

Certificate of Analysis

Client: Nunatta Environmental Services Inc.

Report Date: 21-Aug-2014

Client PO:

Project Description: Land Farm Cell #3B

Order Date: 15-Aug-2014

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
BTEX by P&T GC-MS	EPA 8260 - P&T GC-MS	19-Aug-14	20-Aug-14
PHC F1	CWS Tier 1 - P&T GC-FID	19-Aug-14	20-Aug-14
PHC F2 - F4	CWS Tier 1 - GC-FID, extraction	20-Aug-14	20-Aug-14
Solids, %	Gravimetric, calculation	20-Aug-14	20-Aug-14

Certificate of Analysis

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

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

Project Description: Land Farm Cell #3B

Client ID:	Cell #3 #1B	-	-	-
Sample Date:	15-Aug-14	-	-	-
Sample ID:	1434025-01	-	-	-
MDL/Units	Soil	-	-	-

Physical Characteristics

% Solids	0.1 % by Wt.	94.4	-	-	-
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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	94.8%	-	-	-

Hydrocarbons

F1 PHCs (C6-C10)	7 ug/g dry	<7	-	-	-
F2 PHCs (C10-C16)	4 ug/g dry	17	-	-	-
F3 PHCs (C16-C34)	8 ug/g dry	209	-	-	-
F4 PHCs (C34-C50)	6 ug/g dry	<6	-	-	-

Certificate of Analysis

Client: Nunatta Environmental Services Inc.
Client PO:

Project Description: Land Farm Cell #3B

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

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	7.92		ug/g		99.0	50-140			

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Client: Nunatta Environmental Services Inc.
Client PO:

Project Description: Land Farm Cell #3B

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

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	1190	7	ug/g dry	1120			6.0	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	
Physical Characteristics									
% Solids	87.0	0.1	% by Wt.	87.4			0.4	25	
Volatiles									
Benzene	0.030	0.02	ug/g dry	ND			0.0	50	
Ethylbenzene	7.18	0.05	ug/g dry	6.97			3.0	50	
Toluene	3.19	0.05	ug/g dry	2.51			23.7	50	
m,p-Xylenes	32.3	0.05	ug/g dry	34.9			7.7	50	
o-Xylene	16.7	0.05	ug/g dry	19.3			14.3	50	
Surrogate: Toluene-d8	6.32		ug/g dry	ND	97.8	50-140			

Certificate of Analysis

Client: Nunatta Environmental Services Inc.
Client PO:

Project Description: Land Farm Cell #3B

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

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	201	7	ug/g	ND	101	80-120			
F2 PHCs (C10-C16)	79	4	ug/g	ND	69.5	60-140			
F3 PHCs (C16-C34)	183	8	ug/g	ND	77.5	60-140			
F4 PHCs (C34-C50)	160	6	ug/g	ND	102	60-140			
Volatiles									
Benzene	4.90	0.02	ug/g	ND	123	60-130			
Ethylbenzene	4.20	0.05	ug/g	ND	105	60-130			
Toluene	3.60	0.05	ug/g	ND	90.0	60-130			
m,p-Xylenes	8.44	0.05	ug/g	ND	105	60-130			
o-Xylene	4.47	0.05	ug/g	ND	112	60-130			
Surrogate: Toluene-d8	6.03		ug/g		75.4	50-140			

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Project Description: **Land Farm Cell #3B**

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

Qualifier Notes:

None

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.

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:

Report Date: 9-Oct-2014
Order Date: 6-Oct-2014

Order #: 1441084

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

Paracel ID	Client ID
1441084-01	Cell #3 North End
1441084-02	Cell #3 Middle
1441084-03	Cell #3 Southwest

Approved By:

Mark Foto

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

Any use of these results implies your agreement that our total liability in connection with this work, however arising shall be limited to the amount paid by you for this work, and that our employees or agents shall not under circumstances be liable to you in connection with this work

Certificate of Analysis

Client: **Nunatta Environmental Services Inc.**

Report Date: 09-Oct-2014

Client PO:

Project Description: Landfarm Soils

Order Date: 6-Oct-2014

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Anions	EPA 300.1 - IC, water extraction	8-Oct-14	8-Oct-14
Metals, ICP-MS	EPA 6020 - Digestion - ICP-MS	8-Oct-14	8-Oct-14
Nitrogen as N, total	Calculation	8-Oct-14	8-Oct-14
PAHs by GC-MS	EPA 8270 - GC-MS, extraction	7-Oct-14	7-Oct-14
PCBs, total	SW846 8082A - GC-ECD	7-Oct-14	8-Oct-14
PHC F1	CWS Tier 1 - P&T GC-FID	7-Oct-14	8-Oct-14
PHC F2 - F4	CWS Tier 1 - GC-FID, extraction	7-Oct-14	8-Oct-14
Phosphorus, total	EPA 365.4 - Auto Colour, digestion	8-Oct-14	8-Oct-14
Solids, %	Gravimetric, calculation	8-Oct-14	8-Oct-14
Standard Plate Count	based on SM 9215C	7-Oct-14	7-Oct-14
TKN	based on EPA351.2 - Auto Colour, digestion	8-Oct-14	8-Oct-14
VOCs by P&T GC-MS	EPA 8260 - P&T GC-MS	7-Oct-14	8-Oct-14

Certificate of Analysis

Client: Nunatta Environmental Services Inc.

Report Date: 09-Oct-2014

Client PO:

Project Description: Landfarm Soils

Order Date: 6-Oct-2014

Client ID:	Cell #3 North End	Cell #3 Middle	Cell #3 Southwest	-
Sample Date:	30-Sep-14	30-Sep-14	30-Sep-14	-
Sample ID:	1441084-01	1441084-02	1441084-03	-
MDL/Units	Soil	Soil	Soil	-

Physical Characteristics

% Solids	0.1 % by Wt.	93.7	93.5	92.7	-
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Microbiological Parameters

Standard Plate Count	1000 CFU/g	78000 [1]	29000 [1]	202000 [1]	-
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General Inorganics

Nitrogen, Total	21 ug/g	588	482	474	-
Phosphorus, total	1.00 ug/g dry	799	578	724	-
Total Kjeldahl Nitrogen	10 ug/g dry	530	430	403	-

Anions

Nitrate as N	1 ug/g dry	57	51	71	-
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Metals

Potassium	200 ug/g dry	758	731	763	-
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Volatiles

Acetone	0.50 ug/g dry	<0.50	<0.50	<0.50	-
Benzene	0.02 ug/g dry	<0.02	<0.02	<0.02	-
Bromodichloromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Bromoform	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Bromomethane	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Carbon Tetrachloride	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Chlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Chloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Chloroform	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Chloromethane	0.20 ug/g dry	<0.20	<0.20	<0.20	-
Dibromochloromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Dichlorodifluoromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	-
1,2-Dibromoethane	0.05 ug/g dry	<0.05	<0.05	<0.05	-
1,2-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	-
1,3-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	-
1,4-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	-
1,1-Dichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	-
1,2-Dichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	-
1,1-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	-
cis-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	-
trans-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	-

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Report Date: 09-Oct-2014

Client PO:

Project Description: Landfarm Soils

Order Date: 6-Oct-2014

	Client ID: Sample Date: Sample ID:	Cell #3 North End 30-Sep-14 1441084-01 Soil	Cell #3 Middle 30-Sep-14 1441084-02 Soil	Cell #3 Southwest 30-Sep-14 1441084-03 Soil	-
	MDL/Units				
1,2-Dichloroethylene, total	0.05 ug/g dry	<0.05	<0.05	<0.05	-
1,2-Dichloropropane	0.05 ug/g dry	<0.05	<0.05	<0.05	-
cis-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	<0.05	<0.05	-
trans-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	<0.05	<0.05	-
1,3-Dichloropropene, total	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Ethylbenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Hexane	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Methyl Ethyl Ketone (2-Butanone)	0.50 ug/g dry	<0.50	<0.50	<0.50	-
Methyl Butyl Ketone (2-Hexanone)	2.00 ug/g dry	<2.00	<2.00	<2.00	-
Methyl Isobutyl Ketone	0.50 ug/g dry	<0.50	<0.50	<0.50	-
Methyl tert-butyl ether	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Methylene Chloride	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Styrene	0.05 ug/g dry	<0.05	<0.05	<0.05	-
1,1,1,2-Tetrachloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	-
1,1,2,2-Tetrachloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Tetrachloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Toluene	0.05 ug/g dry	<0.05	<0.05	<0.05	-
1,1,1-Trichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	-
1,1,2-Trichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Trichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Trichlorofluoromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	-
1,3,5-Trimethylbenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Vinyl chloride	0.02 ug/g dry	<0.02	<0.02	<0.02	-
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	-
4-Bromofluorobenzene	Surrogate	106%	107%	106%	-
Dibromofluoromethane	Surrogate	96.4%	96.5%	97.0%	-
Toluene-d8	Surrogate	99.0%	98.5%	97.8%	-

Hydrocarbons

F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	<7	-
F2 PHCs (C10-C16)	4 ug/g dry	188	223	132	-
F3 PHCs (C16-C34)	8 ug/g dry	143	111	95	-
F4 PHCs (C34-C50)	6 ug/g dry	28	15	13	-

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Report Date: 09-Oct-2014
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Project Description: Landfarm Soils

Client ID:	Cell #3 North End	Cell #3 Middle	Cell #3 Southwest	
Sample Date:	30-Sep-14	30-Sep-14	30-Sep-14	-
Sample ID:	1441084-01	1441084-02	1441084-03	-
MDL/Units	Soil	Soil	Soil	-

Semi-Volatiles

Acenaphthene	0.02 ug/g dry	<0.02	<0.02	<0.02	-
Acenaphthylene	0.02 ug/g dry	<0.02	<0.02	<0.02	-
Anthracene	0.02 ug/g dry	<0.02	<0.02	<0.02	-
Benzo [a] anthracene	0.02 ug/g dry	<0.02	0.03	0.04	-
Benzo [a] pyrene	0.02 ug/g dry	0.03	0.04	0.04	-
Benzo [b] fluoranthene	0.02 ug/g dry	0.06	0.06	0.09	-
Benzo [g,h,i] perylene	0.02 ug/g dry	0.03	0.03	0.04	-
Benzo [k] fluoranthene	0.02 ug/g dry	0.03	0.02	0.03	-
Biphenyl	0.02 ug/g dry	<0.02	<0.02	<0.02	-
Chrysene	0.02 ug/g dry	<0.02	0.03	0.03	-
Dibenzo [a,h] anthracene	0.02 ug/g dry	<0.02	<0.02	<0.02	-
Fluoranthene	0.02 ug/g dry	0.02	0.03	0.05	-
Fluorene	0.02 ug/g dry	<0.02	<0.02	<0.02	-
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	0.03	0.03	0.04	-
1-Methylnaphthalene	0.02 ug/g dry	0.08	0.03	0.03	-
2-Methylnaphthalene	0.02 ug/g dry	0.05	0.02	0.02	-
Methylnaphthalene (1&2)	0.04 ug/g dry	0.14	0.05	0.06	-
Naphthalene	0.01 ug/g dry	<0.01	<0.01	<0.01	-
Phenanthrene	0.02 ug/g dry	<0.02	<0.02	0.02	-
Pyrene	0.02 ug/g dry	0.04	0.05	0.07	-
Quinoline	0.10 ug/g dry	<0.10	2.21	4.20	-
2-Fluorobiphenyl	Surrogate	115%	111%	123%	-
Terphenyl-d14	Surrogate	82.7%	78.7%	86.9%	-

PCBs

PCBs, total	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Decachlorobiphenyl	Surrogate	96.1%	107%	109%	-

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Report Date: 09-Oct-2014

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Project Description: Landfarm Soils

Order Date: 6-Oct-2014

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									
Potassium	ND	200	ug/g						
Microbiological Parameters									
Standard Plate Count	ND	1000	CFU/g						
PCBs									
PCBs, total	ND	0.05	ug/g						
Surrogate: Decachlorobiphenyl	0.103		ug/g		103	60-140			
Semi-Volatiles									
Acenaphthene	ND	0.02	ug/g						
Acenaphthylene	ND	0.02	ug/g						
Anthracene	ND	0.02	ug/g						
Benzo [a] anthracene	ND	0.02	ug/g						
Benzo [a] pyrene	ND	0.02	ug/g						
Benzo [b] fluoranthene	ND	0.02	ug/g						
Benzo [g,h,i] perylene	ND	0.02	ug/g						
Benzo [k] fluoranthene	ND	0.02	ug/g						
Biphenyl	ND	0.02	ug/g						
Chrysene	ND	0.02	ug/g						
Dibenzo [a,h] anthracene	ND	0.02	ug/g						
Fluoranthene	ND	0.02	ug/g						
Fluorene	ND	0.02	ug/g						
Indeno [1,2,3-cd] pyrene	ND	0.02	ug/g						
1-Methylnaphthalene	ND	0.02	ug/g						
2-Methylnaphthalene	ND	0.02	ug/g						
Methylnaphthalene (1&2)	ND	0.04	ug/g						
Naphthalene	ND	0.01	ug/g						
Phenanthrene	ND	0.02	ug/g						
Pyrene	ND	0.02	ug/g						
Quinoline	ND	0.10	ug/g						
Surrogate: 2-Fluorobiphenyl	1.64		ug/g		123	50-140			
Surrogate: Terphenyl-d14	1.25		ug/g		93.7	50-140			
Volatiles									
Acetone	ND	0.50	ug/g						
Benzene	ND	0.02	ug/g						
Bromodichloromethane	ND	0.05	ug/g						
Bromoform	ND	0.05	ug/g						
Bromomethane	ND	0.05	ug/g						
Carbon Tetrachloride	ND	0.05	ug/g						
Chlorobenzene	ND	0.05	ug/g						
Chloroethane	ND	0.05	ug/g						
Chloroform	ND	0.05	ug/g						
Chloromethane	ND	0.20	ug/g						
Dibromochloromethane	ND	0.05	ug/g						

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Project Description: Landfarm Soils

Order Date: 6-Oct-2014

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Dichlorodifluoromethane	ND	0.05	ug/g						
1,2-Dibromoethane	ND	0.05	ug/g						
1,2-Dichlorobenzene	ND	0.05	ug/g						
1,3-Dichlorobenzene	ND	0.05	ug/g						
1,4-Dichlorobenzene	ND	0.05	ug/g						
1,1-Dichloroethane	ND	0.05	ug/g						
1,2-Dichloroethane	ND	0.05	ug/g						
1,1-Dichloroethylene	ND	0.05	ug/g						
cis-1,2-Dichloroethylene	ND	0.05	ug/g						
trans-1,2-Dichloroethylene	ND	0.05	ug/g						
1,2-Dichloroethylene, total	ND	0.05	ug/g						
1,2-Dichloropropane	ND	0.05	ug/g						
cis-1,3-Dichloropropylene	ND	0.05	ug/g						
trans-1,3-Dichloropropylene	ND	0.05	ug/g						
1,3-Dichloropropene, total	ND	0.05	ug/g						
Ethylbenzene	ND	0.05	ug/g						
Hexane	ND	0.05	ug/g						
Methyl Ethyl Ketone (2-Butanone)	ND	0.50	ug/g						
Methyl Butyl Ketone (2-Hexanone)	ND	2.00	ug/g						
Methyl Isobutyl Ketone	ND	0.50	ug/g						
Methyl tert-butyl ether	ND	0.05	ug/g						
Methylene Chloride	ND	0.05	ug/g						
Styrene	ND	0.05	ug/g						
1,1,1,2-Tetrachloroethane	ND	0.05	ug/g						
1,1,2,2-Tetrachloroethane	ND	0.05	ug/g						
Tetrachloroethylene	ND	0.05	ug/g						
Toluene	ND	0.05	ug/g						
1,1,1-Trichloroethane	ND	0.05	ug/g						
1,1,2-Trichloroethane	ND	0.05	ug/g						
Trichloroethylene	ND	0.05	ug/g						
Trichlorofluoromethane	ND	0.05	ug/g						
1,3,5-Trimethylbenzene	ND	0.05	ug/g						
Vinyl chloride	ND	0.02	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: 4-Bromofluorobenzene	7.84		ug/g		98.0	50-140			
Surrogate: Dibromofluoromethane	8.27		ug/g		103	50-140			
Surrogate: Toluene-d8	7.34		ug/g		91.8	50-140			

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Report Date: 09-Oct-2014

Client PO:

Project Description: Landfarm Soils

Order Date: 6-Oct-2014

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions									
Nitrate as N	59.8	1	ug/g dry	57.3			4.2	20	
General Inorganics									
Phosphorus, total	422	10.0	ug/g dry	716			51.7	10	QR-04
Total Kjeldahl Nitrogen	262	20	ug/g dry	314			18.1	10	QR-04
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g dry	ND				40	
F2 PHCs (C10-C16)	244	4	ug/g dry	223			9.2	30	
F3 PHCs (C16-C34)	165	8	ug/g dry	111			38.8	30	QR-04
F4 PHCs (C34-C50)	32	6	ug/g dry	15			72.7	30	QR-04
Metals									
Potassium	1550	200	ug/g dry	1340			14.9	30	
Microbiological Parameters									
Standard Plate Count	67000	1000	CFU/g	78000			15.0	200	
PCBs									
PCBs, total	ND	0.05	ug/g dry	ND				40	
Surrogate: Decachlorobiphenyl	0.141		ug/g dry	ND	132	60-140			
Physical Characteristics									
% Solids	82.2	0.1	% by Wt.	82.6			0.5	25	
Semi-Volatiles									
Acenaphthene	ND	0.02	ug/g dry	ND			0.0	40	
Acenaphthylene	0.021	0.02	ug/g dry	ND			0.0	40	
Anthracene	0.034	0.02	ug/g dry	0.029			17.1	40	
Benzo [a] anthracene	0.088	0.02	ug/g dry	0.080			8.9	40	
Benzo [a] pyrene	0.081	0.02	ug/g dry	0.070			15.0	40	
Benzo [b] fluoranthene	0.126	0.02	ug/g dry	0.118			6.8	40	
Benzo [g,h,i] perylene	0.056	0.02	ug/g dry	0.054			3.2	40	
Benzo [k] fluoranthene	0.049	0.02	ug/g dry	0.051			3.4	40	
Biphenyl	ND	0.02	ug/g dry	ND				40	
Chrysene	0.090	0.02	ug/g dry	0.083			8.2	40	
Dibenzo [a,h] anthracene	ND	0.02	ug/g dry	ND			0.0	40	
Fluoranthene	0.174	0.02	ug/g dry	0.151			14.4	40	
Fluorene	ND	0.02	ug/g dry	ND			0.0	40	
Indeno [1,2,3-cd] pyrene	0.048	0.02	ug/g dry	0.044			10.0	40	
1-Methylnaphthalene	ND	0.02	ug/g dry	ND				40	
2-Methylnaphthalene	ND	0.02	ug/g dry	ND				40	
Naphthalene	0.011	0.01	ug/g dry	0.014			23.5	40	
Phenanthrene	0.112	0.02	ug/g dry	0.089			23.1	40	
Pyrene	0.146	0.02	ug/g dry	0.129			12.6	40	
Quinoline	ND	0.10	ug/g dry	ND				40	
Surrogate: 2-Fluorobiphenyl	1.57		ug/g dry	ND	102	50-140			
Surrogate: Terphenyl-d14	1.28		ug/g dry	ND	83.2	50-140			
Volatiles									
Acetone	ND	0.50	ug/g dry	ND				50	
Benzene	ND	0.02	ug/g dry	ND				50	
Bromodichloromethane	ND	0.05	ug/g dry	ND				50	
Bromoform	ND	0.05	ug/g dry	ND				50	
Bromomethane	ND	0.05	ug/g dry	ND				50	
Carbon Tetrachloride	ND	0.05	ug/g dry	ND				50	
Chlorobenzene	ND	0.05	ug/g dry	ND				50	
Chloroethane	ND	0.05	ug/g dry	ND				50	
Chloroform	ND	0.05	ug/g dry	ND				50	

Certificate of Analysis

Client: Nunatta Environmental Services Inc.

Report Date: 09-Oct-2014

Client PO:

Project Description: Landfarm Soils

Order Date: 6-Oct-2014

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Chloromethane	ND	0.20	ug/g dry	ND				50	
Dibromochloromethane	ND	0.05	ug/g dry	ND				50	
Dichlorodifluoromethane	ND	0.05	ug/g dry	ND				50	
1,2-Dibromoethane	ND	0.05	ug/g dry	ND				50	
1,2-Dichlorobenzene	ND	0.05	ug/g dry	ND				50	
1,3-Dichlorobenzene	ND	0.05	ug/g dry	ND				50	
1,4-Dichlorobenzene	ND	0.05	ug/g dry	ND				50	
1,1-Dichloroethane	ND	0.05	ug/g dry	ND				50	
1,2-Dichloroethane	ND	0.05	ug/g dry	ND				50	
1,1-Dichloroethylene	ND	0.05	ug/g dry	ND				50	
cis-1,2-Dichloroethylene	ND	0.05	ug/g dry	ND				50	
trans-1,2-Dichloroethylene	ND	0.05	ug/g dry	ND				50	
1,2-Dichloropropane	ND	0.05	ug/g dry	ND				50	
cis-1,3-Dichloropropylene	ND	0.05	ug/g dry	ND				50	
trans-1,3-Dichloropropylene	ND	0.05	ug/g dry	ND				50	
Ethylbenzene	ND	0.05	ug/g dry	ND				50	
Hexane	ND	0.05	ug/g dry	ND				50	
Methyl Ethyl Ketone (2-Butanone)	ND	0.50	ug/g dry	ND				50	
Methyl Butyl Ketone (2-Hexanone)	ND	2.00	ug/g dry	ND				50	
Methyl Isobutyl Ketone	ND	0.50	ug/g dry	ND				50	
Methyl tert-butyl ether	ND	0.05	ug/g dry	ND				50	
Methylene Chloride	ND	0.05	ug/g dry	ND				50	
Styrene	ND	0.05	ug/g dry	ND				50	
1,1,1,2-Tetrachloroethane	ND	0.05	ug/g dry	ND				50	
1,1,2,2-Tetrachloroethane	ND	0.05	ug/g dry	ND				50	
Tetrachloroethylene	ND	0.05	ug/g dry	ND				50	
Toluene	ND	0.05	ug/g dry	ND				50	
1,1,1-Trichloroethane	ND	0.05	ug/g dry	ND				50	
1,1,2-Trichloroethane	ND	0.05	ug/g dry	ND				50	
Trichloroethylene	ND	0.05	ug/g dry	ND				50	
Trichlorofluoromethane	ND	0.05	ug/g dry	ND				50	
1,3,5-Trimethylbenzene	ND	0.05	ug/g dry	ND				50	
Vinyl chloride	ND	0.02	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: 4-Bromofluorobenzene	9.13		ug/g dry	ND	106	50-140			
Surrogate: Dibromofluoromethane	8.31		ug/g dry	ND	96.3	50-140			
Surrogate: Toluene-d8	8.59		ug/g dry	ND	99.6	50-140			

Certificate of Analysis

Client: **Nunatta Environmental Services Inc.**

Report Date: 09-Oct-2014

Client PO:

Project Description: Landfarm Soils

Order Date: 6-Oct-2014

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions									
Nitrate as N	67.9	1	ug/g	57.3	106	83-109			
General Inorganics									
Phosphorus, total	60.5	1.00	ug/g	ND	96.8	57-139			
Total Kjeldahl Nitrogen	259	10	ug/g	ND	103	79-130			
Hydrocarbons									
F1 PHCs (C6-C10)	197	7	ug/g	ND	98.4	80-120			
F2 PHCs (C10-C16)	293	4	ug/g	132	167	60-140			QM-06
F3 PHCs (C16-C34)	311	8	ug/g	95	108	60-140			
F4 PHCs (C34-C50)	110	6	ug/g	13	72.6	60-140			
Metals									
Potassium	1420		ug/L	535	88.5	70-130			
PCBs									
PCBs, total	0.529	0.05	ug/g	ND	124	60-140			
Surrogate Decachlorobiphenyl	0.145		ug/g		135	60-140			
Semi-Volatiles									
Acenaphthene	0.191	0.02	ug/g	ND	99.8	50-140			
Acenaphthylene	0.169	0.02	ug/g	ND	88.1	50-140			
Anthracene	0.334	0.02	ug/g	0.029	159	50-140			QM-06
Benzo [a] anthracene	0.261	0.02	ug/g	0.080	94.4	50-140			
Benzo [a] pyrene	0.234	0.02	ug/g	0.070	85.4	50-140			
Benzo [b] fluoranthene	0.335	0.02	ug/g	0.118	113	50-140			
Benzo [g,h,i] perylene	0.241	0.02	ug/g	0.054	97.7	50-140			
Benzo [k] fluoranthene	0.243	0.02	ug/g	0.051	99.9	50-140			
Biphenyl	0.199	0.02	ug/g	ND	104	50-140			
Chrysene	0.291	0.02	ug/g	0.083	109	50-140			
Dibenzo [a,h] anthracene	0.158	0.02	ug/g	ND	82.6	50-140			
Fluoranthene	0.376	0.02	ug/g	0.151	118	50-140			
Fluorene	0.165	0.02	ug/g	ND	85.9	50-140			
Indeno [1,2,3-cd] pyrene	0.226	0.02	ug/g	0.044	94.9	50-140			
1-Methylnaphthalene	0.131	0.02	ug/g	ND	68.1	50-140			
2-Methylnaphthalene	0.137	0.02	ug/g	ND	71.4	50-140			
Naphthalene	0.144	0.01	ug/g	0.014	68.1	50-140			
Phenanthrene	0.309	0.02	ug/g	0.089	115	50-140			
Pyrene	0.341	0.02	ug/g	0.129	111	50-140			
Volatiles									
Acetone	5.60	0.50	ug/g	ND	56.0	50-140			
Benzene	3.85	0.02	ug/g	ND	96.2	60-130			
Bromodichloromethane	4.53	0.05	ug/g	ND	113	60-130			
Bromoform	4.31	0.05	ug/g	ND	108	60-130			
Bromomethane	3.38	0.05	ug/g	ND	84.5	50-140			
Carbon Tetrachloride	4.06	0.05	ug/g	ND	101	60-130			
Chlorobenzene	3.82	0.05	ug/g	ND	95.6	60-130			
Chloroethane	2.52	0.05	ug/g	ND	63.0	50-140			
Chloroform	4.02	0.05	ug/g	ND	101	60-130			
Chloromethane	2.58	0.20	ug/g	ND	64.5	50-140			
Dibromochloromethane	3.32	0.05	ug/g	ND	83.0	60-130			

Certificate of Analysis

Client: Nunatta Environmental Services Inc.

Report Date: 09-Oct-2014

Client PO:

Project Description: Landfarm Soils

Order Date: 6-Oct-2014

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Dichlorodifluoromethane	2.30	0.05	ug/g	ND	57.5	50-140			
1,2-Dibromoethane	3.34	0.05	ug/g	ND	83.4	60-130			
1,2-Dichlorobenzene	3.96	0.05	ug/g	ND	99.1	60-130			
1,3-Dichlorobenzene	3.89	0.05	ug/g	ND	97.3	60-130			
1,4-Dichlorobenzene	3.63	0.05	ug/g	ND	90.9	60-130			
1,1-Dichloroethane	3.96	0.05	ug/g	ND	98.9	60-130			
1,2-Dichloroethane	4.03	0.05	ug/g	ND	101	60-130			
1,1-Dichloroethylene	4.80	0.05	ug/g	ND	120	60-130			
cis-1,2-Dichloroethylene	3.98	0.05	ug/g	ND	99.5	60-130			
trans-1,2-Dichloroethylene	3.62	0.05	ug/g	ND	90.4	60-130			
1,2-Dichloropropane	4.10	0.05	ug/g	ND	102	60-130			
cis-1,3-Dichloropropylene	3.66	0.05	ug/g	ND	91.5	60-130			
trans-1,3-Dichloropropylene	4.00	0.05	ug/g	ND	100	60-130			
Ethylbenzene	3.88	0.05	ug/g	ND	97.0	60-130			
Hexane	2.79	0.05	ug/g	ND	69.7	60-130			
Methyl Ethyl Ketone (2-Butanone)	9.26	0.50	ug/g	ND	92.6	50-140			
Methyl Butyl Ketone (2-Hexanone)	9.03	2.00	ug/g	ND	90.3	50-140			
Methyl Isobutyl Ketone	8.60	0.50	ug/g	ND	86.0	50-140			
Methyl tert-butyl ether	10.8	0.05	ug/g	ND	108	50-140			
Methylene Chloride	2.77	0.05	ug/g	ND	69.3	60-130			
Styrene	4.28	0.05	ug/g	ND	107	60-130			
1,1,1,2-Tetrachloroethane	4.09	0.05	ug/g	ND	102	60-130			
1,1,2,2-Tetrachloroethane	4.15	0.05	ug/g	ND	104	60-130			
Tetrachloroethylene	3.18	0.05	ug/g	ND	79.5	60-130			
Toluene	3.15	0.05	ug/g	ND	78.8	60-130			
1,1,1-Trichloroethane	3.99	0.05	ug/g	ND	99.8	60-130			
1,1,2-Trichloroethane	3.54	0.05	ug/g	ND	88.5	60-130			
Trichloroethylene	3.82	0.05	ug/g	ND	95.5	60-130			
Trichlorofluoromethane	3.19	0.05	ug/g	ND	79.7	50-140			
1,3,5-Trimethylbenzene	3.82	0.05	ug/g	ND	95.6	60-130			
Vinyl chloride	3.75	0.02	ug/g	ND	93.6	50-140			
m,p-Xylenes	7.29	0.05	ug/g	ND	91.1	60-130			
o-Xylene	3.66	0.05	ug/g	ND	91.5	60-130			

Certificate of Analysis

Client: **Nunatta Environmental Services Inc.**

Client PO:

Project Description: **Landfarm Soils**

Report Date: 09-Oct-2014

Order Date: 6-Oct-2014

Qualifier Notes:

Sample Qualifiers :

1 : Holding time had been exceeded upon sample receipt.

QC Qualifiers :

QM-06 : Due to noted non-homogeneity of the QC sample matrix, the spike recoveries were out side the accepted range. Batch data accepted based on other QC.

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.



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Page 1 of 1

Client Name: <u>Nuvatta Environmental Sys</u>	Project Reference: <u>Land farm Soils</u>	TAT: ☒ Regular ☐ 3 Day ☐ 2 Day ☐ 1 Day Date Required: _____
Contact Name: <u>Jim Wilson</u>	Quote #	
Address: <u>P.O. Box 267, Iqaluit, NU X0A-0H0</u>	PO #	
Telephone: <u>867-979-1488</u>	Email Address: <u>nuvatta@northwestel.net</u>	

Criteria: ☐ Q1 Reg. 153 (As Amended) Table ☐ RSC Filing ☐ O. Reg. 558/00 ☐ PW00 ☒ SCME ☐ SUB (Storms) ☐ 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:

1441084-Rush
1441085-Reg TIT

Sample ID/Location Name		Matrix	Air Volume	# of Containers	Sample Taken		PHCs F1-F4 & BTX	VOCs	PAHs	Metals by ICP	Hg	CrVI	B (HWS)	Microbial	N.P. K.	P.C.B.	Pb (Lead)			
Date	Time																			
1	Cell #3 North end	S	0	1	Sept 30	2:40	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
2	" " Middle	S	0	1	"	"	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
3	" " South west	S	0	1	"	"	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
4	Cell #4 North	S	0	1	"	3:00	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
5	" " Middle	S	0	1	"	"	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
6	" " South	S	0	1	"	"	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
7	Test fuel	S	0	1	"	"	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
8							☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
9							☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
10							☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Comments: Rush 'cell 3' samples per Jim. LC

Method of Delivery:

CANADIAN NORTH

Relinquished By (Sign): <u>[Signature]</u>	Received by Driver/Depot: <u>[Signature]</u>	Received at Lab: <u>SINCEPORN DOKMAN</u>	Verified By: <u>[Signature]</u>
Relinquished By (Print): <u>Jim Wilson</u>	Date/Time: <u>07/10/14 10:36</u>	Date/Time: <u>07/10/14 1:00</u>	Date/Time: <u>07/10/14</u>
Date/Time: <u>Sept 30 / 2014</u>	Temperature: <u>6</u> <u>AM</u>	Temperature: <u>11.9 C</u>	pH Verified: <u>11.3</u>

11.31a



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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:

Report Date: 10-Oct-2014
Order Date: 6-Oct-2014

Order #: 1441085

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

Paracel ID	Client ID
1441085-01	Cell #4 North
1441085-02	Cell #4 Middle
1441085-03	Cell #4 South
1441085-04	Test Trial

Approved By:

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

Any use of these results implies your agreement that our total liability in connection with this work, however arising shall be limited to the amount paid by you for this work, and that our employees or agents shall not under circumstances be liable to you in connection with this work

Certificate of Analysis

Client: Nunatta Environmental Services Inc.
Client PO:

Project Description: Landfarm Soils

Report Date: 10-Oct-2014
Order Date: 6-Oct-2014

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Anions	EPA 300.1 - IC, water extraction	8-Oct-14	8-Oct-14
BTEX by P&T GC-MS	EPA 8260 - P&T GC-MS	8-Oct-14	9-Oct-14
Metals, ICP-MS	EPA 6020 - Digestion - ICP-MS	10-Oct-14	10-Oct-14
Nitrogen as N, total	Calculation	8-Oct-14	8-Oct-14
PCBs, total	SW846 8082A - GC-ECD	7-Oct-14	9-Oct-14
PHC F1	CWS Tier 1 - P&T GC-FID	8-Oct-14	9-Oct-14
PHC F2 - F4	CWS Tier 1 - GC-FID, extraction	9-Oct-14	10-Oct-14
Phosphorus, total	EPA 365.4 - Auto Colour, digestion	8-Oct-14	8-Oct-14
Solids, %	Gravimetric, calculation	8-Oct-14	8-Oct-14
Standard Plate Count	based on SM 9215C	7-Oct-14	7-Oct-14
TKN	based on EPA351.2 - Auto Colour, digestion	8-Oct-14	8-Oct-14

Certificate of Analysis

Client: **Nunatta Environmental Services Inc.**

Report Date: 10-Oct-2014

Client PO:

Project Description: **Landfarm Soils**

Order Date: 6-Oct-2014

	Client ID:	Cell #4 North	Cell #4 Middle	Cell #4 South	Test Trial
	Sample Date:	30-Sep-14	30-Sep-14	30-Sep-14	30-Sep-14
	Sample ID:	1441085-01	1441085-02	1441085-03	1441085-04
	MDL/Units	Soil	Soil	Soil	Soil

Physical Characteristics

% Solids	0.1 % by Wt.	92.6	93.2	92.5	93.5
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Microbiological Parameters

Standard Plate Count	1000 CFU/g	123000 [1]	TNTC [1]	50000 [1]	1000 [1]
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General Inorganics

Nitrogen, Total	21 ug/g	329	367	410	475
Phosphorus, total	1.00 ug/g dry	716	637	592	440
Total Kjeldahl Nitrogen	10 ug/g dry	314	355	409	473

Anions

Nitrate as N	1 ug/g dry	15	12	1	2
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Metals

Lead	1 ug/g dry	12	9	10	-
Potassium	200 ug/g dry	773	634	591	553

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	102%	107%	107%	99.1%

Hydrocarbons

F1 PHCs (C6-C10)	7 ug/g dry	<7	34	23	<7
F2 PHCs (C10-C16)	4 ug/g dry	301	492	680	57
F3 PHCs (C16-C34)	8 ug/g dry	281	461	425	214
F4 PHCs (C34-C50)	6 ug/g dry	92	124	171	41

PCBs

PCBs, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Decachlorobiphenyl	Surrogate	127%	109%	106%	112%

Certificate of Analysis

Client: Nunatta Environmental Services Inc.

Report Date: 10-Oct-2014

Client PO:

Project Description: Landfarm Soils

Order Date: 6-Oct-2014

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									
Lead	ND	1	ug/g						
Potassium	ND	200	ug/g						
Microbiological Parameters									
Standard Plate Count	ND	1000	CFU/g						
PCBs									
PCBs, total	ND	0.05	ug/g						
Surrogate: Decachlorobiphenyl	0.103		ug/g		103	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	8.36		ug/g		104	50-140			

Certificate of Analysis

Client: Nunatta Environmental Services Inc.

Report Date: 10-Oct-2014

Client PO:

Project Description: Landfarm Soils

Order Date: 6-Oct-2014

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions									
Nitrate as N	59.8	1	ug/g dry	57.3			4.2	20	
General Inorganics									
Phosphorus, total	422	10.0	ug/g dry	716			51.7	10	QR-04
Total Kjeldahl Nitrogen	262	20	ug/g dry	314			18.1	10	QR-04
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g dry	ND				40	
F2 PHCs (C10-C16)	106	4	ug/g dry	32			106.0	30	QR-04
F3 PHCs (C16-C34)	64	8	ug/g dry	26			83.3	30	QR-04
F4 PHCs (C34-C50)	ND	6	ug/g dry	ND				30	
Metals									
Lead	11.1	1	ug/g dry	12.1			8.5	30	
Potassium	710	200	ug/g dry	773			8.5	30	
Microbiological Parameters									
Standard Plate Count	67000	1000	CFU/g	78000			15.0	200	
PCBs									
PCBs, total	ND	0.05	ug/g dry	ND				40	
Surrogate: Decachlorobiphenyl	0.141		ug/g dry	ND	132	60-140			
Physical Characteristics									
% Solids	87.1	0.1	% by Wt.	87.9			0.9	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	8.71		ug/g dry	ND	103	50-140			

Certificate of Analysis

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

Project Description: **Landfarm Soils**

Report Date: 10-Oct-2014
Order Date: 6-Oct-2014

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions									
Nitrate as N	67.9	1	ug/g	57.3	106	83-109			
General Inorganics									
Phosphorus, total	60.5	1.00	ug/g	ND	96.8	57-139			
Total Kjeldahl Nitrogen	259	10	ug/g	ND	103	79-130			
Hydrocarbons									
F1 PHCs (C6-C10)	199	7	ug/g	ND	99.6	80-120			
F2 PHCs (C10-C16)	196	4	ug/g	32	133	60-140			
F3 PHCs (C16-C34)	327	8	ug/g	26	119	60-140			
F4 PHCs (C34-C50)	204	6	ug/g	ND	121	60-140			
Metals									
Lead	57.2		ug/L	4.8	105	70-130			
Potassium	1180		ug/L	309	87.1	70-130			
PCBs									
PCBs, total	0.529	0.05	ug/g	ND	124	60-140			
Surrogate, Decachlorobiphenyl	0.145		ug/g		135	60-140			
Volatiles									
Benzene	3.88	0.02	ug/g	ND	97.1	60-130			
Ethylbenzene	3.61	0.05	ug/g	ND	90.2	60-130			
Toluene	3.87	0.05	ug/g	ND	96.8	60-130			
m,p-Xylenes	7.58	0.05	ug/g	ND	94.8	60-130			
o-Xylene	3.58	0.05	ug/g	ND	89.5	60-130			

Certificate of Analysis

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

Project Description: **Landfarm Soils**

Report Date: 10-Oct-2014
Order Date: 6-Oct-2014

Qualifier Notes:

1 : 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.



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Page 1 of 1

Client Name: Nunatta Environmental Sys	Project Reference: Land Farm Soils	TAT: ☒ Regular ☐ 3 Day
Contact Name: Jim Wilson	Quote #	☐ 2 Day ☐ 1 Day
Address: P.O. Box 267, Iqaluit, NU X0A-0H0	PO #	Date Required:
Telephone: 867-979-1488	Email Address: nunatta@northwestel.net	
Criteria: ☐ Q. Reg. L53 (As Amended) Table ☐ RSC Filing ☐ Q. Reg. 558/00 ☐ PQO ☒ X-FLUOR ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality: ☐ Other:		

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm Sanitary Sewers) P (Paint) A (Air) O (Other)							Required Analyses																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
Parcel Order Number: 1441084-Rush 1441085-Reg TAT							Matrix	Air Volume	# of Containers	Sample Taken		PICS P1-P4+BTX	VOCs	PAHs	Metals by ICP	Fig	CrVI	B (HWS)	M. evolsial	N.P. K.	P.C.B	Pb (Lead)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								

Comments: Rush 'cell 3' samples per Jim. AC		Method of Delivery: CANADIAN NORTH	
Relinquished By (Sign): Sam Hunkin	Received by Driver/Depot: TEWSE	Received at Lab: SUPERIOR 20K448	Verified By: SLT
Relinquished By (Print): Jim Wilson	Date/Time: 07/10/14 10:16	Date/Time: 07/10/14 11:00	Date/Time: 07/11/14
Date/Time: Sept 30 / 2014	Temperature: 11°C	Temperature: 11°C	pH Verified / By: N/A