

Certificate of Analysis

Nunatta Environmental Services Inc.

P.O. Box 267

Iqaluit, NU X0A 0H0

Attn: Ivan Charalambij

Phone: (867) 979-1488

Fax: (867) 979-1478

Client PO:

Report Date: 23-Sep-2009

Project: 08-852

Order Date: 17-Sep-2009

Custody: 62098

Order #: 0938209

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

Paracel ID	Client ID
0938209-01	Cell 1 - 09-1
0938209-02	Cell 1 - 09-2
0938209-03	Cell 1 - 09-3
0938209-04	Cell 2 - 09-1
0938209-05	Cell 2 - 09-2
0938209-06	Cell 2 - 09-3
0938209-07	Cell 3 - 09-1
0938209-08	Cell 3 - 09-2
0938209-09	Cell 3 - 09-3

Approved By:



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

Report Date: 23-Sep-2009

Order Date: 17-Sep-2009

Client: **Nunatta Environmental Services Inc.**

Client PO:

Project Description: 08-852

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Boron, available	MOE (HWE), EPA 200.8 - ICP-MS	22-Sep-09	22-Sep-09
CCME PHC F1	CWS Tier 1 - P&T GC-FID	18-Sep-09	20-Sep-09
CCME PHC F2 - F4	CWS Tier 1 - GC-FID, extraction	18-Sep-09	18-Sep-09
Chromium, hexavalent	MOE E3056 - Extraction, colourimetric	23-Sep-09	23-Sep-09
Mercury	EPA 7471A - CVAA, digestion	22-Sep-09	22-Sep-09
Metals	EPA 6020 - Digestion - ICP-MS	22-Sep-09	22-Sep-09
Solids, %	Gravimetric, calculation	18-Sep-09	18-Sep-09

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Client: **Nunatta Environmental Services Inc.**

Client PO:

Project Description: 08-852

	Client ID:	Cell 1 - 09-1	Cell 1 - 09-2	Cell 1 - 09-3	Cell 2 - 09-1
	Sample Date:	15-Sep-09	15-Sep-09	15-Sep-09	15-Sep-09
	Sample ID:	0938209-01	0938209-02	0938209-03	0938209-04
	MDL/Units	Soil	Soil	Soil	Soil

Physical Characteristics

% Solids	0.1 % by Wt.	91.5	92.9	95.0	92.4
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Metals

Antimony	1 ug/g dry	<1	<1	<1	<1
Arsenic	1 ug/g dry	1	1	1	<1
Barium	10 ug/g dry	31	26	31	33
Beryllium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Boron, available	0.5 ug/g dry	<0.5	0.5	<0.5	<0.5
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Chromium	5 ug/g dry	23	25	25	24
Chromium (VI)	0.4 ug/g dry	<0.4	<0.4	<0.4	<0.4
Cobalt	1 ug/g dry	5	5	5	6
Copper	5 ug/g dry	12	12	11	14
Iron	200 ug/g dry	24800	25800	26000	24900
Lead	1 ug/g dry	21	26	15	14
Mercury	0.1 ug/g dry	<0.1	0.2	<0.1	<0.1
Molybdenum	1 ug/g dry	<1	<1	<1	<1
Nickel	5 ug/g dry	8	8	8	9
Selenium	1 ug/g dry	<1	<1	<1	<1
Silver	0.3 ug/g dry	<0.3	<0.3	<0.3	<0.3
Thallium	1 ug/g dry	<1	<1	<1	<1
Tin	5 ug/g dry	<5	<5	<5	<5
Vanadium	10 ug/g dry	48	52	54	48
Zinc	20 ug/g dry	47	48	41	47

Hydrocarbons

F1 PHCs (C6-C10)	10 ug/g dry	<10	<10	22	<10
F2 PHCs (C10-C16)	10 ug/g dry	1220	666	366	776
F3 PHCs (C16-C34)	10 ug/g dry	743	666	436	452
F4 PHCs (C34-C50)	10 ug/g dry	42	125	72	65

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Project Description: 08-852

	Client ID:	Cell 2 - 09-2	Cell 2 - 09-3	Cell 3 - 09-1	Cell 3 - 09-2
	Sample Date:	15-Sep-09	15-Sep-09	15-Sep-09	15-Sep-09
	Sample ID:	0938209-05	0938209-06	0938209-07	0938209-08
	MDL/Units	Soil	Soil	Soil	Soil

Physical Characteristics

% Solids	0.1 % by Wt.	92.1	91.8	89.1	89.4
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Metals

Antimony	1 ug/g dry	<1	<1	<1	3
Arsenic	1 ug/g dry	<1	<1	<1	<1
Barium	10 ug/g dry	29	31	50	46
Beryllium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Boron, available	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Chromium	5 ug/g dry	27	26	26	26
Chromium (VI)	0.4 ug/g dry	<0.4	<0.4	<0.4	<0.4
Cobalt	1 ug/g dry	5	5	8	8
Copper	5 ug/g dry	12	13	25	30
Iron	200 ug/g dry	27900	25300	26300	26800
Lead	1 ug/g dry	12	17	20	9
Mercury	0.1 ug/g dry	<0.1	<0.1	<0.1	<0.1
Molybdenum	1 ug/g dry	<1	<1	<1	<1
Nickel	5 ug/g dry	9	9	11	11
Selenium	1 ug/g dry	<1	<1	<1	<1
Silver	0.3 ug/g dry	<0.3	<0.3	<0.3	<0.3
Thallium	1 ug/g dry	<1	<1	<1	<1
Tin	5 ug/g dry	<5	<5	<5	<5
Vanadium	10 ug/g dry	59	54	60	66
Zinc	20 ug/g dry	45	52	54	50

Hydrocarbons

F1 PHCs (C6-C10)	10 ug/g dry	<10	<10	<10	<10
F2 PHCs (C10-C16)	10 ug/g dry	1050	849	1140	1670
F3 PHCs (C16-C34)	10 ug/g dry	428	519	1410	1150
F4 PHCs (C34-C50)	10 ug/g dry	87	133	224	76

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Client ID:	Cell 3 - 09-3	-	-	-
Sample Date:	15-Sep-09	-	-	-
Sample ID:	0938209-09	-	-	-
MDL/Units	Soil	-	-	-

Physical Characteristics

% Solids	0.1 % by Wt.	93.1	-	-	-
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Metals

Antimony	1 ug/g dry	2	-	-	-
Arsenic	1 ug/g dry	<1	-	-	-
Barium	10 ug/g dry	36	-	-	-
Beryllium	0.5 ug/g dry	<0.5	-	-	-
Boron, available	0.5 ug/g dry	<0.5	-	-	-
Cadmium	0.5 ug/g dry	<0.5	-	-	-
Chromium	5 ug/g dry	26	-	-	-
Chromium (VI)	0.4 ug/g dry	<0.4	-	-	-
Cobalt	1 ug/g dry	6	-	-	-
Copper	5 ug/g dry	15	-	-	-
Iron	200 ug/g dry	27300	-	-	-
Lead	1 ug/g dry	33	-	-	-
Mercury	0.1 ug/g dry	<0.1	-	-	-
Molybdenum	1 ug/g dry	<1	-	-	-
Nickel	5 ug/g dry	9	-	-	-
Selenium	1 ug/g dry	<1	-	-	-
Silver	0.3 ug/g dry	<0.3	-	-	-
Thallium	1 ug/g dry	<1	-	-	-
Tin	5 ug/g dry	<5	-	-	-
Vanadium	10 ug/g dry	58	-	-	-
Zinc	20 ug/g dry	45	-	-	-

Hydrocarbons

F1 PHCs (C6-C10)	10 ug/g dry	<10	-	-	-
F2 PHCs (C10-C16)	10 ug/g dry	1640	-	-	-
F3 PHCs (C16-C34)	10 ug/g dry	704	-	-	-
F4 PHCs (C34-C50)	10 ug/g dry	142	-	-	-

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Client PO:

Project Description: 08-852

Method Quality Control: Blank

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

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Client PO:

Project Description: 08-852

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	10	ug/g dry	ND				32	
F2 PHCs (C10-C16)	ND	10	ug/g dry	ND				50	
F3 PHCs (C16-C34)	ND	10	ug/g dry	ND				50	
F4 PHCs (C34-C50)	ND	10	ug/g dry	ND				50	
Metals									
Antimony	7.1	1	ug/g dry	8.3			15.2	26	
Arsenic	3.9	1	ug/g dry	4.2			8.2	35	
Barium	225	10	ug/g dry	235			4.4	34	
Beryllium	1.25	0.5	ug/g dry	1.39			10.5	25	
Boron, available	1.00	0.5	ug/g dry	0.82			19.4	35	
Cadmium	ND	0.5	ug/g dry	ND				33	
Chromium (VI)	ND	0.4	ug/g dry	ND				35	
Chromium	40.0	5	ug/g dry	42.8			6.8	32	
Cobalt	15.5	1	ug/g dry	16.1			3.7	32	
Copper	24.9	5	ug/g dry	25.8			3.6	32	
Iron	34600	200	ug/g dry	36500			5.6	32	
Lead	42.3	1	ug/g dry	43.6			3.0	44	
Mercury	ND	0.1	ug/g dry	ND				35	
Molybdenum	1.2	1	ug/g dry	1.3			5.5	29	
Nickel	28.9	5	ug/g dry	29.9			3.6	29	
Selenium	1.0	1	ug/g dry	1.1			5.6	28	
Silver	ND	0.3	ug/g dry	ND				28	
Thallium	ND	1	ug/g dry	ND				27	
Tin	ND	5	ug/g dry	ND				27	
Vanadium	49.4	10	ug/g dry	52.8			6.7	27	
Zinc	72.2	20	ug/g dry	75.7			4.8	27	
Physical Characteristics									
% Solids	91.8	0.1	% by Wt.	91.5			0.3	25	

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Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	97	10	ug/g	ND	97.1	80-120			
F2 PHCs (C10-C16)	84	10	ug/g	ND	105	61-129			
F3 PHCs (C16-C34)	189	10	ug/g	ND	94.3	61-129			
F4 PHCs (C34-C50)	132	10	ug/g	ND	110	61-129			
Metals									
Antimony	33.3		ug/L	ND	66.5	80-120			QS-02
Arsenic	51.3		ug/L	ND	103	80-120			
Barium	50.4		ug/L	ND	101	80-120			
Beryllium	58.5		ug/L	ND	117	80-120			
Boron, available	5.19	0.5	ug/g	ND	104	70-122			
Cadmium	51.4		ug/L	ND	103	80-120			
Chromium (VI)	5.8	0.4	ug/g	ND	116	89-123			
Chromium	53.0		ug/L	ND	106	80-120			
Cobalt	50.8		ug/L	ND	102	80-120			
Copper	51.1		ug/L	ND	102	80-120			
Iron	1100		ug/L	ND	110	80-120			
Lead	49.9		ug/L	ND	99.9	80-120			
Mercury	1.41	0.1	ug/g	ND	94.2	72-128			
Molybdenum	49.2		ug/L	ND	98.4	80-120			
Nickel	52.0		ug/L	ND	104	80-120			
Selenium	53.8		ug/L	ND	108	80-120			
Silver	49.8		ug/L	ND	99.5	80-120			
Thallium	51.8		ug/L	ND	104	80-120			
Tin	48.6		ug/L	ND	97.2	80-120			
Vanadium	52.2		ug/L	ND	104	80-120			
Zinc	53.3		ug/L	ND	107	80-120			

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Sample and QC Qualifiers Notes

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

Sample Data Revisions

None

Work Order Revisions/Comments:

None

Other Report Notes:

n/a: not applicable

MDL: Method Detection Limit

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

%REC: Percent recovery.

RPD: Relative percent difference.

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

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

CCME PHC additional information:

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



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www.paracellabs.com

Pg. ____ of ____

Company Name: <u>NUMATTA ENVIRONMENTAL</u>	Project Ref: <u>08-852</u>	Date Required: _____
Contact Name: <u>IVAN CHARALOMBI</u>	PO# _____	Turn Around Time: 1-day 2-day Regular
Address: <u>Box 267, Iqaluit, N.W.</u>	Quote # _____ ☐ Not Quoted	
Tel: <u>867-979-1488</u> Cell: _____	Preservative to be added by Paracel? ☐ Yes ☐ No	Regulatory/Guideline Requirements
Email: <u>NUMATTA@NORTHWESTEL.NET</u>		

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

[illegible]

Comments: _____

Relinquished By: AXEL HAVR	Received at Depot:	Received at Lab: Uroc	Verified By: Uroc
Date: Sept 15/09 Time:	Date: Time:	Date: 9/9/17 Time: 17:30	Date: 9/9/17 Time: 18:00

Please refer to the back page for Locations and Sample Preservation, Container and Hold Time Requirements.

WHITE - Lab Copy, PINK - Client Copy