THE COLLECTION OF LANDFILL MONITORING DATA AT THE FORMER CAM-2 DEW LINE SITE

Gladman Point, Nunavut

FINAL REPORT – 2009 SEASON

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

DEFENCE CONSTRUCTION CANADA

February 2010

Biogenie, a division of Englobe Corp.
4495 Wilfrid-Hamel blvd, suite 200
Quebec City, Quebec
G1P 2J7 CANADA

Tel.: 418-653-4422
Fax: 418-653-3583

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Presented to: Nahed Farah
Defence Construction Canada

Written by: _____
Andrew Passalis
Project Engineer

Verified by: _____
Jean-Pierre Pelletier
Team Leader

Approved by: _____
Renald Gauthier
Project Manager

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1 INTRODUCTION

1.1 LOCATION AND SITE FEATURES

The CAM-2 Gladman Point DEW Line site is located on the south side of King William Island at 68° 40' N and 97° 49' W. The community of Gjoa Haven is located approximately 75 kilometres east and the community of Ikaluktutiak (Cambridge Bay), 300 kilometres to the west.

The CAM-2 site is a former auxiliary radar site within the original DEW Line system that was operated until the early 1990s, at which time it was converted to a NWS Short Range Radar (SRR) site as part of the North American Aerospace Defence Modernization Program. The environmental cleanup and demolition of facilities not required as part of the NWS SRR site commenced in 2003 and were completed in the summer of 2005.

The clean-up included the closure and remediation of four existing landfills as well as the construction of a landfill for the disposal of non-hazardous waste generated from demolition and collection of site debris (NHWLF) and 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-2.1) at the end of this section:

- Station Landfill
- West Landfill – North
- West Landfill – South
- Airstrip Landfill (completely excavated, no monitoring required)
- Non-Hazardous Waste Landfill
- Tier II Soil Disposal Facility

In accordance with the NTI-DND Cooperation Agreement, landfill monitoring will be carried out following the site clean-up. The following table provides a synopsis of field activities performed during the 2009 CAM-2 Landfill Monitoring Program at CAM-2 Gladman Point.

Table I: 2009 Monitoring Requirements for CAM-2 Landfills.

Landfill	Visual Inspection	Soil Sampling	Groundwater Sampling	Thermal Monitoring
Station Landfill	✓			
West Landfill – North	✓			
West Landfill – South	✓			
Non-Hazardous Waste Landfill	✓			
Tier II Disposal Facility	✓	✓	✓	✓

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 a geotechnical and environmental perspective. DCC has specified the requirements for the Landfill Monitoring Program in the document *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. (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-2 Landfills
- Visual inspection
- Soil sampling
- Groundwater sampling
- Thermal monitoring (DCC Tier II Disposal Facility)
- Create photographic record
- Draft and Final reports

1.3 REPORT FORMAT

This report describes the work carried out in August 2009 at five landfill sites at CAM-2 Gladman Point. 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 CD-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 for that landfill area, for the 2009 Landfill Monitoring Program. The following information is provided in each landfill section:

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

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

1.4 PROJECT REFERENCES

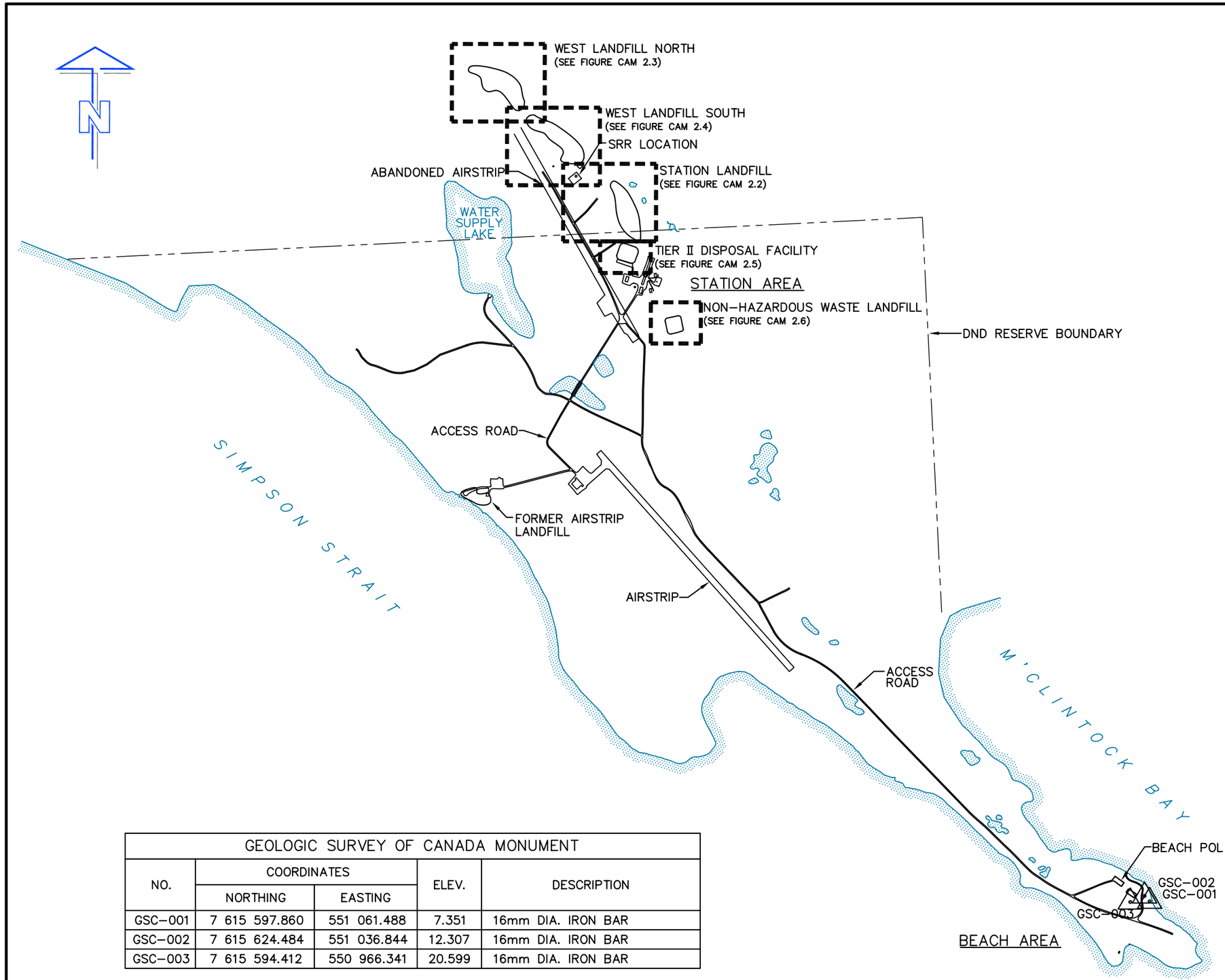
The following references are specifically relevant to the 2009 Landfill Monitoring activities:

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. 6121-061,* February 2008.

D. *Post-Field Progress Report, CAM-2 Landfill Monitoring 2009*, August 26, 2009.



LEGEND

CM2 △ SURVEY CONTROL MONUMENT

WATERBODY

0 200m 400m 600m 800m 1000m

GEOLOGIC SURVEY OF CANADA MONUMENT				
NO.	COORDINATES		ELEV.	DESCRIPTION
	NORTHING	EASTING		
GSC-001	7 615 597.860	551 061.488	7.351	16mm DIA. IRON BAR
GSC-002	7 615 624.484	551 036.844	12.307	16mm DIA. IRON BAR
GSC-003	7 615 594.412	550 966.341	20.599	16mm DIA. IRON BAR

NO.	VERSION	DATE	BY	VERIF.	APPR.
A	FINAL VERSION	10-02-18	P.L.	A.P.	J.P.P.

Construction de Défense Canada
Defence Construction Canada

FINAL REPORT
COLLECTION OF LANDFILL MONITORING DATA
CAM-2, GLADMAN POINT (NUNAVUT)

OVERALL SITE PLAN

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 : 20,000	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-2_1	PAGE LS

FIGURE CAM-2.1

G:\CD9229\2009\CAM-2\FINAL\CD9229_001_160-CAM-2_1.dwg, LS, 2010-02-18 10:39:24

2 OUTLINE AND METHODOLOGY

2.1 FIELD PROGRAM STAFF

The 2009 on-site field program at CAM-2 Gladman Point took place from August 11 to 13, 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 (4) local Inuit representatives.

The Sila Field Team consisted of an engineer and local support personnel. 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/Camp Attendant

2.2 2009 WEATHER CONDITIONS

Seasonal weather conditions were observed during the CAM-2 Gladman Point monitoring period, consisting of daily temperatures between 2-3ºC (early morning lows) and 4-10 ºC (daytime highs). Skies were overcast upon late arrival on site on August 11th, were clear on the 12th, and returned to overcast and low to moderate ceiling conditions at the time of departure on August 13th. Winds varied between 30 – 50 km/h from the NE, N and NW directions. No precipitations were observed during the monitoring event.

2.3 VISUAL INSPECTION

Data and information collected during the visual inspection of the CAM-2 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 Cannon PowerShot A590 8.0 megapixel (MP) digital camera. Full resolution digital jpg copies are furnished on a CD-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 (CCME catalogue - "http://www.ccme.ca/pdfs/cat_eng.pdf").

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 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-2 during the August 2009 field program.

Table II: Summary of Soil Sampling at CAM-2 – August 2009

Landfill Site	**Soil Sample Locations**			
Tier II Disposal Facility	MW-1	MW-2	MW-3	MW-4

Notes:
Soil samples annotated as "MW" were collected as per the ToR (reference B) 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 = 11 samples (4 samples x 2 depths + 1 QA/QC + 1 (Inter-laboratory comparison) + 1 for Owner's Representative (ESG Archives)

The detection limits were raised for some analyses 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).

2.5 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); and
- 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 4 of the 8 monitoring wells at CAM-2. Two monitoring wells produced insufficient sample volume for all analytical parameters. 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 in this report.

Table III: Summary of Groundwater Sampling at CAM-2 – August 2009

Landfill Site	**Groundwater Sample Locations**			
Tier II Disposal Facility	MW-1	MW-2	MW-3	MW-4

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 = 7 samples (4 monitoring well samples + 1 blind duplicate + 1 inter-laboratory duplicate + 1 field blank) + 1 travel blank.

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. With the exception of manual temperature readings at VT-2 (#12), VT-3 (#12), and VT-4 (#16), all analogues/thermocouples were observed to be functioning properly. Data from all thermistors was successfully retrieved and battery levels in VT-2 and VT-4 were noted to be weak and will require replacement in 2010. Internal memories were reset and clocks were synchronized using the Prolog software.

Specific detailed information regarding temperature data is contained in the report section on the Tier II Disposal Facility. 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 A for reference. Notes were written on waterproof field sheets 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 was 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.

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 table 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 the 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 STATION LANDFILL

3.1 BACKGROUND AND MONITORING PROGRAM

The Station Landfill area is located approximately 100 m northwest of the former main station area and is bound on the southwest side by the abandoned airstrip, to the south by the Tier II Disposal Facility and to the north by the SRR site. The landfill has five separate regrade areas (labelled as Lobes 1 through 5 for reference), and, including the engineered cover, encompasses a footprint of approximately 19,000 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 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 Station Landfill was conducted on August 12 and 13, 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 settlement were noted at one location (Feature A) on the landfill surface of Lobe 5. This feature includes three relatively small depressions in a consolidated area on the southwest surface of the lobe. The feature has an acceptable severity rating.

Erosion
Four general areas of erosion were noted on the surface of the Station Landfill including several localized areas of shallow erosion on the southwest facing slope of Lobe 3 (Feature B); and three larger areas of shallow erosion on the east side of Lobe 2 (Features C, D and E). Each of the larger features appears at the geometric inflection points where localized runoff converges on the surface of the landfill. 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
One area of rust-coloured staining (Feature F) was noted at the northeast corner of Lobe 2, extending from the landfill toe to a nearby pond situated approximately 25 m to the east. Staining was not specifically noted during the 2008 inspection. However, based on the size, it appears to be a pre-existing feature at the landfill. There was no sheen associated with the staining at the time of the inspection.

Seepage Points

One area of seepage (wetted area) was noted on the north side of Lobe 2. Feature G was observed on the downgradient slope, approximately 10 m west of the toe. Based on the location of the seepage, it is assumed that this feature is contributing to the ponded water and rust-coloured staining observed at the toe of the landfill.

Debris

There was one notation of debris in the area immediately west of the landfill, including a partially exposed piece of metal pipe approximately 50 mm in diameter (Feature H). The length and depth of the debris is not known. The piece of debris appeared to be isolated and outside of the landfill regrade.

Presence/Condition of Monitoring Instruments

There is no instrumentation installed at this landfill.

Other Features of Note

Several thin tension/desiccation cracks were noted running parallel to the slope on the northwest and southeast sides of Lobe 3 (Feature I). Slope movement was not suspected.

Minor erosion was also noted along the base of the constructed drainage channel extending along the north side of Lobe 2 (Feature J). The level of erosion appears consistent with the previous year's observations (photos) and planned remedial measures to direct flow around the landfill. The erosion is not in direct contact with the landfill.

Discussion

The Station 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.

It was noted that surface runoff has resulted in minor erosional features on the southeast side of Lobe 3 and at the downgradient convergence points on the east side crests of Lobe 2. 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 – Station Landfill

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

SITE NAME: CAM-2 GLADMAN POINT
LANDFILL DESIGNATION: STATION LANDFILL
DATE OF INSPECTION: AUGUST 12-13, 2009
DATE OF PREVIOUS INSPECTION: AUGUST 15, 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-2 Gladman Point
Landfill: Station Landfill
Designation: Regrade Landfill
Date Inspected: August 11 - 13, 2009
Inspected by: Andrew Passalis, P.Eng.

Signature: 

TABLE IV: CAM-2 GLADMAN POINT, STATION LANDFILL
Page 2 of 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-2.2 (Lobe 5)	0.3 - 0.5 m	0.3 - 0.5 m	10 cm	Isolated 1%	Minor depressions	SLF-27	Acceptable	Three minor depressions on surface of lobe
Erosion	Yes	FEATURE B See Figure CAM-2.2 (Lobe 3)	2.5 - 3.0 m	0.1 - 0.2 m	< 5 cm	Occassional 1 %	Minor surficial erosion	SLF-3, -4	Acceptable	Minor erosion noted at 6 locations on west side and 1 location on east side lobe, typ. extending from top to toe
		FEATURE C See Figure CAM-2.2 (Lobe 2)	15 + 25 m	2 m	1 - 5 cm	Occassional <1 %	Minor surficial erosion	SLF-12, -32	Acceptable	Minor erosion noted on surface of landfill (<1 cm), increasing to 5 cm depth on downgradient slope. Self armouring.
		FEATURE D See Figure CAM-2.2 (Lobe 2)	15 + 30 m	0.75 - 2 m	2 - 10 cm	Occassional <1 %	Minor surficial erosion	SLF-13. -14	Acceptable	Minor erosion noted on surface of landfill (2 cm), increasing to 5-10 cm depth on downgradient slope. Self armouring.
		FEATURE E See Figure CAM-2.2 (Lobe 2)	20 + 40 m	1 - 2 m	2 - 15 cm	Occassional <1 %	Minor surficial erosion	SLF-15, 16, 17	Acceptable	Minor erosion noted on surface of landfill (2 cm), increasing to 5-15 cm depth on downgradient slope. Self armouring.
Frost Action	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Animal Burrows	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Vegetation	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Staining	Yes	FEATURE F See Figure CAM-2.2 (northeast of Lobe 2)	25 m	15 m	unknown	N/A	Rust coloured staining	SLF-20	Acceptable	Rust coloured staining extending from NE toe of landfill to adjacent pond
Vegetation Stress	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Seepage Points	Yes	FEATURE G See Figure CAM-2.2 (northeast area of Lobe 2)	8 m	4 m	N/A	Isolated <1%	Seepage on downgradient slope of lobe	SLF-19	Acceptable	Wetted area and minor seepage daylighting on northeast corner of lobe.
Debris Exposed	Yes	FEATURE H See Figure CAM-2.2 (west of Lobe 3)	0.15 m (exposed)	0.05 m	unknown	Isolated <1%	Partially exposed metal pipe	SLF-4	Acceptable	Located near toe of regrade
Presence/Condition of Monitoring Instruments	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Other Features of Note:	Yes	FEATURE I See Figure CAM-2.2 (northwest and southeast sides of Lobe 3)	8 - 14 m	2-3 mm	unknown	Isolated <1%	Thin tension / desication cracks extending parallel to sideslope	SLF-6, -8	Not Observable	Thin desication cracks extending along sideslope. Partially infilled. Do not suspect slope movement.
		FEATURE J See Figure CAM-2.2 (drainage channel on north side of Lobe 2)	60 m	1 m	10 - 15 cm	N/A	Minor erosion along base of engineered drainage channel	SLF-21, 22	Acceptable	Minor erosion noted along drainage channel extending along north side of lobe. Self armouring.
Additional Photos	Yes	See Figure CAM-2.2 and Photographic Record	N/A	N/A	N/A	N/A	General Photographic Record	N/A	Not Observable	General photos for documentation, no features of note.
Overall Landfill Performance:	**Acceptable**									

3.3 PRELIMINARY STABILITY ASSESSMENT

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

Table V: Preliminary Stability Assessment – Station Landfill

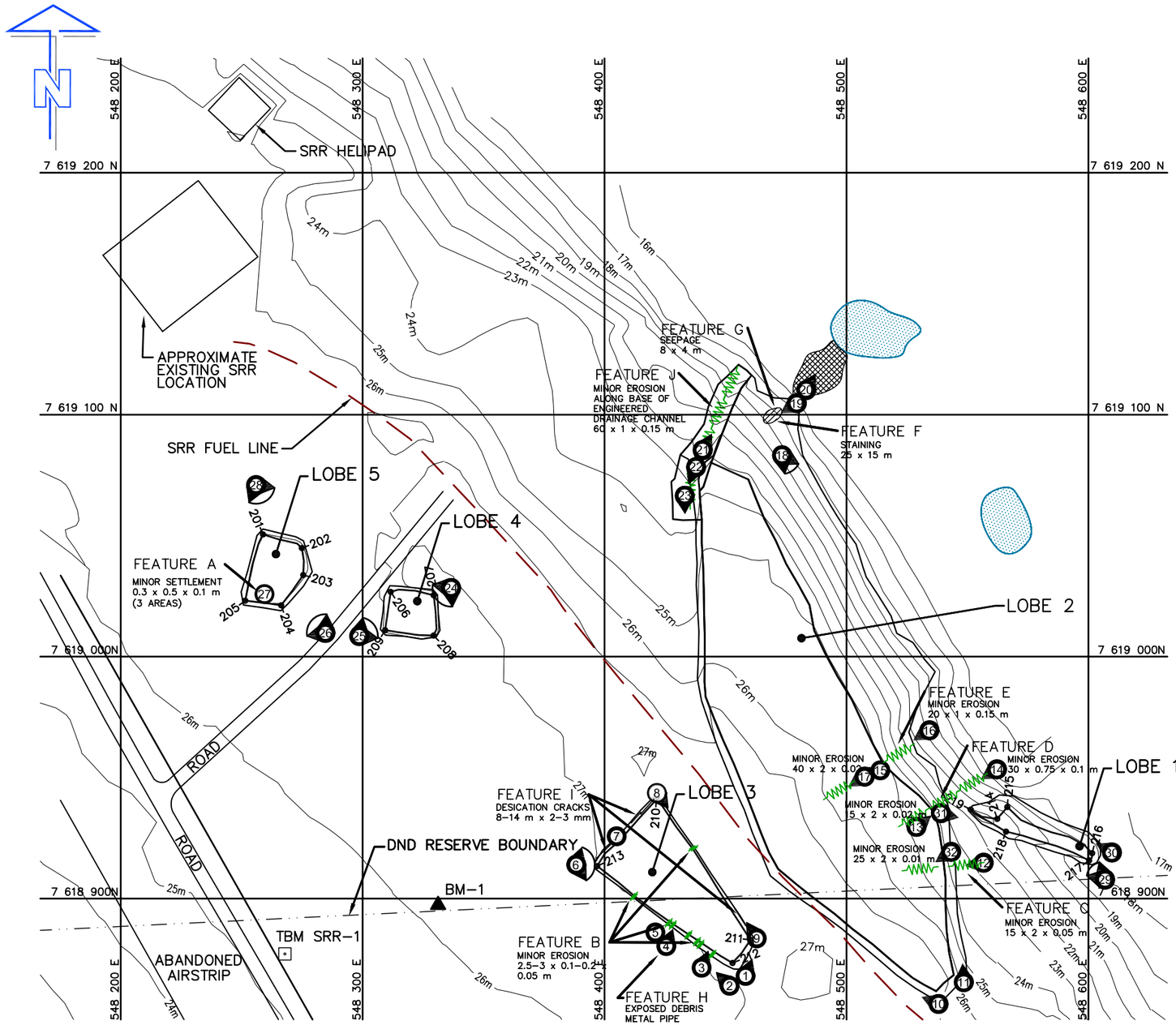
Feature	Severity Rating	Extent
Settlement	Acceptable	Isolated
Erosion	Acceptable	Isolated
Frost Action	Not observed	None
Staining	Acceptable	Isolated
Vegetation Stress	Not observed	None
Seepage/Ponded Water	Acceptable	Isolated
Debris exposure	Acceptable	Isolated
Overall Landfill Performance	**Acceptable**	

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 the 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 Station Landfill has been completed as per the ToR and is presented in Figure CAM-2.2.



COORDINATE POINTS (AS-BUILT) STATION LANDFILL AREA REGRADING		
NO.	NORTHING	EASTING
201	7 619 050.5	548 258.8
202	7 619 044.9	548 274.9
203	7 619 033.7	548 275.5
204	7 619 021.2	548 266.3
205	7 619 023.1	548 251.5
206	7 619 026.7	548 311.6
207	7 619 025.4	548 329.4
208	7 619 008.7	548 329.3
209	7 619 010.9	548 309.3
210	7 618 940.9	548 421.4
211	7 618 883.0	548 460.3
212	7 618 873.4	548 452.9
213	7 618 913.4	548 397.0
214	7 618 932.9	548 562.3
215	7 618 937.8	548 566.5
216	7 618 918.8	548 601.5
217	7 618 915.8	548 600.3
218	7 618 927.7	548 565.9
219	7 618 936.8	548 551.3

PERMANENT BENCHMARK				
NO.	COORDINATES		ELEV.	DESCRIPTION
	NORTHING	EASTING		
BM-1	7 618 897.363	548 331.191	26.595	25mm DIA. STEEL PIPE
SRR-1	7 618 877.108	548 267.873	24.975	16mm DIA. IRON BAR

LEGEND

- TBM4 — TEMPORARY BENCHMARK
- BM-1 — PERMANENT BENCHMARK
- 101 — COORDINATE POINT
- 20 — PHOTOGRAPH LOCATION
- SURFICIAL EROSION (NTS)
- SETTLEMENT (NTS)
- CRACK (NTS)
- SEEPAGE
- STAINING

0 20m 40m 60m 80m 100m

NO.	VERSION	DATE	BY	VERIF.	APPR.
A	FIANL VERSION	10-02-18	P.L.	A.P.	J.P.P.

Construction de Défense Canada
Defence Construction Canada

FINAL REPORT
COLLECTION OF LANDFILL MONITORING DATA
CAM-2, GLADMAN POINT (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 : 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-2_2	PAGE PL

FIGURE CAM-2.2

G:\CD9229\2009\CAM-2\FINAL\CD9229_001_160-CAM-2_2.dwg, PL, 2010-02-18 10:41:54

3.5 PHOTOGRAPHIC RECORDS

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

Table VI: Landfill Visual Inspection Photo Log - Station Landfill
Site Name: CAM-2, Gladman Point
Landfill: Station Landfill
Date Inspected: August 11 - 13, 2009
Inspected by: Andrew Passalis, P.Eng.

Photo (SLF-)	Thumbnail	Filename	Size (KB)	Date	Vantage Point		Caption
					Easting	Northing	
1		C209_3212	3,287 KB	8/12/2009	548453	7618869	View NE along east side of lobe 3
2		C209_3213	3,350 KB	8/12/2009	548453	7618869	View NW at minor erosion typical along sideslopes of landfill
3		C209_3214	3,604 KB	8/12/2009	548443	7618876	View NE at minor erosion typical along sideslopes of landfill
4		C209_3215	2,668 KB	8/12/2009	548426	7618883	View NE at minor erosion typical along sideslopes of landfill
5		C209_3216	4,635 KB	8/12/2009	548422	7618886	Piece of exposed metal pipe (debris) at edge of landfill
6		C209_3217	3,255 KB	8/12/2009	548395	7618913	Panoramic view SE to NE from northwest corner of lobe 3
		C209_3218	2,973 KB	8/12/2009			
		C209_3219	2,999 KB	8/12/2009			
		C209_3220	3,280 KB	8/12/2009			
		C209_3221	3,171 KB	8/12/2009	548404	7618924	View NE at tension cracks extending perpendicular along north sideslope.
7		C209_3222	4,318 KB	8/12/2009	548404	7618924	Closeup view of tension cracks on north sideslope
		C209_3223	4,846 KB	8/12/2009	548412	7618933	Closeup view of tension cracks on north sideslope
8		C209_3224	3,158 KB	8/12/2009	548421	7618940	View SE along east side of lobe 3
9		C209_3225	3,142 KB	8/12/2009	548463	7618882	View NW along east side of lobe 3
		C209_3229	2,487 KB	8/12/2009	548537	7618861	Panoramic view NW to NE from south end of lobe 2
		C209_3230	3,069 KB	8/12/2009			
		C209_3231	3,214 KB	8/12/2009			
		C209_3232	3,308 KB	8/12/2009			
10		C209_3234	3,156 KB	8/12/2009	548538	7618858	View NW along west side of lobe 2
11		C209_3235	3,048 KB	8/12/2009	548546	7618865	View N along east side of lobe 2
		C209_3236	3,527 KB	8/12/2009	548536	7618913	View E at erosion on east side of landfill
12		C209_3237	2,825 KB	8/12/2009	548546	7618914	View W at erosion on east side of landfill
13		C209_3238	4,144 KB	8/12/2009	548534	7618933	View NE at erosion on east side of landfill
14		C209_3239	2,122 KB	8/12/2009	548543	7618942	View SW at erosion on east side of landfill
		C209_3240	2,808 KB	8/12/2009	548535	7618936	View W at erosion on east surface of landfill
		C209_3241	3,336 KB	8/12/2009	548528	7618944	View N to NE at erosion on east side of landfill
		C209_3242	3,609 KB	8/12/2009			

Table VI: Landfill Visual Inspection Photo Log - Station Landfill
Site Name: CAM-2, Gladman Point
Landfill: Station Landfill
Date Inspected: August 11 - 13, 2009
Inspected by: Andrew Passalis, P.Eng.

Photo (SLF-)	Thumbnail	Filename	Size (KB)	Date	Vantage Point		Caption
					Easting	Northing	
15		C209_3243	3,923 KB	8/12/2009	548514	7618954	View NE at erosion on east side of landfill
16		C209_3244	1,723 KB	8/12/2009	548530	7618967	View SW at erosion on east side of landfill
17		C209_3245	2,076 KB	8/12/2009	548514	7618954	View W at erosion on east surface of landfill
		C209_3246	2,781 KB	8/12/2009	548498	7618989	Panoramic view NNW to NE across Type 1 cover on east side of landfill
		C209_3247	3,450 KB	8/12/2009			
18		C209_3248	2,905 KB	8/12/2009	548472	7619082	Panoramic view SE to S along east toe of landfill
		C209_3249	3,219 KB	8/12/2009			
19		C209_3250	2,346 KB	8/12/2009	548478	7619104	View SW at seepage/wetted area at north end of lobe 2
20		C209_3251	3,318 KB	8/12/2009	548478	7619104	View E at pond located downgradient of north end of lobe 2, note iron staining extending from landfill toe
21		C209_3252	3,425 KB	8/12/2009	548439	7619085	View NE along runoff control channel at north end of landfill
22		C209_3253	3,718 KB	8/12/2009	548439	7619085	View SSW along runoff control channel at north end of landfill
		C209_3254	2,759 KB	8/12/2009	548439	7619085	View NE at rust coloured staining extending from landfill toe to ponded area
23		C209_3255	2,975 KB	8/12/2009	548432	7619066	View S along west side of lobe 2
		C209_3256	3,136 KB	8/12/2009	548432	7619066	View NE from top of runoff control channel with pond and staining in background
24		C209_3257	1,973 KB	8/12/2009	548334	7619028	Panoramic view W to S from northeast corner of regrade area
		C209_3258	2,022 KB	8/12/2009			
		C209_3259	2,481 KB	8/12/2009			
25		C209_3260	2,157 KB	8/12/2009	548299	7619008	Panoramic view NNE to E from northwest corner of regrade area
		C209_3261	2,426 KB	8/12/2009			
26		C209_3262	2,473 KB	8/12/2009	548285	7619010	Panoramic view W to N from southeast corner of regrade area. SRR in background
		C209_3263	2,832 KB	8/12/2009			
27		C209_3264	3,689 KB	8/12/2009	548260	7619025	Isolated settlement depressions in surface of regrade
28		C209_3265	2,689 KB	8/12/2009	548256	7619070	Panoramic view S to E from northwest corner of regrade
		C209_3266	2,838 KB	8/12/2009			
		C209_3267	2,558 KB	8/12/2009			
		C209_3402	2,838 KB	8/13/2009	548596	7618882	View N at lobe 1
29		C209_3403	2,716 KB	8/13/2009	548604	7618911	Panoramic view NW to NNW at lobe 1
		C209_3404	2,731 KB	8/13/2009			
		C209_3405	2,770 KB	8/13/2009			
30		C209_3406	2,417 KB	8/13/2009	548609	7618919	View NW along east side of lobe 1
31		C209_3407	2,267 KB	8/13/2009	548535	7618933	View SE at lobe 1
32		C209_3408	2,234 KB	8/13/2009	548539	7618914	Panoramic view SW to W at radial erosion on surface of large lobe.
		C209_3409	2,264 KB	8/13/2009			

4 WEST LANDFILL – NORTH

4.1 BACKGROUND AND MONITORING PROGRAM

The West Landfill - North is located approximately 1 km northwest of the former main station area and is bound on the west side by an abandoned airstrip. The landfill includes seven regraded debris lobes (labelled 1 through 7) ranging in size from 140 m^2 to 6,300 m^2. With its cover material, the landfill encompasses a footprint of approximately 16,500 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 West Landfill - North was classified as a low potential environmental risk. The remediation consisted of excavation of contaminated soils and 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.

4.2 VISUAL INSPECTION REPORT

The visual inspection of the West Landfill - North was conducted on August 12, 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 settlement were not noted.

Erosion
Minor surface erosion was noted along a runoff channel that extends between two closely spaced lobes in the central area of the landfill (Feature A). The erosion was noted to extend along the toe of the lobe 4 and is not in direct contact with the landfill.

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
There was no evidence of exposed debris at this landfill.

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

Other Features of Note

A single area of ponding was noted at the toe of one of the downgradient lobes. The ponded water was contained to a pre-construction dug-out area.

Discussion

The West Landfill - North 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 – West Landfill – North

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

SITE NAME: CAM-2 GLADMAN POINT
LANDFILL DESIGNATION: WEST LANDFILL - NORTH
DATE OF INSPECTION: AUGUST 12, 2009
DATE OF PREVIOUS INSPECTION: AUGUST 15, 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-2 Gladman Point
Landfill: West Landfill - North
Designation: Regrade Landfill
Date Inspected: August 11 - 13, 2009
Inspected by: Andrew Passalis, P.Eng.

Signature: 

TABLE VII: CAM-2 GLADMAN POINT, WEST LANDFILL - NORTH
Page 2 of 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 Observable	N/A
Erosion	Yes	FEATURE A See Figure CAM-2.3 (between regrades)	20 m	0.4 m	5 cm	<1	Isolated	WLFN-10, 11	Acceptable	Runoff channel located between regrade areas, extending along toe of regrade. Self armouring.
Frost Action	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Animal Burrows	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Vegetation	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Staining	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Vegetation Stress	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Seepage Points	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Debris Exposed	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Presence/Condition of Monitoring Instruments	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Other Features of Note:	Yes	See Figure CAM-2.3 (ponding)	3 m	2 m	0.2 m	<1	Isolated	WLFN-6	Acceptable	547955E, 7619615N, dug-out area at edge of regrade area
Additional Photos	Yes	See Figure CAM-2.3 and Photographic Record	N/A	N/A	N/A	N/A	General Photographic Record	N/A	Not Observable	General photos for documentation, no features of note.
Overall Landfill Performance:	**Acceptable**									

4.3 PRELIMINARY STABILITY ASSESSMENT

The Preliminary Stability Assessment for West Landfill – North has been completed as per the ToR and is included as Table VIII below.

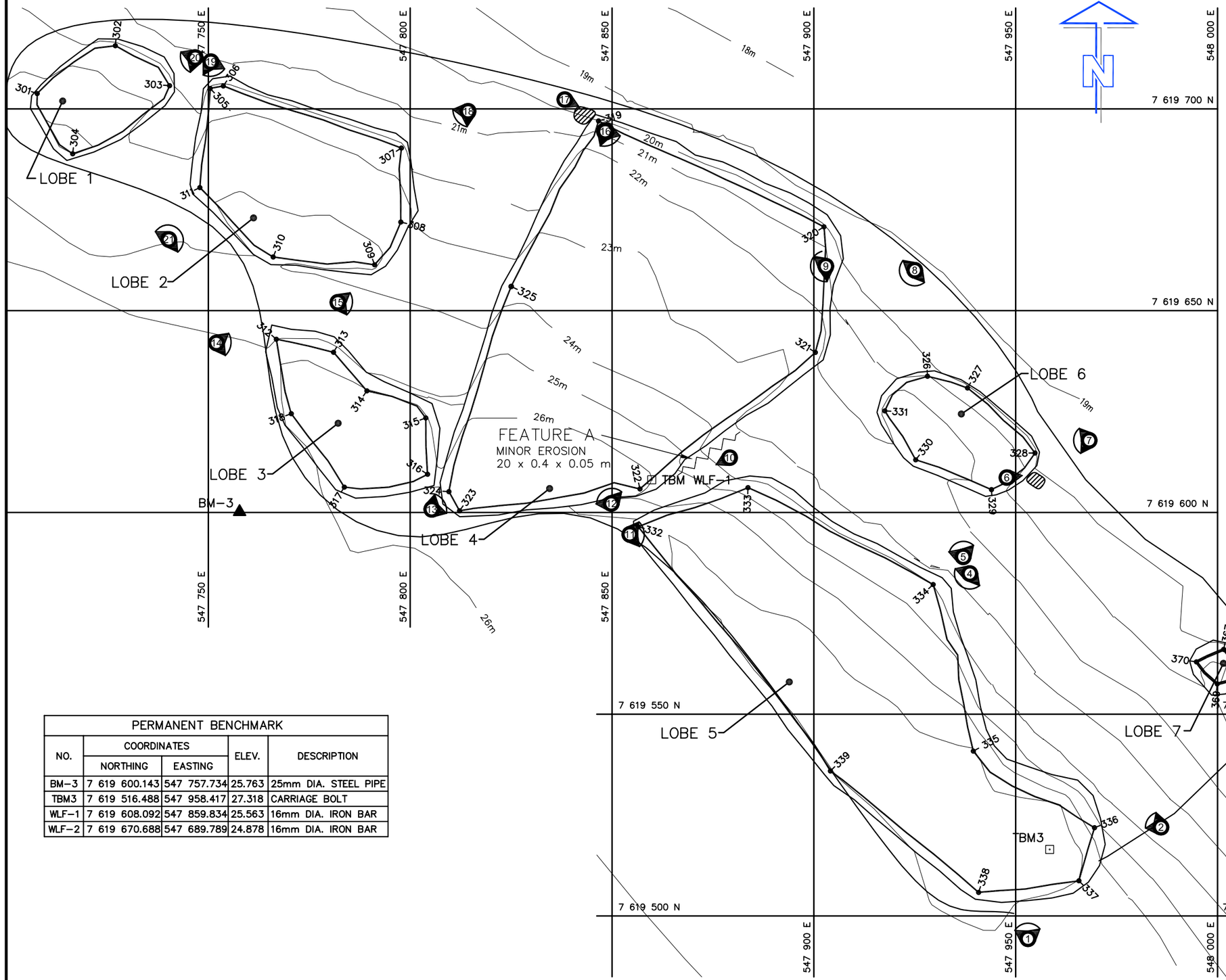
Table VIII: Preliminary Stability Assessment – West Landfill – North

Feature	Severity Rating	Extent
Settlement	Not observed	None
Erosion	Acceptable	Isolated
Frost Action	Not observed	None
Staining	Not observed	None
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 the 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 West Landfill – North has been completed as per the ToR and is presented in Figure CAM-2.3.



LEGEND

- TBM4 — TEMPORARY BENCHMARK
- BM-1 — PERMANENT BENCHMARK
- 101 — COORDINATE POINT
- 5 — PHOTOGRAPH LOCATION
- PONDED WATER
- EROSION (NTS)

PERMANENT BENCHMARK				
NO.	COORDINATES		ELEV.	DESCRIPTION
	NORTHING	EASTING		
BM-3	7 619 600.143	547 757.734	25.763	25mm DIA. STEEL PIPE
TBM3	7 619 516.488	547 958.417	27.318	CARRIAGE BOLT
WLF-1	7 619 608.092	547 859.834	25.563	16mm DIA. IRON BAR
WLF-2	7 619 670.688	547 689.789	24.878	16mm DIA. IRON BAR

NO.	VERSION	DATE	BY	VERIF.	APPR.
A	FINAL VERSION	10-02-18	P.L.	A.P.	J.P.P.

Construction de Défense Canada
Defence Construction Canada

FINAL REPORT
COLLECTION OF LANDFILL MONITORING DATA

CAM-2, GLADMAN POINT (NUNAVUT)

WEST LANDFILL-NORTH

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 2009
DRAWN BY:	VERIFIED BY:	APPROVED BY:
P. LÉGARÉ	A. PASSALIS	J.-P. PELLETIER
PROJECT NO:	DRAWING NO:	PAGE
CD9229_001_160	CD9229_001_160-CAM-2_3	PL

FIGURE CAM-2.3

4.5 PHOTOGRAPHIC RECORDS

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

Table IX: Landfill Visual Inspection Photo Log - West Landfill - North
Site Name: CAM-2, Gladman Point
Landfill: West Landfill - North
Date Inspected: August 11 - 13, 2009
Inspected by: Andrew Passalis, P.Eng.

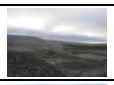
Photo (WLFN-)	Thumbnail	Filename	Size (KB)	Date	Vantage Point		Caption
					Easting	Northing	
1		C209_3312	2,286 KB	8/12/2009	547953	7649494	Panoramic view NW to ENE from southwest corner of lobe 5
		C209_3313	2,311 KB	8/12/2009			
		C209_3314	2,338 KB	8/12/2009			
		C209_3315	2,321 KB	8/12/2009			
2		C209_3316	2,121 KB	8/12/2009	547986	7649522	View W to NW from southeast corner of lobe 5
		C209_3317	2,457 KB	8/12/2009			
3		C209_3318	2,348 KB	8/12/2009	548018	7649562	View W across small regrade area
4		C209_3319	2,297 KB	8/12/2009	547938	7649588	Panoramic view SE to NW across lobe 5
		C209_3320	2,713 KB	8/12/2009			
		C209_3321	2,514 KB	8/12/2009			
		C209_3322	2,627 KB	8/12/2009			
		C209_3323	2,343 KB	8/12/2009			
5		C209_3324	2,250 KB	8/12/2009	547938	7649588	Panoramic view NW to NE across lobe 6
		C209_3325	2,229 KB	8/12/2009			
		C209_3326	2,785 KB	8/12/2009			
6		C209_3327	3,288 KB	8/12/2009	547948	7649608	View E as small dugout on east side of lobe 6
7		C209_3328	1,729 KB	8/12/2009	547968	7649618	Panoramic view SW to NW across lobe 6
		C209_3329	1,474 KB	8/12/2009			
		C209_3330	1,495 KB	8/12/2009			
8		C209_3331	1,886 KB	8/12/2009	547925	7649660	Panoramic view SW to W to NW across lobe 5
		C209_3332	2,018 KB	8/12/2009			
		C209_3333	1,987 KB	8/12/2009			
		C209_3334	1,851 KB	8/12/2009			
		C209_3335	1,754 KB	8/12/2009			
		C209_3336	1,687 KB	8/12/2009			
9		C209_3337	2,457 KB	8/12/2009	547903	7649661	Panoramic view S to NW from east side of lobe 4
		C209_3338	2,374 KB	8/12/2009			
		C209_3339	2,365 KB	8/12/2009			
		C209_3340	2,547 KB	8/12/2009			
10		C209_3341	2,642 KB	8/12/2009	547879	7649614	View SW between lobes
		C209_3342	2,431 KB	8/12/2009	547852	7649599	View NE between lobes
11		C209_3343	2,173 KB	8/12/2009	547852	7649599	Panoramic view E to SE across lobe 5
		C209_3344	2,133 KB	8/12/2009			
		C209_3345	2,378 KB	8/12/2009			
12		C209_3346	2,056 KB	8/12/2009	547852	7649599	Panoramic view W to NE across lobe 4
		C209_3347	1,907 KB	8/12/2009			
		C209_3348	2,029 KB	8/12/2009			
		C209_3349	2,414 KB	8/12/2009			
		C209_3350	2,440 KB	8/12/2009			

Table IX: Landfill Visual Inspection Photo Log - West Landfill - North
Site Name: CAM-2, Gladman Point
Landfill: West Landfill - North
Date Inspected: August 11 - 13, 2009
Inspected by: Andrew Passalis, P.Eng.

Photo (WLFN-)	Thumbnail	Filename	Size (KB)	Date	Vantage Point		Caption
					Easting	Northing	
13		C209_3351	3,269 KB	8/12/2009	547805	7649601	Panoramic view N to E from southwest corner of lobe 4
		C209_3352	3,138 KB	8/12/2009			
		C209_3353	2,735 KB	8/12/2009			
14		C209_3354	2,228 KB	8/12/2009	547752	7649642	Panoramic view SE to E from west end of lobe 3
		C209_3355	2,337 KB	8/12/2009			
		C209_3356	2,432 KB	8/12/2009			
15		C209_3357	3,162 KB	8/12/2009	547782	7649652	Panoramic view SE to NE across opening between lobes
		C209_3358	2,731 KB	8/12/2009			
		C209_3359	2,725 KB	8/12/2009			
		C209_3360	2,960 KB	8/12/2009			
		C209_3361	3,172 KB	8/12/2009			
16		C209_3363	2,852 KB	8/12/2009	547848	7649694	Panoramic view SE to SW from northwest corner of lobe 4
		C209_3364	3,326 KB	8/12/2009			
		C209_3365	3,292 KB	8/12/2009			
		C209_3366	3,318 KB	8/12/2009			
17		C209_3367	4,024 KB	8/12/2009	547840	7649701	View ESE at ponded water at toe of lobe 4
		C209_3368	2,469 KB	8/12/2009	547840	7649701	View SW along west side of lobe
18		C209_3369	1,693 KB	8/12/2009	547815	7649699	Panoramic view W to S from northeast of lobe 2
		C209_3370	1,840 KB	8/12/2009			
		C209_3371	2,464 KB	8/12/2009			
		C209_3372	2,549 KB	8/12/2009			
19		C209_3373	2,146 KB	8/12/2009	547747	7649713	Panoramic view ESE to S from northwest corner of lobe 2
		C209_3374	2,471 KB	8/12/2009			
		C209_3375	2,617 KB	8/12/2009			
20		C209_3376	1,868 KB	8/12/2009	547747	7649713	Panoramic view S to WNW from northeast corner of lobe 1
		C209_3377	2,062 KB	8/12/2009			
		C209_3378	1,498 KB	8/12/2009			
21		C209_3379	2,149 KB	8/12/2009	547741	7649667	Panoramic view NW to SE from south of lobes 1 and 2
		C209_3380	2,515 KB	8/12/2009			
		C209_3381	2,833 KB	8/12/2009			
		C209_3382	2,632 KB	8/12/2009			
		C209_3383	2,464 KB	8/12/2009			
		C209_3384	2,198 KB	8/12/2009			

5 WEST LANDFILL – SOUTH

5.1 BACKGROUND AND MONITORING PROGRAM

The West Landfill - South is located approximately 700 m northwest of the former main station area and is bound on the south by the SRR site and west by an abandoned airstrip. The landfill includes four regraded debris lobes (labelled 8 – 11) ranging in size from 575 m^2 to 9,125 m^2. With its cover material, the landfill encompasses a footprint of approximately 12,600 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 West Landfill – South was classified as a low potential environmental risk. The remediation consisted of excavation of contaminated soils and 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.

5.2 VISUAL INSPECTION REPORT

The visual inspection of the West Landfill - South was conducted on August 12, 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 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 was no seepage point observed at this landfill.

Debris
There was one notation of debris in the area immediately south of the landfill (Feature A), including a partially exposed piece of black geotextile material. The length and depth of the debris is not known, however it is suspected the geotexile may be associated with the drainage channel construction. The piece of debris appeared to be isolated and outside of the landfill regrade area.

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

Other Features of Note
A single area of ponding was noted in a low lying area extending between the lobe 11 and adjacent lobe 10 to the north. There was no seepage point or staining associated with the ponded water.

Discussion
The West Landfill - South 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 X: Visual Inspection Checklist / Report – West Landfill – South

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

SITE NAME: CAM-2 GLADMAN POINT
LANDFILL DESIGNATION: WEST LANDFILL - SOUTH
DATE OF INSPECTION: AUGUST 12, 2009
DATE OF PREVIOUS INSPECTION: AUGUST 15, 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-2 Gladman Point
Landfill: West Landfill - South
Designation: Regrade Landfill
Date Inspected: August 11 - 13, 2009
Inspected by: Andrew Passalis, P.Eng.

Signature: 

TABLE X: CAM-2 GLADMAN POINT, WEST LANDFILL - SOUTH
Page 2 of 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 Observable	N/A
Erosion	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Frost Action	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Animal Burrows	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Vegetation	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Staining	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Vegetation Stress	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Seepage Points	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Debris Exposed	Yes	FEATURE A See Figure CAM-2.4 (east end of drainage channel southeast of Lobe 11)	0.3 m	0.4 m	Unknown (may be piece used in channel construction)	Isolated <1%	Isolated	WLFS-3	Acceptable	548268E, 7619265N, partially exposed piece of black geotextile
Presence/Condition of Monitoring Instruments	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Other Features of Note:	Yes	See Figure CAM-2.4 (north of Lobe 11)	25 m	4 - 10 m	5 - 10 cm	Isolated <1%	Ponding	WLFS-7	Acceptable	Localized ponding between lobes
Additional Photos	Yes	See Figure CAM-2.4 and Photographic Record	N/A	N/A	N/A	N/A	General Photographic Record	N/A	Not Observable	General photos for documentation, no features of note.
Overall Landfill Performance:	**Acceptable**									

5.3 PRELIMINARY STABILITY ASSESSMENT

The Preliminary Stability Assessment for West Landfill – South has been completed as per the ToR and is included as Table XI below.

Table XI: Preliminary Stability Assessment – West Landfill – South

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	Acceptable	Isolated
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 the 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 West Landfill – South has been completed as per the ToR and is presented in Figure CAM-2.4.

Located 15m north of displayed location

548 000 E
548 050 E
548 100 E
548 500 E
548 200 E
548 250 E

7 619 450 N
7 619 400 N
7 619 350 N
7 619 300 N
7 619 250 N

LOBE 8
LOBE 9
LOBE 10
LOBE 11

FEATURE A
EXPOSED DEBRIS
GEOTEXTILE

20m
21m
19m
22m
23m
24m
25m
26m

340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

LEGEND

- TBM4 — TEMPORARY BENCHMARK
- BM–1 — PERMANENT BENCHMARK
- 101 — COORDINATE POINT
- 2 — PHOTOGRAPH LOCATION
- PONDED WATER

0 10m 20m 30m 40m 50m

NO.	VERSION	DATE	BY	VERIF.	APPR.
A	FINAL VERSION	10–02–18	P.L.	A.P.	J.P.P.

Construction de Défense Canada
Defence Construction Canada

FINAL REPORT
COLLECTION OF LANDFILL MONITORING DATA
CAM-2, GLADMAN POINT (NUNAVUT)

WEST LANDFILL-SOUTH

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-2_4	PAGE PL

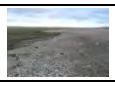
FIGURE CAM-2.4

G:\CD9229\2009\CAM-2\FINAL\CD9229_001_160-CAM-2_4.dwg, PL, 2010-02-18 10:41:13

5.5 PHOTOGRAPHIC RECORDS

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

Table XII: Landfill Visual Inspection Log - West Landfill - South
Site Name: CAM-2, Gladman Point
Landfill: West Landfill - South
Date Inspected: August 11 - 13, 2009
Inspected by: Andrew Passalis, P.Eng.

Photo (WLFS-)	Thumbnail	Filename	Size (KB)	Date	Vantage Point		Caption
					Easting	Northing	
		C209_3268	2,323 KB	8/12/2009	548229	7619252	View W along south side of lobe and drainage channel
1		C209_3269	2,657 KB	8/12/2009	548229	7619252	View E along south side of lobe 11 and drainage channel
2		C209_3270	2,494 KB	8/12/2009	548272	7619265	Panoramic view WSW to N from southeast corner of lobe 11
		C209_3271	1,952 KB	8/12/2009			
		C209_3272	2,685 KB	8/12/2009			
		C209_3273	3,080 KB	8/12/2009			
3		C209_3274	4,519 KB	8/12/2009	548268	7619265	Piece of exposed geotextile at east end of drainage feature
4		C209_3275	2,781 KB	8/12/2009	548256	7619331	Panoramic view S to WNW from west side of lobe 11
		C209_3276	2,877 KB	8/12/2009			
		C209_3277	2,541 KB	8/12/2009			
		C209_3278	2,095 KB	8/12/2009			
		C209_3279	2,060 KB	8/12/2009			
5		C209_3280	2,057 KB	8/12/2009	548196	7619370	Panoramic view SSE to NW from northwest corner of lobe 11
		C209_3281	2,457 KB	8/12/2009			
		C209_3282	1,914 KB	8/12/2009			
		C209_3283	1,545 KB	8/12/2009			
		C209_3284	1,768 KB	8/12/2009	548196	7619370	View NW at ponded water on north end of lobe
6		C209_3285	2,377 KB	8/12/2009	548155	7619258	Panoramic view N to E from southwest corner of lobe 11
		C209_3286	2,271 KB	8/12/2009			
		C209_3287	2,195 KB	8/12/2009			
		C209_3288	2,179 KB	8/12/2009			
7		C209_3289	2,196 KB	8/12/2009	548150	7619341	Panoramic view NW to NE from upgradient of lobe 10 Note ponding between lobes on right of photo
		C209_3290	2,671 KB	8/12/2009			
		C209_3291	3,114 KB	8/12/2009			
		C209_3292	2,928 KB	8/12/2009			
8		C209_3293	2,112 KB	8/12/2009	548162	7619371	View NW along toe of lobe 10
9		C209_3294	2,844 KB	8/12/2009	548121	7619394	View SE along toe of lobe 10
10		C209_3295	3,045 KB	8/12/2009	548121	7619394	Panoramic view N to W at adjacent lobe 9 to the north
		C209_3296	2,727 KB	8/12/2009			
		C209_3297	2,678 KB	8/12/2009			
		C209_3298	1,986 KB	8/12/2009			
		C209_3299	1,331 KB	8/12/2009	548129	7619443	View SW at lobe from downgradient tundra location
11		C209_3300	2,641 KB	8/12/2009	548071	7619404	View NE at lobe 9 from upgradient location
12		C209_3301	2,212 KB	8/12/2009	548048	7619431	View E at lobe 9 from cross gradient location
13		C209_3302	2,242 KB	8/12/2009	548048	7619431	Panoramic view NW to SW from southeast corner of lobe 8
		C209_3303	2,056 KB	8/12/2009			
		C209_3304	1,731 KB	8/12/2009			
14		C209_3305	2,502 KB	8/12/2009	547991	7619437	Panoramic view NW to E from southwest corner of lobe 8
		C209_3306	2,407 KB	8/12/2009			
		C209_3307	2,579 KB	8/12/2009			
		C209_3308	2,578 KB	8/12/2009			
15		C209_3309	2,271 KB	8/12/2009	548004	7619478	Panoramic view SE to S from northwest corner of lobe 8
		C209_3310	2,333 KB	8/12/2009			
		C209_3311	2,357 KB	8/12/2009			

6 TIER II DISPOSAL FACILITY

6.1 BACKGROUND AND MONITORING PROGRAM

The Tier II Disposal Facility is constructed at the northwest corner of the former station area and is bound to the west by an abandoned airstrip, to the north by the Station Landfill, and to the southeast by the former module train pad. 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 8,700 m^2 with the final cover extending approximately 5.25 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 a visual inspection to verify for evidence of settlement or erosion and collection of soil and groundwater samples to monitor for the presence of leachate. Locations of groundwater monitoring wells, soil samples and thermistor installations are identified on Figure CAM-2.5.

The soil and groundwater analytical data are presented in Tables XVI and XVIII, respectively. 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-2 and MW-3 which were dry at the time of sampling.

6.2 VISUAL INSPECTION REPORT

The visual inspection of the Tier II Disposal Facility was conducted on August 12, 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 settlement were noted at two locations (Feature A and B) on the facility surface. Feature A consisted of linear depression extending parallel to the crest on the southeast area of the facility (southeast of VT-4), whereas Feature B consisted of a more localized depression on the east facing slope east of VT-3. Both 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 on the surface of the landfill, including Feature C located on the slope southwest of VT-4 and Feature D located on the northeast corner of the landfill. Both features extend perpendicular to the slope, appear to be self-armouring and have an acceptable severity rating. Overall, the facility cover appears stable and unchanged from the 2008 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
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 noted at one location on the southwest slope of the facility consisting of a localized wetted area approximately 5 m above the toe (Feature E). The facility cover appears stable with no erosion 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
Several thin tension/desiccation cracks were noted extending along the toe parallel to the slope on the southwest, west and northwest sides of the facility cover (Feature F). The frequency and magnitude of cracks appear to be less than that observed in 2008, possibly due to partial/complete infilling. No further indications of desiccation/movement were noted.

Several areas of ponded water were noted along the north and east sides of the facility, including an area in close proximity to MW-2. The ponding is the result of low relief and poor drainage through fine-grained soils that underlay the area.

Discussion
The Tier II Disposal Facility 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 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-2 GLADMAN POINT
LANDFILL DESIGNATION: TIER II DISPOSAL FACILITY
DATE OF INSPECTION: AUGUST 12, 2009
DATE OF PREVIOUS INSPECTION: AUGUST 16, 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-2 Gladman Point
Landfill: Tier II Disposal Facility
Designation: New Landfill
Date Inspected: August 11 - 13, 2009
Inspected by: Andrew Passalis, P.Eng.

Signature: 

TABLE XIII: CAM-2 GLADMAON POINT, TIER II SOIL DISPOSAL FACILITY
Page 2 of 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-2.5 (southeast of VT-4)	20 m	1.0 to 1.5 m	5 cm	Isolated <1%	Subtle depression	Tier II-17, 18	Acceptable	Cover and slopes appear stable. Feature not visible in 2008 photos.
		Feature B See Figure CAM-2.5 (east of VT-3)	2 m	1.5 m	15 cm	Isolated <1%	Localized depression on slope perpendicular to toe	Tier II-28	Acceptable	Cover and slopes appear stable. Feature not visible in 2008 photos.
Erosion	Yes	Feature C See Figure CAM-2.5 (south of VT-4)	10 m	0.5 m	5 cm	Isolated <1%	Minor surficial erosion	Tier II-30	Acceptable	Minor erosion noted on surface of landfill. Cover eppears stable and unchanged from 2008. Self armouring.
		Feature D See Figure CAM-2.5 (northeast corner)	15 m	0.5 m	5-10 cm	Isolated <1%	Minor surficial erosion	Tier II-26, 27	Acceptable	Minor erosion noted on surface of landfill. Cover eppears stable and unchanged from 2008. Self armouring.
Frost Action	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Animal Burrows	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Vegetation	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Staining	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Vegetation Stress	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Seepage Points	Yes	Feature E See Figure CAM-2.5 (southwest slope)	5 m	2 m	N/A	Isolated <1%	Wetted area on side slope	Tier II-29	Acceptable	Minor seepage noted. Slope appears stable. Feature not present in 2008.
Debris Exposed	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Presence/Condition of Monitoring Instruments	Yes	See Figure CAM-2.5	N/A	N/A	N/A	N/A	VT-1, VT-2, VT-3, and VT-4 MW-1, MW-2, MW-3 and MW-4	Tier II-12, 10, 11, 9, 5, 7, 1, 3	N/A	Sampled and monitored in 2009
Other Features of Note:	Yes	Feature F See Figure CAM-2.5 (southwest, west and northwest slopes)	Variable, 10 - 30m	1 - 3 mm	Unknown	< 5%	Tension cracks along southwest, west and northwest slopes (majority along toe)	Tier II-21, 23, 24, 31 - 34	Acceptable	Cracks appear to be less frequent than observed in 2008, possibly due to partial infilling. No further indications of desication/movement noted.
		See Figure CAM-2.5 (north, east and southeast toe)	Variable, 10 - 50m	5 - 15 m	10 - 20 cm	N/A	Ponding	Tier II-14, 24, 35	N/A	Ponded water in low lying areas along toe, including vicinity of MW-2. Seepage from facility not noted.
Additional Photos	Yes	See Figure CAM-2.5 and Photographic Record	N/A	N/A	N/A	N/A	General Photographic Record	N/A	Not Observable	General photos for documentation, no 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 below.

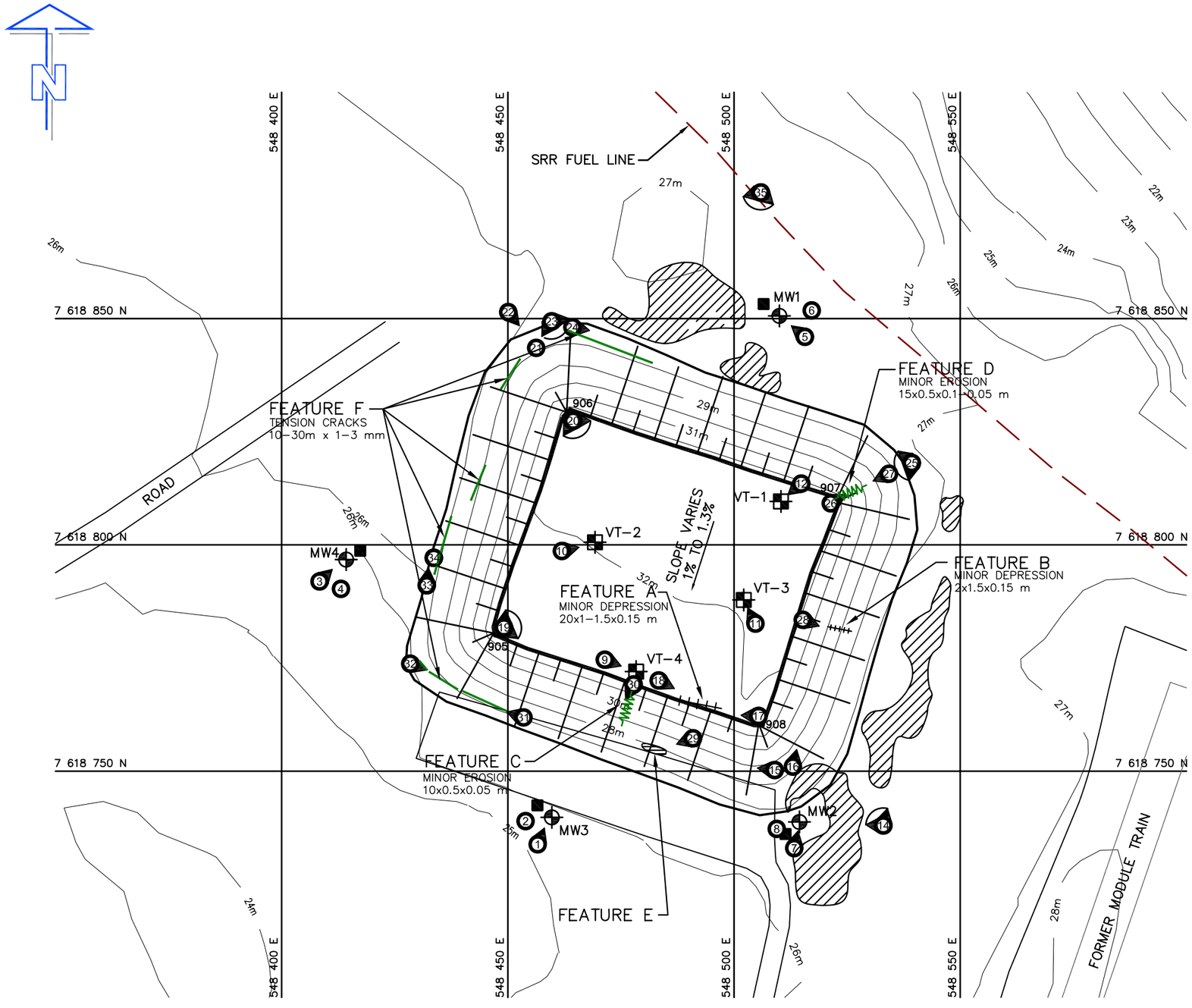
Table XIV: Preliminary Stability Assessment – Tier II Disposal Facility

Feature	Severity Rating	Extent
Settlement	Acceptable	Isolated
Erosion	Acceptable	None
Frost Action	Not observed	None
Staining	Not observed	None
Vegetation Stress	Not observed	None
Seepage/Ponded Water	Acceptable	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 its 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 presented in Figure CAM-2.5.



LEGEND

- COORDINATE POINT
- MONITORING SOIL SAMPLE LOCATION
- MONITORING WELL LOCATION
- VERTICAL THERMISTOR LOCATION
- PHOTOGRAPH LOCATION
- EROSION (NTS)
- TENSION CRACK (NTS)
- SETTLEMENT
- PONDED WATER
- SEEPAGE

0 10m 20m 30m 40m 50m

NO.	VERSION	DATE	BY	VERIF.	APPR.
A	FINAL VERSION	10-02-18	P.L.	A.P.	J.P.P.

Construction de Défense Canada
Defence Construction Canada

FINAL REPORT
COLLECTION OF LANDFILL MONITORING DATA
CAM-2, GLADMAN POINT (NUNAVUT)

TIER II DISPOSAL FACILITY

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-2_5	PAGE PL

FIGURE CAM-2.5

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 only contains an index and “thumbnail” photographs. Full-sized photographs are contained in the Addendum CD-ROM.

Table XV: Landfill Visual Inspection Photo Log - Tier II Disposal Facility
Site Name: CAM-2, Gladman Point
Landfill: Tier II Disposal Facility
Date Inspected: August 11 - 13, 2009
Inspected by: Andrew Passalis, P.Eng.

Photo (Tier II-)	Thumbnail	Filename	Size (KB)	Date	Vantage Point		Caption
					Easting	Northing	
		C209_3085	3,486 KB	8/12/2009	548460	761838	MW-3
1		C209_3086	2,917 KB	8/12/2009	548458	761834	View NE at MW-3
2		C209_3087	4,462 KB	8/12/2009	548457	761838	C209-3WA/B
3		C209_3088	3,274 KB	8/12/2009	548410	761790	View NE at MW-4
		C209_3089	1,695 KB	8/12/2009	548414	761803	View S at MW-4
4		C209_3090	4,624 KB	8/12/2009	548415	761793	C209-4WA/B
		C209_3091	3,401 KB	8/12/2009	548410	761790	View NE at C209-4WA/B
5		C209_3092	3,192 KB	8/12/2009	548514	761848	View NW at MW-1
		C209_3093	2,282 KB	8/12/2009	548512	761854	View SW at MW-1
6		C209_3094	4,002 KB	8/12/2009	548514	761852	C209-1WA/B
		C209_3095	3,209 KB	8/12/2009	548515	761852	View W at MW-1
7		C209_3096	3,012 KB	8/12/2009	548513	761734	View NNE at MW-2, note ponding along toe
		C209_3097	2,729 KB	8/12/2009	548519	761734	View NW at MW-2
8		C209_3098	3,962 KB	8/12/2009	548509	761737	C209-2WA/B
		C209_3099	2,920 KB	8/12/2009	548517	761734	View N at MW-2
9		C209_3100	3,684 KB	8/12/2009	548472	761774	View SE at VT-4
		C209_3101	2,519 KB	8/12/2009	548481	761767	View NNW at VT-4
		C209_3102	2,907 KB	8/12/2009	548472	761795	View NW at VT-2

Table XV: Landfill Visual Inspection Photo Log - Tier II Disposal Facility

Site Name: CAM-2, Gladman Point
Landfill: Tier II Disposal Facility
Date Inspected: August 11 - 13, 2009
Inspected by: Andrew Passalis, P.Eng.

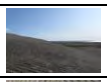
Photo (Tier II-)	Thumbnail	Filename	Size (KB)	Date	Vantage Point		Caption
					Easting	Northing	
10		C209_3103	3,164 KB	8/12/2009	548462	761798	View ENE at VT-2, VT-1 in background
		C209_3104	2,788 KB	8/12/2009	548505	761782	View NNW at VT-3
11		C209_3105	2,265 KB	8/12/2009	548502	761794	View S at VT-3, SRR in background
		C209_3106	2,906 KB	8/12/2009	548514	761804	View NNW at VT-1
12		C209_3107	2,540 KB	8/12/2009	548515	761813	View SW at VT-1, VT-3 in back left and VT-2 in back right
13		C209_3167	2,714 KB	8/12/2009	548573	761681	View NW at Tier II Disposal Facility from former Module Train pad
		C209_3168	2,764 KB	8/12/2009			
14		C209_3169	2,211 KB	8/12/2009	548533	761738	Panoramic view W to N from southwest corner
		C209_3170	2,568 KB	8/12/2009			
		C209_3171	2,505 KB	8/12/2009			
15		C209_3172	2,376 KB	8/12/2009	548513	761750	View W along west side of DF
16		C209_3173	2,483 KB	8/12/2009	548513	761750	View NNE along south side of DF
17		C209_3176	2,626 KB	8/12/2009	548506	761762	View NW at minor settlement along crest. VT-4 in background.
		C209_3177	2,825 KB	8/12/2009	548506	761762	Panoramic view N to NE from southeast corner of DF
		C209_3178	2,633 KB	8/12/2009			
		C209_3179	2,649 KB	8/12/2009			
18		C209_3180	2,838 KB	8/12/2009	548484	761769	View SE at settlement along crest
19		C209_3181	2,678 KB	8/12/2009	548449	761781	Panoramic view NE to SE from southwest top of DF
		C209_3182	2,471 KB	8/12/2009			
		C209_3183	2,563 KB	8/12/2009			
		C209_3184	2,796 KB	8/12/2009			
20		C209_3185	2,938 KB	8/12/2009	548464	761828	Panoramic view SE to SW from northwest top of DF
		C209_3186	2,869 KB	8/12/2009			
		C209_3187	2,932 KB	8/12/2009			
		C209_3188	3,051 KB	8/12/2009			
		C209_3189	2,864 KB	8/12/2009	548460	761836	View SE along east side of DF
		C209_3190	2,507 KB	8/12/2009	548460	761836	View SW along north side of DF
21		C209_3191	4,495 KB	8/12/2009	548456	761842	Piece of exposed metal pipe in berm of DF (former POL line)

Table XV: Landfill Visual Inspection Photo Log - Tier II Disposal Facility

Site Name: CAM-2, Gladman Point
Landfill: Tier II Disposal Facility
Date Inspected: August 11 - 13, 2009
Inspected by: Andrew Passalis, P.Eng.

Photo (Tier II-)	Thumbnail	Filename	Size (KB)	Date	Vantage Point		Caption
					Easting	Northing	
22		C209_3192	3,632 KB	8/12/2009	548450	761851	View SE at exposed metal pipe in berm of DF
23		C209_3193	2,293 KB	8/12/2009	548460	761849	Panoramic view E to SSW from northwest toe of DF
		C209_3194	3,502 KB	8/12/2009			
		C209_3195	3,247 KB	8/12/2009			
		C209_3196	2,606 KB	8/12/2009			
24		C209_3197	2,872 KB	8/12/2009	548465	761848	View SE at tension crack along north toe of DF
25		C209_3198	2,729 KB	8/12/2009	548540	761818	Panoramic view NW to SW from northeast corner of DF
		C209_3199	2,932 KB	8/12/2009			
		C209_3200	2,539 KB	8/12/2009			
		C209_3201	2,508 KB	8/12/2009			
26		C209_3202	3,649 KB	8/12/2009	548521	761809	View NE at minor erosion on northeast corner of DF
27		C209_3203	2,425 KB	8/12/2009	548534	761816	View SW at mior ersion on northeast corner of DF
28		C209_3204	4,371 KB	8/12/2009	548515	761783	View SE at localized settlement on east berm of DF
29		C209_3205	4,473 KB	8/12/2009	548491	761757	View SW at seepage on west side of DF
30		C209_3206	4,257 KB	8/12/2009	548478	761769	View SW at minor erosion on west slope downgradient of VT-4
31		C209_3207	4,411 KB	8/12/2009	548453	761762	View NW at tension crack near base of slope on west side of DF
32		C209_3208	3,412 KB	8/12/2009	548429	761773	View SE at tension crack near base of slope on west side of DF
33		C209_3209	3,009 KB	8/12/2009	548432	761791	View N at tension crack near base of slop on north side of DF
34		C209_3210	3,662 KB	8/12/2009	548432	761791	View N at tension crack near base of slop on north side of DF
35		C209_3226	1,555 KB	8/12/2009	548507	7618879	Panoramic view SW to SE from Station Landfill lobe 3
		C209_3227	2,387 KB	8/12/2009			
		C209_3228	2,925 KB	8/12/2009			

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 with the exception of sensors #12 at VT-2 and VT-3 and sensor #16 at VT-4, all analogues/thermocouples were observed to be functioning properly at the time of the inspection. Further review of the downloaded data identified a consistent error in temperature readings obtained from these sensors throughout the monitoring period. In addition, sensor #9 at VT-3 also experienced periodic errors during the monitoring period. All clocks exhibited slight drift and were synchronized using the Prolog software.

Weak battery levels were noted at VT-2 and VT-4 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 the 2008-2009 period has been forwarded to DCC as per the ToR.

6.8 SOIL SAMPLE ANALYTICAL DATA

The soil chemical analysis results and evaluation of the soil 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

Tier II - Soil Chemical Analysis Results

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 [mg/kg]	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]
C209-1WA	MW-1	0-15	<5	2	<1	<0.1	2	<10	2	<1	<0.05	<0.01	<12	<10	18	18
C209-1WB		40-50	<5	2	1	<0.1	3	<10	4	1	<0.05	<0.01	<12	<10	<10	ND
C209-2WA	MW-2	0-15	<5	2	1	<0.1	4	63	3	1	<0.05	<0.01	<12	<10	51	51
C209-2WB		40-50	<5	2	1	<0.1	2	<10	3	1	<0.05	<0.01	<12	<10	<10	ND
C209-3WA	MW-3	0-15	<5	2	<1	<0.1	2	<10	2	1	<0.05	<0.01	<12	<10	13	13
C209-3WB		40-50	<5	3	1	<0.1	4	<10	6	2	<0.05	<0.01	<12	<10	<10	ND
C209-4WA	MW-4	0-15	<5	2	1	<0.1	2	<10	3	1	<0.05	<0.01	<12	<10	14	14
C209-4WB		40-50	<5	8	2	<0.1	4	<10	17	1	<0.05	<0.01	<12	<10	<10	ND
C209-BD1	C209-3WA	0-15	<5	2	<1	<0.1	2	<10	3	1	<0.05	<0.01	<12	<10	18	18

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/CAM-2/09-Soil and GW-results(Soil Tier II).xls

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

Parameter	2009
Copper	All reported concentrations were less than the method detection limit (5 mg/kg).
Nickel	Concentrations ranged between 2-8 mg/kg with a mean of 1.8. The highest concentration observed at depth in MW-4 (downgradient location), with detectable concentrations between 2-3 mg/kg observed at all other locations.
Cobalt	Concentrations ranged between <1-2 mg/kg with a mean of 1.0. With the exception of shallow samples at MW-1 and MW-3, detectable concentrations were noted at all locations. The highest concentration was observed at depth in MW-4 (downgradient location).
Cadmium	All reported concentrations were less than the method detection limit (0.1 mg/kg)
Lead	Concentrations ranged between 2-4 mg/kg with a mean of 2.9. Trace concentrations were noted at all locations with 4 mg/kg noted at surface at MW-2 and at depth at MW-3 and MW-4.
Zinc	With the exception of the shallow sample at MW-2 (63 mg/kg), all reported concentrations were less than the method detection limit (10 mg/kg). MW-2 is located downgradient of the facility.
Chromium	Concentrations ranged between 2-17 mg/kg with a mean of 5.0. Elevated concentrations of 6 and 17 mg/kg were observed at depth in downgradient locations MW-3 and MW-4, respectively.
Arsenic	Concentrations ranged between <1.0-2 mg/kg with a mean of 1.1. The highest concentration of 2 mg/kg was noted at depth in the downgradient location MW-3.
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 <12-51 mg/kg with detectable F3 concentrations noted at all surface locations. The most elevated concentration was noted in MW-2 (51 mg/kg) with the remaining surface sample locations ranging between 13 mg/kg at MW-3, 14 mg/kg at MW-4 and 18 mg/kg at MW-1. All reported TPH concentrations in depth samples were below the method detection limit (12 mg/kg).

6.9 GROUNDWATER SAMPLE ANALYTICAL DATA

The groundwater chemical analysis results and evaluation of the analytical data for the 2009 Tier II Disposal Facility samples are presented in Tables XVIII and XIX hereafter. There was insufficient sample volume in MW-2 and MW-3 to complete the full suite of analysis. Groundwater samples collected as part of the QA/QC program are presented in Appendix C at the end of the report.

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 [ug/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]
C209-1W	MW-1	0,010	0,038	0,013	0,000098	0,0075	17	0,013	0,0026	0,011	<0.05	<0.1	0.5	0.1	0.6
C209-2W	MW-2	0,023	0,038	0,0070	0,00020	0,0012	110	0,019	0,0008	0,009	NS	NS	NS	NS	NS
C209-3W	MW-3	0,022	0,12	0,0016	0,00012	0,0023	0.21	0,032	0,0048	0,007	<0.05	NS	NS	NS	NS
C209-4W	MW-4	0,0050	0,008	0,0011	0,000091	0,0015	16	0,039	0,0013	<0.005	<0.05	<0.1	<0.1	<0.1	ND
C209-BD1W	C209-1W	0,011	0,040	0,014	0,00010	0,0068	17	0,013	0,0027	<0.005	<0.05	<0.1	0.7	<0.1	0.7

TPH: Sum of the concentrations of F1, F2 and F3. Concentrations below method detection limits are excluded from the total.
ND: Not Detected
NS: Not enough water in well for this analysis

S/P/CD/9229/T/CAM-2/09-Soil and GW-results(GW).xls

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

Parameter	2009
Copper	Concentrations ranged between 0.005-0.023 mg/L, with the most elevated concentrations noted at downgradient locations MW-2 (0.023 mg/kg) and MW-3 (0.022 mg/kg). The lowest concentrations was noted at MW-4 (downgradient location)
Nickel	Concentrations ranged between 0.008-0.12 mg/L, with the highest and lowest concentrations noted at MW-3 and MW-4, respectively (both downgradient locations).
Cobalt	Concentrations ranged between 0.0011-0.013 mg/L, with the highest concentration observed at the upgradient location MW-1.
Cadmium	Concentrations ranged between 0.000091-0.0002 mg/L. The highest concentrations were noted at MW-2 and MW-3 (both downgradient locations).
Lead	Concentrations ranged between 0.0012-0.0075 mg/L, with the highest concentration noted at MW-1 (upgradient location).
Zinc	Concentrations ranged between 0.21-110 mg/L. Elevated concentrations were noted at MW-2, nearly an order of magnitude higher than concentrations observed at upgradient location MW-1 (17 mg/L) and downgradient location MW-4 (16 mg/L); and two orders of magnitude higher than at MW-3 (0.21 mg/L).
Chromium	Concentrations ranged between 0.013-0.39 mg/L, with the lowest concentration observed at the upgradient location MW-1 and highest concentrations at MW-4.
Arsenic	Concentrations ranged between 0.0008-0.0048 mg/L, with the highest and lowest concentrations noted at MW-3 and MW-2, respectively (both downgradient locations).
Mercury	Concentrations ranged between <0.000005-0.000011 mg/L, with the highest concentration observed at MW-1 (upgradient) and lowest concentration at MW-4 (downgradient).
PCBs	All reported concentrations were less than the method detection limit (0.00005 mg/L). MW-2 was not analyzed for PCBs.
TPH	Trace concentrations of F2 (0.5 mg/L) were noted at MW-1 (upgradient location). All remaining reported concentrations for MW-1 and MW-4 were less than the method detection limit (0.1 mg/L).

6.10 THERMISTOR ANNUAL MAINTENANCE REPORTS

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

Thermistor Annual Maintenance Report

Contractor Name:	**Sila Remediation Inc.**	Inspection Date:	**12/08/2009**
Prepared By:	**A.Passalis**		

Thermistor Information

Site Name:	**CAM-2**		Thermistor Location		**Tier II Disposal Facility**		
Thermistor Number:	**VT-1**		Inclination		**Vertical**		
Install Date:	**08/30/2005**		First Date Event		**08/22/2006**	Last Date Event	**25/08/2007**
Coordinates and Elevation	N	**7618811**	E	**548508.81**	Elev		**32.48**
Length of Cable (m)	**10.5**	Cable Lead Above Ground (m)	**3.60**	Nodal Points	**16**		
Datalogger Serial #	**207019**			Cable Serial Number	**1690**		

Thermistor Inspection

	Good	Needs Maintenance	
Casing	**Yes**	**No**	
Cover	**Yes**	**No**	
Data Logger	**Yes**	**No**	
Cable	**Yes**	**No**	
Beads	**Yes**	**No**	
Battery Installation Date	**08/25/2007**		
Battery Levels	Main **11.34**	Aux **13.38**	

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	8.936	9.6377
2	8.023	14.0876
3	12.564	5.2588
4	12.967	4.1909
5	13.959	2.1909
6	15.340	1.1328
7	18.820	-2.7857
8	19.954	-3.9572

Bead	ohms	Degrees C
9	20.03	-5.0757
10	21.95	-5.9381
11	22.84	-6.7403
12	23.54	-7.4380
13	24.72	-8.1493
14	24.94	-8.7550
15	25.96	-9.3646
16	26.37	-9.7480

Observations and Proposed Maintenance

Thermistor Annual Maintenance Report

Contractor Name:	**Sila Remediation Inc.**	Inspection Date:	**12/08/2009**
Prepared By:	**A.Passalis**		

Thermistor Information

Site Name:	**CAM-2**	Thermistor Location		**Tier II Disposal Facility**			
Thermistor Number:	**VT-2**	Inclination		**Vertical**			
Install Date:	**08/30/2005**	First Date Event		**08/22/2006**	Last Date Event		**25/08/2007**
Coordinates and Elevation	N	**7618799**	E	**548474.24**		Elev	**32.072**
Length of Cable (m)	**8.0**	Cable Lead Above Ground (m)	**2.75**	Nodal Points			**12**
Datalogger Serial #	**207107**			Cable Serial Number			**1691**

Thermistor Inspection

	Good	Needs Maintenance	
Casing	**Yes**	**No**	
Cover	**Yes**	**No**	
Data Logger	**Yes**	**No**	
Cable	**Yes**	**No**	
Beads	**Yes**	**No**	Bead 12 not reading manually
Battery Installation Date	**08/25/2007**		
Battery Levels	Main **10.18**	Aux **9.73**	

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	11.513	6.9/93
2	13.047	4.5377
3	13.533	3.7940
4	14.544	2.2708
5	17.026	-0.7688
6	18.871	-2.8298
7	20.21	-4.2572
8	21.74	-5.9600

Bead	ohms	Degrees C
9	23.07	-6.8659
10	24.05	-7.7268
11	24.61	-8.3785
12		

Observations and Proposed Maintenance

Batteries should be replaced in 2010.

Thermistor Annual Maintenance Report

Contractor Name:	**Sila Remediation Inc.**	Inspection Date:	**12/08/2009**
Prepared By:	**A.Passalis**		

Thermistor Information

Site Name:	**CAM-2**	Thermistor Location		**Tier II Disposal Facility**			
Thermistor Number:	**VT-3**	Inclination		**Vertical**			
Install Date:	**08/30/2005**	First Date Event		**08/22/2006**	Last Date Event		**25/08/2007**
Coordinates and Elevation	N	**7618792**	E	**548495.38**		Elev	**32.06**
Length of Cable (m)	**8.0**	Cable Lead Above Ground (m)	**2.90**	Nodal Points			**12**
Datalogger Serial #	**5070039**			Cable Serial Number			**1692**

Thermistor Inspection

	Good	Needs Maintenance	
Casing	**Yes**	**No**	
Cover	**Yes**	**No**	
Data Logger	**Yes**	**No**	
Cable	**Yes**	**No**	
Beads	**Yes**	**No**	12 not responding
Battery Installation Date	**08/25/2007**		
Battery Levels	Main **11.34**	Aux **13.75**	

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	8.928	12.3827
2	12.703	5.0741
3	13.151	4.3706
4	14.157	2.7742
5	16.66	-0.3668
6	18.027	-2.0261
7	19.542	-3.5227
8	21.55	-5.5271

Bead	ohms	Degrees C
9	24.68	-8.1493
10	24.41	-7.6216
11	24.47	-8.3253
12	-	-

Observations and Proposed Maintenance

Thermistor Annual Maintenance Report

Contractor Name:	**Sila Remediation Inc.**	Inspection Date:	**12/08/2008**
Prepared By:	**A.Passalis**		

Thermistor Information

Site Name:	**CAM-2**		Thermistor Location		**Tier II Disposal Facility**		
Thermistor Number:	**VT-4**		Inclination		**Vertical**		
Install Date:	**08/30/2005**		First Date Event		**08/22/2006**	Last Date Event	**25/08/2007**
Coordinates and Elevation		N	**7618772**	E	**548479.02**	Elev	**31.89**
Length of Cable (m)	**10.5**	Cable Lead Above Ground (m)		**3.50**	Nodal Points		**16**
Datalogger Serial #	**2020130**				Cable Serial Number		**1693**

Thermistor Inspection

	Good	Needs Maintenance	
Casing	**Yes**	**No**	
Cover	**Yes**	**No**	
Data Logger	**Yes**	**No**	
Cable	**Yes**	**No**	
Beads	**Yes**	**No**	16 not responding to data logger
Battery Installation Date	**08/25/2007**		
Battery Levels	Main **9.73**	Aux **9.37**	

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	8.023	18.3000
2	8.605	12.6641
3	12.906	4.6700
4	13.578	3.6291
5	14.563	2.2182
6	16.949	-0.7968
7	18.015	-2.0081
8	19.177	-3.2692

Bead	ohms	Degrees C
9	20.19	-4.3600
10	21.12	-5.2890
11	22.02	-6.1513
12	22.65	-6.8659
13	23.77	-7.5277
14	24.07	-8.1381
15	24.72	-8.6198
16		\

Observations and Proposed Maintenance

Batteries should be replaced in 2010.

6.11 MONITORING WELL SAMPLING/INSPECTION LOGS

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

2009 Monitoring Well Sampling Log (MW-1)

Site name:	CAM-2
Date of sampling event:	12-Aug-09
Names of samplers:	Andrew Passalis
Monitoring well ID:	MW-1
Facility:	Tier ll Soil Disposal Facility

Known Data	
Depth of installation* (m):	3.50
Length of screened section (m):	1.87
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):	0.90
Well height above ground (m):	0.47	Depth to bottom (m):	1.96
Diameter of well (m):	0.05	Free product thickness (mm):	-

Calculations		Notes	
Depth of water (m):	1.05	Evidence of sludge:	no
Well volume of water (L):	2.07	Evidence of freezing/siltation:	no
Static water level* (m):	0.43		
Length of screen collecting water (m):	0.89		

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
12-Aug-09	2.1	2.4	7.0	2.17	40	C&C, N/O

Water Sampling		Soil Sampling	
Date & Time Collected:	12-Aug-09	Date and Time Collected:	12-Aug-09
Sample Number - Water:	C209-1W (BDW1)	Sample Number - Soil:	C209-1WA
			C209-1WB
Sample Containers:	2x250 mL plastic	Sample Containers:	2x125mL glass/bag
	4x500 mL & 2x1 L 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 sand, some gravel
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
LDPE=Low Density Polyethylene
SS=Stainless Steel

2009 Monitoring Well Sampling Log (MW-2)

Site name:	CAM-2
Date of sampling event:	12-Aug-09
Names of samplers:	Andrew Passalis
Monitoring well ID:	MW-2
Facility:	Tier ll Soil Disposal Facility

Known Data	
Depth of installation* (m):	3.50
Length of screened section (m):	1.85
Depth to top of screen* (m):	0.65

Measured Data			
Condition of well:	Good	Procedure/Equipment:	Interface Meter
Procedure/Equipment:	Measuring Tape	Depth to water surface (m):	1.31
Well height above ground (m):	0.21	Depth to bottom (m):	1.42
Diameter of well (m):	0.05	Free product thickness (mm):	-

Calculations		Notes	
Depth of water (m):	0.11	Evidence of sludge:	no
Well volume of water (L):	0.22	Evidence of freezing/siltation:	no
Static water level* (m):	1.10		
Length of screen collecting water (m):	0.11		

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
12-Aug-09	0.25	6.1	6.8	5.0	25	C&C, N/O

Water Sampling		Soil Sampling	
Date & Time Collected:	12-Aug-09	Date and Time Collected:	12-Aug-09
Sample Number - Water:	C209-2W	Sample Number - Soil:	C209-2WA
			C209-2WB
Sample Containers:	1x250 mL plastic	Sample Containers:	2x125mL glass/bag
	insufficent sample volume		2x125mL glass/bag
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 sand, some gravel
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
LDPE=Low Density Polyethylene
SS=Stainless Steel

2009 Monitoring Well Sampling Log (MW-3)

Site name:	CAM-2
Date of sampling event:	12-Aug-09
Names of samplers:	Andrew Passalis
Monitoring well ID:	MW-3
Facility:	Tier ll Soil Disposal Facility

Known Data	
Depth of installation* (m):	3.60
Length of screened section (m):	2.00
Depth to top of screen* (m):	0.50

Measured Data			
Condition of well:	Good	Procedure/Equipment:	Interface Meter
Procedure/Equipment:	Measuring Tape	Depth to water surface (m):	0.87
Well height above ground (m):	0.46	Depth to bottom (m):	1.73
Diameter of well (m):	0.05	Free product thickness (mm):	-

Calculations		Notes	
Depth of water (m):	0.86	Evidence of sludge:	no
Well volume of water (L):	1.68	Evidence of freezing/siltation:	no
Static water level* (m):	0.41		
Length of screen collecting water (m):	0.77		

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
12-Aug-09	0.8	3.9	6.8	2,7	35	C&C, N/O

Water Sampling		Soil Sampling	
Date & Time Collected:	12-Aug-09	Date and Time Collected:	12-Aug-09
Sample Number - Water:	C209-3W	Sample Number - Soil:	C209-3WA (BD1)
			C209-3WB
Sample Containers:	1x250 mL plastic	Sample Containers:	7x125mL glass/bag
	0.5x1 L amber		2x125mL glass/bag
	insufficent sample volume		
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 sand, with gravel
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
LDPE=Low Density Polyethylene
SS=Stainless Steel

2009 Monitoring Well Sampling Log (MW-4)

Site name:	CAM-2
Date of sampling event:	12-Aug-09
Names of samplers:	Andrew Passalis
Monitoring well ID:	MW-4
Facility:	Tier ll Soil Disposal Facility

Known Data	
Depth of installation* (m):	3.30
Length of screened section (m):	1.00
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):	1.32
Well height above ground (m):	0.74	Depth to bottom (m):	1.99
Diameter of well (m):	0.05	Free product thickness (mm):	-

Calculations		Notes	
Depth of water (m):	0.67	Evidence of sludge:	no
Well volume of water (L):	1.32	Evidence of freezing/siltation:	no
Static water level* (m):	0.58		
Length of screen collecting water (m):	0.67		

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
12-Aug-09	1.5	4.3	6.9	3.0	12	C&C, N/O

Water Sampling		Soil Sampling	
Date & Time Collected:	12-Aug-09	Date and Time Collected:	12-Aug-09
Sample Number - Water:	C209-4W	Sample Number - Soil:	C209-4WA
	(dup for interlab QA)		C209-4WB
Sample Containers:	2x250 mL plastic	Sample Containers:	2x125mL glass/bag
	2x500 mL & 3x1 L 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 sand, with gravel
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
LDPE=Low Density Polyethylene
SS=Stainless Steel

7 NON-HAZARDOUS WASTE LANDFILL (NHWLF)

7.1 BACKGROUND AND MONITORING PROGRAM

The NHWLF is located approximately 200 m southeast of the former station area and is bordered to the north by the former Station POL and to the east by a former borrow area. The landfill, including its granular cover, encompasses a footprint of approximately 5,500 m^2 with the final cover extending approximately 3.0 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. Four groundwater monitoring wells are installed at the landfill perimeter.

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

7.2 VISUAL INSPECTION REPORT

The visual inspection of the NHWLF was conducted on August 12, 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 localized settlement were noted at three areas (Features A, B and C) on the landfill surface, including two linear depressions extending parallel to the crest on the southwest and northeast corners of the landfill (Features A & C) and two isolated pot holes in a common area on the southeast corner of the landfill surface. These features were not noted as part of the 2008 inspection. These features have an acceptable severity rating.

Erosion
Evidence of erosion was noted in two areas at the landfill, including several minor surface erosion channels extending along the south slope of the landfill cover (Feature D) and a minor erosion channel extending along the east toe of the landfill (Feature E). The level of erosion appears consistent with the previous year's observations (photos) and planned measures to direct flow around the landfill. Both features appear to be self-armouring and have an acceptable severity rating. Overall, the facility cover appears stable and unchanged from the 2008 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.

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
Evidence of exposed debris was not noted.

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

Other Features of Note
Several tension/desiccation cracks were noted extending along and parallel to the south and east slopes and east crest of the landfill cover (Feature F). The frequency and magnitude of cracks appear to be less than that observed in 2008, possibly due to partial/complete infilling. No further indications of desiccation/movement were noted.

Areas of ponded water were noted along the north and southwest sides of the landfill. The ponded area to the southwest exhibited slight rust-coloured staining in the area immediate to the landfill toe. Areas of direct seepage were not observed at this location. The ponding is largely the result of low relief and poor drainage through the fine-grained soils that underlay the site.

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 XX: Visual Inspection Checklist / Report – NHWLF

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

SITE NAME: CAM-2 GLADMAN POINT
LANDFILL DESIGNATION: NHWLF
DATE OF INSPECTION: AUGUST 12, 2009
DATE OF PREVIOUS INSPECTION: AUGUST 16, 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-2 Gladman Point
Landfill: Non-Hazardous Waste Landfill
Designation: New Landfill
Date Inspected: August 11 - 13, 2009
Inspected by: Andrew Passalis, P.Eng.

Signature: 

TABLE XX: CAM-2 GLADMAN POINT, NON-HAZARDOUS WASTE LANFILL
Page 2 of 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-2.6 (southwest corner)	3 m	2.5 m	15 cm	Isolated <1%	Linear depression	NHWLF-7	Acceptable	Subtle depression on slpe of NHWLF.
		Feature B See Figure CAM-2.6 (southeast cover)	0.1 - 0.15 m	4 - 8 cm	10 cm	Isolated <1%	Isolated depressopms	NHWLF-15	Acceptable	Two isolated depressions (pot holes) on surface of NHWLF.
		Feature C See Figure CAM-2.6 (northeast cover)	3 m	1 m	10 - 15 cm	Isolated <1%	Linear depression	NHWLF-22	Acceptable	Subtle depression on slpe of NHWLF.
Erosion	Yes	Feature D See Figure CAM-2.6 (3 areas on south slope)	6 m	Variable, 0.1 - 0.8 m	5 cm	Isolated <1%	Minor surficial erosion	NHWLF-9, 10, 13	Acceptable	Minor erosion noted on surface of landfill. Cover eppears stable. Features not noted in 2008.
		Feature E See Figure CAM-2.6 (extending along east toe)	50 m	0.3 m	10 - 15 cm	Isolated <2%	Minor surficial erosion	NHWLF-17, 20	Acceptable	Runoff channel along toe of landfill. 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	Yes	See Figure CAM-2.6 MW-5 to MW-8	N/A	N/A	N/A	None	Steel protective casings	N/A	Acceptable	All monitoring wells in good condition
Other Features of Note:	Yes	Feature F See Figure CAM-2.5 (south and east slope, east crest)	Variable, 15 - 25 m	2 - 5 mm	Unknown	< 5%	Tension cracks along south and east slopes and east crest	NHWLF-11-12, 23-28	Acceptable	Cracks appear to be less frequent than observed in 2008, possibly due to partial infilling. No further indications of desication/movement noted.
Additional Photos	Yes	See Figure CAM-2.6 and Photographic Record	N/A	N/A	N/A	N/A	General Photographic Record	N/A	Not Observable	General photos for documentation, no features of note.
Overall Landfill Performance:	**Acceptable**									

7.3 PRELIMINARY STABILITY ASSESSMENT

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

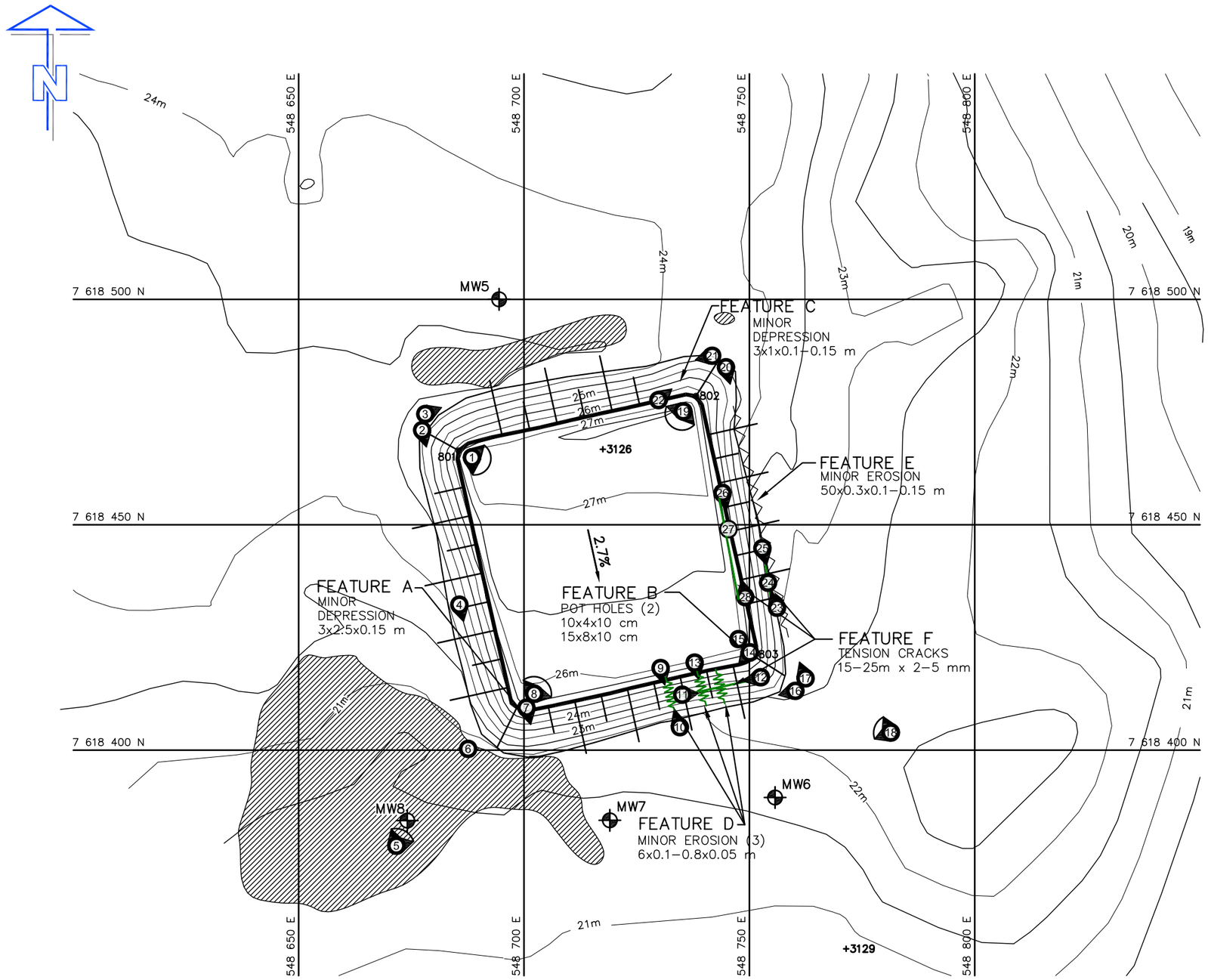
Table XXI: Preliminary Stability Assessment – NHWLF

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

7.4 LOCATION PLAN

The Location Plan for the NHWLF has been completed as per the ToR and is presented in Figure CAM-2.6.



LEGEND

- 101 — COORDINATE POINT
- MONITORING WELL LOCATION
- 2 — PHOTOGRAPH LOCATION
- EROSION (NTS)
- TENSION CRACK (NTS)
- SETTLEMENT (NTS)
- PONDED WATER

0 10m 20m 30m 40m 50m

NO.	VERSION	DATE	BY	VERIF.	APPR.
A	FINAL VERSION	10–02–18	P.L.	A.P.	J.P.P.

Construction de Défense Canada
Defence Construction Canada

FINAL REPORT
COLLECTION OF LANDFILL MONITORING DATA
CAM-2, GLADMAN POINT (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 : 1,000	FEBRUARY 2009
DRAWN BY:	VERIFIED BY:	APPROVED BY:
P. LÉGARÉ	A. PASSALIS	J.–P. PELLETIER
PROJECT NO:	DRAWING NO:	PAGE
CD9229_001_160	CD9229_001_160-CAM-2_6	PL

FIGURE CAM-2.6

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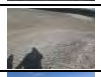
7.5 PHOTOGRAPHIC RECORDS

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

Table XXII: Landfill Visual Inspection Photo Log - NHWLF
Site Name: CAM-2, Gladman Point
Landfill: Non-Hazardous Waste Landfill
Date Inspected: August 11 - 13, 2009
Inspected by: Andrew Passalis, P.Eng.

Photo (NHWLF-)	Thumbnail	Filename	Size (KB)	Date	Vantage Point		Caption
					Easting	Northing	
1		C209_3116	3,152 KB	8/12/2009	548688	7618465	Panoramic view S to NE from northwest top of landfill
		C209_3117	3,288 KB	8/12/2009			
		C209_3118	2,848 KB	8/12/2009			
		C209_3119	2,251 KB	8/12/2009			
2		C209_3120	2,694 KB	8/12/2009	548678	7618473	View SSE along west side of landfill
3		C209_3121	2,979 KB	8/12/2009	548678	7618473	View ENE along north side of landfill
4		C209_3122	2,998 KB	8/12/2009	548686	7618432	View SSE along west side of landfill, no evidence of tension crack as identified in 2008
		C209_3123	2,689 KB	8/12/2009	548696	7618400	Panoramic view ENE to NW from southwest toe of landfill
		C209_3124	2,992 KB	8/12/2009			
		C209_3125	2,928 KB	8/12/2009			
		C209_3126	2,889 KB	8/12/2009			
5		C209_3127	2,493 KB	8/12/2009	548678	7618375	Panoramic view ENE to NNW from MW-8
		C209_3128	2,298 KB	8/12/2009			
		C209_3129	2,336 KB	8/12/2009			
6		C209_3130	4,049 KB	8/12/2009	548688	7618400	Iron staining in ponded water at southwest toe of landfill
7		C209_3131	3,979 KB	8/12/2009	548700	7618410	View S at minor settlement on southwest corner of landfill
8		C209_3132	2,741 KB	8/12/2009	548700	7618410	Panoramic view NNW to SE from southwest top of landfill
		C209_3133	2,706 KB	8/12/2009			
		C209_3134	2,765 KB	8/12/2009			
		C209_3135	3,071 KB	8/12/2009			
		C209_3136	3,096 KB	8/12/2009			
9		C209_3137	4,214 KB	8/12/2009	548731	7618416	View SSE at minor erosion on south side of landfill
10		C209_3138	3,286 KB	8/12/2009	548733	7618409	View NNW at minor erosion on south side of landfill
11		C209_3139	3,645 KB	8/12/2009	548735	7618412	View ENE at tension crack on southeast corner of landfill
12		C209_3140	3,906 KB	8/12/2009	548753	7618416	View WSW at tension crack on southeast corner of landfill
13		C209_3141	3,873 KB	8/12/2009	548738	7618418	View SE at minor erosion on south side of landfill
		C209_3142	3,951 KB	8/12/2009	548742	7618420	View SE at minor erosion on south side of landfill
		C209_3143	2,936 KB	8/12/2009	548749	7618423	Panoramic view N to W from southeast top of landfill
		C209_3144	2,945 KB	8/12/2009			
		C209_3145	2,919 KB	8/12/2009			
14		C209_3146	2,978 KB	8/12/2009	548749	7618423	View SW at south facing slope
15		C209_3147	4,700 KB	8/12/2009	548748	7618424	Minor settlement (2 depressions) on SE corner of landfill

Table XXII: Landfill Visual Inspection Photo Log - NHWLF
Site Name: CAM-2, Gladman Point
Landfill: Non-Hazardous Waste Landfill
Date Inspected: August 11 - 13, 2009
Inspected by: Andrew Passalis, P.Eng.

Photo (NHWLF-)	Thumbnail	Filename	Size (KB)	Date	Vantage Point Easting	Vantage Point Northing	Caption
16		C209_3148	2,306 KB	8/12/2009	548761	7618414	View SSW along south side of landfill
17		C209_3149	3,049 KB	8/12/2009	548761	7618414	View WNW along east side of landfill
18		C209_3150	2,694 KB	8/12/2009	548781	7618404	Panoramic view NNW to WSW from southeast of landfill
		C209_3151	3,098 KB	8/12/2009			
		C209_3152	2,976 KB	8/12/2009			
19		C209_3153	3,569 KB	8/12/2009	548737	7618475	Panoramic view W to SE from northeast top of landfill
		C209_3154	2,830 KB	8/12/2009			
		C209_3155	2,714 KB	8/12/2009			
		C209_3156	2,276 KB	8/12/2009			
		C209_3157	4,023 KB	8/12/2009			
20		C209_3158	3,046 KB	8/12/2009	548744	7618487	View SSE along south side of landfill, note minor erosion channel along toe to south
21		C209_3159	2,497 KB	8/12/2009	548744	7618487	View WSW along east side of landfill
22		C209_3160	3,512 KB	8/12/2009	548730	7618477	Minor settlement on NE corner slope
23		C209_3161	3,379 KB	8/12/2009	548756	7618431	View NNW at tension crack extending 2 up from toe
24		C209_3162	4,023 KB	8/12/2009	548755	7618436	View of tension crack, partially infilled.
25		C209_3163	3,832 KB	8/12/2009	548753	7618445	View SSE at tension crack extending along east side of landfill
26		C209_3164	4,062 KB	8/12/2009	548744	7618456	View S at tension crack extending along southeast crest of landfill, Robert standing at end of crack
27		C209_3165	4,397 KB	8/12/2009	548745	7618449	View of tension crack, partially infilled.
28		C209_3166	3,621 KB	8/12/2009	548749	7618434	View N at tension crack extending along southeast crest of landfill

8 BEACH POL REPAIRS

8.1 LOCATION AND SITE FEATURES

The CAM-2 Beach POL facility is located on a sand and gravel spit situated along the south shoreline of McClintock Bay, approximately 2 km south of the airstrip. The facility consists of two 20,000 gallon aboveground tanks and associated fuel pipeline used to transfer fuel to and from the tanks. The tanks are located above the beach landing area, immediately southeast of the former 65,000 gallon POL tanks and pumphouse that were removed during site cleanup.

Site cleanup of the former tank area also included the excavation and removal of hydrocarbon impacted soil in close proximity to the existing tanks which resulted in the unearthing of copper wire and two plates associated with the grounding grid at the fuel storage facility.

8.2 SCOPE OF WORK

The scope of work for the POL repairs were included in Amendment No. 4, issued March 31, 2009, which included:

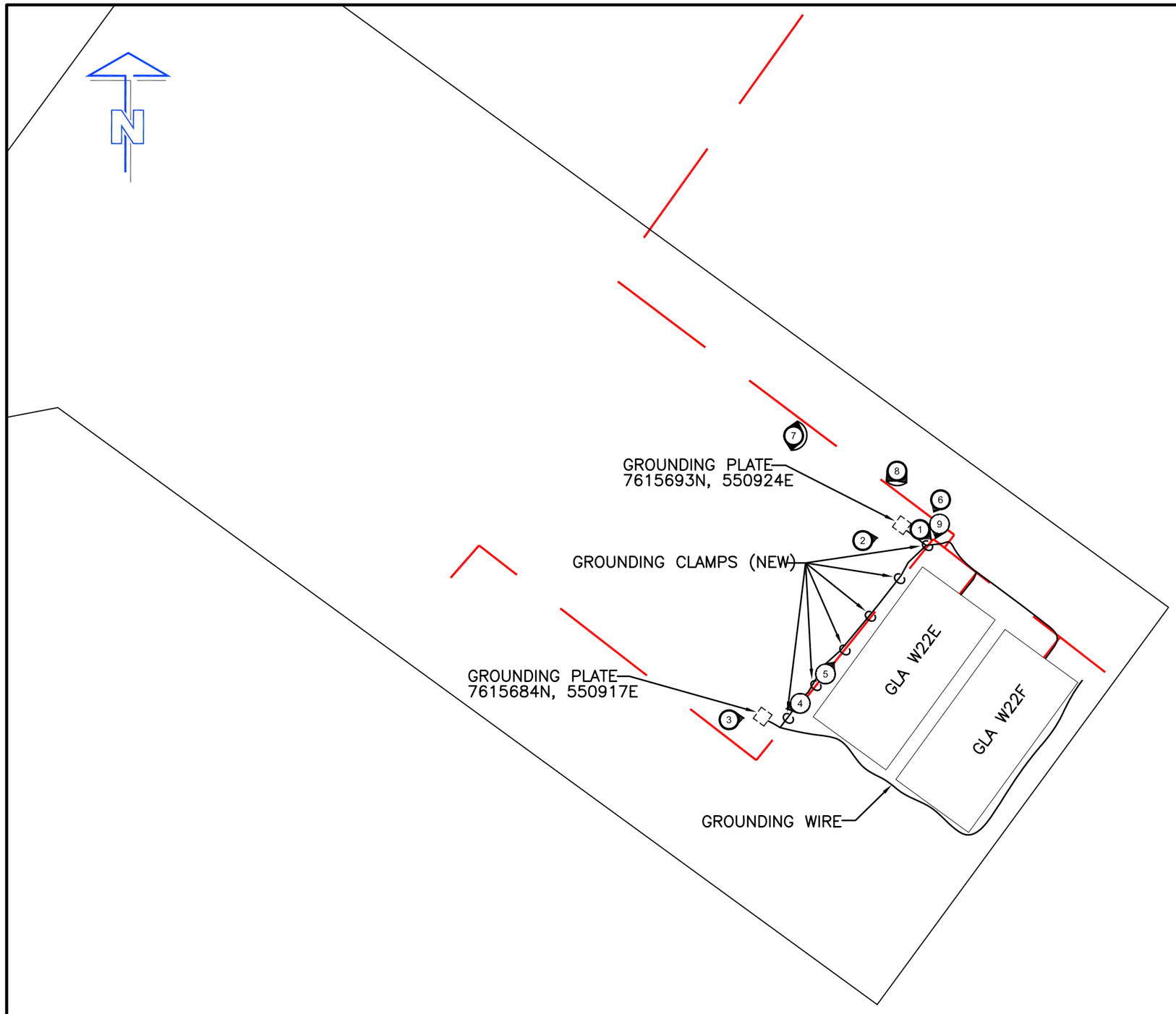
- Fasten existing copper ground wire to existing fuel pipeline using banding straps. Band pipe at 1.5 m intervals and provide additional banding at valves and fittings.
- Bury existing grounding plate minimum 30 cm below existing grade and minimum 60 cm from existing blocking.
- Provide reference photos showing buried grounding plate location in relatation to fuel tanks.
- Provide GPS coordinates for location of buried grounding plate.
- Restore blocking as required.

8.3 FIELD REPAIRS

Repairs to the Beach POL grounding grid were completed by Biogenie/Sila on August 12, 2009 during the annual Landfill Monitoring Program. Upon initial inspection, it was determined that two grounding plates located near the northwest and southwest corners of the facility and connecting copper ground wire had been unearthed and was laying on ground surface. The affected grounding plates and copper wire extended approximately 10 m along the west side of Tank W22E.

As part of the repairs, the two grounding plates were buried a minimum of 30 cm below the existing ground surface and 60 cm away from the pipeline. The connecting copper ground wire was also bonded at six locations along the pipeline by the use of new grounding clamps. The new clamps are consistent with existing clamps on the facility. No additional clamps were required on exisitng valves or fittings.

The location of the buried grounding plates and pipe clamps are illustrated on Figure CAM-2.7. A photo log of the repairs is presented in Table XXIII.



LEGEND

0 2m 4m 6m 8m 10m

NO.	VERSION	DATE	BY	VERIF.	APPR.
A	FINAL VERSION	10-02-18	P.L.	A.P.	J.P.P.

Construction de Défense Canada
Defence Construction Canada

FINAL REPORT
COLLECTION OF LANDFILL MONITORING DATA
CAM-2, GLADMAN POINT (NUNAVUT)

BEACH POL REPAIRS

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 2009
DRAWN BY:	VERIFIED BY:	APPROVED BY:
P. LÉGARÉ	A. PASSALIS	J.-P. PELLETIER
PROJECT NO:	DRAWING NO:	PAGE
CD9229_001_160	CD9229_001_160-CAM-2_7	PL

FIGURE CAM-2.7

G:\CD9229\2009\CAM-2\FINAL\CD9229_001_160-CAM-2_7.dwg, PL, 2010-02-18 10:40:24

Table XXIII: VISUAL INSPECTION PHOTO LOG
Site Name: CAM-2, Gladman Point
Facility Beach POL
Date Inspected: August 12, 2009
Inspected by: Andrew Passalis, P.Eng.

Photo (POL-)	Thumbnail	Filename	Size (KB)	Date	Vantage Point		Caption
					Easting	Northing	
1		C209_3385	2,834 KB	2009-08-12	550925	7615693	View SE at grounding clamp installation on northwest corner of Tank W22E
		C209_3386	2,259 KB	2009-08-12	550923	7615693	View SE at grounding clamp installation on northwest corner of Tank W22E. Prior to burial of grounding plate.
		C209_3387	2,466 KB	2009-08-12			
2		C209_3388	3,330 KB	2009-08-12	550922	7615692	View E during burial of grounding plate near northwest corner of Tank W22E.
		C209_3389	3,243 KB	2009-08-12	550917	7615684	View SE at exposed grounding plate located near southwest corner of Tank W22E prior to burial.
3		C209_3390	2,539 KB	2009-08-12	550916	7615684	View E at exposed grounding plate located near southwest corner of Tank W22E prior to burial.
4		C209_3391	2,945 KB	2009-08-12	550919	7615685	View W during burial of grounding plate near southwest corner of Tank W22E.
5		C209_3392	2,817 KB	2009-08-12	550920	7615686	View NE along POL line on west side of Tank W22E
6		C209_3393	2,769 KB	2009-08-12	550926	7615694	View SW along POL line on west side of Tank W22E
7		C209_3394	2,597 KB	2009-08-12	550919	7615697	Panoramic view N to S at POL line extending from Barge DBA (left) to Tank W22E.
		C209_3395	2,404 KB	2009-08-12			
		C209_3396	2,509 KB	2009-08-12			
		C209_3397	2,426 KB	2009-08-12			
		C209_3398	2,029 KB	2009-08-12			
8		C209_3399	2,311 KB	2009-08-12	550924	7615696	View SSE to SW at POL line extending along south side of Tank W22E.
		C209_3400	2,394 KB	2009-08-12			
9		C209_3401	2,595 KB	2009-08-12	550926	7615693	Typical grounding clamp (6) installed on POL line adjacent to Tank W22E.

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-2 GLADMAN POINT

AUGUST 11 2009 8°C Sunny 20km/h NE

pm
850 LAND IN GLADMAN PT.
SET CAMP ON DOWN SLOPE OF HANGAR PAD (FORMER CAMP LOC)
50+ km/h wind from NE.

TIER II DF

MW-03 SOUTH SIDE OF LF
WP-5

Slug 0.46m 2 0.872
F/P = 0 FROZEN 1.23

0 BROWN SAND, MED-CS GR, SOME WITH GRAVEL, DAMP, WET @ 10cm
26m SW of MW
C209-3WA 0-15 BD-1
B 40-50

COLLECT SLOW REC
1x250 mL
½ x 1L Am.
DRY.

T 2.4/3.9
PH 10.61/10.8
Cond 2.89/2.69
TDS 2.54/1.75
DO 6.61/8.81
TURB 35.1

REVI

MW 04 - SW CORNER
WP = 6.

S/UP 0.74 ∇ = 1.318
F/P = Ø FROZEN @ 1.99

3.9 m S of MW

BROWN SAND MED-CS GR, WITH GRAVEL, TR. CBLES, DAMP, tr-some silt + clay below 0.35

C209-4WA 0-15
B 40-50

		COLLECT	1 DUP FOR EXOVA
T	3.9/4.4/4.3	1x250 PL	1x250 PL
pH	6.71/6.73/6.88	1x1L Am	2x1L Am
Cond	2.99/2.81/3.01	2x250 Am	
TDS	1.94/1.80/1.96	3x40	3x40 ml
DO	8.2/8.3/7.7		
TURB	10.7/14.9/12.1		

MW-0? NE SIDE
WP 7

S/UP = 0.47 m ∇ = 0.905
F/P = 0 FROZEN @ 1.955

3 m N.E OF MW

0 - BROWN SAND, F-CS GR, MG, SOME-WITH GRAVEL, DAMP., TR CBLS, tr. silt + clay
C209 1WA 0-15
C209-1WB 40-50

		COLLECT BDIW
T	2.6/2.8/2.7	2x250 mL
Cond	3.04/2.24/2.17	2x1L Am
pH	6.69/6.87/7.01	4x250 mL
TDS	1.97/1.45/1.39	6x40 mL
DO	3.1/4.7/4.8	
TURB	45.5/50.1/40.3	

LEVEL

MW2 SE CORNER OF LF.

WP 9/10

SWUP 0.21 ∇: 1.306

F/P: ∅ Frozen 1.42

low ∇ ↺

2.4m WNW OF MW-

0- Lt Brown. SAND; med-cs gr, w.g., some gravel, damp, tr. silt + clay

C2091-2WA 0-15

B 40-50

T 6.1

pH 6.81

Cond 5.03

TDS 3.28

DO 15.88

TURB 25.3

COLLECT

1 x 250 pl.

R.D. ... MADE IN VANCOUVER, CANADA

VT-4. WP 11

download data

reset clock

restart datalogger

Aux batt low - needs replacement

VT-2 WP 12

download data

reset clock

restart datalogger

Aux batt. weak - need repl.

VT-3 WP-13

download data ✓

reset clock

restart datalogger

batt. ✓.

VT-1 WP-14.

download data

restart clock

restart data logger

LEVEL

NON-HAZARDOUS WASTE LANDFILL

WP DESC TOP

15 NW CORNER PAN S-E

16 NW TOE S + E

17 W FACE; NO EVID OF TENSION CRACKS - INFILLED

18 SW TOE, PAN E TO N.

19 MW8, PAN E TO N.

20 IRON STAINED AREA IN DUMP ALONG TOE 2m x 2m area.

21 SW TOP, SMALL AREA OF POT SETTLEMENT AT CORNER 2x5m x 0.15 ↕ VIEW S, PAN N-E-S

22 MINOR EROSION FROM TOP-DOWN 8m L, 10cm ↔, 5-2cm ↕

23 tension crack ⊥ to slope (mid) view E, extending to SE corner

24 end of crack

25 & 26 minor erosion from top down to toe 25 - 30cm ↔ 5cm ↕ 26 - 85cm ↔ 5cm ↕ (≈50cm)

27 SE TOP PAN N-W-SW. 2m in from SE

28 Settlement near corner, 2 voids 10x4cm & 15x8cm 10cm ↕

29 SE TOE V. W & N.

29 PAN NW-NE.

30 NE TOP PAN S-W-NW.

31 NE TOE V. S & W along toe MINOR EROS CHANNEL ALONG TOE TO S 30cm ↔, full E side, 1-15cm ↕

32 MINOR SETTLEMENT IN NE CORNER SLOPE 3m x 1m x 15cm ↕ V. E.

33 VIEW N, VIEW S AT CRACK 2m UPSLOPE FROM TOE, START

34 Photo of crack ext, V. S. 15m long to S.

EQUIP TRACKS ∥ TO SLOPE

NO OTHER CRACKS NOTED - INFILLED

POMPING AROUND PER. OF LF AREA.

35 START OF TENSION CRACK ALONG TOP OF E. SIDE. 36 - END, MINOR SETTLEMENT ALONG CRACK, PH S, CLOSEUP, N.

NO DEBRIS

LEVEL

TIER II DF

37 VIEW NW AT DF

38 PAN NW - N

39 SE TOE V - W + N ALONG TOE

40 SE TOE PAN S TO NNE.

41 MINOR SETTLEMENT? ALONG S SIDE (CREST). TO 42. 1.5m W., 20m L, 5cm ↓

43 SW CORNER. PAN N - E

44 NW TOP PAN E - S

45 NW MID SLOPE V - E + S

46 EXP PIECE OF POL LINE 2" Φ 6m. NW TOE OF LF

47 NW TOE - PAN S E.

47? START OF TENSION CRACK, INFILLED PARTIAL ⊥ TO N. SLOPE 10cm ⇔, 30m L, TRACK ALONG TO SE 15cm ↓ ANGLE.

49 PAN W TO S. NE TOE

50 NE TOE MINOR EROSION FROM CORNER ½ downslope 50cm ⇔, 15m L, 5cm ↓

51 Settlement 1.5 x 2m x 15cm mid slope

52 AREA OF SEEPAGE OF SLOPE 5m ⇔ 2m ↑

53 MINOR EROSION S FACE FROM TOP. ~10m, 0.5m WIDE, 5cm deep, V S

54 START OF TENSION CRACK TO W. ⊥ to slope, MORE THAN 1 ... TO 55 V. W + E from END

56 Start tension ck VN ↓ end

58 Start tension ck V-N, hairline to 59.

60 Old, partially infilled crack. to 61, 5cm ⇔

STATION LF.

62 V. NE / NW ALONG SLOPES ↓ slope

63 MINOR EROSION (TYP.) 10cm W, 2cm ↓ V-NE

64 - 68 (70, 76) TYP EROSION. 66 - PAN

69 EXP PIECE OF PIPE AT LF EDGE

71 - WEST CORNER, VIEW PAN SE, NW.

72-73 V. NE - tension ck partially infilled on slope, desiccation 2-3cm ⇔

74 Con't along slope, all along ⊥ slope NE CORNER // to slope (R) ↓ top to bot. 3m, V SE.

75 tension crack ⊥ to slope, downslope to 76 minor

76 V. NW along toe.

LEVEL

96

80 VIEW TO TIER II - S (SW-SE)
81 S END OF LOBE A. , PAN NW - NE
82 V. NE / NW ALONG TOE
83 V N ALONG TOE
84 EROSION ON SLOPE ± .25m L.
2m W x 5cm ↕ V. NWISE
85 " L" ZIG ZAG upslope
on LF / minor 2cm ...
30m +. upslope across LF, to be
2m w/ upslope, 0.75 downslope
86 1-2m wide on slope x 15cm ↕
w/ light erosion on LF, V NE/SW/SW
87 V. NNW - NE. ACROSS TYPE 2
88 MINOR SETTLEMENT AT THE TYPE 2/1
AT TOP. 20m long SE of ... x 30cm W
x 10cm ↕
89 V SE ~~ALONG~~ TOE
90 SEEPAGE / MELT @ N end of LF.
OXID STAINING DOWNSLOPE IN TYPE II
TO POND. / IRON BACT. SHEEN ON II
AT PONDS EDGE. / SOFT GRAN.
91 N. RUNOFF CHANNEL V. NNE/SSW
NE TO POND.
92 top of channel v S/N.

97

LOBE C + D
93 PAN W - S
94 PAN NNE - ~~SE~~ E
LOBE D/
95 PAN W - N.
96. 3 small settlement areas 50 x 50 x
10 cm ↕ by 30 x 30 x 5cm
97 PAN S-E

WEST LANDFILL SOUTH

98 V - W + E - ALONG DRAINAGE ...
99 PAN W - N - NE ACROSS LOBE
100 PIECE OF GEOTEX EXP.
SOME PONDING IN CHANNEL
12m x 2m W x 2-3 cm ↕
101 PAN S - W ALONG TOE
~~102~~ PAN SE - S - SW. (NODE 357)
102 V. N AT PONDING B/W LOBES
103 PAN S - E.
104 PAN NW - NE
105 V. NW
106 V SE / PAN N - W.
107 V. S.
108 V NE / SE
109 PAN NW/SW

LEVEL

(42)

110 PAN N-E
111 PAN S-SE

WEST LANDFILL NORTH

112 PAN NW-NE
113 V W-NW
114 V SW
115 PAN SE-S, W-N
116 V. E at sm dugout
117 PAN SW-NW
118 PAN SE, N TO NW
119. PAN S-W-NW
~~120~~ V. SW B/W LOBES, NO OBS
DRAINAGE
120 VIEW NE - SE / W - NE
121 PAN N-E, MINOR SELF ARMOURING
IN CHANNEL B/W LOBES
122 BM 3.
123 PAN SE-E
124 PAN S, E, N
125 PAN SE-SW ~~SE~~ (NW TOP)
126 ~~Seepage~~ Ponding near toe V. ESE
V SSW ALONG SIDE OF LF
127 PAN NW-SW

(43)

128 PAN SE S-NW
129 NW-N-SW.

AUGUST 13 2009 - 4°C, 50km/h NW
OVERCAST, COLD

WP
130 V N AT NE LOBE
131 P W TO N
132 V N
133 V E // TO LOBE
134 V SW-W @ LARGE LOBE -
MINOR RADIAL (FAN) EROSION
ON SURF

BREAKCAMP 10:00AM

FLIGHT OUT @ 1:15pm

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 the 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 the case of soil samples, some minor differences were noted between the Maxxam and Exova metal 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. All TPH concentrations were less than five times the MDL, In case of PCBs, all reported concentrations were below the MDL.

1.2 GROUNDWATER SAMPLES

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 intralab results (BDW1) for total metals indicate RPDs well within acceptable limits for all parameters, however the inter-laboratory results for C209-4W indicate slightly higher RPDs for select parameters including arsenic, cadmium, chromium, copper and lead.

Results from one field blank indicate all concentrations below the MDL with the exception of copper, lead and zinc which exhibited trace concentrations of 0.0075 mg/L, 0.0003 mg/L and 0.016 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-2
Site: GLADMAN POINT
Your C.O.C. #: 83435, 83436

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 #: A944419
Received: 2009/08/19, 8:45

Sample Matrix: Soil
Samples Received: 9

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Boron (Hot Water Soluble)	9	2009/08/22	2009/08/22	CAL SOP-00192	EPA SW846/6010B
BTEX/F1 by HS GC/MS (MeOH extract)	4	2009/08/20	2009/08/22	EENVSOP-00005 EENVSOP-00002	EPA 8260C/CCME
BTEX/F1 by HS GC/MS (MeOH extract)	5	2009/08/21	2009/08/22	EENVSOP-00005 EENVSOP-00002	EPA 8260C/CCME
Hexavalent Chromium	9	2009/08/21	2009/08/21	EENVSOP-00131	SM 3500-Cr B
CCME Hydrocarbons (F2-F4 in soil)	9	2009/08/20	2009/08/22	EENVSOP-00007 EENVSOP-00006	CCME PHC-CWS
Elements by ICPMS - Soils	9	2009/08/22	2009/08/22	CAL SOP-00191	EPA SW-846-6020A
Moisture	9	N/A	2009/08/21	EENVSOP-00139	Carter SSMA 51.2

Sample Matrix: Water
Samples Received: 6

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
BTEX/F1 in Water by HS GC/MS	4	N/A	2009/08/22	EENVSOP-00004 EENVSOP-00002	EPA 8260C/CCME
CCME Hydrocarbons (F2-F4 in water)	4	2009/08/21	2009/08/24	EENVSOP-00009 EENVSOP-00008	EPA3510C/CCME PHCCWS
Mercury (Total)	3	2009/08/21	2009/08/21	EENVSOP-00031	EPA 245.1
Mercury (Total)	3	2009/08/24	2009/08/24	EENVSOP-00031	EPA 245.1
Elements by ICPMS - Total	6	2009/08/24	2009/08/25	CAL SOP-00191	EPA SW-846 6020A

../2

Your Project #: CAM-2
Site: GLADMAN POINT
Your C.O.C. #: 83435, 83436

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# (780) 577-7100

==========

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 #: A944419
Report Date: 2009/10/29

SILA REMEDIATION
Client Project #: CAM-2
Site Reference: GLADMAN POINT
Sampler Initials: AP

AT1 BTEX AND F1-F4 IN SOIL (SOIL)

Maxxam ID		Q33017	Q33042	Q33044	Q33045		
Sampling Date		2009/08/11	2009/08/11	2009/08/11	2009/08/11		
COC Number		83435	83435	83435	83435		
	Units	**C209-1WA**	**C209-1WB**	**C209-2WA**	**C209-2WB**	**RDL**	**QC Batch**
Physical Properties							
Moisture	%	7.1	11	7.5	8.2	0.3	3364711
Ext. Pet. Hydrocarbon							
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	<10	<10	<10	10	3363773
F3 (C16-C34 Hydrocarbons)	mg/kg	18	<10	51	<10	10	3363773
F4 (C34-C50 Hydrocarbons)	mg/kg	<10	<10	<10	<10	10	3363773
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes		3363773
Volatiles							
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	3363702
Toluene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	3363702
Ethylbenzene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	3363702
Xylenes (Total)	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	3363702
m & p-Xylene	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	3363702
o-Xylene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	3363702
F1 (C6-C10) - BTEX	mg/kg	<12	<12	<12	<12	12	3363702
(C6-C10)	mg/kg	<12	<12	<12	<12	12	3363702
Surrogate Recovery (%)							
4-BROMOFLUOROBENZENE (sur.)	%	103	103	95	103		3363702
D10-ETHYLBENZENE (sur.)	%	106	104	106	110		3363702
D4-1,2-DICHLOROETHANE (sur.)	%	98	97	97	96		3363702
D8-TOLUENE (sur.)	%	102	102	102	104		3363702
O-TERPHENYL (sur.)	%	107	94	109	106		3363773

RDL = Reportable Detection Limit

Maxxam Job #: A944419
Report Date: 2009/10/29

SILA REMEDIATION
Client Project #: CAM-2
Site Reference: GLADMAN POINT
Sampler Initials: AP

AT1 BTEX AND F1-F4 IN SOIL (SOIL)

Maxxam ID		Q33046	Q33049	Q33058	Q33059		
Sampling Date		2009/08/11	2009/08/11	2009/08/11	2009/08/11		
COC Number		83435	83435	83435	83435		
	Units	**C209-3WA**	**C209-3WB**	**C209-4WA**	**C209-4WB**	**RDL**	**QC Batch**
Physical Properties							
Moisture	%	10	9.5	7.3	10	0.3	3364711
Ext. Pet. Hydrocarbon							
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	<10	<10	<10	10	3363773
F3 (C16-C34 Hydrocarbons)	mg/kg	13	<10	14	<10	10	3363773
F4 (C34-C50 Hydrocarbons)	mg/kg	<10	<10	<10	<10	10	3363773
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes		3363773
Volatiles							
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	3363702
Toluene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	3363702
Ethylbenzene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	3363702
Xylenes (Total)	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	3363702
m & p-Xylene	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	3363702
o-Xylene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	3363702
F1 (C6-C10) - BTEX	mg/kg	<12	<12	<12	<12	12	3363702
(C6-C10)	mg/kg	<12	<12	<12	<12	12	3363702
Surrogate Recovery (%)							
4-BROMOFLUOROBENZENE (sur.)	%	91	101	101	103		3363702
D10-ETHYLBENZENE (sur.)	%	103	108	109	105		3363702
D4-1,2-DICHLOROETHANE (sur.)	%	97	95	97	98		3363702
D8-TOLUENE (sur.)	%	104	104	102	104		3363702
O-TERPHENYL (sur.)	%	106	103	108	108		3363773

RDL = Reportable Detection Limit

Maxxam Job #: A944419
Report Date: 2009/10/29

SILA REMEDIATION
Client Project #: CAM-2
Site Reference: GLADMAN POINT
Sampler Initials: AP

AT1 BTEX AND F1-F4 IN SOIL (SOIL)

Maxxam ID		Q33060		
Sampling Date		2009/08/11		
COC Number		83435		
	Units	**C209-BD1**	**RDL**	**QC Batch**
Physical Properties				
Moisture	%	12	0.3	3364711
Ext. Pet. Hydrocarbon				
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	10	3363773
F3 (C16-C34 Hydrocarbons)	mg/kg	18	10	3363773
F4 (C34-C50 Hydrocarbons)	mg/kg	<10	10	3363773
Reached Baseline at C50	mg/kg	Yes		3363773
Volatiles				
Benzene	mg/kg	<0.0050	0.0050	3363702
Toluene	mg/kg	<0.020	0.020	3363702
Ethylbenzene	mg/kg	<0.010	0.010	3363702
Xylenes (Total)	mg/kg	<0.040	0.040	3363702
m & p-Xylene	mg/kg	<0.040	0.040	3363702
o-Xylene	mg/kg	<0.020	0.020	3363702
F1 (C6-C10) - BTEX	mg/kg	<12	12	3363702
(C6-C10)	mg/kg	<12	12	3363702
Surrogate Recovery (%)				
4-BROMOFLUOROBENZENE (sur.)	%	97		3363702
D10-ETHYLBENZENE (sur.)	%	104		3363702
D4-1,2-DICHLOROETHANE (sur.)	%	94		3363702
D8-TOLUENE (sur.)	%	103		3363702
O-TERPHENYL (sur.)	%	109		3363773

RDL = Reportable Detection Limit

Maxxam Job #: A944419
Report Date: 2009/10/29

SILA REMEDIATION
Client Project #: CAM-2
Site Reference: GLADMAN POINT
Sampler Initials: AP

AT1 BTEX AND F1-F4 IN WATER (WATER)

Maxxam ID		Q33075	Q33167	Q33168	Q33169		
Sampling Date		2009/08/11	2009/08/11	2009/08/11	2009/08/11		
COC Number		83435	83436	83436	83436		
	Units	**C209-1W**	**C209-4W**	**C209-BD1W**	**C209-FB**	**RDL**	**QC Batch**
Extractable Hydrocarbons							
F2 (C10-C16 Hydrocarbons)	mg/L	0.5	<0.1	0.7	<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.)	%	99	101	97	98		3363777
D4-1,2-DICHLOROETHANE (sur.)	%	98	95	95	95		3363777
D8-TOLUENE (sur.)	%	97	99	99	97		3363777
O-TERPHENYL (sur.)	%	115	115	115	114		3365216

RDL = Reportable Detection Limit

Maxxam Job #: A944419
Report Date: 2009/10/29

SILA REMEDIATION
Client Project #: CAM-2
Site Reference: GLADMAN POINT
Sampler Initials: AP

REGULATED METALS (CCME/AT1)

Maxxam ID		Q33017	Q33042	Q33044	Q33045		
Sampling Date		2009/08/11	2009/08/11	2009/08/11	2009/08/11		
COC Number		83435	83435	83435	83435		
	Units	**C209-1WA**	**C209-1WB**	**C209-2WA**	**C209-2WB**	**RDL**	**QC Batch**
Elements							
Soluble (Hot water) Boron (B)	mg/kg	0.3	0.3	0.4	0.2	0.1	3366186
Hex. Chromium (Cr 6+)	mg/kg	<0.15	<0.15	<0.15	<0.15	0.15	3364654
Total Antimony (Sb)	mg/kg				<1	1	3366378
Total Arsenic (As)	mg/kg	<1	1	1	1	1	3366378
Total Barium (Ba)	mg/kg				<10	10	3366378
Total Beryllium (Be)	mg/kg				<0.4	0.4	3366378
Total Cadmium (Cd)	mg/kg	<0.1	<0.1	<0.1	<0.1	0.1	3366378
Total Chromium (Cr)	mg/kg	2	4	3	3	1	3366378
Total Cobalt (Co)	mg/kg	<1	1	1	1	1	3366378
Total Copper (Cu)	mg/kg	<5	<5	<5	<5	5	3366378
Total Lead (Pb)	mg/kg	2	3	4	2	1	3366378
Total Mercury (Hg)	mg/kg	<0.05	<0.05	<0.05	<0.05	0.05	3366378
Total Molybdenum (Mo)	mg/kg				<0.4	0.4	3366378
Total Nickel (Ni)	mg/kg	2	2	2	2	1	3366378
Total Selenium (Se)	mg/kg				<0.5	0.5	3366378
Total Silver (Ag)	mg/kg				<1	1	3366378
Total Thallium (Tl)	mg/kg				<0.3	0.3	3366378
Total Tin (Sn)	mg/kg				<1	1	3366378
Total Uranium (U)	mg/kg				<1	1	3366378
Total Vanadium (V)	mg/kg				6	1	3366378
Total Zinc (Zn)	mg/kg	<10	<10	63	<10	10	3366378

RDL = Reportable Detection Limit

Maxxam Job #: A944419
Report Date: 2009/10/29

SILA REMEDIATION
Client Project #: CAM-2
Site Reference: GLADMAN POINT
Sampler Initials: AP

REGULATED METALS (CCME/AT1)

Maxxam ID		Q33046	Q33049	Q33058	Q33059		
Sampling Date		2009/08/11	2009/08/11	2009/08/11	2009/08/11		
COC Number		83435	83435	83435	83435		
	Units	**C209-3WA**	**C209-3WB**	**C209-4WA**	**C209-4WB**	**RDL**	**QC Batch**
Elements							
Soluble (Hot water) Boron (B)	mg/kg	0.7	0.2	0.3	0.2	0.1	3366186
Hex. Chromium (Cr 6+)	mg/kg	<0.15	<0.15	<0.15	<0.15	0.15	3364654
Total Arsenic (As)	mg/kg	1	2	1	1	1	3366378
Total Cadmium (Cd)	mg/kg	<0.1	<0.1	<0.1	<0.1	0.1	3366378
Total Chromium (Cr)	mg/kg	2	6	3	17	1	3366378
Total Cobalt (Co)	mg/kg	<1	1	1	2	1	3366378
Total Copper (Cu)	mg/kg	<5	<5	<5	<5	5	3366378
Total Lead (Pb)	mg/kg	2	4	2	4	1	3366378
Total Mercury (Hg)	mg/kg	<0.05	<0.05	<0.05	<0.05	0.05	3366378
Total Nickel (Ni)	mg/kg	2	3	2	8	1	3366378
Total Zinc (Zn)	mg/kg	<10	<10	<10	<10	10	3366378

RDL = Reportable Detection Limit

Maxxam Job #: A944419
Report Date: 2009/10/29

SILA REMEDIATION
Client Project #: CAM-2
Site Reference: GLADMAN POINT
Sampler Initials: AP

REGULATED METALS (CCME/AT1)

Maxxam ID		Q33060		
Sampling Date		2009/08/11		
COC Number		83435		
	Units	**C209-BD1**	**RDL**	**QC Batch**
Elements				
Soluble (Hot water) Boron (B)	mg/kg	0.6	0.1	3366186
Hex. Chromium (Cr 6+)	mg/kg	<0.15	0.15	3364654
Total Arsenic (As)	mg/kg	1	1	3366378
Total Cadmium (Cd)	mg/kg	<0.1	0.1	3366378
Total Chromium (Cr)	mg/kg	3	1	3366378
Total Cobalt (Co)	mg/kg	<1	1	3366378
Total Copper (Cu)	mg/kg	<5	5	3366378
Total Lead (Pb)	mg/kg	2	1	3366378
Total Mercury (Hg)	mg/kg	<0.05	0.05	3366378
Total Nickel (Ni)	mg/kg	2	1	3366378
Total Zinc (Zn)	mg/kg	<10	10	3366378

RDL = Reportable Detection Limit

Maxxam Job #: A944419
Report Date: 2009/10/29

SILA REMEDIATION
Client Project #: CAM-2
Site Reference: GLADMAN POINT
Sampler Initials: AP

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		Q33075		Q33165		Q33166		
Sampling Date		2009/08/11		2009/08/11		2009/08/11		
COC Number		83435		83435		83435		
	Units	**C209-1W**	**RDL**	**C209-2W**	**RDL**	**C209-3W**	**RDL**	**QC Batch**
Elements								
Total Arsenic (As)	mg/L	0.0026	0.0002	0.0008	0.0002	0.0048	0.0002	3371707
Total Cadmium (Cd)	mg/L	0.000098	0.000005	0.00020	0.000005	0.00012	0.000005	3371707
Total Chromium (Cr)	mg/L	0.013	0.001	0.019	0.001	0.032	0.001	3371707
Total Cobalt (Co)	mg/L	0.013	0.0003	0.0070	0.0003	0.0016	0.0003	3371707
Total Copper (Cu)	mg/L	0.010	0.0002	0.023	0.0002	0.022	0.0002	3371707
Total Lead (Pb)	mg/L	0.0075	0.0002	0.0012	0.0002	0.0023	0.0002	3371707
Total Nickel (Ni)	mg/L	0.038	0.0005	0.038	0.0005	0.12	0.0005	3371707
Total Zinc (Zn)	mg/L	17 (1)	0.06	110 (1)	0.3	0.21	0.003	3371707
Low Level Elements								
Total Mercury (Hg)	ug/L	0.011	0.005	0.009	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		Q33167	Q33168		Q33169		
Sampling Date		2009/08/11	2009/08/11		2009/08/11		
COC Number		83436	83436		83436		
	Units	**C209-4W**	**C209-BD1W**	**RDL**	**C209-FB**	**RDL**	**QC Batch**
Elements							
Total Arsenic (As)	mg/L	0.0013	0.0027	0.0002	<0.0002	0.0002	3371707
Total Cadmium (Cd)	mg/L	0.000091	0.00010	0.000005	<0.000005	0.000005	3371707
Total Chromium (Cr)	mg/L	0.039	0.013	0.001	<0.001	0.001	3371707
Total Cobalt (Co)	mg/L	0.0011	0.014	0.0003	<0.0003	0.0003	3371707
Total Copper (Cu)	mg/L	0.0050	0.011	0.0002	0.0075	0.0002	3371707
Total Lead (Pb)	mg/L	0.0015	0.0068	0.0002	0.0003	0.0002	3371707
Total Nickel (Ni)	mg/L	0.0080	0.040	0.0005	<0.0005	0.0005	3371707
Total Zinc (Zn)	mg/L	16 (1)	17 (1)	0.06	0.016	0.003	3371707
Low Level Elements							
Total Mercury (Hg)	ug/L	<0.005	<0.005	0.005	<0.005	0.005	3367675

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

General Comments

This report is being reissued due to an error identified by the lab associated with the mercury data for sample Q33075, Q33165 and Q33166. 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-2
P.O. #:
Site Reference: GLADMAN POINT

Quality Assurance Report

Maxxam Job Number: EA944419

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
3363702	AK8	Matrix Spike	4-BROMOFLUOROBENZENE (sur.)	2009/08/22		97	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2009/08/22		99	%	30 - 130
			D4-1,2-DICHLOROETHANE (sur.)	2009/08/22		96	%	60 - 140
			D8-TOLUENE (sur.)	2009/08/22		103	%	60 - 140
			Benzene	2009/08/22		105	%	60 - 140
			Toluene	2009/08/22		105	%	60 - 140
			Ethylbenzene	2009/08/22		114	%	60 - 140
			m & p-Xylene	2009/08/22		111	%	60 - 140
			o-Xylene	2009/08/22		107	%	60 - 140
			(C6-C10)	2009/08/22		140	%	60 - 140
		Spiked Blank	4-BROMOFLUOROBENZENE (sur.)	2009/08/22		104	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2009/08/22		98	%	30 - 130
			D4-1,2-DICHLOROETHANE (sur.)	2009/08/22		98	%	60 - 140
			D8-TOLUENE (sur.)	2009/08/22		103	%	60 - 140
			Benzene	2009/08/22		109	%	60 - 140
			Toluene	2009/08/22		105	%	60 - 140
			Ethylbenzene	2009/08/22		111	%	60 - 140
			m & p-Xylene	2009/08/22		112	%	60 - 140
			o-Xylene	2009/08/22		107	%	60 - 140
			(C6-C10)	2009/08/22		118	%	80 - 120
		Method Blank	4-BROMOFLUOROBENZENE (sur.)	2009/08/22		103	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2009/08/22		95	%	30 - 130
			D4-1,2-DICHLOROETHANE (sur.)	2009/08/22		97	%	60 - 140
			D8-TOLUENE (sur.)	2009/08/22		103	%	60 - 140
			Benzene	2009/08/22	<0.0050		mg/kg	
			Toluene	2009/08/22	<0.020		mg/kg	
			Ethylbenzene	2009/08/22	<0.010		mg/kg	
			Xylenes (Total)	2009/08/22	<0.040		mg/kg	
			m & p-Xylene	2009/08/22	<0.040		mg/kg	
			o-Xylene	2009/08/22	<0.020		mg/kg	
			F1 (C6-C10) - BTEX	2009/08/22	<12		mg/kg	
			(C6-C10)	2009/08/22	<12		mg/kg	
		RPD	Benzene	2009/08/22	0.6		%	50
			Toluene	2009/08/22	NC		%	50
			Ethylbenzene	2009/08/22	NC		%	50
			Xylenes (Total)	2009/08/22	NC		%	50
			m & p-Xylene	2009/08/22	NC		%	50
			o-Xylene	2009/08/22	NC		%	50
			F1 (C6-C10) - BTEX	2009/08/22	NC		%	50
			(C6-C10)	2009/08/22	NC		%	50
3363773	KW2	Matrix Spike	O-TERPHENYL (sur.)	2009/08/22		87	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2009/08/22		96	%	50 - 130
			F3 (C16-C34 Hydrocarbons)	2009/08/22		92	%	50 - 130
			F4 (C34-C50 Hydrocarbons)	2009/08/22		91	%	50 - 130
		Spiked Blank	O-TERPHENYL (sur.)	2009/08/22		97	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2009/08/22		119	%	80 - 120
			F3 (C16-C34 Hydrocarbons)	2009/08/22		111	%	80 - 120
			F4 (C34-C50 Hydrocarbons)	2009/08/22		111	%	80 - 120
		Method Blank	O-TERPHENYL (sur.)	2009/08/22		101	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2009/08/22	<10		mg/kg	
			F3 (C16-C34 Hydrocarbons)	2009/08/22	<10		mg/kg	
			F4 (C34-C50 Hydrocarbons)	2009/08/22	<10		mg/kg	
		RPD	F2 (C10-C16 Hydrocarbons)	2009/08/22	NC		%	50
			F3 (C16-C34 Hydrocarbons)	2009/08/22	NC		%	50
			F4 (C34-C50 Hydrocarbons)	2009/08/22	NC		%	50

SILA REMEDIATION
Attention: ANDREW PASSALIS
Client Project #: CAM-2
P.O. #:
Site Reference: GLADMAN POINT

Quality Assurance Report (Continued)

Maxxam Job Number: EA944419

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
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
			(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
			(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
			F1 (C6-C10) - BTEX	2009/08/22	<100		ug/L	
			(C6-C10)	2009/08/22	<100		ug/L	
		RPD	F1 (C6-C10) - BTEX	2009/08/22	NC		%	40
			(C6-C10)	2009/08/22	NC		%	40
3364654	AL2	Matrix Spike						
		[Q33042-01]	Hex. Chromium (Cr 6+)	2009/08/21		96	%	75 - 125
		Spiked Blank	Hex. Chromium (Cr 6+)	2009/08/21		99	%	80 - 120
		Method Blank	Hex. Chromium (Cr 6+)	2009/08/21	<0.15		mg/kg	
		RPD [Q33017-01]	Hex. Chromium (Cr 6+)	2009/08/21	NC		%	35
3364711	JP6	Method Blank	Moisture	2009/08/21	<0.3		%	
		RPD [Q33017-01]	Moisture	2009/08/21	5.5		%	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
3366186	RI3	Matrix Spike						
		[Q33042-01]	Soluble (Hot water) Boron (B)	2009/08/22		91	%	75 - 125
		Spiked Blank	Soluble (Hot water) Boron (B)	2009/08/22		98	%	80 - 120
		Method Blank	Soluble (Hot water) Boron (B)	2009/08/22	<0.1		mg/kg	
		RPD [Q33042-01]	Soluble (Hot water) Boron (B)	2009/08/22	NC		%	35
3366378	EO1	Calibration Check	Total Antimony (Sb)	2009/08/22		98	%	80 - 120
			Total Arsenic (As)	2009/08/22		84	%	80 - 120
			Total Barium (Ba)	2009/08/22		89	%	80 - 120
			Total Beryllium (Be)	2009/08/22		94	%	80 - 120
			Total Cadmium (Cd)	2009/08/22		85	%	80 - 120
			Total Chromium (Cr)	2009/08/22		84	%	80 - 120
			Total Cobalt (Co)	2009/08/22		84	%	80 - 120
			Total Copper (Cu)	2009/08/22		85	%	80 - 120
			Total Lead (Pb)	2009/08/22		87	%	80 - 120
			Total Mercury (Hg)	2009/08/22		94	%	80 - 120
			Total Molybdenum (Mo)	2009/08/22		84	%	80 - 120
			Total Nickel (Ni)	2009/08/22		84	%	80 - 120
			Total Selenium (Se)	2009/08/22		80	%	80 - 120
			Total Silver (Ag)	2009/08/22		81	%	80 - 120
			Total Thallium (Tl)	2009/08/22		86	%	80 - 120
			Total Tin (Sn)	2009/08/22		83	%	80 - 120
			Total Uranium (U)	2009/08/22		84	%	80 - 120
			Total Vanadium (V)	2009/08/22		86	%	80 - 120
			Total Zinc (Zn)	2009/08/22		88	%	80 - 120
		Matrix Spike						
		[Q33042-01]	Total Antimony (Sb)	2009/08/22		101	%	75 - 125
			Total Arsenic (As)	2009/08/22		88	%	75 - 125

SILA REMEDIATION
Attention: ANDREW PASSALIS
Client Project #: CAM-2
P.O. #:
Site Reference: GLADMAN POINT

Quality Assurance Report (Continued)

Maxxam Job Number: EA944419

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
3366378	EO1	Matrix Spike [Q33042-01]	Total Barium (Ba)	2009/08/22		90	%	75 - 125
			Total Beryllium (Be)	2009/08/22		94	%	75 - 125
			Total Cadmium (Cd)	2009/08/22		88	%	75 - 125
			Total Chromium (Cr)	2009/08/22		89	%	75 - 125
			Total Cobalt (Co)	2009/08/22		89	%	75 - 125
			Total Copper (Cu)	2009/08/22		82	%	75 - 125
			Total Lead (Pb)	2009/08/22		84	%	75 - 125
			Total Mercury (Hg)	2009/08/22		95	%	75 - 125
			Total Molybdenum (Mo)	2009/08/22		96	%	75 - 125
			Total Nickel (Ni)	2009/08/22		84	%	75 - 125
			Total Selenium (Se)	2009/08/22		85	%	75 - 125
			Total Silver (Ag)	2009/08/22		76	%	75 - 125
			Total Thallium (Tl)	2009/08/22		87	%	75 - 125
			Total Tin (Sn)	2009/08/22		91	%	75 - 125
			Total Uranium (U)	2009/08/22		83	%	75 - 125
			Total Vanadium (V)	2009/08/22		92	%	75 - 125
			Total Zinc (Zn)	2009/08/22		79	%	75 - 125
		QC Standard	Total Arsenic (As)	2009/08/22		95	%	72 - 128
			Total Barium (Ba)	2009/08/22		100	%	67 - 132
			Total Chromium (Cr)	2009/08/22		72	%	50 - 150
			Total Cobalt (Co)	2009/08/22		101	%	75 - 125
			Total Copper (Cu)	2009/08/22		79	%	72 - 127
			Total Lead (Pb)	2009/08/22		84	%	65 - 135
			Total Mercury (Hg)	2009/08/22		83	%	75 - 125
			Total Nickel (Ni)	2009/08/22		94	%	75 - 125
			Total Vanadium (V)	2009/08/22		96	%	60 - 140
			Total Zinc (Zn)	2009/08/22		79	%	74 - 125
		Method Blank	Total Antimony (Sb)	2009/08/22	<1		mg/kg	
			Total Arsenic (As)	2009/08/22	<1		mg/kg	
			Total Barium (Ba)	2009/08/22	<10		mg/kg	
			Total Beryllium (Be)	2009/08/22	<0.4		mg/kg	
			Total Cadmium (Cd)	2009/08/22	<0.1		mg/kg	
			Total Chromium (Cr)	2009/08/22	<1		mg/kg	
			Total Cobalt (Co)	2009/08/22	<1		mg/kg	
			Total Copper (Cu)	2009/08/22	<5		mg/kg	
			Total Lead (Pb)	2009/08/22	<1		mg/kg	
			Total Mercury (Hg)	2009/08/22	<0.05		mg/kg	
			Total Molybdenum (Mo)	2009/08/22	<0.4		mg/kg	
			Total Nickel (Ni)	2009/08/22	<1		mg/kg	
			Total Selenium (Se)	2009/08/22	<0.5		mg/kg	
			Total Silver (Ag)	2009/08/22	<1		mg/kg	
			Total Thallium (Tl)	2009/08/22	<0.3		mg/kg	
			Total Tin (Sn)	2009/08/22	<1		mg/kg	
			Total Uranium (U)	2009/08/22	<1		mg/kg	
			Total Vanadium (V)	2009/08/22	<1		mg/kg	
			Total Zinc (Zn)	2009/08/22	<10		mg/kg	
		RPD [Q33042-01]	Total Arsenic (As)	2009/08/22	NC		%	35
			Total Cadmium (Cd)	2009/08/22	NC		%	35
			Total Chromium (Cr)	2009/08/22	NC		%	35
			Total Cobalt (Co)	2009/08/22	NC		%	35
			Total Copper (Cu)	2009/08/22	NC		%	35
			Total Lead (Pb)	2009/08/22	NC		%	35
			Total Mercury (Hg)	2009/08/22	NC		%	35
			Total Nickel (Ni)	2009/08/22	NC		%	35

SILA REMEDIATION
Attention: ANDREW PASSALIS
Client Project #: CAM-2
P.O. #:
Site Reference: GLADMAN POINT

Quality Assurance Report (Continued)

Maxxam Job Number: EA944419

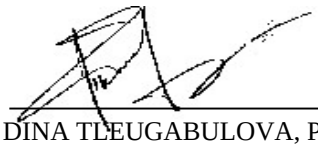
QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
3366378	EO1	RPD [Q33042-01]	Total Zinc (Zn)	2009/08/22	NC		%	35
3367675	RB3	Calibration Check	Total Mercury (Hg)	2009/08/24		90	%	85 - 115
		Matrix Spike	Total Mercury (Hg)	2009/08/24		103	%	85 - 115
		Spiked Blank	Total Mercury (Hg)	2009/08/24		91	%	85 - 115
		Method Blank	Total Mercury (Hg)	2009/08/24	<0.005		ug/L	
3371707	PC1	Calibration Check	Total Arsenic (As)	2009/08/25		90	%	80 - 120
			Total Cadmium (Cd)	2009/08/25		99	%	80 - 120
			Total Chromium (Cr)	2009/08/25		105	%	80 - 120
			Total Cobalt (Co)	2009/08/25		107	%	80 - 120
			Total Copper (Cu)	2009/08/25		103	%	80 - 120
			Total Lead (Pb)	2009/08/25		103	%	80 - 120
			Total Nickel (Ni)	2009/08/25		105	%	80 - 120
			Total Zinc (Zn)	2009/08/25		91	%	80 - 120
		Matrix Spike	Total Arsenic (As)	2009/08/26		91	%	80 - 120
			Total Cadmium (Cd)	2009/08/26		93	%	80 - 120
			Total Chromium (Cr)	2009/08/26		89	%	80 - 120
			Total Cobalt (Co)	2009/08/26		90	%	80 - 120
			Total Copper (Cu)	2009/08/26		104	%	80 - 120
			Total Lead (Pb)	2009/08/26		100	%	80 - 120
			Total Nickel (Ni)	2009/08/26		82	%	80 - 120
		Method Blank	Total Arsenic (As)	2009/08/25	<0.0002		mg/L	
			Total Cadmium (Cd)	2009/08/25	0.000009, RDL=0.000005		mg/L	
			Total Chromium (Cr)	2009/08/25	<0.001		mg/L	
			Total Cobalt (Co)	2009/08/25	<0.0003		mg/L	
			Total Copper (Cu)	2009/08/25	<0.0002		mg/L	
			Total Lead (Pb)	2009/08/25	<0.0002		mg/L	
			Total Nickel (Ni)	2009/08/25	<0.0005		mg/L	
			Total Zinc (Zn)	2009/08/25	<0.003		mg/L	
		RPD	Total Arsenic (As)	2009/08/25	NC		%	20
			Total Chromium (Cr)	2009/08/25	NC		%	20
			Total Cobalt (Co)	2009/08/25	NC		%	20
			Total Copper (Cu)	2009/08/25	NC		%	20
			Total Lead (Pb)	2009/08/25	NC		%	20
			Total Nickel (Ni)	2009/08/25	NC		%	20
			Total Zinc (Zn)	2009/08/25	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

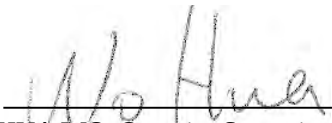
Maxxam Job #: A944419

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

LISA CUMMINGS, Extractables Supervisor

RON VENZI, Scientific Specialist

==========

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Your Project #: A944419
Your C.O.C. #: na

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

Report Date: 2009/08/25

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A9A8355
Received: 2009/08/21, 10:55

Sample Matrix: Soil
Samples Received: 9

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
MOISTURE	9	N/A	2009/08/22	CAM SOP-00445	McKeague 2nd ed 1978
Polychlorinated Biphenyl in Soil	9	2009/08/22	2009/08/23	CAM SOP-00309	SW846 8082

Sample Matrix: Water
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Polychlorinated Biphenyl in Water	5	2009/08/21	2009/08/24	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

==========

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

Total cover pages: 1

Maxxam Job #: A9A8355
Report Date: 2009/08/25

Maxxam Analytics
Client Project #: A944419

RESULTS OF ANALYSES OF SOIL

Maxxam ID		DL4033	DL4034	DL4035	DL4036	DL4037		
Sampling Date		2009/08/11	2009/08/11	2009/08/11	2009/08/11	2009/08/11		
	Units	**Q33017\C209-1WA**	**Q33042\C209-1WB**	**Q33044\C209-2WA**	**Q33045\C209-2WB**	**Q33046\C209-3WA**	**RDL**	**QC Batch**
Inorganics								
Moisture	%	7.0	13	7.1	27	13	0.2	1915833

Maxxam ID		DL4038	DL4039	DL4040	DL4041		
Sampling Date		2009/08/11	2009/08/11	2009/08/11	2009/08/11		
	Units	**Q33049\C209-3WB**	**Q33058\C209-4WA**	**Q33059\C209-4WB**	**Q33060\C209-BD1**	**RDL**	**QC Batch**
Inorganics							
Moisture	%	10	8.6	9.6	11	0.2	1915833

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		DL4033	DL4034	DL4035	DL4036	DL4037		
Sampling Date		2009/08/11	2009/08/11	2009/08/11	2009/08/11	2009/08/11		
	Units	**Q33017\C209-1WA**	**Q33042\C209-1WB**	**Q33044\C209-2WA**	**Q33045\C209-2WB**	**Q33046\C209-3WA**	**RDL**	**QC Batch**
PCBs								
Aroclor 1262	ug/g	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	1915801
Aroclor 1016	ug/g	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	1915801
Aroclor 1221	ug/g	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	1915801
Aroclor 1232	ug/g	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	1915801
Aroclor 1242	ug/g	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	1915801
Aroclor 1248	ug/g	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	1915801
Aroclor 1254	ug/g	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	1915801
Aroclor 1260	ug/g	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	1915801
Aroclor 1268	ug/g	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	1915801
Total PCB	ug/g	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	1915801
Surrogate Recovery (%)								
2,4,5,6-Tetrachloro-m-xylene	%	62	68	5.3(1)	81	81		1915801
Decachlorobiphenyl	%	87	97	103	88	80		1915801

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

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: A9A8355
Report Date: 2009/08/25

Maxxam Analytics
Client Project #: A944419

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		DL4038	DL4039	DL4040	DL4041		
Sampling Date		2009/08/11	2009/08/11	2009/08/11	2009/08/11		
	Units	**Q33049\C209-3WB**	**Q33058\C209-4WA**	**Q33059\C209-4WB**	**Q33060\C209-BD1**	**RDL**	**QC Batch**
PCBs							
Aroclor 1262	ug/g	<0.01	<0.01	<0.01	<0.01	0.01	1915801
Aroclor 1016	ug/g	<0.01	<0.01	<0.01	<0.01	0.01	1915801
Aroclor 1221	ug/g	<0.01	<0.01	<0.01	<0.01	0.01	1915801
Aroclor 1232	ug/g	<0.01	<0.01	<0.01	<0.01	0.01	1915801
Aroclor 1242	ug/g	<0.01	<0.01	<0.01	<0.01	0.01	1915801
Aroclor 1248	ug/g	<0.01	<0.01	<0.01	<0.01	0.01	1915801
Aroclor 1254	ug/g	<0.01	<0.01	<0.01	<0.01	0.01	1915801
Aroclor 1260	ug/g	<0.01	<0.01	<0.01	<0.01	0.01	1915801
Aroclor 1268	ug/g	<0.01	<0.01	<0.01	<0.01	0.01	1915801
Total PCB	ug/g	<0.01	<0.01	<0.01	<0.01	0.01	1915801
Surrogate Recovery (%)							
2,4,5,6-Tetrachloro-m-xylene	%	61	62	55	71		1915801
Decachlorobiphenyl	%	88	87	89	87		1915801

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: A9A8355
Report Date: 2009/08/25

Maxxam Analytics
Client Project #: A944419

POLYCHLORINATED BIPHENYLS BY GC-ECD (WATER)

Maxxam ID		DL4042	DL4043	DL4044	DL4045	DL4046		
Sampling Date		2009/08/11	2009/08/11	2009/08/11	2009/08/11	2009/08/11		
	Units	**Q33075\C209-1W**	**Q33166\C209-3W**	**Q33167\C209-4W**	**Q33168\C209-BD1W**	**Q33169\C209-FB**	**RDL**	**QC Batch**
PCBs								
Aroclor 1016	ug/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	1915196
Aroclor 1221	ug/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	1915196
Aroclor 1232	ug/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	1915196
Aroclor 1242	ug/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	1915196
Aroclor 1248	ug/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	1915196
Aroclor 1254	ug/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	1915196
Aroclor 1260	ug/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	1915196
Aroclor 1262	ug/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	1915196
Aroclor 1268	ug/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	1915196
Total PCB	ug/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	1915196
Surrogate Recovery (%)								
2,4,5,6-Tetrachloro-m-xylene	%	73	62	60	73	86		1915196
Decachlorobiphenyl	%	79	59	67	83	81		1915196

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: A9A8355
Report Date: 2009/08/25

Maxxam Analytics
Client Project #: A944419

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
1915196	2,4,5,6-Tetrachloro-m-xylene	2009/08/24	73	40 - 130	93	40 - 130	70	%		
1915196	Decachlorobiphenyl	2009/08/24	78	40 - 130	88	40 - 130	60	%		
1915196	Aroclor 1260	2009/08/24	97	30 - 130	114	30 - 130	<0.05	ug/L	NC	40
1915196	Total PCB	2009/08/24	97	30 - 130	114	30 - 130	<0.05	ug/L	NC	40
1915196	Aroclor 1016	2009/08/24					<0.05	ug/L	NC	40
1915196	Aroclor 1221	2009/08/24					<0.05	ug/L	NC	40
1915196	Aroclor 1232	2009/08/24					<0.05	ug/L	NC	40
1915196	Aroclor 1242	2009/08/24					<0.05	ug/L	NC	40
1915196	Aroclor 1248	2009/08/24					<0.05	ug/L	NC	40
1915196	Aroclor 1254	2009/08/24					<0.05	ug/L	NC	40
1915196	Aroclor 1262	2009/08/24					<0.05	ug/L	NC	40
1915196	Aroclor 1268	2009/08/24					<0.05	ug/L	NC	40
1915801	2,4,5,6-Tetrachloro-m-xylene	2009/08/22	78	40 - 130	91	40 - 130	84	%		
1915801	Decachlorobiphenyl	2009/08/22	107	40 - 130	110	40 - 130	92	%		
1915801	Aroclor 1260	2009/08/23	109	30 - 130	103	30 - 130	<0.01	ug/g	NC	50
1915801	Total PCB	2009/08/23	109	30 - 130	103	30 - 130	<0.01	ug/g	NC	50
1915801	Aroclor 1262	2009/08/23					<0.01	ug/g	NC	50
1915801	Aroclor 1016	2009/08/23					<0.01	ug/g	NC	50
1915801	Aroclor 1221	2009/08/23					<0.01	ug/g	NC	50
1915801	Aroclor 1232	2009/08/23					<0.01	ug/g	NC	50
1915801	Aroclor 1242	2009/08/23					<0.01	ug/g	NC	50
1915801	Aroclor 1248	2009/08/23					<0.01	ug/g	NC	50
1915801	Aroclor 1254	2009/08/23					<0.01	ug/g	NC	50
1915801	Aroclor 1268	2009/08/23					<0.01	ug/g	NC	50
1915833	Moisture	2009/08/22							3.2	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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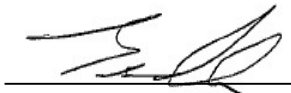
Validation Signature Page

Maxxam Job #: A9A8355

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



BRAD NEWMAN, Scientific Specialist

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

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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
Edmonton: 9331 – 48 Street, T6B 2R4 | Ph: (780) 465-1212 | Fax: (780) 450-4187 | Toll free: (877) 465-8889
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83435 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 BLVD, SUITE 200
Prov: QUEBEC CITY QUEBEC PC: G1P 2J7
Contact #s: Ph: 204 791-4938 418 653 4422 Fax: 418 653-3583

Report To: A944419 /JN/JP

Prov: PC:
Ph: Fax:

PO # / AFE #:
Quotation #: FA0192
Project #:
Project Name: CAM-2
Location: GLADMAN POINT
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
jppelletierebiogenie-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: F1-F4	Sieve (75 micron)	Salinity 4	Regulated Metals (CCME / AT1) See list	Assessment ICP Metals	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	Total Preserved	Not Preserved	Dissolved Preserved	Not Preserved Filtered	Not Filtered	REGULATED METALS (CCME / AT1)	Mercury	Total	Dissolved	Ammonia	TKN	COD	TOC	DOC	OTHER TEST(S): TPH (C6-C34)	T-METALS (SEE LIST)	PCB's (TOTAL)	*HOLD for 60 Days	# of Containers Submitted
1	C209-1WA	S	11/8/09	X			X								X																										3
2	C209-1WB			X			X								X																										3
3	C209-2WA			X			X								X																										3
4	C209-2WB			X			X								X																										3
5	C209-3WA			X			X								X																										3
6	C209-3WB			X			X								X																										3
7	C209-4WA			X			X								X																										3
8	C209-4WB			X			X								X																										3
9	C209-BD1			X			X								X																										3
10	C209-1W	W																																			X	X	X		7
11	C209-2W																																				X	X	X		7
12	C209-3W																																					X	X			2

ARRIVED AT DEPOT:
AUG 19 2009
TEMP 6/16/71

Maxxam Job #:

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

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

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

# JARS USED & NOT SUBMITTED	Received By	Temperature	
	AUG 20 2009 8:45	2 2 2	4 5 7
	CUSTODY SEAL YES / NO	4 4 2	4 5

209

Maxxam Analytics

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83436 **CHAIN OF CUSTODY**

Page: 2 of 2

Invoice To: Require Report? Yes ☐ No ☐
Company Name: SILA REMEDIATION INC.
Contact Name:
Address:
Prov: PC:
Contact #s: Ph: Fax:

Report To: A944419 / JN / JL
Prov: PC:
Ph: Fax:

PO # / AFE #:
Quotation #: A90192
Project #:
Project Name: CAM-2
Location: GLADMAN PO, NT.
Sampler's Initials: A.P.

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

REPORT DISTRIBUTION:
EMAIL ADDRESS(S):
apassalis@mts.net

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 (footnotes defined on back): BTEX F1-F4	Sieve (75 micron)	Salinity 4	Regulated Metals (CCME / AT1)[1]	Assessment ICP Metals[2]	Paint Filter ☐ Flashpoint ☐ pH (1:1)	TCLP ☐ BTEX ☐ Metals	WATERS (footnotes defined on back): ☐ BTEX F1 ☐ VOCs	☐ BTEX F1-F2 ☐ BTEX F1-F4	Routine Water Package ☐ Turb ☐ F	REGULATED METALS (CCME / AT1)[1]: 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	C209-4W	W	11/8/09																X	X	X		7
2	C209-BDIW	W	"																X	X	X		7
3	C209-FB	W	"																X	X	X		7
4																							
5																							
6																							
7																							
8																							
9																							
10																							
11																							
12																							

ARRIVED AT DEPOT:
AUG 19 2009
TEMP: 4/7/7

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

Maxxam Job #:

Relinquished By: A. PASSALIS Date/Time: 17/08/09.
Sign and Print:

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

JARS USED & NOT SUBMITTED

Received By: AUG 20 2009 8:45
CUSTODY SEAL YES / NO

Temperature		
2	2	2
4	5	7
4	4	5
11	11	12

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)

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Report Transmission Cover Page

Bill To:	Sila Remediation Inc.	Project:		Lot ID:	**698987**
Report To:	EGE	ID:		Approval Status:	Approved
	511 Pepperloaf Cres.	Name:	CAM 2/CAM 3	Invoice Frequency:	by Lot
	Winnipeg, MB, Canada	Location:	Gladman PT/Shepherd Bay	COD Status:	
	R3R 1E6	LSD:		Control Number:	A126973
Attn:	A Passalis	P.O.:		Date Received:	Aug 24, 2009
Sampled By:	A. Passalis	Acct code:		Date Reported:	Sep 1, 2009
Company:	EGE			Report Number:	1244418

Contact & Affiliation	Address	Delivery Commitments
Accounts Payable Sila Remediation Inc.	200,4495 Boul. Wilfrid-Hamel Quebec City, Quebec G1P 2J7 Phone: (418) 653-4422 Fax: (418) 653-3583 Email: n/a	On [Lot Approval and Final Test Report Approval] send (Invoice) by Post M
JP Pelletiere Sila Remediation Inc.	200,4495 Boul. Wilfrid-Hamel Quebec City, Quebec G1P 2J7 Phone: (418) 653-4422 Fax: (418) 653-3583 Email: jppelletier@biogenie-env.com	On [Lot Verification] send (COA, COC) by Email - Merge Reports On [Report Approval] send (Test Report) by Email - Merge Reports
A Passalis EGE	511 Pepperloaf Cres. Winnipeg, Manitoba R3R 1E6 Phone: (204) 837-6473 Fax: (204) 837-6473 Email: apassslis@mts.net	On [Lot Verification] send (COA, COC) by Email - Merge Reports On [Report Approval] send (Test Report) by Email - Merge Reports

Notes To Clients:

- Sample #5 Identification taken from containers.

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Sample Custody

Bill To:	Sila Remediation Inc.	Project:	
Report To:	EGE	ID:	
	511 Pepperloaf Cres.	Name:	CAM 2/CAM 3
	Winnipeg, MB, Canada	Location:	Gladman PT/Shepherd Bay
	R3R 1E6	LSD:	
Attn:	A Passalis	P.O.:	
Sampled By:	A. Passalis	Acct code:	
Company:	EGE		

Lot ID:	**698987**
Control Number:	A126973
Date Received:	Aug 24, 2009
Date Reported:	Sep 1, 2009
Report Number:	1244418

Sample Disposal Date: October 01, 2009

All samples will be stored until this date unless other instructions are received. Please indicate other requirements below and return this form to the address or fax number on the top of this page.

☐ Extend Sample Storage Until _____ (MM/DD/YY)

The following charges apply to extended sample storage:

Storage for an additional 30 days	$ 2.50 per sample
Storage for an additional 60 days	$ 5.00 per sample
Storage for an additional 90 days	$ 7.50 per sample

☐ Return Sample, collect, to the address below via:

- ☐ Greyhound
- ☐ DHL
- ☐ Purolator
- ☐ Other (specify) _____

Name _____
Company _____
Address _____
_____
Phone _____
Fax _____

Signature _____

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W: www.exova.com

Analytical Report

Bill To:	Sila Remediation Inc.	Project:	
Report To:	EGE	ID:	
	511 Pepperloaf Cres.	Name:	CAM 2/CAM 3
	Winnipeg, MB, Canada	Location:	Gladman PT/Shepherd Bay
	R3R 1E6	LSD:	
Attn:	A Passalis	P.O.:	
Sampled By:	A. Passalis	Acct code:	
Company:	EGE		

Lot ID:	**698987**
Control Number:	A126973
Date Received:	Aug 24, 2009
Date Reported:	Sep 1, 2009
Report Number:	1244418

Reference Number	698987-1	698987-3	698987-4
Sample Date	Aug 11, 2009	Aug 13, 2009	Aug 14, 2009
Sample Time	NA	NA	NA
Sample Location			
Sample Description	CAM-2 / C209-3WA	CAM-3 / C309-6WB	CAM-3 / C309-13WB
Matrix	Soil	Soil	Soil

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Hot Water Soluble						
Boron	Hot Water Soluble	mg/kg	1.0	2.3	0.2	0.1
Metals Strong Acid Digestion						
Mercury	Strong Acid Extractable	mg/kg	0.01	0.03	0.01	0.01
Antimony	Strong Acid Extractable	mg/kg	<0.2	<0.2	<0.2	0.2
Arsenic	Strong Acid Extractable	mg/kg	0.8	3.0	1.3	0.2
Barium	Strong Acid Extractable	mg/kg	9	17	29	1
Beryllium	Strong Acid Extractable	mg/kg	0.1	0.2	0.2	0.1
Cadmium	Strong Acid Extractable	mg/kg	0.02	0.28	0.03	0.01
Chromium	Strong Acid Extractable	mg/kg	3.6	9.0	8.4	0.1
Cobalt	Strong Acid Extractable	mg/kg	1.1	3.0	2.7	0.1
Copper	Strong Acid Extractable	mg/kg	4	8	4	1
Lead	Strong Acid Extractable	mg/kg	2.6	4.4	4.0	0.1
Molybdenum	Strong Acid Extractable	mg/kg	<1	<1	<1	1
Nickel	Strong Acid Extractable	mg/kg	1.8	6.1	3.8	0.5
Selenium	Strong Acid Extractable	mg/kg	<0.3	<0.3	<0.3	0.3
Silver	Strong Acid Extractable	mg/kg	<0.1	0.1	<0.1	0.1
Thallium	Strong Acid Extractable	mg/kg	0.09	0.08	0.10	0.05
Tin	Strong Acid Extractable	mg/kg	3	3	3	1
Uranium	Strong Acid Extractable	mg/kg	<0.5	1	0.5	0.5
Vanadium	Strong Acid Extractable	mg/kg	6.0	12.7	14.7	0.1
Zinc	Strong Acid Extractable	mg/kg	6	7	10	1
Mono-Aromatic Hydrocarbons - Soil						
Extraction Date			26-Aug-09	26-Aug-09	26-Aug-09	
Benzene	Dry Weight	mg/kg	<0.004	<0.004	<0.004	0.004
Toluene	Dry Weight	mg/kg	0.022	<0.005	<0.005	0.005
Ethylbenzene	Dry Weight	mg/kg	<0.010	<0.010	<0.010	0.010
Total Xylenes (m,p,o)	Dry Weight	mg/kg	0.02	0.03	<0.010	0.010
Volatile Petroleum Hydrocarbons - Soil						
Extraction Date			26-Aug-09	26-Aug-09	26-Aug-09	
F1 C6-C10	Dry Weight	mg/kg	<4	<4	<4	4
F1 -BTEX	Dry Weight	mg/kg	<4	<4	<4	4
Extractable Petroleum Hydrocarbons - Soil						
Extraction Date			26-Aug-09	26-Aug-09	26-Aug-09	
F2c C10-C16	Dry Weight	mg/kg	10	31	<10	10
F3c C16-C34	Dry Weight	mg/kg	<30	<30	<30	30
F4c C34-C50	Dry Weight	mg/kg	<20	<20	<20	20

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Analytical Report

Bill To:	Sila Remediation Inc.	Project:	
Report To:	EGE	ID:	
	511 Pepperloaf Cres.	Name:	CAM 2/CAM 3
	Winnipeg, MB, Canada	Location:	Gladman PT/Shepherd Bay
	R3R 1E6	LSD:	
Attn:	A Passalis	P.O.:	
Sampled By:	A. Passalis	Acct code:	
Company:	EGE		

Lot ID:	**698987**
Control Number:	A126973
Date Received:	Aug 24, 2009
Date Reported:	Sep 1, 2009
Report Number:	1244418

Reference Number	698987-1	698987-3	698987-4
Sample Date	Aug 11, 2009	Aug 13, 2009	Aug 14, 2009
Sample Time	NA	NA	NA
Sample Location			
Sample Description	CAM-2 / C209-3WA	CAM-3 / C309-6WB	CAM-3 / C309-13WB
Matrix	Soil	Soil	Soil

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Extractable Petroleum Hydrocarbons - Soil - Continued						
F4HTGCc C34-C50+	Dry Weight	mg/kg	<20	<20	<20	20
% C50+		%	<5	<5	<5	
Silica Gel Cleanup						
Silica Gel Cleanup			Done	Done	Done	
Soil % Moisture						
Moisture	Soil % Moisture	%	12.00	31.80	9.59	
Polychlorinated Biphenyls - Soil						
Aroclor 1016	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1221	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1232	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1242	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1248	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1254	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1260	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1262	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1268	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Total PCBs	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Polychlorinated Biphenyls - Soil - Surrogate						
Decachlorobiphenyl	Surrogate	%	100	90	80	50-150

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F: +1 (780) 438-0396
E: NWL-Edmonton@exova.com
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Analytical Report

Bill To:	Sila Remediation Inc.	Project:		Lot ID:	**698987**
Report To:	EGE	ID:		Control Number:	A126973
	511 Pepperloaf Cres.	Name:	CAM 2/CAM 3	Date Received:	Aug 24, 2009
	Winnipeg, MB, Canada	Location:	Gladman PT/Shepherd Bay	Date Reported:	Sep 1, 2009
	R3R 1E6	LSD:		Report Number:	1244418
Attn:	A Passalis	P.O.:			
Sampled By:	A. Passalis	Acct code:			
Company:	EGE				

Reference Number	698987-2	698987-5
Sample Date	Aug 11, 2009	Aug 14, 2009
Sample Time	NA	NA
Sample Location		
Sample Description	CAM-2 / C209-4W	CAM-3 / C309-5W
Matrix	Water	Water

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Metals Total						
Calcium	Total	mg/L	167	268		0.2
Iron	Total	mg/L	2.57	3.19		0.05
Magnesium	Total	mg/L	113	183		0.1
Manganese	Total	mg/L	0.077	0.235		0.005
Potassium	Total	mg/L	13.8	21.6		0.4
Silicon	Total	mg/L	6.76	12.3		0.05
Sodium	Total	mg/L	201	385		0.4
Sulfur	Total	mg/L	133	294		0.3
Aluminum	Total	mg/L	2.77	3.70		0.005
Antimony	Total	mg/L	<0.0002	<0.0004		0.0002
Arsenic	Total	mg/L	0.0033	0.0036		0.0002
Barium	Total	mg/L	0.066	0.058		0.001
Beryllium	Total	mg/L	0.0002	0.0003		0.0001
Bismuth	Total	mg/L	<0.0005	<0.001		0.0005
Boron	Total	mg/L	0.202	0.15		0.002
Cadmium	Total	mg/L	0.00006	0.0002		0.00001
Chromium	Total	mg/L	0.0176	0.0432		0.0005
Cobalt	Total	mg/L	0.0014	0.0035		0.0001
Copper	Total	mg/L	0.011	0.02		0.001
Lead	Total	mg/L	0.0028	0.002		0.0001
Lithium	Total	mg/L	0.042	0.308		0.001
Molybdenum	Total	mg/L	0.009	0.003		0.001
Nickel	Total	mg/L	0.0083	0.0312		0.0005
Selenium	Total	mg/L	0.0007	0.001		0.0002
Silver	Total	mg/L	0.00005	0.00006		0.00001
Strontium	Total	mg/L	0.344	0.279		0.001
Thallium	Total	mg/L	0.00012	<0.0001		0.00005
Tin	Total	mg/L	<0.001	<0.002		0.001
Titanium	Total	mg/L	0.116	0.175		0.0005
Uranium	Total	mg/L	0.0086	0.002		0.0005
Vanadium	Total	mg/L	0.0047	0.0066		0.0001
Zinc	Total	mg/L	15.3	7.16		0.001
Zirconium	Total	mg/L	0.004	0.009		0.001
Purgeable Hydrocarbons - Water						
Total Hydrocarbon (C6-C10)		mg/L	<0.01	<0.01		0.01

Exova
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Edmonton, Alberta
T6B 3J4, Canada

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E: NWL-Edmonton@exova.com
W: www.exova.com

Analytical Report

Bill To:	Sila Remediation Inc.	Project:	
Report To:	EGE	ID:	
	511 Pepperloaf Cres.	Name:	CAM 2/CAM 3
	Winnipeg, MB, Canada	Location:	Gladman PT/Shepherd Bay
	R3R 1E6	LSD:	
Attn:	A Passalis	P.O.:	
Sampled By:	A. Passalis	Acct code:	
Company:	EGE		

Lot ID:	**698987**
Control Number:	A126973
Date Received:	Aug 24, 2009
Date Reported:	Sep 1, 2009
Report Number:	1244418

Reference Number	698987-2	698987-5
Sample Date	Aug 11, 2009	Aug 14, 2009
Sample Time	NA	NA
Sample Location		
Sample Description	CAM-2 / C209-4W	CAM-3 / C309-5W
Matrix	Water	Water

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Extractable Hydrocarbons (C40) - Water						
Total C11-C40+		mg/L	<0.1	<0.1		0.1
Polychlorinated Biphenyls - Water						
Aroclor 1016		ug/L	<0.1	<0.1		0.1
Aroclor 1221		ug/L	<0.1	<0.1		0.1
Aroclor 1232		ug/L	<0.1	<0.1		0.1
Aroclor 1242		ug/L	<0.1	<0.1		0.1
Aroclor 1248		ug/L	<0.1	<0.1		0.1
Aroclor 1254		ug/L	<0.1	<0.1		0.1
Aroclor 1260		ug/L	<0.1	<0.1		0.1
Aroclor 1262		ug/L	<0.1	<0.1		0.1
Aroclor 1268		ug/L	<0.1	<0.1		0.1
Total PCBs		ug/L	<0.1	<0.1		0.1
Polychlorinated Biphenyls - Water - Surrogate						
Decachlorobiphenyl	Surrogate	%	110	101		50-150

Exova
7217 Roper Road NW
Edmonton, Alberta
T6B 3J4, Canada

T: +1 (780) 438-5522
F: +1 (780) 438-0396
E: NWL-Edmonton@exova.com
W: www.exova.com

Analytical Report

Bill To:	Sila Remediation Inc.	Project:		Lot ID:	**698987**
Report To:	EGE	ID:		Control Number:	A126973
	511 Pepperloaf Cres.	Name:	CAM 2/CAM 3	Date Received:	Aug 24, 2009
	Winnipeg, MB, Canada	Location:	Gladman PT/Shepherd Bay	Date Reported:	Sep 1, 2009
	R3R 1E6	LSD:		Report Number:	1244418
Attn:	A Passalis	P.O.:			
Sampled By:	A. Passalis	Acct code:			
Company:	EGE				

Reference Number	698987-6
Sample Date	Aug 09, 2009
Sample Time	NA
Sample Location	
Sample Description	PIN 3 / P309-2A
Matrix	Soil

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Hot Water Soluble						
Boron	Hot Water Soluble	mg/kg	0.4			0.1
Metals Strong Acid Digestion						
Mercury	Strong Acid Extractable	mg/kg	0.01			0.01
Antimony	Strong Acid Extractable	mg/kg	<0.2			0.2
Arsenic	Strong Acid Extractable	mg/kg	1.4			0.2
Barium	Strong Acid Extractable	mg/kg	65			1
Beryllium	Strong Acid Extractable	mg/kg	0.2			0.1
Cadmium	Strong Acid Extractable	mg/kg	0.03			0.01
Chromium	Strong Acid Extractable	mg/kg	8.1			0.1
Cobalt	Strong Acid Extractable	mg/kg	2.6			0.1
Copper	Strong Acid Extractable	mg/kg	10			1
Lead	Strong Acid Extractable	mg/kg	2.9			0.1
Molybdenum	Strong Acid Extractable	mg/kg	<1			1
Nickel	Strong Acid Extractable	mg/kg	11.0			0.5
Selenium	Strong Acid Extractable	mg/kg	<0.3			0.3
Silver	Strong Acid Extractable	mg/kg	<0.1			0.1
Thallium	Strong Acid Extractable	mg/kg	0.08			0.05
Tin	Strong Acid Extractable	mg/kg	3			1
Uranium	Strong Acid Extractable	mg/kg	0.6			0.5
Vanadium	Strong Acid Extractable	mg/kg	13.8			0.1
Zinc	Strong Acid Extractable	mg/kg	8			1
Mono-Aromatic Hydrocarbons - Soil						
Extraction Date			26-Aug-09			
Benzene	Dry Weight	mg/kg	<0.004			0.004
Toluene	Dry Weight	mg/kg	0.042			0.005
Ethylbenzene	Dry Weight	mg/kg	<0.010			0.010
Total Xylenes (m,p,o)	Dry Weight	mg/kg	0.02			0.010
Volatile Petroleum Hydrocarbons - Soil						
Extraction Date			26-Aug-09			
F1 C6-C10	Dry Weight	mg/kg	<4			4
F1 -BTEX	Dry Weight	mg/kg	<4			4
Extractable Petroleum Hydrocarbons - Soil						
Extraction Date			26-Aug-09			
F2c C10-C16	Dry Weight	mg/kg	13			10
F3c C16-C34	Dry Weight	mg/kg	<30			30
F4c C34-C50	Dry Weight	mg/kg	<20			20

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Analytical Report

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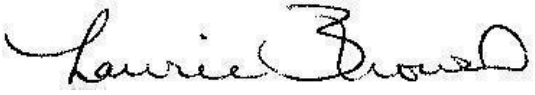
Report To:	EGE	ID:	
	511 Pepperloaf Cres.	Name:	CAM 2/CAM 3
	Winnipeg, MB, Canada	Location:	Gladman PT/Shepherd Bay
	R3R 1E6	LSD:	
Attn:	A Passalis	P.O.:	
Sampled By:	A. Passalis	Acct code:	
Company:	EGE		

Lot ID:	**698987**
Control Number:	A126973
Date Received:	Aug 24, 2009
Date Reported:	Sep 1, 2009
Report Number:	1244418

Reference Number	698987-6
Sample Date	Aug 09, 2009
Sample Time	NA
Sample Location	
Sample Description	PIN 3 / P309-2A
Matrix	Soil

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Extractable Petroleum Hydrocarbons - Soil - Continued						
F4HTGCc C34-C50+	Dry Weight	mg/kg	<20			20
% C50+		%	<5			
Silica Gel Cleanup						
Silica Gel Cleanup			Done			
Soil % Moisture						
Moisture	Soil % Moisture	%	7.41			
Polychlorinated Biphenyls - Soil						
Aroclor 1016	Dry Weight	mg/kg	<0.1			0.1
Aroclor 1221	Dry Weight	mg/kg	<0.1			0.1
Aroclor 1232	Dry Weight	mg/kg	<0.1			0.1
Aroclor 1242	Dry Weight	mg/kg	<0.1			0.1
Aroclor 1248	Dry Weight	mg/kg	<0.1			0.1
Aroclor 1254	Dry Weight	mg/kg	<0.1			0.1
Aroclor 1260	Dry Weight	mg/kg	<0.1			0.1
Aroclor 1262	Dry Weight	mg/kg	<0.1			0.1
Aroclor 1268	Dry Weight	mg/kg	<0.1			0.1
Total PCBs	Dry Weight	mg/kg	<0.1			0.1
Polychlorinated Biphenyls - Soil - Surrogate						
Decachlorobiphenyl	Surrogate	%	100			50-150

Approved by:



Laurie Brown, MSc
Client Services Manager

Exova
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T6B 3J4, Canada

T: +1 (780) 438-5522
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Methodology and Notes

Bill To:	Sila Remediation Inc.	Project:	
Report To:	EGE	ID:	
	511 Pepperloaf Cres.	Name:	CAM 2/CAM 3
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	R3R 1E6	LSD:	
Attn:	A Passalis	P.O.:	
Sampled By:	A. Passalis	Acct code:	
Company:	EGE		

Lot ID:	**698987**
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Date Reported:	Sep 1, 2009
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Method of Analysis

Method Name	Reference		Method	Date Analysis Started	Location
Boron in general soil	McKeague	*	Hot Water Soluble Boron - Azomethine -H Method, 4.61	25-Aug-09	Exova Edmonton
BTEX-CCME - Soil	CCME	*	Reference Method for Canada-Wide Standard for PHC in Soil, CWS PHCS TIER 1	25-Aug-09	Exova Calgary
BTEX-CCME - Soil	US EPA	*	US EPA method, 8260B/5035	25-Aug-09	Exova Calgary
BTEX-TPH - Water	US EPA	*	US EPA method, 8260B/5035	26-Aug-09	Exova Calgary
Mercury (Hot Block) in Soil	US EPA	*	Determination of Hg in Sediment by Cold Vapor Atomic Absorption Spec, 245.5	25-Aug-09	Exova Edmonton
Metals ICP-MS (Hot Block) in soil	SW-846	*	Acid Digestion of Sediments, Sludges, and Soils, EPA 3050B	25-Aug-09	Exova Edmonton
Metals ICP-MS (Total) in water	US EPA	*	Determination of Trace Elements in Waters and Wastes by ICP-MS, 200.8	25-Aug-09	Exova Edmonton
Metals Trace (Total) in water	APHA	*	Inductively Coupled Plasma (ICP) Method, 3120 B	25-Aug-09	Exova Edmonton
PCB - Soil	US EPA	*	Biological US Method, 8082A	25-Aug-09	Exova Calgary
PCB - Water	US EPA	*	Biological US Method, 8082A	27-Aug-09	Exova Calgary
TEH - Water	MMCA	*	Petroleum Hydrocarbons in water, A108.0	26-Aug-09	Exova Calgary
TEH-CCME-Soil (Shake)	CCME	*	Reference Method for Canada-Wide Standard for PHC in Soil, CWS PHCS TIER 1	25-Aug-09	Exova Calgary

** Laboratory method(s) based on reference method*

References

Alta. Env.	Alberta Environment Method
APHA	Standard Methods for the Examination of Water and Wastewater
CCME	Canadian Council of Ministers of the Environment
McKeague	Manual on Soil Sampling and Methods of Analysis
SW-846	Test Methods for Evaluating Solid Waste
US EPA	US Environmental Protection Agency Test Methods

Comments:

- Sample #5 Identification taken from containers.

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Methodology and Notes

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Report To:	EGE	ID:	
	511 Pepperloaf Cres.	Name:	CAM 2/CAM 3
	Winnipeg, MB, Canada	Location:	Gladman PT/Shepherd Bay
	R3R 1E6	LSD:	
Attn:	A Passalis	P.O.:	
Sampled By:	A. Passalis	Acct code:	
Company:	EGE		

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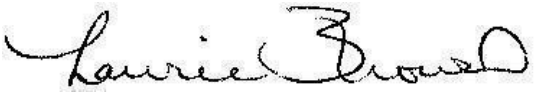
	Winnipeg, MB, Canada	Location:	Gladman PT/Shepherd Bay	Date Reported:	Sep 1, 2009
	R3R 1E6	LSD:		Report Number:	1244418
Attn:	A Passalis	P.O.:			
Sampled By:	A. Passalis	Acct code:			
Company:	EGE				

Petroleum Hydrocarbons in Soil

Batch Notes

1. The method used complies with the Reference Method for the Canada Wide Standards for Petroleum Hydrocarbons in Soil - Tier 1, April 2001, including Addendum 1, and is accredited for use in Exova.
2. Modifications of the method: See Notes and Methodology for nonconformances (if applicable).
3. Qualifications on results: See Notes and Methodology for nonconformances (if applicable).
4. Silica gel treatment is performed for fractions F2, F3, F4.
5. F1-BTEX: BTEX has been subtracted from the F1 fraction.
6. If analyzed, naphthalene has been subtracted from fraction F2 and selected PAHs have been subtracted from fraction F3.
7. F4HTGC is reported when more than 5% of the total carbon envelope elutes past C_{50}.
8. Exova does not routinely report Gravimetric Heavy Hydrocarbons (F4G or F4G-sg), F4HTGC through extended range high temperature GC is reported instead.
9. When both F4(C_{34}-C_{50}) and F4HTGC are reported, F4HTGC is the final F4 that is to be used for interpreting the CWS.
10. Quality criteria met for the batch: Data is reported in Quality Control Section of report (if requested).
    -nC_6 and nC_{10} response factors (RF) are within 30% of RF for toluene
    -nC_{10}, nC_{16} and nC_{34} RFs are within 10% of each other
    -nC_{50} RF is within 30% of the average RF for nC_{10}+nC_{16}+nC_{34}
    -linearity is within 15% for each of the calibrated carbon ranges
11. Batch data for analytical quality control are available on request.
12. Extraction and analysis holding times were met: See Notes and Methodology for nonconformances (if applicable).

Approved by:



Laurie Brown, MSc
Client Services Manager