

Appendices

D - G


Appendix D (on CD ROM)

WATER LEVEL DATA



Test Report

Client: PTS Laboratories, Inc. MI#: 11182
 PTS File # 41269; Marsland Core Project Sample Type: Sediment samples
 PO# 11-133 Date: 06.06.11

Contact	Rachel Spitz
Address	PTS Laboratories 8100 Secura Way Santa Fe Springs, CA 90670
E-mail	rspitz@ptsgeolabs.com
Phone	562-347-2500
PO #	11-133
Test Methods	XRD (Bulk & Clay Fraction analysis) (n=8)
Project ID	PTS File # 41269 Marsland Core Project
Calibration Date	06.06.11
MI Lab Supervisor	 Timothy B. Murphy

CONDITIONS AND QUALIFICATIONS

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MINERALOGY, INC.

TABLE I

X-RAY DIFFRACTION ANALYSIS

Client: PTS Laboratories, Inc. MI#: 11182
 PTS File # 41269; Marsland Core Project Sample Type: Sediment samples
 PO# 11-133 Date: 06.06.11

X-Ray Diffraction Results

Mineral Constituents	Chemical Formula	M1454c				M1624c			
		Run 1	Run 2	Run 3	Run 4	Run 1	Run 2	Run 4	Run 5
Lab ID	Run #	11182-01	11182-02	11182-03	11182-04	11182-05	11182-06	11182-07	11182-08
		Relative Abundance (%)							
Quartz	SiO ₂	15	11	63	29	15	14	54	23
Plagioclase Feldspar	(Na,Ca)AlSi ₃ O ₈	9	8	4	5	11	10	4	5
K-Feldspar	KAlSi ₃ O ₈	2	2	8	5	5	3	8	4
Calcite	CaCO ₃	47	35	trc		13	1	1	
Dolomite	(Ca,Mg)(CO ₃) ₂				3			2	
Siderite	FeCO ₃			1					
Pyrite	FeS ₂			1					1
Magnetite	alpha-Fe ₃ O ₄		1	trc		2			
Magnesium Vanadium Oxide	beta-Mg(VO ₃)			2					
Kaolinite	Al ₂ Si ₂ O ₅ (OH) ₄			1		2		trc	2
Chlorite	(Fe,Al,Mg) ₃ (Si,Al) ₄ O ₁₀ (OH) ₂				2				
Illite/Mica	KAl ₂ (Si ₃ AlO ₁₀)(OH) ₂	2	5	2	6	5	12	3	8
Mixed-Layered Illite/Smectite	K _{0.5} Al ₂ (Si,Al) ₄ O ₁₀ (OH) ₂ · 2H ₂ O		38	18	48	49	60	28	55
Montmorillonite	Na _{0.3} (Al,Mg) ₂ Si ₄ O ₁₀ (OH) ₂ · xH ₂ O	25							
TOTAL		100	100	100	100	100	100	100	100
% Illite Layers in ML Illite/Smectite	(+/- 5%)		45%	10%	25%	10%	25%	15%	20%

PARTICLE SIZE SUMMARY

(METHODOLOGY: ASTM D422/D4464M)

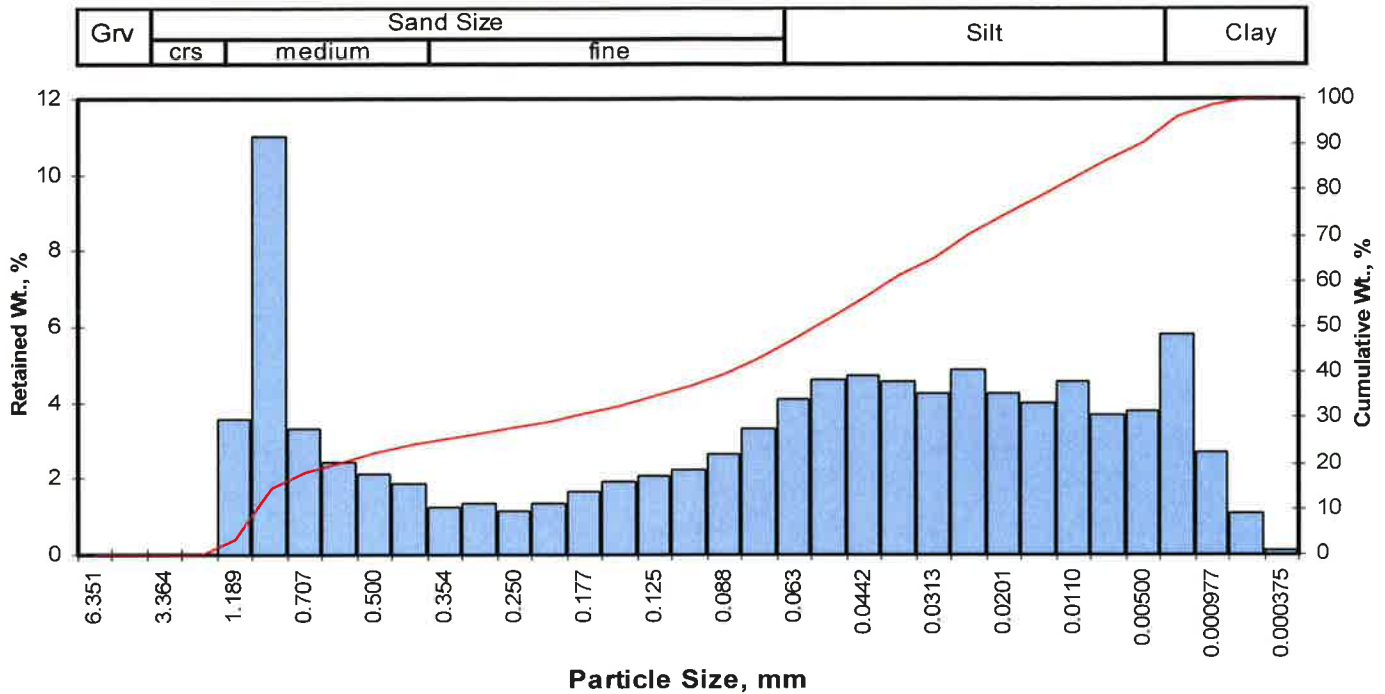
PROJECT NAME: Marsland Core
PROJECT NO: N/A

Sample ID	Depth, ft.	Median Grain Size mm	Particle Size Distribution, wt. percent						Silt & Clay
			Gravel	Sand Size			Silt	Clay	
				Coarse	Medium	Fine			
M-1454c Run 1	N/A	0.056	0.00	24.31	18.80	47.25	9.64	56.89	
M-1454c Run 2	N/A	0.027	0.00	8.58	24.41	46.36	20.65	67.01	
M-1454c Run 3	N/A	0.075	0.00	2.74	47.49	29.85	19.92	49.77	
M-1454c Run 4	N/A	0.007	0.00	0.00	0.45	60.15	39.40	99.55	
M-1624c Run 1	N/A	0.049	0.00	7.50	29.12	54.65	8.73	63.38	
M-1624c Run 2	N/A	0.065	0.00	26.37	22.12	34.96	16.54	51.50	
M-1624c Run 4	N/A	0.711	0.00	69.05	14.89	11.56	4.50	16.06	
M-1624c Run 5	N/A	0.005	0.00	0.00	1.28	50.88	47.85	98.72	

(1) Based on Mean from Trask

Client: Crow Butte Resources, Inc.
 Project: Marsland Core
 Project No: N/A

PTS File No: 41269
 Sample ID: M-1454c Run 1
 Depth, ft: N/A



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
Inches	Millimeters					
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	3.58	3.58	3.58
0.0331	0.841	0.25	20	11.00	11.00	14.59
0.0278	0.707	0.50	25	3.31	3.31	17.90
0.0234	0.595	0.75	30	2.42	2.42	20.32
0.0197	0.500	1.00	35	2.14	2.14	22.46
0.0166	0.420	1.25	40	1.85	1.85	24.31
0.0139	0.354	1.50	45	1.22	1.22	25.53
0.0117	0.297	1.75	50	1.34	1.34	26.87
0.0098	0.250	2.00	60	1.13	1.13	28.00
0.0083	0.210	2.25	70	1.36	1.36	29.36
0.0070	0.177	2.50	80	1.63	1.63	30.99
0.0059	0.149	2.75	100	1.89	1.89	32.88
0.0049	0.125	3.00	120	2.06	2.06	34.94
0.0041	0.105	3.25	140	2.23	2.23	37.17
0.0035	0.088	3.50	170	2.62	2.62	39.80
0.0029	0.074	3.75	200	3.31	3.31	43.11
0.0025	0.063	4.00	230	4.09	4.09	47.20
0.0021	0.053	4.25	270	4.59	4.59	51.79
0.00174	0.0442	4.50	325	4.73	4.73	56.52
0.00146	0.0372	4.75	400	4.54	4.54	61.06
0.00123	0.0313	5.00	450	4.23	4.23	65.30
0.000986	0.0250	5.32	500	4.87	4.87	70.17
0.000790	0.0201	5.64	635	4.23	4.23	74.40
0.000615	0.0156	6.00		3.98	3.98	78.38
0.000435	0.0110	6.50		4.53	4.53	82.91
0.000308	0.00781	7.00		3.67	3.67	86.58
0.000197	0.00500	7.65		3.77	3.77	90.36
0.000077	0.00195	9.00		5.78	5.78	96.14
0.000038	0.000977	10.00		2.69	2.69	98.83
0.000019	0.000488	11.00		1.08	1.08	99.91
0.000015	0.000375	11.38		0.09	0.09	100.00
TOTALS				100.00	100.00	100.00

Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	-0.19	0.0448	1.137
10	0.04	0.0383	0.972
16	0.36	0.0307	0.781
25	1.39	0.0150	0.381
40	3.52	0.0034	0.087
50	4.15	0.0022	0.056
60	4.69	0.0015	0.039
75	5.69	0.0008	0.019
84	6.65	0.0004	0.010
90	7.58	0.0002	0.005
95	8.73	0.0001	0.002

Measure	Trask	Inman	Folk-Ward
Median, phi	4.15	4.15	4.15
Median, in.	0.0022	0.0022	0.0022
Median, mm	0.056	0.056	0.056
Mean, phi	2.32	3.50	3.72
Mean, in.	0.0079	0.0035	0.0030
Mean, mm	0.200	0.088	0.076
Sorting	4.443	3.146	2.924
Skewness	1.526	-0.207	-0.090
Kurtosis	0.187	0.418	0.849

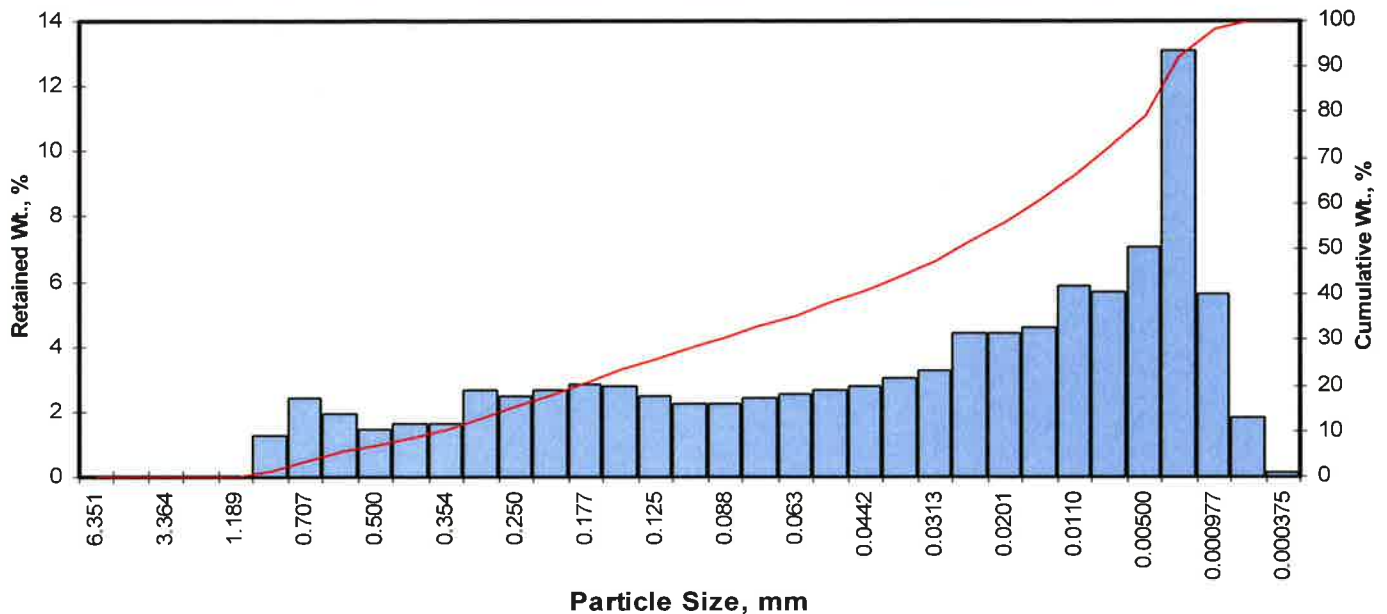
Grain Size Description
 (ASTM-USCS Scale) Fine sand (based on Mean from Trask)

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	24.31
Fine Sand	200	18.80
Silt	>0.005 mm	47.25
Clay	<0.005 mm	9.64
Total		100

Client: Crow Butte Resources, Inc.
 Project: Marsland Core
 Project No: N/A

PTS File No: 41269
 Sample ID: M-1454c Run 2
 Depth, ft: N/A

Grv	Sand Size			Silt	Clay
	crs	medium	fine		



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
Inches	Millimeters					
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.00	0.00	0.00
0.0331	0.841	0.25	20	1.24	1.24	1.24
0.0278	0.707	0.50	25	2.40	2.40	3.64
0.0234	0.595	0.75	30	1.92	1.92	5.56
0.0197	0.500	1.00	35	1.42	1.42	6.98
0.0166	0.420	1.25	40	1.60	1.60	8.58
0.0139	0.354	1.50	45	1.64	1.64	10.22
0.0117	0.297	1.75	50	2.63	2.63	12.85
0.0098	0.250	2.00	60	2.46	2.46	15.31
0.0083	0.210	2.25	70	2.67	2.67	17.98
0.0070	0.177	2.50	80	2.82	2.82	20.80
0.0059	0.149	2.75	100	2.77	2.77	23.57
0.0049	0.125	3.00	120	2.49	2.49	26.06
0.0041	0.105	3.25	140	2.26	2.26	28.32
0.0035	0.088	3.50	170	2.26	2.26	30.58
0.0029	0.074	3.75	200	2.41	2.41	32.99
0.0025	0.063	4.00	230	2.55	2.55	35.54
0.0021	0.053	4.25	270	2.63	2.63	38.17
0.00174	0.0442	4.50	325	2.80	2.80	40.97
0.00146	0.0372	4.75	400	3.04	3.04	44.01
0.00123	0.0313	5.00	450	3.28	3.28	47.29
0.000986	0.0250	5.32	500	4.40	4.40	51.69
0.000790	0.0201	5.64	635	4.43	4.43	56.12
0.000615	0.0156	6.00		4.61	4.61	60.73
0.000435	0.0110	6.50		5.86	5.86	66.59
0.000308	0.00781	7.00		5.69	5.69	72.28
0.000197	0.00500	7.65		7.07	7.07	79.35
0.000077	0.00195	9.00		13.10	13.10	92.45
0.000038	0.000977	10.00		5.63	5.63	98.08
0.000019	0.000488	11.00		1.79	1.79	99.87
0.000015	0.000375	11.38		0.13	0.13	100.00
TOTALS				100.00	100.00	100.00

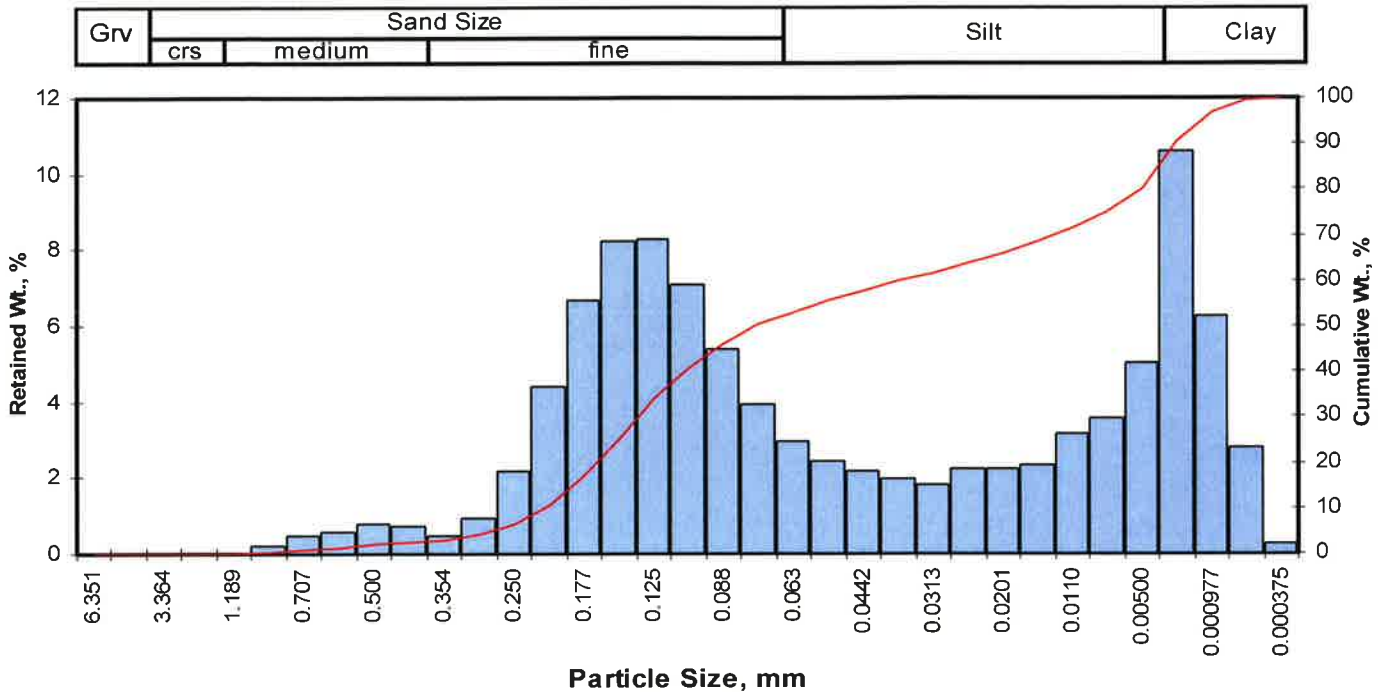
Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	0.68	0.0246	0.625
10	1.47	0.0142	0.362
16	2.06	0.0094	0.239
25	2.89	0.0053	0.135
40	4.41	0.0018	0.047
50	5.20	0.0011	0.027
60	5.94	0.0006	0.016
75	7.25	0.0003	0.007
84	8.13	0.0001	0.004
90	8.75	0.0001	0.002
95	9.45	0.0001	0.001

Measure	Trask	Inman	Folk-Ward
Median, phi	5.20	5.20	5.20
Median, in.	0.0011	0.0011	0.0011
Median, mm	0.027	0.027	0.027
Mean, phi	3.82	5.10	5.13
Mean, in.	0.0028	0.0012	0.0011
Mean, mm	0.071	0.029	0.029
Sorting	4.523	3.031	2.845
Skewness	1.091	-0.034	-0.032
Kurtosis	0.178	0.448	0.826
Grain Size Description		Silt	
(ASTM-USCS Scale)		(based on Mean from Trask)	

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	8.58
Fine Sand	200	24.41
Silt	>0.005 mm	46.36
Clay	<0.005 mm	20.65
Total		100

Client: Crow Butte Resources, Inc.
Project: Marsland Core
Project No: N/A

PTS File No: 41269
Sample ID: M-1454c Run 3
Depth, ft: N/A



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
Inches	Millimeters					
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.00	0.00	0.00
0.0331	0.841	0.25	20	0.23	0.23	0.23
0.0278	0.707	0.50	25	0.47	0.47	0.70
0.0234	0.595	0.75	30	0.59	0.59	1.29
0.0197	0.500	1.00	35	0.75	0.75	2.04
0.0166	0.420	1.25	40	0.70	0.70	2.74
0.0139	0.354	1.50	45	0.45	0.45	3.19
0.0117	0.297	1.75	50	0.94	0.94	4.13
0.0098	0.250	2.00	60	2.16	2.16	6.29
0.0083	0.210	2.25	70	4.38	4.38	10.67
0.0070	0.177	2.50	80	6.68	6.68	17.35
0.0059	0.149	2.75	100	8.23	8.23	25.59
0.0049	0.125	3.00	120	8.27	8.27	33.86
0.0041	0.105	3.25	140	7.07	7.07	40.93
0.0035	0.088	3.50	170	5.38	5.38	46.31
0.0029	0.074	3.75	200	3.92	3.92	50.23
0.0025	0.063	4.00	230	2.97	2.97	53.20
0.0021	0.053	4.25	270	2.45	2.45	55.65
0.00174	0.0442	4.50	325	2.16	2.16	57.81
0.00146	0.0372	4.75	400	1.94	1.94	59.75
0.00123	0.0313	5.00	450	1.81	1.81	61.56
0.000986	0.0250	5.32	500	2.24	2.24	63.80
0.000790	0.0201	5.64	635	2.21	2.21	66.01
0.000615	0.0156	6.00		2.32	2.32	68.33
0.000435	0.0110	6.50		3.13	3.13	71.46
0.000308	0.00781	7.00		3.58	3.58	75.05
0.000197	0.00500	7.65		5.03	5.03	80.08
0.000077	0.00195	9.00		10.60	10.60	90.68
0.000038	0.000977	10.00		6.28	6.28	96.96
0.000019	0.000488	11.00		2.80	2.80	99.76
0.000015	0.000375	11.38		0.24	0.24	100.00
TOTALS				100.00	100.00	100.00

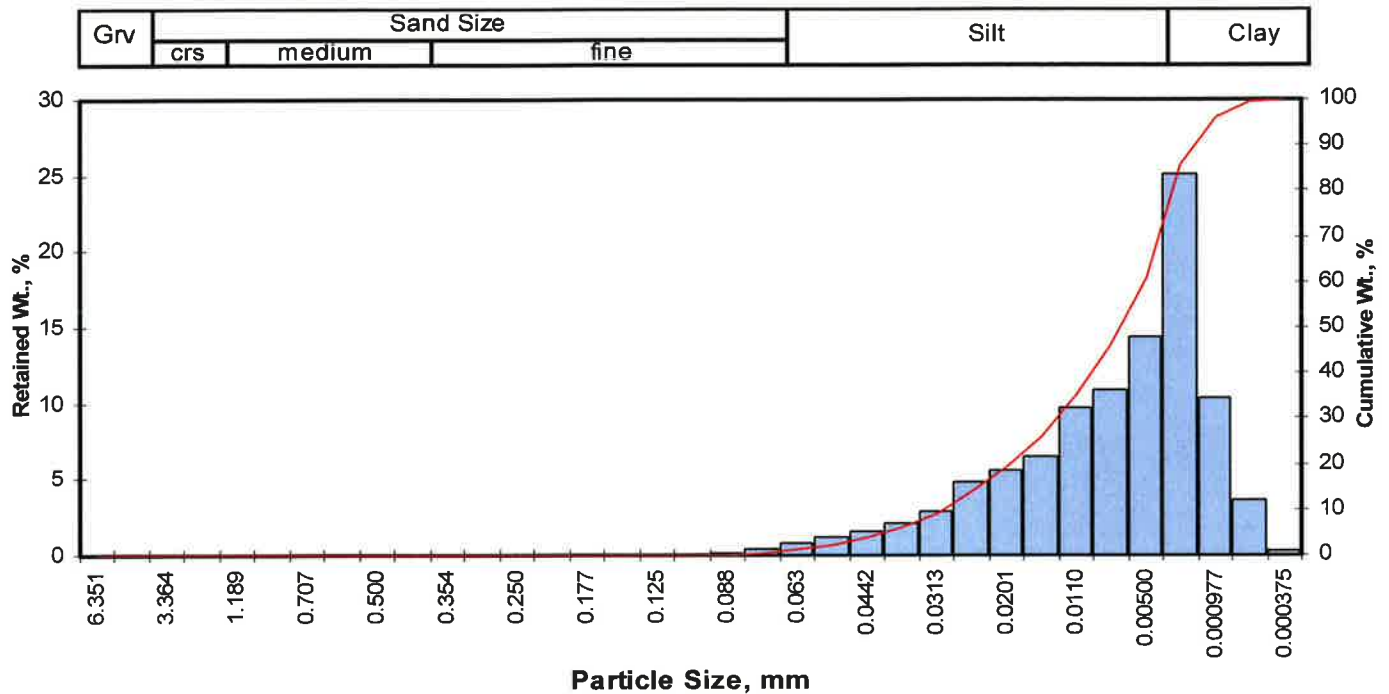
Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	1.85	0.0109	0.277
10	2.21	0.0085	0.216
16	2.45	0.0072	0.183
25	2.73	0.0059	0.150
40	3.22	0.0042	0.108
50	3.74	0.0030	0.075
60	4.78	0.0014	0.036
75	6.99	0.0003	0.008
84	8.15	0.0001	0.004
90	8.91	0.0001	0.002
95	9.69	0.0000	0.001

Measure	Trask	Inman	Folk-Ward
Median, phi	3.74	3.74	3.74
Median, in.	0.0030	0.0030	0.0030
Median, mm	0.075	0.075	0.075
Mean, phi	3.66	5.30	4.78
Mean, in.	0.0031	0.0010	0.0014
Mean, mm	0.079	0.025	0.036
Sorting	4.379	2.849	2.612
Skewness	0.458	0.549	0.534
Kurtosis	0.334	0.376	0.754
Grain Size Description (ASTM-USCS Scale)		Fine sand (based on Mean from Trask)	

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	2.74
Fine Sand	200	47.49
Silt	>0.005 mm	29.85
Clay	<0.005 mm	19.92
Total		100

Client: Crow Butte Resources, Inc.
Project: Marsland Core
Project No: N/A

PTS File No: 41269
Sample ID: M-1454c Run 4
Depth, ft: N/A



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
Inches	Millimeters					
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.00	0.00	0.00
0.0331	0.841	0.25	20	0.00	0.00	0.00
0.0278	0.707	0.50	25	0.00	0.00	0.00
0.0234	0.595	0.75	30	0.00	0.00	0.00
0.0197	0.500	1.00	35	0.00	0.00	0.00
0.0166	0.420	1.25	40	0.00	0.00	0.00
0.0139	0.354	1.50	45	0.00	0.00	0.00
0.0117	0.297	1.75	50	0.00	0.00	0.00
0.0098	0.250	2.00	60	0.00	0.00	0.00
0.0083	0.210	2.25	70	0.00	0.00	0.00
0.0070	0.177	2.50	80	0.00	0.00	0.00
0.0059	0.149	2.75	100	0.00	0.00	0.00
0.0049	0.125	3.00	120	0.00	0.00	0.00
0.0041	0.105	3.25	140	0.00	0.00	0.00
0.0035	0.088	3.50	170	0.08	0.08	0.09
0.0029	0.074	3.75	200	0.36	0.36	0.45
0.0025	0.063	4.00	230	0.77	0.77	1.22
0.0021	0.053	4.25	270	1.14	1.14	2.36
0.00174	0.0442	4.50	325	1.55	1.55	3.91
0.00146	0.0372	4.75	400	2.10	2.10	6.01
0.00123	0.0313	5.00	450	2.87	2.87	8.88
0.000986	0.0250	5.32	500	4.78	4.78	13.66
0.000790	0.0201	5.64	635	5.62	5.62	19.28
0.000615	0.0156	6.00		6.45	6.45	25.73
0.000435	0.0110	6.50		9.67	9.67	35.40
0.000308	0.00781	7.00		10.90	10.90	46.30
0.000197	0.00500	7.65		14.30	14.30	60.60
0.000077	0.00195	9.00		25.10	25.10	85.70
0.000038	0.000977	10.00		10.40	10.40	96.10
0.000019	0.000488	11.00		3.62	3.62	99.72
0.000015	0.000375	11.38		0.28	0.28	100.00
TOTALS				100.00	100.00	100.00

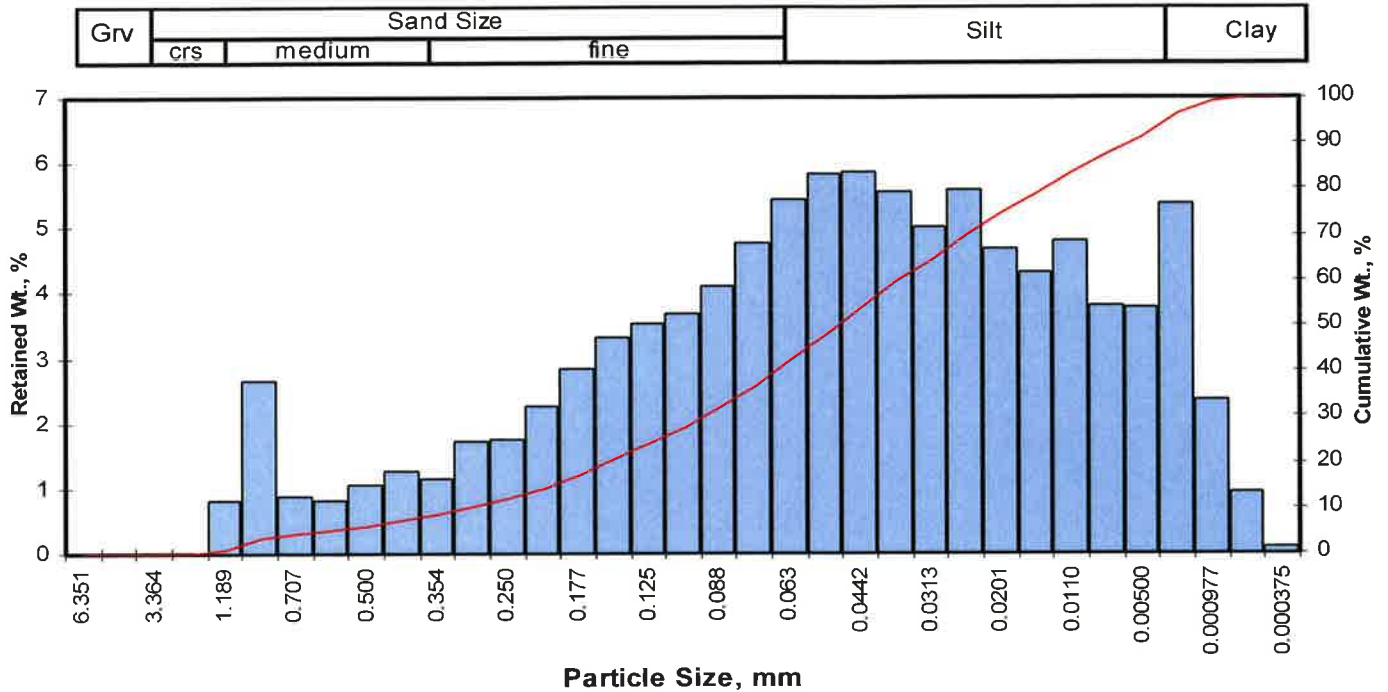
Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	4.63	0.0016	0.040
10	5.08	0.0012	0.030
16	5.45	0.0009	0.023
25	5.96	0.0006	0.016
40	6.71	0.0004	0.010
50	7.17	0.0003	0.007
60	7.62	0.0002	0.005
75	8.42	0.0001	0.003
84	8.91	0.0001	0.002
90	9.41	0.0001	0.001
95	9.89	0.0000	0.001

Measure	Trask	Inman	Folk-Ward
Median, phi	7.17	7.17	7.17
Median, in.	0.0003	0.0003	0.0003
Median, mm	0.007	0.007	0.007
Mean, phi	6.72	7.18	7.18
Mean, in.	0.0004	0.0003	0.0003
Mean, mm	0.009	0.007	0.007
Sorting	2.348	1.727	1.661
Skewness	0.984	0.008	0.022
Kurtosis	0.233	0.524	0.876
Grain Size Description (ASTM-USCS Scale)		Silt (based on Mean from Trask)	

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	0.00
Fine Sand	200	0.45
Silt	>0.005 mm	60.15
Clay	<0.005 mm	39.40
Total		100

Client: Crow Butte Resources, Inc.
 Project: Marsland Core
 Project No: N/A

PTS File No: 41269
 Sample ID: M-1624c Run 1
 Depth, ft: N/A



Particle Size, mm

Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
Inches	Millimeters					
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.81	0.81	0.81
0.0331	0.841	0.25	20	2.66	2.66	3.47
0.0278	0.707	0.50	25	0.89	0.89	4.36
0.0234	0.595	0.75	30	0.81	0.81	5.17
0.0197	0.500	1.00	35	1.05	1.05	6.22
0.0166	0.420	1.25	40	1.28	1.28	7.50
0.0139	0.354	1.50	45	1.16	1.16	8.66
0.0117	0.297	1.75	50	1.72	1.72	10.38
0.0098	0.250	2.00	60	1.76	1.76	12.14
0.0083	0.210	2.25	70	2.25	2.25	14.39
0.0070	0.177	2.50	80	2.84	2.84	17.23
0.0059	0.149	2.75	100	3.32	3.32	20.54
0.0049	0.125	3.00	120	3.52	3.52	24.06
0.0041	0.105	3.25	140	3.69	3.69	27.75
0.0035	0.088	3.50	170	4.10	4.10	31.85
0.0029	0.074	3.75	200	4.77	4.77	36.62
0.0025	0.063	4.00	230	5.44	5.44	42.06
0.0021	0.053	4.25	270	5.83	5.83	47.89
0.00174	0.0442	4.50	325	5.87	5.87	53.75
0.00146	0.0372	4.75	400	5.54	5.54	59.29
0.00123	0.0313	5.00	450	5.02	5.02	64.31
0.000986	0.0250	5.32	500	5.58	5.58	69.89
0.000790	0.0201	5.64	635	4.69	4.69	74.58
0.000615	0.0156	6.00		4.33	4.33	78.91
0.000435	0.0110	6.50		4.81	4.81	83.72
0.000308	0.00781	7.00		3.79	3.79	87.50
0.000197	0.00500	7.65		3.77	3.77	91.27
0.000077	0.00195	9.00		5.38	5.38	96.65
0.000038	0.000977	10.00		2.34	2.34	98.99
0.000019	0.000488	11.00		0.93	0.93	99.92
0.000015	0.000375	11.38		0.08	0.08	100.00
TOTALS				100.00	100.00	100.00

Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	0.70	0.0243	0.616
10	1.70	0.0122	0.309
16	2.39	0.0075	0.191
25	3.06	0.0047	0.120
40	3.91	0.0026	0.067
50	4.34	0.0019	0.049
60	4.79	0.0014	0.036
75	5.68	0.0008	0.020
84	6.54	0.0004	0.011
90	7.43	0.0002	0.006
95	8.58	0.0001	0.003

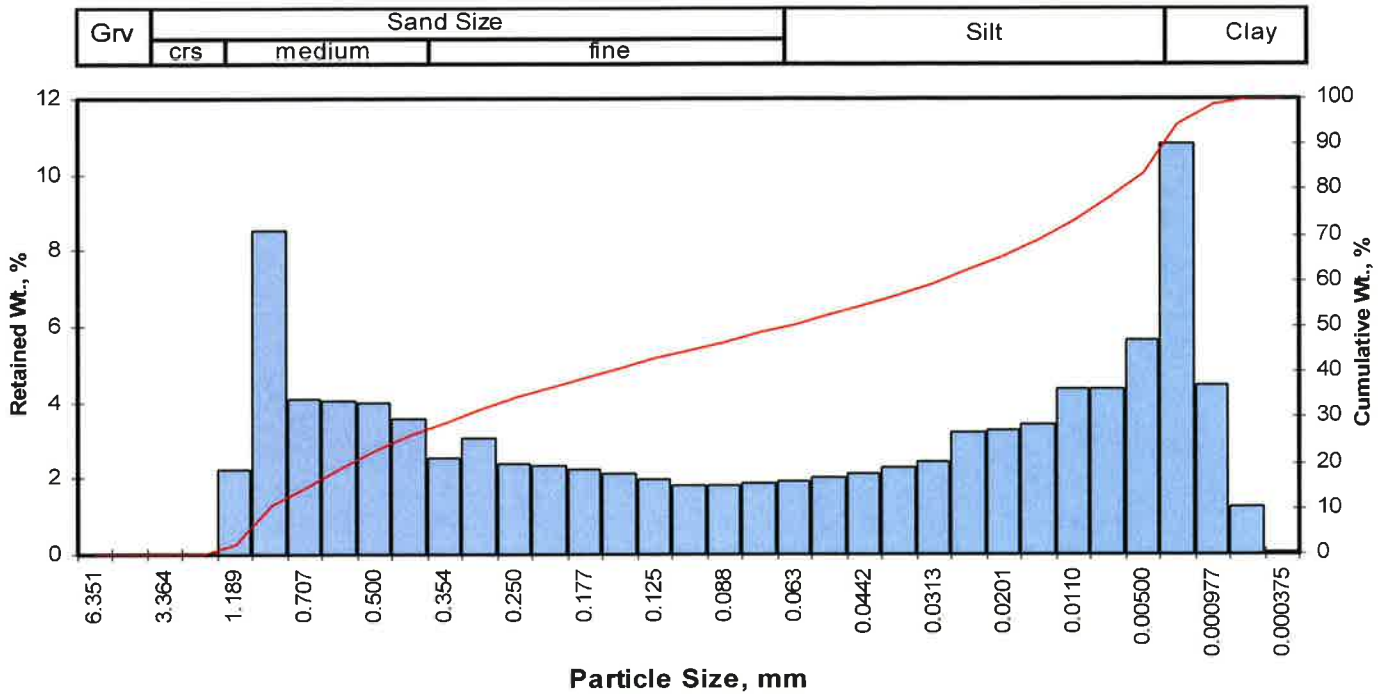
Measure	Trask	Inman	Folk-Ward
Median, phi	4.34	4.34	4.34
Median, in.	0.0019	0.0019	0.0019
Median, mm	0.049	0.049	0.049
Mean, phi	3.84	4.46	4.42
Mean, in.	0.0027	0.0018	0.0018
Mean, mm	0.070	0.045	0.047
Sorting	2.472	2.073	2.231
Skewness	0.980	0.060	0.068
Kurtosis	0.165	0.902	1.238

Grain Size Description (ASTM-USCS Scale) **Silt** (based on Mean from Trask)

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	7.50
Fine Sand	200	29.12
Silt	>0.005 mm	54.65
Clay	<0.005 mm	8.73
Total		100

Client: Crow Butte Resources, Inc.
 Project: Marsland Core
 Project No: N/A

PTS File No: 41269
 Sample ID: M-1624c Run 2
 Depth, ft: N/A



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
Inches	Millimeters					
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	2.23	2.23	2.23
0.0331	0.841	0.25	20	8.51	8.51	10.74
0.0278	0.707	0.50	25	4.07	4.07	14.81
0.0234	0.595	0.75	30	4.04	4.04	18.85
0.0197	0.500	1.00	35	3.97	3.97	22.82
0.0166	0.420	1.25	40	3.55	3.55	26.37
0.0139	0.354	1.50	45	2.54	2.54	28.91
0.0117	0.297	1.75	50	3.04	3.04	31.95
0.0098	0.250	2.00	60	2.40	2.40	34.35
0.0083	0.210	2.25	70	2.31	2.31	36.66
0.0070	0.177	2.50	80	2.24	2.24	38.91
0.0059	0.149	2.75	100	2.14	2.14	41.05
0.0049	0.125	3.00	120	1.98	1.98	43.03
0.0041	0.105	3.25	140	1.83	1.83	44.86
0.0035	0.088	3.50	170	1.79	1.79	46.65
0.0029	0.074	3.75	200	1.85	1.85	48.50
0.0025	0.063	4.00	230	1.93	1.93	50.43
0.0021	0.053	4.25	270	2.00	2.00	52.43
0.00174	0.0442	4.50	325	2.13	2.13	54.56
0.00146	0.0372	4.75	400	2.28	2.28	56.84
0.00123	0.0313	5.00	450	2.43	2.43	59.27
0.000986	0.0250	5.32	500	3.22	3.22	62.49
0.000790	0.0201	5.64	635	3.24	3.24	65.73
0.000615	0.0156	6.00		3.39	3.39	69.12
0.000435	0.0110	6.50		4.36	4.36	73.48
0.000308	0.00781	7.00		4.35	4.35	77.83
0.000197	0.00500	7.65		5.63	5.63	83.46
0.000077	0.00195	9.00		10.80	10.80	94.26
0.000038	0.000977	10.00		4.44	4.44	98.70
0.000019	0.000488	11.00		1.22	1.22	99.92
0.000015	0.000375	11.38		0.08	0.08	100.00
TOTALS				100.00	100.00	100.00

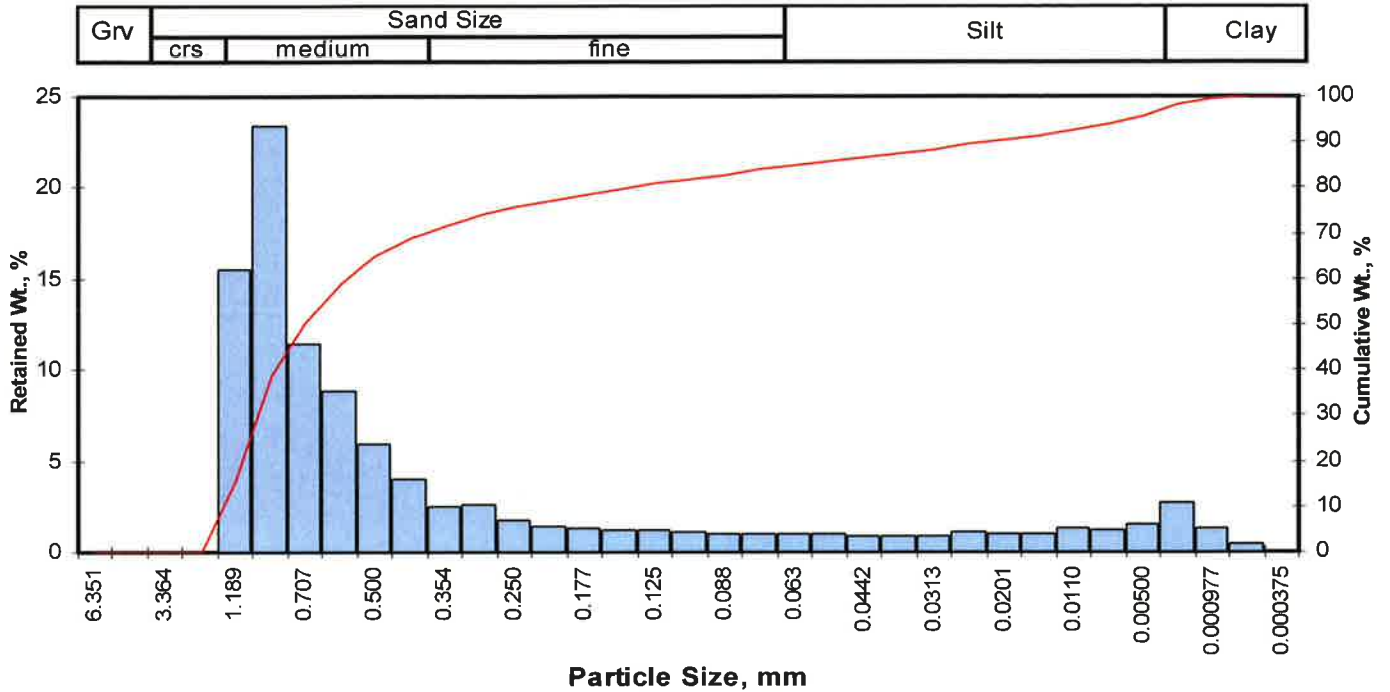
Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	-0.09	0.0418	1.062
10	0.21	0.0341	0.867
16	0.57	0.0265	0.672
25	1.15	0.0177	0.450
40	2.63	0.0064	0.162
50	3.94	0.0026	0.065
60	5.07	0.0012	0.030
75	6.67	0.0004	0.010
84	7.71	0.0002	0.005
90	8.47	0.0001	0.003
95	9.17	0.0001	0.002

Measure	Trask	Inman	Folk-Ward
Median, phi	3.94	3.94	3.94
Median, in.	0.0026	0.0026	0.0026
Median, mm	0.065	0.065	0.065
Mean, phi	2.12	4.14	4.08
Mean, in.	0.0090	0.0022	0.0023
Mean, mm	0.230	0.057	0.059
Sorting	6.777	3.570	3.187
Skewness	1.022	0.056	0.092
Kurtosis	0.255	0.296	0.687
Grain Size Description (ASTM-USCS Scale)		Fine sand (based on Mean from Trask)	

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	26.37
Fine Sand	200	22.12
Silt	>0.005 mm	34.96
Clay	<0.005 mm	16.54
Total		100

Client: Crow Butte Resources, Inc.
 Project: Marsland Core
 Project No: N/A

PTS File No: 41269
 Sample ID: M-1624c Run 4
 Depth, ft: N/A



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
Inches	Millimeters					
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	15.50	15.51	15.51
0.0331	0.841	0.25	20	23.40	23.41	38.92
0.0278	0.707	0.50	25	11.40	11.41	50.33
0.0234	0.595	0.75	30	8.81	8.82	59.14
0.0197	0.500	1.00	35	5.92	5.92	65.07
0.0166	0.420	1.25	40	3.98	3.98	69.05
0.0139	0.354	1.50	45	2.47	2.47	71.52
0.0117	0.297	1.75	50	2.62	2.62	74.14
0.0098	0.250	2.00	60	1.71	1.71	75.85
0.0083	0.210	2.25	70	1.39	1.39	77.24
0.0070	0.177	2.50	80	1.26	1.26	78.51
0.0059	0.149	2.75	100	1.22	1.22	79.73
0.0049	0.125	3.00	120	1.14	1.14	80.87
0.0041	0.105	3.25	140	1.05	1.05	81.92
0.0035	0.088	3.50	170	1.01	1.01	82.93
0.0029	0.074	3.75	200	1.01	1.01	83.94
0.0025	0.063	4.00	230	0.99	0.99	84.93
0.0021	0.053	4.25	270	0.95	0.95	85.88
0.00174	0.0442	4.50	325	0.91	0.91	86.79
0.00146	0.0372	4.75	400	0.88	0.88	87.67
0.00123	0.0313	5.00	450	0.85	0.85	88.52
0.000986	0.0250	5.32	500	1.03	1.03	89.55
0.000790	0.0201	5.64	635	0.99	0.99	90.54
0.000615	0.0156	6.00		1.01	1.01	91.55
0.000435	0.0110	6.50		1.25	1.25	92.80
0.000308	0.00781	7.00		1.21	1.21	94.01
0.000197	0.00500	7.65		1.48	1.48	95.50
0.000077	0.00195	9.00		2.68	2.68	98.18
0.000038	0.000977	10.00		1.33	1.33	99.51
0.000019	0.000488	11.00		0.46	0.46	99.97
0.000015	0.000375	11.38		0.03	0.03	100.00
TOTALS				99.90	100.00	100.00

Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	-0.76	0.0666	1.691
10	-0.52	0.0563	1.430
16	-0.24	0.0465	1.181
25	-0.05	0.0407	1.033
40	0.27	0.0326	0.827
50	0.49	0.0280	0.711
60	0.79	0.0228	0.580
75	1.88	0.0107	0.273
84	3.77	0.0029	0.074
90	5.46	0.0009	0.023
95	7.43	0.0002	0.006

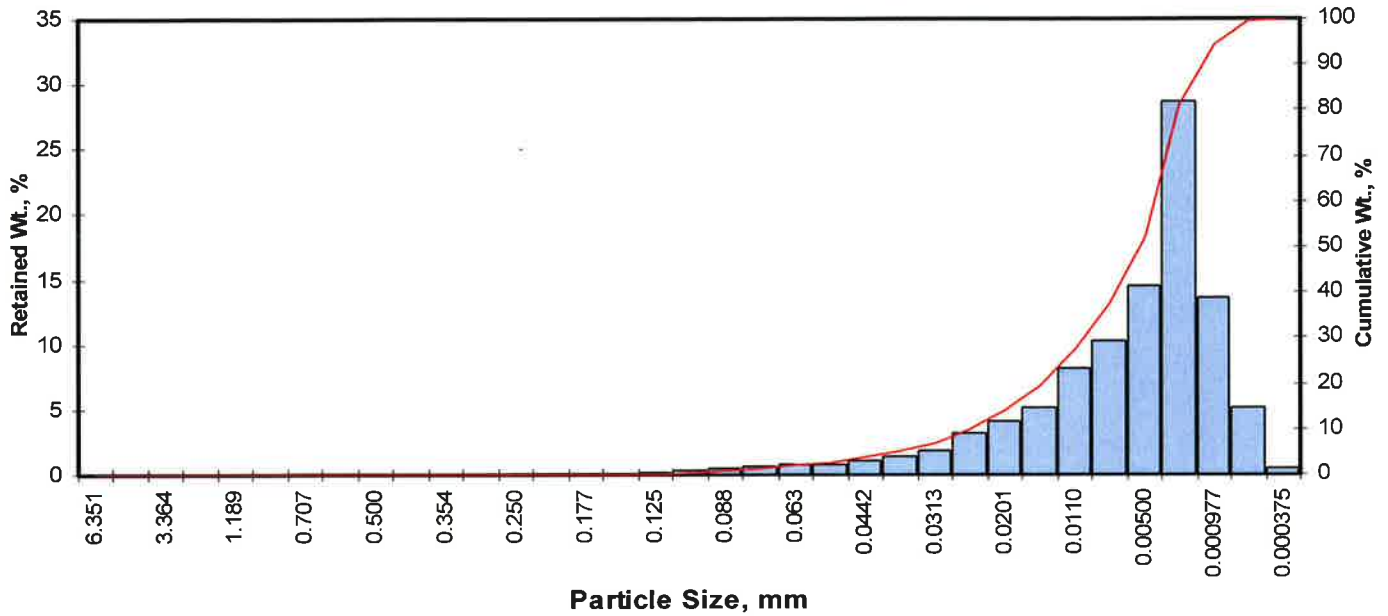
Measure	Trask	Inman	Folk-Ward
Median, phi	0.49	0.49	0.49
Median, in.	0.0280	0.0280	0.0280
Median, mm	0.711	0.711	0.711
Mean, phi	0.61	1.76	1.34
Mean, in.	0.0257	0.0116	0.0156
Mean, mm	0.653	0.295	0.395
Sorting	1.947	2.002	2.242
Skewness	0.747	0.634	0.664
Kurtosis	0.270	1.044	1.745
Grain Size Description		Medium sand	
(ASTM-USCS Scale)		(based on Mean from Trask)	

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	69.05
Fine Sand	200	14.89
Silt	>0.005 mm	11.56
Clay	<0.005 mm	4.50
Total		100

Client: Crow Butte Resources, Inc.
 Project: Marsland Core
 Project No: N/A

PTS File No: 41269
 Sample ID: M-1624c Run 5
 Depth, ft: N/A

Grv	Sand Size			Silt	Clay
	crs	medium	fine		



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
Inches	Millimeters					
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.00	0.00	0.00
0.0331	0.841	0.25	20	0.00	0.00	0.00
0.0278	0.707	0.50	25	0.00	0.00	0.00
0.0234	0.595	0.75	30	0.00	0.00	0.00
0.0197	0.500	1.00	35	0.00	0.00	0.00
0.0166	0.420	1.25	40	0.00	0.00	0.00
0.0139	0.354	1.50	45	0.00	0.00	0.00
0.0117	0.297	1.75	50	0.00	0.00	0.00
0.0098	0.250	2.00	60	0.00	0.00	0.00
0.0083	0.210	2.25	70	0.00	0.00	0.00
0.0070	0.177	2.50	80	0.00	0.00	0.00
0.0059	0.149	2.75	100	0.01	0.01	0.01
0.0049	0.125	3.00	120	0.08	0.08	0.09
0.0041	0.105	3.25	140	0.24	0.24	0.33
0.0035	0.088	3.50	170	0.39	0.39	0.72
0.0029	0.074	3.75	200	0.56	0.56	1.28
0.0025	0.063	4.00	230	0.70	0.70	1.98
0.0021	0.053	4.25	270	0.81	0.81	2.79
0.00174	0.0442	4.50	325	0.99	0.99	3.78
0.00146	0.0372	4.75	400	1.31	1.31	5.09
0.00123	0.0313	5.00	450	1.80	1.80	6.89
0.000986	0.0250	5.32	500	3.15	3.15	10.03
0.000790	0.0201	5.64	635	4.11	4.11	14.14
0.000615	0.0156	6.00		5.11	5.11	19.25
0.000435	0.0110	6.50		8.22	8.22	27.47
0.000308	0.00781	7.00		10.20	10.20	37.66
0.000197	0.00500	7.65		14.50	14.49	52.15
0.000077	0.00195	9.00		28.70	28.69	80.84
0.000038	0.000977	10.00		13.60	13.59	94.43
0.000019	0.000488	11.00		5.15	5.15	99.58
0.000015	0.000375	11.38		0.42	0.42	100.00
TOTALS				100.00	100.00	100.00

Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	4.73	0.0015	0.038
10	5.32	0.0010	0.025
16	5.77	0.0007	0.018
25	6.35	0.0005	0.012
40	7.10	0.0003	0.007
50	7.55	0.0002	0.005
60	8.02	0.0002	0.004
75	8.72	0.0001	0.002
84	9.23	0.0001	0.002
90	9.67	0.0000	0.001
95	10.11	0.0000	0.001

Measure	Trask	Inman	Folk-Ward
Median, phi	7.55	7.55	7.55
Median, in.	0.0002	0.0002	0.0002
Median, mm	0.005	0.005	0.005
Mean, phi	7.10	7.50	7.52
Mean, in.	0.0003	0.0002	0.0002
Mean, mm	0.007	0.006	0.005
Sorting	2.277	1.731	1.680
Skewness	1.008	-0.027	-0.037
Kurtosis	0.207	0.553	0.928
Grain Size Description		Silt	
(ASTM-USCS Scale)		(based on Mean from Trask)	

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	0.00
Fine Sand	200	1.28
Silt	>0.005 mm	50.88
Clay	<0.005 mm	47.85
Total		100

COMPANY		ANALYSIS REQUEST												PO#	
CROW BUTTE RESOURCES, INC														5337	
ADDRESS		TURNAROUND TIME												24 HOURS <input type="checkbox"/>	5 DAYS <input type="checkbox"/>
CITY		TOC: WALKLEY-BLACK												48 HOURS <input type="checkbox"/>	NORMAL <input type="checkbox"/>
PROJECT MANAGER		GRAIN SIZE DISTRIBUTION, ASTM D422/4464M												72 HOURS <input type="checkbox"/>	
PROJECT NAME		HYDRAULIC CONDUCTIVITY, EPA9100, API RP40, D5084												OTHER:	
PHONE NUMBER		AIR PERMEABILITY, API RP40												SAMPLE INTEGRITY (CHECK):	
FAX NUMBER		BULK DENSITY (DRY), API RP40 or ASTM D2937												INTACT <input checked="" type="checkbox"/>	ON ICE <input type="checkbox"/>
SITE LOCATION		SPECIFIC GRAVITY, ASTM D864												PTS QUOTE NO.	
SAMPLER SIGNATURE		POROSITY: EFFECTIVE, ASTM D425M												PTS FILE:	41269
DATE		POROSITY: TOTAL, API RP40												COMMENTS	
TIME		MOISTURE CONTENT, ASTM D2216													
DATE		PHOTOLOG: CORE PHOTOGRAPHY													
TIME		FLUID PROPERTIES PACKAGE													
DATE		CAPILLARITY PACKAGE													
TIME		TCEQ/NRCC PROPERTIES PACKAGE													
DATE		PORE FLUID SATURATIONS PACKAGE													
TIME		HYDRAULIC CONDUCTIVITY PACKAGE													
DATE		SOIL PROPERTIES PACKAGE													
TIME		NUMBER OF SAMPLES													
DATE		ATTENBERG LIMITS, ASTM D4318													
TIME		PETROGRAPHY XRD-Bulk Fine													

1. RELINQUISHED BY	2. RECEIVED BY	3. RELINQUISHED BY	4. RECEIVED BY
Wade Beins	Paul Pol		
COMPANY	COMPANY	COMPANY	COMPANY
Crow Butte Resources, Inc	PTS Labs Inc		
DATE	DATE	DATE	DATE
4-20-11	4-25-11		
TIME	TIME	TIME	TIME
11:00 AM	1517		

SAMPLE ID NUMBER	DATE	TIME	DEPTH, FT
M-1454c Run1	3/22/11		
M-1454c Run2	3/22/11		
M-1454c Run3	3/22/11		
M-1454c Run4	3/22/11		
M-1624c Run1	3/25/11		
M-1624c Run2	3/25/11		
M-1624c Run4	3/25/11		
M-1624c Run5	3/25/11		

Note - There is not a sample for Run 3



ANALYTICAL SUMMARY REPORT

June 10, 2011

Crow Butte Resources
86 Crow Butte Rd
Crawford, NE 69339

Workorder No.: C11040735
Project Name: Not Indicated

Energy Laboratories, Inc. Casper WY received the following 14 samples for Crow Butte Resources on 4/22/2011 for analysis.


Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C11040735-001	M1454c-Run3-Sample 1	03/22/11 0:00	04/22/11	Core	Metals by ICP/ICPMS, Total Digestion, Total Metals for Core Samples Gamma Sample Preparation Uranium by Gamma
C11040735-002	M1454c-Run3-Sample 2	03/22/11 0:00	04/22/11	Core	Same As Above
C11040735-003	M1454c-Run3-Sample 3	03/22/11 0:00	04/22/11	Core	Same As Above
C11040735-004	M1454c-Run3-Sample 4	03/22/11 0:00	04/22/11	Core	Same As Above
C11040735-005	M1454c-Run3-Sample 5	03/22/11 0:00	04/22/11	Core	Same As Above
C11040735-006	M1624c-Run3-Sample 1	03/25/11 0:00	04/22/11	Core	Same As Above
C11040735-007	M1624c-Run3-Sample 2	03/25/11 0:00	04/22/11	Core	Same As Above
C11040735-008	M1624c-Run3-Sample 3	03/25/11 0:00	04/22/11	Core	Same As Above
C11040735-009	M1624c-Run3-Sample 4	03/25/11 0:00	04/22/11	Core	Same As Above
C11040735-010	M1624c-Run4-Sample 1	03/25/11 0:00	04/22/11	Core	Same As Above
C11040735-011	M1624c-Run4-Sample 2	03/22/11 0:00	04/22/11	Core	Same As Above
C11040735-012	M1624c-Run4-Sample 3	03/22/11 0:00	04/22/11	Core	Same As Above
C11040735-013	M1624c-Run4-Sample 4	03/22/11 0:00	04/22/11	Core	Same As Above
C11040735-014	M1624c-Run4-Sample 5	03/22/11 0:00	04/22/11	Core	Same As Above

This report was prepared by Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

The results as reported relate only to the item(s) submitted for testing.

If you have any questions regarding these test results, please call.

Report Approved By:


Stephanie D. Waldrop
Reporting Supervisor



CLIENT: Crow Butte Resources
Project: Not Indicated
Sample Delivery Group: C11040735

Report Date: 06/10/11

CASE NARRATIVE

ORIGINAL SAMPLE SUBMITTAL(S)

All original sample submittals have been returned with the data package.

SAMPLE TEMPERATURE COMPLIANCE: 4°C (±2°C)

Temperature of samples received may not be considered properly preserved by accepted standards. Samples that are hand delivered immediately after collection shall be considered acceptable if there is evidence that the chilling process has begun.

GROSS ALPHA ANALYSIS

Method 900.0 for gross alpha and gross beta is intended as a drinking water method for low TDS waters. Data provided by this method for non potable waters should be viewed as inconsistent.

SOIL/SOLID SAMPLES

All samples reported on an as received basis unless otherwise indicated.

SUBCONTRACTING ANALYSIS

Subcontracting of sample analyses to an outside laboratory may be required. If so, ENERGY LABORATORIES will utilize its branch laboratories or qualified contract laboratories for this service. Any such laboratories will be indicated within the Laboratory Analytical Report.

BRANCH LABORATORY LOCATIONS

eli-b - Energy Laboratories, Inc. - Billings, MT
eli-g - Energy Laboratories, Inc. - Gillette, WY
eli-h - Energy Laboratories, Inc. - Helena, MT
eli-r - Energy Laboratories, Inc. - Rapid City, SD
eli-t - Energy Laboratories, Inc. - College Station, TX

CERTIFICATIONS:

USEPA: WY00002; FL-DOH NELAC: E87641; California: 02118CA
Oregon: WY200001; Utah: 3072350515; Virginia: 00057; Washington: C1903

ISO 17025 DISCLAIMER:

The results of this Analytical Report relate only to the items submitted for analysis.

ENERGY LABORATORIES, INC. - CASPER, WY certifies that certain method selections contained in this report meet requirements as set forth by the above accrediting authorities. Some results requested by the client may not be covered under these certifications. All analysis data to be submitted for regulatory enforcement should be certified in the sample state of origin. Please verify ELI's certification coverage by visiting www.energylab.com

ELI appreciates the opportunity to provide you with this analytical service. For additional information and services visit our web page www.energylab.com.



www.energylab.com
Analytical Excellence Since 1987

Helena, MT 877-472-0711 • Billings, MT 866-735-4488 • Casper, WY 866-235-8815
Culbata, WY 866-686-7175 • Rapid City, SD 888-872-1225 • College Station, TX 888-888-2218

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Report Date: 06/10/11
Date Received: 04/22/11

Client: Crow Butte Resources
Project: Not Indicated
Workorder: C11040735

Sample ID	Client Sample ID	Analysis		U308 Chemical		U Gamma		U308 Gamma	
		Units	%	Results	%	Results	%	Results	%
C11040735-001	M1454c-Run3-Sample 1		< 0.005	< 0.006	0.038	0.045			
C11040735-002	M1454c-Run3-Sample 2		0.013	0.015	0.109	0.129			
C11040735-003	M1454c-Run3-Sample 3		0.259	0.305	0.370	0.436			
C11040735-004	M1454c-Run3-Sample 4		1.51	1.74	1.04	1.22			
C11040735-005	M1454c-Run3-Sample 5		1.12	1.24	0.715	0.842			
C11040735-006	M1624c-Run3-Sample 1		0.009	0.010	0.003	0.004			
C11040735-007	M1624c-Run3-Sample 2		< 0.005	< 0.006	0.004	0.004			
C11040735-008	M1624c-Run3-Sample 3		< 0.005	< 0.006	0.003	0.004			
C11040735-009	M1624c-Run3-Sample 4		< 0.005	< 0.006	0.003	0.004			
C11040735-010	M1624c-Run4-Sample 1		< 0.005	< 0.006	0.004	0.005			
C11040735-011	M1624c-Run4-Sample 2		< 0.005	< 0.006	0.002	0.003			
C11040735-012	M1624c-Run4-Sample 3		0.024	0.028	0.022	0.026			
C11040735-013	M1624c-Run4-Sample 4		< 0.005	< 0.006	0.016	0.019			
C11040735-014	M1624c-Run4-Sample 5		0.032	0.037	0.028	0.033			



QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Crow Butte Resources

Report Date: 06/10/11

Project: Not Indicated

Work Order: C11040735

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E901.1										Batch: R146661
Sample ID: LCS-R146661		Laboratory Control Sample								06/06/11 12:16
Radium 226	8.00	pCi/g-dry		2.0	92	80	120			
Sample ID: MB-R146661	2	Method Blank								06/06/11 12:16
Uranium by Gamma		ND	mg/kg-dry							U
U3O8 by Gamma		ND	mg/kg-dry							U
Sample ID: C11040735-010ADUP	2	Sample Duplicate								06/06/11 12:16
Uranium by Gamma		43.3	mg/kg-dry	6.0				3.6	20	
U3O8 by Gamma		51.1	mg/kg-dry	7.1				3.6	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration



QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Crow Butte Resources

Report Date: 06/10/11

Project: Not Indicated

Work Order: C11040735

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020										Batch: 29668
Sample ID: MB-29668		Method Blank								Run: ICPMS2-C_110429A 04/30/11 08:13
Uranium		0.02	mg/kg-dry	0.002						
Sample ID: LCS3-29668		Laboratory Control Sample								Run: ICPMS2-C_110429A 04/30/11 08:34
Uranium		106	mg/kg-dry	0.50	106	54.2	183			
Sample ID: C11040735-014AMS3		Sample Matrix Spike								Run: ICPMS2-C_110429A 04/30/11 10:26
Uranium		404	mg/kg-dry	0.50		75	125			A
Sample ID: C11040735-014AMSD		Sample Matrix Spike Duplicate								Run: ICPMS2-C_110429A 04/30/11 10:30
Uranium		411	mg/kg-dry	0.50		75	125	1.8	20	A
Method: SW6020										Batch: 29668
Sample ID: MB-29668		Method Blank								Run: ICPMS2-C_110502A 05/03/11 00:52
Uranium		0.2	mg/kg-dry	0.002						
Sample ID: LCS3-29668		Laboratory Control Sample								Run: ICPMS2-C_110502A 05/03/11 01:18
Uranium		126	mg/kg-dry	0.50	126	54.2	183			
Sample ID: C11040735-014AMS3		Sample Matrix Spike								Run: ICPMS2-C_110502A 05/03/11 01:50
Uranium		431	mg/kg-dry	0.50		75	125			A
Sample ID: C11040735-014AMSD		Sample Matrix Spike Duplicate								Run: ICPMS2-C_110502A 05/03/11 01:55
Uranium		443	mg/kg-dry	0.50		75	125	2.7	20	A

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.



Energy Laboratories Inc

Workorder Receipt Checklist



C11040735

Login completed by: Corinne Wagner

Date Received: 4/22/2011

Reviewed by: BL2000\lemcpike

Received by: ckw

Reviewed Date: 4/25/2011

Carrier Ground name:

- Shipping container/cooler in good condition? Yes No Not Present
- Custody seals Intact on shipping container/cooler? Yes No Not Present
- Custody seals intact on sample bottles? Yes No Not Present
- Chain of custody present? Yes No
- Chain of custody signed when relinquished and received? Yes No
- Chain of custody agrees with sample labels? Yes No
- Samples in proper container/bottle? Yes No
- Sample containers intact? Yes No
- Sufficient sample volume for indicated test? Yes No
- All samples received within holding time? Yes No
- Container/Temp Blank temperature: N/A°C
- Water - VOA vials have zero headspace? Yes No No VOA vials submitted
- Water - pH acceptable upon receipt? Yes No Not Applicable

Contact and Corrective Action Comments:

None



Chain of Custody and Analytical Request Record

PLEASE PRINT- Provide as much information as possible.

Company Name: Crow Butte Resources, Inc Report Mail Address: PO Box 169 Invoice Address: PO Box 169	Project Name, PWS, Permit, Etc. Contact Name: Wade Beins Phone/Fax: 308 665 2215 ext 113 Email: Wade_Beins@carneco.com Purchase Order: 5450	Sample Origin State: Nebraska EPA/State Compliance: Yes <input type="checkbox"/> No <input type="checkbox"/> Sampler: (Please Print) Wade Beins Quote/Bottle Order.																																	
Special Report/Formats - ELI must be notified prior to sample submittal for the following: <input type="checkbox"/> DW <input type="checkbox"/> GSA <input type="checkbox"/> POTW/WWTP <input type="checkbox"/> State: <input type="checkbox"/> Other: <input type="checkbox"/> A2LA <input type="checkbox"/> EDD/EDT (Electronic Data) Format: <input type="checkbox"/> LEVEL IV <input type="checkbox"/> NELAC	Invoice Contact & Phone: Terri Anderson 308 665 2215 ext 110 Number of Containers Sample Type: A W S V O Air Water Soils/Solids Vegetation Bioassay Other MATRIX <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:30%;"></td> <td style="width:30%; text-align: center;">Chemical Uranium</td> <td style="width:30%; text-align: center;">Closed Can Uranium</td> </tr> <tr> <td>1 M1454c-Run3-Sample 1</td> <td style="text-align: center;">X</td> <td style="text-align: center;">X</td> </tr> <tr> <td>2 M1454c-Run3-Sample 2</td> <td style="text-align: center;">X</td> <td style="text-align: center;">X</td> </tr> <tr> <td>3 M1454c-Run3-Sample 3</td> <td style="text-align: center;">X</td> <td style="text-align: center;">X</td> </tr> <tr> <td>4 M1454c-Run3-Sample 4</td> <td style="text-align: center;">X</td> <td style="text-align: center;">X</td> </tr> <tr> <td>5 M1454c-Run3-Sample 5</td> <td style="text-align: center;">X</td> <td style="text-align: center;">X</td> </tr> <tr> <td>6 M1624c-Run3-Sample 1</td> <td style="text-align: center;">X</td> <td style="text-align: center;">X</td> </tr> <tr> <td>7 M1624c-Run3-Sample 2</td> <td style="text-align: center;">X</td> <td style="text-align: center;">X</td> </tr> <tr> <td>8 M1624c-Run3-Sample 3</td> <td style="text-align: center;">X</td> <td style="text-align: center;">X</td> </tr> <tr> <td>9 M1624c-Run3-Sample 4</td> <td style="text-align: center;">X</td> <td style="text-align: center;">X</td> </tr> <tr> <td>10 M1624c-Run4-Sample 1</td> <td style="text-align: center;">X</td> <td style="text-align: center;">X</td> </tr> </table>		Chemical Uranium	Closed Can Uranium	1 M1454c-Run3-Sample 1	X	X	2 M1454c-Run3-Sample 2	X	X	3 M1454c-Run3-Sample 3	X	X	4 M1454c-Run3-Sample 4	X	X	5 M1454c-Run3-Sample 5	X	X	6 M1624c-Run3-Sample 1	X	X	7 M1624c-Run3-Sample 2	X	X	8 M1624c-Run3-Sample 3	X	X	9 M1624c-Run3-Sample 4	X	X	10 M1624c-Run4-Sample 1	X	X	ANALYSIS REQUESTED SEE ATTACHED Normal Turnaround (TAT) Comments: R U S H Contact ELI prior to RUSH sample submittal for charges and scheduling - See Instruction Page
	Chemical Uranium	Closed Can Uranium																																	
1 M1454c-Run3-Sample 1	X	X																																	
2 M1454c-Run3-Sample 2	X	X																																	
3 M1454c-Run3-Sample 3	X	X																																	
4 M1454c-Run3-Sample 4	X	X																																	
5 M1454c-Run3-Sample 5	X	X																																	
6 M1624c-Run3-Sample 1	X	X																																	
7 M1624c-Run3-Sample 2	X	X																																	
8 M1624c-Run3-Sample 3	X	X																																	
9 M1624c-Run3-Sample 4	X	X																																	
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Shipping Information: Shipped by: UPS-G Cooler ID(s): BOX Receipt Temp: 11A°C On Ice: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Custody Seal Intact: Y <input type="checkbox"/> N <input checked="" type="checkbox"/> Signature Match: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>		LABORATORY USE ONLY U1046735																																	

Custody Record MUST be Signed

Relinquished by (print): Wade Beins Date/Time: 4/20/11
 Relinquished by (print): _____ Date/Time: _____
 Received by (print): _____ Date/Time: _____
 Received by (print): _____ Date/Time: _____
 Received by Laboratory: _____ Date/Time: 4/22/11
 Signature: _____
 Signature: _____
 Signature: _____

Sample Disposal: _____ Return to Client: Yes
 Lab Disposal: _____

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly indicated on your analytical report. Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.



Chain of Custody and Analytical Request Record

PLEASE PRINT - Provide as much information as possible.

Company Name: Crow Butte Resources, Inc		Sample Origin State: Nebraska		EPA/State Compliance: Yes <input type="checkbox"/> No <input type="checkbox"/>																																													
Report Mail Address: PO Box 169		Contact Name: Wade Beins		Email: Wade_Beins@cameco.com																																													
Invoice Address: PO Box 169		Phone/Fax: 308 665 2215 ext 113		Purchase Order: 5450																																													
<p>Special Report/Formats - ELI must be notified prior to sample submittal for the following:</p> <p> <input type="checkbox"/> DW <input type="checkbox"/> GSA <input type="checkbox"/> POTW/WWTP <input type="checkbox"/> State: <input type="checkbox"/> Other: </p> <p> <input type="checkbox"/> A2LA <input type="checkbox"/> EDD/EDT (Electronic Data) Format: <input type="checkbox"/> LEVEL IV <input type="checkbox"/> NELAC </p>		Invoice Contact & Phone: Terri Anderson 308 665 2215 ext 110		Quote/Bottle Order:																																													
<p>Number of Containers</p> <p>Sample Type: A W S V B O</p> <p>Air Water Soils/Solids</p> <p>Vegetation Bioassay Other</p>		ANALYSIS REQUESTED		Contact ELI prior to RUSH sample submittal for charges and scheduling - See Instruction Page																																													
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				Received by Laboratory: <u>Wade Beins</u>																																													
				Date/Time: <u>4/22/11 9:30</u>																																													
Custody Record MUST be Signed		Sample Disposal: Return to Client: <input checked="" type="checkbox"/> Yes		Lab Disposal:																																													

LABORATORY USE ONLY

11040735

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8100 Secura Way • Santa Fe Springs, CA 90670
Telephone (562) 347-2500 • Fax (562) 907-3610

October 10, 2013

Wade Beins
Crow Butte Resources, Inc.
PO Box 169
Crawford, NE 69339


Re: PTS File No: 43570
Physical Properties Data
Marsland Core

Dear Mr. Beins:

Please find enclosed report for Physical Properties analyses conducted upon samples received from your Marsland Core project. All analyses were performed by applicable ASTM, EPA, or API methodologies. An electronic version of the report has previously been sent to your attention via the internet. The samples are currently in storage and will be retained for thirty days past completion of testing at no charge. Please note that the samples will be disposed of at that time. You may contact me regarding storage, disposal, or return of the samples.

PTS Laboratories appreciates the opportunity to be of service. If you have any questions or require additional information, please contact Rachel Spitz at (562) 347-2504.

Sincerely,
PTS Laboratories, Inc.



Michael Mark Brady, P.G.
District Manager

Encl.

PTS Laboratories

Project Name: Marsland Core
 Project Number: N/A

PTS File No: 43570
 Client: Crow Butte Resources, Inc.

TEST PROGRAM - 20130829

CORE ID	Depth ft.	Core Recovery ft.	Grain Size Analysis	*X-Ray Diffraction Proprietary	Notes
Date Received: 20130829					
M-533C Run 1, Sample 1	63.9-64.9	N/A	X	X	
M-533C Run 1, Sample 2	68.8-69.8	N/A	X	X	
M-533C Run 3, Sample 1	299.0-300.0	N/A	X	X	
M-533C Run 3, Sample 2	306.0-307.0	N/A	X	X	
M-533C Run 5, Sample 1	1052.5-1053.0	N/A	X	X	
M-1635C Run 1, Sample 1	70.0-70.5	N/A	X	X	
M-1635C Run 1, Sample 2	79.5-80.0	N/A	X	X	
M-1635C Run 2, Sample 1	197.0-197.5	N/A	X	X	
M-1635C Run 2, Sample 2	206.5-207.0	N/A	X	X	
M-1635C Run 3, Sample 1	530.0-530.5	N/A	X	X	
M-1635C Run 6, Sample 1	993.0-994.0	N/A	X	X	
M-1912C Run 1, Sample 1	63.0-64.0	N/A	X	X	
M-1912C Run 2, Sample 1	130.7-131.7	N/A	X	X	
M-1912C Run 3, Sample 1	255.0-255.5	N/A	X	X	
M-1912C Run 3, Sample 2	260.4-260.9	N/A	X	X	
M-1912C Run 4, Sample 1	974.5-975.0	N/A	X	X	
M-1912C Run 4, Sample 2	968.7-969.7	N/A	X	X	
M-1956C Run 1, Sample 1	42.0-43.0	N/A	X	X	
M-1956C Run 3, Sample 1	78.0-79.0	N/A	X	X	
M-1956C Run 4, Sample 1	196.5-197.1	N/A	X	X	
M-1956C Run 4, Sample 2	202.0-202.5	N/A	X	X	
M-1956C Run 5, Sample 1	425.6-426.2	N/A	X	X	
M-1956C Run 5, Sample 2	431.0-431.6	N/A	X	X	
M-1956C Run 6, Sample 1	1011.8-1012.4	N/A	X	X	

PTS Laboratories

Project Name: Marsland Core
 Project Number: N/A

PTS File No: 43570
 Client: Crow Butte Resources, Inc.

TEST PROGRAM - 20130829

CORE ID	Depth ft.	Core Recovery ft.	Grain Size Analysis	*X-Ray Diffraction Proprietary	Notes
M-2169C Run 1, Sample 1	110.0-110.5	N/A	X	X	
M-2169C Run 2, Sample 3	156.5-157.2	N/A	X	X	
M-2169C Run 3, Sample 1	355.0-356.0	N/A	X	X	
M-2169C Run 4, Sample 1	470.0-470.5	N/A	X	X	
M-2169C Run 5, Sample 1	608.9-609.5	N/A	X	X	
M-2169C Run 7, Sample 1	1135.5-1136.0	N/A	X	X	
TOTALS:	30 bags		30	30	30

Laboratory Test Program Notes

Contaminant identification: _____

PARTICLE SIZE SUMMARY
(METHODOLOGY: ASTM D422/D4464M)

PROJECT NAME: Marsland Core
PROJECT NO: N/A

Sample ID	Depth, ft.	Mean Grain Size Description (1)	Median Grain Size mm	Particle Size Distribution, wt. percent						Silt & Clay
				Gravel	Sand Size			Silt	Clay	
					Coarse	Medium	Fine			
M-533C Run 1, Sample 1	63.9-64.9	Fine sand	0.238	0.00	18.42	71.95	8.22	1.41	9.63	
M-533C Run 1, Sample 2	68.8-69.8	Silt	0.033	0.00	0.00	20.53	63.04	16.44	79.47	
M-533C Run 3, Sample 1	299.0-300.0	Silt	0.034	0.00	0.00	12.97	81.45	5.57	87.03	
M-533C Run 3, Sample 2	306.0-307.0	Silt	0.051	0.00	0.00	26.00	70.23	3.77	74.00	
M-533C Run 5, Sample 1	1052.5-1053.0	Clay	0.003	0.00	0.00	0.00	34.81	65.19	100.00	
M-1635C Run 1, Sample 1	70.0-70.5	Silt	0.046	0.00	0.00	27.88	60.57	11.55	72.12	
M-1635C Run 1, Sample 2	79.5-80.0	Silt	0.063	0.00	0.00	39.61	53.90	6.50	60.39	
M-1635C Run 2, Sample 1	197.0-197.5	Silt	0.041	0.00	0.00	13.73	81.80	4.47	86.27	
M-1635C Run 2, Sample 2	206.5-207.0	Silt	0.055	0.00	0.00	29.24	67.17	3.59	70.76	
M-1635C Run 3, Sample 1	530.0-530.5	Silt	0.040	0.00	2.83	25.96	61.01	10.20	71.21	
M-1635C Run 6, Sample 1	993.0-994.0	Clay	0.003	0.00	0.00	0.00	24.05	75.95	100.00	
M-1912C Run 1, Sample 1	63.0-64.0	Fine sand	0.135	0.00	3.85	76.54	17.60	2.01	19.61	
M-1912C Run 2, Sample 1	130.7-131.7	Fine sand	0.087	0.00	7.84	49.02	36.10	7.03	43.14	
M-1912C Run 3, Sample 1	255.0-255.5	Fine sand	0.072	0.00	4.42	43.67	48.95	2.96	51.91	

(1) Based on Mean from Trask

PARTICLE SIZE SUMMARY
(METHODOLOGY: ASTM D422/D464M)

PROJECT NAME: Marsland Core
PROJECT NO: N/A

Sample ID	Depth, ft.	Mean Grain Size Description (1)	Median Grain Size mm	Particle Size Distribution, wt. percent							Silt & Clay
				Gravel	Sand Size			Silt	Clay		
					Coarse	Medium	Fine				
M-1912C Run 3, Sample 2	260.4-260.9	Silt	0.062	0.00	0.00	0.00	36.63	59.98	3.40	63.37	
M-1912C Run 4, Sample 1	974.5-975.0	Clay	0.003	0.00	0.00	0.00	0.00	28.79	71.21	100.00	
*M-1912C Run 4, Sample 2	968.7-969.7	Clay	0.003	0.00	0.00	0.00	0.00	27.94	72.06	100.00	
*M-1912C Run 4, Sample 2 Rerun	968.7-969.7	Silt	0.004	0.00	0.00	0.00	5.35	36.27	58.38	94.65	
*M-1912C Run 4, Sample 2 Rerun 2	968.7-969.7	Medium sand	0.850	0.00	0.00	74.30	6.83	7.90	10.97	18.87	
M-1956C Run 1, Sample 1	42.0-43.0	Fine sand	0.266	0.00	0.00	16.97	79.36	2.75	0.92	3.67	
M-1956C Run 3, Sample 1	78.0-79.0	Silt	0.054	0.00	0.00	1.00	32.36	60.43	6.21	66.64	
M-1956C Run 4, Sample 1	196.5-197.1	Silt	0.062	0.00	0.00	2.22	37.09	56.30	4.39	60.69	
M-1956C Run 4, Sample 2	202.0-202.5	Silt	0.052	0.00	0.00	0.00	27.65	67.34	5.00	72.35	
M-1956C Run 5, Sample 1	425.6-426.2	Silt	0.029	0.00	0.00	0.00	12.54	73.63	13.84	87.46	
M-1956C Run 5, Sample 2	431.0-431.6	Silt	0.046	0.00	0.00	3.76	28.81	60.64	6.79	67.43	
M-1956C Run 6, Sample 1	1011.8-1012.4	Clay	0.004	0.00	0.00	0.00	0.00	39.14	60.86	100.00	
M-2169C Run 1, Sample 1	110.0-110.5	Silt	0.037	0.00	0.00	0.00	20.58	65.73	13.69	79.42	
M-2169C Run 2, Sample 3	156.5-157.2	Silt	0.059	0.00	0.00	0.00	37.21	54.28	8.51	62.79	

(1) Based on Mean from Trask

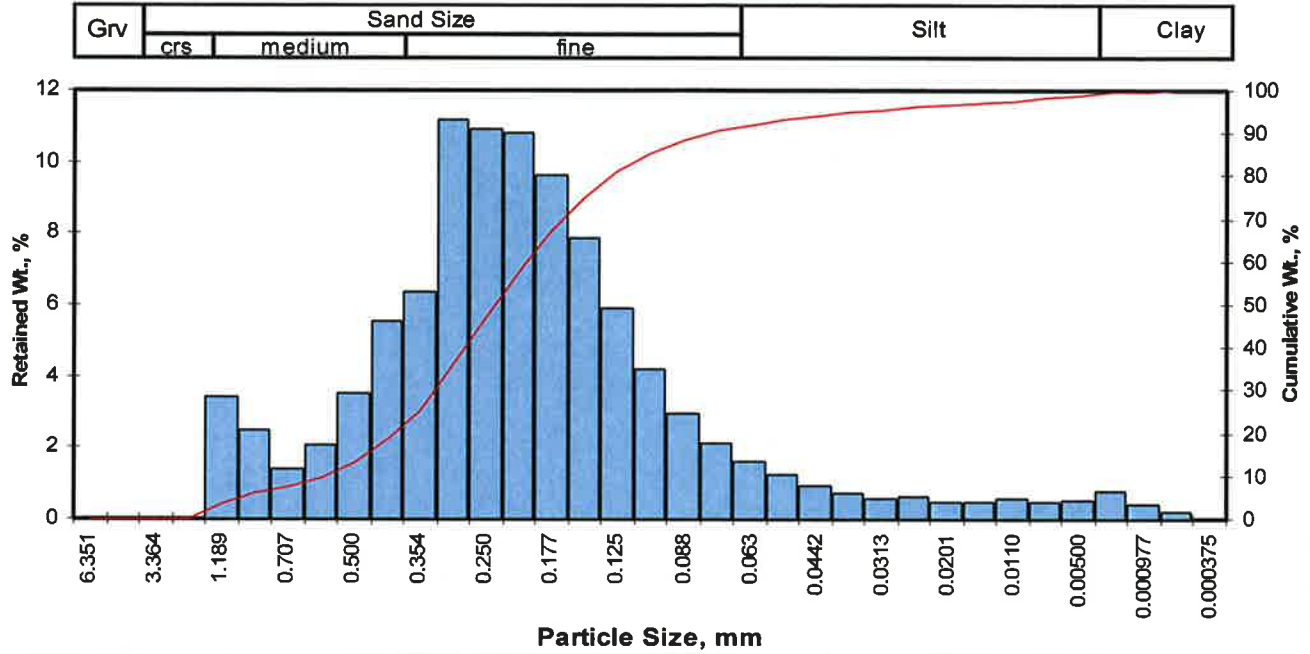
PARTICLE SIZE SUMMARY
(METHODOLOGY: ASTM D422/D464M)

PROJECT NAME: Marsland Core
PROJECT NO: N/A

Sample ID	Depth, ft.	Mean Grain Size Description (1)	Median Grain Size mm	Particle Size Distribution, wt. percent					Silt & Clay	
				Gravel	Coarse Sand	Medium Sand	Fine Sand	Silt		Clay
M-2169C Run 3, Sample 1	355.0-356.0	Silt	0.036	0.00	0.00	0.00	15.97	74.53	9.51	84.03
M-2169C Run 4, Sample 1	470.0-470.5	Silt	0.040	0.00	0.00	1.05	24.67	64.33	9.95	74.28
M-2169C Run 5, Sample 1	608.9-609.5	Fine sand	0.050	0.00	0.00	13.87	23.80	52.86	9.46	62.33
M-2169C Run 7, Sample 1	1135.5-1136.0	Silt	0.004	0.00	0.00	0.00	0.00	45.40	54.60	100.00

*Note: Sample M-1912C Run 4, Sample 2 is a heterogeneous core consisting of clay with entrained sand. The small amount of sample volume required for LPSA (~1 gm) can over-represent the lithology depending on sample location and composition. Visual estimation of sand contained is 10-20%. MMB 20131008

Client: Crow Butte Resources, Inc. **PTS File No:** 43570
Project: Marsland Core **Sample ID:** M-533C Run 1, Sample 1
Project No: N/A **Depth, ft:** 63.9-64.9



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
Inches	Millimeters					
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	3.42	3.42	3.42
0.0331	0.841	0.25	20	2.47	2.47	5.89
0.0278	0.707	0.50	25	1.42	1.42	7.31
0.0234	0.595	0.75	30	2.07	2.07	9.38
0.0197	0.500	1.00	35	3.50	3.50	12.87
0.0166	0.420	1.25	40	5.55	5.55	18.42
0.0139	0.354	1.50	45	6.39	6.39	24.81
0.0117	0.297	1.75	50	11.20	11.20	36.01
0.0098	0.250	2.00	60	10.90	10.90	46.90
0.0083	0.210	2.25	70	10.80	10.80	57.70
0.0070	0.177	2.50	80	9.65	9.65	67.34
0.0059	0.149	2.75	100	7.85	7.85	75.19
0.0049	0.125	3.00	120	5.92	5.92	81.11
0.0041	0.105	3.25	140	4.21	4.21	85.32
0.0035	0.088	3.50	170	2.94	2.94	88.25
0.0029	0.074	3.75	200	2.12	2.12	90.37
0.0025	0.063	4.00	230	1.60	1.60	91.97
0.0021	0.053	4.25	270	1.23	1.23	93.20
0.00174	0.0442	4.50	325	0.95	0.95	94.15
0.00146	0.0372	4.75	400	0.74	0.74	94.89
0.00123	0.0313	5.00	450	0.58	0.58	95.47
0.000986	0.0250	5.32	500	0.60	0.60	96.07
0.000790	0.0201	5.64	635	0.49	0.49	96.56
0.000615	0.0156	6.00		0.47	0.47	97.03
0.000435	0.0110	6.50		0.56	0.56	97.59
0.000308	0.00781	7.00		0.48	0.48	98.07
0.000197	0.00500	7.65		0.52	0.52	98.59
0.000077	0.00195	9.00		0.80	0.80	99.39
0.000038	0.000977	10.00		0.39	0.39	99.78
0.000019	0.000488	11.00		0.20	0.20	99.98
0.000015	0.000375	11.38		0.02	0.02	100.00
TOTALS				100.00	100.00	100.00

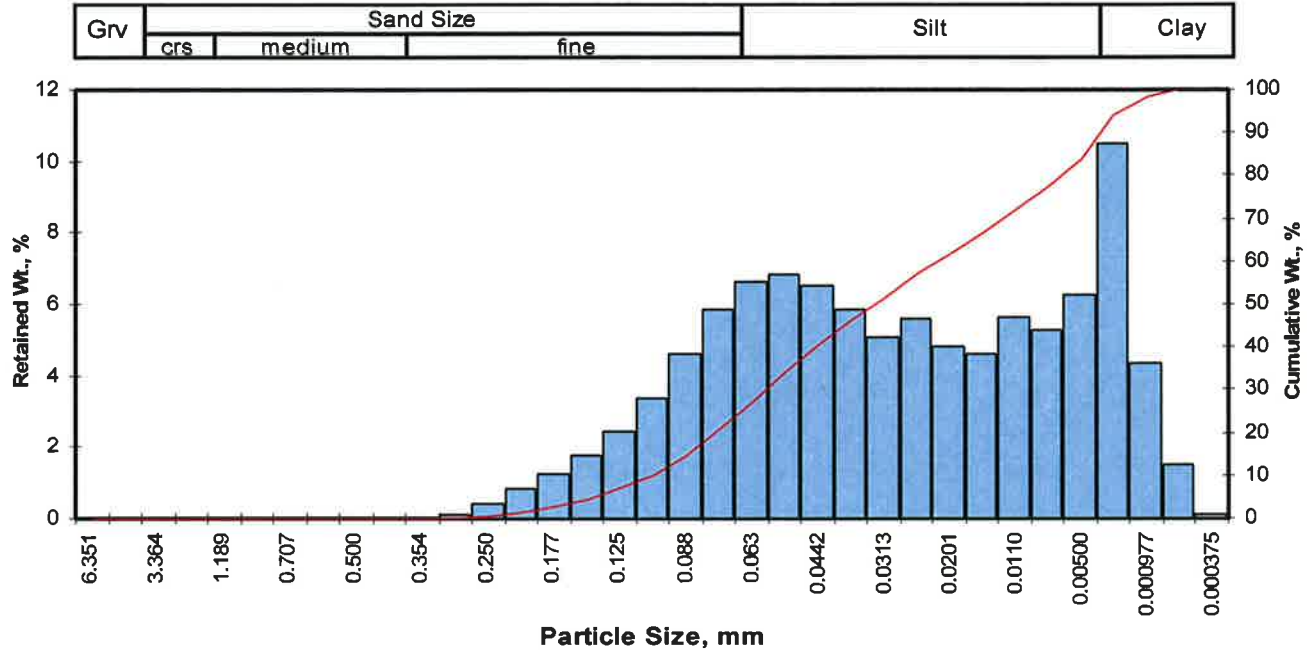
Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	0.07	0.0375	0.952
10	0.79	0.0227	0.577
16	1.14	0.0179	0.453
25	1.50	0.0139	0.353
40	1.84	0.0110	0.279
50	2.07	0.0094	0.238
60	2.31	0.0079	0.202
75	2.74	0.0059	0.149
84	3.17	0.0044	0.111
90	3.71	0.0030	0.077
95	4.80	0.0014	0.036

Measure	Trask	Inman	Folk-Ward
Median, phi	2.07	2.07	2.07
Median, in.	0.0094	0.0094	0.0094
Median, mm	0.238	0.238	0.238
Mean, phi	1.99	2.16	2.13
Mean, in.	0.0099	0.0088	0.0090
Mean, mm	0.251	0.224	0.229
Sorting	1.537	1.016	1.224
Skewness	0.964	0.083	0.118
Kurtosis	0.203	1.327	1.562

Grain Size Description (ASTM-USCS Scale) Fine sand (based on Mean from Trask)

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	18.42
Fine Sand	200	71.95
Silt	>0.005 mm	8.22
Clay	<0.005 mm	1.41
Total		100

Client: Crow Butte Resources, Inc. **PTS File No:** 43570
Project: Marsland Core **Sample ID:** M-533C Run 1, Sample 2
Project No: N/A **Depth, ft:** 68.8-69.8



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
Inches	Millimeters					
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.00	0.00	0.00
0.0331	0.841	0.25	20	0.00	0.00	0.00
0.0278	0.707	0.50	25	0.00	0.00	0.00
0.0234	0.595	0.75	30	0.00	0.00	0.00
0.0197	0.500	1.00	35	0.00	0.00	0.00
0.0166	0.420	1.25	40	0.00	0.00	0.00
0.0139	0.354	1.50	45	0.00	0.00	0.00
0.0117	0.297	1.75	50	0.11	0.11	0.11
0.0098	0.250	2.00	60	0.41	0.41	0.52
0.0083	0.210	2.25	70	0.83	0.83	1.35
0.0070	0.177	2.50	80	1.24	1.24	2.59
0.0059	0.149	2.75	100	1.75	1.75	4.34
0.0049	0.125	3.00	120	2.41	2.41	6.75
0.0041	0.105	3.25	140	3.35	3.35	10.10
0.0035	0.088	3.50	170	4.59	4.59	14.69
0.0029	0.074	3.75	200	5.84	5.84	20.53
0.0025	0.063	4.00	230	6.64	6.64	27.17
0.0021	0.053	4.25	270	6.82	6.82	33.99
0.00174	0.0442	4.50	325	6.51	6.51	40.49
0.00146	0.0372	4.75	400	5.84	5.84	46.33
0.00123	0.0313	5.00	450	5.09	5.09	51.42
0.000986	0.0250	5.32	500	5.57	5.57	56.99
0.000790	0.0201	5.64	635	4.80	4.80	61.79
0.000615	0.0156	6.00		4.61	4.61	66.40
0.000435	0.0110	6.50		5.64	5.64	72.04
0.000308	0.00781	7.00		5.27	5.27	77.31
0.000197	0.00500	7.65		6.26	6.26	83.56
0.000077	0.00195	9.00		10.50	10.50	94.06
0.000038	0.000977	10.00		4.34	4.34	98.40
0.000019	0.000488	11.00		1.49	1.49	99.89
0.000015	0.000375	11.38		0.11	0.11	100.00
TOTALS				100.00	100.00	100.00

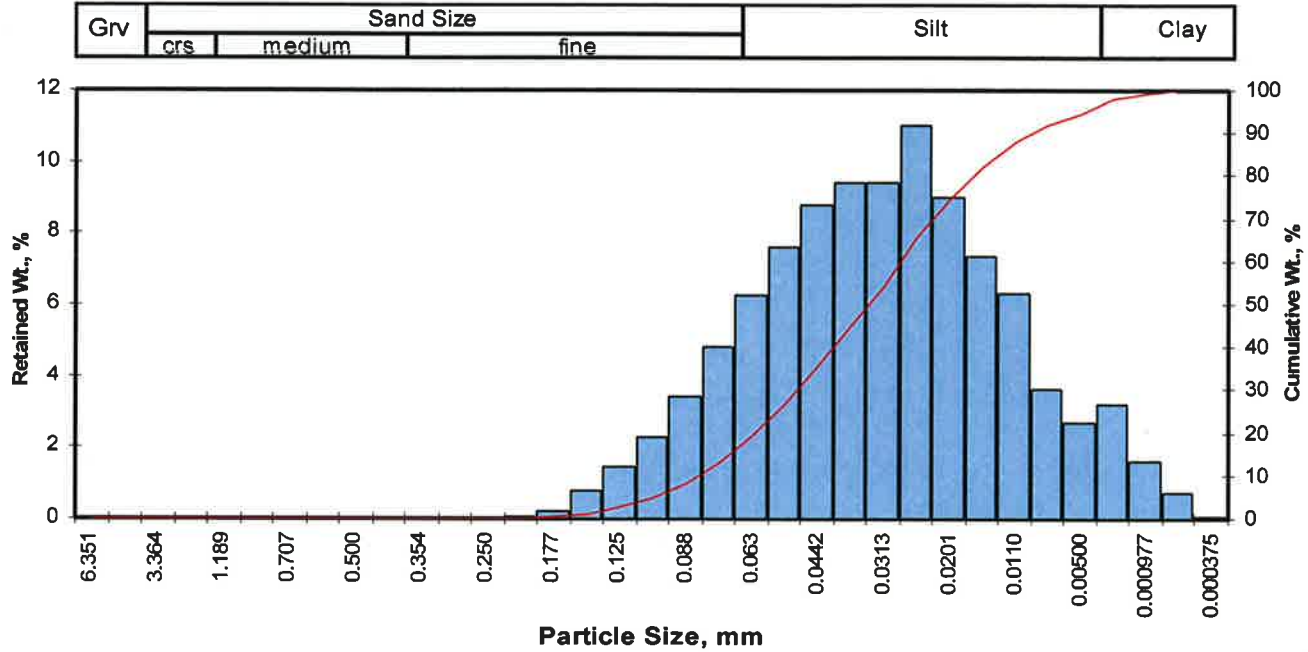
Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	2.82	0.0056	0.142
10	3.24	0.0042	0.106
16	3.56	0.0033	0.085
25	3.92	0.0026	0.066
40	4.48	0.0018	0.045
50	4.93	0.0013	0.033
60	5.52	0.0009	0.022
75	6.78	0.0004	0.009
84	7.70	0.0002	0.005
90	8.48	0.0001	0.003
95	9.22	0.0001	0.002

Measure	Trask	Inman	Folk-Ward
Median, phi	4.93	4.93	4.93
Median, in.	0.0013	0.0013	0.0013
Median, mm	0.033	0.033	0.033
Mean, phi	4.73	5.63	5.40
Mean, in.	0.0015	0.0008	0.0009
Mean, mm	0.038	0.020	0.024
Sorting	2.697	2.073	2.006
Skewness	0.748	0.337	0.338
Kurtosis	0.277	0.543	0.916

Grain Size Description (ASTM-USCS Scale) **Silt** (based on Mean from Trask)

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	0.00
Fine Sand	200	20.53
Silt	>0.005 mm	63.04
Clay	<0.005 mm	16.44
Total		100

Client: Crow Butte Resources, Inc. **PTS File No:** 43570
Project: Marsland Core **Sample ID:** M-533C Run 3, Sample 1
Project No: N/A **Depth, ft:** 299.0-300.0



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
Inches	Millimeters					
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.00	0.00	0.00
0.0331	0.841	0.25	20	0.00	0.00	0.00
0.0278	0.707	0.50	25	0.00	0.00	0.00
0.0234	0.595	0.75	30	0.00	0.00	0.00
0.0197	0.500	1.00	35	0.00	0.00	0.00
0.0166	0.420	1.25	40	0.00	0.00	0.00
0.0139	0.354	1.50	45	0.00	0.00	0.00
0.0117	0.297	1.75	50	0.00	0.00	0.00
0.0098	0.250	2.00	60	0.00	0.00	0.00
0.0083	0.210	2.25	70	0.03	0.03	0.03
0.0070	0.177	2.50	80	0.23	0.23	0.26
0.0059	0.149	2.75	100	0.75	0.75	1.01
0.0049	0.125	3.00	120	1.43	1.43	2.44
0.0041	0.105	3.25	140	2.30	2.30	4.74
0.0035	0.088	3.50	170	3.43	3.43	8.17
0.0029	0.074	3.75	200	4.80	4.80	12.97
0.0025	0.063	4.00	230	6.25	6.25	19.22
0.0021	0.053	4.25	270	7.61	7.61	26.84
0.00174	0.0442	4.50	325	8.79	8.79	35.63
0.00146	0.0372	4.75	400	9.40	9.40	45.04
0.00123	0.0313	5.00	450	9.40	9.40	54.44
0.000986	0.0250	5.32	500	11.00	11.00	65.44
0.000790	0.0201	5.64	635	9.01	9.01	74.46
0.000615	0.0156	6.00		7.36	7.36	81.82
0.000435	0.0110	6.50		6.32	6.32	88.14
0.000308	0.00781	7.00		3.60	3.60	91.74
0.000197	0.00500	7.65		2.68	2.68	94.43
0.000077	0.00195	9.00		3.23	3.23	97.66
0.000038	0.000977	10.00		1.58	1.58	99.24
0.000019	0.000488	11.00		0.70	0.70	99.94
0.000015	0.000375	11.38		0.06	0.06	100.00
TOTALS				100.00	100.00	100.00

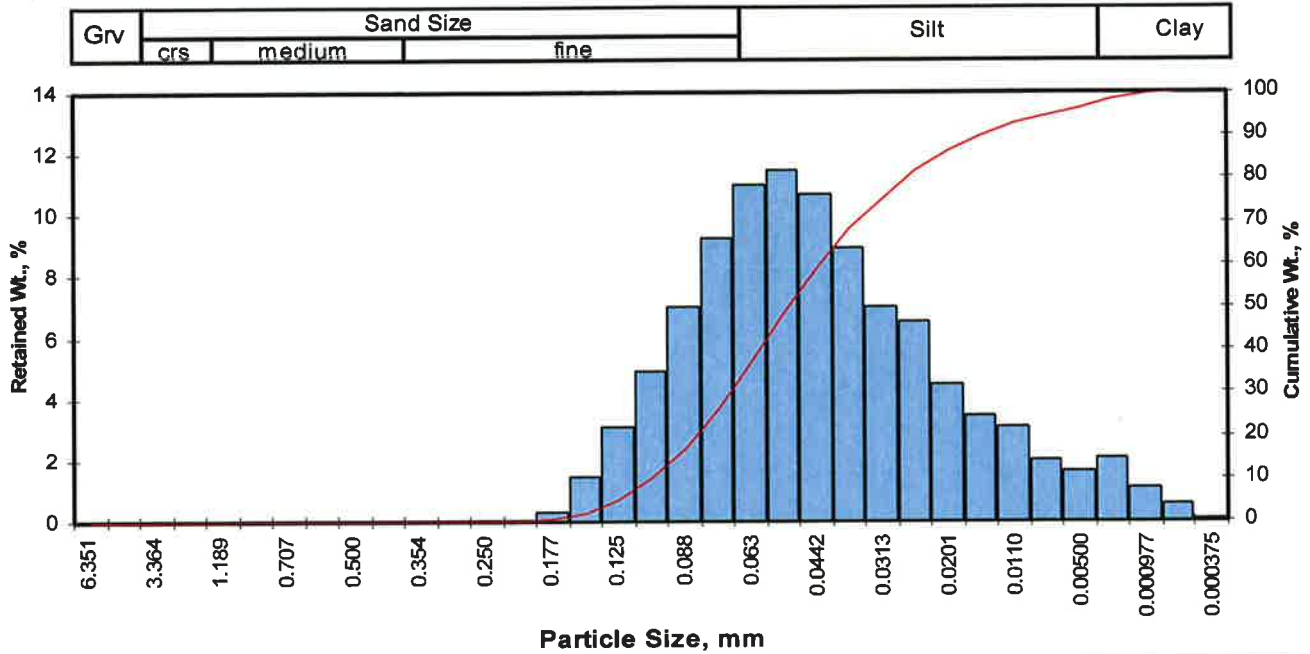
Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	3.27	0.0041	0.104
10	3.60	0.0033	0.083
16	3.87	0.0027	0.068
25	4.19	0.0022	0.055
40	4.62	0.0016	0.041
50	4.88	0.0013	0.034
60	5.16	0.0011	0.028
75	5.67	0.0008	0.020
84	6.17	0.0005	0.014
90	6.76	0.0004	0.009
95	7.89	0.0002	0.004

Measure	Trask	Inman	Folk-Ward
Median, phi	4.88	4.88	4.88
Median, in.	0.0013	0.0013	0.0013
Median, mm	0.034	0.034	0.034
Mean, phi	4.75	5.02	4.98
Mean, in.	0.0015	0.0012	0.0013
Mean, mm	0.037	0.031	0.032
Sorting	1.668	1.151	1.275
Skewness	0.969	0.121	0.211
Kurtosis	0.239	1.006	1.281

Grain Size Description (ASTM-USCS Scale) **Silt**
 (based on Mean from Trask)

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	0.00
Fine Sand	200	12.97
Silt	>0.005 mm	81.45
Clay	<0.005 mm	5.57
Total		100

Client: Crow Butte Resources, Inc. **PTS File No:** 43570
Project: Marsland Core **Sample ID:** M-533C Run 3, Sample 2
Project No: N/A **Depth, ft:** 306.0-307.0

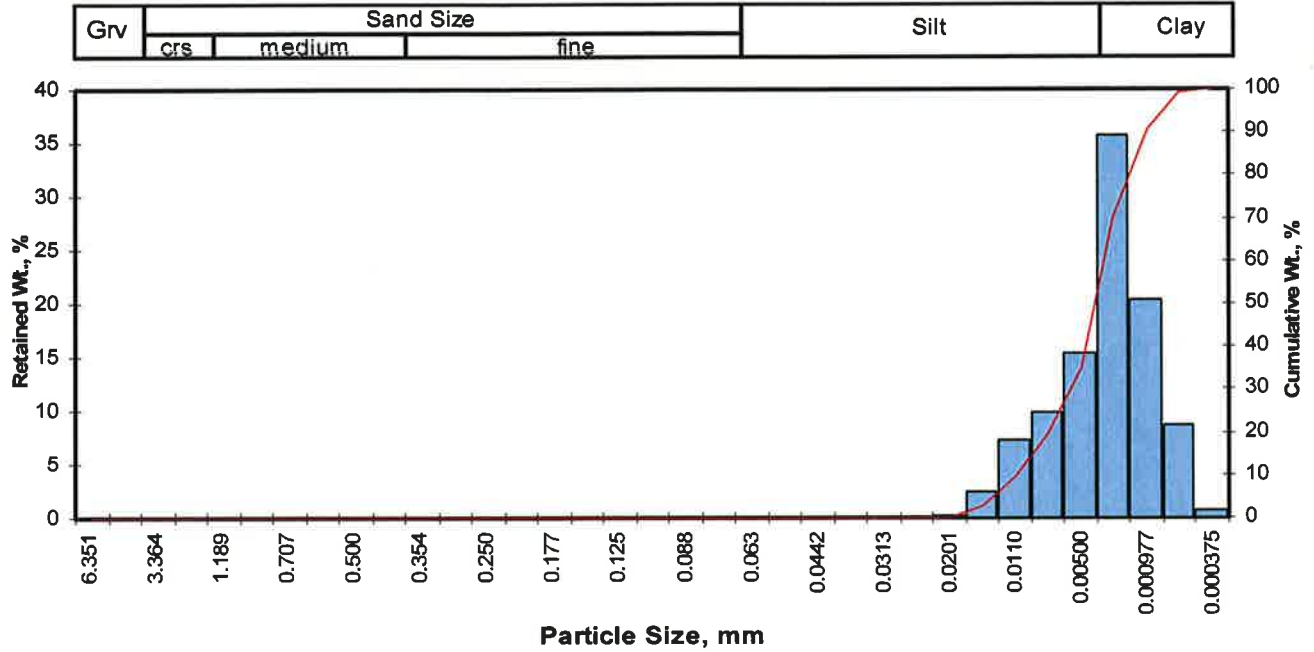


Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent	Cumulative Weight Percent greater than				
Inches	Millimeters						Weight percent	Phi Value	Particle Size		
						Inches	Millimeters				
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00		5	3.01	0.0049	0.125
0.1873	4.757	-2.25	4	0.00	0.00	0.00		10	3.26	0.0041	0.105
0.1324	3.364	-1.75	6	0.00	0.00	0.00		16	3.47	0.0035	0.090
0.0787	2.000	-1.00	10	0.00	0.00	0.00		25	3.72	0.0030	0.076
0.0468	1.189	-0.25	16	0.00	0.00	0.00		40	4.07	0.0024	0.060
0.0331	0.841	0.25	20	0.00	0.00	0.00		50	4.29	0.0020	0.051
0.0278	0.707	0.50	25	0.00	0.00	0.00		60	4.52	0.0017	0.043
0.0234	0.595	0.75	30	0.00	0.00	0.00		75	5.00	0.0012	0.031
0.0197	0.500	1.00	35	0.00	0.00	0.00		84	5.49	0.0009	0.022
0.0166	0.420	1.25	40	0.00	0.00	0.00		90	6.08	0.0006	0.015
0.0139	0.354	1.50	45	0.00	0.00	0.00		95	7.17	0.0003	0.007
0.0117	0.297	1.75	50	0.00	0.00	0.00					
0.0098	0.250	2.00	60	0.00	0.00	0.00					
0.0083	0.210	2.25	70	0.02	0.02	0.02					
0.0070	0.177	2.50	80	0.32	0.32	0.34					
0.0059	0.149	2.75	100	1.46	1.46	1.80					
0.0049	0.125	3.00	120	3.09	3.09	4.89					
0.0041	0.105	3.25	140	4.89	4.89	9.77					
0.0035	0.088	3.50	170	6.99	6.98	16.76					
0.0029	0.074	3.75	200	9.25	9.24	26.00					
0.0025	0.063	4.00	230	11.00	10.99	36.99					
0.0021	0.053	4.25	270	11.50	11.49	48.48					
0.00174	0.0442	4.50	325	10.70	10.69	59.16					
0.00146	0.0372	4.75	400	8.92	8.91	68.08					
0.00123	0.0313	5.00	450	6.98	6.97	75.05					
0.000986	0.0250	5.32	500	6.53	6.52	81.57					
0.000790	0.0201	5.64	635	4.48	4.48	86.05					
0.000615	0.0156	6.00		3.45	3.45	89.50					
0.000435	0.0110	6.50		3.10	3.10	92.59					
0.000308	0.00781	7.00		1.98	1.98	94.57					
0.000197	0.00500	7.65		1.66	1.66	96.23					
0.000077	0.00195	9.00		2.08	2.08	98.31					
0.000038	0.000977	10.00		1.08	1.08	99.39					
0.000019	0.000488	11.00		0.56	0.56	99.95					
0.000015	0.000375	11.38		0.06	0.05	100.00					
TOTALS				100.10	100.00	100.00					

Measure	Trask	Inman	Folk-Ward
Median, phi	4.29	4.29	4.29
Median, in.	0.0020	0.0020	0.0020
Median, mm	0.051	0.051	0.051
Mean, phi	4.22	4.48	4.42
Mean, in.	0.0021	0.0018	0.0018
Mean, mm	0.054	0.045	0.047
Sorting	1.556	1.010	1.136
Skewness	0.949	0.196	0.290
Kurtosis	0.248	1.059	1.337

Grain Size Description	Retained on Sieve #	Weight Percent
Silt (ASTM-USCS Scale) (based on Mean from Trask)		
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	0.00
Fine Sand	200	26.00
Silt	>0.005 mm	70.23
Clay	<0.005 mm	3.77
Total		100

Client: Crow Butte Resources, Inc. PTS File No: 43570
 Project: Marsland Core Sample ID: M-533C Run 5, Sample 1
 Project No: N/A Depth, ft: 1052.5-1053.0



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
Inches	Millimeters					
0.2500	6.351	-2.67	14	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.00	0.00	0.00
0.0331	0.841	0.25	20	0.00	0.00	0.00
0.0278	0.707	0.50	25	0.00	0.00	0.00
0.0234	0.595	0.75	30	0.00	0.00	0.00
0.0197	0.500	1.00	35	0.00	0.00	0.00
0.0166	0.420	1.25	40	0.00	0.00	0.00
0.0139	0.354	1.50	45	0.00	0.00	0.00
0.0117	0.297	1.75	50	0.00	0.00	0.00
0.0098	0.250	2.00	60	0.00	0.00	0.00
0.0083	0.210	2.25	70	0.00	0.00	0.00
0.0070	0.177	2.50	80	0.00	0.00	0.00
0.0059	0.149	2.75	100	0.00	0.00	0.00
0.0049	0.125	3.00	120	0.00	0.00	0.00
0.0041	0.105	3.25	140	0.00	0.00	0.00
0.0035	0.088	3.50	170	0.00	0.00	0.00
0.0029	0.074	3.75	200	0.00	0.00	0.00
0.0025	0.063	4.00	230	0.00	0.00	0.00
0.0021	0.053	4.25	270	0.00	0.00	0.00
0.00174	0.0442	4.50	325	0.00	0.00	0.00
0.00146	0.0372	4.75	400	0.00	0.00	0.00
0.00123	0.0313	5.00	450	0.00	0.00	0.00
0.000986	0.0250	5.32	500	0.00	0.00	0.00
0.000790	0.0201	5.64	635	0.09	0.09	0.09
0.000615	0.0156	6.00		2.33	2.33	2.42
0.000435	0.0110	6.50		7.27	7.27	9.69
0.000308	0.00781	7.00		9.81	9.81	19.50
0.000197	0.00500	7.65		15.30	15.30	34.81
0.000077	0.00195	9.00		35.60	35.61	70.41
0.000038	0.000977	10.00		20.30	20.30	90.72
0.000019	0.000488	11.00		8.56	8.56	99.28
0.000015	0.000375	11.38		0.72	0.72	100.00
TOTALS				100.00	100.00	100.00

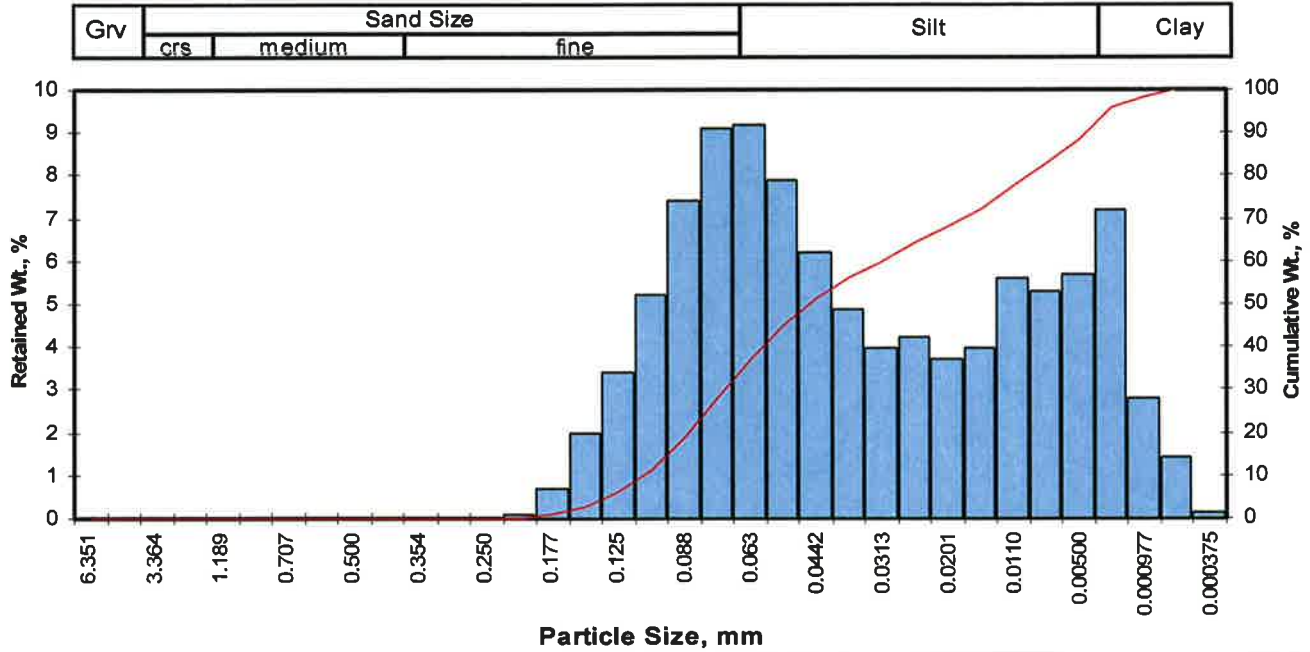
Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	6.18	0.0005	0.014
10	6.52	0.0004	0.011
16	6.82	0.0003	0.009
25	7.23	0.0003	0.007
40	7.84	0.0002	0.004
50	8.22	0.0001	0.003
60	8.60	0.0001	0.003
75	9.23	0.0001	0.002
84	9.67	0.0000	0.001
90	9.96	0.0000	0.001
95	10.50	0.0000	0.001

Measure	Trask	Inman	Folk-Ward
Median, phi	8.22	8.22	8.22
Median, in.	0.0001	0.0001	0.0001
Median, mm	0.003	0.003	0.003
Mean, phi	7.91	8.25	8.24
Mean, in.	0.0002	0.0001	0.0001
Mean, mm	0.004	0.003	0.003
Sorting	1.996	1.424	1.367
Skewness	0.996	0.016	0.035
Kurtosis	0.251	0.518	0.888

Grain Size Description (ASTM-USCS Scale) Clay (based on Mean from Trask)

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	0.00
Fine Sand	200	0.00
Silt	>0.005 mm	34.81
Clay	<0.005 mm	65.19
Total		100

Client: Crow Butte Resources, Inc. **PTS File No:** 43570
Project: Marsland Core **Sample ID:** M-1635C Run 1, Sample 1
Project No: N/A **Depth, ft:** 70.0-70.5



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
Inches	Millimeters					
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.00	0.00	0.00
0.0331	0.841	0.25	20	0.00	0.00	0.00
0.0278	0.707	0.50	25	0.00	0.00	0.00
0.0234	0.595	0.75	30	0.00	0.00	0.00
0.0197	0.500	1.00	35	0.00	0.00	0.00
0.0166	0.420	1.25	40	0.00	0.00	0.00
0.0139	0.354	1.50	45	0.00	0.00	0.00
0.0117	0.297	1.75	50	0.00	0.00	0.00
0.0098	0.250	2.00	60	0.00	0.00	0.00
0.0083	0.210	2.25	70	0.08	0.08	0.08
0.0070	0.177	2.50	80	0.67	0.67	0.75
0.0059	0.149	2.75	100	1.98	1.98	2.73
0.0049	0.125	3.00	120	3.41	3.41	6.14
0.0041	0.105	3.25	140	5.23	5.23	11.37
0.0035	0.088	3.50	170	7.43	7.43	18.80
0.0029	0.074	3.75	200	9.08	9.08	27.88
0.0025	0.063	4.00	230	9.18	9.18	37.06
0.0021	0.053	4.25	270	7.90	7.90	44.97
0.00174	0.0442	4.50	325	6.22	6.22	51.19
0.00146	0.0372	4.75	400	4.87	4.87	56.06
0.00123	0.0313	5.00	450	3.96	3.96	60.02
0.000986	0.0250	5.32	500	4.21	4.21	64.23
0.000790	0.0201	5.64	635	3.69	3.69	67.92
0.000615	0.0156	6.00		3.96	3.96	71.88
0.000435	0.0110	6.50		5.59	5.59	77.47
0.000308	0.00781	7.00		5.31	5.31	82.78
0.000197	0.00500	7.65		5.67	5.67	88.45
0.000077	0.00195	9.00		7.19	7.19	95.64
0.000038	0.000977	10.00		2.79	2.79	98.43
0.000019	0.000488	11.00		1.43	1.43	99.86
0.000015	0.000375	11.38		0.14	0.14	100.00
TOTALS				100.00	100.00	100.00

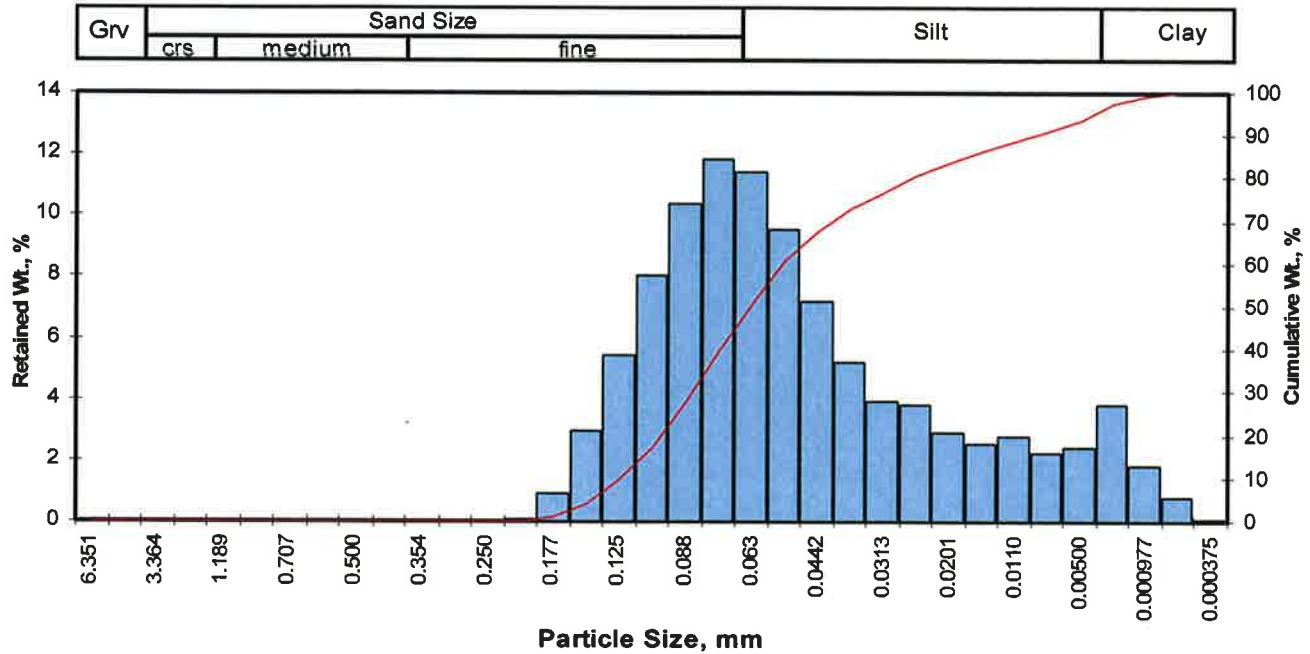
Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	2.92	0.0052	0.132
10	3.18	0.0043	0.110
16	3.41	0.0037	0.094
25	3.67	0.0031	0.079
40	4.09	0.0023	0.059
50	4.45	0.0018	0.046
60	5.00	0.0012	0.031
75	6.28	0.0005	0.013
84	7.14	0.0003	0.007
90	7.94	0.0002	0.004
95	8.88	0.0001	0.002

Measure	Trask	Inman	Folk-Ward
Median, phi	4.45	4.45	4.45
Median, in.	0.0018	0.0018	0.0018
Median, mm	0.046	0.046	0.046
Mean, phi	4.45	5.27	5.00
Mean, in.	0.0018	0.0010	0.0012
Mean, mm	0.046	0.026	0.031
Sorting	2.470	1.867	1.837
Skewness	0.696	0.439	0.462
Kurtosis	0.310	0.597	0.937

Grain Size Description (ASTM-USCS Scale) **Silt** (based on Mean from Trask)

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	0.00
Fine Sand	200	27.88
Silt	>0.005 mm	60.57
Clay	<0.005 mm	11.55
Total		100

Client: Crow Butte Resources, Inc. **PTS File No:** 43570
Project: Marsland Core **Sample ID:** M-1635C Run 1, Sample 2
Project No: N/A **Depth, ft:** 79.5-80.0



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
Inches	Millimeters					
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.00	0.00	0.00
0.0331	0.841	0.25	20	0.00	0.00	0.00
0.0278	0.707	0.50	25	0.00	0.00	0.00
0.0234	0.595	0.75	30	0.00	0.00	0.00
0.0197	0.500	1.00	35	0.00	0.00	0.00
0.0166	0.420	1.25	40	0.00	0.00	0.00
0.0139	0.354	1.50	45	0.00	0.00	0.00
0.0117	0.297	1.75	50	0.00	0.00	0.00
0.0098	0.250	2.00	60	0.00	0.00	0.00
0.0083	0.210	2.25	70	0.09	0.09	0.09
0.0070	0.177	2.50	80	0.88	0.88	0.97
0.0059	0.149	2.75	100	2.96	2.96	3.93
0.0049	0.125	3.00	120	5.43	5.43	9.36
0.0041	0.105	3.25	140	8.03	8.03	17.40
0.0035	0.088	3.50	170	10.40	10.41	27.80
0.0029	0.074	3.75	200	11.80	11.81	39.61
0.0025	0.063	4.00	230	11.40	11.41	51.01
0.0021	0.053	4.25	270	9.55	9.55	60.57
0.00174	0.0442	4.50	325	7.16	7.16	67.73
0.00146	0.0372	4.75	400	5.21	5.21	72.94
0.00123	0.0313	5.00	450	3.91	3.91	76.86
0.000986	0.0250	5.32	500	3.82	3.82	80.68
0.000790	0.0201	5.64	635	2.89	2.89	83.57
0.000615	0.0156	6.00		2.52	2.52	86.09
0.000435	0.0110	6.50		2.77	2.77	88.86
0.000308	0.00781	7.00		2.25	2.25	91.11
0.000197	0.00500	7.65		2.39	2.39	93.50
0.000077	0.00195	9.00		3.82	3.82	97.33
0.000038	0.000977	10.00		1.80	1.80	99.13
0.000019	0.000488	11.00		0.80	0.80	99.93
0.000015	0.000375	11.38		0.07	0.07	100.00
TOTALS				100.00	100.00	100.00

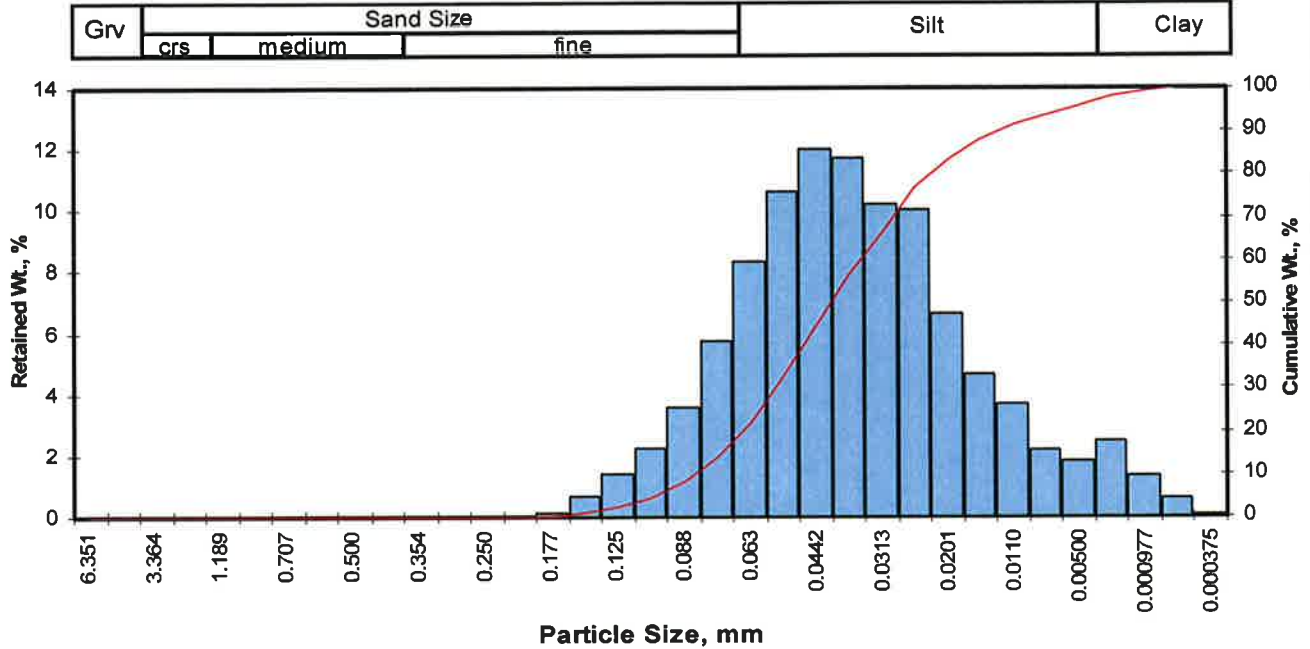
Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	2.80	0.0057	0.144
10	3.02	0.0049	0.123
16	3.21	0.0043	0.108
25	3.43	0.0036	0.093
40	3.76	0.0029	0.074
50	3.98	0.0025	0.063
60	4.24	0.0021	0.053
75	4.88	0.0013	0.034
84	5.70	0.0008	0.019
90	6.75	0.0004	0.009
95	8.18	0.0001	0.003

Measure	Trask	Inman	Folk-Ward
Median, phi	3.98	3.98	3.98
Median, in.	0.0025	0.0025	0.0025
Median, mm	0.063	0.063	0.063
Mean, phi	3.98	4.45	4.30
Mean, in.	0.0025	0.0018	0.0020
Mean, mm	0.063	0.046	0.051
Sorting	1.652	1.247	1.438
Skewness	0.883	0.382	0.472
Kurtosis	0.257	1.155	1.521

Grain Size Description (ASTM-USCS Scale) **Silt**
 (based on Mean from Trask)

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	0.00
Fine Sand	200	39.61
Silt	>0.005 mm	53.90
Clay	<0.005 mm	6.50
Total		100

Client: Crow Butte Resources, Inc. **PTS File No:** 43570
 Project: Marsland Core **Sample ID:** M-1635C Run 2, Sample 1
 Project No: N/A **Depth, ft:** 197.0-197.5



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
Inches	Millimeters					
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.00	0.00	0.00
0.0331	0.841	0.25	20	0.00	0.00	0.00
0.0278	0.707	0.50	25	0.00	0.00	0.00
0.0234	0.595	0.75	30	0.00	0.00	0.00
0.0197	0.500	1.00	35	0.00	0.00	0.00
0.0166	0.420	1.25	40	0.00	0.00	0.00
0.0139	0.354	1.50	45	0.00	0.00	0.00
0.0117	0.297	1.75	50	0.00	0.00	0.00
0.0098	0.250	2.00	60	0.00	0.00	0.00
0.0083	0.210	2.25	70	0.00	0.00	0.00
0.0070	0.177	2.50	80	0.11	0.11	0.11
0.0059	0.149	2.75	100	0.66	0.66	0.77
0.0049	0.125	3.00	120	1.41	1.41	2.18
0.0041	0.105	3.25	140	2.24	2.24	4.42
0.0035	0.088	3.50	170	3.58	3.58	8.00
0.0029	0.074	3.75	200	5.73	5.73	13.73
0.0025	0.063	4.00	230	8.34	8.34	22.07
0.0021	0.053	4.25	270	10.60	10.60	32.67
0.00174	0.0442	4.50	325	12.00	12.00	44.67
0.00146	0.0372	4.75	400	11.70	11.70	56.37
0.00123	0.0313	5.00	450	10.20	10.20	66.57
0.000986	0.0250	5.32	500	10.00	10.00	76.57
0.000790	0.0201	5.64	635	6.66	6.66	83.23
0.000615	0.0156	6.00		4.67	4.67	87.90
0.000435	0.0110	6.50		3.67	3.67	91.57
0.000308	0.00781	7.00		2.16	2.16	93.73
0.000197	0.00500	7.65		1.80	1.80	95.53
0.000077	0.00195	9.00		2.48	2.48	98.01
0.000038	0.000977	10.00		1.30	1.30	99.31
0.000019	0.000488	11.00		0.63	0.63	99.94
0.000015	0.000375	11.38		0.06	0.06	100.00
TOTALS				100.00	100.00	100.00

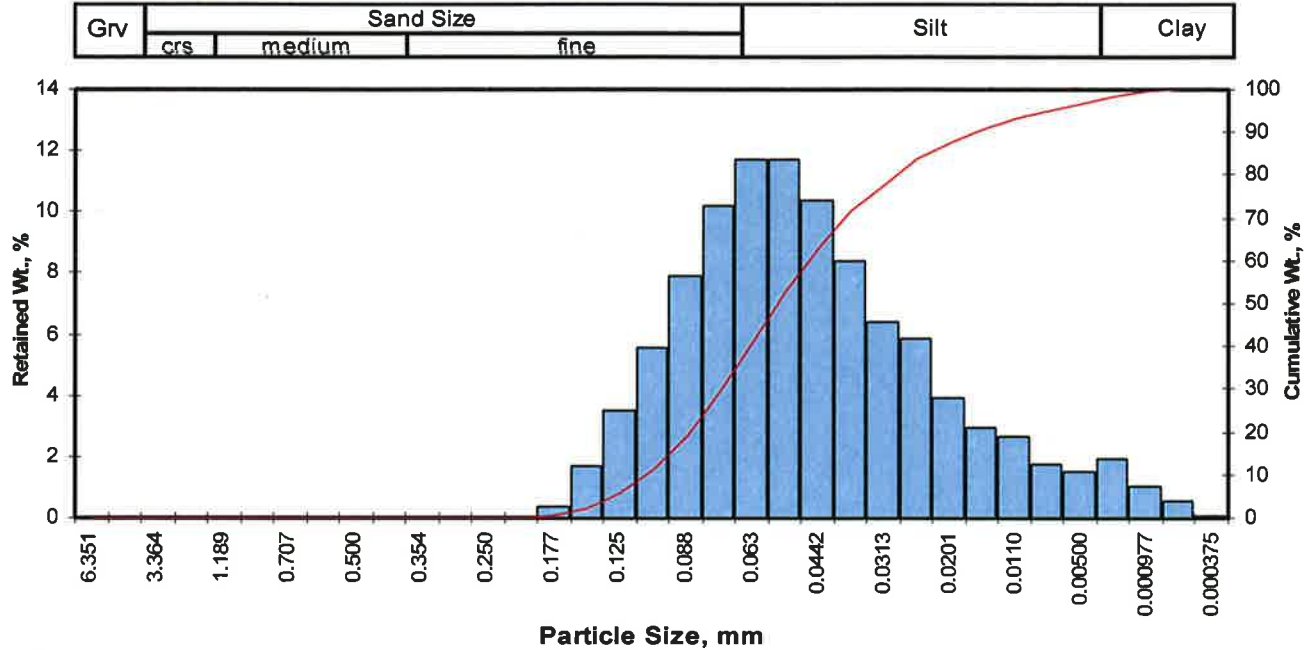
Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	3.29	0.0040	0.102
10	3.59	0.0033	0.083
16	3.82	0.0028	0.071
25	4.07	0.0023	0.060
40	4.40	0.0019	0.047
50	4.61	0.0016	0.041
60	4.84	0.0014	0.035
75	5.27	0.0010	0.026
84	5.70	0.0008	0.019
90	6.29	0.0005	0.013
95	7.45	0.0002	0.006

Measure	Trask	Inman	Folk-Ward
Median, phi	4.61	4.61	4.61
Median, in.	0.0016	0.0016	0.0016
Median, mm	0.041	0.041	0.041
Mean, phi	4.55	4.76	4.71
Mean, in.	0.0017	0.0015	0.0015
Mean, mm	0.043	0.037	0.038
Sorting	1.516	0.941	1.101
Skewness	0.962	0.154	0.259
Kurtosis	0.239	1.214	1.421

Grain Size Description Silt
 (ASTM-USCS Scale) (based on Mean from Trask)

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	0.00
Fine Sand	200	13.73
Silt	>0.005 mm	81.80
Clay	<0.005 mm	4.47
Total		100

Client: Crow Butte Resources, Inc. **PTS File No.:** 43570
Project: Marsland Core **Sample ID:** M-1635C Run 2, Sample 2
Project No.: N/A **Depth, ft.:** 206.5-207.0



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
Inches	Millimeters					
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.00	0.00	0.00
0.0331	0.841	0.25	20	0.00	0.00	0.00
0.0278	0.707	0.50	25	0.00	0.00	0.00
0.0234	0.595	0.75	30	0.00	0.00	0.00
0.0197	0.500	1.00	35	0.00	0.00	0.00
0.0166	0.420	1.25	40	0.00	0.00	0.00
0.0139	0.354	1.50	45	0.00	0.00	0.00
0.0117	0.297	1.75	50	0.00	0.00	0.00
0.0098	0.250	2.00	60	0.00	0.00	0.00
0.0083	0.210	2.25	70	0.03	0.03	0.03
0.0070	0.177	2.50	80	0.39	0.39	0.42
0.0059	0.149	2.75	100	1.67	1.67	2.09
0.0049	0.125	3.00	120	3.49	3.49	5.58
0.0041	0.105	3.25	140	5.56	5.56	11.14
0.0035	0.088	3.50	170	7.91	7.91	19.04
0.0029	0.074	3.75	200	10.20	10.20	29.24
0.0025	0.063	4.00	230	11.70	11.70	40.94
0.0021	0.053	4.25	270	11.70	11.70	52.63
0.00174	0.0442	4.50	325	10.40	10.40	63.03
0.00146	0.0372	4.75	400	8.38	8.38	71.41
0.00123	0.0313	5.00	450	6.39	6.39	77.79
0.000986	0.0250	5.32	500	5.85	5.85	83.64
0.000790	0.0201	5.64	635	3.93	3.93	87.57
0.000615	0.0156	6.00		2.97	2.97	90.54
0.000435	0.0110	6.50		2.65	2.65	93.19
0.000308	0.00781	7.00		1.73	1.73	94.92
0.000197	0.00500	7.65		1.49	1.49	96.41
0.000077	0.00195	9.00		1.96	1.96	98.37
0.000038	0.000977	10.00		1.03	1.03	99.40
0.000019	0.000488	11.00		0.55	0.55	99.95
0.000015	0.000375	11.38		0.05	0.05	100.00
TOTALS				100.00	100.00	100.00

Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	2.96	0.0051	0.129
10	3.20	0.0043	0.109
16	3.40	0.0037	0.094
25	3.65	0.0031	0.080
40	3.98	0.0025	0.063
50	4.19	0.0022	0.055
60	4.43	0.0018	0.046
75	4.89	0.0013	0.034
84	5.35	0.0010	0.025
90	5.93	0.0006	0.016
95	7.04	0.0003	0.008

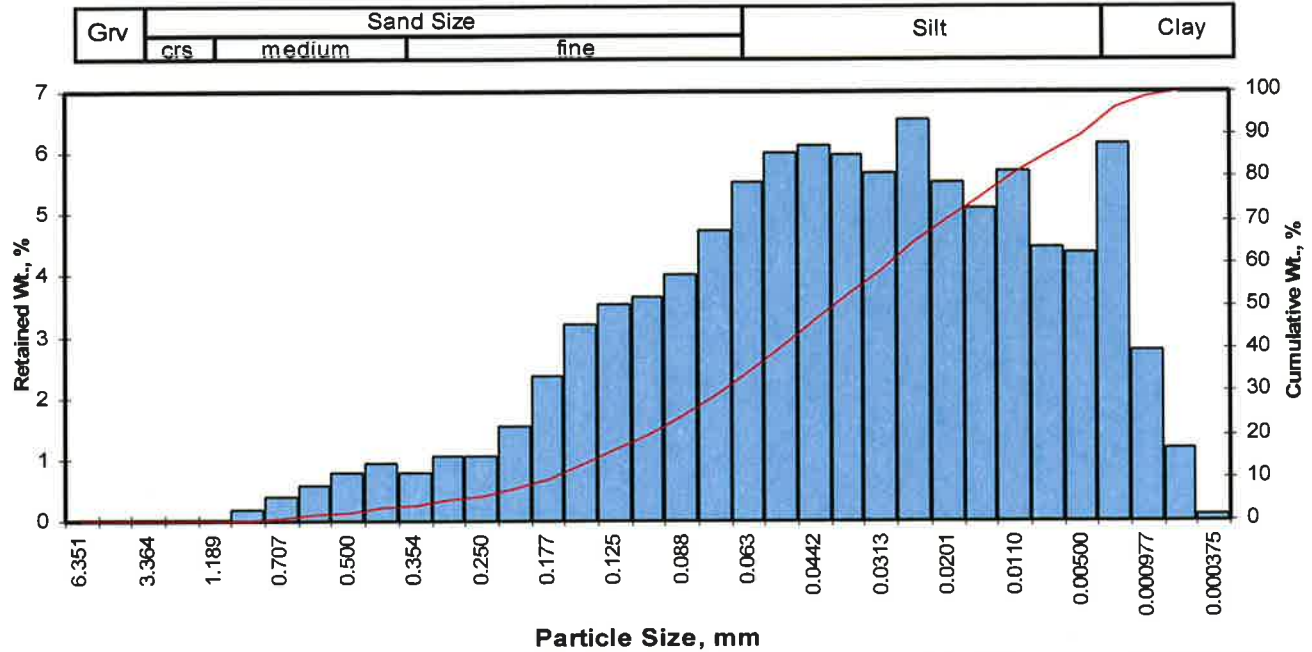
Measure	Trask	Inman	Folk-Ward
Median, phi	4.19	4.19	4.19
Median, in.	0.0022	0.0022	0.0022
Median, mm	0.055	0.055	0.055
Mean, phi	4.14	4.38	4.32
Mean, in.	0.0022	0.0019	0.0020
Mean, mm	0.057	0.048	0.050
Sorting	1.539	0.973	1.104
Skewness	0.950	0.188	0.291
Kurtosis	0.249	1.096	1.342

Grain Size Description (ASTM-USCS Scale) **Silt** (based on Mean from Trask)

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	0.00
Fine Sand	200	29.24
Silt	>0.005 mm	67.17
Clay	<0.005 mm	3.59
Total		100

Client: Crow Butte Resources, Inc.
 Project: Marsland Core
 Project No: N/A

PTS File No: 43570
 Sample ID: M-1635C Run 3, Sample 1
 Depth, ft: 530.0-530.5



Opening	Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
0.2500	6.351	-2.67	1/4	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00
0.0468	1.189	-0.25	16	0.00	0.00
0.0331	0.841	0.25	20	0.17	0.17
0.0278	0.707	0.50	25	0.40	0.57
0.0234	0.595	0.75	30	0.56	1.13
0.0197	0.500	1.00	35	0.77	1.90
0.0166	0.420	1.25	40	0.93	2.83
0.0139	0.354	1.50	45	0.79	3.62
0.0117	0.297	1.75	50	1.07	4.69
0.0098	0.250	2.00	60	1.05	5.74
0.0083	0.210	2.25	70	1.53	7.27
0.0070	0.177	2.50	80	2.36	9.63
0.0059	0.149	2.75	100	3.19	12.82
0.0049	0.125	3.00	120	3.54	16.36
0.0041	0.105	3.25	140	3.66	20.02
0.0035	0.088	3.50	170	4.02	24.04
0.0029	0.074	3.75	200	4.75	28.79
0.0025	0.063	4.00	230	5.53	34.32
0.0021	0.053	4.25	270	5.99	40.31
0.00174	0.0442	4.50	325	6.12	46.43
0.00146	0.0372	4.75	400	5.98	52.41
0.00123	0.0313	5.00	450	5.68	58.09
0.000986	0.0250	5.32	500	6.54	64.63
0.000790	0.0201	5.64	635	5.53	70.16
0.000615	0.0156	6.00		5.10	75.26
0.000435	0.0110	6.50		5.70	80.96
0.000308	0.00781	7.00		4.47	85.43
0.000197	0.00500	7.65		4.37	89.80
0.000077	0.00195	9.00		6.15	95.95
0.000038	0.000977	10.00		2.77	98.72
0.000019	0.000488	11.00		1.18	99.90
0.000015	0.000375	11.38		0.10	100.00
TOTALS				100.00	100.00

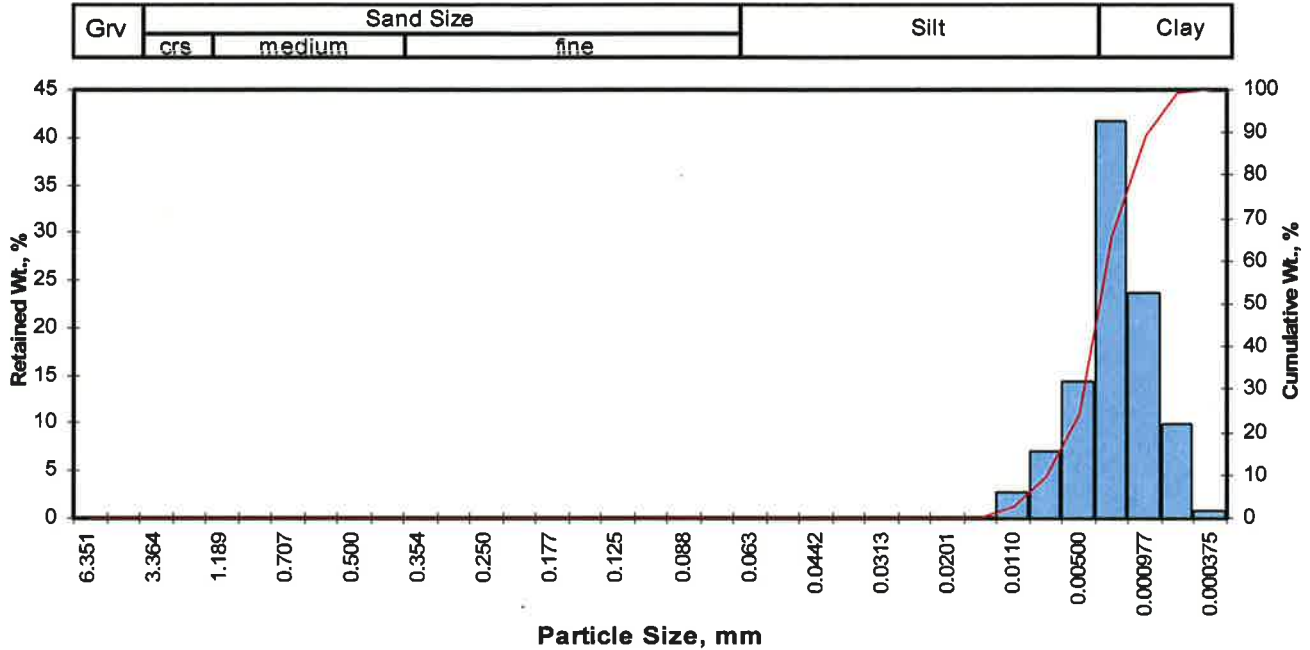
Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	1.82	0.0111	0.282
10	2.53	0.0068	0.173
16	2.97	0.0050	0.127
25	3.55	0.0034	0.085
40	4.24	0.0021	0.053
50	4.65	0.0016	0.040
60	5.09	0.0012	0.029
75	5.98	0.0006	0.016
84	6.84	0.0003	0.009
90	7.69	0.0002	0.005
95	8.79	0.0001	0.002

Measure	Trask	Inman	Folk-Ward
Median, phi	4.65	4.65	4.65
Median, in.	0.0016	0.0016	0.0016
Median, mm	0.040	0.040	0.040
Mean, phi	4.31	4.91	4.82
Mean, in.	0.0020	0.0013	0.0014
Mean, mm	0.051	0.033	0.035
Sorting	2.322	1.933	2.022
Skewness	0.922	0.134	0.161
Kurtosis	0.206	0.802	1.174

Grain Size Description (ASTM-USCS Scale) **Silt** (based on Mean from Trask)

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	2.83
Fine Sand	200	25.96
Silt	>0.005 mm	61.01
Clay	<0.005 mm	10.20
Total		100

Client: Crow Butte Resources, Inc. **PTS File No:** 43570
Project: Marsland Core **Sample ID:** M-1635C Run 6, Sample 1
Project No: N/A **Depth, ft:** 993.0-994.0



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
Inches	Millimeters					
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.00	0.00	0.00
0.0331	0.841	0.25	20	0.00	0.00	0.00
0.0278	0.707	0.50	25	0.00	0.00	0.00
0.0234	0.595	0.75	30	0.00	0.00	0.00
0.0197	0.500	1.00	35	0.00	0.00	0.00
0.0166	0.420	1.25	40	0.00	0.00	0.00
0.0139	0.354	1.50	45	0.00	0.00	0.00
0.0117	0.297	1.75	50	0.00	0.00	0.00
0.0098	0.250	2.00	60	0.00	0.00	0.00
0.0083	0.210	2.25	70	0.00	0.00	0.00
0.0070	0.177	2.50	80	0.00	0.00	0.00
0.0059	0.149	2.75	100	0.00	0.00	0.00
0.0049	0.125	3.00	120	0.00	0.00	0.00
0.0041	0.105	3.25	140	0.00	0.00	0.00
0.0035	0.088	3.50	170	0.00	0.00	0.00
0.0029	0.074	3.75	200	0.00	0.00	0.00
0.0025	0.063	4.00	230	0.00	0.00	0.00
0.0021	0.053	4.25	270	0.00	0.00	0.00
0.00174	0.0442	4.50	325	0.00	0.00	0.00
0.00146	0.0372	4.75	400	0.00	0.00	0.00
0.00123	0.0313	5.00	450	0.00	0.00	0.00
0.000986	0.0250	5.32	500	0.00	0.00	0.00
0.000790	0.0201	5.64	635	0.00	0.00	0.00
0.000615	0.0156	6.00		0.06	0.06	0.06
0.000435	0.0110	6.50		2.68	2.68	2.75
0.000308	0.00781	7.00		6.89	6.89	9.64
0.000197	0.00500	7.65		14.40	14.41	24.05
0.000077	0.00195	9.00		41.60	41.62	65.67
0.000038	0.000977	10.00		23.60	23.61	89.28
0.000019	0.000488	11.00		9.86	9.87	99.15
0.000015	0.000375	11.38		0.85	0.85	100.00
TOTALS				99.90	100.00	100.00

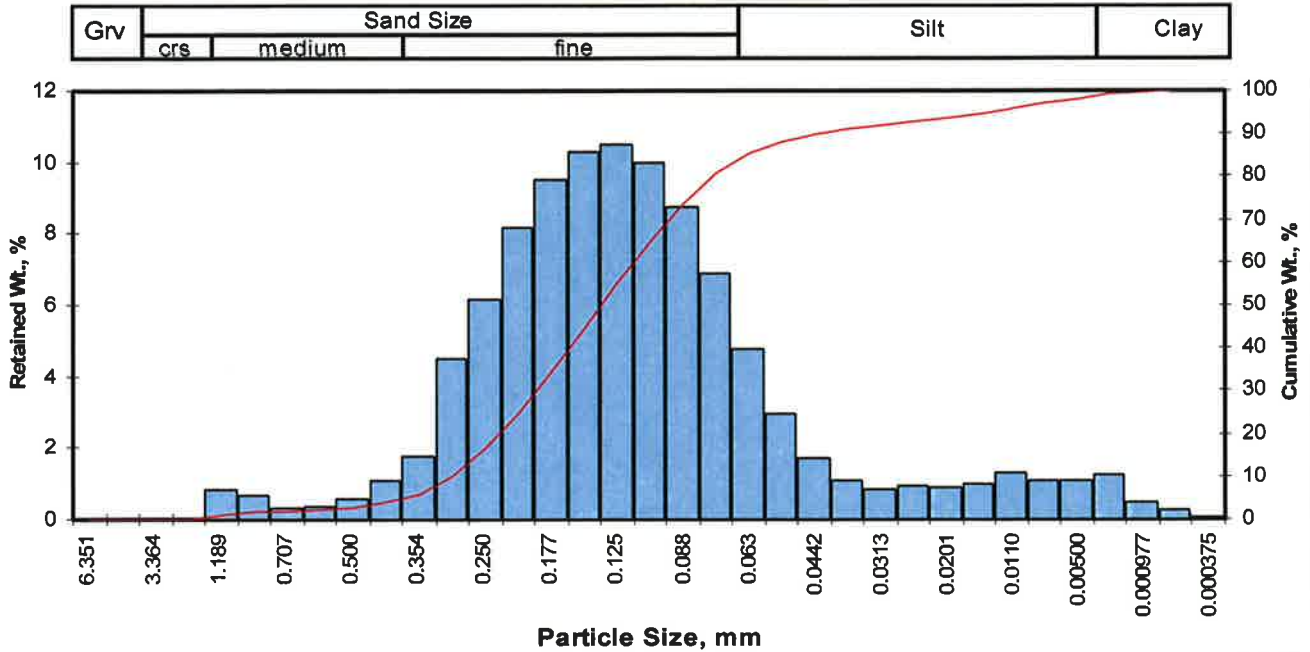
Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	6.66	0.0004	0.010
10	7.02	0.0003	0.008
16	7.28	0.0003	0.006
25	7.68	0.0002	0.005
40	8.16	0.0001	0.003
50	8.49	0.0001	0.003
60	8.82	0.0001	0.002
75	9.40	0.0001	0.001
84	9.78	0.0000	0.001
90	10.07	0.0000	0.001
95	10.58	0.0000	0.001

Measure	Trask	Inman	Folk-Ward
Median, phi	8.49	8.49	8.49
Median, in.	0.0001	0.0001	0.0001
Median, mm	0.003	0.003	0.003
Mean, phi	8.29	8.53	8.52
Mean, in.	0.0001	0.0001	0.0001
Mean, mm	0.003	0.003	0.003
Sorting	1.814	1.246	1.216
Skewness	0.969	0.033	0.050
Kurtosis	0.250	0.572	0.934

Grain Size Description (ASTM-USCS Scale) **Clay** (based on Mean from Trask)

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	0.00
Fine Sand	200	0.00
Silt	>0.005 mm	24.05
Clay	<0.005 mm	75.95
Total		100

Client: Crow Butte Resources, Inc. **PTS File No.:** 43570
Project: Marsland Core **Sample ID:** M-1912C Run 1, Sample 1
Project No.: N/A **Depth, ft.:** 63.0-64.0



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
Inches	Millimeters					
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.82	0.82	0.82
0.0331	0.841	0.25	20	0.69	0.69	1.51
0.0278	0.707	0.50	25	0.32	0.32	1.83
0.0234	0.595	0.75	30	0.35	0.35	2.18
0.0197	0.500	1.00	35	0.56	0.56	2.74
0.0166	0.420	1.25	40	1.11	1.11	3.85
0.0139	0.354	1.50	45	1.76	1.76	5.61
0.0117	0.297	1.75	50	4.49	4.49	10.11
0.0098	0.250	2.00	60	6.17	6.17	16.28
0.0083	0.210	2.25	70	8.15	8.16	24.44
0.0070	0.177	2.50	80	9.52	9.53	33.96
0.0059	0.149	2.75	100	10.30	10.31	44.27
0.0049	0.125	3.00	120	10.50	10.51	54.77
0.0041	0.105	3.25	140	9.99	10.00	64.77
0.0035	0.088	3.50	170	8.74	8.75	73.52
0.0029	0.074	3.75	200	6.87	6.87	80.39
0.0025	0.063	4.00	230	4.77	4.77	85.16
0.0021	0.053	4.25	270	2.95	2.95	88.11
0.00174	0.0442	4.50	325	1.73	1.73	89.85
0.00146	0.0372	4.75	400	1.11	1.11	90.96
0.00123	0.0313	5.00	450	0.83	0.83	91.79
0.000986	0.0250	5.32	500	0.92	0.92	92.71
0.000790	0.0201	5.64	635	0.88	0.88	93.59
0.000615	0.0156	6.00		0.97	0.97	94.56
0.000435	0.0110	6.50		1.28	1.28	95.84
0.000308	0.00781	7.00		1.09	1.09	96.93
0.000197	0.00500	7.65		1.06	1.06	97.99
0.000077	0.00195	9.00		1.22	1.22	99.21
0.000038	0.000977	10.00		0.49	0.49	99.70
0.000019	0.000488	11.00		0.27	0.27	99.97
0.000015	0.000375	11.38		0.03	0.03	100.00
TOTALS				99.90	100.00	100.00

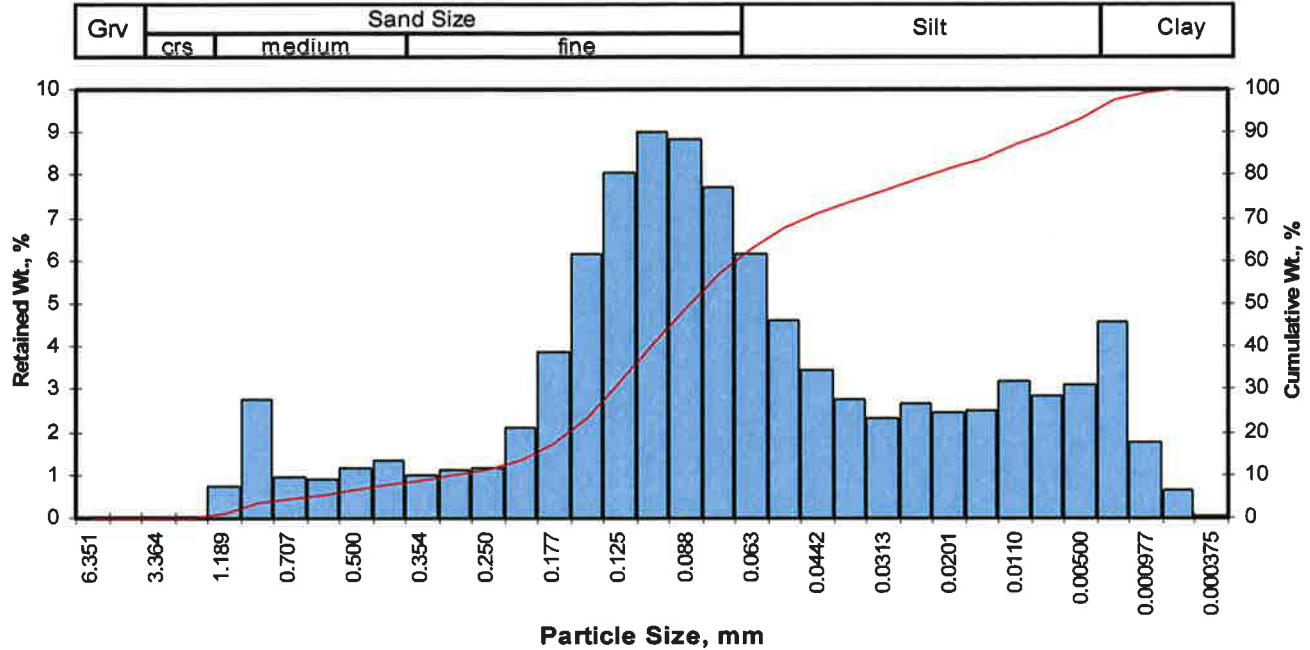
Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	1.41	0.0148	0.376
10	1.74	0.0118	0.299
16	1.99	0.0099	0.252
25	2.26	0.0082	0.208
40	2.65	0.0063	0.160
50	2.89	0.0053	0.135
60	3.13	0.0045	0.114
75	3.55	0.0034	0.085
84	3.94	0.0026	0.065
90	4.53	0.0017	0.043
95	6.17	0.0005	0.014

Measure	Trask	inman	Folk-Ward
Median, phi	2.89	2.89	2.89
Median, in.	0.0053	0.0053	0.0053
Median, mm	0.135	0.135	0.135
Mean, phi	2.77	2.96	2.94
Mean, in.	0.0058	0.0050	0.0051
Mean, mm	0.147	0.128	0.130
Sorting	1.563	0.975	1.209
Skewness	0.984	0.079	0.230
Kurtosis	0.241	1.440	1.513

Grain Size Description (ASTM-USCS Scale) **Fine sand** (based on Mean from Trask)

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	3.85
Fine Sand	200	76.54
Silt	>0.005 mm	17.60
Clay	<0.005 mm	2.01
Total		100

Client: Crow Butte Resources, Inc. **PTS File No:** 43570
Project: Marsland Core **Sample ID:** M-1912C Run 2, Sample 1
Project No: N/A **Depth, ft:** 130.7-131.7



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
Inches	Millimeters					
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.74	0.74	0.74
0.0331	0.841	0.25	20	2.75	2.75	3.49
0.0278	0.707	0.50	25	0.96	0.96	4.45
0.0234	0.595	0.75	30	0.89	0.89	5.34
0.0197	0.500	1.00	35	1.17	1.17	6.51
0.0166	0.420	1.25	40	1.33	1.33	7.84
0.0139	0.354	1.50	45	0.98	0.98	8.82
0.0117	0.297	1.75	50	1.10	1.10	9.92
0.0098	0.250	2.00	60	1.17	1.17	11.09
0.0083	0.210	2.25	70	2.13	2.13	13.22
0.0070	0.177	2.50	80	3.87	3.87	17.09
0.0059	0.149	2.75	100	6.15	6.15	23.24
0.0049	0.125	3.00	120	8.05	8.05	31.29
0.0041	0.105	3.25	140	9.01	9.01	40.30
0.0035	0.088	3.50	170	8.83	8.83	49.13
0.0029	0.074	3.75	200	7.73	7.73	56.86
0.0025	0.063	4.00	230	6.16	6.16	63.02
0.0021	0.053	4.25	270	4.63	4.63	67.65
0.00174	0.0442	4.50	325	3.46	3.46	71.11
0.00146	0.0372	4.75	400	2.74	2.74	73.86
0.00123	0.0313	5.00	450	2.34	2.34	76.20
0.000986	0.0250	5.32	500	2.67	2.67	78.87
0.000790	0.0201	5.64	635	2.44	2.44	81.31
0.000615	0.0156	6.00		2.50	2.50	83.81
0.000435	0.0110	6.50		3.19	3.19	87.00
0.000308	0.00781	7.00		2.85	2.85	89.85
0.000197	0.00500	7.65		3.12	3.12	92.97
0.000077	0.00195	9.00		4.56	4.56	97.53
0.000038	0.000977	10.00		1.77	1.77	99.30
0.000019	0.000488	11.00		0.65	0.65	99.95
0.000015	0.000375	11.38		0.05	0.05	100.00
TOTALS				100.00	100.00	100.00

Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	0.65	0.0250	0.635
10	1.77	0.0116	0.294
16	2.43	0.0073	0.186
25	2.80	0.0056	0.143
40	3.24	0.0042	0.106
50	3.53	0.0034	0.087
60	3.88	0.0027	0.068
75	4.87	0.0013	0.034
84	6.03	0.0006	0.015
90	7.03	0.0003	0.008
95	8.25	0.0001	0.003

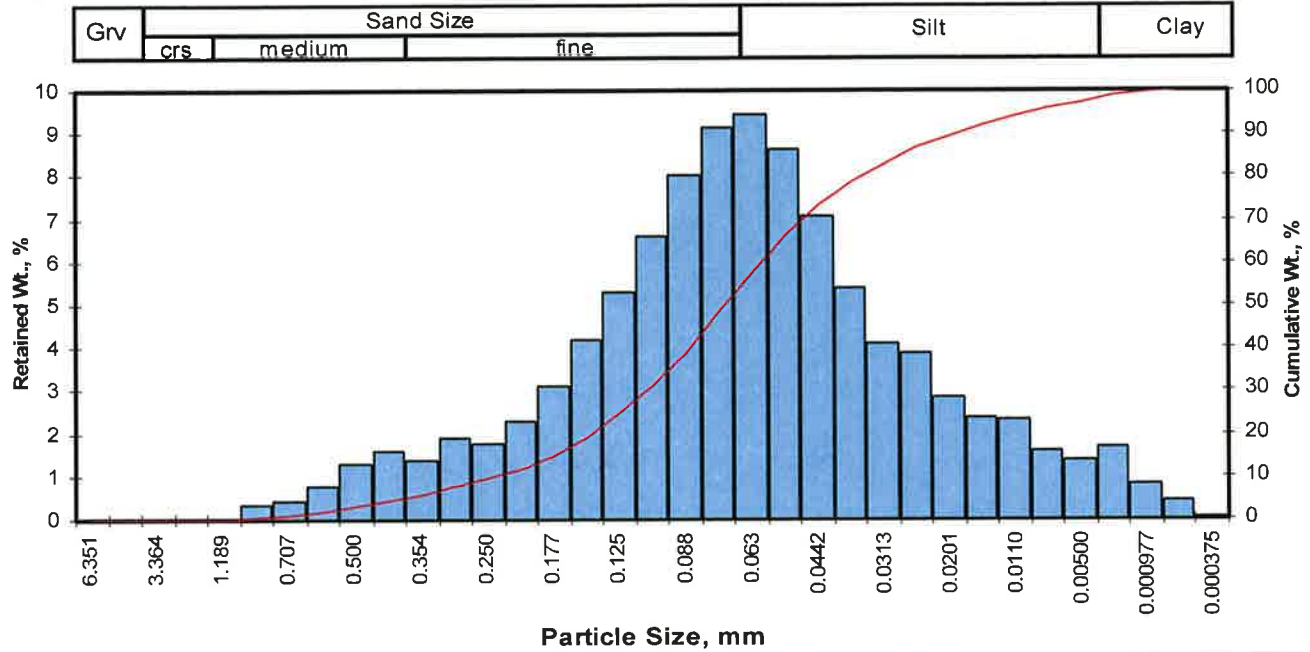
Measure	Trask	Inman	Folk-Ward
Median, phi	3.53	3.53	3.53
Median, in.	0.0034	0.0034	0.0034
Median, mm	0.087	0.087	0.087
Mean, phi	3.50	4.23	4.00
Mean, in.	0.0035	0.0021	0.0025
Mean, mm	0.089	0.053	0.063
Sorting	2.047	1.800	2.051
Skewness	0.806	0.390	0.317
Kurtosis	0.190	1.109	1.505

Grain Size Description (ASTM-USCS Scale) Fine sand (based on Mean from Trask)

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	7.84
Fine Sand	200	49.02
Silt	>0.005 mm	36.10
Clay	<0.005 mm	7.03
Total		100

Client: Crow Butte Resources, Inc.
 Project: Marsland Core
 Project No: N/A

PTS File No: 43570
 Sample ID: M-1912C Run 3, Sample 1
 Depth, ft: 255.0-255.5



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
Inches	Millimeters					
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.02	0.02	0.02
0.0331	0.841	0.25	20	0.35	0.35	0.37
0.0278	0.707	0.50	25	0.41	0.41	0.78
0.0234	0.595	0.75	30	0.78	0.78	1.56
0.0197	0.500	1.00	35	1.28	1.28	2.84
0.0166	0.420	1.25	40	1.58	1.58	4.42
0.0139	0.354	1.50	45	1.38	1.38	5.80
0.0117	0.297	1.75	50	1.89	1.89	7.69
0.0098	0.250	2.00	60	1.77	1.77	9.46
0.0083	0.210	2.25	70	2.28	2.28	11.74
0.0070	0.177	2.50	80	3.12	3.12	14.86
0.0059	0.149	2.75	100	4.20	4.20	19.06
0.0049	0.125	3.00	120	5.30	5.30	24.36
0.0041	0.105	3.25	140	6.58	6.58	30.94
0.0035	0.088	3.50	170	8.00	8.00	38.94
0.0029	0.074	3.75	200	9.15	9.15	48.09
0.0025	0.063	4.00	230	9.44	9.44	57.53
0.0021	0.053	4.25	270	8.62	8.62	66.15
0.00174	0.0442	4.50	325	7.06	7.06	73.21
0.00146	0.0372	4.75	400	5.39	5.39	78.60
0.00123	0.0313	5.00	450	4.08	4.08	82.68
0.000986	0.0250	5.32	500	3.90	3.90	86.58
0.000790	0.0201	5.64	635	2.85	2.85	89.43
0.000615	0.0156	6.00		2.36	2.36	91.79
0.000435	0.0110	6.50		2.31	2.31	94.10
0.000308	0.00781	7.00		1.58	1.58	95.68
0.000197	0.00500	7.65		1.36	1.36	97.04
0.000077	0.00195	9.00		1.66	1.66	98.70
0.000038	0.000977	10.00		0.82	0.82	99.52
0.000019	0.000488	11.00		0.44	0.44	99.96
0.000015	0.000375	11.38		0.04	0.04	100.00
TOTALS				100.00	100.00	100.00

Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	1.35	0.0154	0.391
10	2.06	0.0094	0.240
16	2.57	0.0066	0.169
25	3.02	0.0048	0.123
40	3.53	0.0034	0.087
50	3.80	0.0028	0.072
60	4.07	0.0023	0.059
75	4.58	0.0016	0.042
84	5.11	0.0011	0.029
90	5.73	0.0007	0.019
95	6.79	0.0004	0.009

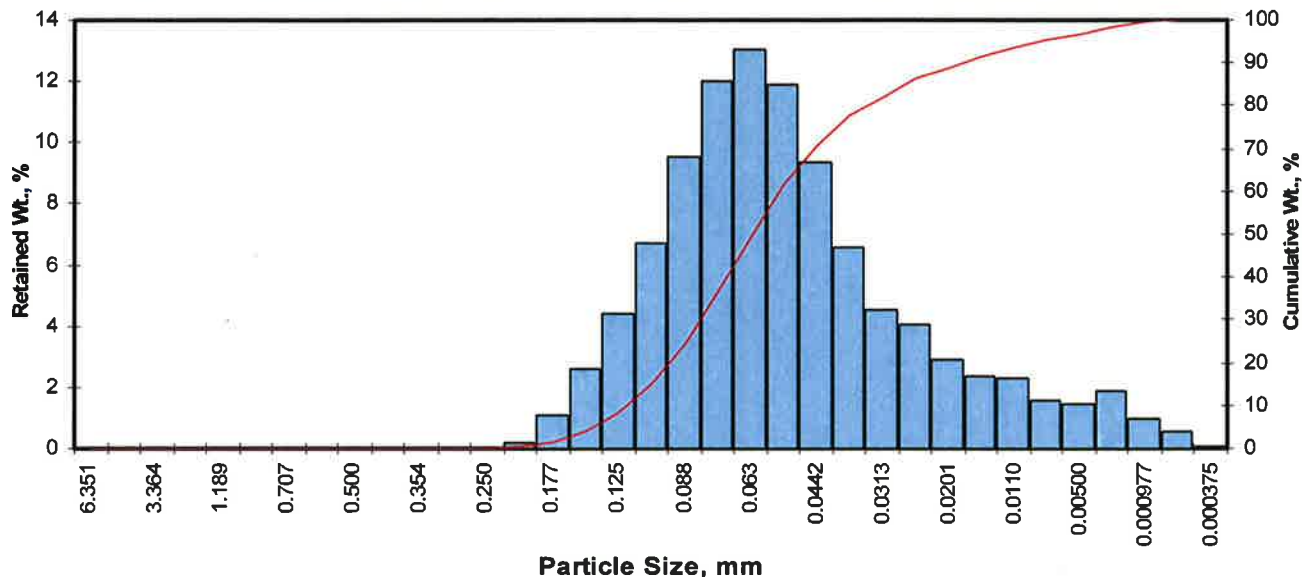
Measure	Trask	Inman	Folk-Ward
Median, phi	3.80	3.80	3.80
Median, in.	0.0028	0.0028	0.0028
Median, mm	0.072	0.072	0.072
Mean, phi	3.60	3.84	3.83
Mean, in.	0.0032	0.0028	0.0028
Mean, mm	0.082	0.070	0.071
Sorting	1.716	1.270	1.458
Skewness	0.998	0.030	0.064
Kurtosis	0.184	1.138	1.428
Grain Size Description (ASTM-USCS Scale)	Fine sand (based on Mean from Trask)		

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	4.42
Fine Sand	200	43.67
Silt	>0.005 mm	48.95
Clay	<0.005 mm	2.96
Total		100

Client: Crow Butte Resources, Inc.
 Project: Marsland Core
 Project No: N/A

PTS File No: 43570
 Sample ID: M-1912C Run 3, Sample 2
 Depth, ft: 260.4-260.9

Grv	Sand Size			Silt	Clay
	crs	medium	fine		



Particle Size, mm

Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
Inches	Millimeters					
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.00	0.00	0.00
0.0331	0.841	0.25	20	0.00	0.00	0.00
0.0278	0.707	0.50	25	0.00	0.00	0.00
0.0234	0.595	0.75	30	0.00	0.00	0.00
0.0197	0.500	1.00	35	0.00	0.00	0.00
0.0166	0.420	1.25	40	0.00	0.00	0.00
0.0139	0.354	1.50	45	0.00	0.00	0.00
0.0117	0.297	1.75	50	0.00	0.00	0.00
0.0098	0.250	2.00	60	0.01	0.01	0.01
0.0083	0.210	2.25	70	0.21	0.21	0.22
0.0070	0.177	2.50	80	1.09	1.09	1.31
0.0059	0.149	2.75	100	2.62	2.62	3.93
0.0049	0.125	3.00	120	4.42	4.42	8.36
0.0041	0.105	3.25	140	6.72	6.73	15.08
0.0035	0.088	3.50	170	9.52	9.53	24.61
0.0029	0.074	3.75	200	12.00	12.01	36.63
0.0025	0.063	4.00	230	13.00	13.01	49.64
0.0021	0.053	4.25	270	11.90	11.91	61.55
0.00174	0.0442	4.50	325	9.34	9.35	70.90
0.00146	0.0372	4.75	400	6.58	6.59	77.49
0.00123	0.0313	5.00	450	4.53	4.53	82.02
0.000986	0.0250	5.32	500	4.03	4.03	86.05
0.000790	0.0201	5.64	635	2.87	2.87	88.93
0.000615	0.0156	6.00		2.36	2.36	91.29
0.000435	0.0110	6.50		2.30	2.30	93.59
0.000308	0.00781	7.00		1.59	1.59	95.18
0.000197	0.00500	7.65		1.42	1.42	96.60
0.000077	0.00195	9.00		1.87	1.87	98.48
0.000038	0.000977	10.00		0.95	0.95	99.43
0.000019	0.000488	11.00		0.52	0.52	99.95
0.000015	0.000375	11.38		0.05	0.05	100.00
TOTALS				99.90	100.00	100.00

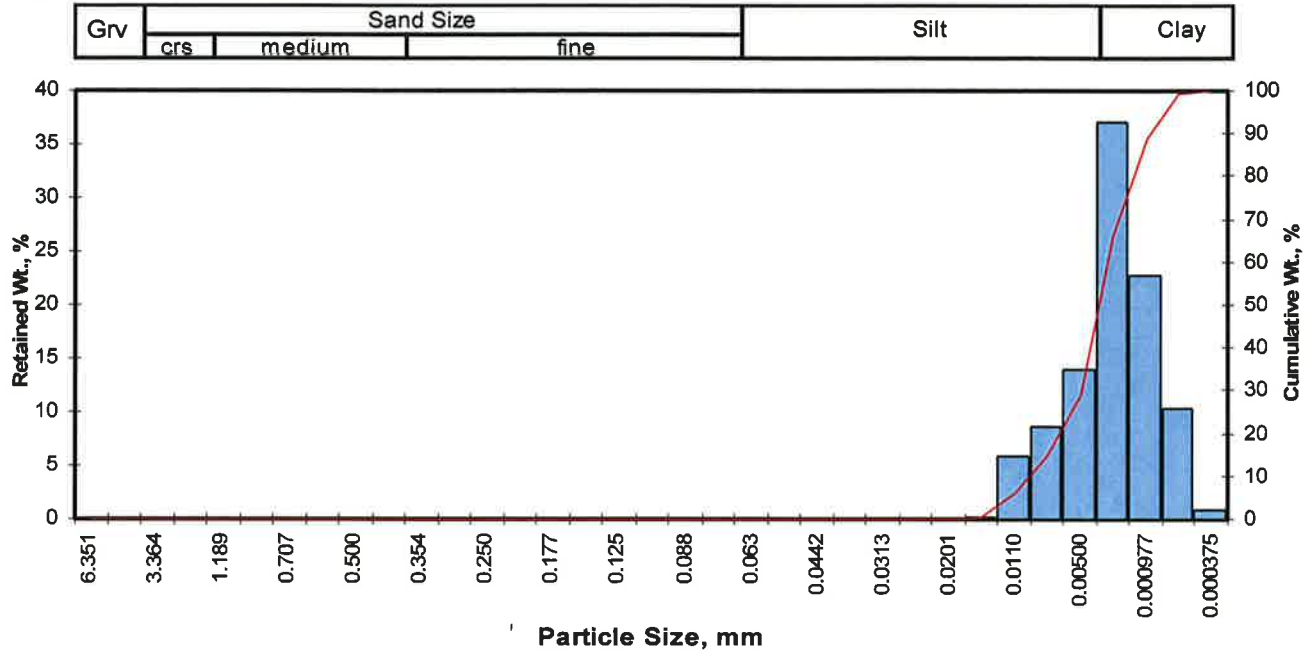
Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	2.81	0.0056	0.143
10	3.06	0.0047	0.120
16	3.27	0.0041	0.103
25	3.51	0.0035	0.088
40	3.81	0.0028	0.071
50	4.01	0.0024	0.062
60	4.22	0.0021	0.054
75	4.66	0.0016	0.040
84	5.16	0.0011	0.028
90	5.80	0.0007	0.018
95	6.94	0.0003	0.008

Measure	Trask	Inman	Folk-Ward
Median, phi	4.01	4.01	4.01
Median, in.	0.0024	0.0024	0.0024
Median, mm	0.062	0.062	0.062
Mean, phi	3.97	4.22	4.15
Mean, in.	0.0025	0.0021	0.0022
Mean, mm	0.064	0.054	0.056
Sorting	1.488	0.942	1.097
Skewness	0.950	0.221	0.321
Kurtosis	0.237	1.194	1.476

Grain Size Description (ASTM-USCS Scale) **Silt** (based on Mean from Trask)

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	0.00
Fine Sand	200	36.63
Silt	>0.005 mm	59.98
Clay	<0.005 mm	3.40
Total		100

Client: Crow Butte Resources, Inc. **PTS File No:** 43570
Project: Marsland Core **Sample ID:** M-1912C Run 4, Sample 1
Project No: N/A **Depth, ft:** 974.5-975.0



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
Inches	Millimeters					
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.00	0.00	0.00
0.0331	0.841	0.25	20	0.00	0.00	0.00
0.0278	0.707	0.50	25	0.00	0.00	0.00
0.0234	0.595	0.75	30	0.00	0.00	0.00
0.0197	0.500	1.00	35	0.00	0.00	0.00
0.0166	0.420	1.25	40	0.00	0.00	0.00
0.0139	0.354	1.50	45	0.00	0.00	0.00
0.0117	0.297	1.75	50	0.00	0.00	0.00
0.0098	0.250	2.00	60	0.00	0.00	0.00
0.0083	0.210	2.25	70	0.00	0.00	0.00
0.0070	0.177	2.50	80	0.00	0.00	0.00
0.0059	0.149	2.75	100	0.00	0.00	0.00
0.0049	0.125	3.00	120	0.00	0.00	0.00
0.0041	0.105	3.25	140	0.00	0.00	0.00
0.0035	0.088	3.50	170	0.00	0.00	0.00
0.0029	0.074	3.75	200	0.00	0.00	0.00
0.0025	0.063	4.00	230	0.00	0.00	0.00
0.0021	0.053	4.25	270	0.00	0.00	0.00
0.00174	0.0442	4.50	325	0.00	0.00	0.00
0.00146	0.0372	4.75	400	0.00	0.00	0.00
0.00123	0.0313	5.00	450	0.00	0.00	0.00
0.000986	0.0250	5.32	500	0.00	0.00	0.00
0.000790	0.0201	5.64	635	0.00	0.00	0.00
0.000615	0.0156	6.00		0.22	0.22	0.22
0.000435	0.0110	6.50		5.93	5.93	6.15
0.000308	0.00781	7.00		8.65	8.65	14.80
0.000197	0.00500	7.65		14.00	14.00	28.79
0.000077	0.00195	9.00		37.10	37.09	65.89
0.000038	0.000977	10.00		22.80	22.80	88.68
0.000019	0.000488	11.00		10.40	10.40	99.08
0.000015	0.000375	11.38		0.92	0.92	100.00
TOTALS				100.00	100.00	100.00

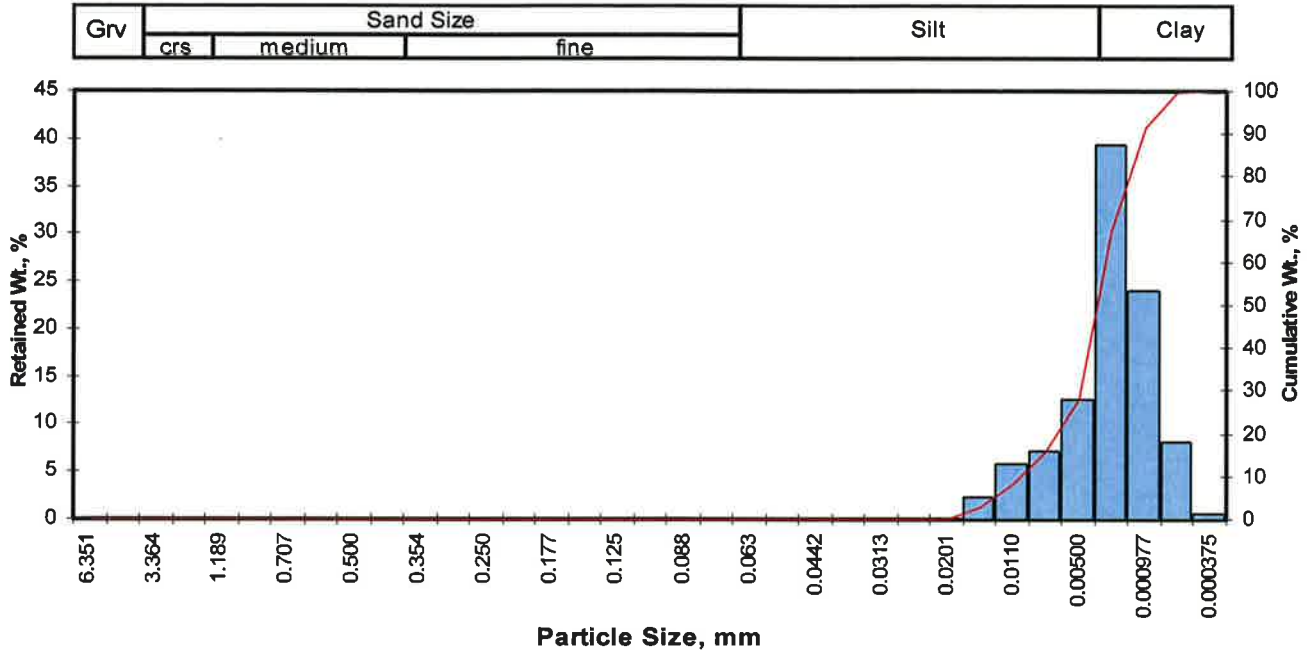
Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	6.40	0.0005	0.012
10	6.72	0.0004	0.009
16	7.06	0.0003	0.008
25	7.47	0.0002	0.006
40	8.05	0.0001	0.004
50	8.42	0.0001	0.003
60	8.78	0.0001	0.002
75	9.40	0.0001	0.001
84	9.79	0.0000	0.001
90	10.13	0.0000	0.001
95	10.61	0.0000	0.001

Measure	Trask	Inman	Folk-Ward
Median, phi	8.42	8.42	8.42
Median, in.	0.0001	0.0001	0.0001
Median, mm	0.003	0.003	0.003
Mean, phi	8.13	8.43	8.42
Mean, in.	0.0001	0.0001	0.0001
Mean, mm	0.004	0.003	0.003
Sorting	1.952	1.370	1.322
Skewness	0.989	0.004	0.022
Kurtosis	0.243	0.535	0.893

Grain Size Description (ASTM-USCS Scale) **Clay** (based on Mean from Trask)

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	0.00
Fine Sand	200	0.00
Silt	>0.005 mm	28.79
Clay	<0.005 mm	71.21
Total		100

Client: Crow Butte Resources, Inc. **PTS File No:** 43570
Project: Marsland Core **Sample ID:** M-1912C Run 4, Sample 2
Project No: N/A **Depth, ft:** 968.7-969.7



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
Inches	Millimeters					
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.00	0.00	0.00
0.0331	0.841	0.25	20	0.00	0.00	0.00
0.0278	0.707	0.50	25	0.00	0.00	0.00
0.0234	0.595	0.75	30	0.00	0.00	0.00
0.0197	0.500	1.00	35	0.00	0.00	0.00
0.0166	0.420	1.25	40	0.00	0.00	0.00
0.0139	0.354	1.50	45	0.00	0.00	0.00
0.0117	0.297	1.75	50	0.00	0.00	0.00
0.0098	0.250	2.00	60	0.00	0.00	0.00
0.0083	0.210	2.25	70	0.00	0.00	0.00
0.0070	0.177	2.50	80	0.00	0.00	0.00
0.0059	0.149	2.75	100	0.00	0.00	0.00
0.0049	0.125	3.00	120	0.00	0.00	0.00
0.0041	0.105	3.25	140	0.00	0.00	0.00
0.0035	0.088	3.50	170	0.00	0.00	0.00
0.0029	0.074	3.75	200	0.00	0.00	0.00
0.0025	0.063	4.00	230	0.00	0.00	0.00
0.0021	0.053	4.25	270	0.00	0.00	0.00
0.00174	0.0442	4.50	325	0.00	0.00	0.00
0.00146	0.0372	4.75	400	0.00	0.00	0.00
0.00123	0.0313	5.00	450	0.00	0.00	0.00
0.000986	0.0250	5.32	500	0.00	0.00	0.00
0.000790	0.0201	5.64	635	0.10	0.10	0.10
0.000615	0.0156	6.00		2.33	2.33	2.42
0.000435	0.0110	6.50		5.79	5.79	8.21
0.000308	0.00781	7.00		7.14	7.14	15.35
0.000197	0.00500	7.65		12.60	12.59	27.94
0.000077	0.00195	9.00		39.40	39.38	67.32
0.000038	0.000977	10.00		24.00	23.99	91.30
0.000019	0.000488	11.00		8.14	8.14	99.44
0.000015	0.000375	11.38		0.56	0.56	100.00
TOTALS				100.10	100.00	100.00

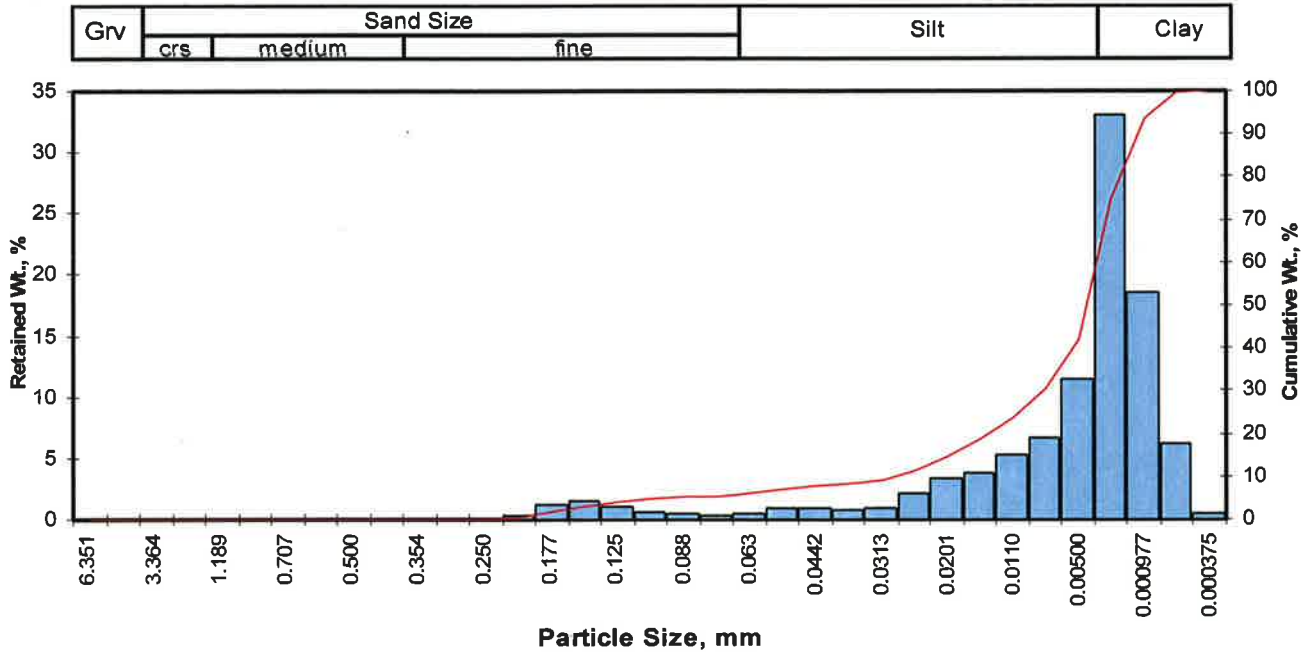
Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	6.22	0.0005	0.013
10	6.63	0.0004	0.010
16	7.03	0.0003	0.008
25	7.49	0.0002	0.006
40	8.06	0.0001	0.004
50	8.40	0.0001	0.003
60	8.75	0.0001	0.002
75	9.32	0.0001	0.002
84	9.70	0.0000	0.001
90	9.95	0.0000	0.001
95	10.45	0.0000	0.001

Measure	Trask	Inman	Folk-Ward
Median, phi	8.40	8.40	8.40
Median, in.	0.0001	0.0001	0.0001
Median, mm	0.003	0.003	0.003
Mean, phi	8.14	8.36	8.38
Mean, in.	0.0001	0.0001	0.0001
Mean, mm	0.004	0.003	0.003
Sorting	1.883	1.331	1.307
Skewness	0.998	-0.030	-0.030
Kurtosis	0.218	0.590	0.950

Grain Size Description Clay
 (ASTM-USCS Scale) (based on Mean from Trask)

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	0.00
Fine Sand	200	0.00
Silt	>0.005 mm	27.94
Clay	<0.005 mm	72.06
Total		100

Client: Crow Butte Resources, Inc. **PTS File No:** 43570
Project: Marsland Core **Sample ID:** M-1912C Run 4, Sample 2 Rerun
Project No: N/A **Depth, ft:** 968.7-969.7



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
Inches	Millimeters					
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.00	0.00	0.00
0.0331	0.841	0.25	20	0.00	0.00	0.00
0.0278	0.707	0.50	25	0.00	0.00	0.00
0.0234	0.595	0.75	30	0.00	0.00	0.00
0.0197	0.500	1.00	35	0.00	0.00	0.00
0.0166	0.420	1.25	40	0.00	0.00	0.00
0.0139	0.354	1.50	45	0.00	0.00	0.00
0.0117	0.297	1.75	50	0.00	0.00	0.00
0.0098	0.250	2.00	60	0.02	0.02	0.02
0.0083	0.210	2.25	70	0.33	0.33	0.35
0.0070	0.177	2.50	80	1.18	1.18	1.53
0.0059	0.149	2.75	100	1.48	1.48	3.01
0.0049	0.125	3.00	120	1.03	1.03	4.04
0.0041	0.105	3.25	140	0.63	0.63	4.67
0.0035	0.088	3.50	170	0.39	0.39	5.06
0.0029	0.074	3.75	200	0.29	0.29	5.35
0.0025	0.063	4.00	230	0.48	0.48	5.83
0.0021	0.053	4.25	270	0.86	0.86	6.69
0.00174	0.0442	4.50	325	0.91	0.91	7.60
0.00146	0.0372	4.75	400	0.71	0.71	8.31
0.00123	0.0313	5.00	450	0.86	0.86	9.17
0.000986	0.0250	5.32	500	2.12	2.12	11.29
0.000790	0.0201	5.64	635	3.31	3.31	14.60
0.000615	0.0156	6.00		3.78	3.78	18.38
0.000435	0.0110	6.50		5.24	5.24	23.62
0.000308	0.00781	7.00		6.60	6.60	30.22
0.000197	0.00500	7.65		11.40	11.40	41.62
0.000077	0.00195	9.00		33.10	33.10	74.72
0.000038	0.000977	10.00		18.60	18.60	93.32
0.000019	0.000488	11.00		6.24	6.24	99.56
0.000015	0.000375	11.38		0.44	0.44	100.00
TOTALS				100.00	100.00	100.00

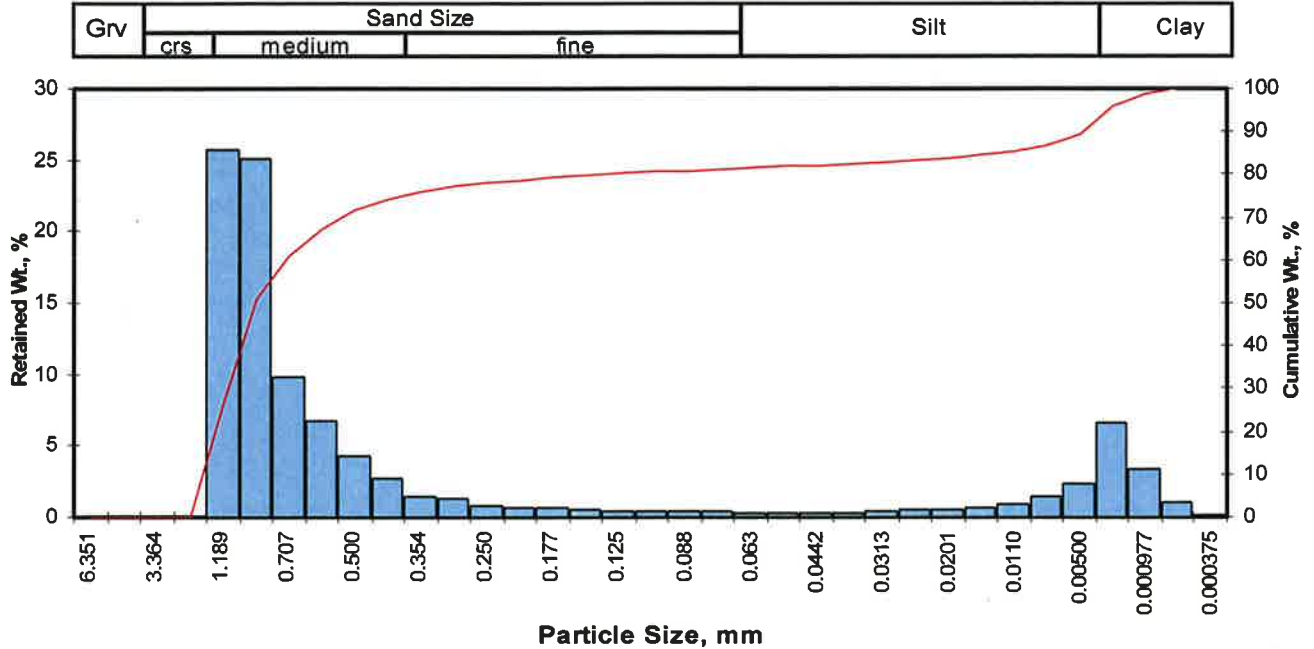
Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	3.46	0.0036	0.091
10	5.13	0.0011	0.029
16	5.77	0.0007	0.018
25	6.60	0.0004	0.010
40	7.55	0.0002	0.005
50	7.99	0.0002	0.004
60	8.40	0.0001	0.003
75	9.02	0.0001	0.002
84	9.50	0.0001	0.001
90	9.82	0.0000	0.001
95	10.27	0.0000	0.001

Measure	Trask	Inman	Folk-Ward
Median, phi	7.99	7.99	7.99
Median, in.	0.0002	0.0002	0.0002
Median, mm	0.004	0.004	0.004
Mean, phi	7.36	7.64	7.75
Mean, in.	0.0002	0.0002	0.0002
Mean, mm	0.006	0.005	0.005
Sorting	2.306	1.863	1.963
Skewness	1.131	-0.189	-0.259
Kurtosis	0.151	0.827	1.157

Grain Size Description (ASTM-USCS Scale) **Silt** (based on Mean from Trask)

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	0.00
Fine Sand	200	5.35
Silt	>0.005 mm	36.27
Clay	<0.005 mm	58.38
Total		100

Client: Crow Butte Resources, Inc. **PTS File No.:** 43570
Project: Marsland Core **Sample ID:** M-1912C Run 4, Sample 2 Rerun 2
Project No.: N/A **Depth, ft.:** 968.7-969.7



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
Inches	Millimeters					
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	25.70	25.70	25.70
0.0331	0.841	0.25	20	25.10	25.10	50.81
0.0278	0.707	0.50	25	9.82	9.82	60.63
0.0234	0.595	0.75	30	6.77	6.77	67.40
0.0197	0.500	1.00	35	4.24	4.24	71.64
0.0166	0.420	1.25	40	2.66	2.66	74.30
0.0139	0.354	1.50	45	1.46	1.46	75.76
0.0117	0.297	1.75	50	1.33	1.33	77.09
0.0098	0.250	2.00	60	0.82	0.82	77.91
0.0083	0.210	2.25	70	0.70	0.70	78.61
0.0070	0.177	2.50	80	0.59	0.59	79.20
0.0059	0.149	2.75	100	0.48	0.48	79.68
0.0049	0.125	3.00	120	0.40	0.40	80.08
0.0041	0.105	3.25	140	0.37	0.37	80.45
0.0035	0.088	3.50	170	0.35	0.35	80.80
0.0029	0.074	3.75	200	0.33	0.33	81.13
0.0025	0.063	4.00	230	0.31	0.31	81.44
0.0021	0.053	4.25	270	0.30	0.30	81.74
0.00174	0.0442	4.50	325	0.30	0.30	82.04
0.00146	0.0372	4.75	400	0.31	0.31	82.35
0.00123	0.0313	5.00	450	0.33	0.33	82.68
0.000986	0.0250	5.32	500	0.48	0.48	83.16
0.000790	0.0201	5.64	635	0.56	0.56	83.72
0.000615	0.0156	6.00		0.63	0.63	84.35
0.000435	0.0110	6.50		0.94	0.94	85.29
0.000308	0.00781	7.00		1.36	1.36	86.65
0.000197	0.00500	7.65		2.38	2.38	89.03
0.000077	0.00195	9.00		6.53	6.53	95.56
0.000038	0.000977	10.00		3.35	3.35	98.91
0.000019	0.000488	11.00		1.02	1.02	99.93
0.000015	0.000375	11.38		0.07	0.07	100.00
TOTALS				100.00	100.00	100.00

Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	-0.85	0.0712	1.808
10	-0.71	0.0643	1.634
16	-0.53	0.0570	1.447
25	-0.27	0.0475	1.206
40	0.03	0.0384	0.976
50	0.23	0.0335	0.850
60	0.48	0.0281	0.715
75	1.37	0.0152	0.387
84	5.80	0.0007	0.018
90	7.85	0.0002	0.004
95	8.88	0.0001	0.002

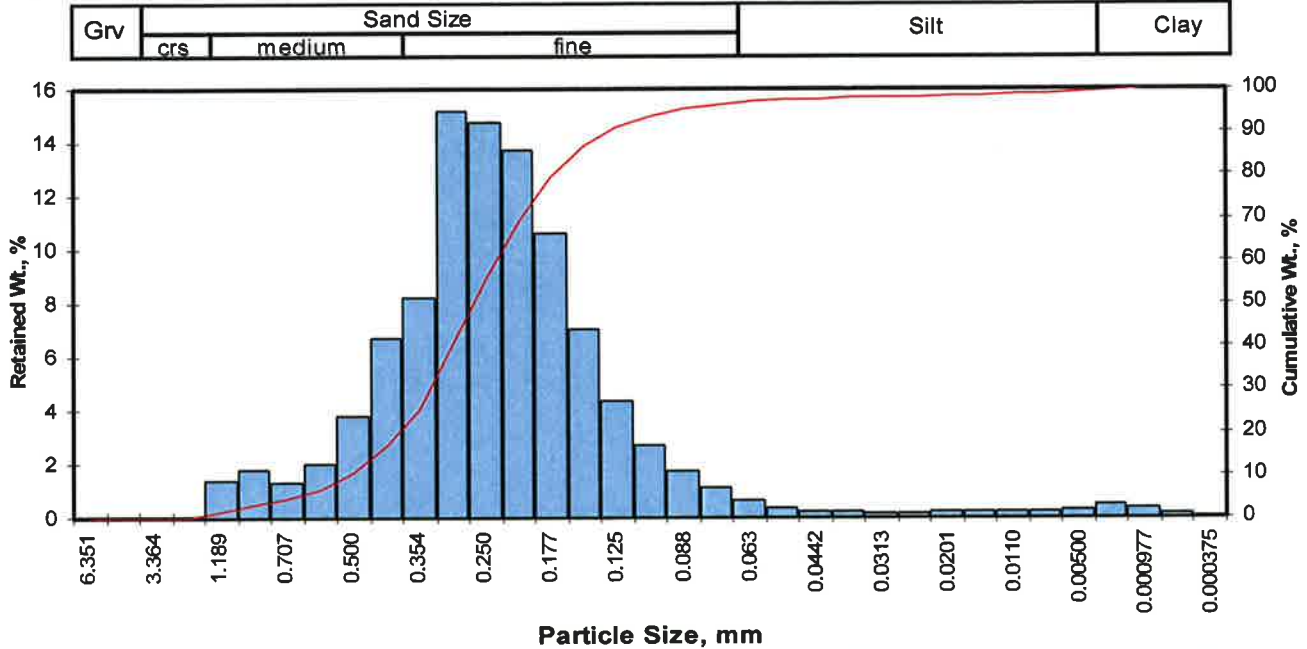
Measure	Trask	Inman	Folk-Ward
Median, phi	0.23	0.23	0.23
Median, in.	0.0335	0.0335	0.0335
Median, mm	0.850	0.850	0.850
Mean, phi	0.33	2.63	1.83
Mean, in.	0.0314	0.0063	0.0110
Mean, mm	0.797	0.161	0.281
Sorting	1.766	3.166	3.058
Skewness	0.803	0.758	0.767
Kurtosis	0.251	0.538	2.433

Grain Size Description (ASTM-USCS Scale) Medium sand (based on Mean from Trask)

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	74.30
Fine Sand	200	6.83
Silt	>0.005 mm	7.90
Clay	<0.005 mm	10.97
Total		100

Client: Crow Butte Resources, Inc.
 Project: Marsland Core
 Project No: N/A

PTS File No: 43570
 Sample ID: M-1956C Run 1, Sample 1
 Depth, ft: 42.0-43.0



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
Inches	Millimeters					
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	1.37	1.37	1.37
0.0331	0.841	0.25	20	1.79	1.79	3.16
0.0278	0.707	0.50	25	1.31	1.31	4.47
0.0234	0.595	0.75	30	2.02	2.02	6.49
0.0197	0.500	1.00	35	3.82	3.82	10.30
0.0166	0.420	1.25	40	6.67	6.67	16.97
0.0139	0.354	1.50	45	8.24	8.24	25.20
0.0117	0.297	1.75	50	15.20	15.19	40.40
0.0098	0.250	2.00	60	14.80	14.79	55.19
0.0083	0.210	2.25	70	13.70	13.69	68.88
0.0070	0.177	2.50	80	10.60	10.59	79.47
0.0059	0.149	2.75	100	7.02	7.02	86.49
0.0049	0.125	3.00	120	4.36	4.36	90.85
0.0041	0.105	3.25	140	2.69	2.69	93.53
0.0035	0.088	3.50	170	1.72	1.72	95.25
0.0029	0.074	3.75	200	1.08	1.08	96.33
0.0025	0.063	4.00	230	0.62	0.62	96.95
0.0021	0.053	4.25	270	0.34	0.34	97.29
0.00174	0.0442	4.50	325	0.22	0.22	97.51
0.00146	0.0372	4.75	400	0.18	0.18	97.69
0.00123	0.0313	5.00	450	0.15	0.15	97.84
0.000986	0.0250	5.32	500	0.17	0.17	98.01
0.000790	0.0201	5.64	635	0.18	0.18	98.19
0.000615	0.0156	6.00		0.19	0.19	98.38
0.000435	0.0110	6.50		0.23	0.23	98.61
0.000308	0.00781	7.00		0.21	0.21	98.82
0.000197	0.00500	7.65		0.26	0.26	99.08
0.000077	0.00195	9.00		0.47	0.47	99.55
0.000038	0.000977	10.00		0.32	0.32	99.87
0.000019	0.000488	11.00		0.13	0.13	100.00
0.000015	0.000375	11.38		0.00	0.00	100.00
TOTALS				100.10	100.00	100.00

Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	0.57	0.0266	0.676
10	0.98	0.0200	0.507
16	1.21	0.0170	0.431
25	1.49	0.0140	0.355
40	1.74	0.0118	0.299
50	1.91	0.0105	0.266
60	2.09	0.0093	0.235
75	2.39	0.0075	0.190
84	2.66	0.0062	0.158
90	2.95	0.0051	0.129
95	3.46	0.0036	0.091

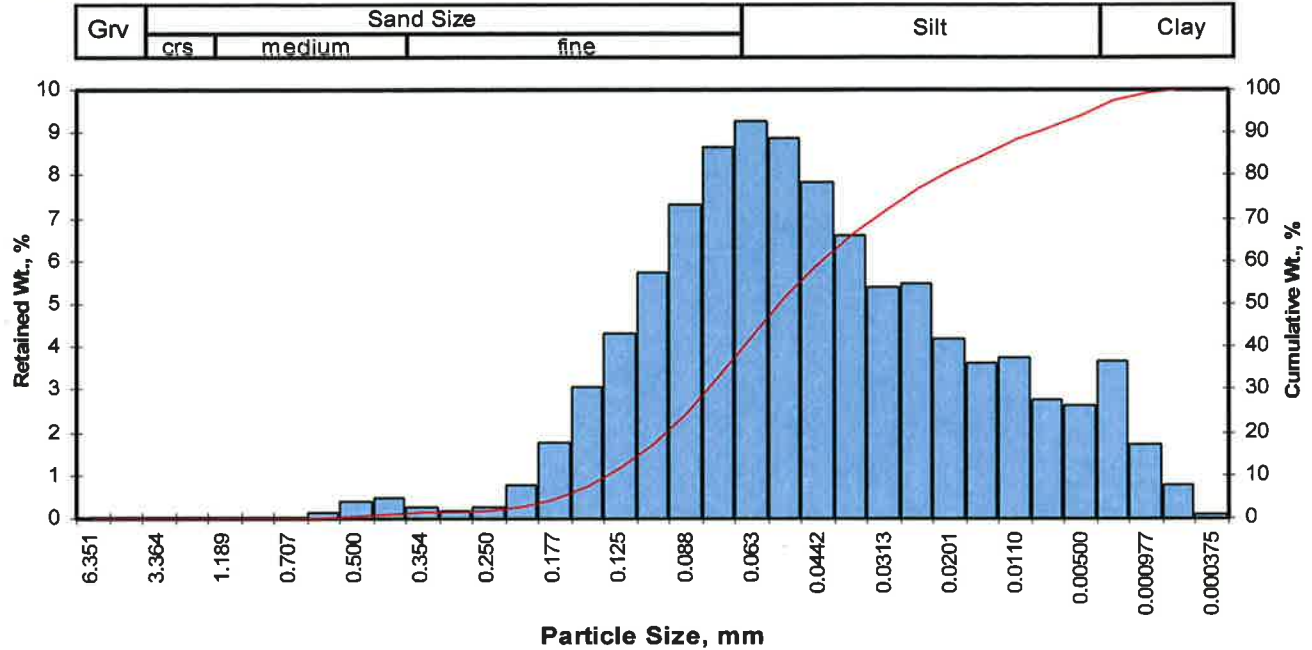
Measure	Trask	Inman	Folk-Ward
Median, phi	1.91	1.91	1.91
Median, in.	0.0105	0.0105	0.0105
Median, mm	0.266	0.266	0.266
Mean, phi	1.87	1.94	1.93
Mean, in.	0.0107	0.0103	0.0103
Mean, mm	0.273	0.261	0.263
Sorting	1.366	0.724	0.801
Skewness	0.978	0.035	0.053
Kurtosis	0.218	1.001	1.318

Grain Size Description (ASTM-USCS Scale) Fine sand (based on Mean from Trask)

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	16.97
Fine Sand	200	79.36
Silt	>0.005 mm	2.75
Clay	<0.005 mm	0.92
Total		100

Client: Crow Butte Resources, Inc.
 Project: Marsland Core
 Project No: N/A

PTS File No: 43570
 Sample ID: M-1956C Run 3, Sample 1
 Depth, ft: 78.0-79.0



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
Inches	Millimeters					
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.00	0.00	0.00
0.0331	0.841	0.25	20	0.00	0.00	0.00
0.0278	0.707	0.50	25	0.01	0.01	0.01
0.0234	0.595	0.75	30	0.14	0.14	0.15
0.0197	0.500	1.00	35	0.39	0.39	0.54
0.0166	0.420	1.25	40	0.46	0.46	1.00
0.0139	0.354	1.50	45	0.27	0.27	1.27
0.0117	0.297	1.75	50	0.19	0.19	1.46
0.0098	0.250	2.00	60	0.25	0.25	1.71
0.0083	0.210	2.25	70	0.78	0.78	2.49
0.0070	0.177	2.50	80	1.77	1.77	4.26
0.0059	0.149	2.75	100	3.04	3.04	7.30
0.0049	0.125	3.00	120	4.33	4.33	11.63
0.0041	0.105	3.25	140	5.74	5.74	17.37
0.0035	0.088	3.50	170	7.32	7.32	24.69
0.0029	0.074	3.75	200	8.67	8.67	33.36
0.0025	0.063	4.00	230	9.27	9.27	42.63
0.0021	0.053	4.25	270	8.89	8.89	51.52
0.00174	0.0442	4.50	325	7.85	7.85	59.37
0.00146	0.0372	4.75	400	6.58	6.58	65.95
0.00123	0.0313	5.00	450	5.41	5.41	71.36
0.000986	0.0250	5.32	500	5.49	5.49	76.84
0.000790	0.0201	5.64	635	4.19	4.19	81.03
0.000615	0.0156	6.00		3.60	3.60	84.63
0.000435	0.0110	6.50		3.74	3.74	88.37
0.000308	0.00781	7.00		2.78	2.78	91.15
0.000197	0.00500	7.65		2.64	2.64	93.79
0.000077	0.00195	9.00		3.67	3.67	97.46
0.000038	0.000977	10.00		1.71	1.71	99.17
0.000019	0.000488	11.00		0.76	0.76	99.93
0.000015	0.000375	11.38		0.07	0.07	100.00
TOTALS				100.00	100.00	100.00

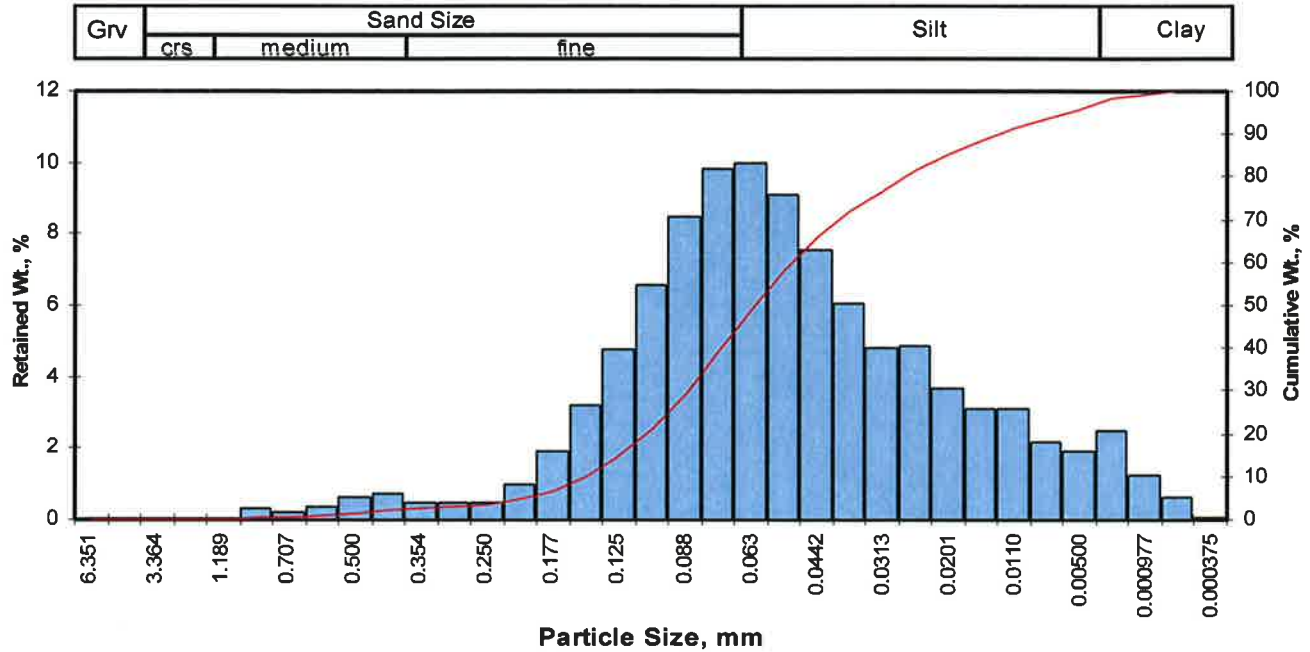
Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	2.56	0.0067	0.170
10	2.91	0.0053	0.133
16	3.19	0.0043	0.110
25	3.51	0.0035	0.088
40	3.93	0.0026	0.066
50	4.21	0.0021	0.054
60	4.52	0.0017	0.043
75	5.21	0.0011	0.027
84	5.94	0.0006	0.016
90	6.79	0.0004	0.009
95	8.09	0.0001	0.004

Measure	Trask	Inman	Folk-Ward
Median, phi	4.21	4.21	4.21
Median, in.	0.0021	0.0021	0.0021
Median, mm	0.054	0.054	0.054
Mean, phi	4.12	4.56	4.44
Mean, in.	0.0023	0.0017	0.0018
Mean, mm	0.057	0.042	0.046
Sorting	1.805	1.373	1.525
Skewness	0.899	0.259	0.332
Kurtosis	0.245	1.014	1.330

Grain Size Description
 (ASTM-USCS Scale) Silt
 (based on Mean from Trask)

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	1.00
Fine Sand	200	32.36
Silt	>0.005 mm	60.43
Clay	<0.005 mm	6.21
Total		100

Client: Crow Butte Resources, Inc. **PTS File No:** 43570
Project: Marsland Core **Sample ID:** M-1956C Run 4, Sample 1
Project No: N/A **Depth, ft:** 196.5-197.1



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
Inches	Millimeters					
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.03	0.03	0.03
0.0331	0.841	0.25	20	0.30	0.30	0.33
0.0278	0.707	0.50	25	0.19	0.19	0.52
0.0234	0.595	0.75	30	0.34	0.34	0.86
0.0197	0.500	1.00	35	0.64	0.64	1.50
0.0166	0.420	1.25	40	0.72	0.72	2.22
0.0139	0.354	1.50	45	0.48	0.48	2.70
0.0117	0.297	1.75	50	0.46	0.46	3.16
0.0098	0.250	2.00	60	0.47	0.47	3.63
0.0083	0.210	2.25	70	0.97	0.97	4.60
0.0070	0.177	2.50	80	1.90	1.90	6.50
0.0059	0.149	2.75	100	3.20	3.20	9.70
0.0049	0.125	3.00	120	4.74	4.74	14.44
0.0041	0.105	3.25	140	6.58	6.58	21.02
0.0035	0.088	3.50	170	8.47	8.47	29.50
0.0029	0.074	3.75	200	9.81	9.81	39.31
0.0025	0.063	4.00	230	10.00	10.00	49.31
0.0021	0.053	4.25	270	9.08	9.08	58.40
0.00174	0.0442	4.50	325	7.55	7.55	65.95
0.00146	0.0372	4.75	400	6.03	6.03	71.98
0.00123	0.0313	5.00	450	4.83	4.83	76.81
0.000986	0.0250	5.32	500	4.86	4.86	81.68
0.000790	0.0201	5.64	635	3.68	3.68	85.36
0.000615	0.0156	6.00		3.10	3.10	88.46
0.000435	0.0110	6.50		3.08	3.08	91.54
0.000308	0.00781	7.00		2.15	2.15	93.69
0.000197	0.00500	7.65		1.92	1.92	95.61
0.000077	0.00195	9.00		2.50	2.50	98.11
0.000038	0.000977	10.00		1.22	1.22	99.33
0.000019	0.000488	11.00		0.61	0.61	99.94
0.000015	0.000375	11.38		0.06	0.06	100.00
TOTALS				100.00	100.00	100.00

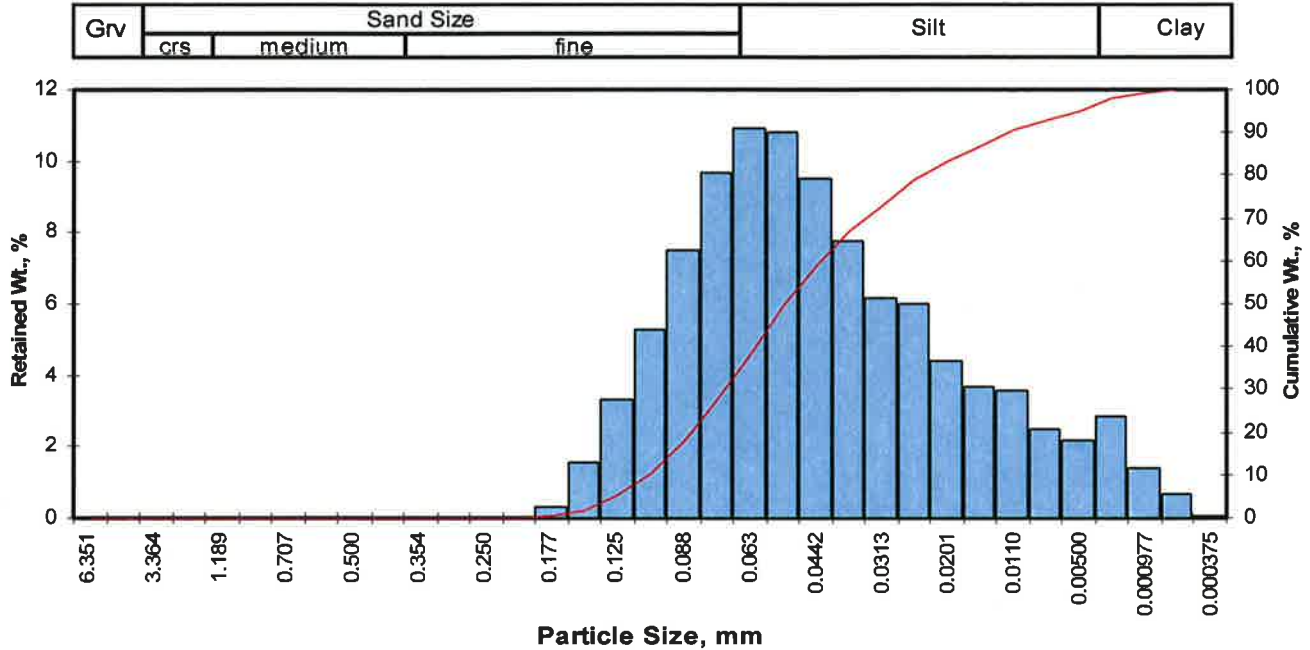
Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	2.30	0.0080	0.203
10	2.77	0.0058	0.147
16	3.06	0.0047	0.120
25	3.37	0.0038	0.097
40	3.77	0.0029	0.073
50	4.02	0.0024	0.062
60	4.30	0.0020	0.051
75	4.91	0.0013	0.033
84	5.52	0.0009	0.022
90	6.25	0.0005	0.013
95	7.44	0.0002	0.006

Measure	Trask	Inman	Folk-Ward
Median, phi	4.02	4.02	4.02
Median, in.	0.0024	0.0024	0.0024
Median, mm	0.062	0.062	0.062
Mean, phi	3.94	4.29	4.20
Mean, in.	0.0026	0.0020	0.0021
Mean, mm	0.065	0.051	0.054
Sorting	1.705	1.231	1.394
Skewness	0.922	0.221	0.276
Kurtosis	0.237	1.086	1.368

Grain Size Description (ASTM-USCS Scale) **Silt**
 (based on Mean from Trask)

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	2.22
Fine Sand	200	37.09
Silt	>0.005 mm	56.30
Clay	<0.005 mm	4.39
Total		100

Client: Crow Butte Resources, Inc. **PTS File No:** 43570
Project: Marsland Core **Sample ID:** M-1956C Run 4, Sample 2
Project No: N/A **Depth, ft:** 202.0-202.5



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
Inches	Millimeters					
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.00	0.00	0.00
0.0331	0.841	0.25	20	0.00	0.00	0.00
0.0278	0.707	0.50	25	0.00	0.00	0.00
0.0234	0.595	0.75	30	0.00	0.00	0.00
0.0197	0.500	1.00	35	0.00	0.00	0.00
0.0166	0.420	1.25	40	0.00	0.00	0.00
0.0139	0.354	1.50	45	0.00	0.00	0.00
0.0117	0.297	1.75	50	0.00	0.00	0.00
0.0098	0.250	2.00	60	0.00	0.00	0.00
0.0083	0.210	2.25	70	0.02	0.02	0.02
0.0070	0.177	2.50	80	0.32	0.32	0.34
0.0059	0.149	2.75	100	1.54	1.54	1.88
0.0049	0.125	3.00	120	3.30	3.30	5.18
0.0041	0.105	3.25	140	5.27	5.27	10.45
0.0035	0.088	3.50	170	7.51	7.51	17.96
0.0029	0.074	3.75	200	9.69	9.69	27.65
0.0025	0.063	4.00	230	10.90	10.90	38.56
0.0021	0.053	4.25	270	10.80	10.80	49.36
0.00174	0.0442	4.50	325	9.50	9.50	58.86
0.00146	0.0372	4.75	400	7.74	7.74	66.60
0.00123	0.0313	5.00	450	6.13	6.13	72.73
0.000986	0.0250	5.32	500	5.99	5.99	78.72
0.000790	0.0201	5.64	635	4.42	4.42	83.14
0.000615	0.0156	6.00		3.66	3.66	86.80
0.000435	0.0110	6.50		3.57	3.57	90.37
0.000308	0.00781	7.00		2.46	2.46	92.83
0.000197	0.00500	7.65		2.16	2.16	95.00
0.000077	0.00195	9.00		2.84	2.84	97.84
0.000038	0.000977	10.00		1.41	1.41	99.25
0.000019	0.000488	11.00		0.69	0.69	99.94
0.000015	0.000375	11.38		0.06	0.06	100.00
TOTALS				100.00	100.00	100.00

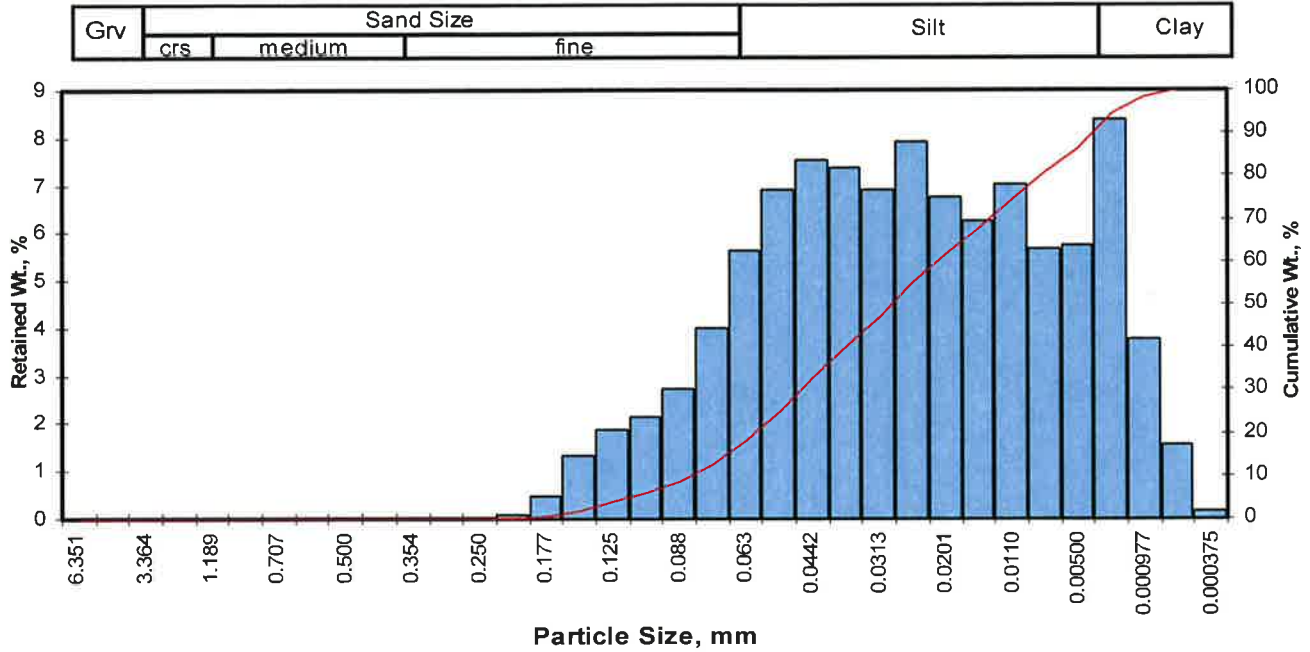
Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	2.99	0.0050	0.126
10	3.23	0.0042	0.107
16	3.43	0.0036	0.092
25	3.68	0.0031	0.078
40	4.03	0.0024	0.061
50	4.27	0.0020	0.052
60	4.54	0.0017	0.043
75	5.12	0.0011	0.029
84	5.72	0.0007	0.019
90	6.45	0.0005	0.011
95	7.65	0.0002	0.005

Measure	Trask	Inman	Folk-Ward
Median, phi	4.27	4.27	4.27
Median, in.	0.0020	0.0020	0.0020
Median, mm	0.052	0.052	0.052
Mean, phi	4.23	4.58	4.48
Mean, in.	0.0021	0.0016	0.0018
Mean, mm	0.053	0.042	0.045
Sorting	1.647	1.145	1.279
Skewness	0.911	0.273	0.362
Kurtosis	0.258	1.036	1.327

Grain Size Description (ASTM-USCS Scale) **Silt** (based on Mean from Trask)

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	0.00
Fine Sand	200	27.65
Silt	>0.005 mm	67.34
Clay	<0.005 mm	5.00
Total		100

Client: Crow Butte Resources, Inc. **PTS File No:** 43570
Project: Marsland Core **Sample ID:** M-1956C Run 5, Sample 1
Project No: N/A **Depth, ft:** 425.6-426.2



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
Inches	Millimeters					
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.00	0.00	0.00
0.0331	0.841	0.25	20	0.00	0.00	0.00
0.0278	0.707	0.50	25	0.00	0.00	0.00
0.0234	0.595	0.75	30	0.00	0.00	0.00
0.0197	0.500	1.00	35	0.00	0.00	0.00
0.0166	0.420	1.25	40	0.00	0.00	0.00
0.0139	0.354	1.50	45	0.00	0.00	0.00
0.0117	0.297	1.75	50	0.00	0.00	0.00
0.0098	0.250	2.00	60	0.00	0.00	0.00
0.0083	0.210	2.25	70	0.07	0.07	0.07
0.0070	0.177	2.50	80	0.48	0.48	0.55
0.0059	0.149	2.75	100	1.31	1.31	1.86
0.0049	0.125	3.00	120	1.85	1.85	3.71
0.0041	0.105	3.25	140	2.13	2.13	5.84
0.0035	0.088	3.50	170	2.72	2.72	8.56
0.0029	0.074	3.75	200	3.98	3.98	12.54
0.0025	0.063	4.00	230	5.62	5.62	18.15
0.0021	0.053	4.25	270	6.92	6.92	25.07
0.00174	0.0442	4.50	325	7.52	7.52	32.59
0.00146	0.0372	4.75	400	7.36	7.36	39.95
0.00123	0.0313	5.00	450	6.89	6.89	46.84
0.000986	0.0250	5.32	500	7.90	7.90	54.74
0.000790	0.0201	5.64	635	6.75	6.75	61.49
0.000615	0.0156	6.00		6.26	6.26	67.75
0.000435	0.0110	6.50		7.04	7.04	74.78
0.000308	0.00781	7.00		5.65	5.65	80.43
0.000197	0.00500	7.65		5.73	5.73	86.16
0.000077	0.00195	9.00		8.38	8.38	94.54
0.000038	0.000977	10.00		3.76	3.76	98.30
0.000019	0.000488	11.00		1.56	1.56	99.86
0.000015	0.000375	11.38		0.14	0.14	100.00
TOTALS				100.00	100.00	100.00

Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	3.15	0.0044	0.113
10	3.59	0.0033	0.083
16	3.90	0.0026	0.067
25	4.25	0.0021	0.053
40	4.75	0.0015	0.037
50	5.13	0.0011	0.029
60	5.57	0.0008	0.021
75	6.52	0.0004	0.011
84	7.40	0.0002	0.006
90	8.27	0.0001	0.003
95	9.12	0.0001	0.002

Measure	Trask	Inman	Folk-Ward
Median, phi	5.13	5.13	5.13
Median, in.	0.0011	0.0011	0.0011
Median, mm	0.029	0.029	0.029
Mean, phi	4.98	5.65	5.48
Mean, in.	0.0013	0.0008	0.0009
Mean, mm	0.032	0.020	0.022
Sorting	2.197	1.749	1.779
Skewness	0.838	0.300	0.319
Kurtosis	0.262	0.707	1.077

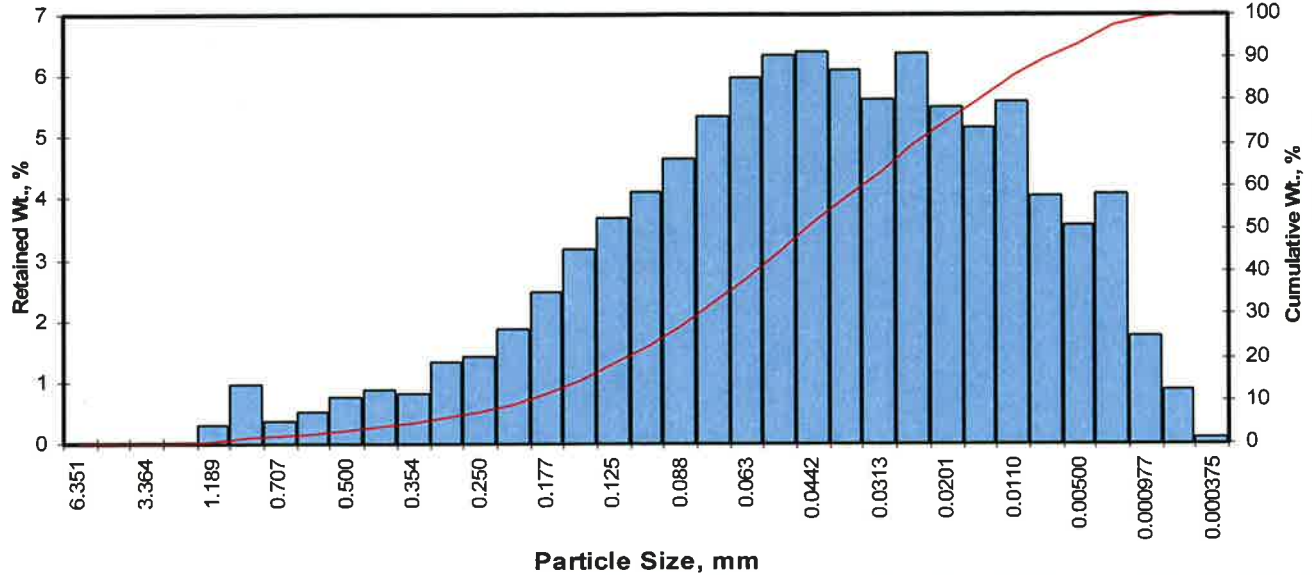
Grain Size Description (ASTM-USCS Scale) **Silt** (based on Mean from Trask)

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	0.00
Fine Sand	200	12.54
Silt	>0.005 mm	73.63
Clay	<0.005 mm	13.84
Total		100

Client: Crow Butte Resources, Inc.
 Project: Marsland Core
 Project No: N/A

PTS File No: 43570
 Sample ID: M-1956C Run 5, Sample 2
 Depth, ft: 431.0-431.6

Grv	Sand Size			Silt	Clay
	crs	medium	fine		



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
Inches	Millimeters					
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.30	0.30	0.30
0.0331	0.841	0.25	20	0.96	0.96	1.26
0.0278	0.707	0.50	25	0.36	0.36	1.62
0.0234	0.595	0.75	30	0.50	0.50	2.12
0.0197	0.500	1.00	35	0.75	0.75	2.87
0.0166	0.420	1.25	40	0.89	0.89	3.76
0.0139	0.354	1.50	45	0.81	0.81	4.57
0.0117	0.297	1.75	50	1.32	1.32	5.89
0.0098	0.250	2.00	60	1.42	1.42	7.31
0.0083	0.210	2.25	70	1.86	1.86	9.17
0.0070	0.177	2.50	80	2.47	2.47	11.64
0.0059	0.149	2.75	100	3.17	3.17	14.81
0.0049	0.125	3.00	120	3.67	3.67	18.48
0.0041	0.105	3.25	140	4.09	4.09	22.57
0.0035	0.088	3.50	170	4.65	4.65	27.22
0.0029	0.074	3.75	200	5.35	5.35	32.57
0.0025	0.063	4.00	230	5.98	5.98	38.55
0.0021	0.053	4.25	270	6.34	6.34	44.89
0.00174	0.0442	4.50	325	6.40	6.40	51.29
0.00146	0.0372	4.75	400	6.10	6.10	57.39
0.00123	0.0313	5.00	450	5.62	5.62	63.01
0.000986	0.0250	5.32	500	6.38	6.38	69.39
0.000790	0.0201	5.64	635	5.50	5.50	74.89
0.000615	0.0156	6.00		5.15	5.15	80.04
0.000435	0.0110	6.50		5.57	5.57	85.61
0.000308	0.00781	7.00		4.05	4.05	89.66
0.000197	0.00500	7.65		3.55	3.55	93.21
0.000077	0.00195	9.00		4.08	4.08	97.29
0.000038	0.000977	10.00		1.76	1.76	99.05
0.000019	0.000488	11.00		0.87	0.87	99.92
0.000015	0.000375	11.38		0.08	0.08	100.00
TOTALS				100.00	100.00	100.00

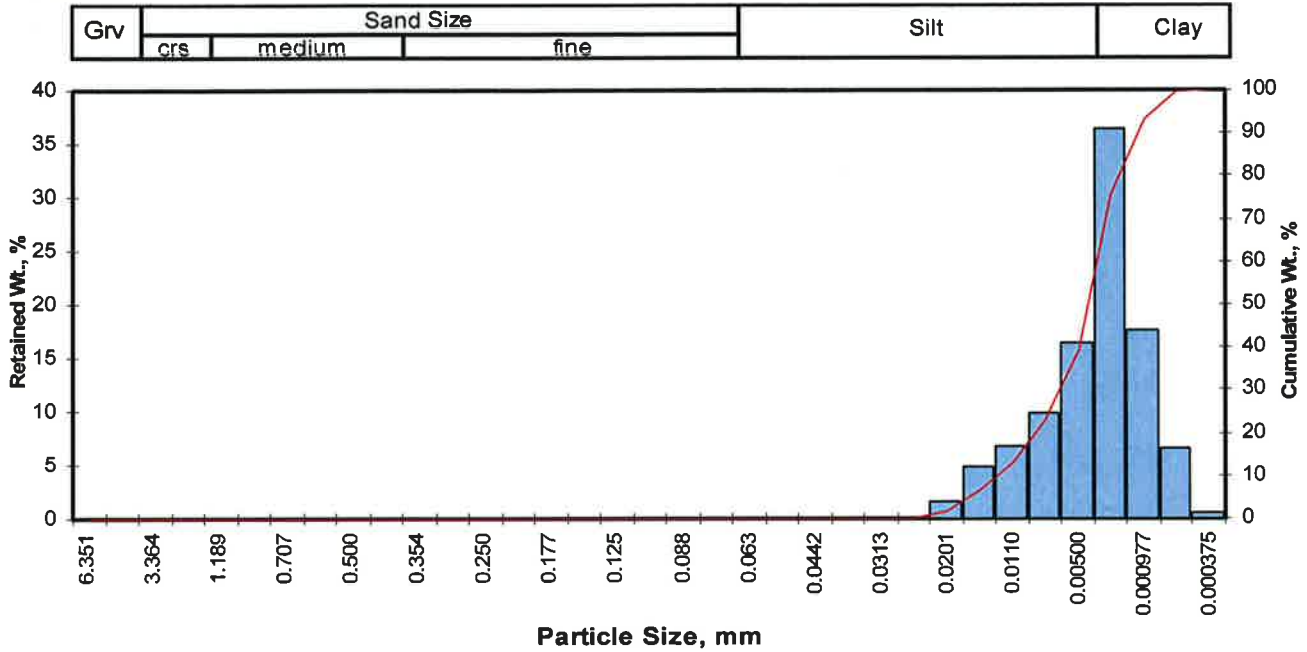
Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	1.58	0.0132	0.334
10	2.33	0.0078	0.198
16	2.83	0.0055	0.141
25	3.38	0.0038	0.096
40	4.06	0.0024	0.060
50	4.45	0.0018	0.046
60	4.87	0.0013	0.034
75	5.65	0.0008	0.020
84	6.36	0.0005	0.012
90	7.06	0.0003	0.007
95	8.24	0.0001	0.003

Measure	Trask	Inman	Folk-Ward
Median, phi	4.45	4.45	4.45
Median, in.	0.0018	0.0018	0.0018
Median, mm	0.046	0.046	0.046
Mean, phi	4.11	4.59	4.55
Mean, in.	0.0023	0.0016	0.0017
Mean, mm	0.058	0.041	0.043
Sorting	2.194	1.762	1.890
Skewness	0.956	0.082	0.110
Kurtosis	0.199	0.889	1.204

Grain Size Description Silt
 (ASTM-USCS Scale) (based on Mean from Trask)

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	3.76
Fine Sand	200	28.81
Silt	>0.005 mm	60.64
Clay	<0.005 mm	6.79
Total		100

Client: Crow Butte Resources, Inc. **PTS File No:** 43570
Project: Marsland Core **Sample ID:** M-1956C Run 6, Sample 1
Project No: N/A **Depth, ft:** 1011.8-1012.4



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
Inches	Millimeters					
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.00	0.00	0.00
0.0331	0.841	0.25	20	0.00	0.00	0.00
0.0278	0.707	0.50	25	0.00	0.00	0.00
0.0234	0.595	0.75	30	0.00	0.00	0.00
0.0197	0.500	1.00	35	0.00	0.00	0.00
0.0166	0.420	1.25	40	0.00	0.00	0.00
0.0139	0.354	1.50	45	0.00	0.00	0.00
0.0117	0.297	1.75	50	0.00	0.00	0.00
0.0098	0.250	2.00	60	0.00	0.00	0.00
0.0083	0.210	2.25	70	0.00	0.00	0.00
0.0070	0.177	2.50	80	0.00	0.00	0.00
0.0059	0.149	2.75	100	0.00	0.00	0.00
0.0049	0.125	3.00	120	0.00	0.00	0.00
0.0041	0.105	3.25	140	0.00	0.00	0.00
0.0035	0.088	3.50	170	0.00	0.00	0.00
0.0029	0.074	3.75	200	0.00	0.00	0.00
0.0025	0.063	4.00	230	0.00	0.00	0.00
0.0021	0.053	4.25	270	0.00	0.00	0.00
0.00174	0.0442	4.50	325	0.00	0.00	0.00
0.00146	0.0372	4.75	400	0.00	0.00	0.00
0.00123	0.0313	5.00	450	0.00	0.00	0.00
0.000986	0.0250	5.32	500	0.02	0.02	0.02
0.000790	0.0201	5.64	635	1.49	1.49	1.51
0.000615	0.0156	6.00		4.74	4.74	6.25
0.000435	0.0110	6.50		6.64	6.64	12.90
0.000308	0.00781	7.00		9.83	9.84	22.73
0.000197	0.00500	7.65		16.40	16.41	39.14
0.000077	0.00195	9.00		36.30	36.32	75.46
0.000038	0.000977	10.00		17.50	17.51	92.97
0.000019	0.000488	11.00		6.51	6.51	99.48
0.000015	0.000375	11.38		0.52	0.52	100.00
TOTALS				99.90	100.00	100.00

Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	5.90	0.0007	0.017
10	6.28	0.0005	0.013
16	6.66	0.0004	0.010
25	7.09	0.0003	0.007
40	7.68	0.0002	0.005
50	8.05	0.0001	0.004
60	8.42	0.0001	0.003
75	8.98	0.0001	0.002
84	9.49	0.0001	0.001
90	9.83	0.0000	0.001
95	10.31	0.0000	0.001

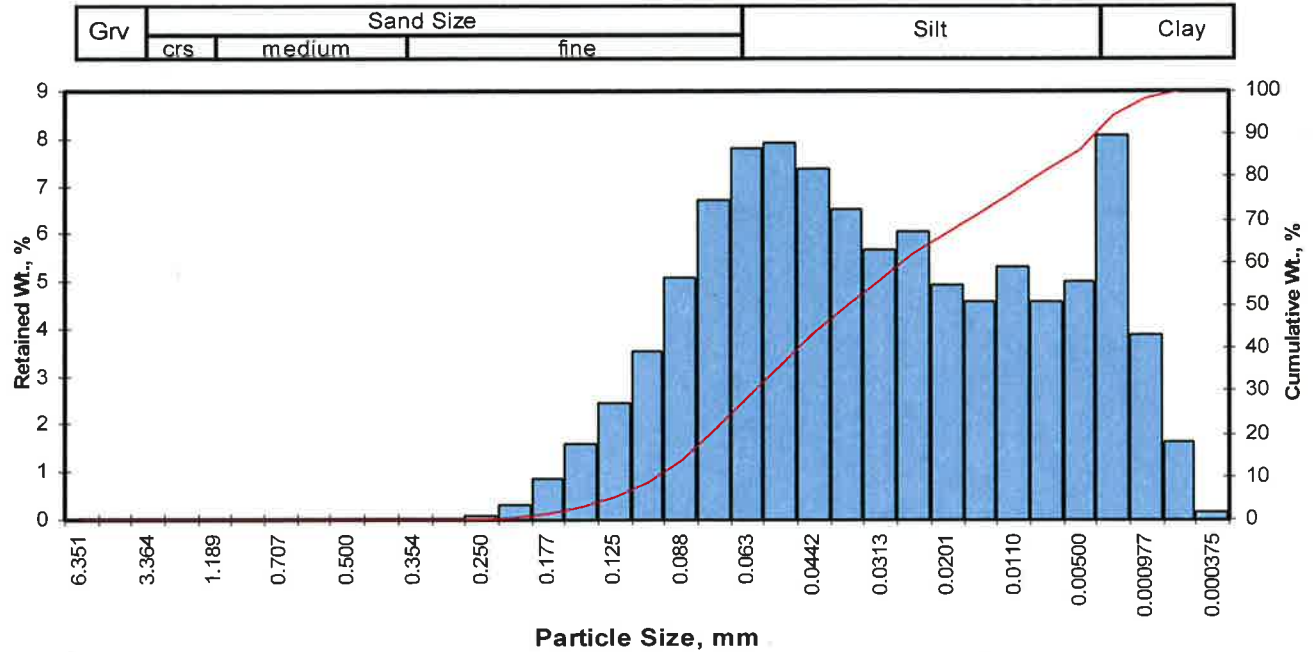
Measure	Trask	Inman	Folk-Ward
Median, phi	8.05	8.05	8.05
Median, in.	0.0001	0.0001	0.0001
Median, mm	0.004	0.004	0.004
Mean, phi	7.75	8.07	8.07
Mean, in.	0.0002	0.0001	0.0001
Mean, mm	0.005	0.004	0.004
Sorting	1.928	1.415	1.375
Skewness	1.010	0.016	0.021
Kurtosis	0.228	0.557	0.954

Grain Size Description Clay
 (ASTM-USCS Scale) (based on Mean from Trask)

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	0.00
Fine Sand	200	0.00
Silt	>0.005 mm	39.14
Clay	<0.005 mm	60.86
Total		100

Client: Crow Butte Resources, Inc.
 Project: Marsland Core
 Project No: N/A

PTS File No: 43570
 Sample ID: M-2169C Run 1, Sample 1
 Depth, ft: 110.0-110.5



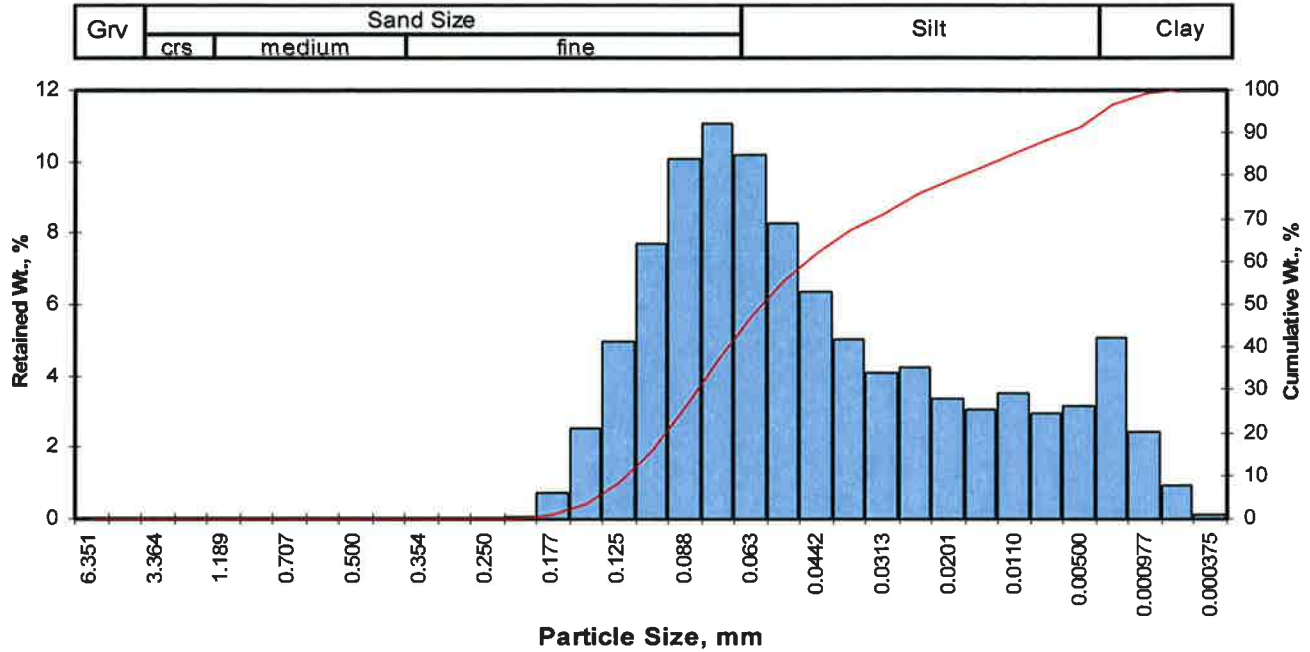
Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
Inches	Millimeters					
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.00	0.00	0.00
0.0331	0.841	0.25	20	0.00	0.00	0.00
0.0278	0.707	0.50	25	0.00	0.00	0.00
0.0234	0.595	0.75	30	0.00	0.00	0.00
0.0197	0.500	1.00	35	0.00	0.00	0.00
0.0166	0.420	1.25	40	0.00	0.00	0.00
0.0139	0.354	1.50	45	0.00	0.00	0.00
0.0117	0.297	1.75	50	0.00	0.00	0.00
0.0098	0.250	2.00	60	0.06	0.06	0.06
0.0083	0.210	2.25	70	0.32	0.32	0.38
0.0070	0.177	2.50	80	0.85	0.85	1.23
0.0059	0.149	2.75	100	1.60	1.60	2.83
0.0049	0.125	3.00	120	2.43	2.43	5.26
0.0041	0.105	3.25	140	3.54	3.54	8.80
0.0035	0.088	3.50	170	5.07	5.07	13.87
0.0029	0.074	3.75	200	6.71	6.71	20.58
0.0025	0.063	4.00	230	7.79	7.79	28.37
0.0021	0.053	4.25	270	7.92	7.92	36.29
0.00174	0.0442	4.50	325	7.37	7.37	43.66
0.00146	0.0372	4.75	400	6.51	6.51	50.17
0.00123	0.0313	5.00	450	5.65	5.65	55.82
0.000986	0.0250	5.32	500	6.07	6.07	61.89
0.000790	0.0201	5.64	635	4.94	4.94	66.83
0.000615	0.0156	6.00		4.56	4.56	71.39
0.000435	0.0110	6.50		5.32	5.32	76.71
0.000308	0.00781	7.00		4.59	4.59	81.30
0.000197	0.00500	7.65		5.01	5.01	86.31
0.000077	0.00195	9.00		8.07	8.07	94.38
0.000038	0.000977	10.00		3.87	3.87	98.25
0.000019	0.000488	11.00		1.61	1.61	99.86
0.000015	0.000375	11.38		0.14	0.14	100.00
TOTALS				100.00	100.00	100.00

Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	2.97	0.0050	0.127
10	3.31	0.0040	0.101
16	3.58	0.0033	0.084
25	3.89	0.0027	0.067
40	4.38	0.0019	0.048
50	4.74	0.0015	0.037
60	5.22	0.0011	0.027
75	6.34	0.0005	0.012
84	7.35	0.0002	0.006
90	8.26	0.0001	0.003
95	9.16	0.0001	0.002

Measure	Trask	Inman	Folk-Ward
Median, phi	4.74	4.74	4.74
Median, in.	0.0015	0.0015	0.0015
Median, mm	0.037	0.037	0.037
Mean, phi	4.65	5.46	5.22
Mean, in.	0.0016	0.0009	0.0011
Mean, mm	0.040	0.023	0.027
Sorting	2.335	1.884	1.880
Skewness	0.773	0.382	0.405
Kurtosis	0.282	0.642	1.036
Grain Size Description (ASTM-USCS Scale)		Silt (based on Mean from Trask)	

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	0.00
Fine Sand	200	20.58
Silt	>0.005 mm	65.73
Clay	<0.005 mm	13.69
Total		100

Client: Crow Butte Resources, Inc. **PTS File No:** 43570
 Project: Marsland Core **Sample ID:** M-2169C Run 2, Sample 3
 Project No: N/A **Depth, ft:** 156.5-157.2



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
Inches	Millimeters					
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.00	0.00	0.00
0.0331	0.841	0.25	20	0.00	0.00	0.00
0.0278	0.707	0.50	25	0.00	0.00	0.00
0.0234	0.595	0.75	30	0.00	0.00	0.00
0.0197	0.500	1.00	35	0.00	0.00	0.00
0.0166	0.420	1.25	40	0.00	0.00	0.00
0.0139	0.354	1.50	45	0.00	0.00	0.00
0.0117	0.297	1.75	50	0.00	0.00	0.00
0.0098	0.250	2.00	60	0.00	0.00	0.00
0.0083	0.210	2.25	70	0.07	0.07	0.07
0.0070	0.177	2.50	80	0.73	0.73	0.80
0.0059	0.149	2.75	100	2.55	2.55	3.35
0.0049	0.125	3.00	120	4.98	4.98	8.33
0.0041	0.105	3.25	140	7.70	7.70	16.02
0.0035	0.088	3.50	170	10.10	10.09	26.12
0.0029	0.074	3.75	200	11.10	11.09	37.21
0.0025	0.063	4.00	230	10.20	10.19	47.40
0.0021	0.053	4.25	270	8.30	8.29	55.70
0.00174	0.0442	4.50	325	6.38	6.38	62.08
0.00146	0.0372	4.75	400	5.02	5.02	67.09
0.00123	0.0313	5.00	450	4.11	4.11	71.20
0.000986	0.0250	5.32	500	4.26	4.26	75.46
0.000790	0.0201	5.64	635	3.36	3.36	78.81
0.000615	0.0156	6.00		3.06	3.06	81.87
0.000435	0.0110	6.50		3.52	3.52	85.39
0.000308	0.00781	7.00		2.95	2.95	88.34
0.000197	0.00500	7.65		3.15	3.15	91.49
0.000077	0.00195	9.00		5.08	5.08	96.56
0.000038	0.000977	10.00		2.41	2.41	98.97
0.000019	0.000488	11.00		0.95	0.95	99.92
0.000015	0.000375	11.38		0.08	0.08	100.00
TOTALS				100.10	100.00	100.00

Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	2.83	0.0055	0.140
10	3.05	0.0047	0.120
16	3.25	0.0041	0.105
25	3.47	0.0035	0.090
40	3.82	0.0028	0.071
50	4.08	0.0023	0.059
60	4.42	0.0018	0.047
75	5.29	0.0010	0.026
84	6.30	0.0005	0.013
90	7.34	0.0002	0.006
95	8.58	0.0001	0.003

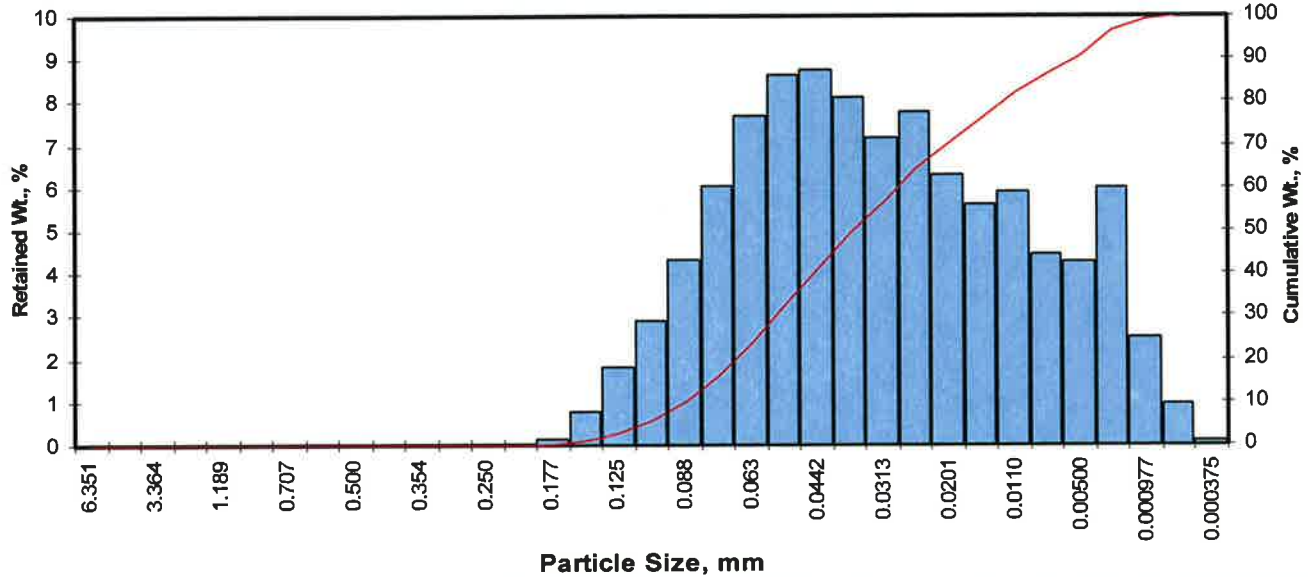
Measure	Trask	Inman	Folk-Ward
Median, phi	4.08	4.08	4.08
Median, in.	0.0023	0.0023	0.0023
Median, mm	0.059	0.059	0.059
Mean, phi	4.11	4.78	4.54
Mean, in.	0.0023	0.0014	0.0017
Mean, mm	0.058	0.037	0.043
Sorting	1.875	1.527	1.634
Skewness	0.812	0.457	0.512
Kurtosis	0.282	0.883	1.300

Grain Size Description (ASTM-USCS Scale) **Silt** (based on Mean from Trask)

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	0.00
Fine Sand	200	37.21
Silt	>0.005 mm	54.28
Clay	<0.005 mm	8.51
Total		100

Client: Crow Butte Resources, Inc.
 Project: Marsland Core
 Project No: N/A

PTS File No: 43570
 Sample ID: M-2169C Run 3, Sample 1
 Depth, ft: 355.0-356.0



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
Inches	Millimeters					
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.00	0.00	0.00
0.0331	0.841	0.25	20	0.00	0.00	0.00
0.0278	0.707	0.50	25	0.00	0.00	0.00
0.0234	0.595	0.75	30	0.00	0.00	0.00
0.0197	0.500	1.00	35	0.00	0.00	0.00
0.0166	0.420	1.25	40	0.00	0.00	0.00
0.0139	0.354	1.50	45	0.00	0.00	0.00
0.0117	0.297	1.75	50	0.00	0.00	0.00
0.0098	0.250	2.00	60	0.00	0.00	0.00
0.0083	0.210	2.25	70	0.00	0.00	0.00
0.0070	0.177	2.50	80	0.13	0.13	0.13
0.0059	0.149	2.75	100	0.79	0.79	0.92
0.0049	0.125	3.00	120	1.80	1.80	2.73
0.0041	0.105	3.25	140	2.90	2.90	5.63
0.0035	0.088	3.50	170	4.30	4.30	9.93
0.0029	0.074	3.75	200	6.04	6.04	15.97
0.0025	0.063	4.00	230	7.67	7.67	23.64
0.0021	0.053	4.25	270	8.62	8.62	32.26
0.00174	0.0442	4.50	325	8.74	8.74	41.00
0.00146	0.0372	4.75	400	8.10	8.10	49.10
0.00123	0.0313	5.00	450	7.16	7.16	56.26
0.000986	0.0250	5.32	500	7.75	7.75	64.01
0.000790	0.0201	5.64	635	6.28	6.28	70.29
0.000615	0.0156	6.00		5.59	5.59	75.88
0.000435	0.0110	6.50		5.90	5.90	81.78
0.000308	0.00781	7.00		4.43	4.43	86.21
0.000197	0.00500	7.65		4.28	4.28	90.49
0.000077	0.00195	9.00		5.97	5.97	96.46
0.000038	0.000977	10.00		2.52	2.52	98.98
0.000019	0.000488	11.00		0.94	0.94	99.92
0.000015	0.000375	11.38		0.08	0.08	100.00
TOTALS				100.00	100.00	100.00

Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	3.20	0.0043	0.109
10	3.50	0.0035	0.088
16	3.75	0.0029	0.074
25	4.04	0.0024	0.061
40	4.47	0.0018	0.045
50	4.78	0.0014	0.036
60	5.15	0.0011	0.028
75	5.94	0.0006	0.016
84	6.75	0.0004	0.009
90	7.57	0.0002	0.005
95	8.67	0.0001	0.002

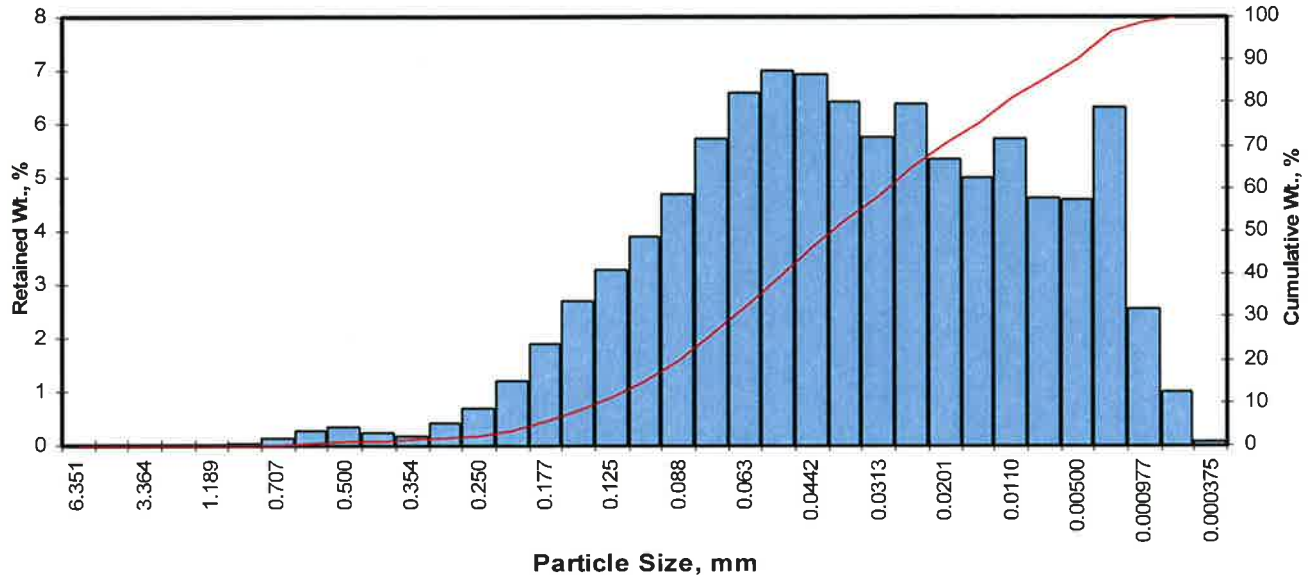
Measure	Trask	Inman	Folk-Ward
Median, phi	4.78	4.78	4.78
Median, in.	0.0014	0.0014	0.0014
Median, mm	0.036	0.036	0.036
Mean, phi	4.70	5.25	5.09
Mean, in.	0.0015	0.0010	0.0012
Mean, mm	0.039	0.026	0.029
Sorting	1.934	1.500	1.579
Skewness	0.865	0.313	0.367
Kurtosis	0.269	0.824	1.178

Grain Size Description (ASTM-USCS Scale) **Silt** (based on Mean from Trask)

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	0.00
Fine Sand	200	15.97
Silt	>0.005 mm	74.53
Clay	<0.005 mm	9.51
Total		100

Client: Crow Butte Resources, Inc. PTS File No: 43570
 Project: Marsland Core Sample ID: M-2169C Run 4, Sample 1
 Project No: N/A Depth, ft: 470.0-470.5

Grv	Sand Size			Silt	Clay
	crs	medium	fine		



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
Inches	Millimeters					
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.00	0.00	0.00
0.0331	0.841	0.25	20	0.05	0.05	0.05
0.0278	0.707	0.50	25	0.15	0.15	0.20
0.0234	0.595	0.75	30	0.28	0.28	0.48
0.0197	0.500	1.00	35	0.33	0.33	0.81
0.0166	0.420	1.25	40	0.24	0.24	1.05
0.0139	0.354	1.50	45	0.18	0.18	1.23
0.0117	0.297	1.75	50	0.40	0.40	1.63
0.0098	0.250	2.00	60	0.69	0.69	2.32
0.0083	0.210	2.25	70	1.21	1.21	3.53
0.0070	0.177	2.50	80	1.91	1.91	5.44
0.0059	0.149	2.75	100	2.69	2.69	8.13
0.0049	0.125	3.00	120	3.29	3.29	11.42
0.0041	0.105	3.25	140	3.88	3.88	15.30
0.0035	0.088	3.50	170	4.70	4.70	20.00
0.0029	0.074	3.75	200	5.72	5.72	25.72
0.0025	0.063	4.00	230	6.60	6.60	32.32
0.0021	0.053	4.25	270	7.00	7.00	39.32
0.00174	0.0442	4.50	325	6.92	6.92	46.24
0.00146	0.0372	4.75	400	6.41	6.41	52.65
0.00123	0.0313	5.00	450	5.75	5.75	58.40
0.000986	0.0250	5.32	500	6.37	6.37	64.77
0.000790	0.0201	5.64	635	5.34	5.34	70.11
0.000615	0.0156	6.00		4.99	4.99	75.10
0.000435	0.0110	6.50		5.73	5.73	80.83
0.000308	0.00781	7.00		4.62	4.62	85.45
0.000197	0.00500	7.65		4.60	4.60	90.05
0.000077	0.00195	9.00		6.31	6.31	96.36
0.000038	0.000977	10.00		2.56	2.56	98.92
0.000019	0.000488	11.00		1.00	1.00	99.92
0.000015	0.000375	11.38		0.08	0.08	100.00
TOTALS				100.00	100.00	100.00

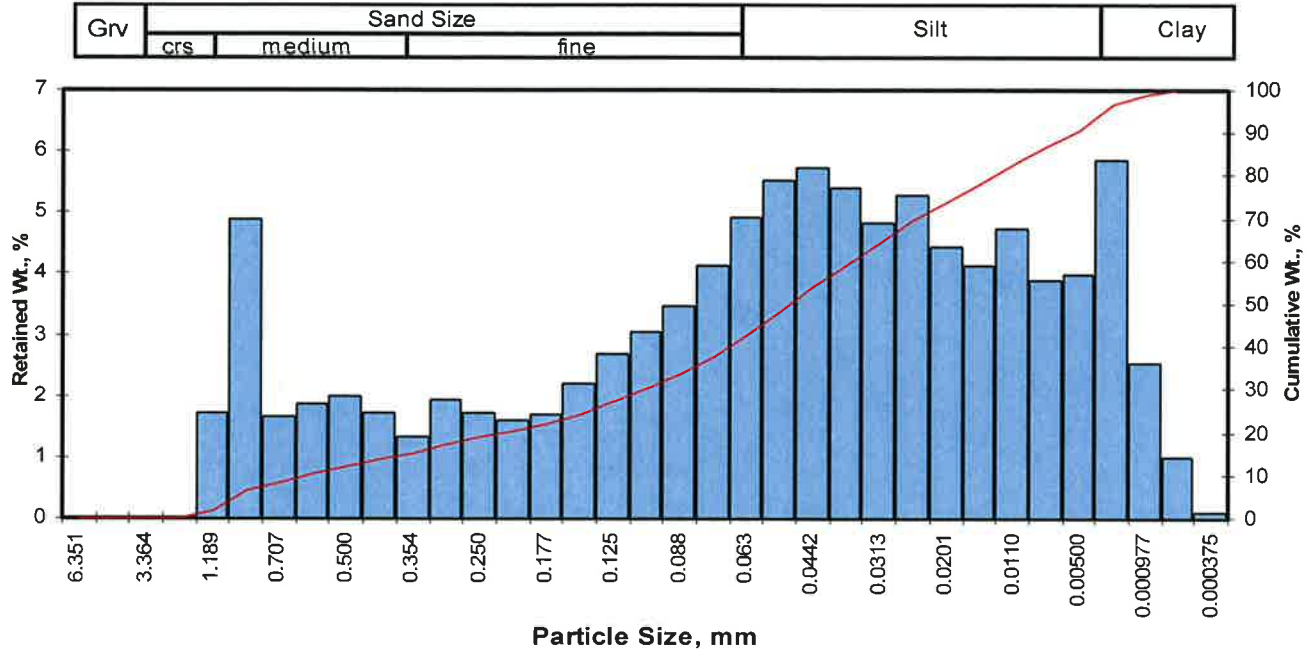
Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	2.44	0.0072	0.184
10	2.89	0.0053	0.135
16	3.29	0.0040	0.102
25	3.72	0.0030	0.076
40	4.27	0.0020	0.052
50	4.65	0.0016	0.040
60	5.08	0.0012	0.030
75	5.99	0.0006	0.016
84	6.84	0.0003	0.009
90	7.64	0.0002	0.005
95	8.71	0.0001	0.002

Measure	Trask	Inman	Folk-Ward
Median, phi	4.65	4.65	4.65
Median, in.	0.0016	0.0016	0.0016
Median, mm	0.040	0.040	0.040
Mean, phi	4.45	5.07	4.93
Mean, in.	0.0018	0.0012	0.0013
Mean, mm	0.046	0.030	0.033
Sorting	2.200	1.778	1.838
Skewness	0.865	0.235	0.266
Kurtosis	0.232	0.762	1.129

Grain Size Description (ASTM-USCS Scale)	Silt (based on Mean from Trask)
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Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	1.05
Fine Sand	200	24.67
Silt	>0.005 mm	64.33
Clay	<0.005 mm	9.95
Total		100

Client: Crow Butte Resources, Inc. **PTS File No:** 43570
Project: Marsland Core **Sample ID:** M-2169C Run 5, Sample 1
Project No: N/A **Depth, ft:** 608.9-609.5



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
Inches	Millimeters					
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	1.72	1.72	1.72
0.0331	0.841	0.25	20	4.90	4.90	6.62
0.0278	0.707	0.50	25	1.67	1.67	8.29
0.0234	0.595	0.75	30	1.86	1.86	10.15
0.0197	0.500	1.00	35	1.99	1.99	12.14
0.0166	0.420	1.25	40	1.73	1.73	13.87
0.0139	0.354	1.50	45	1.32	1.32	15.19
0.0117	0.297	1.75	50	1.94	1.94	17.13
0.0098	0.250	2.00	60	1.71	1.71	18.84
0.0083	0.210	2.25	70	1.60	1.60	20.44
0.0070	0.177	2.50	80	1.70	1.70	22.14
0.0059	0.149	2.75	100	2.19	2.19	24.33
0.0049	0.125	3.00	120	2.70	2.70	27.03
0.0041	0.105	3.25	140	3.05	3.05	30.08
0.0035	0.088	3.50	170	3.46	3.46	33.54
0.0029	0.074	3.75	200	4.13	4.13	37.67
0.0025	0.063	4.00	230	4.92	4.92	42.59
0.0021	0.053	4.25	270	5.52	5.52	48.11
0.00174	0.0442	4.50	325	5.73	5.73	53.84
0.00146	0.0372	4.75	400	5.41	5.41	59.25
0.00123	0.0313	5.00	450	4.83	4.83	64.08
0.000986	0.0250	5.32	500	5.28	5.28	69.36
0.000790	0.0201	5.64	635	4.42	4.42	73.78
0.000615	0.0156	6.00		4.14	4.14	77.92
0.000435	0.0110	6.50		4.75	4.75	82.67
0.000308	0.00781	7.00		3.88	3.88	86.56
0.000197	0.00500	7.65		3.98	3.98	90.54
0.000077	0.00195	9.00		5.84	5.84	96.38
0.000038	0.000977	10.00		2.54	2.54	98.92
0.000019	0.000488	11.00		1.00	1.00	99.92
0.000015	0.000375	11.38		0.08	0.08	100.00
TOTALS				100.00	100.00	100.00

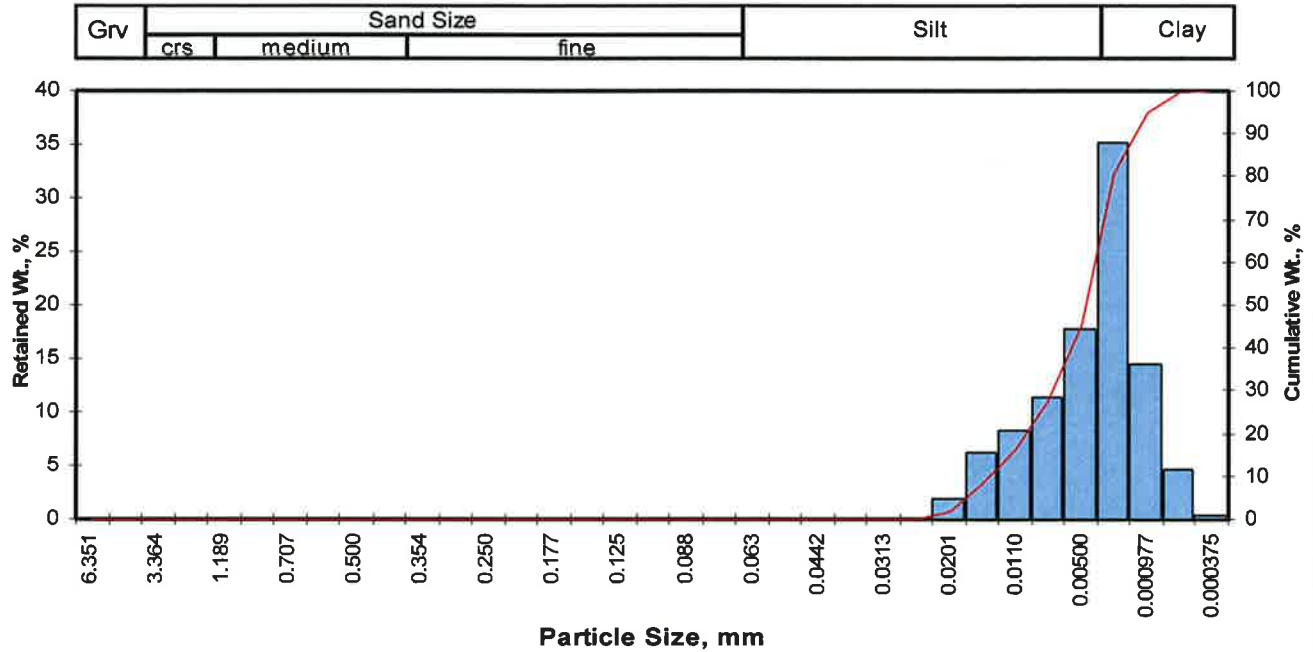
Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	0.08	0.0371	0.943
10	0.73	0.0237	0.603
16	1.60	0.0129	0.329
25	2.81	0.0056	0.142
40	3.87	0.0027	0.068
50	4.33	0.0020	0.050
60	4.79	0.0014	0.036
75	5.75	0.0007	0.019
84	6.67	0.0004	0.010
90	7.56	0.0002	0.005
95	8.68	0.0001	0.002

Measure	Trask	Inman	Folk-Ward
Median, phi	4.33	4.33	4.33
Median, in.	0.0020	0.0020	0.0020
Median, mm	0.050	0.050	0.050
Mean, phi	3.63	4.14	4.20
Mean, in.	0.0032	0.0022	0.0021
Mean, mm	0.081	0.057	0.054
Sorting	2.764	2.533	2.569
Skewness	1.038	-0.077	-0.033
Kurtosis	0.104	0.697	1.201

Grain Size Description (ASTM-USCS Scale): **Fine sand**
 (based on Mean from Trask)

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	13.87
Fine Sand	200	23.80
Silt	>0.005 mm	52.86
Clay	<0.005 mm	9.46
Total		100

Client: Crow Butte Resources, Inc. **PTS File No:** 43570
Project: Marsland Core **Sample ID:** M-2169C Run 7, Sample 1
Project No: N/A **Depth, ft:** 1135.5-1136.0



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
Inches	Millimeters					
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.00	0.00	0.00
0.0331	0.841	0.25	20	0.00	0.00	0.00
0.0278	0.707	0.50	25	0.00	0.00	0.00
0.0234	0.595	0.75	30	0.00	0.00	0.00
0.0197	0.500	1.00	35	0.00	0.00	0.00
0.0166	0.420	1.25	40	0.00	0.00	0.00
0.0139	0.354	1.50	45	0.00	0.00	0.00
0.0117	0.297	1.75	50	0.00	0.00	0.00
0.0098	0.250	2.00	60	0.00	0.00	0.00
0.0083	0.210	2.25	70	0.00	0.00	0.00
0.0070	0.177	2.50	80	0.00	0.00	0.00
0.0059	0.149	2.75	100	0.00	0.00	0.00
0.0049	0.125	3.00	120	0.00	0.00	0.00
0.0041	0.105	3.25	140	0.00	0.00	0.00
0.0035	0.088	3.50	170	0.00	0.00	0.00
0.0029	0.074	3.75	200	0.00	0.00	0.00
0.0025	0.063	4.00	230	0.00	0.00	0.00
0.0021	0.053	4.25	270	0.00	0.00	0.00
0.00174	0.0442	4.50	325	0.00	0.00	0.00
0.00146	0.0372	4.75	400	0.00	0.00	0.00
0.00123	0.0313	5.00	450	0.00	0.00	0.00
0.000986	0.0250	5.32	500	0.02	0.02	0.02
0.000790	0.0201	5.64	635	1.86	1.86	1.88
0.000615	0.0156	6.00		6.16	6.16	8.05
0.000435	0.0110	6.50		8.34	8.34	16.39
0.000308	0.00781	7.00		11.30	11.30	27.69
0.000197	0.00500	7.65		17.70	17.70	45.40
0.000077	0.00195	9.00		35.10	35.11	80.50
0.000038	0.000977	10.00		14.40	14.40	94.91
0.000019	0.000488	11.00		4.73	4.73	99.64
0.000015	0.000375	11.38		0.36	0.36	100.00
TOTALS				100.00	100.00	100.00

Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	5.82	0.0007	0.018
10	6.12	0.0006	0.014
16	6.48	0.0004	0.011
25	6.88	0.0003	0.008
40	7.45	0.0002	0.006
50	7.82	0.0002	0.004
60	8.21	0.0001	0.003
75	8.79	0.0001	0.002
84	9.24	0.0001	0.002
90	9.66	0.0000	0.001
95	10.02	0.0000	0.001

Measure	Trask	Inman	Folk-Ward
Median, phi	7.82	7.82	7.82
Median, in.	0.0002	0.0002	0.0002
Median, mm	0.004	0.004	0.004
Mean, phi	7.54	7.86	7.85
Mean, in.	0.0002	0.0002	0.0002
Mean, mm	0.005	0.004	0.004
Sorting	1.936	1.383	1.327
Skewness	0.992	0.027	0.037
Kurtosis	0.236	0.518	0.902

Grain Size Description Silt
 (ASTM-USCS Scale) (based on Mean from Trask)


Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	0.00
Fine Sand	200	0.00
Silt	>0.005 mm	45.40
Clay	<0.005 mm	54.60
Total		100



MINERALOGY, INC.

Final Test Report

Client: PTS Laboratories, Inc. MI#: 13383
Project: Marsland Core / PTS# 43570 Sample Type: Conventional Core
PO#: 13-349 Date: 10.03.13

Contact	Rachel Spitz
Address	PTS Laboratories, Inc. 8100 Secura Way Santa Fe Springs, CA 90670
E-mail	rspitz@ptslabs.com
Phone	562.347.2500
Project ID:	Marsland Core / PTS# 43570 / PO# 13-349
Test Methods	XRD (B&C) (x30)
Calibration Date	10.03.13
MI Lab Supervisor	
	Timothy B. Murphy

CONDITIONS AND QUALIFICATIONS

Mineralogy, Inc. will endeavor to provide accurate and reliable laboratory measurements of the samples provided by the client. The results of any x-ray diffraction, petrographic or core analysis test are necessarily influenced by the condition and selection of the samples to be analyzed. It should be recognized that geological samples are commonly heterogeneous and lack uniform properties. Mineralogical, geochemical and/or petrographic data obtained for a specific sample provides compositional data pertinent to that specific sampling location. Such "site-specific data" may fail to provide adequate characterization of the range of compositional variability possible within a given project area, thus the "projection" of these laboratory findings and values to adjoining, "untested" areas of the formation or project area is inherently risky, and exceeds the scope of the laboratory work request. Hence, Mineralogy, Inc. shall not assume any liability risk or responsibility for any loss or potential failure associated with the application of "site or sample-specific laboratory data" to "untested" areas of the formation or project area. Unless otherwise directed, the samples selected for analysis will be chosen to reflect a visually representative portion of the bulk sample submitted for analysis. Where provided, the interpretation of x-ray diffraction, petrographic or core analysis results constitutes the best geological judgment of Mineralogy, Inc., and is subject to the sampling limitations described above, and the detection limits inherent to semi-quantitative and/or qualitative mineralogical and microscopic analysis. Mineralogy, Inc. assumes no responsibility nor offers any guarantee of the productivity, suitability or performance of any oil or gas well, hydrocarbon recovery process, dimension stone, and/or ore material based upon the data or conclusions presented in this report.



TABLE I-1

X-RAY DIFFRACTION ANALYSIS

Client: PTS Laboratories, Inc. MI#: 13383
 Project ID: Marsland Core / PTS# 43570 / PO# 13-349 Sample Type: Conventional Core

X-Ray Diffraction Results						
Mineral Constituents	Sample ID	M-533C.Run 1.S1	M-533C.Run 1.S2	M-533C.Run 3.S1	M-533C.Run 3.S2	M-533C.Run 5.S1
	Lab ID	13383-01	13383-02	13383-03	13383-04	13383-05
Chemical Formula	Relative Abundance (%)					
Quartz	SiO ₂	63	17	4	9	29
Plagioclase Feldspar	(Na _{0.26} Ca _{0.24})Al _{0.735} Si _{1.266} O ₄	27	12	4	11	6
K-Feldspar - Microcline	KAlSi ₃ O ₈	7	5	1	2	4
Calcite	CaCO ₃				6	
Ferroan Dolomite	Ca(Mg _{0.07} Fe _{0.33})(CO ₃) ₂	trc				
Siderite	FeCO ₃					
Halite	NaCl			trc		
Fluorapatite	Ca ₅ F(PO ₄) ₃		1		1	1
Augite	Ca(Fe,Mg)Si ₂ O ₆	trc		trc		1
Hornblende	Ca ₂ (Mg,Fe) ₅ (Si,Al) ₈ O ₂₂ (OH) ₆	trc				trc
Gypsum	CaSO ₄ · 2H ₂ O					
Goethite	alpha-FeOOH	trc				
Clinoptilolite	(Na,K,Ca) ₆ (Si,Al) ₃₆ O ₇₂ · 20H ₂ O		trc			1
Kaolinite	Al ₂ Si ₂ O ₅ (OH) ₄					1
Chlorite	(Mg,Al) ₆ (Si,Al) ₄ O ₁₀ (OH) ₈	trc	trc			2
Illite/Mica	KAl ₂ (Si ₃ AlO ₁₀)(OH) ₂	trc	5	1	1	4
Montmorillonite	(Na,Ca) _{0.3} (Al,Mg) ₂ Si ₄ O ₁₀ (OH) ₂ · xH ₂ O				7	
Mixed-Layered Illite/Smectite	K _{0.5} Al ₂ (Si,Al) ₄ O ₁₀ (OH) ₂ · 2H ₂ O	3	30	8		33
Amorphous			30	82	63	18
TOTAL		100	100	100	100	100
% Illite Layers In ML Illite/Smectite	+/- 5%	10%	10%	10%	10%	10%



TABLE I-2 X-RAY DIFFRACTION ANALYSIS

Client: PTS Laboratories, Inc. MI#: 13383
 Project ID: Marsland Core / PTS# 43570 / PO# 13-349 Sample Type: Conventional Core

X-Ray Diffraction Results						
Mineral Constituents	Sample ID	M-1635C.Run 1.S1	M-1635C.Run 1.S2	M-1635C.Run 2.S1	M-1635C.Run 2.S2	M-1635C.Run 3.S1
	Lab ID	13383-06	13383-07	13383-08	13383-09	13383-10
	Chemical Formula	Relative Abundance (%)				
Quartz	SiO ₂	12	15	4	9	9
Plagioclase Feldspar	(Na _{0.28} Ca _{0.24})Al _{0.735} Si _{1.266} O ₄	9	13	3	11	9
K-Feldspar - Microcline	KAlSi ₃ O ₈	3	3	1	3	2
Calcite	CaCO ₃	50	46			15
Ferroan Dolomite	Ca(Mg _{0.67} Fe _{0.33})(CO ₃) ₂					trc
Siderite	FeCO ₃					
Halite	NaCl					
Fluorapatite	Ca ₅ F(PO ₄) ₃					
Augite	Ca(Fe,Mg)Si ₂ O ₆					
Hornblende	Ca ₂ (Mg,Fe) ₅ (Si,Al) ₈ O ₂₂ (OH) ₆					
Gypsum	CaSO ₄ · 2H ₂ O					
Goethite	alpha-FeOOH					
Clinoptilolite	(Na,K,Ca) ₆ (Si,Al) ₅₆ O ₇₂ · 20H ₂ O					
Kaolinite	Al ₂ Si ₂ O ₅ (OH) ₄					
Chlorite	(Mg,Al) ₆ (Si,Al) ₄ O ₁₀ (OH) ₃	1		1		trc
Illite/Mica	KAl ₂ (Si ₅ AlO ₁₀)(OH) ₂	1	1	1	1	3
Montmorillonite	(Na,Ca) _{0.3} (Al,Mg) ₂ Si ₄ O ₁₀ (OH) ₂ · xH ₂ O			6	9	34
Mixed-Layered Illite/Smectite	K _{0.5} Al ₂ (Si,Al) ₄ O ₁₀ (OH) ₂ · 2H ₂ O	8	5			
Amorphous		16	17	84	67	28
TOTAL		100	100	100	100	100
% Illite Layers in ML Illite/Smectite		5%	10%			



MINERALOGY, INC.

TABLE I-3 X-RAY DIFFRACTION ANALYSIS

Client: PTS Laboratories, Inc. MI#: 13383
 Project ID: Marsland Core / PTS# 43570 / PO# 13-349 Sample Type: Conventional Core

X-Ray Diffraction Results						
Mineral Constituents	Sample ID	M-1635C,Run 6.S1	M-1912C,Run 1.S1	M-1912C,Run 2.S1	M-1912C,Run 3.S1	M-1912C,Run 3.S2
	Lab ID	13383-11	13383-12	13383-13	13383-14	13383-15
Chemical Formula	Relative Abundance (%)					
Quartz	SiO ₂	21	50	40	17	16
Plagioclase Feldspar	(Na _{0.26} Ca _{0.24})Al _{0.735} Si _{1.266} O ₄	5	22	27	17	14
K-Feldspar - Microcline	KAlSi ₃ O ₈	2	9	7	5	5
Calcite	CaCO ₃					9
Ferroan Dolomite	Ca(Mg _{0.67} Fe _{0.33})(CO ₃) ₂	1	1			
Siderite	FeCO ₃					
Pyrite	FeS ₂					1
Fluorapatite	Ca ₅ F(PO ₄) ₃	trc				
Augite	Ca(Fe,Mg)Si ₂ O ₆					
Hornblende	Ca ₂ (Mg,Fe) ₅ (Si,Al) ₈ O ₂₂ (OH) ₆		1		1	
Gypsum	CaSO ₄ · 2H ₂ O					
Goethite	alpha-FeOOH					
Clinoptilolite	(Na,K,Ca) ₈ (Si,Al) ₃₈ O ₇₂ · 20H ₂ O					
Kaolinite	Al ₂ Si ₂ O ₅ (OH) ₄					
Chlorite	(Mg,Al) ₆ (Si,Al) ₄ O ₁₀ (OH) ₈	5			trc	
Illite/Mica	KAl ₂ (Si ₆ AlO ₁₀)(OH) ₂	4	trc	1	1	1
Montmorillonite	(Na,Ca) _{0.3} (Al,Mg) ₂ Si ₄ O ₁₀ (OH) ₂ · xH ₂ O					
Mixed-Layered Illite/Smectite	K _{0.5} Al ₂ (Si,Al) ₄ O ₁₀ (OH) ₂ · 2H ₂ O	42	5	7	27	20
Amorphous		20	12	18	32	34
TOTAL		100	100	100	100	100
+/- 5%		20%	20%	20%	20%	20%
%. Illite Layers in Mt. Illite/Smectite						



TABLE I-4 X-RAY DIFFRACTION ANALYSIS

Client: PTS Laboratories, Inc. M#: 13383
 Project ID: Marsland Core / PTS# 43570 / PO# 13-349 Sample Type: Conventional Core

X-Ray Diffraction Results		Sample ID	M-1912C.Run 4.S1	M-1912C.Run 4.S2	M-1956C.Run 1.S1	M-1956C.Run 3.S1	M-1956C.Run 4.S1
Mineral Constituents	Chemical Formula	Lab ID	13383-16	13383-17	13383-18	13383-19	13383-20
		Relative Abundance (%)					
Quartz	SiO ₂		22	38	64	13	13
Plagioclase Feldspar	(Na _{0.26} Ca _{0.24})Al _{0.735} Si _{2.265} O ₄		4	8	22	13	14
K-Feldspar - Microcline	KAlSi ₃ O ₈		3	10	9	5	1
Calcite	CaCO ₃		1	1	1	1	9
Ferroan Dolomite	Ca(Mg _{0.67} Fe _{0.33})(CO ₃) ₂		1	trc	1		
Siderite	FeCO ₃						
Pyrite	FeS ₂						
Fluorapatite	Ca ₅ F(PO ₄) ₃						
Augite	Ca(Fe,Mg)Si ₂ O ₆				trc	trc	
Hornblende	Ca ₂ (Mg,Fe) ₅ (Si,Al) ₈ O ₂₂ (OH) ₆						
Gypsum	CaSO ₄ · 2H ₂ O						
Goethite	alpha-FeOOH				trc		
Glimpilloite	(Na,K,Ca) ₃ (Si,Al) ₃ O ₁₀ · 20H ₂ O						
Kaolinite	Al ₂ Si ₂ O ₅ (OH) ₄						
Chlorite	(Mg,Al) ₃ (Si,Al) ₄ O ₁₀ (OH) ₈		1				1
Illite/Mica	KAl ₂ (Si ₄ AlO ₁₀)(OH) ₂		4	3	trc	5	22
Montmorillonite	(Na,Ca) _{0.31} (Al,Mg) ₂ Si ₄ O ₁₀ (OH) ₂ · xH ₂ O		45	25	3	21	40
Mixed-Layered Illite/Smectite	K _{0.5} Al ₂ (Si,Al) ₄ O ₁₀ (OH) ₂ · 2H ₂ O		20	15			
Amorphous							
TOTAL			100	100	100	100	100
% Illite Layers in ML Illite/Smectite	+/- 5%		10%	10%	10%	15%	



TABLE I-5

X-RAY DIFFRACTION ANALYSIS

Client: PTS Laboratories, Inc. MI#: 13383
 Project ID: Marsland Core / PTS# 43570 / PO# 13-349 Sample Type: Conventional Core

X-Ray Diffraction Results						
Mineral Constituents	Sample ID	M-1956C.Run 4.S2	M-1956C.Run 5.S1	M-1956C.Run 5.S2	M-1956C.Run 6.S1	M-2169C.Run 1.S1
	Lab ID	13383-21	13383-22	13383-23	13383-24	13383-25
	Chemical Formula	Relative Abundance (%)				
Quartz	SiO ₂	12	12	4	22	7
Plagioclase Feldspar	(Na _{0.26} Ca _{0.24})Al _{0.735} Si _{1.265} O ₄	15	12	5	4	8
K-Feldspar - Microcline	KAlSi ₃ O ₈	1	3	1	1	2
Calcite	CaCO ₃		10	58	trc	56
Ferroan Dolomite	Ca(Mg _{0.67} Fe _{0.33})(CO ₃) ₂					1
Siderite	FeCO ₃					
Halite	NaCl					
Fluorapatite	Ca ₅ F(PO ₄) ₃					
Augite	Ca(Fe,Mg)Si ₂ O ₆					
Hornblende	Ca ₂ (Mg,Fe) ₅ (Si,Al) ₈ O ₂₂ (OH) ₆	1				
Gypsum	CaSO ₄ · 2H ₂ O					
Goethite	alpha-FeOOH					
Clinoptilolite	(Na,K,Ca) ₆ (Si,Al) ₃₆ O ₇₂ · 20H ₂ O					
Kaolinite	Al ₂ Si ₂ O ₅ (OH) ₄				2	
Chlorite	(Mg,Al) ₃ (Si,Al) ₄ O ₁₀ (OH) ₈				2	
Illite/Mica	KAl ₂ (Si ₃ AlO ₁₀)(OH) ₂	1	2	1	10	1
Montmorillonite	(Na,Ca) _{0.3} (Al,Mg) ₂ Si ₄ O ₁₀ (OH) ₂ · xH ₂ O		29			
Mixed-Layered Illite/Smectite	K _{0.5} Al ₂ (Si,Al) ₄ O ₁₀ (OH) ₂ · 2H ₂ O	25		9	37	10
Amorphous		45	32	22	22	15
TOTAL		100	100	100	100	100
% Illite Layers in ML Illite/Smectite	+/- 5%	20%		10%	30%	15%




TABLE I-6 X-RAY DIFFRACTION ANALYSIS

Client: PTS Laboratories, Inc. MI#: 13383
 Project ID: Marsland Core / PTS# 43570 / PO# 13-349 Sample Type: Conventional Core


X-Ray Diffraction Results		Sample ID	M-2169C.Run 2.S3	M-2169C.Run 3.S1	M-2169C.Run 4.S1	M-2169C.Run 5.S1	M-2169C.Run 7.S1
Mineral Constituents	Chemical Formula	Lab ID	13383-26	13383-27	13383-28	13383-29	13383-30
		Relative Abundance (%)					
Quartz	SiO ₂		21	5	12	13	24
Plagioclase Feldspar	(Na _{0.26} Ca _{0.24})Al _{0.735} Si _{1.266} O ₄		16	7	11	13	4
K-Feldspar - Microcline	KAlSi ₃ O ₈		3	1	2	2	4
Calcite	CaCO ₃		trc	2	6	11	trc
Ferroan Dolomite	Ca(Mg _{0.67} Fe _{0.33})(CO ₃) ₂						2
Siderite	FeCO ₃						
Halite	NaCl			trc			
Fluorapatite	Ca ₅ F(PO ₄) ₃						
Augite	Ca(Fe, Mg)Si ₂ O ₆						
Hornblende	Ca ₂ (Mg, Fe) ₅ (Si, Al) ₈ O ₂₂ (OH) ₆		trc				
Gypsum	CaSO ₄ · 2H ₂ O			trc			
Goethite	alpha-FeOOH						
Clinoptilolite	(Na, K, Ca) ₆ (Si, Al) ₉ O ₇₂ · 20H ₂ O						
Kaolinite	Al ₂ Si ₂ O ₅ (OH) ₄						2
Chlorite	(Mg, Al) ₆ (Si, Al) ₄ O ₁₀ (OH) ₈						2
Illite/Mica	KAl ₂ (Si ₃ AlO ₁₀)(OH) ₂		2	1	1	1	4
Montmorillonite	(Na, Ca) _{0.3} (Al, Mg) ₂ Si ₄ O ₁₀ (OH) ₂ · xH ₂ O			19	28	25	
Mixed-Layered Illite/Smectite	K _{0.5} Al ₂ (Si, Al) ₄ O ₁₀ (OH) ₂ · 2H ₂ O		13				30
Amorphous			45	65	40	35	28
TOTAL			100	100	100	100	100
% Illite Layers in ML Illite/Smectite			10%				10%

PTS Laboratories, Inc. CHAIN OF CUSTODY RECORD PAGE 1 OF 3


COMPANY
 PTS Laboratories, Inc.
 ADDRESS CITY ZIP CODE
 8100 Secura Way, Santa Fe Springs, CA 90670
PROJECT MANAGER
 Rachel Spitz
PROJECT NAME
 Marsland Core
PROJECT NUMBER
 N/A
SITE LOCATION
 N/A
SAMPLER SIGNATURE 

PHONE NUMBER 562-347-2500
FAX NUMBER 562-279-1150
TURNAROUND TIME
 24 HOURS 5 DAYS
 48 HOURS **NORMAL**
 72 HOURS
 OTHER:
SAMPLE INTEGRITY (CHECK):
 INTACT ON ICE
PTS QUOTE NO.
PTS FILE:
 43570
COMMENTS


SAMPLE ID NUMBER	DATE	TIME	DEPTH, FT	NUMBER OF SAMPLES	XRD	ANALYSIS REQUEST										COMMENTS			
M-533C Run 1, Sample 1	20130812	N/A	63.9-64.9	1	X														
M-533C Run 1, Sample 2	20130812	N/A	68.8-69.8	1	X														
M-533C Run 3, Sample 1	20130812	N/A	299.0-300.0	1	X														
M-533C Run 3, Sample 2	20130812	N/A	306.0-307.0	1	X														
M-533C Run 5, Sample 1	20130812	N/A	1052.5-1053.0	1	X														
M-1635C Run 1, Sample 1	20130822	N/A	70.0-70.5	1	X														
M-1635C Run 1, Sample 2	20130822	N/A	79.5-80.0	1	X														
M-1635C Run 2, Sample 1	20130822	N/A	197.0-197.5	1	X														
M-1635C Run 2, Sample 2	20130822	N/A	206.5-207.0	1	X														
M-1635C Run 3, Sample 1	20130822	N/A	530.0-530.5	1	X														
M-1635C Run 6, Sample 1	20130822	N/A	993.0-994.0	1	X														

1. RELINQUISHED-BY  **2. RECEIVED BY**
COMPANY PTS LABS **COMPANY**
DATE TIME 9/9/13 16:30 **DATE TIME**
3. RELINQUISHED BY **4. RECEIVED BY**
COMPANY **COMPANY**
DATE TIME **DATE TIME**

PTS Laboratories, Inc. CHAIN OF CUSTODY RECORD PAGE 2 OF 3



COMPANY PTS Laboratories, Inc.		PO# 13-349	
ADDRESS CITY ZIP CODE 8100 Secura Way, Santa Fe Springs, CA 90670		TURNAROUND TIME 24 HOURS 5 DAYS 48 HOURS NORMAL 72 HOURS OTHER:	
PROJECT MANAGER Rachel Spitz		SAMPLE INTEGRITY (CHECK): INTACT ON ICE	
PROJECT NAME Marstrand Core		PTS QUOTE NO.	
PROJECT NUMBER N/A		PTS FILE: 43570	
SITE LOCATION N/A		COMMENTS	
SAMPLER SIGNATURE 			

SAMPLE ID NUMBER	DATE	TIME	DEPTH, FT	NUMBER OF SAMPLES	ANALYSIS REQUEST										COMMENTS			
M-1912C Run 1, Sample 1	20130814	N/A	63.0-64.0	1	X													
M-1912C Run 2, Sample 1	20130814	N/A	130.7-131.7	1	X													
M-1912C Run 3, Sample 1	20130814	N/A	255.0-255.5	1	X													
M-1912C Run 3, Sample 2	20130814	N/A	260.4-260.9	1	X													
M-1912C Run 4, Sample 1	20130814	N/A	974.5-975.0	1	X													
M-1912C Run 4, Sample 2	20130814	N/A	968.7-969.7	1	X													
M-1956C Run 1, Sample 1	20130819	N/A	42.0-43.0	1	X													
M-1956C Run 3, Sample 1	20130819	N/A	78.0-79.0	1	X													
M-1956C Run 4, Sample 1	20130819	N/A	196.5-197.1	1	X													
M-1956C Run 4, Sample 2	20130819	N/A	202.0-202.5	1	X													
M-1956C Run 5, Sample 1	20130819	N/A	425.6-426.2	1	X													


1. RELINQUISHED BY 		2. RECEIVED BY		3. RELINQUISHED BY		4. RECEIVED BY	
COMPANY PTS LABS		COMPANY		COMPANY		COMPANY	
DATE TIME 9/9/13 16:30		DATE TIME		DATE TIME		DATE TIME	

PTS Laboratories, Inc.

CHAIN OF CUSTODY RECORD PAGE 3 OF 3

COMPANY PTS Laboratories, Inc.			ANALYSIS REQUEST										PO# 13-349	
ADDRESS CITY ZIP CODE 8100 Secura Way, Santa Fe Springs, CA 90670			TURNAROUND TIME 24 HOURS 5 DAYS 48 HOURS NORMAL 72 HOURS OTHER:										SAMPLE INTEGRITY (CHECK): INTACT ON ICE	
PROJECT NAME Marsland Core			PROJECT MANAGER Rachel Spilz										PTS QUOTE NO.	
PROJECT NUMBER N/A			PHONE NUMBER 562-347-2500 FAX NUMBER 562-279-1150										PTS FILE: 43570	
SITE LOCATION N/A			SAMPLER SIGNATURE 										COMMENTS	
SAMPLE ID NUMBER			DATE		TIME		DEPTH, FT		NUMBER OF SAMPLES		XRD		COMMENTS	
M-1956C Run 5, Sample 2			20130819		N/A		431.0-431.6		1		X			
M-1956C Run 6, Sample 1			20130819		N/A		1011.8-1012.4		1		X			
M-2169C Run 1, Sample 1			20130806		N/A		110.0-110.5		1		X			
M-2169C Run 2, Sample 3			20130806		N/A		156.5-157.2		1		X			
M-2169C Run 3, Sample 1			20130806		N/A		355.0-356.0		1		X			
M-2169C Run 4, Sample 1			20130806		N/A		470.0-470.5		1		X			
M-2169C Run 5, Sample 1			20130806		N/A		608.9-609.5		1		X			
M-2169C Run 7, Sample 1			20130806		N/A		1135.5-1136.0		1		X			
1. RELINQUISHED BY 			2. RECEIVED BY										3. RELINQUISHED BY	
COMPANY PTS LABS			COMPANY										COMPANY	
DATE TIME 9/9/13 16:30			DATE TIME										DATE TIME	

COMPANY Crow Bottle Resources, ADDRESS CITY ZIP CODE 86 Crow Bottle Rd Crawford, NE 69339 PROJECT MANAGER Wade Beins (308) 665-2215x113 PROJECT NAME PHONE NUMBER Marsland (308) 665-2341 PROJECT NUMBER FAX NUMBER				ANALYSIS REQUEST SOIL PROPERTIES PACKAGE HYDRAULIC CONDUCTIVITY PACKAGE PORE FLUID SATURATIONS PACKAGE TCE/THM/GC PROPERTIES PACKAGE CAPILLARITY PACKAGE FLUID PROPERTIES PACKAGE PHOTOLOG: CORE PHOTOGRAPHY MOISTURE CONTENT, ASTM D2216 POROSITY: TOTAL, API RP40 POROSITY: EFFECTIVE, ASTM D425M SPECIFIC GRAVITY, ASTM D854 BULK DENSITY (DRY), API RP40 or ASTM D2937 AIR PERMEABILITY, API RP40 HYDRAULIC CONDUCTIVITY, EPA9100, API RP40, D5084 GRAIN SIZE DISTRIBUTION, ASTM D422 (464M) TOC: WALKLEY-BLACK ATTERBERG LIMITS, ASTM D4318												PO# TURNAROUND TIME 24 HOURS <input type="checkbox"/> 5 DAYS <input type="checkbox"/> 48 HOURS <input type="checkbox"/> NORMAL <input checked="" type="checkbox"/> 72 HOURS <input type="checkbox"/> OTHER: _____ SAMPLE INTEGRITY (CHECK): INTACT <input checked="" type="checkbox"/> ON ICE _____ PTS QUOTE NO. _____ PTS FILE: 43570 COMMENTS	
SITE LOCATION M-533C SAMPLER SIGNATURE <i>Wade Beins</i>				NUMBER OF SAMPLES 1 1 1 1 1												2. RECEIVED BY COMPANY P.T.S LABS DATE 8/29/13 TIME 16:35	
SAMPLE ID NUMBER DATE TIME DEPTH, FT M-533C Run 1, Sample 1 8-12-13 - 63.9' - 64.9' M-533C Run 1, Sample 2 8-12-13 - 68.8' - 69.8' M-533C Run 3, Sample 1 8-12-13 - 299.0' - 300.0' M-533C Run 3, Sample 2 8-12-13 - 306.0' - 307.0' M-533C Run 5, Sample 1 8-12-13 - 1052.5' - 1053.0'				3. RELINQUISHED BY COMPANY CROW BOTTLE RESOURCES DATE 8/23/13 TIME 11:30 AM												4. RECEIVED BY COMPANY DATE TIME	

COMPANY Crow Bottle Resources, ADDRESS: 86 Crow Bottle Rd Crawford, NE 69339 CITY: ZIP CODE PROJECT MANAGER: Wade Beins (308) 665-225x113 PROJECT NAME: Marsland (308) 665-2341 PHONE NUMBER: FAX NUMBER PROJECT NUMBER: SITE LOCATION: M-1635C SAMPLER SIGNATURE: <i>Wade Beins</i>			ANALYSIS REQUEST NUMBER OF SAMPLES SOIL PROPERTIES PACKAGE HYDRAULIC CONDUCTIVITY PACKAGE PORE FLUID SATURATIONS PACKAGE TCE/PTNRCG PROPERTIES PACKAGE CAPILLARITY PACKAGE FLUID PROPERTIES PACKAGE PHOTOLOG: CORE PHOTOGRAPHY MOISTURE CONTENT, ASTM D2216 POROSITY: TOTAL, API RP40 POROSITY: EFFECTIVE, ASTM D425M SPECIFIC GRAVITY, ASTM D854 BULK DENSITY (DRY), API RP40 or ASTM D2937 AIR PERMEABILITY, API RP40 HYDRAULIC CONDUCTIVITY, EPA9100, API RP40, D5084 GRAIN SIZE DISTRIBUTION, ASTM D422/4464M TOC: WALKLEY-BLACK ATTERBERG LIMITS, ASTM D4318											
PO# TURNAROUND TIME 24 HOURS <input type="checkbox"/> 5 DAYS <input type="checkbox"/> 48 HOURS <input type="checkbox"/> NORMAL <input checked="" type="checkbox"/> 72 HOURS <input type="checkbox"/> OTHER: _____ SAMPLE INTEGRITY (CHECK): INTACT <input checked="" type="checkbox"/> ON ICE _____ PTS QUOTE NO. _____ PTS FILE: 43570			COMMENTS											
SAMPLE ID NUMBER DATE TIME DEPTH, FT														
M-1635C														
Run 1, Sample 1														
M-1635C														
Run 1, Sample 2														
M-1635C														
Run 2, Sample 1														
M-1635C														
Run 2, Sample 2														
M-1635C														
Run 3, Sample 1														
M-1635C														
Run 6, Sample 1														
1. RELINQUISHED BY <i>Wade Beins</i>			2. RECEIVED BY 											
COMPANY Crow Bottle Resources			3. RELINQUISHED BY COMPANY PTS LABS											
DATE 8/23/13 TIME 11:30 AM			4. RECEIVED BY COMPANY PTS LABS											
DATE 8/23/13 TIME 11:30 AM			DATE 8/29/13 TIME 16:35											

PTS Laboratories, Inc.

CHAIN OF CUSTODY RECORD

PAGE / OF /

COMPANY Crow Butte Resources,		CITY 86 Crow Butte Rd Crawford, NE 69339		ZIP CODE 69339	
PROJECT MANAGER Wade Beins		PHONE NUMBER (308) 665-2215x113		OTHER: <input type="checkbox"/> 5 DAYS <input type="checkbox"/> 72 HOURS <input checked="" type="checkbox"/> NORMAL	
PROJECT NUMBER Marsland		FAX NUMBER (308) 665-2341		SAMPLE INTEGRITY (CHECK): INTACT <input checked="" type="checkbox"/> ON ICE <input type="checkbox"/>	
SITE LOCATION M-1912C		SAMPLER SIGNATURE <i>Wade Beins</i>		PTS QUOTE NO. 43570	
SAMPLE ID NUMBER	DATE	TIME	DEPTH, FT	COMMENTS	
M-1912C Run 1, Sample 1	8-14-13	-	63.0' to 64.0'	XRD	
M-1912C Run 2, Sample 1	8-14-13	-	130.7' - 131.7'		
M-1912C Run 3, Sample 1	8-14-13	-	255.0' - 255.5'		
M-1912C Run 3, Sample 2	8-14-13	-	260.4' - 260.9'		
M-1912C Run 4, Sample 1	8-14-13	-	974.5' - 975.0'		
M-1912C Run 4, Sample 2	8-14-13	-	968.7' - 969.7'		
ANALYSIS REQUEST				TURNAROUND TIME	
NUMBER OF SAMPLES				24 HOURS <input type="checkbox"/> 48 HOURS <input type="checkbox"/> 72 HOURS <input checked="" type="checkbox"/>	
SOIL PROPERTIES PACKAGE				OTHER: _____	
HYDRAULIC CONDUCTIVITY PACKAGE				SAMPLE INTEGRITY (CHECK):	
PORE FLUID SATURATIONS PACKAGE				INTACT <input checked="" type="checkbox"/> ON ICE <input type="checkbox"/>	
TCEQ/NRCC PROPERTIES PACKAGE				PTS QUOTE NO.	
CAPILLARITY PACKAGE				PTS FILE: 43570	
FLUID PROPERTIES PACKAGE				COMMENTS	
PHOTOLOG: CORE PHOTOGRAPHY					
MOISTURE CONTENT, ASTM D2216					
POROSITY: TOTAL, API RP40					
POROSITY: EFFECTIVE, ASTM D425M					
SPECIFIC GRAVITY, ASTM D854					
BULK DENSITY (DRY), API RP40 or ASTM D2937					
AIR PERMEABILITY, API RP40					
HYDRAULIC CONDUCTIVITY, EPA9100, API RP40, D5084					
GRAIN SIZE DISTRIBUTION, ASTM D422/4464M					
TOC: WALKLEY-BLACK					
ATTERBERG LIMITS, ASTM D4318					
1. RELINQUISHED BY <i>Wade Beins</i>		2. RECEIVED BY <i>[Signature]</i>		4. RECEIVED BY	
COMPANY Crow Butte Resources		COMPANY PTS LABS		COMPANY	
DATE 8/23/13 11:30 AM		DATE 8/29/13 16:35		DATE	

COMPANY
Crow Bottle Resources,
 ADDRESS **86 Crow Bottle Rd Crawford, NE 69339**
 CITY
 PROJECT MANAGER
Wade Beins (308) 665-2215 x113
 PROJECT NAME
Marysland (308) 665-2341
 PROJECT NUMBER
 PHONE NUMBER
 FAX NUMBER

ANALYSIS REQUEST

SOIL PROPERTIES PACKAGE	
HYDRAULIC CONDUCTIVITY PACKAGE	
PORE FLUID SATURATIONS PACKAGE	
TCE/INR/C PROPERTIES PACKAGE	
CAPILLARITY PACKAGE	
FLUID PROPERTIES PACKAGE	
PHOTOLOG: CORE PHOTOGRAPHY	
MOISTURE CONTENT, ASTM D2216	
POROSITY: TOTAL, API RP40	
POROSITY: EFFECTIVE, ASTM D425M	
SPECIFIC GRAVITY, ASTM D854	
BULK DENSITY (DRY), API RP40 or ASTM D2937	
AIR PERMEABILITY, API RP40	
HYDRAULIC CONDUCTIVITY, EPA9100, API RP40, D5084	
GRAIN SIZE DISTRIBUTION, ASTM D422/464M	
TOC: WALKLEY-BLACK	
ATTERBERG LIMITS, ASTM D4318	

TURNAROUND TIME
 24 HOURS 5 DAYS
 48 HOURS NORMAL
 72 HOURS
 OTHER: _____
 SAMPLE INTEGRITY (CHECK):
 INTACT ON ICE _____
 PTS QUOTE NO. _____
 PTS FILE: **43570**
 COMMENTS

SAMPLE ID NUMBER	DATE	TIME	DEPTH, FT
M-1956C Run 1, Sample 1	8-19-13	-	42.0' - 43.0'
M-1956C Run 3, Sample 1	8-19-13	-	78.0' - 79.0'
M-1956C Run 4, Sample 1	8-19-13	-	196.5' - 197.1'
M-1956C Run 4, Sample 2	8-19-13	-	202.0' - 202.5'
M-1956C Run 5, Sample 1	8-19-13	-	425.6' - 426.2'
M-1956C Run 5, Sample 2	8-19-13	-	431.0' - 431.6'
M-1956C Run 6, Sample 1	8-19-13	-	1011.8' - 1012.4'

1. RELINQUISHED BY Wade Beins	2. RECEIVED BY 	3. RELINQUISHED BY	4. RECEIVED BY
COMPANY Crow Bottle Resources	COMPANY PTS LABS	COMPANY	COMPANY
DATE 8/23/13	DATE 8/29/13	DATE	DATE
TIME 11:30 AM	TIME 16:35	TIME	TIME

COMPANY Crow Butte Resources, ADDRESS 86 Crow Butte Rd Crawford, NE 69339 CITY ZIP CODE PROJECT MANAGER Wade Reins (308) 665-2215x113 PHONE NUMBER PROJECT NAME Marsland (308) 665-2341 FAX NUMBER PROJECT NUMBER SITE LOCATION M-2169C SAMPLER SIGNATURE Wade Reins			ANALYSIS REQUEST TURNAROUND TIME 24 HOURS <input type="checkbox"/> 48 HOURS <input type="checkbox"/> 72 HOURS <input type="checkbox"/> 5 DAYS <input type="checkbox"/> NORMAL <input checked="" type="checkbox"/> OTHER: _____ SAMPLE INTEGRITY (CHECK): INTACT <input checked="" type="checkbox"/> ON ICE _____ PTS QUOTE NO. _____ PTS FILE: 43570 COMMENTS														
NUMBER OF SAMPLES SOIL PROPERTIES PACKAGE HYDRAULIC CONDUCTIVITY PACKAGE PORE FLUID SATURATIONS PACKAGE TCEO/TNRC PROPERTIES PACKAGE CAPILLARITY PACKAGE FLUID PROPERTIES PACKAGE PHOTOLOG: CORE PHOTOGRAPHY MOISTURE CONTENT, ASTM D2216 POROSITY: TOTAL, API RP40 POROSITY: EFFECTIVE, ASTM D425M SPECIFIC GRAVITY, ASTM D854 BULK DENSITY (DRY), API RP40 or ASTM D2937 AIR PERMEABILITY, API RP40 HYDRAULIC CONDUCTIVITY, EPA9100, API RP40, D5084 GRAIN SIZE DISTRIBUTION, ASTM D422 (4464M) TOC: WALKLEY-BLACK ATTERBERG LIMITS, ASTM D4318			PO# XRD														
SAMPLE ID NUMBER	DATE	TIME	DEPTH, FT													RECEIVED BY	RECEIVED BY
Run #1, Sample 1	8/6/13	-	110.0' - 110.5'														
Run #2, Sample 3	8/6/13	-	156.5' - 157.2'														
Run #3, Sample 1	8/6/13	-	355.0' - 356.0'														
Run #4, Sample 1	8/6/13	-	470.0' - 470.5'														
Run #5, Sample 1	8/6/13	-	608.9' - 609.5'														
Run #7, Sample 1	8/6/13	-	1135.5' - 1136.0'														
1. RELINQUISHED BY Wade Reins COMPANY Crow Butte Resources DATE 8/23/13 11:30 AM TIME			2. RECEIVED BY COMPANY PTS LABS DATE 8/29/13 16:35 TIME			3. RELINQUISHED BY COMPANY DATE TIME			4. RECEIVED BY COMPANY DATE TIME								