ᓄᓇᑦᑕ ᐊᓴᑎᓕᓵᔨᖏᑦᑕ ᑎᒥᖅᑦ

Nunatta Environmental Services Inc.

P.O Box 267
Iqaluit, NU, X0A 0H0
(867) 979-1488
nunatta@northwestel.net

2014 Soil Samples Lab Results

NWB-1BR-NUN1217

Prepared for:
Nunavut Water Board
c/o Manager of Licensing
P.O. Box 119
Gjoa Haven, Nu
X0B 1J0

Prepared by:
Nunatta Environmental Services Inc.
P.O Box 267
Iqaluit, Nunavut, X0A 0H0
January 30 2015

PARACEL LABORATORIES LTD. | TRUSTED. RESPONSIVE. RELIABLE.

OTTAWA · KINGSTON · NIAGARA · MISSISSAUGA · SARNIA

Head Office
300-2319 St. Laurent Blvd.
Ottawa, Ontario K1G 4J8
p: 1-800-749-1947
e: paracel@paracellabs.com

www.paracellabs.com

Certificate of Analysis

Nunatta Environmental Services Inc.
P.O. Box 267
Iqaluit, NU X0A 0H0
Attn: Jim Wilson

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

Client PO:
Project: Land Farm Soil
Custody: 13322

Report Date: 6-Jun-2014
Order Date: 2-Jun-2014
Order #: 1423110

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

Paracel ID	Client ID
1423110-01	Cell 1-1
1423110-02	Cell 1-2
1423110-03	Cell 1-3
1423110-04	Cell 3-1
1423110-05	Cell 3-2
1423110-06	Cell 3-3
1423110-07	Cell 4-1
1423110-08	Cell 4-2
1423110-09	Cell 4-3

Approved By: Mark Foto

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

PARACEL LABORATORIES LTD.

Order #: 1423110

Certificate of Analysis

Report Date: 06-Jun-2014
Order Date:2-Jun-2014

Client: **Nunatta Environmental Services Inc.**
Client PO: Project Description: Land Farm Soil

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Anions	EPA 300.1 - IC, water extraction	5-Jun-14	5-Jun-14
BTEX by P&T GC-MS	EPA 8260 - P&T GC-MS	4-Jun-14	5-Jun-14
Mercury	EPA 7471B - CVAA, digestion	5-Jun-14	5-Jun-14
Metals, ICP-MS	EPA 6020 - Digestion - ICP-MS	6-Jun-14	6-Jun-14
Nitrogen as N, total	Calculation	5-Jun-14	5-Jun-14
PCBs, total	SW846 8082A - GC-ECD	3-Jun-14	5-Jun-14
PHC F1	CWS Tier 1 - P&T GC-FID	4-Jun-14	5-Jun-14
PHC F2 - F4	CWS Tier 1 - GC-FID, extraction	3-Jun-14	4-Jun-14
Phosphorus, total	EPA 365.4 - Auto Colour, digestion	5-Jun-14	6-Jun-14
Solids, %	Gravimetric, calculation	5-Jun-14	5-Jun-14
Standard Plate Count	based on SM 9215C	3-Jun-14	6-Jun-14
TKN	based on EPA351.2 - Auto Colour, digestion	5-Jun-14	5-Jun-14

PARACEL LABORATORIES LTD.

Order #: 1423110

Certificate of Analysis

Report Date: 06-Jun-2014
Order Date:2-Jun-2014

Client: **Nunatta Environmental Services Inc.**
Client PO:

Project Description: Land Farm Soil

	Client ID:	Cell 1-1	Cell 1-2	Cell 1-3	Cell 3-1
	Sample Date:	30-May-14	30-May-14	30-May-14	30-May-14
	Sample ID:	1423110-01	1423110-02	1423110-03	1423110-04
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	90.4	92.5	90.1	93.1
Microbiological Parameters					
Standard Plate Count	1000 CFU/g	2000 [1] [2]	1000 [2]	2000 [2]	ND [2]
General Inorganics					
Nitrogen, Total	41 ug/g	-	-	-	475
Phosphorus, total	1.00 ug/g dry	-	-	-	770
Total Kjeldahl Nitrogen	10 ug/g dry	-	-	-	464
Anions					
Nitrate as N	1 ug/g dry	-	-	-	12
Metals					
Antimony	1 ug/g dry	<1	<1	<1	-
Arsenic	1 ug/g dry	<1	<1	<1	-
Barium	1 ug/g dry	32	32	30	-
Beryllium	0.5 ug/g dry	<0.5	<0.5	<0.5	-
Boron	5.0 ug/g dry	<5.0	<5.0	<5.0	-
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	-
Chromium	5 ug/g dry	17	19	19	-
Cobalt	1 ug/g dry	6	6	6	-
Copper	5 ug/g dry	37	25	28	-
Iron	200 ug/g dry	27700	24500	25800	-
Lead	1 ug/g dry	18	12	16	-
Mercury	0.1 ug/g dry	<0.1	<0.1	<0.1	-
Molybdenum	1 ug/g dry	1	<1	<1	-
Nickel	5 ug/g dry	9	10	10	-
Potassium	200 ug/g dry	-	-	-	879
Selenium	1 ug/g dry	<1	<1	<1	-
Silver	0.3 ug/g dry	<0.3	<0.3	<0.3	-
Thallium	1 ug/g dry	<1	<1	<1	-
Tin	5 ug/g dry	<5	<5	<5	-
Uranium	1 ug/g dry	<1	<1	<1	-
Vanadium	10 ug/g dry	35	36	37	-
Zinc	20 ug/g dry	134	92	122	-
Volatiles					
Benzene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02

PARACEL LABORATORIES LTD

Order #: 1423110

Certificate of Analysis

Report Date: 06-Jun-2014
Order Date:2-Jun-2014

Client: **Nunatta Environmental Services Inc.**
Client PO:

Project Description: Land Farm Soil

	Client ID:	Cell 1-1	Cell 1-2	Cell 1-3	Cell 3-1
	Sample Date:	30-May-14	30-May-14	30-May-14	30-May-14
	Sample ID:	1423110-01	1423110-02	1423110-03	1423110-04
	MDL/Units	Soil	Soil	Soil	Soil
Ethylbenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Toluene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
m,p-Xylenes	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
o-Xylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Xylenes, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Toluene-d8	Surrogate	104%	101%	102%	101%
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	14	<7	36	<7
F2 PHCs (C10-C16)	4 ug/g dry	975	367	1250	147
F3 PHCs (C16-C34)	8 ug/g dry	249	242	424	180
F4 PHCs (C34-C50)	6 ug/g dry	115	133	210	74
PCBs					
PCBs, total	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Decachlorobiphenyl	Surrogate	112%	95.3%	104%	-

PARACEL LABORATORIES LTD.

Order #: 1423110

Certificate of Analysis

Report Date: 06-Jun-2014
Order Date:2-Jun-2014

Client: **Nunatta Environmental Services Inc.**
Client PO:

Project Description: Land Farm Soil

	Client ID:	Cell 3-2	Cell 3-3	Cell 4-1	Cell 4-2
	Sample Date:	30-May-14	30-May-14	30-May-14	30-May-14
	Sample ID:	1423110-05	1423110-06	1423110-07	1423110-08
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	92.9	93.0	92.4	90.4
Microbiological Parameters					
Standard Plate Count	1000 CFU/g	2000 [2]	3000 [2]	24000 [2]	3000 [2]
General Inorganics					
Nitrogen, Total	41 ug/g	442	363	528	623
Phosphorus, total	1.00 ug/g dry	667	543	781	942
Total Kjeldahl Nitrogen	10 ug/g dry	438	337	497	622
Anions					
Nitrate as N	1 ug/g dry	4	26	31	2
Metals					
Potassium	200 ug/g dry	945	846	1070	912
Volatiles					
Benzene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Toluene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
m,p-Xylenes	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
o-Xylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Xylenes, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Toluene-d8	Surrogate	101%	103%	101%	102%
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	42	87
F2 PHCs (C10-C16)	4 ug/g dry	157	113	640	982
F3 PHCs (C16-C34)	8 ug/g dry	280	199	186	168
F4 PHCs (C34-C50)	6 ug/g dry	75	63	37	38

PARACEL LABORATORIES LTD.

Order #: 1423110

Certificate of Analysis

Report Date: 06-Jun-2014
Order Date:2-Jun-2014

Client: **Nunatta Environmental Services Inc.**
Client PO:

Project Description: Land Farm Soil

	Client ID:	Cell 4-3	-	-	-
	Sample Date:	30-May-14	-	-	-
	Sample ID:	1423110-09	-	-	-
	MDL/Units	Soil	-	-	-
Physical Characteristics					
% Solids	0.1 % by Wt.	92.8	-	-	-
Microbiological Parameters					
Standard Plate Count	1000 CFU/g	7000 [2]	-	-	-
General Inorganics					
Nitrogen, Total	41 ug/g	351	-	-	-
Phosphorus, total	1.00 ug/g dry	648	-	-	-
Total Kjeldahl Nitrogen	10 ug/g dry	348	-	-	-
Anions					
Nitrate as N	1 ug/g dry	3	-	-	-
Metals					
Potassium	200 ug/g dry	1010	-	-	-
Volatiles					
Benzene	0.02 ug/g dry	<0.02	-	-	-
Ethylbenzene	0.05 ug/g dry	<0.05	-	-	-
Toluene	0.05 ug/g dry	<0.05	-	-	-
m,p-Xylenes	0.05 ug/g dry	<0.05	-	-	-
o-Xylene	0.05 ug/g dry	<0.05	-	-	-
Xylenes, total	0.05 ug/g dry	<0.05	-	-	-
Toluene-d8	Surrogate	101%	-	-	-
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	8	-	-	-
F2 PHCs (C10-C16)	4 ug/g dry	263	-	-	-
F3 PHCs (C16-C34)	8 ug/g dry	121	-	-	-
F4 PHCs (C34-C50)	6 ug/g dry	19	-	-	-

Certificate of Analysis

Report Date: 06-Jun-2014
Order Date:2-Jun-2014

Client: **Nunatta Environmental Services Inc.**
Client PO: Project Description: Land Farm Soil

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions									
Nitrate as N	ND	1	ug/g						
General Inorganics									
Phosphorus, total	ND	1.00	ug/g						
Total Kjeldahl Nitrogen	ND	10	ug/g						
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g						
F2 PHCs (C10-C16)	ND	4	ug/g						
F3 PHCs (C16-C34)	ND	8	ug/g						
F4 PHCs (C34-C50)	ND	6	ug/g						
Metals									
Antimony	ND	1	ug/g						
Arsenic	ND	1	ug/g						
Barium	ND	1	ug/g						
Beryllium	ND	0.5	ug/g						
Boron	ND	5.0	ug/g						
Cadmium	ND	0.5	ug/g						
Chromium	ND	5	ug/g						
Cobalt	ND	1	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						
Potassium	ND	200	ug/g						
Selenium	ND	1	ug/g						
Silver	ND	0.3	ug/g						
Thallium	ND	1	ug/g						
Tin	ND	5	ug/g						
Uranium	ND	1	ug/g						
Vanadium	ND	10	ug/g						
Zinc	ND	20	ug/g						
Microbiological Parameters									
Standard Plate Count	ND	1000	CFU/g						
PCBs									
PCBs, total	ND	0.05	ug/g						
Surrogate: Decachlorobiphenyl	*0.0750*		*ug/g*		*75.0*	*60-140*			
Volatiles									
Benzene	ND	0.02	ug/g						
Ethylbenzene	ND	0.05	ug/g						
Toluene	ND	0.05	ug/g						
m,p-Xylenes	ND	0.05	ug/g						
o-Xylene	ND	0.05	ug/g						
Xylenes, total	ND	0.05	ug/g						
Surrogate: Toluene-d8	*7.76*		*ug/g*		*97.0*	*50-140*			

Certificate of Analysis

Report Date: 06-Jun-2014
Order Date:2-Jun-2014

Client: **Nunatta Environmental Services Inc.**
Client PO:

Project Description: Land Farm Soil

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions									
Nitrate as N	2.84	1	ug/g dry	2.89			1.8	20	
General Inorganics									
Phosphorus, total	622	10.0	ug/g dry	770			21.3	10	QR-04
Total Kjeldahl Nitrogen	452	40	ug/g dry	464			2.6	10	
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g dry	ND				40	
F2 PHCs (C10-C16)	ND	4	ug/g dry	ND				30	
F3 PHCs (C16-C34)	ND	8	ug/g dry	ND				30	
F4 PHCs (C34-C50)	ND	6	ug/g dry	ND				30	
Metals									
Antimony	ND	1	ug/g dry	7.0			0.0	30	
Arsenic	5.5	1	ug/g dry	5.2			4.9	30	
Barium	72.9	1	ug/g dry	68.7			5.9	30	
Beryllium	0.50	0.5	ug/g dry	ND			0.0	30	
Boron	18.3	5.0	ug/g dry	15.6			16.1	30	
Cadmium	ND	0.5	ug/g dry	ND			0.0	30	
Chromium	18.8	5	ug/g dry	17.9			4.6	30	
Cobalt	6.7	1	ug/g dry	6.3			6.9	30	
Copper	22.4	5	ug/g dry	21.1			6.1	30	
Iron	11800	200	ug/g dry	11100			6.1	30	
Lead	70.4	1	ug/g dry	67.9			3.6	30	
Mercury	ND	0.1	ug/g dry	ND			0.0	35	
Molybdenum	2.0	1	ug/g dry	1.5			28.9	30	
Nickel	20.4	5	ug/g dry	19.1			6.7	30	
Potassium	2150	200	ug/g dry	1960			9.1	30	
Selenium	1.0	1	ug/g dry	ND			0.0	30	
Silver	ND	0.3	ug/g dry	ND			0.0	30	
Thallium	ND	1	ug/g dry	ND			0.0	30	
Tin	7.6	5	ug/g dry	5.9			24.9	30	
Uranium	1.1	1	ug/g dry	ND			0.0	30	
Vanadium	23.3	10	ug/g dry	22.7			2.9	30	
Zinc	53.7	20	ug/g dry	52.3			2.7	30	
Microbiological Parameters									
Standard Plate Count	ND	1000	CFU/g	2000			0.0	200	
PCBs									
PCBs, total	ND	0.05	ug/g dry	ND				40	
Surrogate: Decachlorobiphenyl	*0.130*		*ug/g dry*	*ND*	*102*	*60-140*			
Physical Characteristics									
% Solids	85.7	0.1	% by Wt.	87.0			1.5	25	
Volatiles									
Benzene	ND	0.02	ug/g dry	ND				50	
Ethylbenzene	ND	0.05	ug/g dry	ND				50	
Toluene	ND	0.05	ug/g dry	ND				50	
m,p-Xylenes	ND	0.05	ug/g dry	ND				50	
o-Xylene	ND	0.05	ug/g dry	ND				50	
Surrogate: Toluene-d8	*6.89*		*ug/g dry*	*ND*	*96.2*	*50-140*			

Certificate of Analysis

Report Date: 06-Jun-2014
Order Date:2-Jun-2014

Client: **Nunatta Environmental Services Inc.**
Client PO: Project Description: Land Farm Soil

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions									
Nitrate as N	13.0	1	ug/g	2.89	101	83-109			
General Inorganics									
Phosphorus, total	59.7	1.00	ug/g	ND	95.5	57-139			
Total Kjeldahl Nitrogen	262	10	ug/g	ND	105	79-130			
Hydrocarbons									
F1 PHCs (C6-C10)	206	7	ug/g	ND	103	80-120			
F2 PHCs (C10-C16)	101	4	ug/g	ND	105	60-140			
F3 PHCs (C16-C34)	216	8	ug/g	ND	109	60-140			
F4 PHCs (C34-C50)	156	6	ug/g	ND	118	60-140			
Metals									
Antimony	47.9		ug/L	2.8	90.2	70-130			
Arsenic	43.8		ug/L	2.1	83.5	70-130			
Barium	77.4		ug/L	27.5	99.9	70-130			
Beryllium	51.1		ug/L	0.18	102	70-130			
Boron	56.1		ug/L	6.2	99.8	70-130			
Cadmium	40.7		ug/L	0.07	81.3	70-130			
Chromium	56.3		ug/L	7.2	98.3	70-130			
Cobalt	49.4		ug/L	2.5	93.7	70-130			
Copper	55.0		ug/L	8.4	93.1	70-130			
Iron	5450		ug/L	4450	100	70-130			
Lead	78.7		ug/L	27.2	103	70-130			
Mercury	1.39	0.1	ug/g	ND	92.6	72-128			
Molybdenum	43.4		ug/L	0.6	85.7	70-130			
Nickel	55.5		ug/L	7.6	95.7	70-130			
Potassium	1870		ug/L	784	109	70-130			
Selenium	41.1		ug/L	0.3	81.6	70-130			
Silver	40.6		ug/L	0.06	81.1	70-130			
Thallium	48.5		ug/L	ND	97.1	70-130			
Tin	45.2		ug/L	2.4	85.7	70-130			
Uranium	56.0		ug/L	0.3	111	70-130			
Vanadium	57.4		ug/L	9.1	96.7	70-130			
Zinc	64.6		ug/L	20.9	87.4	70-130			
PCBs									
PCBs, total	0.529	0.05	ug/g	ND	104	60-140			
Surrogate: Decachlorobiphenyl	*0.123*		*ug/g*		*97.3*	*60-140*			
Volatiles									
Benzene	4.09	0.02	ug/g	ND	102	60-130			
Ethylbenzene	4.33	0.05	ug/g	ND	108	60-130			
Toluene	3.62	0.05	ug/g	ND	90.5	60-130			
m,p-Xylenes	8.42	0.05	ug/g	ND	105	60-130			
o-Xylene	4.25	0.05	ug/g	ND	106	60-130			

PARACEL LABORATORIES LTD.

Order #: 1423110

Certificate of Analysis

Report Date: 06-Jun-2014
Order Date:2-Jun-2014

Client: **Nunatta Environmental Services Inc.**
Client PO: Project Description: Land Farm Soil

Qualifier Notes:

Sample Qualifiers :

1 : Duplicate result for this sample analysis was determined to be ND.

2 : Holding time had been exceeded upon sample receipt.

QC Qualifiers :

QR-04 : Duplicate results exceeds RPD limits due to non-homogeneous matrix.

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable
ND: Not Detected
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. | TRUSTED RESPONSIVE RELIABLE.

OTTAWA • KINGSTON • NIAGARA • MISSISSAUGA • SARNIA

Head Office
300-2319 St. Laurent Blvd.
Ottawa Ontario K1G 4J8
p 1-800 749-1947
e paracel@paracellabs.com
www.paracellabs.com

Chain of Custody (Lab Use Only)

№ 13322

Page 1 of 1

Client Name: Nunatta Environmental

Contact Name: Jim Wilson

Address: 1575 Federal Rd, Iqaluit, NU
P.O Box 267 X0A-0H0

Telephone: 867-979-1488

Quote #: Landfarm Spring 2014

PO #:

e: nunatta@northwestel.net

TAT: [✓] Regular [ ] 3 Day [ ] 2 Day [ ] 1 Day

Date Required:

Criteria: [ ] O. Reg. 153/04 (as Amended) Table ___ [ ] SS: Filing [ ] O. Reg. 558 [ ] PWQO [ ] CCME [ ] SUB (Storm) [ ] SUB (Sanitary) Municipality: ___ [ ] Other: ___

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Paracel Order Number: 1423110

Cell	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	F1-F4	BTEX	Total Aromatics	VPK	PB	Mercury	PCB	BoXeB			
1	1-1	S	Ø	1	May 30	9 am	↓	↓	↓		1	X	X	X		850	mL
2	1-2	S	Ø	1							X	X	X	X			
3	3-1	S	Ø	1						X							
4	3-2	S	Ø	1						X							
5	3-3	S	Ø	1						X							
6	4-1	S	Ø	1						X							
7	4-2	S	Ø	1						X							
8	4-3	S	Ø	1						X						↓	
9																	
10																	

Comments: → received Cell 1-3 Sample ? Analysis ? → analyze for the same parameters as samples Cell 1-1 and Cell 1-2 per Jim. -mlc

Method of Delivery: First Air

Relinquished By (Sign): James Hartman

Relinquished By (Print): Jim Wilson

Date/Time: May 30 2014 10:30

Received by Driver/Depot: T. Louise

Date/Time: 03/06/14 10:30 am

Temperature: °C

Received at Lab: SUNRISE DOKMS

Date/Time: JUN 3, 2014 11:10

Temperature: 16 °C

Verified By: MLC

Date/Time: June 3/14 2:15

pH Verified: [ ] By: N/A

PARACEL LABORATORIES LTD. | TRUSTED. RESPONSIVE. RELIABLE.

OTTAWA · KINGSTON · NIAGARA · MISSISSAUGA · SARNIA

Head Office
300-2319 St. Laurent Blvd.
Ottawa, Ontario K1G 4J8
p: 1-800-749-1947
e: paracel@paracellabs.com

www.paracellabs.com

Certificate of Analysis

Nunatta Environmental Services Inc.
P.O. Box 267
Iqaluit, NU X0A 0H0
Attn: Jim Wilson

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

Client PO:
Project: Landfarm Soils
Custody: 101497

Report Date: 13-Aug-2014
Order Date: 7-Aug-2014
Order #: 1432225

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

Paracel ID	Client ID
1432225-14	Yard #1
1432225-15	Yard #2
1432225-16	Yard #3
1432225-17	Yard #4
1432225-18	Yard #5

Approved By: Mark Foto

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

PARACEL LABORATORIES LTD

Order #: 1432225

Certificate of Analysis

Report Date: 13-Aug-2014
Order Date:7-Aug-2014

Client: **Nunatta Environmental Services Inc.**
Client PO: Project Description: Landfarm Soils

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
BTEX by P&T GC-MS	EPA 8260 - P&T GC-MS	11-Aug-14	13-Aug-14
PHC F1	CWS Tier 1 - P&T GC-FID	11-Aug-14	13-Aug-14
PHC F2 - F4	CWS Tier 1 - GC-FID, extraction	8-Aug-14	12-Aug-14
Solids, %	Gravimetric, calculation	11-Aug-14	11-Aug-14

PARACEL LABORATORIES LTD

Order #: 1432225

Certificate of Analysis

Report Date: 13-Aug-2014
Order Date:7-Aug-2014

Client: **Nunatta Environmental Services Inc.**
Client PO:

Project Description: Landfarm Soils

	Client ID:	Yard #1	Yard #2	Yard #3	Yard #4
	Sample Date:	06-Aug-14	06-Aug-14	06-Aug-14	06-Aug-14
	Sample ID:	1432225-14	1432225-15	1432225-16	1432225-17
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	89.8	88.5	95.1	92.3
Volatiles					
Benzene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Toluene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
m,p-Xylenes	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
o-Xylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Xylenes, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Toluene-d8	Surrogate	90.1%	90.6%	92.2%	90.2%
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	<7	<7
F2 PHCs (C10-C16)	4 ug/g dry	21	<4	21	40
F3 PHCs (C16-C34)	8 ug/g dry	130	48	411	167
F4 PHCs (C34-C50)	6 ug/g dry	49	34	366	59

	Client ID:	Yard #5	-	-	-
	Sample Date:	06-Aug-14	-	-	-
	Sample ID:	1432225-18	-	-	-
	MDL/Units	Soil	-	-	-
Physical Characteristics					
% Solids	0.1 % by Wt.	92.6	-	-	-
Volatiles					
Benzene	0.02 ug/g dry	<0.02	-	-	-
Ethylbenzene	0.05 ug/g dry	<0.05	-	-	-
Toluene	0.05 ug/g dry	<0.05	-	-	-
m,p-Xylenes	0.05 ug/g dry	<0.05	-	-	-
o-Xylene	0.05 ug/g dry	<0.05	-	-	-
Xylenes, total	0.05 ug/g dry	<0.05	-	-	-
Toluene-d8	Surrogate	87.5%	-	-	-
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	-	-	-
F2 PHCs (C10-C16)	4 ug/g dry	23	-	-	-
F3 PHCs (C16-C34)	8 ug/g dry	213	-	-	-
F4 PHCs (C34-C50)	6 ug/g dry	114	-	-	-

PARACEL LABORATORIES LTD.

Order #: 1432225

Certificate of Analysis

Report Date: 13-Aug-2014
Order Date:7-Aug-2014

Client: **Nunatta Environmental Services Inc.**
Client PO: Project Description: Landfarm Soils

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g						
F2 PHCs (C10-C16)	ND	4	ug/g						
F3 PHCs (C16-C34)	ND	8	ug/g						
F4 PHCs (C34-C50)	ND	6	ug/g						
Volatiles									
Benzene	ND	0.02	ug/g						
Ethylbenzene	ND	0.05	ug/g						
Toluene	ND	0.05	ug/g						
m,p-Xylenes	ND	0.05	ug/g						
o-Xylene	ND	0.05	ug/g						
Xylenes, total	ND	0.05	ug/g						
Surrogate: Toluene-d8	*3.00*		*ug/g*		*93.6*	*50-140*			

PARACEL LABORATORIES LTD

Order #: 1432225

Certificate of Analysis

Report Date: 13-Aug-2014
Order Date:7-Aug-2014

Client: **Nunatta Environmental Services Inc.**
Client PO: Project Description: Landfarm Soils

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g dry	ND			0.0	40	
F2 PHCs (C10-C16)	ND	4	ug/g dry	ND				30	
F3 PHCs (C16-C34)	79	8	ug/g dry	95			18.8	30	
F4 PHCs (C34-C50)	229	6	ug/g dry	312			30.9	30	QR-04
Physical Characteristics									
% Solids	95.0	0.1	% by Wt.	94.9			0.1	25	
Volatiles									
Benzene	ND	0.02	ug/g dry	ND				50	
Ethylbenzene	ND	0.05	ug/g dry	ND				50	
Toluene	ND	0.05	ug/g dry	ND				50	
m,p-Xylenes	ND	0.05	ug/g dry	ND				50	
o-Xylene	ND	0.05	ug/g dry	ND				50	
Surrogate: Toluene-d8	*2.99*		*ug/g dry*	*ND*	*88.7*	*50-140*			

Certificate of Analysis

Report Date: 13-Aug-2014
Order Date:7-Aug-2014

Client: **Nunatta Environmental Services Inc.**
Client PO: Project Description: Landfarm Soils

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	207	7	ug/g	ND	103	80-120			
F2 PHCs (C10-C16)	109	4	ug/g	ND	107	60-140			
F3 PHCs (C16-C34)	349	8	ug/g	95	121	60-140			
F4 PHCs (C34-C50)	403	6	ug/g	312	64.8	60-140			
Volatiles									
Benzene	2.88	0.02	ug/g	ND	71.9	60-130			
Ethylbenzene	3.55	0.05	ug/g	ND	88.7	60-130			
Toluene	3.80	0.05	ug/g	ND	95.0	60-130			
m,p-Xylenes	7.77	0.05	ug/g	ND	97.1	60-130			
o-Xylene	3.77	0.05	ug/g	ND	94.2	60-130			
Surrogate: Toluene-d8	*2.64*		*ug/g*		*82.5*	*50-140*			

PARACEL LABORATORIES LTD.

Order #: 1432225

Certificate of Analysis

Report Date: 13-Aug-2014
Order Date:7-Aug-2014

Client: **Nunatta Environmental Services Inc.**
Client PO: Project Description: Landfarm Soils

Qualifier Notes:

QC Qualifiers :

QR-04 : Duplicate results exceeds RPD limits due to non-homogeneous matrix.

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable
ND: Not Detected
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. | TRUSTED. RESPONSIVE. RELIABLE.

OTTAWA • KINGSTON • NIAGARA • MISSISSAUGA • SARNIA

Head Office
300-2319 St. Laurent Blvd.
Ottawa, Ontario K1G 4J8
p. 1-800-749-1947
e: paracel@paracellabs.com
www.paracellabs.com

Chain of Custody
(Lab Use Only)
№ 101497

Page 1 of 2

Client Name: Nunatta Environmental
Contact Name: Jim Wilson
Address: 1575 Federal Rd Iqaluit NU
Telephone: 867-979-1488
Project Reference: Land farm Soils
Quote #:
PO #:
Email Address: nunatta@northwestel.net
TAT: [X] Regular [ ] 3 Day [ ] 2 Day [ ] 1 Day
Date Required: _____

Criteria: [ ] O. Reg. 153/04 (As Amended) Table __ [ ] RSC Filing [ ] O. Reg. 558/00 [ ] PWQO [ ] CCME [ ] SUB (Storm) [ ] SUB (Sanitary) Municipality: _____ [ ] Other: _____

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Required Analyses

Paracel Order Number: 1432225

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	PHC's F1-F4 + BTEX	VOC's	PAHs	Metals by ICP	Hg	CrVI	B (HWS)	
1	Cell #1 #1	S		1	Aug 6	9:00am	X							-12 Mi-
2	Cell #1 #2	S		1			X							
3	Cell #1 #3	S		1			X							
4	Cell #2 #1			1			X							
5	Cell #2 #2			1			X							
6	Cell #3 #1			1			X							
7	Cell #3 #2			1			X							
8	Cell #3 #3			1			X							
9	Cell #4 #1			1			X							
10	Cell #4 #2			1			X							

Comments:

Method of Delivery: CANADIAN NORTH

Relinquished By (Sign): James Hwilson	Received by Driver/Depot: T. Scouse	Received at Lab: SUNREPORN DKMH	Verified By: MC
Relinquished By (Print): James H Wilson	Date/Time: 08/08/14 9:45am	Date/Time: Aug 8/14 10:30	Date/Time: Aug 8/14 11:43
Date/Time: Aug 6 10:00am	Temperature: ___°C	Temperature: 9.4 °C	pH Verified [ ] By N/A

PARACEL LABORATORIES LTD. | TRUSTED. RESPONSIVE. RELIABLE.

OTTAWA · KINGSTON · NIAGARA · MISSISSAUGA · SARNIA

Head Office
300-2319 St. Laurent Blvd.
Ottawa, Ontario K1G 4J8
1-800-749-1947
paracel@paracellabs.com
www.paracellabs.com

Chain of Custody (Lab Use Only)

Page 2 of 2

Client Name: Duvatte Environmental
Contact Name: Jim Wilson
Address: 1575 Federal Rd
Telephone:
Project Reference: FARM Soils
Quote #:
PO #:
Email Address: duvatte@northwestel.net

TAT: ☑ Regular ☐ 3 Day ☐ 2 Day ☐ 1 Day
Date Required:

Criteria: ☐ O. Reg. 153 (As Amended) Table ___ ☐ RSC Filing ☐ O. Reg. 558/00 ☐ PWQO ☐ CCME ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality: ___ ☐ Other: ___

Matrix Type: S (Soil Sed.) GW (Ground Water) SW (Surface Water) SS (Storm Sanitary Sewer) P (Paint) A (Air) O (Other)

Paracel Order Number: 1432225

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	PHCs F1-F4+BTEX	VOCs	PAHs	Metals by ICP	Hg	CrVI	B (HWS)	Required Analyses
1	Cell #4 #3	S	0	1	Aug 6	9:30 am	☑	☐	☐	☐	☐	☐	☐	
2	[redacted]		~~0~~	~~1~~			☑	☐	☐	☐	☐	☐	☐	
3	Pile #1	S		1			☑	☐	☐	☐	☐	☐	☐	
4	Pile #2	S		1			☑	☐	☐	☐	☐	☐	☐	
5	YARD #1	S		1			☑	☐	☐	☐	☐	☐	☐	
6	YARD #2	S		1			☑	☐	☐	☐	☐	☐	☐	
7	YARD #3	S		1			☑	☐	☐	☐	☐	☐	☐	
8	YARD #4	S		1			☑	☐	☐	☐	☐	☐	☐	
9	YARD #5	S		1			☑	☐	☐	☐	☐	☐	☐	
10							☐	☐	☐	☐	☐	☐	☐	

Comments:

Method of Delivery: Courier North

Relinquished By (Sign): James Hutchinson
Relinquished By (Print): James H Wilson
Date/Time: Aug 6 10:00 am

Received by Driver/Depot: T House
Date/Time: 08/08/14 9:45 am
Temperature: ___ °C

Received at Lab: Sudeepan Dhami
Date/Time: Aug 8 2014 15:30
Temperature: 5.4 °C

Verified By: M C
Date/Time: Aug 8/14 11:43
pH Verified [ ] By: N/A

PARACEL LABORATORIES LTD. | TRUSTED. RESPONSIVE. RELIABLE.

OTTAWA · KINGSTON · NIAGARA · MISSISSAUGA · SARNIA

Head Office
300-2319 St. Laurent Blvd.
Ottawa, Ontario K1G 4J8
p: 1-800-749-1947
e: paracel@paracellabs.com

www.paracellabs.com

Certificate of Analysis

Nunatta Environmental Services Inc.
P.O. Box 267
Iqaluit, NU X0A 0H0
Attn: Jim Wilson

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

Client PO:
Project: Landfarm Soils
Custody: 101497

Report Date: 13-Aug-2014
Order Date: 7-Aug-2014
Order #: 1432225

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

Paracel ID	Client ID
1432225-01	Cell #1 - #1
1432225-02	Cell #1 - #2
1432225-03	Cell #1 - #3

Approved By: Mark Foto

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

PARACEL LABORATORIES LTD

Order #: 1432225

Certificate of Analysis

Report Date: 13-Aug-2014
Order Date:7-Aug-2014

Client: **Nunatta Environmental Services Inc.**
Client PO:

Project Description: Landfarm Soils

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
BTEX by P&T GC-MS	EPA 8260 - P&T GC-MS	11-Aug-14	12-Aug-14
PHC F1	CWS Tier 1 - P&T GC-FID	11-Aug-14	12-Aug-14
PHC F2 - F4	CWS Tier 1 - GC-FID, extraction	8-Aug-14	11-Aug-14
Solids, %	Gravimetric, calculation	11-Aug-14	11-Aug-14

PARACEL LABORATORIES LTD.

Order #: 1432225

Certificate of Analysis

Report Date: 13-Aug-2014
Order Date:7-Aug-2014

Client: **Nunatta Environmental Services Inc.**
Client PO:

Project Description: Landfarm Soils

	Client ID:	Cell #1 - #1	Cell #1 - #2	Cell #1 - #3	-
	Sample Date:	06-Aug-14	06-Aug-14	06-Aug-14	-
	Sample ID:	1432225-01	1432225-02	1432225-03	-
	MDL/Units	Soil	Soil	Soil	-
Physical Characteristics					
% Solids	0.1 % by Wt.	94.9	93.8	92.9	-
Volatiles					
Benzene	0.02 ug/g dry	<0.02	<0.02	<0.02	-
Ethylbenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Toluene	0.05 ug/g dry	<0.05	<0.05	<0.05	-
m,p-Xylenes	0.05 ug/g dry	<0.05	<0.05	0.13	-
o-Xylene	0.05 ug/g dry	<0.05	<0.05	0.22	-
Xylenes, total	0.05 ug/g dry	<0.05	<0.05	0.35	-
Toluene-d8	Surrogate	91.8%	92.3%	92.1%	-
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	40	50	-
F2 PHCs (C10-C16)	4 ug/g dry	435	1460	1430	-
F3 PHCs (C16-C34)	8 ug/g dry	314	1280	704	-
F4 PHCs (C34-C50)	6 ug/g dry	93	454	267	-

Certificate of Analysis

Report Date: 13-Aug-2014
Order Date:7-Aug-2014

Client: **Nunatta Environmental Services Inc.**
Client PO: Project Description: Landfarm Soils

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g						
F2 PHCs (C10-C16)	ND	4	ug/g						
F3 PHCs (C16-C34)	ND	8	ug/g						
F4 PHCs (C34-C50)	ND	6	ug/g						
Volatiles									
Benzene	ND	0.02	ug/g						
Ethylbenzene	ND	0.05	ug/g						
Toluene	ND	0.05	ug/g						
m,p-Xylenes	ND	0.05	ug/g						
o-Xylene	ND	0.05	ug/g						
Xylenes, total	ND	0.05	ug/g						
Surrogate: Toluene-d8	*3.00*		*ug/g*		*93.6*	*50-140*			

Certificate of Analysis

Report Date: 13-Aug-2014
Order Date:7-Aug-2014

Client: **Nunatta Environmental Services Inc.**
Client PO: Project Description: Landfarm Soils

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g dry	ND			0.0	40	
F2 PHCs (C10-C16)	ND	4	ug/g dry	ND				30	
F3 PHCs (C16-C34)	79	8	ug/g dry	95			18.8	30	
F4 PHCs (C34-C50)	229	6	ug/g dry	312			30.9	30	QR-04
Physical Characteristics									
% Solids	95.0	0.1	% by Wt.	94.9			0.1	25	
Volatiles									
Benzene	ND	0.02	ug/g dry	ND				50	
Ethylbenzene	ND	0.05	ug/g dry	ND				50	
Toluene	ND	0.05	ug/g dry	ND				50	
m,p-Xylenes	ND	0.05	ug/g dry	ND				50	
o-Xylene	ND	0.05	ug/g dry	ND				50	
Surrogate: Toluene-d8	*2.99*		*ug/g dry*	*ND*	*88.7*	*50-140*			

Certificate of Analysis

Report Date: 13-Aug-2014
Order Date:7-Aug-2014

Client: **Nunatta Environmental Services Inc.**
Client PO: Project Description: Landfarm Soils

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	207	7	ug/g	ND	103	80-120			
F2 PHCs (C10-C16)	109	4	ug/g	ND	107	60-140			
F3 PHCs (C16-C34)	349	8	ug/g	95	121	60-140			
F4 PHCs (C34-C50)	403	6	ug/g	312	64.8	60-140			
Volatiles									
Benzene	2.88	0.02	ug/g	ND	71.9	60-130			
Ethylbenzene	3.55	0.05	ug/g	ND	88.7	60-130			
Toluene	3.80	0.05	ug/g	ND	95.0	60-130			
m,p-Xylenes	7.77	0.05	ug/g	ND	97.1	60-130			
o-Xylene	3.77	0.05	ug/g	ND	94.2	60-130			
Surrogate: Toluene-d8	*2.64*		*ug/g*		*82.5*	*50-140*			

PARACEL LABORATORIES LTD

Order #: 1432225

Certificate of Analysis

Report Date: 13-Aug-2014
Order Date:7-Aug-2014

Client: **Nunatta Environmental Services Inc.**
Client PO: Project Description: Landfarm Soils

Qualifier Notes:

QC Qualifiers :

QR-04 : Duplicate results exceeds RPD limits due to non-homogeneous matrix.

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable
ND: Not Detected
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. | TRUSTED. RESPONSIVE. RELIABLE.

OTTAWA • KINGSTON • NIAGARA • MISSISSAUGA • SARNIA

Head Office
300-2319 St. Laurent Blvd.
Ottawa, Ontario K1G 4J8
p: 1-800-749-1947
e: paracel@paracellabs.com
www.paracellabs.com

Chain of Custody
(Lab Use Only)
№ 101497

Page 1 of 2

Client Name: Nunatta Environmental
Contact Name: Jim Wilson
Address: 1575 Federal Rd Iqaluit NU
Telephone: 867-979-1488
Project Reference: Landfarm Soils
Quote #:
PO #:
Email Address: nunatta@northwestel.net
TAT: [✓] Regular [ ] 3 Day [ ] 2 Day [ ] 1 Day
Date Required:

Criteria: [✓] O. Reg. 153/04 (As Amended) Table __ [ ] RSC Filing [ ] O. Reg. 558/00 [ ] PWQO [ ] CCME [ ] SUB (Storm) [ ] SUB (Sanitary) Municipality: _____ [ ] Other: _____

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Paracel Order Number: 1432225

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken: Date	Sample Taken: Time	Required Analyses: PHCs F1-F4 + BTEX	VOCs	PAHs	Metals by ICP	Hg	CrVI	B (HWS)							
1	Cell #1 #1	S		1	Aug 6	9:00 am	X												-130 mm-	
2	Cell #1 #2	S		1			X													
3	Cell #1 #3	S		1			X													
4	Cell #2 #1			1			X													
5	Cell #2 #2			1			X													
6	Cell #3 #1			1			X													
7	Cell #3 #2			1			X													
8	Cell #3 #3			1			X													
9	Cell #4 #1			1			X													
10	Cell #4 #2			1			X													

Comments:

Method of Delivery: Canadian North

Relinquished By (Sign): James Hwilson	Received by Driver/Depot: T. Scouse	Received at Lab: SUNEEP SIN DOK MAI	Verified By: M/C
Relinquished By (Print): James H Wilson	Date/Time: 08/08/14 9:45 am	Date/Time: Aug 8/14 10:30	Date/Time: Aug 8/14 11:43
Date/Time: Aug 6 10:00 am	Temperature: °C	Temperature: 9.4 °C	pH Verified [ ] By: N/A

PARACEL LABORATORIES LTD. | TRUSTED. RESPONSIVE. RELIABLE.

OTTAWA · KINGSTON · NIAGARA · MISSISSAUGA · SARNIA

Head Office
300-2319 St. Laurent Blvd.
Ottawa, Ontario K1G 4J8
1 800-749-1947
paracel@paracellabs.com
www.paracellabs.com

Chain of Custody (Lab Use Only)

Client Name: Wyatt Environmental
Contact Name: Jim Wilson
Address: 1575 Federal Rd
Telephone:

Project Reference: LANDFARM Soils
Quote #:
PO #:
Email Address: kwyatt@northwestel.net

TAT: ☑ Regular ☐ 3 Day ☐ 2 Day ☐ 1 Day
Date Required:

Criteria: ☐ O. Reg. 153 (As Amended) Table __ ☐ RSC Filing ☐ O. Reg. 558/00 ☐ PWQO ☐ CCME ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality: ☐ Other:

Matrix Type: S (Soil Sed.) GW (Ground Water) SW (Surface Water) SS (Storm Sanitary Sewer) P (Paint) A (Air) O (Other)

Required Analyses

Paracel Order Number: 1432225

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken: Date	Sample Taken: Time	PHCs F1-F4+BTEX	VOCs	PAHs	Metals by ICP	Hg	CrVI	B (HWS)
1	Cell #4 #3	S	0	1	Aug 6	9:30am	☑	☐	☐	☐	☐	☐	☐
2	[redacted]		~~0~~	~~1~~			☐	☐	☐	☐	☐	☐	☐
3	Pile #1	S		1			☐	☐	☐	☐	☐	☐	☐
4	Pile #2	S		1			☑	☐	☐	☐	☐	☐	☐
5	YHKD #1	S		1			☑	☐	☐	☐	☐	☐	☐
6	YHKD #2	S		1			☑	☐	☐	☐	☐	☐	☐
7	YHKD #3	S		1			☑	☐	☐	☐	☐	☐	☐
8	YHKD #4	S	↓	1			☑	☐	☐	☐	☐	☐	☐
9	YHKD #5	S		1			☑	☐	☐	☐	☐	☐	☐
10							☐	☐	☐	☐	☐	☐	☐

Comments:

Method of Delivery: Courier North

Relinquished By (Sign): James Hutton	Received by Driver/Depot: T House	Received at Lab: Whitehorse Dikeman	Verified By: M.C.
Relinquished By (Print): James H Wilson	Date/Time: 08/08/14 9:45am	Date/Time: Aug 8/2014 15:30	Date/Time: Aug 8/14 11:43
Date/Time: Aug 6 10:00am	Temperature: °C	Temperature: 5.4 °C	Verified [ ] By:

PARACEL LABORATORIES LTD. | TRUSTED. RESPONSIVE. RELIABLE.

OTTAWA · KINGSTON · NIAGARA · MISSISSAUGA · SARNIA

Head Office
300-2319 St. Laurent Blvd.
Ottawa, Ontario K1G 4J8
p: 1-800-749-1947
e: paracel@paracellabs.com
www.paracellabs.com

Certificate of Analysis

Nunatta Environmental Services Inc.
P.O. Box 267
Iqaluit, NU X0A 0H0
Attn: Jim Wilson

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

Client PO:
Project: Landfarm Soils
Custody: 101497

Report Date: 13-Aug-2014
Order Date: 7-Aug-2014
Order #: 1432225

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

Paracel ID	Client ID
1432225-04	Cell #2 - #1
1432225-05	Cell #2 - #2

Approved By: Mark Foto

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

PARACEL LABORATORIES LTD

Order #: 1432225

Certificate of Analysis

Report Date: 13-Aug-2014
Order Date:7-Aug-2014

Client: **Nunatta Environmental Services Inc.**
Client PO: Project Description: Landfarm Soils

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
BTEX by P&T GC-MS	EPA 8260 - P&T GC-MS	11-Aug-14	12-Aug-14
PHC F1	CWS Tier 1 - P&T GC-FID	11-Aug-14	12-Aug-14
PHC F2 - F4	CWS Tier 1 - GC-FID, extraction	8-Aug-14	11-Aug-14
Solids, %	Gravimetric, calculation	11-Aug-14	11-Aug-14

PARACEL LABORATORIES LTD.

Order #: 1432225

Certificate of Analysis

Report Date: 13-Aug-2014
Order Date:7-Aug-2014

Client: **Nunatta Environmental Services Inc.**
Client PO:

Project Description: Landfarm Soils

	Client ID:	Cell #2 - #1	Cell #2 - #2	-	-
	Sample Date:	06-Aug-14	06-Aug-14	-	-
	Sample ID:	1432225-04	1432225-05	-	-
	MDL/Units	Soil	Soil	-	-
Physical Characteristics					
% Solids	0.1 % by Wt.	90.5	93.6	-	-
Volatiles					
Benzene	0.02 ug/g dry	<0.02	<0.02	-	-
Ethylbenzene	0.05 ug/g dry	<0.05	<0.05	-	-
Toluene	0.05 ug/g dry	<0.05	<0.05	-	-
m,p-Xylenes	0.05 ug/g dry	<0.05	<0.05	-	-
o-Xylene	0.05 ug/g dry	<0.05	<0.05	-	-
Xylenes, total	0.05 ug/g dry	<0.05	<0.05	-	-
Toluene-d8	Surrogate	93.0%	91.8%	-	-
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	-	-
F2 PHCs (C10-C16)	4 ug/g dry	51	64	-	-
F3 PHCs (C16-C34)	8 ug/g dry	188	246	-	-
F4 PHCs (C34-C50)	6 ug/g dry	62	68	-	-

Certificate of Analysis

Report Date: 13-Aug-2014
Order Date:7-Aug-2014

Client: **Nunatta Environmental Services Inc.**
Client PO: Project Description: Landfarm Soils

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g						
F2 PHCs (C10-C16)	ND	4	ug/g						
F3 PHCs (C16-C34)	ND	8	ug/g						
F4 PHCs (C34-C50)	ND	6	ug/g						
Volatiles									
Benzene	ND	0.02	ug/g						
Ethylbenzene	ND	0.05	ug/g						
Toluene	ND	0.05	ug/g						
m,p-Xylenes	ND	0.05	ug/g						
o-Xylene	ND	0.05	ug/g						
Xylenes, total	ND	0.05	ug/g						
Surrogate: Toluene-d8	*3.00*		*ug/g*		*93.6*	*50-140*			

Certificate of Analysis

Report Date: 13-Aug-2014
Order Date:7-Aug-2014

Client: **Nunatta Environmental Services Inc.**
Client PO: Project Description: Landfarm Soils

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g dry	ND			0.0	40	
F2 PHCs (C10-C16)	ND	4	ug/g dry	ND				30	
F3 PHCs (C16-C34)	79	8	ug/g dry	95			18.8	30	
F4 PHCs (C34-C50)	229	6	ug/g dry	312			30.9	30	QR-04
Physical Characteristics									
% Solids	95.0	0.1	% by Wt.	94.9			0.1	25	
Volatiles									
Benzene	ND	0.02	ug/g dry	ND				50	
Ethylbenzene	ND	0.05	ug/g dry	ND				50	
Toluene	ND	0.05	ug/g dry	ND				50	
m,p-Xylenes	ND	0.05	ug/g dry	ND				50	
o-Xylene	ND	0.05	ug/g dry	ND				50	
Surrogate: Toluene-d8	*2.99*		*ug/g dry*	*ND*	*88.7*	*50-140*			

Certificate of Analysis

Report Date: 13-Aug-2014
Order Date:7-Aug-2014

Client: **Nunatta Environmental Services Inc.**
Client PO: Project Description: Landfarm Soils

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	207	7	ug/g	ND	103	80-120			
F2 PHCs (C10-C16)	109	4	ug/g	ND	107	60-140			
F3 PHCs (C16-C34)	349	8	ug/g	95	121	60-140			
F4 PHCs (C34-C50)	403	6	ug/g	312	64.8	60-140			
Volatiles									
Benzene	2.88	0.02	ug/g	ND	71.9	60-130			
Ethylbenzene	3.55	0.05	ug/g	ND	88.7	60-130			
Toluene	3.80	0.05	ug/g	ND	95.0	60-130			
m,p-Xylenes	7.77	0.05	ug/g	ND	97.1	60-130			
o-Xylene	3.77	0.05	ug/g	ND	94.2	60-130			
Surrogate: Toluene-d8	*2.64*		*ug/g*		*82.5*	*50-140*			

Certificate of Analysis

Report Date: 13-Aug-2014
Order Date:7-Aug-2014

Client: **Nunatta Environmental Services Inc.**
Client PO: Project Description: Landfarm Soils

Qualifier Notes:

QC Qualifiers :

QR-04 : Duplicate results exceeds RPD limits due to non-homogeneous matrix.

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable
ND: Not Detected
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. | TRUSTED. RESPONSIVE. RELIABLE.

OTTAWA • KINGSTON • NIAGARA • MISSISSAUGA • SARNIA

Head Office
300-2319 St. Laurent Blvd.
Ottawa, Ontario K1G 4J8
p. 1-800-749-1947
e: paracel@paracellabs.com
www.paracellabs.com

Chain of Custody
(Lab Use Only)
№ 101497

Page 1 of 2

Client Name: Nunatta Environmental
Contact Name: Jim Wilson
Address: 1575 Federal Rd Iqaluit NU
Telephone: 867-979-1488
Project Reference: Land farm Soils
Quote #:
PO #:
Email Address: nunatta@northwestel.net

TAT: [✓] Regular [ ] 3 Day [ ] 2 Day [ ] 1 Day
Date Required: _____

Criteria: [ ] O. Reg. 153/04 (As Amended) Table _ [ ] RSC Filing [ ] O. Reg. 558/00 [ ] PWQO [ ] CCME [ ] SUB (Storm) [ ] SUB (Sanitary) Municipality: _____ [ ] Other: _____

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Required Analyses

Paracel Order Number: 1432225

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	PHCs F1-F4 + BTEX	VOCs	PAHs	Metals by ICP	Hg	CrVI	B (HWS)	
1	Cell #1 #1	S	D	1	Aug 6	9:00am	X							~120 mL
2	Cell #1 #2	S		1			X							
3	Cell #1 #3	S		1			X							
4	Cell #2 #1			1			X							
5	Cell #2 #2			1			X							
6	Cell #3 #1			1			X							
7	Cell #3 #2			1			X							
8	Cell #3 #3			1			X							
9	Cell #4 #1			1			X							
10	Cell #4 #2			1			X							

Comments:

Method of Delivery: CANADIAN NORTH

Relinquished By (Sign): James Hwilson	Received by Driver/Depot: T. Scouse	Received at Lab: SUNDERN DSK MM
Relinquished By (Print): James H Wilson	Date/Time: 08/08/14 9:45am	Date/Time: Aug 8/14 10:30
Date/Time: Aug 6 10:00am	Temperature: ____ C	Temperature: 9.4 °C
		Verified By: MC
		Date/Time: Aug 8/14 11:43
		pH Verified [ ] By: NA

PARACEL LABORATORIES LTD. | TRUSTED. RESPONSIVE. RELIABLE.

OTTAWA · KINGSTON · NIAGARA · MISSISSAUGA · SARNIA

Head Office
300-2319 St. Laurent Blvd.
Ottawa, Ontario K1G 4J8
p: 1-800-749-1947
e: paracel@paracellabs.com
www.paracellabs.com

Chain of Custody (Lab Use Only)

Client Name: Duvatte Environmental | Project Reference: LANDFARM Soils

Contact Name: Jim Wilson | Quote #:

Address: 1575 Federal Rd | PO #:

Telephone: | Email Address: duvatte@northwestel.net

TAT: ☑ Regular ☐ 3 Day ☐ 2 Day ☐ 1 Day | Date Required: _____

Criteria: ☐ O. Reg. 153 (As Amended) Table __ ☐ RSC Filing ☐ O. Reg. 558/00 ☐ PWQO ☐ CCME ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality: _____ ☐ Other: _____

Matrix Type: S (Soil Sed.) GW (Ground Water) SW (Surface Water) SS (Storm Sanitary Sewer) P (Paint) A (Air) O (Other)

Required Analyses

Paracel Order Number: 1432225

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken: Date	Sample Taken: Time	PHCs F1-F4+BTEX	VOCs	PAHs	Metals by ICP	Hg	CrVI	B (HWS)							
1	Cell #4 #3	S		1	Aug 6	9:30 am	☑													
2	[redacted]						☑													
3	Pile #1	S		1			☑													
4	Pile #2	S		1			☑													
5	YHKD #1	S		1			☑													
6	YHKD #2	S		1			☑													
7	YHKD #3	S		1			☑													
8	YHKD #4	S		1			☑													
9	YHKD #5	S		1			☑													
10							☐													

13cm

Comments:

Method of Delivery: Courier North

Relinquished By (Sign): James H Wilson

Relinquished By (Print): James H Wilson

Date/Time: Aug 6 10:00 am

Received by Driver/Depot: FT House

Date/Time: 08/08/14 9:45 am

Temperature: _____ °C

Received at Lab: Whitehorse DIKAH

Date/Time: Aug 8/2014 15:30

Temperature: 5.4 °C

Verified By: M/C

Date/Time: Aug 8/14 10:43

pH Verified [ ] By: N/A

PARACEL LABORATORIES LTD. | TRUSTED. RESPONSIVE. RELIABLE.

OTTAWA · KINGSTON · NIAGARA · MISSISSAUGA · SARNIA

Head Office
300-2319 St. Laurent Blvd.
Ottawa, Ontario K1G 4J8
p: 1-800-749-1947
e: paracel@paracellabs.com

www.paracellabs.com

Certificate of Analysis

Nunatta Environmental Services Inc.
P.O. Box 267
Iqaluit, NU X0A 0H0
Attn: Jim Wilson

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

Client PO:
Project: Landfarm Soils
Custody: 101497

Report Date: 13-Aug-2014
Order Date: 7-Aug-2014
Order #: 1432225

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

Paracel ID	Client ID
1432225-06	Cell #3 - #1
1432225-07	Cell #3 - #2
1432225-08	Cell #3 - #3

Approved By: Mark Foto

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

PARACEL
LABORATORIES LTD

Order #: 1432225

Certificate of Analysis

Report Date: 13-Aug-2014
Order Date:7-Aug-2014

Client: **Nunatta Environmental Services Inc.**
Client PO:

Project Description: Landfarm Soils

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
BTEX by P&T GC-MS	EPA 8260 - P&T GC-MS	11-Aug-14	12-Aug-14
PHC F1	CWS Tier 1 - P&T GC-FID	11-Aug-14	12-Aug-14
PHC F2 - F4	CWS Tier 1 - GC-FID, extraction	8-Aug-14	11-Aug-14
Solids, %	Gravimetric, calculation	11-Aug-14	11-Aug-14

PARACEL LABORATORIES LTD

Order #: 1432225

Certificate of Analysis

Report Date: 13-Aug-2014
Order Date:7-Aug-2014

Client: **Nunatta Environmental Services Inc.**
Client PO:

Project Description: Landfarm Soils

	Client ID:	Cell #3 - #1	Cell #3 - #2	Cell #3 - #3	-
	Sample Date:	06-Aug-14	06-Aug-14	06-Aug-14	-
	Sample ID:	1432225-06	1432225-07	1432225-08	-
	MDL/Units	Soil	Soil	Soil	-
Physical Characteristics					
% Solids	0.1 % by Wt.	93.8	92.8	93.0	-
Volatiles					
Benzene	0.02 ug/g dry	<0.02	<0.02	<0.02	-
Ethylbenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Toluene	0.05 ug/g dry	0.81	<0.05	0.31	-
m,p-Xylenes	0.05 ug/g dry	<0.05	<0.05	<0.05	-
o-Xylene	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Xylenes, total	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Toluene-d8	Surrogate	104%	89.4%	89.5%	-
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	<7	-
F2 PHCs (C10-C16)	4 ug/g dry	99	60	109	-
F3 PHCs (C16-C34)	8 ug/g dry	226	170	309	-
F4 PHCs (C34-C50)	6 ug/g dry	62	45	107	-

PARACEL LABORATORIES LTD

Order #: 1432225

Certificate of Analysis

Report Date: 13-Aug-2014
Order Date:7-Aug-2014

Client: **Nunatta Environmental Services Inc.**
Client PO: Project Description: Landfarm Soils

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g						
F2 PHCs (C10-C16)	ND	4	ug/g						
F3 PHCs (C16-C34)	ND	8	ug/g						
F4 PHCs (C34-C50)	ND	6	ug/g						
Volatiles									
Benzene	ND	0.02	ug/g						
Ethylbenzene	ND	0.05	ug/g						
Toluene	ND	0.05	ug/g						
m,p-Xylenes	ND	0.05	ug/g						
o-Xylene	ND	0.05	ug/g						
Xylenes, total	ND	0.05	ug/g						
Surrogate: Toluene-d8	*3.00*		*ug/g*		*93.6*	*50-140*			

Certificate of Analysis

Report Date: 13-Aug-2014
Order Date:7-Aug-2014

Client: **Nunatta Environmental Services Inc.**
Client PO: Project Description: Landfarm Soils

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g dry	ND			0.0	40	
F2 PHCs (C10-C16)	ND	4	ug/g dry	ND				30	
F3 PHCs (C16-C34)	79	8	ug/g dry	95			18.8	30	
F4 PHCs (C34-C50)	229	6	ug/g dry	312			30.9	30	QR-04
Physical Characteristics									
% Solids	95.0	0.1	% by Wt.	94.9			0.1	25	
Volatiles									
Benzene	ND	0.02	ug/g dry	ND				50	
Ethylbenzene	ND	0.05	ug/g dry	ND				50	
Toluene	ND	0.05	ug/g dry	ND				50	
m,p-Xylenes	ND	0.05	ug/g dry	ND				50	
o-Xylene	ND	0.05	ug/g dry	ND				50	
Surrogate: Toluene-d8	*2.99*		*ug/g dry*	*ND*	*88.7*	*50-140*			

PARACEL LABORATORIES LTD

Order #: 1432225

Certificate of Analysis

Report Date: 13-Aug-2014
Order Date:7-Aug-2014

Client: **Nunatta Environmental Services Inc.**
Client PO: Project Description: Landfarm Soils

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	207	7	ug/g	ND	103	80-120			
F2 PHCs (C10-C16)	109	4	ug/g	ND	107	60-140			
F3 PHCs (C16-C34)	349	8	ug/g	95	121	60-140			
F4 PHCs (C34-C50)	403	6	ug/g	312	64.8	60-140			
Volatiles									
Benzene	2.88	0.02	ug/g	ND	71.9	60-130			
Ethylbenzene	3.55	0.05	ug/g	ND	88.7	60-130			
Toluene	3.80	0.05	ug/g	ND	95.0	60-130			
m,p-Xylenes	7.77	0.05	ug/g	ND	97.1	60-130			
o-Xylene	3.77	0.05	ug/g	ND	94.2	60-130			
Surrogate: Toluene-d8	*2.64*		*ug/g*		*82.5*	*50-140*			

Certificate of Analysis

Report Date: 13-Aug-2014
Order Date:7-Aug-2014

Client: **Nunatta Environmental Services Inc.**
Client PO: Project Description: Landfarm Soils

Qualifier Notes:

QC Qualifiers :

QR-04 : Duplicate results exceeds RPD limits due to non-homogeneous matrix.

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable
ND: Not Detected
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. | TRUSTED. RESPONSIVE. RELIABLE.

OTTAWA • KINGSTON • NIAGARA • MISSISSAUGA • SARNIA

Head Office
300-2319 St. Laurent Blvd.
Ottawa, Ontario K1G 4J8
p. 1-800-749-1947
e: paracel@paracellabs.com
www.paracellabs.com

Chain of Custody
(Lab Use Only)
№ 101497

Page 1 of 2

Client Name: Nunatta Environmental
Contact Name: Jim Wilson
Address: 1575 Federal Rd Iqaluit NU
Telephone: 867-979-1488
Project Reference: Landfarm Soils
Quote #:
PO #:
Email Address: nunatta@northwestel.net
TAT: [✓] Regular [ ] 3 Day [ ] 2 Day [ ] 1 Day
Date Required:

Criteria: [ ] O. Reg. 153/04 (As Amended) Table __ [ ] RSC Filing [ ] O. Reg. 558/00 [ ] PWQO [ ] CCME [ ] SUB (Storm) [ ] SUB (Sanitary) Municipal: [ ] Other:

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Required Analyses

	Paracel Order Number: 1432225 / Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	PHCs F1-F4 / BTEX	VOCs	PAHs	Metals by ICP	Hg	CrVI	B (HWS)	
1	Cell #1 #1	S	D	1	Aug 6	9:00am	X							-120 hrs-
2	Cell #1 #2	S		1			X							
3	Cell #1 #3	S		1			X							
4	Cell #2 #1			1			X							
5	Cell #2 #2			1			X							
6	Cell #3 #1			1			X							
7	Cell #3 #2			1			X							
8	Cell #3 #3			1			X							
9	Cell #4 #1			1			X							
10	Cell #4 #2			1			X							

Comments:

Method of Delivery: CANADIAN NORTH

Relinquished By (Sign): James Hutchison	Received by Driver/Depot: T. Stouse	Received at Lab: SUNEEP BN DFK MAI
Relinquished By (Print): James H Wilson	Date/Time: 08/08/14 9:15am	Date/Time: AUG 8/14 10:30
Date/Time: Aug 6 10:00am	Temperature: ___°C	Temperature: 9.4 °C
		Verified By: MJC
		Date/Time: Aug 8/14 11:43
		pH Verified [ ] By: N/A

PARACEL LABORATORIES LTD. | TRUSTED. RESPONSIVE. RELIABLE.

OTTAWA · KINGSTON · NIAGARA · MISSISSAUGA · SARNIA

Head Office
300-2319 St. Laurent Blvd.
Ottawa, Ontario K1G 4J8
1-800-749-1947
paracel@paracellabs.com
www.paracellabs.com

Chain of Custody (Lab Use Only)

Page 2 of 2

Client Name: Wyatt Environmental
Contact Name: Jim Wilson
Address: 1575 Federal Rd
Telephone:
Project Reference: LANDFARM Soils
Quote #:
PO #:
Email Address: wyatt@northwestel.net

TAT: ☑ Regular ☐ 3 Day ☐ 2 Day ☐ 1 Day
Date Required:

Criteria: ☐ O. Reg. 153 (As Amended) Table __ ☐ RSC Filing ☐ O. Reg. 558/00 ☐ PWQO ☐ CCME ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality: ☐ Other:

Matrix Type: S (Soil Sed.) GW (Ground Water) SW (Surface Water) SS (Storm Sanitary Sewer) P (Paint) A (Air) O (Other)

Paracel Order Number: 1432225

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	PHCs F1-F4+BTEX	VOCs	PAHs	Metals by ICP	Hg	CrVI	B (HWS)	Required Analyses
1	Cell #4 #3	S		1	Aug 6	9:30 am	☑	☐	☐	☐	☐	☐	☐	
2	[redacted]						☑	☐	☐	☐	☐	☐	☐	
3	Pile #1	S		1			☑	☐	☐	☐	☐	☐	☐	
4	Pile #2	S		1			☑	☐	☐	☐	☐	☐	☐	
5	YHKD #1	S		1			☑	☐	☐	☐	☐	☐	☐	
6	YHKD #2	S		1			☑	☐	☐	☐	☐	☐	☐	
7	YHKD #3	S		1			☑	☐	☐	☐	☐	☐	☐	
8	YHKD #4	S		1			☑	☐	☐	☐	☐	☐	☐	
9	YHKD #5	S		1			☑	☐	☐	☐	☐	☐	☐	
10							☐	☐	☐	☐	☐	☐	☐	

Comments:

Method of Delivery: Canadian North

Relinquished By (Sign): James Hunter
Relinquished By (Print): James H Wilson
Date/Time: Aug 6 10:00 am

Received by Driver/Depot: T House
Date/Time: 08/08/14 9:45 am
Temperature: °C

Received at Lab: Whitehorse DHKMH
Date/Time: Aug 8/14 10:30
Temperature: 5.4 °C

Verified By: M C
Date/Time: Aug 8/14 10:43
pH Verified ☐ By: N/A

PARACEL LABORATORIES LTD. | TRUSTED. RESPONSIVE. RELIABLE.

OTTAWA · KINGSTON · NIAGARA · MISSISSAUGA · SARNIA

Head Office
300-2319 St. Laurent Blvd.
Ottawa, Ontario K1G 4J8
p: 1-800-749-1947
e: paracel@paracellabs.com

www.paracellabs.com

Certificate of Analysis

Nunatta Environmental Services Inc.
P.O. Box 267
Iqaluit, NU X0A 0H0
Attn: Jim Wilson

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

Client PO:
Project: Landfarm Soils
Custody: 101497

Report Date: 13-Aug-2014
Order Date: 7-Aug-2014
Order #: 1432225

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

Paracel ID	Client ID
1432225-09	Cell #4 - #1
1432225-10	Cell #4 - #2
1432225-11	Cell #4 - #3

Approved By: Mark Foto

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

PARACEL LABORATORIES LTD

Order #: 1432225

Certificate of Analysis

Report Date: 13-Aug-2014
Order Date:7-Aug-2014

Client: **Nunatta Environmental Services Inc.**
Client PO: Project Description: Landfarm Soils

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
BTEX by P&T GC-MS	EPA 8260 - P&T GC-MS	11-Aug-14	13-Aug-14
PHC F1	CWS Tier 1 - P&T GC-FID	11-Aug-14	13-Aug-14
PHC F2 - F4	CWS Tier 1 - GC-FID, extraction	8-Aug-14	11-Aug-14
Solids, %	Gravimetric, calculation	11-Aug-14	11-Aug-14

PARACEL LABORATORIES LTD

Order #: 1432225

Certificate of Analysis

Report Date: 13-Aug-2014
Order Date:7-Aug-2014

Client: **Nunatta Environmental Services Inc.**
Client PO:

Project Description: Landfarm Soils

	Client ID:	Cell #4 - #1	Cell #4 - #2	Cell #4 - #3	-
	Sample Date:	06-Aug-14	06-Aug-14	06-Aug-14	-
	Sample ID:	1432225-09	1432225-10	1432225-11	-
	MDL/Units	Soil	Soil	Soil	-
Physical Characteristics					
% Solids	0.1 % by Wt.	93.7	93.8	93.3	-
Volatiles					
Benzene	0.02 ug/g dry	<0.02	<0.02	<0.02	-
Ethylbenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Toluene	0.05 ug/g dry	<0.05	<0.05	<0.05	-
m,p-Xylenes	0.05 ug/g dry	<0.05	<0.05	<0.05	-
o-Xylene	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Xylenes, total	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Toluene-d8	Surrogate	88.3%	90.6%	89.7%	-
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	16	-
F2 PHCs (C10-C16)	4 ug/g dry	333	197	126	-
F3 PHCs (C16-C34)	8 ug/g dry	199	226	150	-
F4 PHCs (C34-C50)	6 ug/g dry	47	79	45	-

Certificate of Analysis

Report Date: 13-Aug-2014
Order Date:7-Aug-2014

Client: **Nunatta Environmental Services Inc.**
Client PO: Project Description: Landfarm Soils

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g						
F2 PHCs (C10-C16)	ND	4	ug/g						
F3 PHCs (C16-C34)	ND	8	ug/g						
F4 PHCs (C34-C50)	ND	6	ug/g						
Volatiles									
Benzene	ND	0.02	ug/g						
Ethylbenzene	ND	0.05	ug/g						
Toluene	ND	0.05	ug/g						
m,p-Xylenes	ND	0.05	ug/g						
o-Xylene	ND	0.05	ug/g						
Xylenes, total	ND	0.05	ug/g						
Surrogate: Toluene-d8	*3.00*		*ug/g*		*93.6*	*50-140*			

Certificate of Analysis

Report Date: 13-Aug-2014
Order Date:7-Aug-2014

Client: **Nunatta Environmental Services Inc.**
Client PO: Project Description: Landfarm Soils

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g dry	ND			0.0	40	
F2 PHCs (C10-C16)	ND	4	ug/g dry	ND				30	
F3 PHCs (C16-C34)	79	8	ug/g dry	95			18.8	30	
F4 PHCs (C34-C50)	229	6	ug/g dry	312			30.9	30	QR-04
Physical Characteristics									
% Solids	95.0	0.1	% by Wt.	94.9			0.1	25	
Volatiles									
Benzene	ND	0.02	ug/g dry	ND				50	
Ethylbenzene	ND	0.05	ug/g dry	ND				50	
Toluene	ND	0.05	ug/g dry	ND				50	
m,p-Xylenes	ND	0.05	ug/g dry	ND				50	
o-Xylene	ND	0.05	ug/g dry	ND				50	
Surrogate: Toluene-d8	*2.99*		*ug/g dry*	*ND*	*88.7*	*50-140*			

PARACEL LABORATORIES LTD

Order #: 1432225

Certificate of Analysis

Report Date: 13-Aug-2014
Order Date:7-Aug-2014

Client: **Nunatta Environmental Services Inc.**
Client PO: Project Description: Landfarm Soils

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	207	7	ug/g	ND	103	80-120			
F2 PHCs (C10-C16)	109	4	ug/g	ND	107	60-140			
F3 PHCs (C16-C34)	349	8	ug/g	95	121	60-140			
F4 PHCs (C34-C50)	403	6	ug/g	312	64.8	60-140			
Volatiles									
Benzene	2.88	0.02	ug/g	ND	71.9	60-130			
Ethylbenzene	3.55	0.05	ug/g	ND	88.7	60-130			
Toluene	3.80	0.05	ug/g	ND	95.0	60-130			
m,p-Xylenes	7.77	0.05	ug/g	ND	97.1	60-130			
o-Xylene	3.77	0.05	ug/g	ND	94.2	60-130			
Surrogate: Toluene-d8	*2.64*		*ug/g*		*82.5*	*50-140*			

PARACEL LABORATORIES LTD.

Order #: 1432225

Certificate of Analysis

Report Date: 13-Aug-2014
Order Date:7-Aug-2014

Client: **Nunatta Environmental Services Inc.**
Client PO: Project Description: Landfarm Soils

Qualifier Notes:

QC Qualifiers :

QR-04 : Duplicate results exceeds RPD limits due to non-homogeneous matrix.

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable
ND: Not Detected
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. | TRUSTED. RESPONSIVE. RELIABLE.

OTTAWA • KINGSTON • NIAGARA • MISSISSAUGA • SARNIA

Head Office
300-2319 St Laurent Blvd.
Ottawa, Ontario K1G 4J8
p 1-800-749-1947
e paracel@paracellabs.com
www.paracellabs.com

Chain of Custody
(Lab Use Only)
№ 101497

Page 1 of 2

Client Name: Nunatta Environmental
Contact Name: Jim Wilson
Address: 1575 Federal Rd Iqaluit NU
Telephone: 867-979-1488
Project Reference: Landfarm Soils
Quote #:
PO #:
Email Address: nunatta@northwestel.net

TAT [✓] Regular [ ] 3 Day [ ] 2 Day [ ] 1 Day
Date Required: _____

Criteria: [ ] O. Reg. 153/04 (As Amended) Table __ [ ] RSC Filing [ ] O. Reg. 558/00 [ ] PWQO [ ] CCME [ ] SUB (Storm) [ ] SUB (Sanitary) Municipality [ ] Other: _____

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Paracel Order Number: 1432225

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	PHCs F1-F4 + BTEX	VOCs	PAHs	Metals by ICP	Hg	CrVI	B (HWS)	
1	Cell #1 #1	S	D	1	Aug 6	9:00am	X							-120 hrs-
2	Cell #1 #2	S		1			X							
3	Cell #1 #3	S		1			X							
4	Cell #2 #1			1			X							
5	Cell #2 #2			1			X							
6	Cell #3 #1			1			X							
7	Cell #3 #2			1			X							
8	Cell #3 #3			1			X							
9	Cell #4 #1			1			X							
10	Cell #4 #2			1			X							

Comments:

Method of Delivery: Canadian North

Relinquished By (Sign): James Wilson
Relinquished By (Print): James Wilson
Date/Time: Aug 6 10:00am

Received by Driver/Depot: T. Scouse
Date/Time: 08/08/14 9:45am
Temperature: _____ °C

Received at Lab: Sunekpoint Dark Hall
Date/Time: August 8th 10:30
Temperature: 9.4 °C

Verified By: MJC
Date/Time: Aug 8/14 11:43
pH Verified By: N/A

PARACEL LABORATORIES LTD. | TRUSTED. RESPONSIVE. RELIABLE.

OTTAWA · KINGSTON · NIAGARA · MISSISSAUGA · SARNIA

Head Office
300-2319 St Laurent Blvd.
Ottawa, Ontario K1G 4J8
1-800-749-1947
paracel@paracellabs.com
www.paracellabs.com

Chain of Custody
(Lab Use Only)

Client Name: Kwatta Environmental
Contact Name: Jim Wilson
Address: 1575 Federal Rd
Telephone:

Project Reference: LANDFARM Soils
Quote #:
PO #:
Email Address: kwatta@northwestel.net

TAT: ☑ Regular ☐ 3 Day ☐ 2 Day ☐ 1 Day
Date Required: _____

Criteria: ☐ O. Reg. 153 (As Amended) Table __ ☐ RSC Filing ☐ O. Reg. 558/00 ☐ PWQO ☐ CCME ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality: _____ ☐ Other: _____

Matrix Type: S (Soil Sed.) GW (Ground Water) SW (Surface Water) SS (Storm Sanitary Sewer) P (Paint) A (Air) O (Other)

Paracel Order Number: 1432225

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken: Date	Sample Taken: Time	Required Analyses: PHCs F1-F4 + BTEX	VOCs	PAHs	Metals by ICP	Hg	CrVI	B (HWS)
1	Cell #4 #3	S	0	1	Aug 6	9:30am	☑	☐	☐	☐	☐	☐	☐
2	[redacted]		~~0~~	~~1~~			☐	☐	☐	☐	☐	☐	☐
3	Pile #1	S		1			☑	☐	☐	☐	☐	☐	☐
4	Pile #2	S		1			☑	☐	☐	☐	☐	☐	☐
5	YHKD #1	S		1			☑	☐	☐	☐	☐	☐	☐
6	YHKD #2	S		1			☑	☐	☐	☐	☐	☐	☐
7	YHKD #3	S		1			☑	☐	☐	☐	☐	☐	☐
8	YHKD #4	S	↓	1			☑	☐	☐	☐	☐	☐	☐
9	YHKD #5	S	↓	1			☑	☐	☐	☐	☐	☐	☐
10							☐	☐	☐	☐	☐	☐	☐

Comments:

Method of Delivery: CANADIAN NORTH

Relinquished By (Sign): James H Wilson
Relinquished By (Print): James H Wilson
Date/Time: Aug 6 10:00am

Received by Driver/Depot: FT House
Date/Time: 08/08/14 9:45am
Temperature: _____ °C

Received at Lab: SUMEEPOPH DIKAM
Date/Time: Aug 8/14 10:30
Temperature: 5.4 °C

Verified By: MC
Date/Time: Aug 8/14 11:43
pH Verified ☐ By: _____

PARACEL LABORATORIES LTD. | TRUSTED. RESPONSIVE. RELIABLE.

OTTAWA • KINGSTON • NIAGARA • MISSISSAUGA • SARNIA

Head Office
300-2319 St. Laurent Blvd.
Ottawa, Ontario K1G 4J8
p: 1-800-749-1947
e: paracel@paracellabs.com
www.paracellabs.com

Certificate of Analysis

Nunatta Environmental Services Inc.
P.O. Box 267
Iqaluit, NU X0A 0H0
Attn: Jim Wilson

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

Client PO:
Project: Land Farm Cell #3B
Custody:

Report Date: 21-Aug-2014
Order Date: 15-Aug-2014
Order #: 1434025

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

Paracel ID	Client ID
1434025-01	Cell #3 #1B

Approved By: Mark Foto

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