUENE (sur.)	%	101	104	104	102		3363745
O-TERPHENYL (sur.)	%	107	111	110	106		3363751

RDL = Reportable Detection Limit

Maxxam Job #: A944529
Report Date: 2009/10/29

SILA REMEDIATION
Client Project #: CAM-3
Site Reference: SHEPHERD BAY
Sampler Initials: AP

AT1 BTEX AND F1-F4 IN SOIL (SOIL)

Maxxam ID		Q33796	Q33800	Q33801	Q33802		
Sampling Date		2009/08/13	2009/08/13	2009/08/13	2009/08/13		
COC Number		83437	83437	83437	83437		
	Units	**C309-6WA**	**C309-6WB**	**C309-7WA**	**C309-7WB**	**RDL**	**QC Batch**
Physical Properties							
Moisture	%	37	33	11	11	0.3	3364806
Ext. Pet. Hydrocarbon							
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	<10	<10	<10	10	3363751
F3 (C16-C34 Hydrocarbons)	mg/kg	56	78	<10	19	10	3363751
F4 (C34-C50 Hydrocarbons)	mg/kg	19	30	<10	<10	10	3363751
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes		3363751
Volatiles							
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	3363745
Toluene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	3363745
Ethylbenzene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	3363745
Xylenes (Total)	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	3363745
m & p-Xylene	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	3363745
o-Xylene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	3363745
F1 (C6-C10) - BTEX	mg/kg	<12	<12	<12	<12	12	3363745
(C6-C10)	mg/kg	<12	<12	<12	<12	12	3363745
Surrogate Recovery (%)							
4-BROMOFLUOROBENZENE (sur.)	%	102	104	106	101		3363745
D10-ETHYLBENZENE (sur.)	%	90	90	89	89		3363745
D4-1,2-DICHLOROETHANE (sur.)	%	94	99	100	97		3363745
D8-TOLUENE (sur.)	%	103	104	104	105		3363745
O-TERPHENYL (sur.)	%	97	101	104	109		3363751

RDL = Reportable Detection Limit

Maxxam Job #: A944529
Report Date: 2009/10/29

SILA REMEDIATION
Client Project #: CAM-3
Site Reference: SHEPHERD BAY
Sampler Initials: AP

AT1 BTEX AND F1-F4 IN SOIL (SOIL)

Maxxam ID		Q33804	Q33898	Q33899	Q33900		
Sampling Date		2009/08/13	2009/08/14	2009/08/14	2009/08/14		
COC Number		83437	83438	83438	83438		
	Units	**C309-BD1**	**C309-12WA**	**C309-12WB**	**C309-13WA**	**RDL**	**QC Batch**
Physical Properties							
Moisture	%	33	5.8	4.2	13	0.3	3364806
Ext. Pet. Hydrocarbon							
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	<10	13	<10	10	3363751
F3 (C16-C34 Hydrocarbons)	mg/kg	62	27	23	20	10	3363751
F4 (C34-C50 Hydrocarbons)	mg/kg	<10	<10	<10	<10	10	3363751
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes		3363751
Volatiles							
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	3363745
Toluene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	3363745
Ethylbenzene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	3363745
Xylenes (Total)	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	3363745
m & p-Xylene	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	3363745
o-Xylene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	3363745
F1 (C6-C10) - BTEX	mg/kg	<12	<12	<12	<12	12	3363745
(C6-C10)	mg/kg	<12	<12	<12	<12	12	3363745
Surrogate Recovery (%)							
4-BROMOFLUOROBENZENE (sur.)	%	101	102	103	103		3363745
D10-ETHYLBENZENE (sur.)	%	99	89	93	70		3363745
D4-1,2-DICHLOROETHANE (sur.)	%	97	98	95	116		3363745
D8-TOLUENE (sur.)	%	104	101	108	101		3363745
O-TERPHENYL (sur.)	%	113	108	118	118		3363751

RDL = Reportable Detection Limit

Maxxam Job #: A944529
Report Date: 2009/10/29

SILA REMEDIATION
Client Project #: CAM-3
Site Reference: SHEPHERD BAY
Sampler Initials: AP

AT1 BTEX AND F1-F4 IN SOIL (SOIL)

Maxxam ID		Q33901	Q33902	Q33903	Q33904		
Sampling Date		2009/08/14	2009/08/14	2009/08/14	2009/08/14		
COC Number		83438	83438	83438	83438		
	Units	**C309-13WB**	**C309-14WA**	**C309-14WB**	**C309-15WA**	**RDL**	**QC Batch**
Physical Properties							
Moisture	%	11	9.1	11	17	0.3	3364806
Ext. Pet. Hydrocarbon							
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	<10	<10	<10	10	3363751
F3 (C16-C34 Hydrocarbons)	mg/kg	<10	13	10	21	10	3363751
F4 (C34-C50 Hydrocarbons)	mg/kg	<10	<10	<10	<10	10	3363751
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes		3363751
Volatiles							
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	3363745
Toluene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	3363745
Ethylbenzene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	3363745
Xylenes (Total)	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	3363745
m & p-Xylene	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	3363745
o-Xylene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	3363745
F1 (C6-C10) - BTEX	mg/kg	<12	<12	<12	<12	12	3363745
(C6-C10)	mg/kg	<12	<12	<12	<12	12	3363745
Surrogate Recovery (%)							
4-BROMOFLUOROBENZENE (sur.)	%	100	104	95	108		3363745
D10-ETHYLBENZENE (sur.)	%	79	80	84	82		3363745
D4-1,2-DICHLOROETHANE (sur.)	%	101	102	100	99		3363745
D8-TOLUENE (sur.)	%	101	104	103	104		3363745
O-TERPHENYL (sur.)	%	58	112	108	111		3363751

RDL = Reportable Detection Limit

Maxxam Job #: A944529
Report Date: 2009/10/29

SILA REMEDIATION
Client Project #: CAM-3
Site Reference: SHEPHERD BAY
Sampler Initials: AP

AT1 BTEX AND F1-F4 IN SOIL (SOIL)

Maxxam ID		Q33906	Q33907		
Sampling Date		2009/08/14	2009/08/14		
COC Number		83438	83438		
	Units	**C309-15WB**	**C309-BD2**	**RDL**	**QC Batch**
Physical Properties					
Moisture	%	13	11	0.3	3364806
Ext. Pet. Hydrocarbon					
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	<10	10	3363751
F3 (C16-C34 Hydrocarbons)	mg/kg	12	14	10	3363751
F4 (C34-C50 Hydrocarbons)	mg/kg	<10	<10	10	3363751
Reached Baseline at C50	mg/kg	Yes	Yes		3363751
Volatiles					
Benzene	mg/kg	<0.0050	<0.0050	0.0050	3363745
Toluene	mg/kg	<0.020	<0.020	0.020	3363745
Ethylbenzene	mg/kg	<0.010	<0.010	0.010	3363745
Xylenes (Total)	mg/kg	<0.040	<0.040	0.040	3363745
m & p-Xylene	mg/kg	<0.040	<0.040	0.040	3363745
o-Xylene	mg/kg	<0.020	<0.020	0.020	3363745
F1 (C6-C10) - BTEX	mg/kg	<12	<12	12	3363745
(C6-C10)	mg/kg	<12	<12	12	3363745
Surrogate Recovery (%)					
4-BROMOFLUOROBENZENE (sur.)	%	101	103		3363745
D10-ETHYLBENZENE (sur.)	%	85	82		3363745
D4-1,2-DICHLOROETHANE (sur.)	%	98	101		3363745
D8-TOLUENE (sur.)	%	105	102		3363745
O-TERPHENYL (sur.)	%	113	118		3363751

RDL = Reportable Detection Limit

Maxxam Job #: A944529
Report Date: 2009/10/29

SILA REMEDIATION
Client Project #: CAM-3
Site Reference: SHEPHERD BAY
Sampler Initials: AP

AT1 BTEX AND F1-F4 IN WATER (WATER)

Maxxam ID		Q33869	Q33890	Q33891	Q33945		
Sampling Date		2009/08/14	2009/08/14	2009/08/14	2009/08/14		
COC Number		83437	83437	83437	83438		
	Units	**C309-5W**	**C309-6W**	**C309-7W**	**C309-13W**	**RDL**	**QC Batch**
Extractable Hydrocarbons							
F2 (C10-C16 Hydrocarbons)	mg/L	<0.1	<0.1	<0.1	<0.1	0.1	3365216
F3 (C16-C34 Hydrocarbons)	mg/L	<0.1	<0.1	<0.1	<0.1	0.1	3365216
Reached Baseline at C50	mg/L	Yes	Yes	Yes	Yes		3365216
Volatiles							
F1 (C6-C10) - BTEX	ug/L	<100	<100	<100	<100	100	3363777
(C6-C10)	ug/L	<100	<100	<100	<100	100	3363777
Surrogate Recovery (%)							
4-BROMOFLUOROBENZENE (sur.)	%	98	89	98	91		3363777
D4-1,2-DICHLOROETHANE (sur.)	%	97	97	127	95		3363777
D8-TOLUENE (sur.)	%	97	97	89	98		3363777
O-TERPHENYL (sur.)	%	115	116	116	115		3365216

RDL = Reportable Detection Limit

Maxxam Job #: A944529
Report Date: 2009/10/29

SILA REMEDIATION
Client Project #: CAM-3
Site Reference: SHEPHERD BAY
Sampler Initials: AP

AT1 BTEX AND F1-F4 IN WATER (WATER)

Maxxam ID		Q33946	Q33947	Q33948		
Sampling Date		2009/08/14	2009/08/14	2009/08/14		
COC Number		83438	83438	83438		
	Units	**C309-14W**	**C309-15W**	**C309-BD1W**	**RDL**	**QC Batch**
Extractable Hydrocarbons						
F2 (C10-C16 Hydrocarbons)	mg/L	<0.1	<0.1	<0.1	0.1	3365216
F3 (C16-C34 Hydrocarbons)	mg/L	<0.1	<0.1	<0.1	0.1	3365216
Reached Baseline at C50	mg/L	Yes	Yes	Yes		3365216
Volatiles						
F1 (C6-C10) - BTEX	ug/L	<100	<100	<100	100	3363777
(C6-C10)	ug/L	<100	<100	<100	100	3363777
Surrogate Recovery (%)						
4-BROMOFLUOROBENZENE (sur.)	%	90	97	90		3363777
D4-1,2-DICHLOROETHANE (sur.)	%	101	95	97		3363777
D8-TOLUENE (sur.)	%	96	97	98		3363777
O-TERPHENYL (sur.)	%	115	114	114		3365216

RDL = Reportable Detection Limit

Maxxam Job #: A944529
Report Date: 2009/10/29

SILA REMEDIATION
Client Project #: CAM-3
Site Reference: SHEPHERD BAY
Sampler Initials: AP

AT1 BTEX AND F1-F4 IN WATER (WATER)

Maxxam ID		Q33949		
Sampling Date		2009/08/14		
COC Number		83438		
	Units	**C309-FB**	**RDL**	**QC Batch**
Extractable Hydrocarbons				
F2 (C10-C16 Hydrocarbons)	mg/L	<0.1	0.1	3365216
F3 (C16-C34 Hydrocarbons)	mg/L	<0.1	0.1	3365216
Reached Baseline at C50	mg/L	Yes		3365216
Volatiles				
F1 (C6-C10) - BTEX	ug/L	<100	100	3364681
(C6-C10)	ug/L	<100	100	3364681
Surrogate Recovery (%)				
4-BROMOFLUOROBENZENE (sur.)	%	92		3364681
D4-1,2-DICHLOROETHANE (sur.)	%	108		3364681
D8-TOLUENE (sur.)	%	97		3364681
O-TERPHENYL (sur.)	%	112		3365216

RDL = Reportable Detection Limit

Maxxam Job #: A944529
Report Date: 2009/10/29

SILA REMEDIATION
Client Project #: CAM-3
Site Reference: SHEPHERD BAY
Sampler Initials: AP

AT1 BTEX AND F1 (WATER)

Maxxam ID		Q33892		
Sampling Date		2009/08/14		
COC Number		83437		
	Units	**TRAVEL BLANK**	**RDL**	**QC Batch**
Volatiles				
Benzene	ug/L	<0.4	0.4	3363777
Toluene	ug/L	<0.4	0.4	3363777
Ethylbenzene	ug/L	<0.4	0.4	3363777
o-Xylene	ug/L	<0.4	0.4	3363777
m & p-Xylene	ug/L	<0.8	0.8	3363777
Xylenes (Total)	ug/L	<0.8	0.8	3363777
F1 (C6-C10) - BTEX	ug/L	<100	100	3363777
(C6-C10)	ug/L	<100	100	3363777
Surrogate Recovery (%)				
4-BROMOFLUOROBENZENE (sur.)	%	92		3363777
D4-1,2-DICHLOROETHANE (sur.)	%	96		3363777
D8-TOLUENE (sur.)	%	98		3363777

RDL = Reportable Detection Limit

Maxxam Job #: A944529
Report Date: 2009/10/29

SILA REMEDIATION
Client Project #: CAM-3
Site Reference: SHEPHERD BAY
Sampler Initials: AP

REGULATED METALS (CCME/AT1)

Maxxam ID		Q33791	Q33792	Q33794	Q33795		
Sampling Date		2009/08/13	2009/08/13	2009/08/13	2009/08/13		
COC Number		83437	83437	83437	83437		
	Units	**C309-4WA**	**C309-4WB**	**C309-5WA**	**C309-5WB**	**RDL**	**QC Batch**
Elements							
Soluble (Hot water) Boron (B)	mg/kg	0.2	0.3	0.1	0.1	0.1	3368172
Hex. Chromium (Cr 6+)	mg/kg	<0.15	<0.15	<0.15	<0.15	0.15	3364642
Total Arsenic (As)	mg/kg	3	4	3	3	1	3367151
Total Cadmium (Cd)	mg/kg	<0.1	<0.1	<0.1	<0.1	0.1	3367151
Total Chromium (Cr)	mg/kg	32	37	16	17	1	3367151
Total Cobalt (Co)	mg/kg	2	3	3	4	1	3367151
Total Copper (Cu)	mg/kg	<5	<5	6	6	5	3367151
Total Lead (Pb)	mg/kg	5	4	5	6	1	3367151
Total Mercury (Hg)	mg/kg	<0.05	<0.05	<0.05	<0.05	0.05	3367151
Total Nickel (Ni)	mg/kg	15	17	10	10	1	3367151
Total Zinc (Zn)	mg/kg	<10	<10	<10	<10	10	3367151

RDL = Reportable Detection Limit

Maxxam Job #: A944529
Report Date: 2009/10/29

SILA REMEDIATION
Client Project #: CAM-3
Site Reference: SHEPHERD BAY
Sampler Initials: AP

REGULATED METALS (CCME/AT1)

Maxxam ID		Q33796	Q33800	Q33801	Q33802		
Sampling Date		2009/08/13	2009/08/13	2009/08/13	2009/08/13		
COC Number		83437	83437	83437	83437		
	Units	**C309-6WA**	**C309-6WB**	**C309-7WA**	**C309-7WB**	**RDL**	**QC Batch**
Elements							
Soluble (Hot water) Boron (B)	mg/kg	1.2	1.7	0.3	0.3	0.1	3368172
Hex. Chromium (Cr 6+)	mg/kg	<0.15	<0.15	<0.15	<0.15	0.15	3364642
Total Arsenic (As)	mg/kg	2	3	4	4	1	3367151
Total Cadmium (Cd)	mg/kg	0.3	0.3	<0.1	<0.1	0.1	3367151
Total Chromium (Cr)	mg/kg	9	5	13	38	1	3367151
Total Cobalt (Co)	mg/kg	2	2	3	2	1	3367151
Total Copper (Cu)	mg/kg	<5	6	<5	<5	5	3367151
Total Lead (Pb)	mg/kg	4	4	4	3	1	3367151
Total Mercury (Hg)	mg/kg	<0.05	<0.05	<0.05	<0.05	0.05	3367151
Total Nickel (Ni)	mg/kg	5	6	8	18	1	3367151
Total Zinc (Zn)	mg/kg	<10	<10	<10	<10	10	3367151

RDL = Reportable Detection Limit

Maxxam Job #: A944529
Report Date: 2009/10/29

SILA REMEDIATION
Client Project #: CAM-3
Site Reference: SHEPHERD BAY
Sampler Initials: AP

REGULATED METALS (CCME/AT1)

Maxxam ID		Q33804	Q33898	Q33899	Q33900		
Sampling Date		2009/08/13	2009/08/14	2009/08/14	2009/08/14		
COC Number		83437	83438	83438	83438		
	Units	**C309-BD1**	**C309-12WA**	**C309-12WB**	**C309-13WA**	**RDL**	**QC Batch**
Elements							
Soluble (Hot water) Boron (B)	mg/kg	2.0	<0.1	<0.1	0.2	0.1	3368172
Hex. Chromium (Cr 6+)	mg/kg	<0.15	<0.15	<0.15	<0.15	0.15	3364642
Total Arsenic (As)	mg/kg	3	<1	<1	<1	1	3367151
Total Cadmium (Cd)	mg/kg	0.2	<0.1	<0.1	<0.1	0.1	3367151
Total Chromium (Cr)	mg/kg	5	2	2	22	1	3367151
Total Cobalt (Co)	mg/kg	2	<1	<1	1	1	3367151
Total Copper (Cu)	mg/kg	<5	<5	<5	<5	5	3367151
Total Lead (Pb)	mg/kg	3	1	<1	2	1	3367151
Total Mercury (Hg)	mg/kg	<0.05	<0.05	<0.05	<0.05	0.05	3367151
Total Nickel (Ni)	mg/kg	5	<1	<1	10	1	3367151
Total Zinc (Zn)	mg/kg	<10	<10	<10	<10	10	3367151

RDL = Reportable Detection Limit

Maxxam Job #: A944529
Report Date: 2009/10/29

SILA REMEDIATION
Client Project #: CAM-3
Site Reference: SHEPHERD BAY
Sampler Initials: AP

REGULATED METALS (CCME/AT1)

Maxxam ID		Q33901	Q33902	Q33903		
Sampling Date		2009/08/14	2009/08/14	2009/08/14		
COC Number		83438	83438	83438		
	Units	**C309-13WB**	**C309-14WA**	**C309-14WB**	**RDL**	**QC Batch**
Elements						
Soluble (Hot water) Boron (B)	mg/kg	0.1	0.2	0.1	0.1	3368172
Hex. Chromium (Cr 6+)	mg/kg	<0.15	<0.15	<0.15	0.15	3364642
Total Arsenic (As)	mg/kg	1	3	2	1	3367151
Total Cadmium (Cd)	mg/kg	<0.1	<0.1	<0.1	0.1	3367151
Total Chromium (Cr)	mg/kg	11	38	23	1	3367151
Total Cobalt (Co)	mg/kg	2	4	4	1	3367151
Total Copper (Cu)	mg/kg	<5	6	6	5	3367151
Total Lead (Pb)	mg/kg	3	6	5	1	3367151
Total Mercury (Hg)	mg/kg	<0.05	<0.05	<0.05	0.05	3367151
Total Nickel (Ni)	mg/kg	5	18	12	1	3367151
Total Zinc (Zn)	mg/kg	<10	14	17	10	3367151

RDL = Reportable Detection Limit

Maxxam Job #: A944529
Report Date: 2009/10/29

SILA REMEDIATION
Client Project #: CAM-3
Site Reference: SHEPHERD BAY
Sampler Initials: AP

REGULATED METALS (CCME/AT1)

Maxxam ID		Q33904	Q33906	Q33907		
Sampling Date		2009/08/14	2009/08/14	2009/08/14		
COC Number		83438	83438	83438		
	Units	**C309-15WA**	**C309-15WB**	**C309-BD2**	**RDL**	**QC Batch**
Elements						
Soluble (Hot water) Boron (B)	mg/kg	0.2	<0.1	<0.1	0.1	3368172
Hex. Chromium (Cr 6+)	mg/kg	<0.15	<0.15	<0.15	0.15	3364646
Total Arsenic (As)	mg/kg	2	1	2	1	3367151
Total Cadmium (Cd)	mg/kg	<0.1	<0.1	<0.1	0.1	3367151
Total Chromium (Cr)	mg/kg	28	84	19	1	3367151
Total Cobalt (Co)	mg/kg	2	2	3	1	3367151
Total Copper (Cu)	mg/kg	<5	<5	5	5	3367151
Total Lead (Pb)	mg/kg	3	3	5	1	3367151
Total Mercury (Hg)	mg/kg	<0.05	0.05	<0.05	0.05	3367151
Total Nickel (Ni)	mg/kg	13	38	10	1	3367151
Total Zinc (Zn)	mg/kg	<10	<10	13	10	3367151

RDL = Reportable Detection Limit

Maxxam Job #: A944529
Report Date: 2009/10/29

SILA REMEDIATION
Client Project #: CAM-3
Site Reference: SHEPHERD BAY
Sampler Initials: AP

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		Q33869		Q33890		Q33891		
Sampling Date		2009/08/14		2009/08/14		2009/08/14		
COC Number		83437		83437		83437		
	Units	**C309-5W**	**RDL**	**C309-6W**	**RDL**	**C309-7W**	**RDL**	**QC Batch**
Elements								
Total Arsenic (As)	mg/L	0.0030	0.0002	0.0057	0.0002	0.0027	0.0002	3371712
Total Cadmium (Cd)	mg/L	0.00016	0.000005	0.00032	0.000005	0.00030	0.000005	3371712
Total Chromium (Cr)	mg/L	0.12	0.001	0.044	0.001	0.081	0.001	3371712
Total Cobalt (Co)	mg/L	0.0052	0.0003	0.011	0.0003	0.0029	0.0003	3371712
Total Copper (Cu)	mg/L	0.019	0.0002	0.031	0.0002	0.019	0.0002	3371712
Total Lead (Pb)	mg/L	0.0035	0.0002	0.012	0.0002	0.0034	0.0002	3371712
Total Nickel (Ni)	mg/L	0.050	0.0005	0.043	0.0005	0.028	0.0005	3371712
Total Zinc (Zn)	mg/L	5.7 (1)	0.03	0.042	0.003	3.0 (1)	0.03	3371712
Low Level Elements								
Total Mercury (Hg)	ug/L	0.011	0.005	0.020	0.005	0.007	0.005	3511904

RDL = Reportable Detection Limit
(1) Detection limits raised due to dilution to bring analyte within the calibrated range.

Maxxam ID		Q33945			Q33946		
Sampling Date		2009/08/14			2009/08/14		
COC Number		83438			83438		
	Units	**C309-13W**	**RDL**	**QC Batch**	**C309-14W**	**RDL**	**QC Batch**
Elements							
Total Arsenic (As)	mg/L	0.0035	0.0002	3371712	0.0045	0.0002	3371712
Total Cadmium (Cd)	mg/L	0.00038	0.000005	3371712	0.00023	0.000005	3371712
Total Chromium (Cr)	mg/L	0.021	0.001	3371712	0.038	0.001	3371712
Total Cobalt (Co)	mg/L	0.0042	0.0003	3371712	0.0046	0.0003	3371712
Total Copper (Cu)	mg/L	0.011	0.0002	3371712	0.049	0.0002	3371712
Total Lead (Pb)	mg/L	0.0061	0.0002	3371712	0.012	0.0002	3371712
Total Nickel (Ni)	mg/L	0.013	0.0005	3371712	0.052	0.0005	3371712
Total Zinc (Zn)	mg/L	0.33	0.003	3371712	1.8 (1)	0.03	3371712
Low Level Elements							
Total Mercury (Hg)	ug/L	<0.005	0.005	3367675	0.015	0.005	3511904

RDL = Reportable Detection Limit
(1) Detection limits raised due to dilution to bring analyte within the calibrated range.

Maxxam Job #: A944529
Report Date: 2009/10/29

SILA REMEDIATION
Client Project #: CAM-3
Site Reference: SHEPHERD BAY
Sampler Initials: AP

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		Q33947		Q33948	Q33949		
Sampling Date		2009/08/14		2009/08/14	2009/08/14		
COC Number		83438		83438	83438		
	Units	**C309-15W**	**QC Batch**	**C309-BD1W**	**C309-FB**	**RDL**	**QC Batch**
Elements							
Total Arsenic (As)	mg/L	0.0073	3371712	0.0030	<0.0002	0.0002	3371712
Total Cadmium (Cd)	mg/L	0.00051	3371712	0.00033	<0.000005	0.000005	3371712
Total Chromium (Cr)	mg/L	0.084	3371712	0.017	<0.001	0.001	3371712
Total Cobalt (Co)	mg/L	0.0082	3371712	0.0034	<0.0003	0.0003	3371712
Total Copper (Cu)	mg/L	0.025	3371712	0.0086	0.0077	0.0002	3371712
Total Lead (Pb)	mg/L	0.011	3371712	0.0047	0.0003	0.0002	3371712
Total Nickel (Ni)	mg/L	0.044	3371712	0.011	<0.0005	0.0005	3371712
Total Zinc (Zn)	mg/L	0.044	3371712	0.27	0.003	0.003	3371712
Low Level Elements							
Total Mercury (Hg)	ug/L	0.013	3511904	<0.005	<0.005	0.005	3367675

RDL = Reportable Detection Limit

Maxxam Job #: A944529
Report Date: 2009/10/29

SILA REMEDIATION
Client Project #: CAM-3
Site Reference: SHEPHERD BAY
Sampler Initials: AP

General Comments

This report is being reissued due to an error identified by the lab associated with the mercury data for samples Q33869, Q33890, Q33891, Q33946 and Q33947. The original mercury result reported for these samples was biased low by 50%.

Results relate only to the items tested.

SILA REMEDIATION
Attention: ANDREW PASSALIS
Client Project #: CAM-3
P.O. #:
Site Reference: SHEPHERD BAY

Quality Assurance Report

Maxxam Job Number: EA944529

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
3363745	CL9	Matrix Spike	4-BROMOFLUOROBENZENE (sur.)	2009/08/23		103	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2009/08/23		94	%	30 - 130
			D4-1,2-DICHLOROETHANE (sur.)	2009/08/23		93	%	60 - 140
			D8-TOLUENE (sur.)	2009/08/23		102	%	60 - 140
			Benzene	2009/08/23		94	%	60 - 140
			Toluene	2009/08/23		88	%	60 - 140
			Ethylbenzene	2009/08/23		96	%	60 - 140
			m & p-Xylene	2009/08/23		101	%	60 - 140
			o-Xylene	2009/08/23		96	%	60 - 140
			(C6-C10)	2009/08/23		98	%	60 - 140
		Spiked Blank	4-BROMOFLUOROBENZENE (sur.)	2009/08/23		109	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2009/08/23		93	%	30 - 130
			D4-1,2-DICHLOROETHANE (sur.)	2009/08/23		93	%	60 - 140
			D8-TOLUENE (sur.)	2009/08/23		100	%	60 - 140
			Benzene	2009/08/23		95	%	60 - 140
			Toluene	2009/08/23		85	%	60 - 140
			Ethylbenzene	2009/08/23		94	%	60 - 140
			m & p-Xylene	2009/08/23		98	%	60 - 140
			o-Xylene	2009/08/23		101	%	60 - 140
			(C6-C10)	2009/08/23		92	%	80 - 120
		Method Blank	4-BROMOFLUOROBENZENE (sur.)	2009/08/23		102	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2009/08/23		85	%	30 - 130
			D4-1,2-DICHLOROETHANE (sur.)	2009/08/23		91	%	60 - 140
			D8-TOLUENE (sur.)	2009/08/23		106	%	60 - 140
			Benzene	2009/08/23	<0.0050		mg/kg	
			Toluene	2009/08/23	<0.020		mg/kg	
			Ethylbenzene	2009/08/23	<0.010		mg/kg	
			Xylenes (Total)	2009/08/23	<0.040		mg/kg	
			m & p-Xylene	2009/08/23	<0.040		mg/kg	
			o-Xylene	2009/08/23	<0.020		mg/kg	
			F1 (C6-C10) - BTEX	2009/08/23	<12		mg/kg	
			(C6-C10)	2009/08/23	<12		mg/kg	
		RPD [Q33791-01]	Benzene	2009/08/24	NC		%	50
			Toluene	2009/08/24	NC		%	50
			Ethylbenzene	2009/08/24	NC		%	50
			Xylenes (Total)	2009/08/24	NC		%	50
			m & p-Xylene	2009/08/24	NC		%	50
			o-Xylene	2009/08/24	NC		%	50
			F1 (C6-C10) - BTEX	2009/08/24	NC		%	50
			(C6-C10)	2009/08/24	NC		%	50
3363751	LD2	Matrix Spike						
		[Q33792-01]	O-TERPHENYL (sur.)	2009/08/24		98	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2009/08/24		105	%	50 - 130
			F3 (C16-C34 Hydrocarbons)	2009/08/24		107	%	50 - 130
			F4 (C34-C50 Hydrocarbons)	2009/08/24		110	%	50 - 130
		Spiked Blank	O-TERPHENYL (sur.)	2009/08/24		88	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2009/08/24		115	%	80 - 120
			F3 (C16-C34 Hydrocarbons)	2009/08/24		106	%	80 - 120
			F4 (C34-C50 Hydrocarbons)	2009/08/24		107	%	80 - 120
		Method Blank	O-TERPHENYL (sur.)	2009/08/24		97	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2009/08/24	<10		mg/kg	
			F3 (C16-C34 Hydrocarbons)	2009/08/24	<10		mg/kg	
			F4 (C34-C50 Hydrocarbons)	2009/08/24	<10		mg/kg	
		RPD [Q33791-01]	F2 (C10-C16 Hydrocarbons)	2009/08/24	NC		%	50
			F3 (C16-C34 Hydrocarbons)	2009/08/24	NC		%	50

SILA REMEDIATION
Attention: ANDREW PASSALIS
Client Project #: CAM-3
P.O. #:
Site Reference: SHEPHERD BAY

Quality Assurance Report (Continued)

Maxxam Job Number: EA944529

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
3363751	LD2	RPD [Q33791-01]	F4 (C34-C50 Hydrocarbons)	2009/08/24	NC		%	50
3363777	AN1	Matrix Spike	4-BROMOFLUOROBENZENE (sur.)	2009/08/22		98	%	70 - 130
			D4-1,2-DICHLOROETHANE (sur.)	2009/08/22		118	%	70 - 130
			D8-TOLUENE (sur.)	2009/08/22		93	%	70 - 130
			Benzene	2009/08/22		103	%	70 - 130
			Toluene	2009/08/22		86	%	70 - 130
			Ethylbenzene	2009/08/22		90	%	70 - 130
			o-Xylene	2009/08/22		92	%	70 - 130
			m & p-Xylene	2009/08/22		90	%	70 - 130
			(C6-C10)	2009/08/22		72	%	70 - 130
		Spiked Blank	4-BROMOFLUOROBENZENE (sur.)	2009/08/22		97	%	70 - 130
			D4-1,2-DICHLOROETHANE (sur.)	2009/08/22		91	%	70 - 130
			D8-TOLUENE (sur.)	2009/08/22		99	%	70 - 130
			Benzene	2009/08/22		93	%	70 - 130
			Toluene	2009/08/22		85	%	70 - 130
			Ethylbenzene	2009/08/22		94	%	70 - 130
			o-Xylene	2009/08/22		92	%	70 - 130
			m & p-Xylene	2009/08/22		93	%	70 - 130
			(C6-C10)	2009/08/22		102	%	80 - 120
		Method Blank	4-BROMOFLUOROBENZENE (sur.)	2009/08/22		95	%	70 - 130
			D4-1,2-DICHLOROETHANE (sur.)	2009/08/22		93	%	70 - 130
			D8-TOLUENE (sur.)	2009/08/22		98	%	70 - 130
			Benzene	2009/08/22	<0.4		ug/L	
			Toluene	2009/08/22	<0.4		ug/L	
			Ethylbenzene	2009/08/22	<0.4		ug/L	
			o-Xylene	2009/08/22	<0.4		ug/L	
			m & p-Xylene	2009/08/22	<0.8		ug/L	
			Xylenes (Total)	2009/08/22	<0.8		ug/L	
			F1 (C6-C10) - BTEX	2009/08/22	<100		ug/L	
			(C6-C10)	2009/08/22	<100		ug/L	
		RPD	Benzene	2009/08/22	NC		%	40
			Toluene	2009/08/22	NC		%	40
			Ethylbenzene	2009/08/22	NC		%	40
			o-Xylene	2009/08/22	NC		%	40
			m & p-Xylene	2009/08/22	NC		%	40
			Xylenes (Total)	2009/08/22	NC		%	40
			F1 (C6-C10) - BTEX	2009/08/22	NC		%	40
			(C6-C10)	2009/08/22	NC		%	40
3364642	AL2	Matrix Spike	Hex. Chromium (Cr 6+)	2009/08/21		98	%	75 - 125
		Spiked Blank	Hex. Chromium (Cr 6+)	2009/08/21		101	%	80 - 120
		Method Blank	Hex. Chromium (Cr 6+)	2009/08/21	<0.15		mg/kg	
		RPD	Hex. Chromium (Cr 6+)	2009/08/21	NC		%	35
3364646	AL2	Spiked Blank	Hex. Chromium (Cr 6+)	2009/08/21		98	%	80 - 120
		Method Blank	Hex. Chromium (Cr 6+)	2009/08/21	<0.15		mg/kg	
		RPD	Hex. Chromium (Cr 6+)	2009/08/21	NC		%	35
3364681	DR3	Matrix Spike	4-BROMOFLUOROBENZENE (sur.)	2009/08/22		92	%	70 - 130
			D4-1,2-DICHLOROETHANE (sur.)	2009/08/22		109	%	70 - 130
			D8-TOLUENE (sur.)	2009/08/22		97	%	70 - 130
			(C6-C10)	2009/08/22		108	%	70 - 130
		Spiked Blank	4-BROMOFLUOROBENZENE (sur.)	2009/08/24		97	%	70 - 130
			D4-1,2-DICHLOROETHANE (sur.)	2009/08/24		99	%	70 - 130
			D8-TOLUENE (sur.)	2009/08/24		102	%	70 - 130
			(C6-C10)	2009/08/24		104	%	80 - 120
		Method Blank	4-BROMOFLUOROBENZENE (sur.)	2009/08/24		95	%	70 - 130
			D4-1,2-DICHLOROETHANE (sur.)	2009/08/24		114	%	70 - 130

SILA REMEDIATION
Attention: ANDREW PASSALIS
Client Project #: CAM-3
P.O. #:
Site Reference: SHEPHERD BAY

Quality Assurance Report (Continued)

Maxxam Job Number: EA944529

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
3364681 DR3	Method Blank	D8-TOLUENE (sur.)	2009/08/24		98	%	70 - 130
		F1 (C6-C10) - BTEX	2009/08/24	<100		ug/L	
		(C6-C10)	2009/08/24	<100		ug/L	
	RPD	F1 (C6-C10) - BTEX	2009/08/23	NC		%	40
		(C6-C10)	2009/08/23	NC		%	40
3364806 JP6	Method Blank	Moisture	2009/08/20	<0.3		%	
	RPD [Q33791-01]	Moisture	2009/08/20	18.9		%	20
3365216 KO	Spiked Blank	F2 (C10-C16 Hydrocarbons)	2009/08/24		110	%	80 - 120
		F3 (C16-C34 Hydrocarbons)	2009/08/24		104	%	80 - 120
		O-TERPHENYL (sur.)	2009/08/24		114	%	70 - 130
	Method Blank	F2 (C10-C16 Hydrocarbons)	2009/08/24	<0.1		mg/L	
		F3 (C16-C34 Hydrocarbons)	2009/08/24	<0.1		mg/L	
		O-TERPHENYL (sur.)	2009/08/24		116	%	70 - 130
3367151 EO1	Calibration Check	Total Arsenic (As)	2009/08/24		88	%	80 - 120
		Total Cadmium (Cd)	2009/08/24		94	%	80 - 120
		Total Chromium (Cr)	2009/08/24		91	%	80 - 120
		Total Cobalt (Co)	2009/08/24		89	%	80 - 120
		Total Copper (Cu)	2009/08/24		92	%	80 - 120
		Total Lead (Pb)	2009/08/24		93	%	80 - 120
		Total Mercury (Hg)	2009/08/24		103	%	80 - 120
		Total Nickel (Ni)	2009/08/24		90	%	80 - 120
		Total Zinc (Zn)	2009/08/24		116	%	80 - 120
	Matrix Spike [Q33795-01]	Total Arsenic (As)	2009/08/24		81	%	75 - 125
		Total Cadmium (Cd)	2009/08/24		89	%	75 - 125
		Total Chromium (Cr)	2009/08/24		85	%	75 - 125
		Total Cobalt (Co)	2009/08/24		81	%	75 - 125
		Total Copper (Cu)	2009/08/24		76	%	75 - 125
		Total Lead (Pb)	2009/08/24		83	%	75 - 125
		Total Mercury (Hg)	2009/08/24		96	%	75 - 125
		Total Nickel (Ni)	2009/08/24		79	%	75 - 125
		Total Zinc (Zn)	2009/08/24		77	%	75 - 125
	QC Standard	Total Arsenic (As)	2009/08/24		88	%	72 - 128
		Total Chromium (Cr)	2009/08/24		63	%	50 - 150
		Total Cobalt (Co)	2009/08/24		101	%	75 - 125
		Total Copper (Cu)	2009/08/24		81	%	72 - 127
		Total Lead (Pb)	2009/08/24		90	%	65 - 135
		Total Mercury (Hg)	2009/08/24		100	%	75 - 125
		Total Nickel (Ni)	2009/08/24		91	%	75 - 125
		Total Zinc (Zn)	2009/08/24		83	%	74 - 125
	Method Blank	Total Arsenic (As)	2009/08/24	<1		mg/kg	
		Total Cadmium (Cd)	2009/08/24	<0.1		mg/kg	
		Total Chromium (Cr)	2009/08/24	<1		mg/kg	
		Total Cobalt (Co)	2009/08/24	<1		mg/kg	
		Total Copper (Cu)	2009/08/24	<5		mg/kg	
		Total Lead (Pb)	2009/08/24	<1		mg/kg	
		Total Mercury (Hg)	2009/08/24	<0.05		mg/kg	
		Total Nickel (Ni)	2009/08/24	<1		mg/kg	
		Total Zinc (Zn)	2009/08/24	<10		mg/kg	
	RPD [Q33795-01]	Total Arsenic (As)	2009/08/24	NC		%	35
		Total Cadmium (Cd)	2009/08/24	NC		%	35
		Total Chromium (Cr)	2009/08/24	7.0		%	35
		Total Cobalt (Co)	2009/08/24	NC		%	35
		Total Copper (Cu)	2009/08/24	NC		%	35
		Total Lead (Pb)	2009/08/24	3.5		%	35

SILA REMEDIATION
Attention: ANDREW PASSALIS
Client Project #: CAM-3
P.O. #:
Site Reference: SHEPHERD BAY

Quality Assurance Report (Continued)

Maxxam Job Number: EA944529

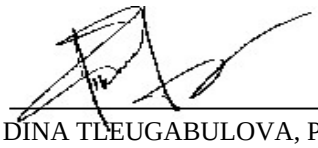
QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
3367151	EO1	RPD [Q33795-01]	Total Mercury (Hg)	2009/08/24	NC		%	35
			Total Nickel (Ni)	2009/08/24	5.4		%	35
			Total Zinc (Zn)	2009/08/24	NC		%	35
3367675	RB3	Calibration Check	Total Mercury (Hg)	2009/08/24		90	%	85 - 115
		Matrix Spike [Q33869-01]	Total Mercury (Hg)	2009/08/24		103	%	85 - 115
		Spiked Blank	Total Mercury (Hg)	2009/08/24		91	%	85 - 115
		Method Blank	Total Mercury (Hg)	2009/08/24	<0.005		ug/L	
3368172	RI3	Matrix Spike [Q33795-01]	Soluble (Hot water) Boron (B)	2009/08/24		80	%	75 - 125
		Method Blank	Soluble (Hot water) Boron (B)	2009/08/24	<0.1		mg/kg	
		RPD [Q33795-01]	Soluble (Hot water) Boron (B)	2009/08/24	NC		%	35
3371712	PC1	Calibration Check	Total Arsenic (As)	2009/08/27		96	%	80 - 120
			Total Cadmium (Cd)	2009/08/27		90	%	80 - 120
			Total Chromium (Cr)	2009/08/27		116	%	80 - 120
			Total Cobalt (Co)	2009/08/27		115	%	80 - 120
			Total Copper (Cu)	2009/08/27		109	%	80 - 120
			Total Lead (Pb)	2009/08/27		103	%	80 - 120
			Total Nickel (Ni)	2009/08/27		112	%	80 - 120
			Total Zinc (Zn)	2009/08/27		80	%	80 - 120
		Matrix Spike	Total Arsenic (As)	2009/08/27		92	%	80 - 120
			Total Cadmium (Cd)	2009/08/27		93	%	80 - 120
			Total Chromium (Cr)	2009/08/27		104	%	80 - 120
			Total Cobalt (Co)	2009/08/27		106	%	80 - 120
			Total Copper (Cu)	2009/08/27		100	%	80 - 120
			Total Lead (Pb)	2009/08/27		96	%	80 - 120
			Total Nickel (Ni)	2009/08/27		107	%	80 - 120
			Total Zinc (Zn)	2009/08/27		103	%	80 - 120
		Method Blank	Total Arsenic (As)	2009/08/26	<0.0002		mg/L	
			Total Cadmium (Cd)	2009/08/26	<0.000005		mg/L	
			Total Chromium (Cr)	2009/08/26	<0.001		mg/L	
			Total Cobalt (Co)	2009/08/26	<0.0003		mg/L	
			Total Copper (Cu)	2009/08/26	<0.0002		mg/L	
			Total Lead (Pb)	2009/08/26	<0.0002		mg/L	
			Total Nickel (Ni)	2009/08/26	<0.0005		mg/L	
			Total Zinc (Zn)	2009/08/26	<0.003		mg/L	
		RPD	Total Arsenic (As)	2009/08/26	1.4		%	20
			Total Chromium (Cr)	2009/08/26	NC		%	20
			Total Cobalt (Co)	2009/08/26	NC		%	20
			Total Copper (Cu)	2009/08/26	NC		%	20
			Total Lead (Pb)	2009/08/26	NC		%	20
			Total Nickel (Ni)	2009/08/26	NC		%	20
			Total Zinc (Zn)	2009/08/26	NC		%	20

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Calibration Check: A calibration standard analyzed at different times to evaluate on-going calibration accuracy.
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 blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
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 (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

Validation Signature Page

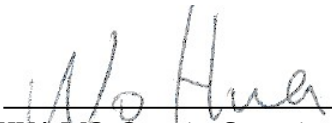
Maxxam Job #: A944529

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



DINA TLEUGABULOVA, Ph.D., Scientific Specialist

DIANE ZACHARKIW, Scientific Specialist



HUA WO, Organics Supervisor

JIM TJATHAS, Analyst 2

LISA CUMMINGS, Extractables Supervisor

Validation Signature Page

Maxxam Job #: A944529

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

RON VENZI, 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. SCC and CALA have approved this reporting process and electronic report format.

Your Project #: A944529
Your C.O.C. #: n/a

Attention: Alaina Hunter
Maxxam Analytics
Edmonton - ENV
9331-48 St
Edmonton, AB
T6B 2R4

Report Date: 2009/08/28

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A9A8338
Received: 2009/08/21, 11:19

Sample Matrix: Soil
Samples Received: 18

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
MOISTURE	18	N/A	2009/08/26	CAM SOP-00445	McKeague 2nd ed 1978
Polychlorinated Biphenyl in Soil	3	2009/08/25	2009/08/26	CAM SOP-00309	SW846 8082
Polychlorinated Biphenyl in Soil	3	2009/08/25	2009/08/27	CAM SOP-00309	SW846 8082
Polychlorinated Biphenyl in Soil	3	2009/08/26	2009/08/26	CAM SOP-00309	SW846 8082
Polychlorinated Biphenyl in Soil	9	2009/08/26	2009/08/27	CAM SOP-00309	SW846 8082

Sample Matrix: Water
Samples Received: 8

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Polychlorinated Biphenyl in Water	5	2009/08/22	2009/08/25	CAM SOP-00309	SW846 8082
Polychlorinated Biphenyl in Water	3	2009/08/22	2009/08/26	CAM SOP-00309	SW846 8082

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
* Results relate only to the items tested.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

ANTONELLA BRASIL, Project Manager
Email: Abrasil@maxxamanalytics.com
Phone# (905) 817-5817

==========

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. SCC and CALA have approved this reporting process and electronic report format.

For Service Group specific validation please refer to the Validation Signature Page

Total cover pages: 1

Maxxam Job #: A9A8338
Report Date: 2009/08/28

Maxxam Analytics
Client Project #: A944529

RESULTS OF ANALYSES OF SOIL

Maxxam ID		DL3926	DL3927	DL3928	DL3929	DL3930	DL3931	DL3932	DL3933	DL3934	DL3938		
Sampling Date		2009/08/13	2009/08/13	2009/08/13	2009/08/13	2009/08/13	2009/08/13	2009/08/13	2009/08/13	2009/08/13	2009/08/14		
	Units	**Q33791 \ C309-4WA**	**Q33792 \ C309-4WB**	**Q33794 \ C309-5WA**	**Q33795 \ C309-5WB**	**Q33796 \ C309-6WA**	**Q33800 \ C309-6WB**	**Q33801 \ C309-7WA**	**Q33802 \ C309-7WB**	**Q33804 \ C309-BD1**	**Q33898 \ C309-12WA**	**RDL**	**QC Batch**
Inorganics													
Moisture	%	5.8	4.4	13	14	41	35	10	9.6	35	7.0	0.2	1920191

Maxxam ID		DL3939	DL3940	DL3941	DL3942	DL3943	DL3944	DL3945	DL3946		
Sampling Date		2009/08/14	2009/08/14	2009/08/14	2009/08/14	2009/08/14	2009/08/14	2009/08/14	2009/08/14		
	Units	**Q33899 \ C309-12WB**	**Q33900 \ C309-13WA**	**Q33901 \ C309-13WB**	**Q33902 \ C309-14WA**	**Q33903 \ C309-14WB**	**Q33904 \ C309-15WA**	**Q33906 \ C309-15WB**	**Q33907 \ C309-BD2**	**RDL**	**QC Batch**
Inorganics											
Moisture	%	4.3	13	11	10	12	35	13	11	0.2	1920191

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		DL3926	DL3927	DL3928	DL3929		DL3930		DL3931		DL3932		
Sampling Date		2009/08/13	2009/08/13	2009/08/13	2009/08/13		2009/08/13		2009/08/13		2009/08/13		
	Units	**Q33791 \ C309-4WA**	**Q33792 \ C309-4WB**	**Q33794 \ C309-5WA**	**Q33795 \ C309-5WB**	**QC Batch**	**Q33796 \ C309-6WA**	**QC Batch**	**Q33800 \ C309-6WB**	**QC Batch**	**Q33801 \ C309-7WA**	**RDL**	**QC Batch**
PCBs													
Aroclor 1262	ug/g	<0.01	<0.01	<0.01	<0.01	1919149	<0.01	1918274	<0.01	1919149	<0.01	0.01	1918274
Aroclor 1016	ug/g	<0.01	<0.01	<0.01	<0.01	1919149	<0.01	1918274	<0.01	1919149	<0.01	0.01	1918274
Aroclor 1221	ug/g	<0.01	<0.01	<0.01	<0.01	1919149	<0.01	1918274	<0.01	1919149	<0.01	0.01	1918274
Aroclor 1232	ug/g	<0.01	<0.01	<0.01	<0.01	1919149	<0.01	1918274	<0.01	1919149	<0.01	0.01	1918274
Aroclor 1242	ug/g	<0.01	<0.01	<0.01	<0.01	1919149	<0.01	1918274	<0.01	1919149	<0.01	0.01	1918274
Aroclor 1248	ug/g	<0.01	<0.01	<0.01	<0.01	1919149	<0.01	1918274	<0.01	1919149	<0.01	0.01	1918274
Aroclor 1254	ug/g	<0.01	<0.01	<0.01	<0.01	1919149	<0.01	1918274	<0.01	1919149	<0.01	0.01	1918274
Aroclor 1260	ug/g	<0.01	<0.01	<0.01	<0.01	1919149	<0.01	1918274	<0.01	1919149	<0.01	0.01	1918274
Aroclor 1268	ug/g	<0.01	<0.01	<0.01	<0.01	1919149	<0.01	1918274	<0.01	1919149	<0.01	0.01	1918274
Total PCB	ug/g	<0.01	<0.01	<0.01	<0.01	1919149	<0.01	1918274	<0.01	1919149	<0.01	0.01	1918274
Surrogate Recovery (%)													
2,4,5,6-Tetrachloro-m-xylene	%	75	63	85	88	1919149	80	1918274	107	1919149	83		1918274
Decachlorobiphenyl	%	108	108	116	121	1919149	114	1918274	143(1)	1919149	124		1918274

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) - Surrogate recovery was above the upper control limit due to matrix interference. This may represent a high bias in the result.

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Maxxam Job #: A9A8338
Report Date: 2009/08/28

Maxxam Analytics
Client Project #: A944529

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		DL3933		DL3934	DL3938		DL3939	DL3940		DL3941		
Sampling Date		2009/08/13		2009/08/13	2009/08/14		2009/08/14	2009/08/14		2009/08/14		
	Units	**Q33802 \ C309-7WB**	**QC Batch**	**Q33804 \ C309-BD1**	**Q33898 \ C309-12WA**	**QC Batch**	**Q33899 \ C309-12WB**	**Q33900 \ C309-13WA**	**QC Batch**	**Q33901 \ C309-13WB**	**RDL**	**QC Batch**
PCBs												
Aroclor 1262	ug/g	<0.01	1919149	<0.01	<0.01	1918274	<0.01	<0.01	1919149	<0.01	0.01	1918274
Aroclor 1016	ug/g	<0.01	1919149	<0.01	<0.01	1918274	<0.01	<0.01	1919149	<0.01	0.01	1918274
Aroclor 1221	ug/g	<0.01	1919149	<0.01	<0.01	1918274	<0.01	<0.01	1919149	<0.01	0.01	1918274
Aroclor 1232	ug/g	<0.01	1919149	<0.01	<0.01	1918274	<0.01	<0.01	1919149	<0.01	0.01	1918274
Aroclor 1242	ug/g	<0.01	1919149	<0.01	<0.01	1918274	<0.01	<0.01	1919149	<0.01	0.01	1918274
Aroclor 1248	ug/g	<0.01	1919149	<0.01	<0.01	1918274	<0.01	<0.01	1919149	<0.01	0.01	1918274
Aroclor 1254	ug/g	<0.01	1919149	<0.01	<0.01	1918274	<0.01	<0.01	1919149	<0.01	0.01	1918274
Aroclor 1260	ug/g	<0.01	1919149	<0.01	<0.01	1918274	<0.01	<0.01	1919149	<0.01	0.01	1918274
Aroclor 1268	ug/g	<0.01	1919149	<0.01	<0.01	1918274	<0.01	<0.01	1919149	<0.01	0.01	1918274
Total PCB	ug/g	<0.01	1919149	<0.01	<0.01	1918274	<0.01	<0.01	1919149	<0.01	0.01	1918274
Surrogate Recovery (%)												
2,4,5,6-Tetrachloro-m-xylene	%	80	1919149	82	79	1918274	65	88	1919149	72		1918274
Decachlorobiphenyl	%	112	1919149	115	119	1918274	110	118	1919149	101		1918274

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: A9A8338
Report Date: 2009/08/28

Maxxam Analytics
Client Project #: A944529

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		DL3942		DL3943	DL3944	DL3945	DL3946		
Sampling Date		2009/08/14		2009/08/14	2009/08/14	2009/08/14	2009/08/14		
	Units	**Q33902 \ C309-14WA**	**QC Batch**	**Q33903 \ C309-14WB**	**Q33904 \ C309-15WA**	**Q33906 \ C309-15WB**	**Q33907 \ C309-BD2**	**RDL**	**QC Batch**
PCBs									
Aroclor 1262	ug/g	<0.01	1918274	<0.01	<0.01	<0.01	<0.01	0.01	1919149
Aroclor 1016	ug/g	<0.01	1918274	<0.01	<0.01	<0.01	<0.01	0.01	1919149
Aroclor 1221	ug/g	<0.01	1918274	<0.01	<0.01	<0.01	<0.01	0.01	1919149
Aroclor 1232	ug/g	<0.01	1918274	<0.01	<0.01	<0.01	<0.01	0.01	1919149
Aroclor 1242	ug/g	<0.01	1918274	<0.01	<0.01	<0.01	<0.01	0.01	1919149
Aroclor 1248	ug/g	<0.01	1918274	<0.01	<0.01	<0.01	<0.01	0.01	1919149
Aroclor 1254	ug/g	<0.01	1918274	<0.01	<0.01	<0.01	<0.01	0.01	1919149
Aroclor 1260	ug/g	<0.01	1918274	<0.01	<0.01	<0.01	<0.01	0.01	1919149
Aroclor 1268	ug/g	<0.01	1918274	<0.01	<0.01	<0.01	<0.01	0.01	1919149
Total PCB	ug/g	<0.01	1918274	<0.01	<0.01	<0.01	<0.01	0.01	1919149
Surrogate Recovery (%)									
2,4,5,6-Tetrachloro-m-xylene	%	76	1918274	80	87	82	71		1919149
Decachlorobiphenyl	%	92	1918274	117	127	110	104		1919149

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: A9A8338
Report Date: 2009/08/28

Maxxam Analytics
Client Project #: A944529

POLYCHLORINATED BIPHENYLS BY GC-ECD (WATER)

Maxxam ID		DL3935	DL3936	DL3937	DL3947	DL3948	DL3949	DL3950	DL3951		
Sampling Date		2009/08/14	2009/08/14	2009/08/14	2009/08/14	2009/08/14	2009/08/14	2009/08/14	2009/08/14		
	Units	**Q33869 \ C309-5W**	**Q33890 \ C309-6W**	**Q33891 \ C309-7W**	**Q33945 \ C309-13W**	**Q33946 \ C309-14W**	**Q33947 \ C309-15W**	**Q33948 \ C309-BD1W**	**Q33949 \ C309-FB**	**RDL**	**QC Batch**
PCBs											
Aroclor 1016	ug/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	1915820
Aroclor 1221	ug/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	1915820
Aroclor 1232	ug/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	1915820
Aroclor 1242	ug/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	1915820
Aroclor 1248	ug/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	1915820
Aroclor 1254	ug/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	1915820
Aroclor 1260	ug/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	1915820
Aroclor 1262	ug/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	1915820
Aroclor 1268	ug/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	1915820
Total PCB	ug/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	1915820
Surrogate Recovery (%)											
2,4,5,6-Tetrachloro-m-xylene	%	72	67	30(1)	68	52	64	65	78		1915820
Decachlorobiphenyl	%	109	94	74	91	59	71	77	84		1915820

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) - Surrogate recovery was below the lower control limit. This may represent a low bias in some results.

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Maxxam Job #: A9A8338
Report Date: 2009/08/28

Maxxam Analytics
Client Project #: A944529

POLYCHLORINATED BIPHENYLS BY GC-ECD (WATER)

Polychlorinated Biphenyl in Water: Duplicate results exceeded RPD acceptance criteria. The variability in the results for flagged analytes may be more pronounced.

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Maxxam Job #: A9A8338
Report Date: 2009/08/28

Maxxam Analytics
Client Project #: A944529

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
1915820	2,4,5,6-Tetrachloro-m-xylene	2009/08/25	68	40 - 130	83	40 - 130	82	%		
1915820	Decachlorobiphenyl	2009/08/25	88	40 - 130	107	40 - 130	111	%		
1915820	Aroclor 1260	2009/08/26	80	30 - 130	99	30 - 130	<0.05	ug/L	NC	40
1915820	Total PCB	2009/08/26	80	30 - 130	99	30 - 130	<0.05	ug/L	NC	40
1915820	Aroclor 1016	2009/08/26					<0.05	ug/L	NC	40
1915820	Aroclor 1221	2009/08/26					<0.05	ug/L	NC	40
1915820	Aroclor 1232	2009/08/26					<0.05	ug/L	NC	40
1915820	Aroclor 1242	2009/08/26					<0.05	ug/L	NC	40
1915820	Aroclor 1248	2009/08/26					<0.05	ug/L	NC	40
1915820	Aroclor 1254	2009/08/26					<0.05	ug/L	NC	40
1915820	Aroclor 1262	2009/08/26					<0.05	ug/L	NC	40
1915820	Aroclor 1268	2009/08/26					<0.05	ug/L	NC	40
1918274	2,4,5,6-Tetrachloro-m-xylene	2009/08/26	81	40 - 130	84	40 - 130	86	%		
1918274	Decachlorobiphenyl	2009/08/26	102	40 - 130	116	40 - 130	113	%		
1918274	Aroclor 1260	2009/08/26	95	30 - 130	97	30 - 130	<0.01	ug/g	NC	50
1918274	Total PCB	2009/08/26	95	30 - 130	97	30 - 130	<0.01	ug/g	NC	50
1918274	Aroclor 1262	2009/08/26					<0.01	ug/g	NC	50
1918274	Aroclor 1016	2009/08/26					<0.01	ug/g	NC	50
1918274	Aroclor 1221	2009/08/26					<0.01	ug/g	NC	50
1918274	Aroclor 1232	2009/08/26					<0.01	ug/g	NC	50
1918274	Aroclor 1242	2009/08/26					<0.01	ug/g	NC	50
1918274	Aroclor 1248	2009/08/26					<0.01	ug/g	NC	50
1918274	Aroclor 1254	2009/08/26					<0.01	ug/g	NC	50
1918274	Aroclor 1268	2009/08/26					<0.01	ug/g	NC	50
1919149	2,4,5,6-Tetrachloro-m-xylene	2009/08/26	82	40 - 130	81	40 - 130	78	%		
1919149	Decachlorobiphenyl	2009/08/26	108	40 - 130	106	40 - 130	98	%		
1919149	Aroclor 1260	2009/08/27	122	30 - 130	102	30 - 130	<0.01	ug/g	NC	50
1919149	Total PCB	2009/08/27	122	30 - 130	102	30 - 130	<0.01	ug/g	4.4	50
1919149	Aroclor 1262	2009/08/27					<0.01	ug/g	NC	50
1919149	Aroclor 1016	2009/08/27					<0.01	ug/g	NC	50
1919149	Aroclor 1221	2009/08/27					<0.01	ug/g	NC	50
1919149	Aroclor 1232	2009/08/27					<0.01	ug/g	NC	50
1919149	Aroclor 1242	2009/08/27					<0.01	ug/g	NC	50
1919149	Aroclor 1248	2009/08/27					<0.01	ug/g	NC	50
1919149	Aroclor 1254	2009/08/27					<0.01	ug/g	NC	50

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Maxxam Job #: A9A8338
Report Date: 2009/08/28

Maxxam Analytics
Client Project #: A944529

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
1919149	Aroclor 1268	2009/08/27					<0.01	ug/g	NC	50
1920191	Moisture	2009/08/26							15.0	50

N/A = Not Applicable
RPD = Relative Percent Difference
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 to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
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 (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

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Validation Signature Page

Maxxam Job #: A9A8338

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

CHARLES ANCKER, B.Sc., M.Sc., C.Chem, Senior Analyst

CRISTINA CARRIERE, Scientific Services

==========

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. SCC and CALA have approved this reporting process and electronic report format.

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MAXXAM ANALYTICS
9331 - 48th Street
Edmonton, Alberta, T6B 2R4
Phone: (780) 577-7100
Fax: (780) 450-4187

RUSH

SILA REMEDIATION - 4495 BL.
WILFRED-HAMEL BUR 100
Maxxam PM Alaina Maxxam

SUBCONTRA

21-Aug-09 11:19
ANTONELLA BRASIL
A9A8338
MAF ENV-759

To: Maxxam Ontario (From Edmonton)

Job# A944529

☐ Yes ☑ No International Sample/BioHazard (if yes, add co ...prior to disposal)
☐ Yes ☑ No Special Protocol (if yes, Protocol _____

Received @ Subcontract Lab by (sign) Zofia (print) ZOFIA ZERUTA

Received @ Subcontract Lab (Date) 09/08/21 (Time) 11:19

Received Lab's Job # _____ Inspected by (print) _____ SIF ☐ Yes ☐ No

Upon receipt, record 3 temperatures for **each** package/cooler. If required by contract or legal sample,indicate if custody sealed.

Temp1 5°C Temp2 5°C Temp3 5°C Custody sealed YES

Sample ID	MATRIX	Test(s) Required	Container	Date Sampled	Date Required
Q33791-02R \ C309-4WA	S	Miscellaneous Inorganics Test	1(125J)	2009/08/13	2009/08/26
Q33792-02R \ C309-4WB	S	Miscellaneous Inorganics Test	1(125J)	2009/08/13	2009/08/26
Q33794-02R \ C309-5WA	S	Miscellaneous Inorganics Test	1(125J)	2009/08/13	2009/08/26
Q33795-02R \ C309-5WB	S	Miscellaneous Inorganics Test	1(125J)	2009/08/13	2009/08/26
Q33796-02R \ C309-6WA	S	Miscellaneous Inorganics Test	1(125J)	2009/08/13	2009/08/26
Q33800-02R \ C309-6WB	S	Miscellaneous Inorganics Test	1(125J)	2009/08/13	2009/08/26
Q33801-02R \ C309-7WA	S	Miscellaneous Inorganics Test	1(125J)	2009/08/13	2009/08/26
Q33802-02R \ C309-7WB	S	Miscellaneous Inorganics Test	1(125J)	2009/08/13	2009/08/26
Q33804-02R \ C309-BD1	S	Miscellaneous Inorganics Test	1(125J)	2009/08/13	2009/08/26
Q33869-03R \ C309-5W	W	Miscellaneous Inorganics Test	1(1L A)	2009/08/14	2009/08/26
Q33890-03R \ C309-6W	W	Miscellaneous Inorganics Test	1(1L A)	2009/08/14	2009/08/26

18 x 125 mL glass vials JN 20/08/09

8 x 1L amber

'09 AUG 21 11:19

Continued

MAXXAM ANALYTICS
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Edmonton, Alberta, T6B 2R4
Phone: (780) 577-7100
Fax: (780) 450-4187

Maxxam Analytics

SUBCONTRACTING REQUEST FORM

SILA REMEDIATION - 4495 BL. WILFRED-HAMEL BUR 100
Maxxam PM Alaina Maxxam

To: Maxxam Ontario (From Edmonton)

Job# A944529

☐ 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 _____)

Received @ Subcontract Lab by (sign) zofia (print) ZOFIA ZERUTA

Received @ Subcontract Lab (Date) 09/08/21 (Time) 11:19

Received Lab's Job # A9A8339 Inspected by (print) MARK SIF ☐ Yes ☐ No

Upon receipt, record 3 temperatures for **each** package/cooler. If required by contract or legal sample, indicate if custody sealed.

Temp1 5°C Temp2 5°C Temp3 5°C Custody sealed YES

Sample ID	MATRIX	Test(s) Required	Container	Date Sampled	Date Required
Q33891-03R \ C309-7W	W	Miscellaneous Inorganics Test	1(1L A)	2009/08/14	2009/08/26
Q33898-02R \ C309-12WA	S	Miscellaneous Inorganics Test	1(125J)	2009/08/14	2009/08/26
Q33899-02R \ C309-12WB	S	Miscellaneous Inorganics Test	1(125J)	2009/08/14	2009/08/26
Q33900-02R \ C309-13WA	S	Miscellaneous Inorganics Test	1(125J)	2009/08/14	2009/08/26
Q33901-02R \ C309-13WB	S	Miscellaneous Inorganics Test	1(125J)	2009/08/14	2009/08/26
Q33902-02R \ C309-14WA	S	Miscellaneous Inorganics Test	1(125J)	2009/08/14	2009/08/26
Q33903-02R \ C309-14WB	S	Miscellaneous Inorganics Test	1(125J)	2009/08/14	2009/08/26
Q33904-02R \ C309-15WA	S	Miscellaneous Inorganics Test	1(125J)	2009/08/14	2009/08/26
Q33906-02R \ C309-15WB	S	Miscellaneous Inorganics Test	1(125J)	2009/08/14	2009/08/26
Q33907-02R \ C309-BD2	S	Miscellaneous Inorganics Test	1(125J)	2009/08/14	2009/08/26
Q33945-03R \ C309-13W	W	Miscellaneous Inorganics Test	1(1L A)	2009/08/14	2009/08/26

'09 AUG 21 11:19

Continued

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9331 - 48th Street
Edmonton, Alberta, T6B 2R4
Phone: (780) 577-7100
Fax: (780) 450-4187

Maxxam Analytics

SUBCONTRACTING REQUEST FORM

SILA REMEDIATION - 4495 BL. WILFRED-HAMEL BUR 100
Maxxam PM Alaina Maxxam

To: Maxxam Ontario (From Edmonton)

Job# A944529

☐ 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 _____)

Received @ Subcontract Lab by (sign) Zofia (print) ZOFIA ZOLTA

Received @ Subcontract Lab (Date) 09/08/21 (Time) 11:19

Received Lab's Job # A9A8338 Inspected by (print) MARIE SIF ☐ Yes ☐ No

Upon receipt, record 3 temperatures for **each** package/cooler. If required by contract or legal sample,indicate if custody sealed.

Temp1 5°C Temp2 5°C Temp3 5°C Custody sealed YES

Sample ID	MATRIX	Test(s) Required	Container	Date Sampled	Date Required
Q33946-03R \ C309-14W	W	Miscellaneous Inorganics Test	1(1L A)	2009/08/14	2009/08/26
Q33947-03R \ C309-15W	W	Miscellaneous Inorganics Test	1(1L A)	2009/08/14	2009/08/26
Q33948-03R \ C309-BD1W	W	Miscellaneous Inorganics Test	1(1L A)	2009/08/14	2009/08/26
Q33949-03R \ C309-FB	W	Miscellaneous Inorganics Test	1(1L A)	2009/08/14	2009/08/26

NOTES:
1) Please call us if due date cannot be met. Please reference Sample ID on your report.
2) Include copy of this completed form, Client COC & signed final report to **edmenvirocs@maxxamanalytics.com**

'09 AUG 21 11:19

SHIPPING INSTRUCTIONS
☐ Ship Immediately (highlight Yellow)
☐ Requir- 9am
☐ Requires Sat. Delivery
☐ Regular Ship next available day
☐ Ship Cold
☐ Ship Room Temp
☐ Ship Frozen
☐ COC Must be Attached
Sender (Print) _____ Initial _____

SHIPPING DEPARTMENT CHECKLIST
☐ Correct Shipping location
☐ Correct Sample Ids (Paperwork vs Bottles)
☐ Yes ☐ No Special-Cooler, Ice, Tape-custody seal, Date&Sign
Date Shipped _____
Shipper (Print) _____ Initial _____

298

Maxxam Analytics

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83437 **CHAIN OF CUSTODY**

Page: 1 of 2

Invoice To: Require Report? Yes ☐ No ☐

Company Name: SILA REMEDIATION INC
Contact Name: ANDREW PASSALIS / J.P. PELLETIER
Address: 4495 WILFRID-HAMEL BVD, SUITE 200, QUEBEC CITY
Prov: QC PC: G1P 2J7
Contact #s: Ph: 204 791-4938 418 653-4422 Fax: 418-653-3583

Report To: A944529/JN/JL

Prov: PC:
Ph: Fax:

PO # / AFE #:
Quotation #: A90192
Project #:
Project Name: CAM-3
Location: SHEPHERD BAY
Sampler's Initials: A.P.

DETECTION LIMIT REQUIREMENTS:
Check the applicable criterion and indicate land use
☐ AT1 _____
☐ CCME _____
☒ OTHER SEE CORRESPONDENCE

REPORT DISTRIBUTION:
EMAIL ADDRESS(S):
apassalis@mts.net
jppelletier@biogenie-env.com

SERVICE REQUESTED:
☐ **RUSH** (Please ensure you contact the lab to reserve)
Date Required: _____
☒ REGULAR Turnaround (5 to 7 Days)

	Sample Identification	Matrix S/W	Date & Time Sampled Year/Month/Day	SOILS: BTEX F1-F4	Sieve (75 micron)	Salinity 4	Regulated Metals (See List)	Assessment ICP Metals[2]	Paint Filter ☐ Flashpoint ☐ pH (1:1)	TCLP ☐ BTEX ☐ Metals	PCBs (TOTAL)	WATERS: BTEX F1 ☐ VOCs	BTEX F1-F2 ☐ BTEX F1-F4	Routine Water Package ☐ Turb ☐ F	REGULATED METALS (CCME / AT1)[3] Total ☐ Preserved ☐ Not Preserved	Dissolved ☐ Preserved ☐ Not Preserved ☐ Filtered ☐ Not Filtered	Mercury ☐ Total ☐ Dissolved	Ammonia ☐ TKN ☐ COD	TOC ☐ DOC	OTHER TEST(S): TPH (C6-C34)	T-METALS (SEE LIST)	PCBS (TOTAL)	TUM	*HOLD for 60 Days	# of Containers Submitted
1	C309-4WA	S	13/8/09	X			X				X														3
2	C309-4WB			X			X				X														3
3	C309-5WA			X			X				X														3
4	C309-5WB			X			X				X														3
5	C309-6WA			X			X				X														3
6	C309-6WB			X			X				X														3
7	C309-7WA			X			X				X														3
8	C309-7WB			X			X				X														3
9	C309-BD1			X			X				X														3
10	C309-5W	W	14/8/09																	X	X	X			7
11	C309-6W																			X	X	X			7
12	C309-7W																			X	X	X			7

ARRIVED AT DEPOT:
AUG 19 2009
TEMP: 9 16 41

TRAVEL BLANK

*All samples will be held for 60 calendar days after sample receipt. For long term storage please contact your project manager.

Maxxam Job #: X3

Relinquished By: A.PASSALIS Date/Time: 17/8/09
Sign and Print:

COMMENTS/SPECIAL INSTRUCTIONS:
Metals - AS, Cd, Cr, Co, Cu, Ni, Pb, Zn, Hg

# JARS USED & NOT SUBMITTED	Received By	Temperature	Ice
	AUG 20 2009 MV 8:45	2.4 2.5 2.7 / 4.4 4.4 2.5	
	CUSTODY SEAL YES / NO		

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Maxxam Analytics

Calgary: 4000 19st St. NE, T2E 6P8 | Ph: (403) 291-3077 | Fax: (403) 735-2240 | Toll free: (800) 386-7247

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www.maxxamanalytics.com

83438 **CHAIN OF CUSTODY**

JN/JC

Page: 2 of 2

Invoice To: Require Report? Yes ☐ No ☐	**Report To:** A944529/JN/JL	
Company Name: SILA REMEDIATION INC		PO # / AFE #:
Contact Name:		Quotation #: A90192
Address:		Project #:
Prov: PC:	Prov: PC:	Project Name: CAM-3
		Location: SHEPHERD BAY
Contact #s: Ph: Fax:	Ph: Fax:	Sampler's Initials: AP

DETECTION LIMIT REQUIREMENTS:
Check the applicable criterion and indicate land use
☐ AT1
☐ CCME
☐ OTHER

REPORT DISTRIBUTION:
EMAIL ADDRESS(S):

SERVICE REQUESTED:
☐ **RUSH** (Please ensure you contact the lab to reserve)
Date Required:
☐ REGULAR Turnaround (5 to 7 Days)

#	Sample Identification	Matrix S/W	Date & Time Sampled Year/Month/Day	SOILS: F1-F4	Sieve (75 micron)	Salinity 4	Regulated Metals (see list)	Assessment ICP Metals²	☐ Paint Filter ☐ Flashpoint ☐ pH (1:1)	TCLP ☐ BTEX ☐ Metals	PCBs (Total)	WATERS: ☐ BTEX F1 ☐ VOCs	☐ BTEX F1-F2 ☐ BTEX F1-F4	Routine Water Package ☐ Turb ☐ F	REGULATED METALS (CCME / AT1)³ Total ☐ Preserved ☐ Not Preserved	Dissolved ☐ Preserved ☐ Not Preserved ☐ Filtered ☐ Not Filtered	Mercury ☐ Total ☐ Dissolved	☐ Ammonia ☐ TKN ☐ COD	☐ TOC ☐ DOC	OTHER TEST(S): TPH (C6-C34)	T.METALS (SEE LIST)	PCBS (TOTAL)	*HOLD for 60 Days	# of Containers Submitted
1	C309 - 12WA	S	14/8/09	X			X				X													3
2	C309 - 12WB	(	(	X			X				X													3
3	C309 - 13WA			X			X				X													3
4	C309 - 13WB			X			X				X													3
5	C309 - 14WA			X			X				X													3
6	C309 - 14WB			X			X				X													3
7	C309 - 15WA			X			X				X													3
8	C309 - 15WB			X			X				X													3
9	C309 - BD2			X			X				X													3
10	C309 - 13W	W																		X	X	X		7
11	C309 - 14W	(																		X	X	X		7
12	C309 - 15W																			X	X	X		7
	C309 - BD1W																			X	X	X		7
	C309 - FB -																			X	X	X		7

ARRIVED AT DEPOT:
AUG 19 2009
TEMP: 5/6/5

*All samples are held for 60 calendar days after sample receipt. For long term storage please contact your project manager.

Maxxam Job #:

Relinquished By: [signature] Date/Time: 17/8/09 - 1200

Sign and Print: A. PASSALIS

JARS USED & NOT SUBMITTED

Received By: AUG 20 2009 MC 8:45

CUSTODY SEAL YES / NO

Temperature			Ice
2	2	2	
4	5	7	
4	4	5	
4	4	2	

COMMENTS/SPECIAL INSTRUCTIONS:
METALS - As, Cr, Cd, Co, Cu, Pb, Ni, Zn, Hg

REPORT OF ANALYSIS

Client: **Sila Remediation Inc.**
200-4495 Boul. Wilfrid-Hamel
Québec, QC
G1P 2J7
Attention: **Mr. Jean-Pierre Pelletier**

Report Number: 2922525
Date: 2009-09-22
Date Submitted: 2009-09-15

Project: FOX-5

P.O. Number:
Matrix: Soil

Chain of Custody Number: **112541**

			LAB ID:	743576	743577	743578	743579	743580	**GUIDELINE**		
			Sample Date:	2009-09-10	2009-09-10	2009-09-10	2009-09-10	2009-09-10			
			Sample ID:	F509-5WA	F509-5WB	F509-GWA	F509-6WB	F509-7WA			
PARAMETER	**UNITS**	**MRL**							**TYPE**	**LIMIT**	**UNITS**
Moisture	%	0.1		11.0	10.8	8.7	12.7	9.5			
Arsenic	ug/g	1.0		3.6	2.7	2.9	2.9	3.2			
Cadmium	ug/g	0.5		<0.5	<0.5	<0.5	<0.5	<0.5			
Chromium	ug/g	1		37	34	12	19	40			
Cobalt	ug/g	1		9	8	5	7	7			
Copper	ug/g	1		10	8	5	8	8			
Lead	ug/g	1		8	7	6	7	8			
Mercury	ug/g	0.1		<0.1	<0.1	<0.1	<0.1	<0.1			
Nickel	ug/g	1		18	17	8	12	22			
Zinc	ug/g	1		47	41	27	40	45			

MRL = Method Reporting Limit INC = Incomplete AO = Aesthetic Objective OG = Operational Guideline MAC = Maximum Allowable Concentration IMAC = Interim Maximum Allowable Concentration

Comment:

APPROVAL: _____
Lorna Wilson
Agriculture Lab Supervisor

REPORT OF ANALYSIS

Client: **Sila Remediation Inc.**
200-4495 Boul. Wilfrid-Hamel
Québec, QC
G1P 2J7
Attention: **Mr. Jean-Pierre Pelletier**

Report Number: 2922525
Date: 2009-09-22
Date Submitted: 2009-09-15

Project: FOX-5

P.O. Number:
Matrix: Soil

Chain of Custody Number: **112541**

			LAB ID:	743581	743582	743583	743584	743585	GUIDELINE		
			Sample Date:	2009-09-10	2009-09-10	2009-09-10	2009-09-10	2009-09-10			
			Sample ID:	F509-7WB	F509-8WA	F509-8WB	F509-9WA	F509-9WB			
PARAMETER	**UNITS**	**MRL**							**TYPE**	**LIMIT**	**UNITS**
Moisture	%	0.1		9.3	13.5	9.9	8.2	9.8			
Arsenic	ug/g	1.0		3.2	3.8	3.2	3.8	3.9			
Cadmium	ug/g	0.5		<0.5	<0.5	<0.5	<0.5	<0.5			
Chromium	ug/g	1		23	30	26	27	18			
Cobalt	ug/g	1		8	7	6	7	6			
Copper	ug/g	1		9	8	7	7	7			
Lead	ug/g	1		7	6	6	6	5			
Mercury	ug/g	0.1		<0.1	<0.1	<0.1	<0.1	<0.1			
Nickel	ug/g	1		13	15	15	15	12			
Zinc	ug/g	1		51	39	34	36	34			

MRL = Method Reporting Limit INC = Incomplete AO = Aesthetic Objective OG = Operational Guideline MAC = Maximum Allowable Concentration IMAC = Interim Maximum Allowable Concentration

Comment:

APPROVAL: _____
Lorna Wilson
Agriculture Lab Supervisor

REPORT OF ANALYSIS

Client: **Sila Remediation Inc.**
200-4495 Boul. Wilfrid-Hamel
Québec, QC
G1P 2J7
Attention: **Mr. Jean-Pierre Pelletier**

Report Number: 2922525
Date: 2009-09-22
Date Submitted: 2009-09-15

Project: FOX-5

P.O. Number:
Matrix: Soil

Chain of Custody Number: **112541**

			LAB ID:	743586	743587	743588	743589	743590	**GUIDELINE**		
			Sample Date:	2009-09-10	2009-09-10	2009-09-10	2009-09-10	2009-09-10			
			Sample ID:	F509-10WA	F509-10WB	F509-11WA	F509-11WB	F509-12WA			
PARAMETER	**UNITS**	**MRL**							**TYPE**	**LIMIT**	**UNITS**
Moisture	%	0.1		9.1	10.0	10.3	11.5	5.3			
Arsenic	ug/g	1.0		2.7	2.5	5.0	5.4	24.8			
Cadmium	ug/g	0.5		<0.5	<0.5	<0.5	<0.5	0.6			
Chromium	ug/g	1		17	25	35	30	28			
Cobalt	ug/g	1		6	7	10	8	6			
Copper	ug/g	1		6	6	9	8	9			
Lead	ug/g	1		9	7	13	9	21			
Mercury	ug/g	0.1		<0.1	<0.1	<0.1	<0.1	<0.1			
Nickel	ug/g	1		14	22	32	19	17			
Zinc	ug/g	1		33	34	43	38	67			

MRL = Method Reporting Limit INC = Incomplete AO = Aesthetic Objective OG = Operational Guideline MAC = Maximum Allowable Concentration IMAC = Interim Maximum Allowable Concentration

Comment:

APPROVAL: _____
Lorna Wilson
Agriculture Lab Supervisor

REPORT OF ANALYSIS

Client: **Sila Remediation Inc.**
200-4495 Boul. Wilfrid-Hamel
Québec, QC
G1P 2J7
Attention: **Mr. Jean-Pierre Pelletier**

Report Number: 2922525
Date: 2009-09-22
Date Submitted: 2009-09-15

Project: FOX-5

P.O. Number:
Matrix: Soil

Chain of Custody Number: **112541**

			LAB ID:	743591	743592	743593	743594	743595	**GUIDELINE**		
			Sample Date:	2009-09-10	2009-09-10	2009-09-10	2009-09-10	2009-09-10			
			Sample ID:	F509-12WB	F509-13WA	F509-13WB	F509-14WA	F509-14WB			
PARAMETER	**UNITS**	**MRL**							**TYPE**	**LIMIT**	**UNITS**
Moisture	%	0.1		5.6	7.9	7.5	3.7	8.9			
Arsenic	ug/g	1.0		2.9	3.3	1.9	2.9	3.2			
Cadmium	ug/g	0.5		<0.5	<0.5	<0.5	<0.5	<0.5			
Chromium	ug/g	1		28	20	16	8	21			
Cobalt	ug/g	1		6	7	6	3	6			
Copper	ug/g	1		6	7	5	4	5			
Lead	ug/g	1		7	8	6	6	8			
Mercury	ug/g	0.1		<0.1	<0.1	<0.1	<0.1	<0.1			
Nickel	ug/g	1		19	20	21	4	9			
Zinc	ug/g	1		40	39	30	19	34			

MRL = Method Reporting Limit INC = Incomplete AO = Aesthetic Objective OG = Operational Guideline MAC = Maximum Allowable Concentration IMAC = Interim Maximum Allowable Concentration

Comment:

APPROVAL:

Lorna Wilson
Agriculture Lab Supervisor

REPORT OF ANALYSIS

Client: **Sila Remediation Inc.**
200-4495 Boul. Wilfrid-Hamel
Québec, QC
G1P 2J7
Attention: **Mr. Jean-Pierre Pelletier**

Report Number: 2922525
Date: 2009-09-22
Date Submitted: 2009-09-15

Project: FOX-5

P.O. Number:
Matrix: Soil

Chain of Custody Number: **112541**

			LAB ID:	743576	743577	743578	743579	743580	GUIDELINE		
			Sample Date:	2009-09-10	2009-09-10	2009-09-10	2009-09-10	2009-09-10			
			Sample ID:	F509-5WA	F509-5WB	F509-GWA	F509-6WB	F509-7WA			
PARAMETER	**UNITS**	**MRL**							**TYPE**	**LIMIT**	**UNITS**
PERCENT MOISTURE											
Moisture	%	0.1	11.0	10.8	8.7	12.7	9.5			
CCME Total Petroleum Hydrocarbons											
F1 (C6-C10)	ug/g	20	<20	<20	<20	<20	<20			
F2 (C10-C16)	ug/g	20	<20	<20	<20	<20	<20			
F3 (C16-C34)	ug/g	20	<20	<20	<20	<20	<20			
F4 (C34-C50)	ug/g	20								

MRL = Method Reporting Limit INC = Incomplete AO = Aesthetic Objective OG = Operational Guideline MAC = Maximum Allowable Concentration IMAC = Interim Maximum Allowable Concentration

Comment:

APPROVAL:

Charlie Qu
Organic Lab Team Leader

REPORT OF ANALYSIS

Client: **Sila Remediation Inc.**
200-4495 Boul. Wilfrid-Hamel
Québec, QC
G1P 2J7
Attention: **Mr. Jean-Pierre Pelletier**

Report Number: 2922525
Date: 2009-09-22
Date Submitted: 2009-09-15

Project: FOX-5

P.O. Number:
Matrix: Soil

Chain of Custody Number: **112541**

			LAB ID:	743581	743582	743583	743584	743585	**GUIDELINE**		
			Sample Date:	2009-09-10	2009-09-10	2009-09-10	2009-09-10	2009-09-10			
			Sample ID:	F509-7WB	F509-8WA	F509-8WB	F509-9WA	F509-9WB			
PARAMETER	**UNITS**	**MRL**							**TYPE**	**LIMIT**	**UNITS**
PERCENT MOISTURE											
Moisture	%	0.1		9.3	13.5	9.9	8.2	9.8			
CCME Total Petroleum Hydrocarbons											
F1 (C6-C10)	ug/g	20		<20	<20	<20	<20	<20			
F2 (C10-C16)	ug/g	20		<20	<20	<20	<20	<20			
F3 (C16-C34)	ug/g	20		<20	<20	<20	<20	<20			
F4 (C34-C50)	ug/g	20				<20					

MRL = Method Reporting Limit INC = Incomplete AO = Aesthetic Objective OG = Operational Guideline MAC = Maximum Allowable Concentration IMAC = Interim Maximum Allowable Concentration

Comment:

APPROVAL:

Charlie Qu
Organic Lab Team Leader

REPORT OF ANALYSIS

Client: **Sila Remediation Inc.**
200-4495 Boul. Wilfrid-Hamel
Québec, QC
G1P 2J7
Attention: **Mr. Jean-Pierre Pelletier**

Report Number: 2922525
Date: 2009-09-22
Date Submitted: 2009-09-15

Project: FOX-5

P.O. Number:
Matrix: Soil

Chain of Custody Number: **112541**

			LAB ID:	743586	743587	743588	743589	743590	GUIDELINE		
			Sample Date:	2009-09-10	2009-09-10	2009-09-10	2009-09-10	2009-09-10			
			Sample ID:	F509-10WA	F509-10WB	F509-11WA	F509-11WB	F509-12WA			
PARAMETER	**UNITS**	**MRL**							**TYPE**	**LIMIT**	**UNITS**
PERCENT MOISTURE											
Moisture	%	0.1		9.1	10.0	10.3	11.5	5.3			
CCME Total Petroleum Hydrocarbons											
F1 (C6-C10)	ug/g	20		<20	<20	<20	<20	<20			
F2 (C10-C16)	ug/g	20		<20	<20	<20	<20	<20			
F3 (C16-C34)	ug/g	20		<20	<20	40	<20	71			
F4 (C34-C50)	ug/g	20									

MRL = Method Reporting Limit INC = Incomplete AO = Aesthetic Objective OG = Operational Guideline MAC = Maximum Allowable Concentration IMAC = Interim Maximum Allowable Concentration

Comment:

APPROVAL:

Charlie Qu
Organic Lab Team Leader

REPORT OF ANALYSIS

Client: **Sila Remediation Inc.**
200-4495 Boul. Wilfrid-Hamel
Québec, QC
G1P 2J7
Attention: **Mr. Jean-Pierre Pelletier**

Report Number: 2922525
Date: 2009-09-22
Date Submitted: 2009-09-15

Project: FOX-5

P.O. Number:
Matrix: Soil

Chain of Custody Number: **112541**

			LAB ID:	743591	743592	743593	743594	743595	GUIDELINE		
			Sample Date:	2009-09-10	2009-09-10	2009-09-10	2009-09-10	2009-09-10			
			Sample ID:	F509-12WB	F509-13WA	F509-13WB	F509-14WA	F509-14WB			
PARAMETER	**UNITS**	**MRL**							**TYPE**	**LIMIT**	**UNITS**
PERCENT MOISTURE											
Moisture	%	0.1		5.6	7.9	7.5	3.7	8.9			
CCME Total Petroleum Hydrocarbons											
F1 (C6-C10)	ug/g	20		<20	<20	<20	<20	<20			
F2 (C10-C16)	ug/g	20		<20	<20	<20	<20	<20			
F3 (C16-C34)	ug/g	20		<20	<20	21	<20	<20			
F4 (C34-C50)	ug/g	20									

MRL = Method Reporting Limit INC = Incomplete AO = Aesthetic Objective OG = Operational Guideline MAC = Maximum Allowable Concentration IMAC = Interim Maximum Allowable Concentration

Comment:

APPROVAL:

Charlie Qu
Organic Lab Team Leader

REPORT OF ANALYSIS

Client: **Sila Remediation Inc.**
200-4495 Boul. Wilfrid-Hamel
Québec, QC
G1P 2J7
Attention: **Mr. Jean-Pierre Pelletier**

Report Number: 2922526
Date: 2009-09-22
Date Submitted: 2009-09-15

Project: FOX-5

P.O. Number:
Matrix: Soil

Chain of Custody Number: **112550**

			LAB ID:	743596	743597	743598	743599	743600	**GUIDELINE**		
			Sample Date:	2009-09-09	2009-09-09	2009-09-09	2009-09-09	2009-09-09			
			Sample ID:	F509-15WA	F509-15WB	F509-16WA	F509-16WB	F509-17WA			
PARAMETER	**UNITS**	**MRL**							**TYPE**	**LIMIT**	**UNITS**
Moisture	%	0.1		9.2	6.9	9.8	10.3	7.0			
Arsenic	ug/g	1.0		2.4	1.6	3.0	3.1	4.1			
Cadmium	ug/g	0.5		<0.5	<0.5	<0.5	<0.5	<0.5			
Chromium	ug/g	1		38	35	36	43	29			
Cobalt	ug/g	1		10	8	7	10	8			
Copper	ug/g	1		18	15	39	17	10			
Lead	ug/g	1		7	3	23	19	8			
Mercury	ug/g	0.1		<0.1	<0.1	<0.1	<0.1	<0.1			
Nickel	ug/g	1		17	16	15	19	13			
Zinc	ug/g	1		50	40	88	88	48			

MRL = Method Reporting Limit INC = Incomplete AO = Aesthetic Objective OG = Operational Guideline MAC = Maximum Allowable Concentration IMAC = Interim Maximum Allowable Concentration

Comment:

APPROVAL: _____
Lorna Wilson
Agriculture Lab Supervisor

REPORT OF ANALYSIS

Client: **Sila Remediation Inc.**
200-4495 Boul. Wilfrid-Hamel
Québec, QC
G1P 2J7
Attention: **Mr. Jean-Pierre Pelletier**

Report Number: 2922526
Date: 2009-09-22
Date Submitted: 2009-09-15

Project: FOX-5

P.O. Number:
Matrix: Soil

Chain of Custody Number: **112550**

			LAB ID:	743601	743602	743603	743604	743605	**GUIDELINE**		
			Sample Date:	2009-09-09	2009-09-09	2009-09-09	2009-09-09	2009-09-09			
			Sample ID:	F509-17WB	F509-18WA	F509-18WB	F509-19WA	F509-19WB			
PARAMETER	**UNITS**	**MRL**							**TYPE**	**LIMIT**	**UNITS**
Moisture	%	0.1		6.2	8.5	5.6	7.4	6.9			
Arsenic	ug/g	1.0		3.1	3.8	3.0	3.8	3.6			
Cadmium	ug/g	0.5		<0.5	<0.5	<0.5	<0.5	<0.5			
Chromium	ug/g	1		18	33	20	28	27			
Cobalt	ug/g	1		6	8	6	8	7			
Copper	ug/g	1		8	10	6	10	9			
Lead	ug/g	1		7	12	6	6	5			
Mercury	ug/g	0.1		<0.1	<0.1	<0.1	<0.1	<0.1			
Nickel	ug/g	1		8	15	9	13	12			
Zinc	ug/g	1		41	46	36	45	40			

MRL = Method Reporting Limit INC = Incomplete AO = Aesthetic Objective OG = Operational Guideline MAC = Maximum Allowable Concentration IMAC = Interim Maximum Allowable Concentration

Comment:

APPROVAL:

Lorna Wilson
Agriculture Lab Supervisor

REPORT OF ANALYSIS

Client: **Sila Remediation Inc.**
200-4495 Boul. Wilfrid-Hamel
Québec, QC
G1P 2J7
Attention: **Mr. Jean-Pierre Pelletier**

Report Number: 2922526
Date: 2009-09-22
Date Submitted: 2009-09-15

Project: FOX-5

P.O. Number:
Matrix: Soil

Chain of Custody Number: **112550**

			LAB ID:	743606	743607	743608			GUIDELINE		
			Sample Date:	2009-09-09	2009-09-09	2009-09-09					
			Sample ID:	F509-BD1	F509-BD2	F509-BD3					
PARAMETER	**UNITS**	**MRL**							**TYPE**	**LIMIT**	**UNITS**
Moisture	%	0.1		8.6	10.9	11.2					
Arsenic	ug/g	1.0		3.8	3.2	3.5					
Cadmium	ug/g	0.5		<0.5	<0.5	<0.5					
Chromium	ug/g	1		30	41	29					
Cobalt	ug/g	1		7	9	9					
Copper	ug/g	1		8	15	15					
Lead	ug/g	1		9	15	8					
Mercury	ug/g	0.1		<0.1	<0.1	<0.1					
Nickel	ug/g	1		13	18	13					
Zinc	ug/g	1		40	76	50					

MRL = Method Reporting Limit INC = Incomplete AO = Aesthetic Objective OG = Operational Guideline MAC = Maximum Allowable Concentration IMAC = Interim Maximum Allowable Concentration

Comment:

APPROVAL:

Lorna Wilson
Agriculture Lab Supervisor

REPORT OF ANALYSIS

Client: **Sila Remediation Inc.**
200-4495 Boul. Wilfrid-Hamel
Québec, QC
G1P 2J7
Attention: **Mr. Jean-Pierre Pelletier**

Report Number: 2922526
Date: 2009-09-22
Date Submitted: 2009-09-15

Project: FOX-5

P.O. Number:
Matrix: Soil

Chain of Custody Number: **112550**

			LAB ID:	743596	743597	743598	743599	743600	GUIDELINE		
			Sample Date:	2009-09-09	2009-09-09	2009-09-09	2009-09-09	2009-09-09			
			Sample ID:	F509-15WA	F509-15WB	F509-16WA	F509-16WB	F509-17WA			
PARAMETER	**UNITS**	**MRL**							**TYPE**	**LIMIT**	**UNITS**
PERCENT MOISTURE											
Moisture	%	0.1		9.2	6.9	9.8	10.3	7.0			
CCME Total Petroleum Hydrocarbons											
F1 (C6-C10)	ug/g	20		<20	<20	<20	<20	<20			
F2 (C10-C16)	ug/g	20		<20	<20	<20	213	<20			
F3 (C16-C34)	ug/g	20		<20	<20	34	118	<20			

MRL = Method Reporting Limit INC = Incomplete AO = Aesthetic Objective OG = Operational Guideline MAC = Maximum Allowable Concentration IMAC = Interim Maximum Allowable Concentration

Comment:

APPROVAL:

Charlie Qu
Organic Lab Team Leader

REPORT OF ANALYSIS

Client: **Sila Remediation Inc.**
200-4495 Boul. Wilfrid-Hamel
Québec, QC
G1P 2J7
Attention: **Mr. Jean-Pierre Pelletier**

Report Number: 2922526
Date: 2009-09-22
Date Submitted: 2009-09-15

Project: FOX-5

P.O. Number:
Matrix: Soil

Chain of Custody Number: **112550**

			LAB ID:	743601	743602	743603	743604	743605	GUIDELINE		
			Sample Date:	2009-09-09	2009-09-09	2009-09-09	2009-09-09	2009-09-09			
			Sample ID:	F509-17WB	F509-18WA	F509-18WB	F509-19WA	F509-19WB			
PARAMETER	**UNITS**	**MRL**							**TYPE**	**LIMIT**	**UNITS**
PERCENT MOISTURE											
Moisture	%	0.1		6.2	8.5	5.6	7.4	6.9			
CCME Total Petroleum Hydrocarbons											
F1 (C6-C10)	ug/g	20		<20	<20	<20	<20	<20			
F2 (C10-C16)	ug/g	20		<20	<20	<20	<20	<20			
F3 (C16-C34)	ug/g	20		<20	<20	43	<20	<20			

MRL = Method Reporting Limit INC = Incomplete AO = Aesthetic Objective OG = Operational Guideline MAC = Maximum Allowable Concentration IMAC = Interim Maximum Allowable Concentration

Comment:

APPROVAL:

Charlie Qu
Organic Lab Team Leader

REPORT OF ANALYSIS

Client: **Sila Remediation Inc.**
200-4495 Boul. Wilfrid-Hamel
Québec, QC
G1P 2J7
Attention: **Mr. Jean-Pierre Pelletier**

Report Number: 2922526
Date: 2009-09-22
Date Submitted: 2009-09-15

Project: FOX-5

P.O. Number:
Chain of Custody Number: **112550**
Matrix: Soil

			LAB ID:	743606	743607	743608			GUIDELINE		
			Sample Date:	2009-09-09	2009-09-09	2009-09-09					
			Sample ID:	F509-BD1	F509-BD2	F509-BD3					
PARAMETER	**UNITS**	**MRL**							**TYPE**	**LIMIT**	**UNITS**
PERCENT MOISTURE											
Moisture	%	0.1	8.6	10.9	11.2						
CCME Total Petroleum Hydrocarbons											
F1 (C6-C10)	ug/g	20	<20	<20	<20						
F2 (C10-C16)	ug/g	20	<20	405	<20						
F3 (C16-C34)	ug/g	20	<20	170	<20						

MRL = Method Reporting Limit INC = Incomplete AO = Aesthetic Objective OG = Operational Guideline MAC = Maximum Allowable Concentration IMAC = Interim Maximum Allowable Concentration

Comment:

APPROVAL:
Charlie Qu
Organic Lab Team Leader

REPORT OF ANALYSIS

Client: **Sila Remediation Inc.**
200-4495 Boul. Wilfrid-Hamel
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G1P 2J7
Attention: **Mr. Jean-Pierre Pelletier**

Report Number: 2922526
Date: 2009-09-22
Date Submitted: 2009-09-15

Project: FOX-5

P.O. Number:
Matrix: Soil

Chain of Custody Number: **112550**

			LAB ID:	743596	743597	743598	743599	743600	**GUIDELINE**		
			Sample Date:	2009-09-09	2009-09-09	2009-09-09	2009-09-09	2009-09-09			
			Sample ID:	F509-15WA	F509-15WB	F509-16WA	F509-16WB	F509-17WA			
PARAMETER	**UNITS**	**MRL**							**TYPE**	**LIMIT**	**UNITS**
Polychlorinated Biphenyls - PCBs											
Polychlorinated Biphenyls (PCBs)	ug/g	0.02	<0.02	<0.02	<0.02	<0.02	<0.02				

MRL = Method Reporting Limit INC = Incomplete AO = Aesthetic Objective OG = Operational Guideline MAC = Maximum Allowable Concentration IMAC = Interim Maximum Allowable Concentration

Comment:

APPROVAL:

Charlie Qu
Organic Lab Team Leader

REPORT OF ANALYSIS

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Project: FOX-5

P.O. Number:
Matrix: Soil

Chain of Custody Number: **112550**

			LAB ID:	743601	743602	743603	743604	743605	**GUIDELINE**		
			Sample Date:	2009-09-09	2009-09-09	2009-09-09	2009-09-09	2009-09-09			
			Sample ID:	F509-17WB	F509-18WA	F509-18WB	F509-19WA	F509-19WB			
PARAMETER	**UNITS**	**MRL**							**TYPE**	**LIMIT**	**UNITS**
Polychlorinated Biphenyls - PCBs											
Polychlorinated Biphenyls (PCBs)	ug/g	0.02		<0.02	<0.02	<0.02	<0.02	<0.02			

MRL = Method Reporting Limit INC = Incomplete AO = Aesthetic Objective OG = Operational Guideline MAC = Maximum Allowable Concentration IMAC = Interim Maximum Allowable Concentration

Comment:

APPROVAL:

Charlie Qu
Organic Lab Team Leader

REPORT OF ANALYSIS

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Project: FOX-5

P.O. Number:
Matrix: Soil

Chain of Custody Number: **112550**

			LAB ID:	743606	743607	743608			GUIDELINE		
			Sample Date:	2009-09-09	2009-09-09	2009-09-09					
			Sample ID:	F509-BD1	F509-BD2	F509-BD3					
PARAMETER	**UNITS**	**MRL**							**TYPE**	**LIMIT**	**UNITS**
Polychlorinated Biphenyls - PCBs											
Polychlorinated Biphenyls (PCBs)	ug/g	0.02	<0.02	<0.02	<0.02						

MRL = Method Reporting Limit INC = Incomplete AO = Aesthetic Objective OG = Operational Guideline MAC = Maximum Allowable Concentration IMAC = Interim Maximum Allowable Concentration

Comment:

APPROVAL:
Charlie Qu
Organic Lab Team Leader

REPORT OF ANALYSIS

Client: **Sila Remediation Inc.**
200-4495 Boul. Wilfrid-Hamel
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Attention: **Mr. Jean-Pierre Pelletier**

Report Number: 2922527
Date: 2009-09-23
Date Submitted: 2009-09-15

Project: FOX-5

P.O. Number:
Matrix: Water

Chain of Custody Number: **112545**

			LAB ID:	743609	743610	743611	743612	743613	**GUIDELINE**		
			Sample Date:	2009-09-10	2009-09-10	2009-09-10	2009-09-10	2009-09-10			
			Sample ID:	F509-5W	F509-6W	F509-7W	F509-8W	F509-9W			
PARAMETER	**UNITS**	**MRL**							**TYPE**	**LIMIT**	**UNITS**
Arsenic	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001			
Cadmium	mg/L	0.0001		0.0001	0.0002	<0.0001	0.0002	<0.0001			
Chromium	mg/L	0.001		0.002	0.001	0.002	<0.001	<0.001			
Cobalt	mg/L	0.0002		0.0004	0.0002	<0.0002	<0.0002	<0.0002			
Copper	mg/L	0.001		0.002	0.001	0.001	<0.001	0.001			
Lead	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001			
Mercury	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001			
Nickel	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005			
Zinc	mg/L	0.01		<0.01	0.07	<0.01	0.04	<0.01			

MRL = Method Reporting Limit INC = Incomplete AO = Aesthetic Objective OG = Operational Guideline MAC = Maximum Allowable Concentration IMAC = Interim Maximum Allowable Concentration

Comment:
743609: Hg analyzed from unpreserved sample.
743610: Hg analyzed from unpreserved sample.

743612: Hg analyzed from unpreserved sample.
743613: Hg analyzed from unpreserved sample.

APPROVAL: _____
Ewan McRobbie
Inorganic Lab Supervisor

REPORT OF ANALYSIS

Client: **Sila Remediation Inc.**
200-4495 Boul. Wilfrid-Hamel
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Report Number: 2922527
Date: 2009-09-23
Date Submitted: 2009-09-15

Project: FOX-5

P.O. Number:
Matrix: Water

Chain of Custody Number: **112545**

			LAB ID:	743614	743615	743617	743618	743619	**GUIDELINE**		
			Sample Date:	2009-09-10	2009-09-10	2009-09-10	2009-09-10	2009-09-10			
			Sample ID:	F509-10W	F509-11W	F509-13W	F509-14W	F509-15W			
PARAMETER	**UNITS**	**MRL**							**TYPE**	**LIMIT**	**UNITS**
Arsenic	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001			
Cadmium	mg/L	0.0001		0.0001	0.0010	0.0007	0.0010	0.0014			
Chromium	mg/L	0.001		<0.001	<0.001	<0.001	0.001	<0.001			
Cobalt	mg/L	0.0002		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			
Copper	mg/L	0.001		<0.001	<0.001	0.001	<0.001	<0.001			
Lead	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001			
Mercury	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001			
Nickel	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005			
Zinc	mg/L	0.01		0.07	<0.01	0.14	0.20	0.04			

MRL = Method Reporting Limit INC = Incomplete AO = Aesthetic Objective OG = Operational Guideline MAC = Maximum Allowable Concentration IMAC = Interim Maximum Allowable Concentration

Comment:
743614: Hg analyzed from unpreserved sample.
743615: Hg analyzed from unpreserved sample.
743617: Hg analyzed from unpreserved sample.
743618: Hg analyzed from unpreserved sample.
743619: Hg analyzed from unpreserved sample.

APPROVAL: _____
Ewan McRobbie
Inorganic Lab Supervisor

REPORT OF ANALYSIS

Client: **Sila Remediation Inc.**
200-4495 Boul. Wilfrid-Hamel
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Project: FOX-5

P.O. Number:
Matrix: Water

Chain of Custody Number: **112545**

			LAB ID:	743620	743621	743622	743623	743624	**GUIDELINE**		
			Sample Date:	2009-09-10	2009-09-10	2009-09-09	2009-09-09	2009-09-09			
			Sample ID:	F509-16W	F509-17W	F509-18W	F509-19W	F509-FB			
PARAMETER	**UNITS**	**MRL**							**TYPE**	**LIMIT**	**UNITS**
Arsenic	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001			
Cadmium	mg/L	0.0001		0.0011	0.0033	0.0004	0.0037	<0.0001			
Chromium	mg/L	0.001		0.002	0.004	0.004	<0.001	<0.001			
Cobalt	mg/L	0.0002		0.0006	0.0002	0.0002	<0.0002	<0.0002			
Copper	mg/L	0.001		0.003	0.004	0.009	<0.001	0.008			
Lead	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001			
Mercury	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001			
Nickel	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005			
Zinc	mg/L	0.01		0.09	0.02	0.04	<0.01	<0.01			

MRL = Method Reporting Limit INC = Incomplete AO = Aesthetic Objective OG = Operational Guideline MAC = Maximum Allowable Concentration IMAC = Interim Maximum Allowable Concentration

Comment:
743620: Hg analyzed from unpreserved sample.
743621: Hg analyzed from unpreserved sample.
743622: Hg analyzed from unpreserved sample.
743623: Hg analyzed from unpreserved sample.
743624: Hg analyzed from unpreserved sample.

APPROVAL: _____
Ewan McRobbie
Inorganic Lab Supervisor

REPORT OF ANALYSIS

Client: **Sila Remediation Inc.**
200-4495 Boul. Wilfrid-Hamel
Québec, QC
G1P 2J7
Attention: **Mr. Jean-Pierre Pelletier**

Report Number: 2922527
Date: 2009-09-23
Date Submitted: 2009-09-15

Project: FOX-5

P.O. Number:
Matrix: Water

Chain of Custody Number: **112545**

			LAB ID:	743625	743626				**GUIDELINE**		
			Sample Date:	2009-09-09	2009-09-09						
			Sample ID:	F509-TB	F509-BDW1						
PARAMETER	**UNITS**	**MRL**							**TYPE**	**LIMIT**	**UNITS**
Arsenic	mg/L	0.001		<0.001	<0.001						
Cadmium	mg/L	0.0001		<0.0001	0.0002						
Chromium	mg/L	0.001		<0.001	0.001						
Cobalt	mg/L	0.0002		<0.0002	0.0003						
Copper	mg/L	0.001		0.004	0.001						
Lead	mg/L	0.001		<0.001	<0.001						
Mercury	mg/L	0.0001		<0.0001	<0.0001						
Nickel	mg/L	0.005		<0.005	<0.005						
Zinc	mg/L	0.01		<0.01	0.01						

MRL = Method Reporting Limit INC = Incomplete AO = Aesthetic Objective OG = Operational Guideline MAC = Maximum Allowable Concentration IMAC = Interim Maximum Allowable Concentration

Comment:

743625: Hg analyzed from unpreserved sample.
743626: Hg analyzed from unpreserved sample.

APPROVAL:
Ewan McRobbie
Inorganic Lab Supervisor

REPORT OF ANALYSIS

Client: **Sila Remediation Inc.**
200-4495 Boul. Wilfrid-Hamel
Québec, QC
G1P 2J7
Attention: **Mr. Jean-Pierre Pelletier**

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Date Submitted: 2009-09-15

Project: FOX-5

P.O. Number:
Matrix: Water

Chain of Custody Number: **112545**

			LAB ID:	743609	743610	743611	743612	743613	**GUIDELINE**		
			Sample Date:	2009-09-10	2009-09-10	2009-09-10	2009-09-10	2009-09-10			
			Sample ID:	F509-5W	F509-6W	F509-7W	F509-8W	F509-9W			
PARAMETER	**UNITS**	**MRL**							**TYPE**	**LIMIT**	**UNITS**
CCME Total Petroleum Hydrocarbons											
F1 (C6-C10)	mg/L	0.2		<0.2	<0.2	<0.2	<0.2	<0.2			
F2 (C10-C16)	mg/L	0.2		<0.2	<0.2	<0.2	<0.2	<0.2			
F3 (C16-C34)	mg/L	0.2		<0.2	<0.2	<0.2	<0.2	<0.2			
F4 (C34-C50)	mg/L	0.2									

MRL = Method Reporting Limit INC = Incomplete AO = Aesthetic Objective OG = Operational Guideline MAC = Maximum Allowable Concentration IMAC = Interim Maximum Allowable Concentration

Comment:

APPROVAL:
Charlie Qu
Organic Lab Team Leader

REPORT OF ANALYSIS

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P.O. Number:
Matrix: Water

Chain of Custody Number: **112545**

			LAB ID:	743614	743615	743617	743618	743619	GUIDELINE		
			Sample Date:	2009-09-10	2009-09-10	2009-09-10	2009-09-10	2009-09-10			
			Sample ID:	F509-10W	F509-11W	F509-13W	F509-14W	F509-15W			
PARAMETER	**UNITS**	**MRL**							**TYPE**	**LIMIT**	**UNITS**
CCME Total Petroleum Hydrocarbons											
F1 (C6-C10)	mg/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2				
F2 (C10-C16)	mg/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2				
F3 (C16-C34)	mg/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2				
F4 (C34-C50)	mg/L	0.2	<0.2								

MRL = Method Reporting Limit INC = Incomplete AO = Aesthetic Objective OG = Operational Guideline MAC = Maximum Allowable Concentration IMAC = Interim Maximum Allowable Concentration

Comment:

APPROVAL:
Charlie Qu
Organic Lab Team Leader

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Matrix: Water

Chain of Custody Number: **112545**

			LAB ID:	743620	743621	743622	743623	743624	GUIDELINE		
			Sample Date:	2009-09-10	2009-09-10	2009-09-09	2009-09-09	2009-09-09			
			Sample ID:	F509-16W	F509-17W	F509-18W	F509-19W	F509-FB			
PARAMETER	**UNITS**	**MRL**							**TYPE**	**LIMIT**	**UNITS**
CCME Total Petroleum Hydrocarbons											
F1 (C6-C10)	mg/L	0.2		<0.2	<0.2	<0.2		<0.2			
F2 (C10-C16)	mg/L	0.2		0.2	<0.2		<0.2	<0.2			
F3 (C16-C34)	mg/L	0.2		0.2	0.4		<0.2	<0.2			
F4 (C34-C50)	mg/L	0.2									

MRL = Method Reporting Limit INC = Incomplete AO = Aesthetic Objective OG = Operational Guideline MAC = Maximum Allowable Concentration IMAC = Interim Maximum Allowable Concentration

Comment:

APPROVAL:

Charlie Qu
Organic Lab Team Leader

REPORT OF ANALYSIS

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Date Submitted: 2009-09-15

Project: FOX-5

P.O. Number:
Matrix: Water

Chain of Custody Number: **112545**

			LAB ID:	743625	743626				**GUIDELINE**		
			Sample Date:	2009-09-09	2009-09-09						
			Sample ID:	F509-TB	F509-BDW1						
PARAMETER	**UNITS**	**MRL**							**TYPE**	**LIMIT**	**UNITS**
CCME Total Petroleum Hydrocarbons											
F1 (C6-C10)	mg/L	0.2		<0.2	<0.2						
F2 (C10-C16)	mg/L	0.2		<0.2	<0.2						
F3 (C16-C34)	mg/L	0.2		<0.2	<0.2						
F4 (C34-C50)	mg/L	0.2									

MRL = Method Reporting Limit INC = Incomplete AO = Aesthetic Objective OG = Operational Guideline MAC = Maximum Allowable Concentration IMAC = Interim Maximum Allowable Concentration

Comment:

APPROVAL:
Charlie Qu
Organic Lab Team Leader

REPORT OF ANALYSIS

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Date: 2009-09-23
Date Submitted: 2009-09-15

Project: FOX-5

P.O. Number:
Matrix: Water

Chain of Custody Number: **112545**

			LAB ID:	743609	743610	743611	743612	743613	**GUIDELINE**		
			Sample Date:	2009-09-10	2009-09-10	2009-09-10	2009-09-10	2009-09-10			
			Sample ID:	F509-5W	F509-6W	F509-7W	F509-8W	F509-9W			
PARAMETER	**UNITS**	**MRL**							**TYPE**	**LIMIT**	**UNITS**
Polychlorinated Biphenyls - PCBs											
Polychlorinated Biphenyls (PCBs)	ug/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1				

MRL = Method Reporting Limit INC = Incomplete AO = Aesthetic Objective OG = Operational Guideline MAC = Maximum Allowable Concentration IMAC = Interim Maximum Allowable Concentration

Comment:

APPROVAL:
Charlie Qu
Organic Lab Team Leader

REPORT OF ANALYSIS

Client: **Sila Remediation Inc.**
200-4495 Boul. Wilfrid-Hamel
Québec, QC
G1P 2J7
Attention: **Mr. Jean-Pierre Pelletier**

Report Number: 2922527
Date: 2009-09-23
Date Submitted: 2009-09-15

Project: FOX-5

P.O. Number:
Matrix: Water

Chain of Custody Number: **112545**

			LAB ID:	743614	743615	743617	743618	743619	**GUIDELINE**		
			Sample Date:	2009-09-10	2009-09-10	2009-09-10	2009-09-10	2009-09-10			
			Sample ID:	F509-10W	F509-11W	F509-13W	F509-14W	F509-15W			
PARAMETER	**UNITS**	**MRL**							**TYPE**	**LIMIT**	**UNITS**
Polychlorinated Biphenyls - PCBs											
Polychlorinated Biphenyls (PCBs)	ug/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1				

MRL = Method Reporting Limit INC = Incomplete AO = Aesthetic Objective OG = Operational Guideline MAC = Maximum Allowable Concentration IMAC = Interim Maximum Allowable Concentration

Comment:

APPROVAL:
Charlie Qu
Organic Lab Team Leader

REPORT OF ANALYSIS

Client: **Sila Remediation Inc.**
200-4495 Boul. Wilfrid-Hamel
Québec, QC
G1P 2J7
Attention: **Mr. Jean-Pierre Pelletier**

Report Number: 2922527
Date: 2009-09-23
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Project: FOX-5

P.O. Number:
Matrix: Water

Chain of Custody Number: **112545**

			LAB ID:	743620	743621	743623	743625		GUIDELINE		
			Sample Date:	2009-09-10	2009-09-10	2009-09-09	2009-09-09				
			Sample ID:	F509-16W	F509-17W	F509-19W	F509-TB				
PARAMETER	**UNITS**	**MRL**							**TYPE**	**LIMIT**	**UNITS**
Polychlorinated Biphenyls - PCBs											
Polychlorinated Biphenyls (PCBs)	ug/L	0.1		<0.1	<0.1	<0.1	<0.1				

MRL = Method Reporting Limit INC = Incomplete AO = Aesthetic Objective OG = Operational Guideline MAC = Maximum Allowable Concentration IMAC = Interim Maximum Allowable Concentration

Comment:

APPROVAL:
Charlie Qu
Organic Lab Team Leader

Bodycote TESTING GROUP

Control Number A 126973

Sample Information Sheet

NOTE: Proper completion of this form is required in order to proceed with analysis
See reverse for your nearest Bodycote location and proper sampling protocol

Billing Address:		**Copy of Report To:**		**Copy of Invoice:** ☐
Company:	SILA REMEDIATION INC.	Company:	EGE ENGINEERING	Mail Invoice to this address for approval ☐
Address:	4495 WILFRID-HAMEL BLVD SUITE 200, QUEBEC CITY, QUEBEC	Address:	511 PEPPERLOAF CRES WINNIPEG, MANITOBA	
QA/QC Report	☐			**Report Results:**
Report Results:				
Attention:	J.P. PELLETIER	Attention:	A. PASSALIS	Fax ☒
Phone:	418-653-4422	Phone:	204-791-4938	Mail ☐
Fax:		Fax:	204-837-6473	Courier ☐
Cell:		Cell:	204-791-4938	e-mail ☒
e-mail:	jppelletier@biogenie-env.com	e-mail:	apassalis@mts.net	e-Service ☐
Fax ☐ Mail ☒ Courier ☐ e-mail ☒ e-Service ☐				

Information to be included on Report and Invoice

Project ID:
Project Name: CAM 2 / CAM 3
Project Location: GLADMAN PT / SHEPHERD BAY
Legal Location:
PO#:
Proj. Acct. Code:
Agreement ID:

Rush Please contact the laboratory to confirm rush dates and times before submitting samples.

Upon filling out this section, client accepts that surcharges will be attached to this analysis

RUSH required on: All analysis ☐ **or** As indicated ☐

Date Required: _____
Signature: _____
Bodycote Authorization: _____

Sample Custody (Please Print)
Sampled by: A. PASSALIS
Company EGE Signature

I authorize Bodycote to proceed with the work indicated on this form:
Date: 17/8/09 Initial:

Received by: Sample Temp. °C
Waybill # Date
Company Time

Special Instructions / Comments

* METALS
As, Cr, Cd, Co, Cu, Pb, Zn, Hg.

FOR LAB USE ONLY
Condition of containers / coolers upon arrival at lab

☐ Check here if Bodycote is required to report results directly to a regulatory body (Please include contact information)

☐ Check here if you're testing POTABLE WATER for **HUMAN CONSUMPTION.**

Please indicate which regulations you are required to meet: _____

	Sample Identification	Location	Depth IN / CM / M	Date/Time Sampled	Matrix	Sampling Method	Number of Containers	F1-F4	METALS *	T. PCBs	HH (134)	T. METALS *	T. PCBs	Enter tests above (✓ relevant samples below)
1	C209-3WA	CAM-2	-	11/8/09	S	G.		X	X	X				
2	C209-4W	"	-	"	W						X	X	X	
3			-											
4	C309-6WB	CAM3	-	13/8/09	S	G		X	X	X				
5	C309-13WB	"	-	14/8/09	S	G		X	X	X				
6	C309-13W	"	-	14/8/09	W						X	X	X	
7			-											
8	P309-2A	D.N.3.	-	9/8/09	S	G		X	X	X				
9			-											
10			-											
11			-											
12			-											
13			-											
14			-											
15			-											

NOTE: All hazardous samples must be labeled according to WHMIS guidelines.

Form No. 0006 (Rev. 04/07)