Nunavut Water Board

Standard Form for Annual Reporting Requirements of NWB2 Exploration Water Licenses

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Under the terms of your water licence issued by the Nunavut Water Board ("NWB") for the use of water and the disposal of waste into water associated with mineral exploration (NWB2 Licenses), Licensees are required to submit to the NWB an Annual Report no later than March 31st of the year following the calendar year being reported.

In order to aid the Licensee with the preparation of the Annual Report and facilitate its review by the NWB, Licensees are **required** to use the following form.

Recommendation and Helpful tips for use:

Metric units shall be used to report any relevant data.

How to Add additional space within Text boxes - Right click mouse on the row number (directly to the left of your screen) which falls within the text box range and click insert. **Do not drag or drop text box to modify size of the text box because formatting will not be maintained and data will be lost.** If you have large amounts of data recommend adding additional worksheets. Go to the help menu for assistance.

Electronic versions should be submitted in Adobe to ensure protection of your information. If you do not have shortcut keys to save as a PDF. Go to print menu . Choose to print "Entire Worksheet" then select printer option Adobe PDF and you will be prompted to save the document as a PDF document. Reminder ensure you have saved your document in Excel so that future changes can be made.

Modify the Header - Select "View" then "Header" from the main menu. Select "Custom Header" and change to reflect the valid Water Licence No.

Textboxes denoted with ***** are optional.

Annual Reports shall be submitted by either fax, mail or email in adobe acrobat or Excel format to:

Nunavut Water Board
c/o Manager of Licensing
P.O. Box 119
Gjoa Haven, NU X0B 1J0
Tel: 867-360-6338
Fax:867-360-6369
Email: licensing@nunavutwaterboard.org

Nunatta Environmental Services Inc.
P.O. Box 267
Iqaluit, NU X0A 0H0

Tel: (867) 979-1488
Fax: (867) 979-1478

RECEPT OF OIL - IMPACTED SOILS
BY CLIENT & JOB
AS AT 31/12/08

Date of Invoice	Customer	Job #	Details (Cu. Mtrs. Received)
April 7/08	Robert Bertrand	08-809	18.5
April 28/08	NP REIT	08-812	23.8
July 7/08	Chuck Gilhuly	08-813	11.50
June 24/08	GN - Young Off.	08-816	50.0
June 19/08	Arctic Co-ops	08-817	42.00
Aug 15/08	GN - CGS	08-819	420.0
June 23/08	Baffin Gas Bar	18-820	22.0
June 23/08	Daniel Cuerrier	08-821	35.0
Sept 22/08	Parkdale Condos	08-826	39.0
Aug 8/08	NPREIT	08-827	28.0
Sept 15/08	NPREIT	08-827-2	7.0
Dec31/08	Northwest Co.	08-828	20.5
Nov 14/08	Katujjiijiit Dev	08-830	27.0
Aug 6/08	NEAS Inc.	08-832	6.0
Sept 15/08	D.J. Specialities	08-837	2.0
Nov 14/08	South Baffin Hldgs	08-840	22.0
Oct 10/08	Brad MacDonald	08-841	66.0
Nov 14/08	NPREIT	08-847	39.0
Nov 14/08	BBS	08-849	36.0
Nov 14/08	Meeka Mike	08-851	162.0
Total Cubic Meters of Oil-impacted Soil Received:			**1,077.3**

 PREPARED: 2/14/2011

NWB Annual Report **Year being reported:** 2008

License No: NWB4NUN0511 - Type "B" **Issued Date:** September 13, 2005
Expiry Date: December 13, 2011

Project Name: Nunatta Environmental Services "Landfarm"

Licensee: Nunatta Environmental Services

Mailing Address:
Box 267,
Iqaluit, Nunavut
X0A 0H0

Name of Company filing Annual Report (if different from Name of Licensee please clarify relationship between the two entities, if applicable):

General Background Information on the Project (*optional):

Nunatta Environmental Services Inc. (Nunatta) owns and operates a Hydrocarbon-Impacted Soil Landfarm Facility in the City of Iqaluit, Nunavut. This treatment facility is commonly referred to as a 'landfarm'. Nunatta operations consist in accepting soils impacted with petroleum products at various concentrations at the landfarm's geosynthetic lined cells and allow indigenous soil microorganisms with the assistance of fertilizers to degrade petroleum products into compounds such as water, carbon dioxide and hydrogen sulfide. Soils accepted at the landfarm are contaminated with diesel fuel, gasoline and other automotive oils.

Licence Requirements: the licensee must provide the following information in accodance with

Part B Item 1

A summary report of water use and waste disposal activities, including, but not limited to: methods of obtaining water; sewage and greywater management; drill waste management; solid and hazardous waste management.

Water Source(s): Run-off water, contaminated water from clean-up site

Water Quantity:

	Quantity Allowable Domestic (cu.m)
	Actual Quantity Used Domestic (cu.m)
	Quantity Allowable Drilling (cu.m)
	Total Quantity Used Drilling (cu.m)

Waste Management and/or Disposal

- ☐ Solid Waste Disposal
- ☐ Sewage
- ☐ Drill Waste
- ☐ Greywater
- ☐ Hazardous

☐ Hazardous
☑ Other: Hydrocarbon Contaminated Soils

Additional Details:

18 cubic meters of water discharged into receiving environment. All waters were passed through carbon filters prior to disscharging.

A list of unauthorized discharges and a summary of follow-up actions taken.

Spill No.: (as reported to the Spill Hot-line)
Date of Spill:
Date of Notification to an Inspector:
Additional Details: (impacts to water, mitigation measures, short/long term monitoring, etc)

Revisions to the Spill Contingency Plan

SCP submitted and approved - no revision required or proposed

Additional Details:

Revisions to the Abandonment and Restoration Plan

AR plan submitted and approved - no revision required or proposed

Additional Details:

Progressive Reclamation Work Undertaken

Additional Details (i.e., work completed and future works proposed)

There was a total of 690 Meters received at landfarm in 2008 giving us a grand total of 6384.4 meters
Soils taken in and placed in cells. Large rocks were removed and soils were turned over with excavator when time permitted. Cell #3 had soils spread out level and were being cultivated and fertilized weekly. Water was applied as needed throughout summer months.

Results of the Monitoring Program including:

The GPS Co-ordinates (in degrees, minutes and seconds of latitude and longitude) of each location where sources of water are utilized;

Not Applicable (N/A)

Additional Details:

The GPS Co-ordinates (in degrees, minutes and seconds of latitude and longitude) of each location where wastes associated with the licence are deposited;

Details described below

Additional Details:

Cell #1 N 63-45-816 These are to centre of cell. Corner coordinates included
W 068-32-667 in attachment (detaled Map)

Cell #2 N 63-45-825
W 068-32-708

Cell #3 N63-45-828
W 068-32-738

Results of any additional sampling and/or analysis that was requested by an Inspector

No additional sampling requested by an Inspector or the Board

Additional Details: (date of request, analysis of results, data attached, etc)

Any other details on water use or waste disposal requested by the Board by November 1 of the year being reported.

No additional sampling requested by an Inspector or the Board

Additional Details: (Attached or provided below)

Any responses or follow-up actions on inspection/compliance reports

No inspection and/or compliance report issued by INAC

Additional Details: (Dates of Report, Follow-up by the Licensee)

Any additional comments or information for the Board to consider

November of 2008 after a change in Management, Franz Environmental was contracted to install 4 new Monitoring wells around the permiter of the containment area. Photo's and GPS data will be included as an attachment to this document.

Date Submitted:	Nov. 25, 2010	
Submitted/Prepared by:	Nunatta Environmental Services Inc, Iqaluit,Nu	
Contact Information:	**Tel:**	867-979-1488
	Fax:	867-979-1478
	email:	nunatta@northwestel.net

GPS Coordinates for water sources utilized

Source Description	Latitude			Longitude		
	Deg °	Min '	Sec "	Deg °	Min '	Sec "

GPS Locations of areas of waste disposal

Location Description (type)	Latitude			Longitude		
	Deg °	Min '	Sec "	Deg °	Min '	Sec "

Nunatta Environmental Services Inc.
Annual Accrual for Future Costs of Soil Remnediation
Annual Data (Per Financial Stetements)
***2010 - year-to-date figures**

Year Soil Received	Details (Cu. Mtrs. Received)	Annual Sales Revenue	Annual Liability at Y/E
2003	3919.6	$ 683,827	$ 547,062
2004	708	$ 204,800	$ 574,136
2005	377.8	$ 74,800	$ 496,251
2006	164.0	$ 34,845	$ 291,440
2007	525.1	$ 130,662	$ 196,317
2008	1077.3	$ 269,513	$ 322,905
Totals	**6771.8**	**$ 1,398,447**	

FRANZ ENVIRONMENTAL INC.

♦ CONSULTING ♦ ENGINEERING ♦ TECHNOLOGIES ♦

February 24, 2009

Mr. Axel Have
Acting General Manager
Nunatta Environmental Services Ltd
P. O. Box 267
Iqaluit, Nunavut
X0A-0H0

Dear Mr. Have:

Re: 2008 Soil Testing and Groundwater Monitoring
Hydrocarbon-Impacted Soil Landfarm Facility
North 40 Industrial Park
City of Iqaluit, Nunavut

The following letter details the environmental testing work completed by Franz Environmental Inc. (FRANZ) at Nunatta Environmental Services Inc's (Nunatta) Hydrocarbon-Impacted Soil Landfarm Facility (Landfarm), North 40 Industrial Park, City of Iqaluit, NU (Figure 1). It is our understanding that the testing provided in this report will be used as part of the documentation supporting the annual reports filed with the Nunavut Water Board by Nunatta for water use and waste disposal activities.

FRANZ was retained by Nunatta to complete the following tasks:

- Install 4 new groundwater monitoring wells to replace older "dry" wells;
- Collect soil and groundwater samples from the new well locations for representative chemical analysis;
- Collect soil samples from Cell 3 Landfarm for representative chemical analysis; and
- Provide a factual report.

329 Churchill Ave North Suite 200, Ottawa, Ontario K1Z 5B8
Tel: 613-721-0555; Fax: 613-721-0029
www.franzenvironmental.com

1.0 INVESTIGATIVE METHODOLOGY

An intrusive and sampling investigation was completed at the Landfarm from November 2 to November 6, 2008. Nunavut Construction, a Quebec construction company with a subsidiary in Iqaluit, was subcontracted to excavate pits for soil sampling, monitoring well installations and soil sampling of Cell 3. FRANZ personnel were responsible for the installation of the monitoring wells, and collection of groundwater and soil samples.

The monitoring well logs are provided in Appendix A. Photographs of the investigation are presented in Appendix B and copies of Paracel Laboratories Ltd results are presented in Appendix C.

1.1 Test Pitting and Soil Sampling

A total of four (4) test pits completed as monitoring wells (MW08-1 to MW08-4) were advanced between November 3 and 4, 2008 to depths ranging from 2.8 to 3.4 m below ground surface (mbgs). The test pit/monitoring well locations are presented in Figures 2 and 3. Test pit/monitoring well logs are included in Appendix A

Test pits were excavated by using a track mounted excavator. Composite soil samples were collected from the side wall of each test pit. Soil stratigraphy was logged and photos taken before backfilling the test pits with excavated soil. The following represented a consistent level of effort for all test pits:

- Excavations from ground surface to a maximum depth of 3.4 mbgs (i.e., controlled by depth of permafrost);
- Field monitoring of combustible gas concentrations using an RKI Eagle Hydrocarbon surveyor was conducted for each test pit;
- Surface and subsurface materials were inspected, described and photographed;
- Representative samples were collected from each soil/fill horizon;
- Following sampling, test pits were backfilled to grade in the reverse order of excavation;
- General soil classification was completed on soil and fill and recorded to establish an understanding of soil and fill units and potential impacts; and
- Precautions were taken to prevent potential cross contamination, soil samples were taken with proper precautions during sampling, including using a fresh pair of nitrile gloves for each sample location.

All samples were stored immediately in doubled-up, zippered, plastic bags (for soil vapour analysis) and laboratory supplied sample jars (for laboratory analysis). Soil samples for laboratory analysis were stored with in laboratory supplied coolers equipped with ice packs from the time of collection until delivery to the laboratory. Test pit photos are presented in Appendix B.

1.2 Landfarm Soil Sampling

A total of three (3) surface test pits were advanced on November 4, 2008 to depths ranging from 0.5 to 0.9 m below ground surface (mbgs) in the Landfarm Cell-3. The surficial test pits were excavated by using a track mounted excavator, supplied and operated by Nunavut Construction. Composite soil samples were collected from each test pit. Soil stratigraphy was logged before backfilling the test pits with excavated soil. The test pit locations are presented in Figures 2 and 3.

All samples were stored immediately in doubled-up, zippered, plastic bags (for soil vapour analysis) and laboratory supplied sample jars (for laboratory analysis). Soil samples for laboratory analysis were stored with in laboratory supplied coolers equipped with ice packs from the time of collection until delivery to the laboratory.

1.3 Soil Vapour Screening

FRANZ field personnel screened all soil samples collected by measuring combustible vapour levels in the headspace of bagged samples. Field screening was conducted for each sample, using a consistent procedure as follows: a standard soil volume was placed into a polyethylene bags; the bagged samples were then allowed to equilibrate to ambient air temperatures for a consistent period of time until readings stabilized. After equilibration, a combustible gas indicator (CGI) probe was inserted into the bags and the maximum concentrations of combustible vapours were recorded. Visual and olfactory observations were also used in field screening of all soil samples.

An RKI Eagle CGI, Serial number E61010, Type 401 was used to screen vapours where petroleum hydrocarbon impacts were suspected. The CGI measures the concentration of combustible gas in parts per million (ppm) or as a percentage of the lower explosive limit (% LEL). The instrument has a methane sensor that can be turned on and off. The methane sensor was turned off for all measurements unless noted otherwise (i.e., measurements do not include methane concentrations). The CGI displays measurements in increments of 5 ppm. Concentrations equal to or less than 50 ppm (background) were considered to be an indication

of the absence of petroleum hydrocarbon impacts. In all cases, olfactory and visual observations were reported together with CGI measurements.

A background, or ambient air reading was also recorded after the instrument was turned on and prior to measuring concentrations in a particular area of concern. The average background concentration of combustible gas averaged approximately 20 to 40 ppm.

1.4 Soil Chemical Analysis

Samples for potential hydrocarbon analysis were screened for soil vapour concentrations and reviewed for staining and visual impacts. In general, soil samples submitted for hydrocarbon analysis were based on the highest soil vapour concentrations, per test pit.

Soil samples for metals analyses were selected to determine the typical concentrations of these chemicals within the Landfarm area.

The samples that were submitted for laboratory analysis are summarized as follows:

Test Pits- Perimeter Monitoring Wells

- A total of three (3) representative soil samples were collected, and all of the samples were submitted for laboratory analysis of the Canadian Council of Ministers of the Environment (CCME) Canada Wide Standards (CWS) for petroleum hydrocarbons F1-F4 parameters.
- Three (3) of these samples were also analysed for CCME metals, including mercury (Hg).

Test Pits- Landfarm Cell 3

- A total of three (3) representative soil samples were collected, and all of the samples were submitted for laboratory analysis of the CCME CWS for petroleum hydrocarbons F1-F4 parameters.
- Three (3) of these samples were also analysed for CCME metals, including mercury (Hg).

1.5 Monitoring Well Installation

Four (4) monitoring wells were installed in test pits to determine the absence or presence of dissolved contaminants. Monitoring well identifications and depths are presented below.

Monitoring Well Locations

Monitoring Well ID	Screen Depth (mbgs)	Water Levels (mbgs)
MW08-1	1.6 – 3.4	Dry
MW08-2	1.1 – 2.8	Dry
MW08-3	1.25 – 3.2	1.65
MW08-4	1.6 – 2.8	1.70

Monitoring installations were completed in accordance with the ASTM 5092-90 standards. The monitoring wells consisted of 31.78 mm (1.25 inch) I.D. diameter schedule 40, flush threaded, pre-washed and bagged PVC pipe with 1.52 m (PVC slot # 10) screens. The shallow wells were positioned to intercept the water table and to provide evidence of any phase-separated hydrocarbons. The wells were completed at the top of the permafrost within the active layer.

1.6 Groundwater Sampling and Chemical Analysis

A total of two (2) groundwater samples were collected (MW08-3 and MW08-4). The samples were collected from the monitoring wells using well-dedicated Watera tubing and foot valves. A total of three well volumes were purged from each well prior to sampling. Water samples were collected from each well and transferred into glass jars. Samples were collected using fresh disposable nitrile gloves for each sample.

All water samples were submitted for analysis for petroleum hydrocarbons (PHCs) fractions F1-F4, PAHs, metals and PCBs.

2.0 REGULATORY GUIDELINES

2.1 Background

The Canadian Council of Ministers of the Environment (CCME) *Canadian Environmental Quality Guidelines* (CCME, 1999 and annual updates), including the *Canada-Wide Standards for Petroleum Hydrocarbons in Soil* (CCME, 2001 and updates) were applied in the numerical comparison of laboratory data.

In Nunavut, environmental site assessments and site remediation projects are typically based on the use of federally developed generic guidelines. Risk assessment principles have been used extensively in developing federal generic clean-up criteria for contaminated sites. However, as the term "generic" implies, they are intended for broad applications and are usually over-protective to avoid underestimating potential risks associated with a wide range of site conditions and potential land uses.

The chemical data obtained during this Study were preferentially compared to established guidelines from the federal CCME. The federal guidelines are relevant since Nunavut has adopted the CCME approach.

The CCME "Canadian Environmental Quality Guidelines" (1999) publication compiled all previously released soil and groundwater criteria and guidelines into one publication. Updates have been issued for selected chemicals over the past several years. These guidelines for soil, sediment and water are numerical limits intended to maintain, improve or protect environmental quality and human health at contaminated sites. The guidelines are derived using toxicological data. There are four separate sets of guidelines for soil quality and five sets of guidelines for water quality. The guidelines are separated into groups for different types of land and water use.

2.2 Soil Guidelines

The soil analytical results were compared to the Canadian Council of Ministers of the Environment (CCME) Canadian Environmental Quality Guidelines and with the Canada-Wide Standards (CWS) for Petroleum Hydrocarbons (PHC) in soil. The criteria are numerical limits intended to maintain, improve or protect environmental quality and human health at contaminated sites. The guidelines are derived using toxicological data and aesthetic considerations.

The standards or guidelines adopted for this evaluation are as follows:

- *Canadian Environmental Quality Guidelines* (CEQGs; CCME, 2007) for commercial land use.
- *Canada-Wide Standards for Petroleum Hydrocarbons* (CWS - PHC) in Soil (CCME, 2008a) - Tier 1 Levels also for commercial land use.

2.3 Groundwater

The federal CCME guidelines were derived based on potential impacts to humans and ecological receptors. However, the CCME guidelines also take into account potential risks to humans associated with the consumption of groundwater on the site. The CCME have not established an equivalent set of non-potable thresholds. For these reasons, Ontario criteria for groundwater were used in the chemical evaluation.

The following guidelines were adopted for the evaluation of groundwater.

Groundwater contaminant levels were compared to the Ontario Ministry of the Environment's Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act (2004):

- Table 3 – Full Depth Generic Site Condition Standards in Non-Potable Ground Water Conditions (coarse soil)

These guidelines are protective of:

- Groundwater discharge to surface water bodies (protection of aquatic receptors).
- Vapour movement from groundwater to indoor air (protection of human health).
- Direct contact or dermal contact of chemicals of Concern (CoC).

3.0 PHYSICAL SITE CHARACTERISTICS

3.1 Topography and Drainage

The ground elevation at the site is approximately 30 m above sea level (masl). The site is located within a generally flat area (National Topographic Series map, Nunavut 25 N/15). The site has a gentle slope to the east towards a small drainage, which joins Carney Creek. Other small amounts of surface melt water also collects in a drainage ditch located to the west of the Landfarm property, between a quarry access roadway and the Landfarm property; however, water collected in this drainage ditch remains trapped and has poor to no circulation. Pooled water also collects to the west of the site in the low lying areas (approximately 20 to 25 masl) created by quarrying activities (See Figure 2).

3.2 Regional Bedrock Geology

The southern portion of Baffin Island consists of primarily Precambrian Canadian Shield crystalline rocks. The regional bedrock geology in the study area is part of the Churchill Structural province. The bedrock in the study area is from the Aphebian Era and consists of a variety of metamorphic rocks. Quartz-feldspar-gneissic rocks are the predominant facies in the area around Iqaluit (Härtling, 1988).

The structural geology follows the general northwest – southeast trend of the area. The northwest – southeast aligned fault system in southern Baffin Island were the result of the Upper Cretaceous and early Tertiary rifting associated with the spreading in the Baffin Bay and Davis Strait. The study area lies at the boundary between the Frobisher Bay graben and the Hall Peninsula horst, and the cliff line and the bedrock outcrops follow the overall trend (Härtling, 1988).

3.3 Regional Surficial Soils

The major landforms developed along lines of weakness related to the Upper Cretaceous to Tertiary faulting and along pre-existing draining systems. During the Cenozoic, the area was affected by several glacial advances and retreats. Glacial ice streams flowed southeastward along the Sylvia Grinnell valley and surrounding areas. The landscape was developed during deglaciation when glacial, glaciofluvial and glaciomarine processes dominated (Mode and Jacobs, 1987). Following glacial retreat of the Frobisher Bay outlet glacier past the study area, the Sylvia Grinnell valley was covered by marine waters until approximately 2 – 3,000 years ago. The site became free of marine influence approximately 5,000 years ago. This time would be too short for substantial bedrock weathering, thus reducing the influence of the bedrock geochemistry on the overlying soils. Both areas would be subject to fluvial and colluvial

processes. The predominant weathering process would be mechanical disintegration by differential thermal expansion and frost action (Härtling, 1988).

3.4 Soil Stratigraphy

The soil conditions encountered in each perimeter test pit are presented in the test pit logs in Appendix A. The test pits ranged in depth from 2.8 to 3.4 mbgs. Permafrost was encountered in all test pits. The frost lines associated with the 2008 freeze up are also noted in the test pit/monitoring well logs in Appendix A.

The soils in all test pits consisted of a thin layer of gravel mixed with topsoil approximately 0.05 to 0.1 m in thickness; followed by silty sand till, boulders and cobbles, grey to brown in colour, and dry down to an average depth of 1.8 mbgs.

MW08-1 and MW08-2 also exhibited an additional stratigraphic layer, differing only slightly from that above. This additional layer consisted of silty sand till, boulders and angular cobbles, brown to grey in colour, moist to wet, and loose. This lower layer ranged from an average depth of 1.8 mbgs to permafrost. Based on field observations, all soils encountered on site are classified as course grained (See Photo 1 in Appendix B).

MW08-3 was the only test pit to exhibit trace hydrocarbon odours during sample collection.

3.5 Hydrogeology

Permafrost, soil and overburden materials, with the exception of taliks (localized areas of discontinuous permafrost) within the tidal zone and surrounding larger/deeper bodies, behave as an impervious aquitard (Freeze and Cherry, 1979). As a result of the frozen pore water in the soil and overburden, very little groundwater movement is expected deeper than the active layer at the site. The active layer is defined as: The top layer of soil which thaws during the summer months and re-freezes during autumn/winter. The active layer thickness is dependent on such factors as slope angles and aspect, drainage, rock or soil type, depth of snow cover, vegetation cover, and local ground moisture conditions. Thawing of the active layer may occur daily or only in the summer.

Values of hydraulic conductivity for the overburden material are dependent on the frozen state of the pore water (frozen or liquid). Under “normal” thaw conditions, the active layer in the overburden material (consisting of silt, sand, gravel, and boulders) would have a hydraulic conductivity ranging from approximately 10^{-5} to 10^{-3} cm/s. Under frozen winter conditions (seasonally from approximately November to May/June), the active layer would be frozen and, thus become a non-operable pathway.

Groundwater in the active layer was encountered at the site during the test pitting program, which took place during thaw conditions. Groundwater levels were measured 1.7 mbgs, with average depth of the water table was approximately from 1.7 mbgs.

Based on the groundwater elevations measured by FRANZ (2008), the groundwater flow direction is determined to be broadly south-southwest towards the main ponds located to the west.

4.0 CHEMICAL RESULTS

The chemical data was compared to the appropriate guidelines for soil (CCME Commercial/Industrial) and groundwater (non-potable) established by both federal and provincial authorities as indicated in Section 2 and referenced as the Environmental Quality Guidelines (EQG). For this study, commercial guidelines for soil were used for comparison purposes.

Federal and provincial guidelines are numerical limits or statements which can be used for comparison with measured contaminant levels at a site in order to determine whether further investigation or actions are required. It should be noted, however, that the definition of impact does not necessarily imply that there will be significant risks to human health and the environment. Natural attenuation mechanisms such as biodegradation and adsorption, exposure pathways, frequency of exposure and distances to potential receptors must be considered to determine specific risks and potential impacts.

Chemical results compared to commercial guidelines are presented in the attached Tables 1 through 5 (Tables Section) and in Figure 4 (Figures Section).

4.1 Soil and Groundwater Testing

4.1.1 General Field Observations (Staining/Vapours)

There was no indication of free product or hydrocarbon odours in the test pits, with the exception of a faint hydrocarbon odour in MW08-3. The maximum hydrocarbon vapour headspace reading in the soil samples collected from test pits was 50 ppm (MW08-3), and the lowest was 20 ppm (MW08-1).

4.1.2 Soil Chemistry

Perimeter Test Pits/Monitoring Wells

Four (4) test pits were excavated surrounding the Landfarm on each corner (MW08-1 through MW08-4) (Figures 2 and 3). Three (3) soil samples were selected for analysis of PHCs (F1 to F4) and metals (MW08-1, MW08-3, and MW08-4). No exceedances of the selected EQG were detected in any of the perimeter soil samples analysed. Analytical results are displayed in Figure 4 and in Tables 1 and 2.

Cell 3 – Soil Sampling

Three (3) soil samples were collected from shallow test pits located across Cell-3 (Cell3-08-1, Cell3-08-2, and Cell3-08-3) (Figure 2 and 3). All three samples were analysed for PHCs and

metals. Exceedances of PHC F2 were detected in all three soil samples above the selected EQG. One soil sample (Cell3-08-2) also exhibited concentrations of Selenium elevated above the selected EQG. Analytical Results are displayed in Figure 4 and Tables 1 and 2.

4.1.3 Groundwater Chemistry

Two groundwater samples were collected from MW08-3 and MW08-4 dowgradient of the Landfarm (Figure 2 and 3). The two samples were analysed for PHCs, PAHs, metals, and PCBs. Both MW08-3 and MW08-4 exhibited chemical concentrations below the selected EQG in all analytes tested. Analytical results are displayed in Tables 3 through 5.

CLOSURE

The findings and conclusions documented in this report have been developed in a manner consistent with the level of care normally exercised by members of the environmental science and engineering profession. This document has been prepared for the exclusive use by Nunatta Environmental Services IncI and ncorporates a summary of the best available information at the time of writing.

The statement of conditions of the site is limited to the sampling locations and frequency, and field results noted herein. No warranty, express or implied, exists for the condition of groundwater between these sampling points or sessions. However, reasonable science and engineering judgment has been applied to any and all field measurements, observations and sampling procedures conducted by Franz Environmental Inc.

We trust that the above is satisfactory for your purposes at this time. If you have any questions please feel free to contact the undersigned at your convenience.

Yours truly,
Franz Environmental Inc.

Steve Livingstone, M.Sc., P. Geo.

Vice President

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Table 3: Groundwater Analytical Results - Petroleum Hydrocarbons

PARAMETER Sampling No. Sampling Date	MOE Table 3[1] Non-Potable Groundwater	MOE Table 2[2] Potable Groundwater	MDL	MW08-3 5/11/2008	MW08-4 5/11/2008
BTEX ug/L					
Benzene	1900	5	0.5	<0.5	<0.5
Toluene	5900	54	0.5	<0.5	<0.5
Ethylbenzene	28000	2.4	0.5	<0.5	<0.5
Xylene Total	300	300	0.5	<0.5	<0.5
Petroleum hydrocarbons ug/L					
F1 (C6-C10)	NA	1000	200	<200	<200
F2 (C10-C16)	NA		100	<100	<100
F3 (C16-C34 Hydrocarbons)	NA	1000	100	<100	898
F4 (C34-C50 Hydrocarbons)	NA		100	<100	<100

Notes: All units are ug/L

1= Ontario Ministry of the Environment - Record of Site Condition Soil, Groundwater and Sediment Standards for Use under Part XV.1 of the Environment Protection Act (2004), Table 3, Full Depth Generic Site Condition Standards in non-potable groundwater condition.

2 = Ontario Ministry of the Environment, Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, *(2004),* Table 2 - Full Depth Generic Site Condition Standards in a Potable Ground Water Conditions, Coarse Soil.

MDL= Laboratory method detection limit

NA= Not available

--- = Not analysed or no criterion/guideline established.

< = Analytical results are below laboratory MDL

Table 4: Groundwater Analytical Results - PAH and PCBs

PARAMETER	Groundwater Criteria	MDL	MW08-3	MW08-4
Sampling Number	Provincial			
Sampling Date	MOE Table 3[1] Non-Potable Groundwater		5/11/2008	5/11/2008
Polycyclic Aromatic Hydrocarbons (ug/L)				
Acenaphthene	1700	0.05	<0.05	<0.05
Acenaphthylene	2000	0.05	<0.05	<0.05
Anthracene	12	0.01	0.03	<0.01
Benzo(a)anthracene	5	0.01	0.07	<0.01
Benzo(a)pyrene	1.9	0.01	0.03	<0.01
Benzo (b) fluoranthene	7	0.05	0.06	<0.05
Benzo(g,h,i)perylene	7	0.05	0.05	<0.05
Benzo(k)fluoranthene	0.4	0.05	<0.05	<0.05
Biphenyl	1700	0.05	<0.05	<0.05
Chrysene	3	0.05	0.08	<0.05
Dibenzo(a,h)anthracene	0.25	0.05	<0.05	<0.05
Fluoranthene	130	0.01	0.12	<0.1
Fluorene	290	0.05	<0.05	<0.05
Indeno(1,2,3-cd)pyrene	0.27	0.05	<0.05	<0.05
1-Methylnaphthalene	13000	0.05	<0.05	<0.05
2-Methylnaphthalene	13000	0.05	<0.05	<0.05
Naphthalene	5900	0.05	0.1	<0.05
Phenanthrene	63	0.05	0.11	<0.05
Pyrene	40	0.01	0.11	<0.01
PCBs Total	0.2	0.01	<0.05	<0.05

Notes: All units are ug/L

1 = Ontario Ministry of the Environment, Guideline for Use at Contaminated Sites in Ontario, Table 3 - Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Conditions (2004).

MDL= Laboratory method detection limit

NA= Not available

< = Analytical results are below laboratory MDL

Table 5: Groundwater Analytical Results - Metals

PARAMETER / Sampling No.	Provincial	Paracel MDL	MW08-3	MW08-4
Sampling Date	**MOE Table 3[1]**		5/11/2008	5/11/2008
Metals (ug/L)				
Aluminum (Al)	---	10	<10	<10
Antimony (Sb)	16000	1	<1	<1
Arsenic (As)	480	10	<10	<10
Barium	23000	10	<10	<10
Boron (B)	50000	50	117	<81
Cadmium (Cd)	11	1	*<1*	*<1*
Calcium (Ca)	---	200	84000	88800
Chromium	200	50	<50	<50
Chromium VI (Cr)	2000	10.00	12	<10
Copper (Cu)	23	5	<5	20
Iron (Fe)	---	200	<200	<200
Lead (Pb)	32	*1*	<1	<1
Manganese	---	*50*	<50	<50
Mercury (Hg)	0.12	0.1	<0.1	<0.1
Selenium (Se)	50	5	*<5*	*<5*
Sodium (Na)	---	200	13500	9810
Uranium (U)	---	5	<5	<5
Zinc(Zn)	1100	20	<20	<20

Notes: All units are ug/L

1 = Ontario Ministry of the Environment, Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, (2004), Table 3 - Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Conditions, Coarse Soil.

MDL= Method detection limit

<= Less than the laboratory method detection limit

--- = Not analysed or no criterion/guideline established.

20 = Denotes exceedances of CCME FWAL and Canadian Drinking Water

20 = Denotes exceedances of CCME FWAL

TABLES

TABLE 1: Soil Analytical Results - Petroleum Hydrocarbons
(Industrial/Commercial)

PARAMETRE		Soil Criteria Federal	Paracel MDL	Cell3-08-1	Cell3-08-2	Cell3-08-3	MW08-1	MW08-3	MW08-4
Sampling Date		CWS for PHC[2] in Soil		11/04/2008	11/04/2008	11/04/2008	11/04/2008	11/04/2008	11/04/2008
Parametres									
PHC ug/g	C6-C10 Hydrocarbons (F1)	320	10	<10	<10	<10	<10	<10	<10
	C10-C16 Hydrocarbons (F2)	*260*	10	**1350**	**1340**	**2070**	<10	<10	<10
	C16-C34 Hydrocarbons (F3)	*1700*	10	1270	1320	1230	<10	<10	11
	C34-C50 Hydrocarbons (F4)	3300	10	134	97	20	<10	<10	<10

Notes: All units in ug/g.

1= Ontario Ministry of the Environment - Record of Site Condition Soil, Groundwater and Sediment Standards for Use under Part XV.1 of the Environment Protection Act (2004), Table 3, Full Depth Generic Site Condition Standards in non-potable groundwater condition. Industrial/commercial land use for coarse grained soil

2 = Canadian Council of Ministers of the Environment Canadian-Wide Standards for Petroleum Hydrocarbons in Soil, Table 1, January 2008 : Summary of Tier 1 Levels (mg/kg soil) for PHCs for surface soil. Industrial land use for coarse grained soils.

MDL = Laboratory method detection limit

ND or < = Analytical results are below laboratory MDL

20= Denotes exceedances of both MOE Table 3 and CWS Table 1

Table 2: Soil Analytical Results - Metals
(Industrial/Commercial)

PARAMETRE / Sample Number	Soil Criteria: Canadian Federal Industrial/Commercial	Paracel MDL	Cell3-08-1	Cell3-08-2	Cell3-08-3	MW08-1	MW08-3	MW08-4
Sample Date			11/04/2008	11/04/2008	11/04/2008	11/04/2008	11/04/2008	11/04/2008
Parametres								
Antimony (Sb)	40	1	<1	<1	<1	<1	<1	<1
Arsenic ((As)	12	1	1	2	<1	<1	1	<1
Total Barium (Ba)	2000	10	34	37	37	39	21	28
Total Beryllium (Be)	8	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Available Boron ((B)	---	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total Cadmium (Cd)	22	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total Chromium (Cr)	87	5	24	26	25	39	27	29
Total Chromium VI (Cr)	1.4	0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Total Cobalt (Co)	300	5	5	7	7	11	7	7
Total Copper (Cu)	91	5	14	21	22	26	18	17
Total Iron (Fe)	---	200	27300	23600	21600	41400	28000	28400
Total Lead (Pb)	260	1	26	19	5	7	3	5
Total Mercury (Hg)	24	0.1	0.2	0.2	<0.1	<0.1	<0.1	<0.1
Total Molybdenum (Mo)	40	1	<1	1	<1	1	<1	<1
Total Nickel (Ni)	50	5	8	10	10	15	10	11
Total Selenium (Se)	2.9	1	<1	**5**	<1	<1	<1	<1
Total Silver (Ag)	40	0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Total Thallium (Tl)	1	1	<1	<1	<1	<1	<1	<1
Total Tin (Sn)	300	5	<5	<5	<5	<5	<5	<5
Total Vanadium (V)	130	10	52	54	54	92	58	62
Total Zinc (Zn)	360	20	50	46	35	48	34	46

Notes: All units in ug/g.

1 = Canadian Council of Ministers of the Environment, Table 1 - Soil Quality Guideline, Coarse Grained Soils, 2007 Update. (Industrial/Commercial Land Use)

RDL = Laboratory reportable detection limit

ND or < = Denotes Non-Detectable.

--- = Not analysed or no criterion/guideline established.

< = Denotes Non-Detectable.

20 = Denotes exceedances of the CCME Commercial guidelines

Table 3: Groundwater Analytical Results - Petroleum Hydrocarbons

PARAMETER	MOE Table 3[1] Non-Potable Groundwater	MOE Table 2[2] Potable Groundwater	MDL	MW08-3	MW08-4
Sampling No.					
Sampling Date				11/05/2008	11/05/2008
BTEX ug/L					
Benzene	1900	5	0.5	<0.5	<0.5
Toluene	5900	54	0.5	<0.5	<0.5
Ethylbenzene	28000	2.4	0.5	<0.5	<0.5
Xylene Total	300	300	0.5	<0.5	<0.5
Petroleum hydrocarbons ug/L					
F1 (C6-C10)	NA	1000	200	<200	<200
F2 (C10-C16)	NA		100	<100	<100
F3 (C16-C34 Hydrocarbons)	NA		100	<100	898
F4 (C34-C50 Hydrocarbons)	NA	1000	100	<100	<100

Notes: All units are ug/L

1= Ontario Ministry of the Environment - Record of Site Condition Soil, Groundwater and Sediment Standards for Use under Part XV.1 of the Environment Protection Act (2004), Table 3, Full Depth Generic Site Condition Standards in non-potable groundwater condition.

2 = Ontario Ministry of the Environment, Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act , *(2004),* Table 2 - Full Depth Generic Site Condition Standards in a Potable Ground Water Conditions, Coarse Soil.

MDL= Laboratory method detection limit

NA= Not available

--- = Not analysed or no criterion/guideline established.

< = Analytical results are below laboratory MDL

Table 4: Groundwater Analytical Results - PAH and PCBs

PARAMETER	Groundwater Criteria	MDL	MW08-3	MW08-4
Sampling Number	Provincial			
Sampling Date	MOE Table 3[1] Non-Potable Groundwater		11/05/2008	11/05/2008
Polycyclic Aromatic Hydrocarbons (ug/L)				
Acenaphthene	1700	0.05	<0.05	<0.05
Acenaphthylene	2000	0.05	<0.05	<0.05
Anthracene	12	0.01	0.03	<0.01
Benzo(a)anthracene	5	0.01	0.07	<0.01
Benzo(a)pyrene	1.9	0.01	0.03	<0.01
Benzo (b) fluoranthene	7	0.05	0.06	<0.05
Benzo(g,h,i)perylene	7	0.05	0.05	<0.05
Benzo(k)fluoranthene	0.4	0.05	<0.05	<0.05
Biphenyl	1700	0.05	<0.05	<0.05
Chrysene	3	0.05	0.08	<0.05
Dibenzo(a,h)anthracene	0.25	0.05	<0.05	<0.05
Fluoranthene	130	0.01	0.12	<0.1
Fluorene	290	0.05	<0.05	<0.05
Indeno(1,2,3-cd)pyrene	0.27	0.05	<0.05	<0.05
1-Methylnaphthalene	13000	0.05	<0.05	<0.05
2-Methylnaphthalene	13000	0.05	<0.05	<0.05
Naphthalene	5900	0.05	0.1	<0.05
Phenanthrene	63	0.05	0.11	<0.05
Pyrene	40	0.01	0.11	<0.01
PCBs Total	0.2	0.01	<0.05	<0.05

Notes: All units are ug/L

1 = Ontario Ministry of the Environment, Guideline for Use at Contaminated Sites in Ontario , Table 3 - Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Conditions (2004).

MDL= Laboratory method detection limit

NA= Not available

< = Analytical results are below laboratory MDL

Table 5: Groundwater Analytical Results - Metals

PARAMETER / Sampling No. / Sampling Date	Provincial MOE Table 3[1]	Paracel MDL	MW08-3 11/05/2008	MW08-4 11/05/2008
Metals (ug/L)				
Aluminum (Al)	---	10	<10	<10
Antimony (Sb)	16000	1	<1	<1
Arsenic (As)	480	10	<10	<10
Barium	23000	10	<10	<10
Boron (B)	50000	50	117	<81
Cadmium (Cd)	11	1	*<1*	*<1*
Calcium (Ca)	---	200	84000	88800
Chromium	200	50	<50	<50
Chromium VI (Cr)	2000	10.00	12	<10
Copper (Cu)	23	5	<5	20
Iron (Fe)	---	200	<200	<200
Lead (Pb)	32	*1*	<1	<1
Manganese	---	*50*	<50	<50
Mercury (Hg)	0.12	0.1	<0.1	<0.1
Selenium (Se)	50	5	*<5*	*<5*
Sodium (Na)	---	200	13500	9810
Uranium (U)	---	5	<5	<5
Zinc(Zn)	1100	20	<20	<20

Notes: All units are ug/L

1 = Ontario Ministry of the Environment, Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, (2004), Table 3 - Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Conditions, Coarse Soil.

MDL= Method detection limit

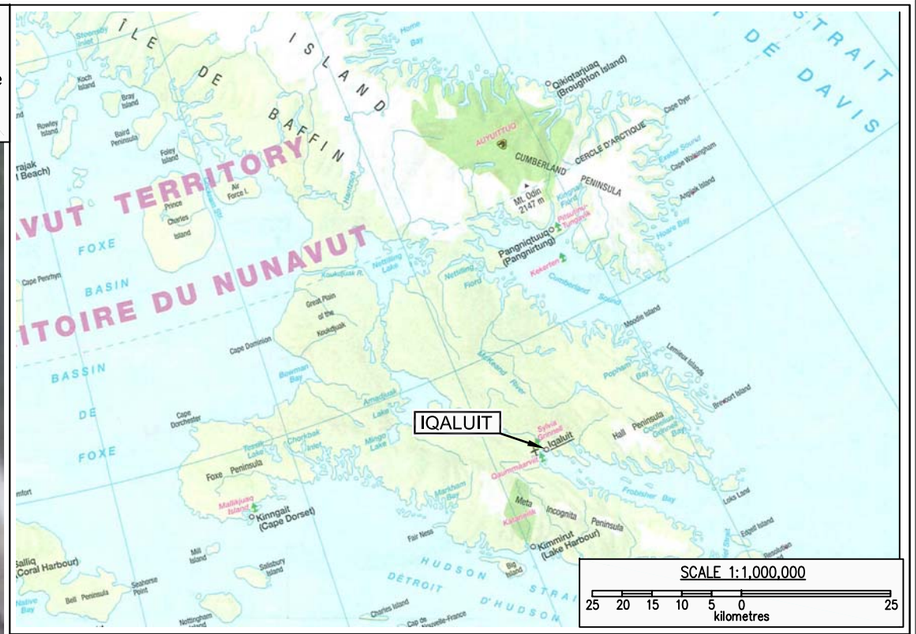
<= Less than the laboratory method detection limit

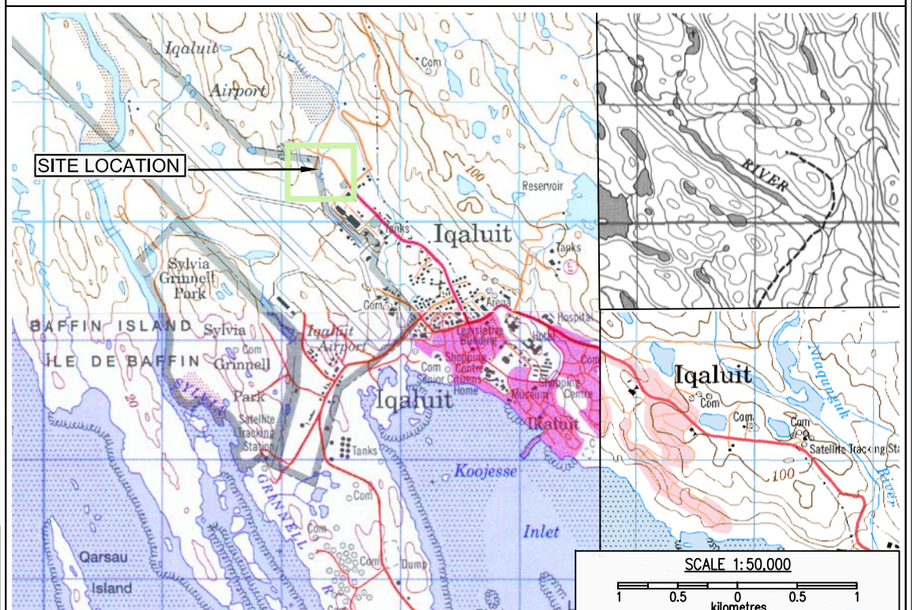
--- = Not analysed or no criterion/guideline established.

20 = Denotes exceedances of CCME FWAL and Canadian Drinking Water

20 = Denotes exceedances of CCME FWAL

FIGURES





References:

(above) Google Earth satellite image, 2008.

(upper right) "*Canada Road Map*", MapArt Publishing, 2003.

(lower right, composite)
Natural Resources Canada NTS Sheet: 25-N/9 Burton Bay, Nunavut, Edition 3, NAD 83, Series A 713, 2001.
Natural Resources Canada NTS Sheet: 25-N/10 Hill Island, Nunavut, Edition 2, NAD 83, Series A 713, 2001.
Natural Resources Canada NTS Sheet: 25-N/15 Iqaluit, Nunavut, Edition 2, NAD 83, Series A 713, 2001.
Natural Resources Canada NTS Sheet: 25-N/16 [No Title] Nunavut, Edition 2, NAD 83, Series A 701, 2001.
(Note: ground elevations shown in metres above mean sea level).

Title:

LANDFARM LOCATION

Project:

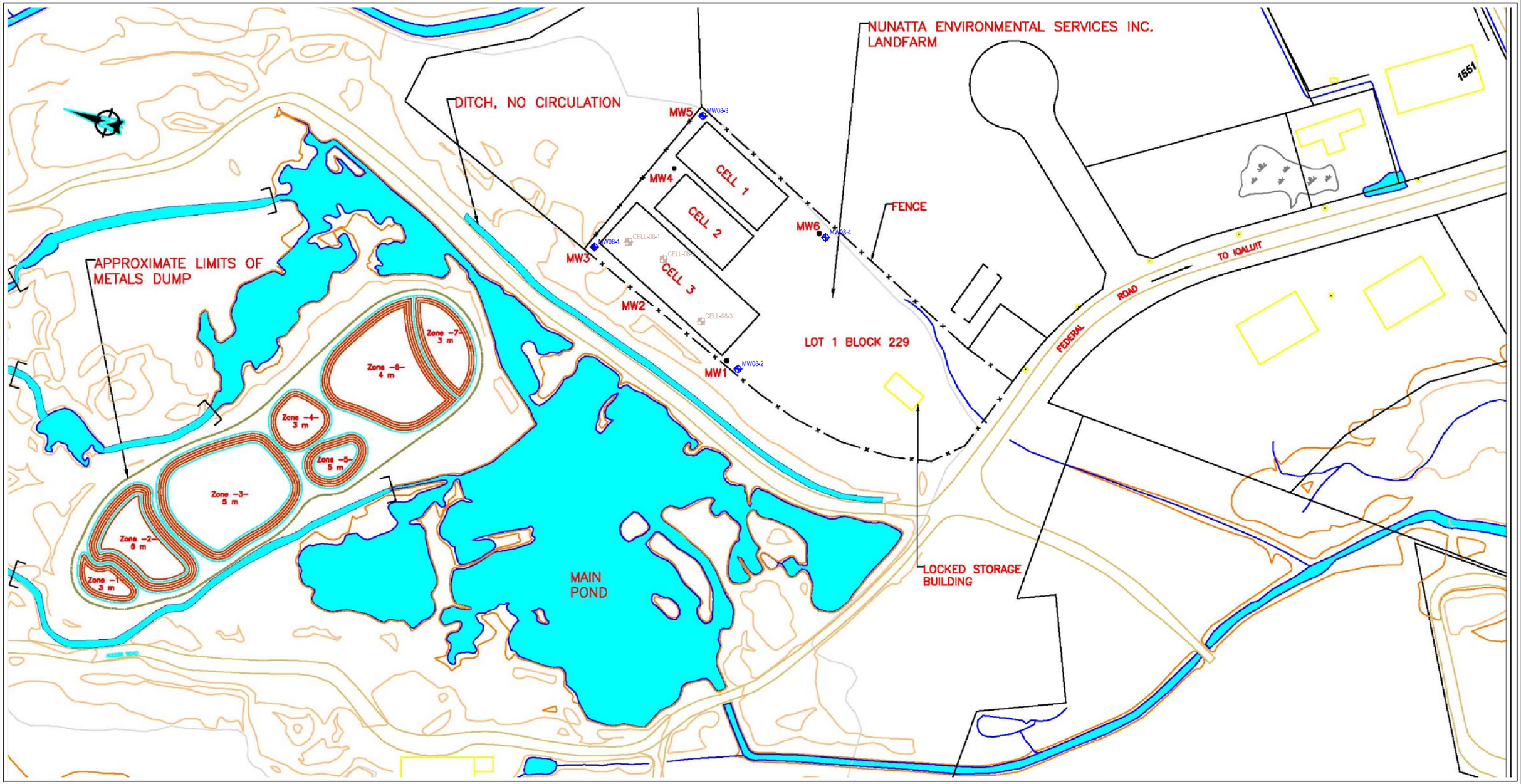
NUNATTA ENVIRONMENTAL INC.
LANDFARM

Date:

MARCH 2009

SCALE AS SHOWN

FIGURE 1



LEGEND:

MW3 PREVIOUSLY INSTALLED MONIROTING WELLS (DECOMISSIONED)

MONITORING WELLS INSTALLED IN 2008

SOIL SAMPLE LOCATION IN 2008

NOTES:

- INFORMATION FOR THIS SITE PLAN WAS OBTAINED FROM A 2000 AERIAL PHOTOGRAPH. ACTUAL EXTENTS OF MAIN POND, ACCESS ROADS AND LEVELS WITHIN QUARRYING AREA HAVE CHANGED.
- CREEKS AND DRAINAGES HAVE BEEN ADDED TO DRAWING BASED ON VISUAL OBSERVATIONS.

Title:

LANDFARM LAYOUT

Project:

NUNATTA ENVIRONMENTAL INC.
LANDFARM

Date:

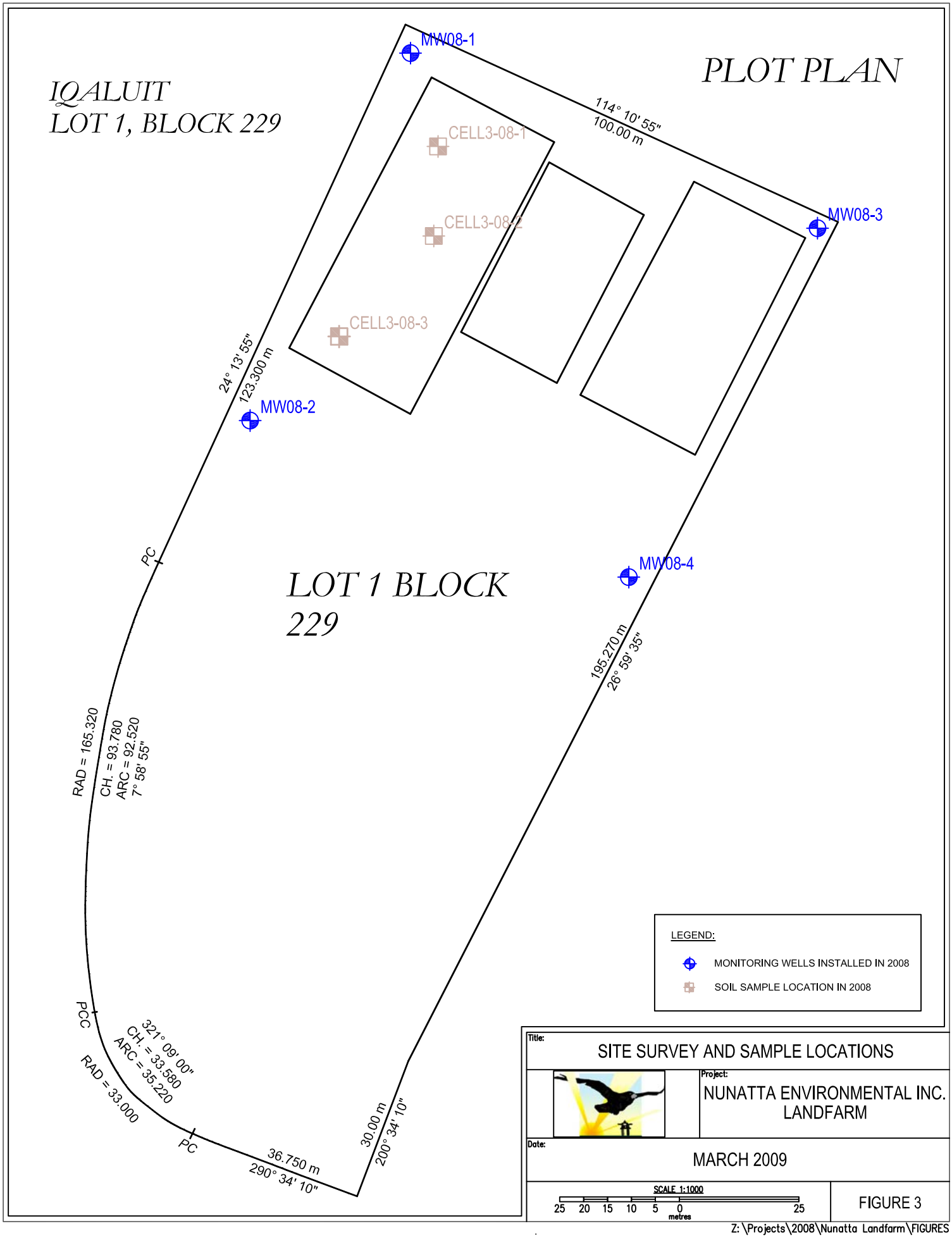
MARCH 2009

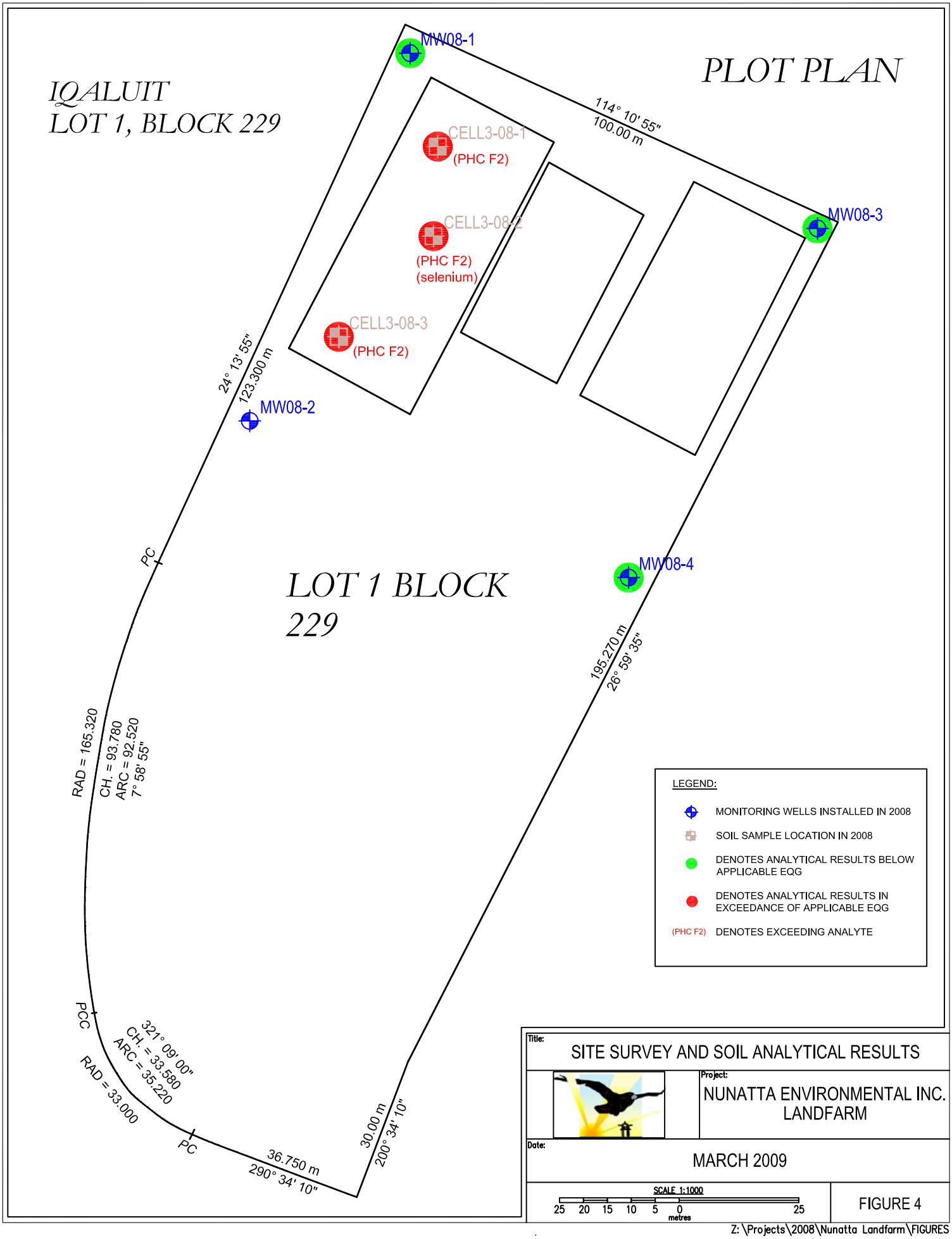
SCALE 1: 2000

50 40 30 20 10 0 metres 50 100

FIGURE 2

Z:\Projects\2008\Nunatta Landfarm\FIGURES


IQALUIT
LOT 1, BLOCK 229
PLOT PLAN
MW08-1
114° 10' 55"
100.00 m
CELL3-08-1
CELL3-08-2
CELL3-08-3
MW08-3
24° 13' 55"
123.300 m
MW08-2
PC
LOT 1 BLOCK 229
MW08-4
195.270 m
26° 59' 35"
RAD = 165.320
CH. = 93.780
ARC = 92.520
7° 58' 55"
PCC
321° 09' 00"
CH. = 33.580
ARC = 35.220
RAD = 33.000
PC
36.750 m
290° 34' 10"
30.00 m
200° 34' 10"
LEGEND:
MONITORING WELLS INSTALLED IN 2008
SOIL SAMPLE LOCATION IN 2008
Title:
SITE SURVEY AND SAMPLE LOCATIONS
Project:
NUNATTA ENVIRONMENTAL INC.
LANDFARM
Date:
MARCH 2009
SCALE 1:1000
25 20 15 10 5 0 25
metres
FIGURE 3
Z:\Projects\2008\Nunatta Landfarm\FIGURES


IQALUIT
LOT 1, BLOCK 229
PLOT PLAN
MW08-1
114° 10' 55"
100.00 m
CELL3-08-1
(PHC F2)
CELL3-08-2
(PHC F2)
(selenium)
CELL3-08-3
(PHC F2)
MW08-3
24° 13' 55"
123.300 m
MW08-2
PC
LOT 1 BLOCK
229
MW08-4
195.270 m
26° 59' 35"
RAD = 165.320
CH. = 93.780
ARC = 92.520
7° 58' 55"
PCC
321° 09' 00"
CH. = 33.580
ARC = 35.220
RAD = 33.000
PC
36.750 m
290° 34' 10"
30.00 m
200° 34' 10"
LEGEND:
MONITORING WELLS INSTALLED IN 2008
SOIL SAMPLE LOCATION IN 2008
DENOTES ANALYTICAL RESULTS BELOW APPLICABLE EQG
DENOTES ANALYTICAL RESULTS IN EXCEEDANCE OF APPLICABLE EQG
(PHC F2) DENOTES EXCEEDING ANALYTE
Title:
SITE SURVEY AND SOIL ANALYTICAL RESULTS
Project:
NUNATTA ENVIRONMENTAL INC.
LANDFARM
Date:
MARCH 2009
SCALE 1:1000
25 20 15 10 5 0 25
metres
FIGURE 4
Z:\Projects\2008\Nunatta Landfarm\FIGURES

APPENDIX A
TEST PIT/MONITORING WELL LOGS

Franz Environmental Inc.
CONSULTING ♦ ENGINEERS ♦ TECHNOLOGIES ♦

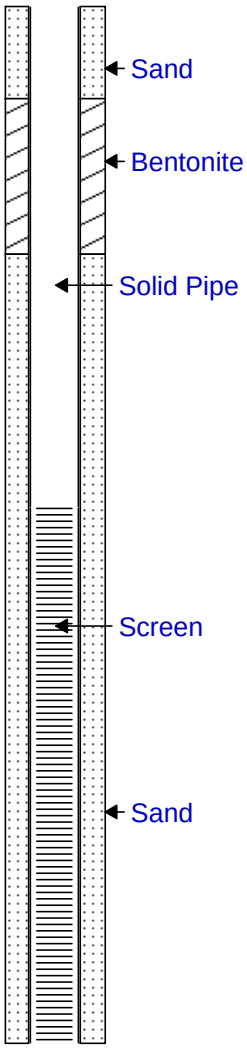
Monitoring Well Log: MW08-01

Project: Annual Report ***Project No: 1517-0801***

Client: Nunatta Environmental Inc ***Logged By: SL***

Location: Iqaluit, Nunavut ***Checked By: SL***

SUBSURFACE PROFILE			SAMPLE		
Depth (m)	Symbol	Description	Sample Type	Vapours (PPM)	Well Description
ft / m		Ground Surface			
0 / 0		Gravel - Topsoil			
		Silty Sand Till, boulders and cobbles, grey to brown, dry, no odours, no staining.	GB-1	20	
1 / 1		Frost Line			
			GB-2	NA	
2 / 2		Brown to grey, loose, angular cobbles.			
		Wet to moist			
3 / 3					
		End of Test Pit - Permafrost			



Excavation Company: TPNG

Excavation Method: Backhoe

Installation Date:

Depth of Test Pit:

Location: Nunatta Environmental Inc Landfarm

Franz Environmental Inc.
CONSULTING ♦ ENGINEERS ♦ TECHNOLOGIES ♦

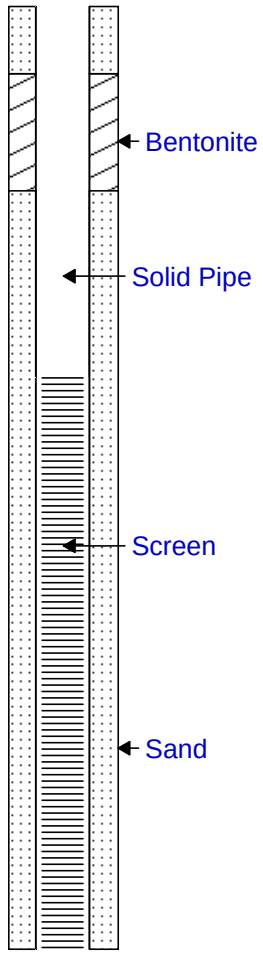
Monitoring Well Log: MW08-02

Project: Annual Report ***Project No: 1517-0801***

Client: Nunatta Environmental Inc ***Logged By: SL***

Location: Iqaluit, Nunavut ***Checked By: SL***

SUBSURFACE PROFILE			SAMPLE		
Depth (m)	Symbol	Description	Sample Type	Vapours (PPM)	Well Description
ft / m		Ground Surface			
0 / 0		Gravel - Topsoil			
1		Silty sand till, boulders and cobbles, grey to brown, dry, no odours or staining	GB-1	25	
2					
3 / 1					
4		Frost Line			
5		Brown to grey, loose	GB-2	35	
6 / 2					
7					
8		Moist to wet			
9					
10 / 3		End of Test Pit - Permafrost			
11					



Excavation Company: TPNG

Excavation Method: Backhoe

Installation Date: November 3, 2008

Depth of Test Pit: 3.0

Location: Nunatta Environmental Inc Landfarm

Franz Environmental Inc.
CONSULTING ♦ ENGINEERS ♦ TECHNOLOGIES ♦

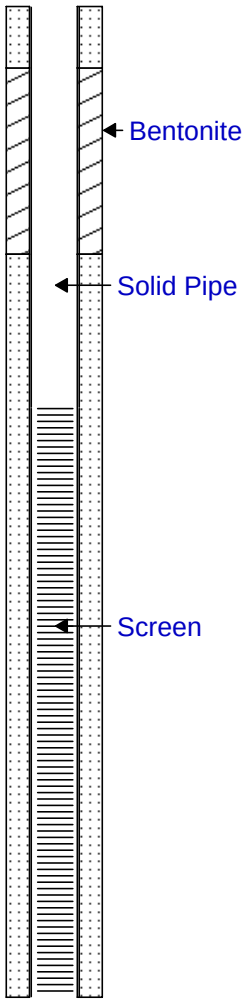
Monitoring Well Log: MW08-03

Project: Annual Report ***Project No: 1517-0801***

Client: Nunatta Environmental Inc ***Logged By: SL***

Location: Iqaluit, Nunavut ***Checked By: SL***

SUBSURFACE PROFILE			SAMPLE		
Depth (m)	Symbol	Description	Sample Type	Vapours (PPM)	Well Description
ft / m		Ground Surface			
0 / 0		Gravel -Topsoil			
1		Silty sand till, boulders and cobbles, grey to brown, no odours, no staining	GB-1	35	
2					
3 / 1					
4					
5					
6					
7 / 2			GB-2	50	
8		Wet Trace odours			
9					
10 / 3					
11		End of Test Pit - Permafrost			
12					



Excavation Company: TPNG

Excavation Method: Backhoe

Installation Date: November 4, 2008

Depth of Test Pit: 3.25

Location: Nunatta Environmental Inc Landfarm

Franz Environmental Inc.
CONSULTING ♦ ENGINEERS ♦ TECHNOLOGIES ♦

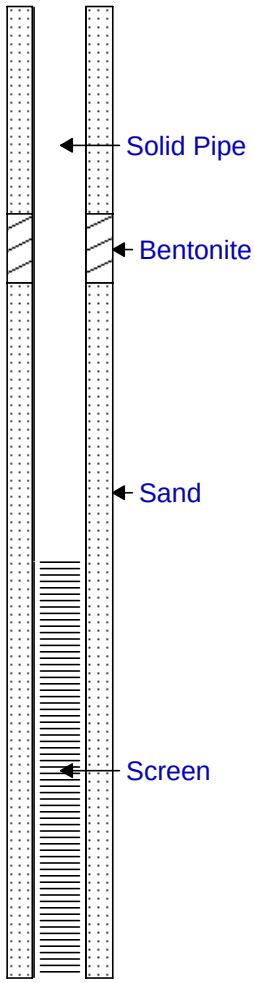
Monitoring Well Log: MW08-04

Project: Annual Report ***Project No: 1517-0801***

Client: Nunatta Environmental Inc ***Logged By: SL***

Location: Iqaluit, Nunavut ***Checked By: SL***

SUBSURFACE PROFILE			SAMPLE		
Depth (m)	Symbol	Description	Sample Type	Vapours (PPM)	Well Description
ft / m		Ground Surface			
0 / 0		Grravel - Topsoil			
		Silty sand till, some boulders and cobbles, grey to brown, no odours, no staining.		30	
1 / 1		Frost line			
2 / 2		Wet Significant water		45	
3 / 3		End of Test Pit - Permafrost			
10					



Excavation Company: TPNG

Excavation Method: Backhoe

Installation Date: November 3, 2008

Depth of Test Pit: 2.8

Location: Nunatta Environmental Inc Landfarm

APPENDIX B
PHOTO LOGS

FRANZ ENVIRONMENTAL INC.
CONSULTING ♦ ENGINEERING ♦ TECHNOLOGIES

PHOTOGRAPHIC LOG

Nunatta Environmental Services Land Treatment Facility	
Photo ID: 1	
Date: November 4, 2008	
Direction: N	
Description: Showing soil type	

Nunatta Environmental Services Land Treatment Facility	
Photo ID: 2	
Date: November 4, 2008	
Direction: N	
Description: Showing landfarm and fence	

FRANZ ENVIRONMENTAL INC.
CONSULTING ♦ ENGINEERING ♦ TECHNOLOGIES

PHOTOGRAPHIC LOG

Nunatta Environmental Services Land Treatment Facility	
Photo ID: 3	
Date: November 4, 2008	
Direction: NA	
Description: Showing stratigraphy and groundwater	

Nunatta Environmental Services Land Treatment Facility	
Photo ID: 4	
Date: November 4, 2008	
Direction: NA	
Description: Showing stratigraphy	

FRANZ ENVIRONMENTAL INC.
CONSULTING ♦ ENGINEERING ♦ TECHNOLOGIES

PHOTOGRAPHIC LOG

Nunatta Environmental Services Land Treatment Facility	
Photo ID: 5	
Date: November 4, 2008	
Direction: NA	
Description: Showing groundwater	

Nunatta Environmental Services Land Treatment Facility	
Photo ID: 6	
Date: November 4, 2008	
Direction: NA	
Description: Showing stratigraphy and groundwater	

FRANZ ENVIRONMENTAL INC.
CONSULTING ♦ ENGINEERING ♦ TECHNOLOGIES

PHOTOGRAPHIC LOG

Nunatta Environmental Services **Land Treatment Facility**	
Photo ID	
Date: November 4, 2008	
Direction	
Description	

APPENDIX C
LABORATORY REPORTS

PARACEL LABORATORIES LTD.

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Certificate of Analysis

Nunatta Environmental Services Inc.

P.O. Box 267
Iqaluit, NUNAVUT X0A 0H0
Attn: Seemee Peter

Phone: (867) 979-1488
Fax: (867) 979-1478

Client PO:
Project: 08-052
Custody: 47623

Report Date: 13-Nov-2008
Order Date: 7-Nov-2008
Revised Report **Order #: 0845175**

This Certificate of Analysis contains analytical data applicable to the following samples submitted:

Paracel ID	Client ID
0845175-01	Cell3-08-1
0845175-02	Cell3-08-2
0845175-03	Cell3-08-3
0845175-04	MW08-1
0845175-05	MW08-3
0845175-06	MW08-4

Approved By: Mark Foto

Mark Foto, M.Sc. For Dale Robertson, BSc
Laboratory Director

PARACEL LABORATORIES LTD.

Order #: 0845175

Certificate of Analysis

Report Date: 13-Nov-2008

Order Date:7-Nov-2008

Client: **Nunatta Environmental Services Inc.**

Client PO: Project Description: 08-052

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Boron, available	MOE (HWE), EPA 200.8 - ICP-MS	10-Nov-08	10-Nov-08
CCME PHC F1	CWS Tier 1 - P&T GC-FID	10-Nov-08	13-Nov-08
CCME PHC F2 - F4	CWS Tier 1 - GC-FID, extraction	10-Nov-08	13-Nov-08
Chromium, hexavalent	MOE E3056 - Extraction, colourimetric	12-Nov-08	12-Nov-08
Mercury	EPA 7471A - CVAA, digestion	11-Nov-08	11-Nov-08
Metals	EPA 6020 - Digestion - ICP-MS	10-Nov-08	11-Nov-08
Solids, %	Gravimetric, calculation	7-Nov-08	10-Nov-08

PARACEL LABORATORIES LTD.

Order #: 0845175

Certificate of Analysis

Report Date: 13-Nov-2008

Order Date:7-Nov-2008

Client: **Nunatta Environmental Services Inc.**

Client PO:

Project Description: 08-052

	Client ID:	Cell3-08-1	Cell3-08-2	Cell3-08-3	MW08-1
	Sample Date:	04-Nov-08	04-Nov-08	04-Nov-08	03-Nov-08
	Sample ID:	0845175-01	0845175-02	0845175-03	0845175-04
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	92.2	90.4	90.7	97.2
Metals					
Antimony	1 ug/g dry	<1	<1	<1	<1
Arsenic	1 ug/g dry	1	2	<1	<1
Barium	10 ug/g dry	34	37	37	39
Beryllium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Boron, available	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Chromium	5 ug/g dry	24	26	25	39
Chromium (VI)	0.4 ug/g dry	<0.4	<0.4	<0.4	<0.4
Cobalt	5 ug/g dry	5	7	7	11
Copper	5 ug/g dry	14	21	22	26
Iron	200 ug/g dry	27300	23600	21600	41400
Lead	1 ug/g dry	26	19	5	7
Mercury	0.1 ug/g dry	0.2	0.2	<0.1	<0.1
Molybdenum	1 ug/g dry	<1	1	<1	1
Nickel	5 ug/g dry	8	10	10	15
Selenium	1 ug/g dry	<1	5	<1	<1
Silver	0.3 ug/g dry	<0.3	<0.3	<0.3	<0.3
Thallium	1 ug/g dry	<1	<1	<1	<1
Tin	5 ug/g dry	<5	<5	<5	<5
Vanadium	10 ug/g dry	52	54	54	92
Zinc	20 ug/g dry	50	46	35	48
Hydrocarbons					
F1 PHCs (C6-C10)	10 ug/g dry	<10	<10	<10	<10
F2 PHCs (C10-C16)	10 ug/g dry	1350	1340	2070	<10
F3 PHCs (C16-C34)	10 ug/g dry	1270	1320	1230	<10
F4 PHCs (C34-C50)	10 ug/g dry	134	97	20	<10

PARACEL LABORATORIES LTD.

Order #: 0845175

Certificate of Analysis

Report Date: 13-Nov-2008

Order Date:7-Nov-2008

Client: **Nunatta Environmental Services Inc.**

Client PO: Project Description: 08-052

	Client ID:	MW08-3	MW08-4	-	-
	Sample Date:	03-Nov-08	03-Nov-08	-	-
	Sample ID:	0845175-05	0845175-06	-	-
	MDL/Units	Soil	Soil	-	-
Physical Characteristics					
% Solids	0.1 % by Wt.	93.2	93.4	-	-
Metals					
Antimony	1 ug/g dry	<1	<1	-	-
Arsenic	1 ug/g dry	1	<1	-	-
Barium	10 ug/g dry	21	28	-	-
Beryllium	0.5 ug/g dry	<0.5	<0.5	-	-
Boron, available	0.5 ug/g dry	<0.5	<0.5	-	-
Cadmium	0.5 ug/g dry	<0.5	<0.5	-	-
Chromium	5 ug/g dry	27	29	-	-
Chromium (VI)	0.4 ug/g dry	<0.4	<0.4	-	-
Cobalt	5 ug/g dry	7	7	-	-
Copper	5 ug/g dry	18	17	-	-
Iron	200 ug/g dry	28000	28400	-	-
Lead	1 ug/g dry	3	5	-	-
Mercury	0.1 ug/g dry	<0.1	<0.1	-	-
Molybdenum	1 ug/g dry	<1	<1	-	-
Nickel	5 ug/g dry	10	11	-	-
Selenium	1 ug/g dry	<1	<1	-	-
Silver	0.3 ug/g dry	<0.3	<0.3	-	-
Thallium	1 ug/g dry	<1	<1	-	-
Tin	5 ug/g dry	<5	<5	-	-
Vanadium	10 ug/g dry	58	62	-	-
Zinc	20 ug/g dry	34	46	-	-
Hydrocarbons					
F1 PHCs (C6-C10)	10 ug/g dry	<10	<10	-	-
F2 PHCs (C10-C16)	10 ug/g dry	<10	<10	-	-
F3 PHCs (C16-C34)	10 ug/g dry	<10	11	-	-
F4 PHCs (C34-C50)	10 ug/g dry	<10	<10	-	-

Certificate of Analysis

Report Date: 13-Nov-2008

Order Date:7-Nov-2008

Client: **Nunatta Environmental Services Inc.**

Client PO: Project Description: 08-052

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	10	ug/g						
F2 PHCs (C10-C16)	ND	10	ug/g						
F3 PHCs (C16-C34)	ND	10	ug/g						
F4 PHCs (C34-C50)	ND	10	ug/g						
Metals									
Antimony	ND	1	ug/g						
Arsenic	ND	1	ug/g						
Barium	ND	10	ug/g						
Beryllium	ND	0.5	ug/g						
Boron, available	ND	0.5	ug/g						
Cadmium	ND	0.5	ug/g						
Chromium (VI)	ND	0.4	ug/g						
Chromium	ND	5	ug/g						
Cobalt	ND	5	ug/g						
Copper	ND	5	ug/g						
Iron	ND	200	ug/g						
Lead	ND	1	ug/g						
Mercury	ND	0.1	ug/g						
Molybdenum	ND	1	ug/g						
Nickel	ND	5	ug/g						
Selenium	ND	1	ug/g						
Silver	ND	0.3	ug/g						
Thallium	ND	1	ug/g						
Tin	ND	5	ug/g						
Vanadium	ND	10	ug/g						
Zinc	ND	20	ug/g						

Certificate of Analysis

Report Date: 13-Nov-2008

Order Date:7-Nov-2008

Client: **Nunatta Environmental Services Inc.**

Client PO: Project Description: 08-052

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes	
Hydrocarbons										
F1 PHCs (C6-C10)	ND	10	ug/g dry	ND				32		
F2 PHCs (C10-C16)	ND	10	ug/g dry	ND				50		
F3 PHCs (C16-C34)	ND	10	ug/g dry	ND				50		
F4 PHCs (C34-C50)	ND	10	ug/g dry	ND				50		
Metals										
Antimony	2.0	1	ug/g dry	ND				26	QR-01	
Arsenic	8.2	1	ug/g dry	8.9			9.1	35		
Barium	82.1	10	ug/g dry	84.5			2.9	34		
Beryllium	1.25	0.5	ug/g dry	1.25			0.0	25		
Boron, available	ND	0.5	ug/g dry	ND				35		
Cadmium	0.68	0.5	ug/g dry	ND				33	QR-01	
Chromium (VI)	ND	0.4	ug/g dry	ND				35		
Chromium	25.5	5	ug/g dry	26.8			5.0	32		
Cobalt	39.7	5	ug/g dry	43.1			8.3	32		
Copper	56.8	5	ug/g dry	61.1			7.2	32		
Iron	31500	200	ug/g dry	34600			9.2	32		
Lead	23.7	1	ug/g dry	25.3			6.8	44		
Mercury	ND	0.1	ug/g dry	0.100			200.0	35		QR-01
Molybdenum	7.1	1	ug/g dry	6.8			4.5	29		
Nickel	113	5	ug/g dry	122			7.9	29		
Selenium	ND	1	ug/g dry	ND				28		
Silver	0.32	0.3	ug/g dry	ND				28	QR-01	
Thallium	1.7	1	ug/g dry	1.7			2.5	27		
Tin	ND	5	ug/g dry	ND				27		
Vanadium	45.9	10	ug/g dry	47.7			3.9	27		
Zinc	73.3	20	ug/g dry	85.5			15.4	27		
Physical Characteristics										
% Solids	92.5	0.1	% by Wt.	92.4			0.1	25		

Certificate of Analysis

Report Date: 13-Nov-2008

Order Date:7-Nov-2008

Client: **Nunatta Environmental Services Inc.**

Client PO: Project Description: 08-052

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	101	10	ug/g	ND	101	80-120			
F2 PHCs (C10-C16)	71	10	ug/g	ND	89.0	61-129			
F3 PHCs (C16-C34)	254	10	ug/g	ND	127	61-129			
F4 PHCs (C34-C50)	152	10	ug/g	ND	127	61-129			
Metals									
Antimony	61.7		ug/L	ND	123	80-120			QS-02
Arsenic	51.0		ug/L	ND	102	80-120			
Barium	46.3		ug/L	ND	92.5	80-120			
Beryllium	62.5		ug/L	ND	125	80-120			QS-02
Boron, available	4.24	0.5	ug/g	ND	84.8	70-122			
Cadmium	60.2		ug/L	ND	120	80-120			
Chromium (VI)	5.0	0.4	ug/g	ND	100	89-123			
Chromium	55.9		ug/L	ND	112	80-120			
Cobalt	54.0		ug/L	ND	108	80-120			
Copper	52.1		ug/L	ND	104	80-120			
Iron	1030		ug/L	ND	103	80-120			
Lead	47.4		ug/L	ND	94.8	80-120			
Mercury	1.74	0.1	ug/g	0.100	109	72-128			
Molybdenum	52.7		ug/L	ND	105	80-120			
Nickel	54.1		ug/L	ND	108	80-120			
Selenium	49.9		ug/L	ND	99.9	80-120			
Silver	59.4		ug/L	ND	119	80-120			
Thallium	50.2		ug/L	ND	100	80-120			
Tin	64.6		ug/L	ND	129	80-120			QS-02
Vanadium	56.2		ug/L	ND	112	80-120			
Zinc	48.4		ug/L	ND	96.7	80-120			

Certificate of Analysis

Report Date: 13-Nov-2008

Order Date:7-Nov-2008

Client: **Nunatta Environmental Services Inc.**

Client PO: Project Description: 08-052

Sample and QC Qualifiers Notes

1- QR-01 : Duplicate RPD is high, however, the sample result is less than 10x the MDL.

2- QS-02 : Spike level outside of control limits. Analysis batch accepted based on other QC included in the batch.

Sample Data Revisions

None

Work Order Revisions/Comments:

None

Other Report Notes:

n/a: not applicable

MDL: Method Detection Limit

Source Result: Data used as source for matrix and duplicate samples

%REC: Percent recovery.

RPD: Relative percent difference.

Soil results are reported on a dry weight basis when the units are denoted with 'dry'.

Where %Solids is reported, moisture loss includes the loss of volatile hydrocarbons.

CCME PHC additional information:

- The method for the analysis of PHCs complies with the Reference Method for the CWS PHC and is validated for use in the laboratory. All prescribed quality criteria identified in the method has been met.

- F1 range corrected for BTEX.

- F2 to F3 ranges corrected for appropriate PAHs where available.

- The gravimetric heavy hydrocarbons (F4G) are not to be added to C6 to C50 hydrocarbons.

- In the case where F4 and F4G are both reported, the greater of the two results is to be used for comparison to CWS PHC criteria.

PARACEL LABORATORIES LTD.

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Chain of Custody Record

№ 47623

Pg. ___ of ___

Contact: Seemee Peters
Company: Nunatta Environmental Inc.
Address: P.O. Box 267 Iqaluit, NU X0A 0H0
Bldg 1575 Federal RD
Tel: 867 979 1488 Fax: 867 979 1488

Project Ref: 08-052
PO #:
Quote #: ☐ Not Quoted
Email:
Preservative to be added by Paracel? ☐ Yes ☐ No

Reporting Options
Electronic: [✓] signed PDF [✓] spreadsheet
Other:
Turn Around Time: [ ] 1-day [ ] 2-day [Regular]
Regulatory/Guideline Requirements
CCME CWSS

Matrix Types: S–Soil/Sed GW–Ground Water SW–Surface Water SS–Storm/Sanitary Sewer A–Air O–Other RDW–Regulated Drinking Water

	Sample Information				Analysis Required														
	Paracel Order # 0845175 / Sample Identification	Matrix	# Bottles	Date Sampled dd/mm/yy	PHC F1-F4	CCME Metals	Hg												
1	Cell 3-08-1	S	4	Nov 4	✓	✓	✓												
2	Cell 3-08-2	S	4	Nov 4	✓	✓	✓												
3	Cell 3-08-3	S	4	Nov 4	✓	✓	✓												
4	MW 08-1	S	3	Nov 3	✓	✓	✓												
5	MW 08-3	S	3	Nov 3	✓	✓	✓												
6	MW 08-4	S	2	Nov 4	✓	✓	✓												
7																			
8																			
9																			
10																			

Comments:

Relinquished by: SS
Date: Nov 4/08 Time: 3:10 pm

Received by: NCorry
Date: Nov 7 Time: 2:00

Verified by: NCorry
Date: Nov 7 Time: 2:34

PARACEL LABORATORIES LTD.

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Certificate of Analysis

Nunatta Environmental Services Inc.

P.O. Box 267
Iqaluit, NUNAVUT X0A 0H0
Attn: Seemee Peter

Phone: (867) 979-1488
Fax: (867) 979-1478

Client PO:
Project: 08-052
Custody: 47624

Report Date: 12-Nov-2008
Order Date: 7-Nov-2008
Order #: 0845177

This Certificate of Analysis contains analytical data applicable to the following samples submitted:

Paracel ID	Client ID
0845177-01	MW08-3
0845177-02	MW08-4

Approved By: Mark Foto

Mark Foto, M.Sc. For Dale Robertson, BSc
Laboratory Director

Certificate of Analysis

Report Date: 12-Nov-2008

Order Date:7-Nov-2008

Client: **Nunatta Environmental Services Inc.**

Client PO: Project Description: 08-052

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
BTEX	EPA 624 - P&T GC-MS	7-Nov-08	9-Nov-08
CCME PHC F1	CWS Tier 1 - P&T GC-FID	7-Nov-08	9-Nov-08
CCME PHC F2 - F4	CWS Tier 1 - GC-FID, extraction	10-Nov-08	10-Nov-08
Chromium, hexavalent	MOE E3056 - colourimetric	10-Nov-08	10-Nov-08
Mercury	EPA 245.1 - Cold Vapour AA	11-Nov-08	11-Nov-08
Metals	EPA 200.8 - ICP-MS	10-Nov-08	11-Nov-08
PAHs by GC-MS, standard scan	EPA 625 - GC-MS, extraction	11-Nov-08	11-Nov-08
PCBs, total	EPA 608 - GC-ECD	10-Nov-08	10-Nov-08

PARACEL LABORATORIES LTD.

Order #: 0845177

Certificate of Analysis

Report Date: 12-Nov-2008

Order Date:7-Nov-2008

Client: **Nunatta Environmental Services Inc.**

Client PO: Project Description: 08-052

	Client ID:	MW08-3	MW08-4	-	-
	Sample Date:	05-Nov-08	05-Nov-08	-	-
	Sample ID:	0845177-01	0845177-02	-	-
	MDL/Units	Water	Water	-	-
Metals					
Aluminum	10 ug/L	<10	<10	-	-
Antimony	1 ug/L	<1	<1	-	-
Arsenic	10 ug/L	<10	<10	-	-
Barium	10 ug/L	<10	<10	-	-
Boron	50 ug/L	117	81	-	-
Cadmium	1 ug/L	<1	<1	-	-
Calcium	200 ug/L	84000	88800	-	-
Chromium	50 ug/L	<50	<50	-	-
Chromium (VI)	10 ug/L	12 [1]	<10 [1]	-	-
Copper	5 ug/L	<5	20	-	-
Iron	200 ug/L	<200	<200	-	-
Lead	1 ug/L	<1	<1	-	-
Manganese	50 ug/L	<50	<50	-	-
Mercury	0.1 ug/L	<0.1	<0.1	-	-
Selenium	5 ug/L	<5	<5	-	-
Sodium	200 ug/L	13500	9810	-	-
Uranium	5 ug/L	<5	<5	-	-
Zinc	20 ug/L	<20	<20	-	-
Volatiles					
Benzene	0.5 ug/L	<0.5	<0.5	-	-
Ethylbenzene	0.5 ug/L	<0.5	<0.5	-	-
Toluene	0.5 ug/L	<0.5	<0.5	-	-
m,p-Xylenes	0.5 ug/L	<0.5	<0.5	-	-
o-Xylene	0.5 ug/L	<0.5	<0.5	-	-
Toluene-d8	Surrogate	95.0%	94.2%	-	-
Hydrocarbons					
F1 PHCs (C6-C10)	200 ug/L	<200	<200	-	-
F2 PHCs (C10-C16)	100 ug/L	<100	<100	-	-
F3 PHCs (C16-C34)	100 ug/L	<100	898	-	-
F4 PHCs (C34-C50)	100 ug/L	<100	<100	-	-
Semi-Volatiles					

PARACEL LABORATORIES LTD.

Order #: 0845177

Certificate of Analysis

Report Date: 12-Nov-2008

Order Date:7-Nov-2008

Client: **Nunatta Environmental Services Inc.**

Client PO:

Project Description: 08-052

	Client ID:	MW08-3	MW08-4	-	-
	Sample Date:	05-Nov-08	05-Nov-08	-	-
	Sample ID:	0845177-01	0845177-02	-	-
	MDL/Units	Water	Water	-	-
Acenaphthene	0.05 ug/L	<0.05	<0.05	-	-
Acenaphthylene	0.05 ug/L	<0.05	<0.05	-	-
Anthracene	0.01 ug/L	0.03	<0.01	-	-
Benzo[a]anthracene	0.01 ug/L	0.07	<0.01	-	-
Benzo[a]pyrene	0.01 ug/L	0.03	<0.01	-	-
Benzo[b]fluoranthene	0.05 ug/L	0.06	<0.05	-	-
Benzo[g,h,i]perylene	0.05 ug/L	0.05	<0.05	-	-
Benzo[k]fluoranthene	0.05 ug/L	<0.05	<0.05	-	-
Biphenyl	0.05 ug/L	<0.05	<0.05	-	-
Chrysene	0.05 ug/L	0.08	<0.05	-	-
Dibenzo[a,h]anthracene	0.05 ug/L	<0.05	<0.05	-	-
Fluoranthene	0.01 ug/L	0.12	<0.01	-	-
Fluorene	0.05 ug/L	<0.05	<0.05	-	-
Indeno[1,2,3-cd]pyrene	0.05 ug/L	<0.05	<0.05	-	-
1-Methylnaphthalene	0.05 ug/L	<0.05	<0.05	-	-
2-Methylnaphthalene	0.05 ug/L	<0.05	<0.05	-	-
Naphthalene	0.05 ug/L	0.10	<0.05	-	-
Phenanthrene	0.05 ug/L	0.11	<0.05	-	-
Pyrene	0.01 ug/L	0.11	<0.01	-	-
2-Fluorobiphenyl	Surrogate	69.4%	68.5%	-	-
Terphenyl-d14	Surrogate	85.1%	79.8%	-	-
PCBs					
PCBs, total	0.05 ug/L	<0.05	<0.05	-	-
Decachlorobiphenyl	Surrogate	88.3%	92.4%	-	-

Certificate of Analysis

Report Date: 12-Nov-2008

Order Date:7-Nov-2008

Client: **Nunatta Environmental Services Inc.**

Client PO: Project Description: 08-052

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	200	ug/L						
Metals									
Aluminum	ND	10	ug/L						
Antimony	ND	1	ug/L						
Arsenic	ND	10	ug/L						
Barium	ND	10	ug/L						
Boron	ND	50	ug/L						
Cadmium	ND	1	ug/L						
Calcium	ND	200	ug/L						
Chromium (VI)	ND	10	ug/L						
Chromium	ND	50	ug/L						
Copper	ND	5	ug/L						
Iron	ND	200	ug/L						
Lead	ND	1	ug/L						
Mercury	ND	0.1	ug/L						
Manganese	ND	50	ug/L						
Selenium	ND	5	ug/L						
Sodium	ND	200	ug/L						
Uranium	ND	5	ug/L						
Zinc	ND	20	ug/L						
PCBs									
PCBs, total	ND	0.05	ug/L						
Surrogate: Decachlorobiphenyl	*0.439*		*ug/L*		*87.8*	*37-130*			
Semi-Volatiles									
Acenaphthene	ND	0.05	ug/L						
Acenaphthylene	ND	0.05	ug/L						
Anthracene	ND	0.01	ug/L						
Benzo[a]anthracene	ND	0.01	ug/L						
Benzo[a]pyrene	ND	0.01	ug/L						
Benzo[b]fluoranthene	ND	0.05	ug/L						
Benzo[g,h,i]perylene	ND	0.05	ug/L						
Benzo[k]fluoranthene	ND	0.05	ug/L						
Biphenyl	ND	0.05	ug/L						
Chrysene	ND	0.05	ug/L						
Dibenzo[a,h]anthracene	ND	0.05	ug/L						
Fluoranthene	ND	0.01	ug/L						
Fluorene	ND	0.05	ug/L						
Indeno[1,2,3-cd]pyrene	ND	0.05	ug/L						
1-Methylnaphthalene	ND	0.05	ug/L						
2-Methylnaphthalene	ND	0.05	ug/L						
Naphthalene	ND	0.05	ug/L						
Phenanthrene	ND	0.05	ug/L						
Pyrene	ND	0.01	ug/L						
Surrogate: 2-Fluorobiphenyl	*11.0*		*ug/L*		*55.2*	*31-154*			
Surrogate: Terphenyl-d14	*13.7*		*ug/L*		*68.6*	*37-156*			
Volatiles									
Benzene	ND	0.5	ug/L						
Ethylbenzene	ND	0.5	ug/L						
Toluene	ND	0.5	ug/L						
m,p-Xylenes	ND	0.5	ug/L						
o-Xylene	ND	0.5	ug/L						
Surrogate: Toluene-d8	*76.8*		*ug/L*		*96.0*	*76-118*			

Certificate of Analysis

Report Date: 12-Nov-2008

Order Date:7-Nov-2008

Client: **Nunatta Environmental Services Inc.**

Client PO: Project Description: 08-052

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	200	ug/L	ND				32	
Metals									
Aluminum	ND	10	ug/L	ND				27	
Antimony	ND	1	ug/L	ND				26	
Arsenic	ND	10	ug/L	ND				29	
Barium	205	10	ug/L	217			6.0	34	
Boron	50.9	50	ug/L	58.0			13.0	33	
Cadmium	ND	1	ug/L	ND				33	
Calcium	97300	200	ug/L	98800			1.5	30	
Chromium (VI)	ND	10	ug/L	ND				13	
Chromium	ND	50	ug/L	ND				32	
Copper	ND	5	ug/L	ND				32	
Iron	ND	200	ug/L	ND				32	
Lead	ND	1	ug/L	ND				32	
Mercury	ND	0.1	ug/L	ND				20	
Manganese	1150	50	ug/L	1150			0.4	29	
Selenium	ND	5	ug/L	ND				28	
Sodium	42100	200	ug/L	42400			0.7	27	
Uranium	10.8	5	ug/L	10.6			2.0	27	
Zinc	ND	20	ug/L	ND				27	
Volatiles									
Benzene	ND	0.5	ug/L	ND				20	
Ethylbenzene	ND	0.5	ug/L	ND				35	
Toluene	ND	0.5	ug/L	ND				30	
m,p-Xylenes	ND	0.5	ug/L	ND				34	
o-Xylene	ND	0.5	ug/L	ND				32	
Surrogate: Toluene-d8	*77.1*		*ug/L*	*ND*	*96.4*	*76-118*			

Certificate of Analysis

Report Date: 12-Nov-2008

Order Date:7-Nov-2008

Client: **Nunatta Environmental Services Inc.**

Client PO: Project Description: 08-052

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	1900	200	ug/L	ND	95.1	68-117			
Metals									
Aluminum	47.0		ug/L	ND	95.3	74-130			
Antimony	47.2		ug/L	ND	94.6	78-126			
Arsenic	48.2		ug/L	0.2	96.1	83-119			
Barium	72.4		ug/L	21.7	101	83-116			
Boron	51.9		ug/L	5.8	92.1	71-128			
Cadmium	49.2		ug/L	0.02	98.4	78-119			
Calcium	10900		ug/L	9880	103	64-127			
Chromium (VI)	197	10	ug/L	ND	98.5	75-120			
Chromium	48.2		ug/L	2.3	91.8	80-124			
Copper	44.8		ug/L	0.09	89.4	75-123			
Iron	1030		ug/L	ND	105	66-119			
Lead	46.2		ug/L	ND	92.6	77-126			
Mercury	3.31	0.1	ug/L	ND	110	78-137			
Manganese	166		ug/L	115	101	79-123			
Selenium	50.4		ug/L	ND	101	81-125			
Sodium	5270		ug/L	4240	103	68-132			
Uranium	48.5		ug/L	1.1	94.9	70-131			
Zinc	46.0		ug/L	ND	92.4	78-130			
PCBs									
PCBs, total	1.29	0.05	ug/L	ND	129	54-137			
Surrogate: Decachlorobiphenyl	*0.430*		*ug/L*		*86.0*	*37-130*			
Semi-Volatiles									
Acenaphthene	3.55	0.05	ug/L	ND	71.0	32-116			
Acenaphthylene	2.84	0.05	ug/L	ND	56.7	26-120			
Anthracene	5.08	0.01	ug/L	ND	102	29-126			
Benzo[a]anthracene	4.15	0.01	ug/L	ND	82.9	29-126			
Benzo[a]pyrene	4.67	0.01	ug/L	ND	93.4	29-111			
Benzo[b]fluoranthene	4.36	0.05	ug/L	ND	87.2	26-111			
Benzo[g,h,i]perylene	4.42	0.05	ug/L	ND	88.3	23-128			
Benzo[k]fluoranthene	5.62	0.05	ug/L	ND	112	23-135			
Biphenyl	3.76	0.05	ug/L	ND	75.2	31-107			
Chrysene	5.49	0.05	ug/L	ND	110	29-137			
Dibenzo[a,h]anthracene	4.28	0.05	ug/L	ND	85.6	20-131			
Fluoranthene	4.57	0.01	ug/L	ND	91.5	24-131			
Fluorene	4.23	0.05	ug/L	ND	84.7	28-123			
Indeno[1,2,3-cd]pyrene	4.18	0.05	ug/L	ND	83.7	20-128			
1-Methylnaphthalene	3.27	0.05	ug/L	ND	65.3	25-127			
2-Methylnaphthalene	3.03	0.05	ug/L	ND	60.5	21-119			
Naphthalene	3.24	0.05	ug/L	ND	64.7	29-118			
Phenanthrene	4.35	0.05	ug/L	ND	87.0	34-108			
Pyrene	4.83	0.01	ug/L	ND	96.7	29-131			
Surrogate: 2-Fluorobiphenyl	*13.2*		*ug/L*		*66.2*	*31-154*			
Surrogate: Terphenyl-d14	*15.1*		*ug/L*		*75.7*	*37-156*			
Volatiles									
Benzene	29.5	0.5	ug/L	ND	73.8	55-141			
Ethylbenzene	33.1	0.5	ug/L	ND	82.6	61-139			
Toluene	39.4	0.5	ug/L	ND	98.4	54-136			
m,p-Xylenes	62.9	0.5	ug/L	ND	78.6	61-139			
o-Xylene	31.4	0.5	ug/L	ND	78.6	60-142			
Surrogate: Toluene-d8	*73.5*		*ug/L*		*91.9*	*76-118*			

Certificate of Analysis

Report Date: 12-Nov-2008

Order Date:7-Nov-2008

Client: **Nunatta Environmental Services Inc.**

Client PO: Project Description: 08-052

Sample and QC Qualifiers Notes

1- H-02 : This analysis was conducted after the accepted holding time had been exceeded.

Sample Data Revisions

None

Work Order Revisions/Comments:

None

Other Report Notes:

n/a: not applicable

MDL: Method Detection Limit

Source Result: Data used as source for matrix and duplicate samples

%REC: Percent recovery.

RPD: Relative percent difference.

CCME PHC additional information:

- The method for the analysis of PHCs complies with the Reference Method for the CWS PHC and is validated for use in the laboratory. All prescribed quality criteria identified in the method has been met.
- F1 range corrected for BTEX.
- F2 to F3 ranges corrected for appropriate PAHs where available.
- The gravimetric heavy hydrocarbons (F4G) are not to be added to C6 to C50 hydrocarbons.
- In the case where F4 and F4G are both reported, the greater of the two results is to be used for comparison to CWS PHC criteria.