Atterberg Limits Test
ASTM D 4318

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number: -

Boring Number: CS-2
Depth: 10-24"
Sample Number: TI-CS02-04A(10-24")
Test Date: 12/16/2013
Technician: DPM
Sampled Date: 11/12/2013
Sampled By: MWH
Method: Method A

Test Configuration

Liquid Limits Device: 1080
Material Size of Fines: -#40

Plastic Limits

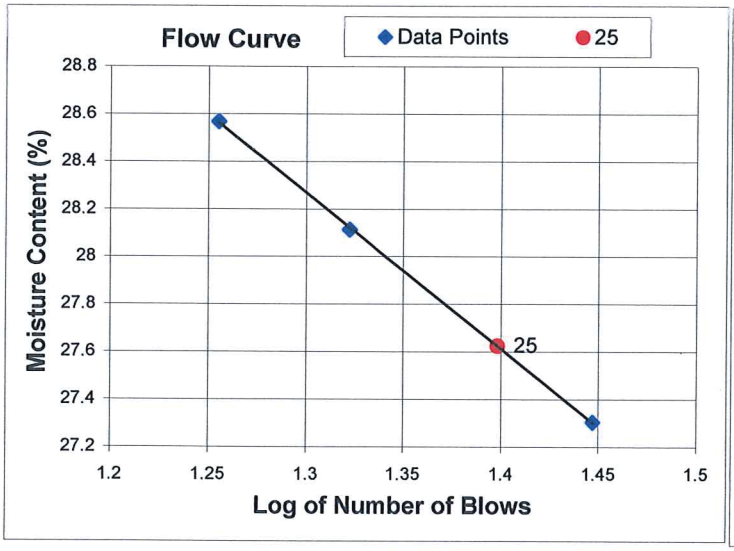
	Sample 1	Sample 2	Sample 3
Weight of Wet Soil & Pan (g):	6.531	6.973	6.868
Weight of Dry Soil & Pan (g):	5.892	6.284	6.220
Weight of Water (g):	0.639	0.689	0.648
Weight of Pan (g):	0.766	0.768	0.774
Moisture Content (%):	12.5	12.5	11.9

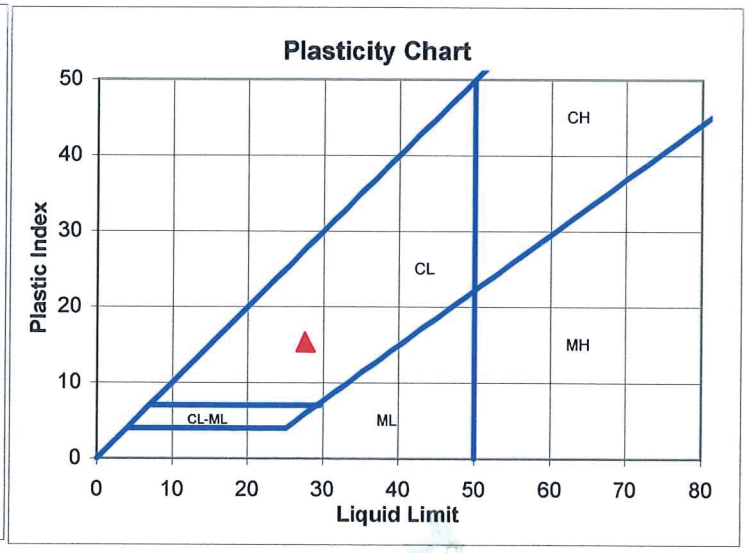
Average: 12.3%
Standard Deviation: 0.3%

Liquid Limits

	Sample 1	Sample 2	Sample 3
Number of Blows:	28	18	21
Weight of Wet Soil & Pan (g):	14.596	14.925	14.115
Weight of Dry Soil & Pan (g):	11.625	11.772	11.180
Weight of Water (g):	2.971	3.153	2.935
Weight of Pan (g):	0.744	0.735	0.740
Moisture Content (%):	27.3	28.6	28.1

Plastic Limit: 12
Liquid Limit: 28
Plastic Index: 15
Atterberg Classification CL





Data Entered By: DPM Date: 12/17/2013 Data Checked By: CJ
File Name: atterberg-ASTM_4318-R6_10.xls Date: 12/17/2013

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number: -

Boring Number: CS-1
Depth: 11-24"
Sample Number: TI-CS01-04A(11-24")
Sampled Date: 11/12/2013
Test Date: 12/20/2013

Sampled By: MWH
Technician: DAW

Grain Size Data

Hygroscopic Moisture of Fines

Weight of Wet Soil & Pan (g): 75.37
Weight of Dry Soil & Pan (g): 73.80
Weight of Water (g): 1.57
Weight of Pan (g): 3.20
Weight of Dry Soil (g): 70.60
Moisture (%): 2.2

General Sample Data

Total Wet Weight of Sample (g): 2,163.10
Total Dry Weight of Sample (g): 2,117.52
Calculated Weight Plus #200 (g): 884.35
Moisture of Total Sample (%): 2.2
Percent Retained #200 Sieve (%): 41.8

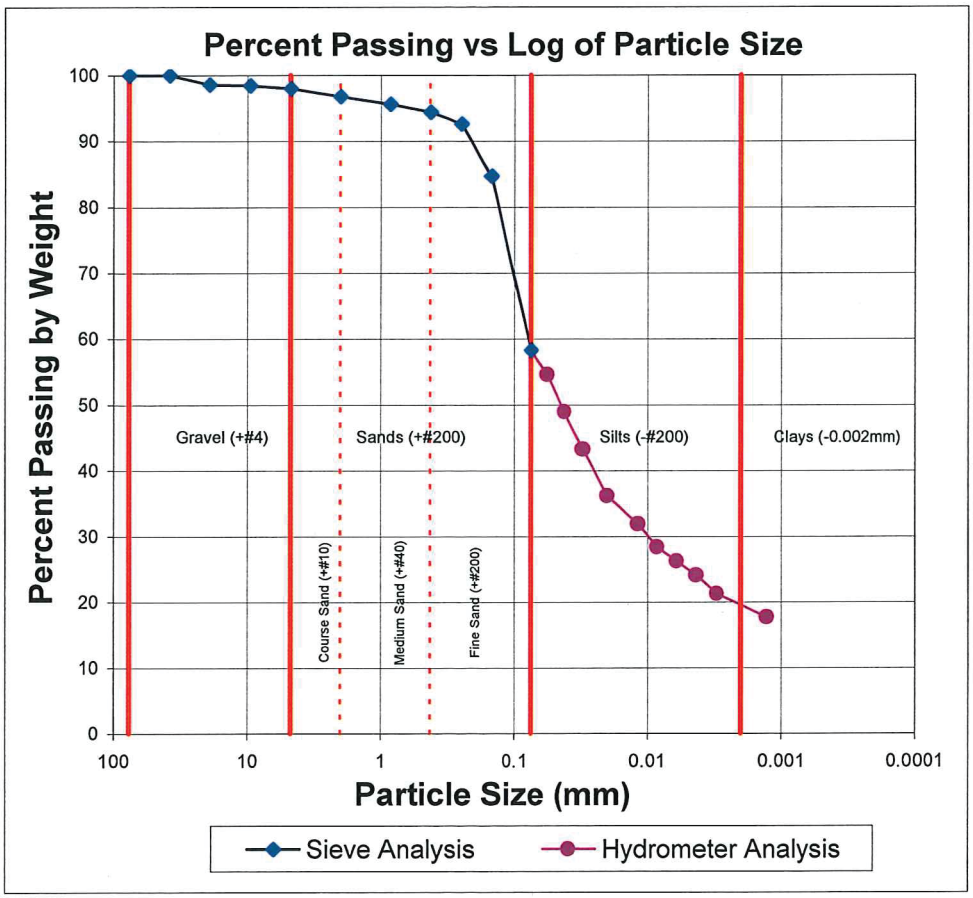
Plus Split Data

Original Weight of +#10 (g): 83.30
Calculated Weight of +#10 (g): 68.05

Minus Split Data

Original Weight of -#10 (g): 2,079.80
Calculated Dry Weight of -#10 (g): 2,049.47

Sieve Number	Sieve Size (mm)	Weight of Retained Soil & Pan (g)	Weight of Pan (g)	Weight of Retained Soil (g)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
3"	**76.2**	0.00	0.00	0.00	0.00	100.0
1.5"	**38.10**	0.00	0.00	0.00	0.00	100.0
3/4"	**19.05**	30.00	0.00	30.00	30.00	98.6
3/8"	**9.525**	3.47	0.00	3.47	3.47	98.4
#4	**4.750**	8.44	0.00	8.44	8.44	98.0
#10	**2.000**	26.14	0.00	26.14	26.14	96.8
69.406g split out of -#10 material.						
#20	**0.850**	4.01	3.19	0.82	24.84	95.6
#40	**0.425**	3.87	3.03	0.84	25.30	94.4
#60	**0.250**	4.38	3.09	1.29	38.88	92.6
#100	**0.150**	8.64	3.09	5.55	167.47	84.7
#200	**0.075**	21.52	2.97	18.55	559.82	58.2



Data Entered By: SKL
Date: 12/27/2013
File Name: 2512_77_hydrometer-ASTM-D422-R0_0.xls

Checked By: MLM
Date: 12/30/13

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number: -

Boring Number: CS-1
Depth: 11-24"
Sample Number: TI-CS01-04A(11-24")
Sampled Date: 11/12/2013 Sampled By: MWH
Test Date: 12/19/2013 Technician: MLM

Hydrometer Data

Test Configuration

Hydrometer Type: 152H
Specific Gravity: 2.68
Deflocculant: Sodium Hexametaphosphate
Deflocculant Correction: 5.5
Specific Gravity Correction Factor - α: 1.00

Total Wet Weight of Sample (g): 2,163.10
Total Dry Weight of Sample (g): 2,117.52
Wet Weight of Sub-Sample (g): 69.406
Dry Weight of Sub-Sample (g): 67.896
Corrected Dry Weight of Sub-Sample - W(g): 70.141

Elapsed Time (min)	Hydrometer Reading	Corrected Hydrometer Reading	Temperature (°C)	Temperature Coefficient (K)	Effective Depth (L)	Grain Diameter (mm)	Percent in Suspension (%)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
0	-	-	-	-	-	-	-	-	-
0.5	44.0	38.5	22.1	0.0133	9.08	0.0568	54.6	1156.60	54.6
1	40.0	34.5	22.1	0.0133	9.73	0.0416	48.9	1036.43	48.9
2	36.0	30.5	22.1	0.0133	10.39	0.0304	43.3	916.27	43.3
5	31.0	25.5	22.1	0.0133	11.21	0.0199	36.2	766.06	36.2
15	28.0	22.5	22.2	0.0133	11.70	0.0118	31.9	675.93	31.9
30	25.5	20.0	22.2	0.0133	12.11	0.0085	28.4	600.83	28.4
60	24.0	18.5	22.3	0.0133	12.36	0.0060	26.2	555.77	26.2
120	22.5	17.0	22.4	0.0133	12.60	0.0043	24.1	510.71	24.1
250	20.5	15.0	22.7	0.0133	12.93	0.0030	21.3	450.62	21.3
1440	18.0	12.5	22.6	0.0133	13.34	0.0013	17.7	375.52	17.7

Data Entered By: SKL
Date: 12/27/2013
File Name: 2512_77_hydrometer-ASTM-D422-R0_0.xls

Checked By: MLM
Date: 12/30/13

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number: -

Boring Number: CS-4
Depth: 10-24"
Sample Number: TI-CS04-04A(10-24")
Sampled Date: 11/12/2013 Sampled By: MWH
Test Date: 12/20/2013 Technician: DAW

Grain Size Data

Hygroscopic Moisture of Fines

Weight of Wet Soil & Pan (g): 55.14
Weight of Dry Soil & Pan (g): 54.07
Weight of Water (g): 1.07
Weight of Pan (g): 3.13
Weight of Dry Soil (g): 50.94
Moisture (%): 2.1

General Sample Data

Total Wet Weight of Sample (g): 1,557.65
Total Dry Weight of Sample (g): 1,526.04
Calculated Weight Plus #200 (g): 485.81
Moisture of Total Sample (%): 2.1
Percent Retained #200 Sieve (%): 31.8

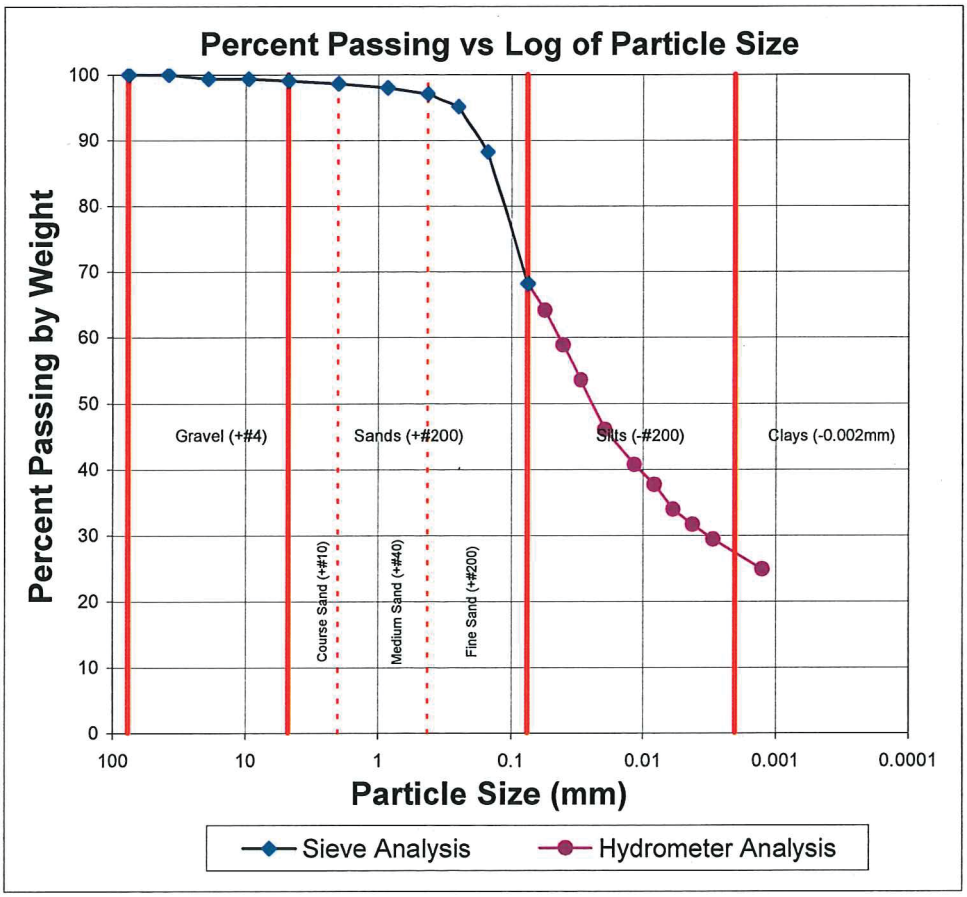
Plus Split Data

Original Weight of +#10 (g): 38.49
Calculated Weight of +#10 (g): 21.12

Minus Split Data

Original Weight of -#10 (g): 1,519.16
Calculated Dry Weight of -#10 (g): 1,504.92

Sieve Number	Sieve Size (mm)	Weight of Retained Soil & Pan (g)	Weight of Pan (g)	Weight of Retained Soil (g)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
3"	76.2	0.00	0.00	0.00	0.00	100.0
1.5"	38.10	0.00	0.00	0.00	0.00	100.0
3/4"	19.05	9.95	0.00	9.95	9.95	99.3
3/8"	9.525	0.00	0.00	0.00	0.00	99.3
#4	4.750	3.94	0.00	3.94	3.94	99.1
#10	2.000	7.23	0.00	7.23	7.23	98.6
66.413g split out of -#10 material.						
#20	0.850	3.42	3.03	0.40	9.16	98.0
#40	0.425	3.64	3.03	0.60	13.97	97.1
#60	0.250	4.28	2.99	1.29	29.89	95.1
#100	0.150	7.58	3.03	4.56	105.41	88.2
#200	0.075	16.48	3.24	13.24	306.25	68.2



Data Entered By: SKL
Date: 12/27/2013
File Name: 2512_77_hydrometer-ASTM-D422-R0_1.xls

Checked By: CNL
Date: 12/27/13

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number: -

Boring Number: CS-4
Depth: 10-24"
Sample Number: TI-CS04-04A(10-24")
Sampled Date: 11/12/2013 Sampled By: MWH
Test Date: 12/19/2013 Technician: MLM

Hydrometer Data

Test Configuration

Hydrometer Type: 152H
Specific Gravity: 2.68
Deflocculant: Sodium Hexametaphosphate
Deflocculant Correction: 5.5
Specific Gravity Correction Factor - α: 1.00

Total Wet Weight of Sample (g): 1,557.65
Total Dry Weight of Sample (g): 1,526.04
Wet Weight of Sub-Sample (g): 66.413
Dry Weight of Sub-Sample (g): 65.047
Corrected Dry Weight of Sub-Sample - W(g): 65.970

Elapsed Time (min)	Hydrometer Reading	Corrected Hydrometer Reading	Temperature (°C)	Temperature Coefficient (K)	Effective Depth (L)	Grain Diameter (mm)	Percent in Suspension (%)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
0	-	-	-	-	-	-	-	-	-
0.5	48.0	42.5	21.9	0.0135	8.42	0.0553	64.1	978.29	64.1
1	44.5	39.0	21.9	0.0135	9.00	0.0404	58.8	897.73	58.8
2	41.0	35.5	21.9	0.0135	9.57	0.0295	53.5	817.16	53.5
5	36.0	30.5	21.9	0.0135	10.39	0.0194	46.0	702.07	46.0
15	32.5	27.0	21.9	0.0135	10.96	0.0115	40.7	621.50	40.7
30	30.5	25.0	22.0	0.0133	11.29	0.0082	37.7	575.47	37.7
60	28.0	22.5	22.1	0.0133	11.70	0.0059	33.9	517.92	33.9
120	26.5	21.0	22.2	0.0133	11.95	0.0042	31.7	483.39	31.7
250	25.0	19.5	22.4	0.0133	12.19	0.0029	29.4	448.86	29.4
1440	22.0	16.5	22.3	0.0133	12.69	0.0013	24.9	379.81	24.9

Data Entered By: SKL
Date: 12/27/2013
File Name: 2512_77_hydrometer-ASTM-D422-R0_1.xls

Checked By: _____
Date: _____

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-5
Depth: 9-24"
Sample Number: TI-CS05-04A(9-24")
Sampled Date: 11/12/2013
Test Date: 12/3/2013

Sampled By: MWH
Technician: CAL

Grain Size Data

Hygroscopic Moisture of Fines

Weight of Wet Soil & Pan (g): 108.63
Weight of Dry Soil & Pan (g): 105.86
Weight of Water (g): 2.77
Weight of Pan (g): 3.60
Weight of Dry Soil (g): 102.26
Moisture (%): 2.7

General Sample Data

Total Wet Weight of Sample (g): 1,644.61
Total Dry Weight of Sample (g): 1,601.96
Calculated Weight Plus #200 (g): 617.80
Moisture of Total Sample (%): 2.7
Percent Retained #200 Sieve (%): 38.6

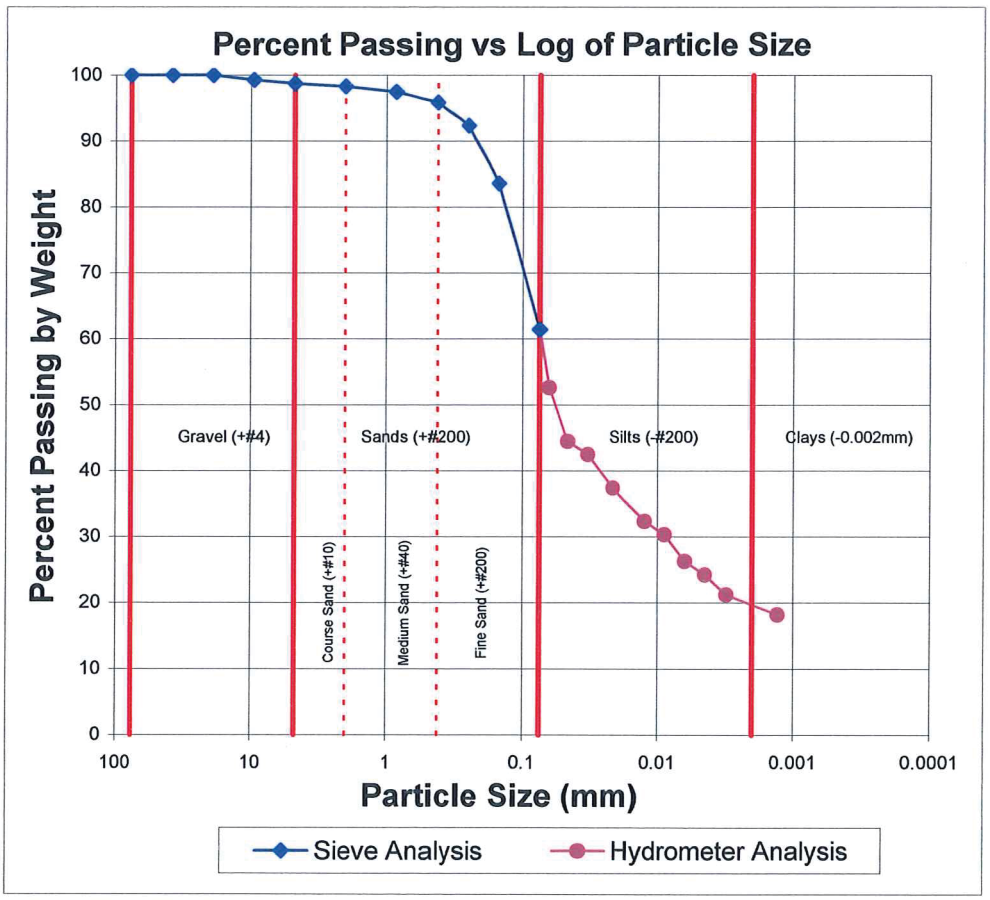
Plus Split Data

Original Weight of +#10 (g): 32.87
Calculated Weight of +#10 (g): 27.24

Minus Split Data

Original Weight of -#10 (g): 1,611.74
Calculated Dry Weight of -#10 (g): 1,574.72

Sieve Number	Sieve Size (mm)	Weight of Retained Soil & Pan (g)	Weight of Pan (g)	Weight of Retained Soil (g)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
3"	**76.2**	0.00	0.00	0.00	0.00	100.0
1.5"	**38.10**	0.00	0.00	0.00	0.00	100.0
3/4"	**19.05**	0.00	0.00	0.00	0.00	100.0
3/8"	**9.525**	11.73	0.00	11.73	11.73	99.3
#4	**4.750**	8.37	0.00	8.37	8.37	98.7
#10	**2.000**	7.14	0.00	7.14	7.14	98.3
49.99g split out of -#10 material.						
#20	**0.850**	4.27	3.84	0.42	13.69	97.4
#40	**0.425**	4.55	3.76	0.79	25.62	95.8
#60	**0.250**	5.41	3.69	1.72	55.58	92.4
#100	**0.150**	8.01	3.66	4.35	140.67	83.6
#200	**0.075**	14.51	3.53	10.97	354.99	61.4



Data Entered By: CAL
Date: 12/5/2013
File Name: 2512_77_hydrometer-ASTM-D422-R1_2.xls

Checked By: KR
Date: 12/5/13

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-5
Depth: 9-24"
Sample Number: TI-CS05-04A(9-24")
Sampled Date: 11/12/2013
Test Date: 12/3/2013

Sampled By: MWH
Technician: CAL

Hydrometer Data

Test Configuration

Hydrometer Type: 152H
Specific Gravity: 2.65
Deflocculant: Sodium Hexametaphosphate
Deflocculant Correction: 8.0
Specific Gravity Correction Factor - α: 1.00

Total Wet Weight of Sample (g): 1,644.61
Total Dry Weight of Sample (g): 1,601.96
Wet Weight of Sub-Sample (g): 49.990
Dry Weight of Sub-Sample (g): 48.672
Corrected Dry Weight of Sub-Sample - W(g): 49.513

Elapsed Time (min)	Hydrometer Reading	Corrected Hydrometer Reading	Temperature (°C)	Temperature Coefficient (K)	Effective Depth (L)	Grain Diameter (mm)	Percent in Suspension (%)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
0	-	-	-	-	-	-	-	-	-
0.5	34.0	26.0	19.8	0.0138	10.72	0.0640	52.6	842.35	52.6
1	30.0	22.0	19.8	0.0138	11.37	0.0466	44.5	712.76	44.5
2	29.0	21.0	19.8	0.0138	11.54	0.0332	42.5	680.36	42.5
5	26.5	18.5	19.8	0.0138	11.95	0.0214	37.4	599.37	37.4
15	24.0	16.0	19.8	0.0138	12.36	0.0125	32.4	518.37	32.4
30	23.0	15.0	19.9	0.0138	12.52	0.0089	30.3	485.97	30.3
60	21.0	13.0	20.1	0.0137	12.85	0.0063	26.3	421.18	26.3
120	20.0	12.0	20.5	0.0137	13.01	0.0045	24.3	388.78	24.3
250	18.5	10.5	21.4	0.0135	13.26	0.0031	21.2	340.18	21.2
1440	17.0	9.0	21.2	0.0135	13.51	0.0013	18.2	291.58	18.2

Data Entered By: CAL
Date: 12/5/2013
File Name: 2512_77_hydrometer-ASTM-D422-R1_2.xls

Checked By: KP
Date: 12/5/13

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-7
Depth: 0-20"
Sample Number: TI-CS07-02A(0-20")
Sampled Date: 11/13/2013
Test Date: 12/2/2013

Sampled By: MWH
Technician: CAL

Grain Size Data

Hygroscopic Moisture of Fines

Weight of Wet Soil & Pan (g): 109.74
Weight of Dry Soil & Pan (g): 107.07
Weight of Water (g): 2.66
Weight of Pan (g): 3.56
Weight of Dry Soil (g): 103.52
Moisture (%): 2.6

General Sample Data

Total Wet Weight of Sample (g): 1,976.72
Total Dry Weight of Sample (g): 1,927.70
Calculated Weight Plus #200 (g): 754.57
Moisture of Total Sample (%): 2.5
Percent Retained #200 Sieve (%): 39.1

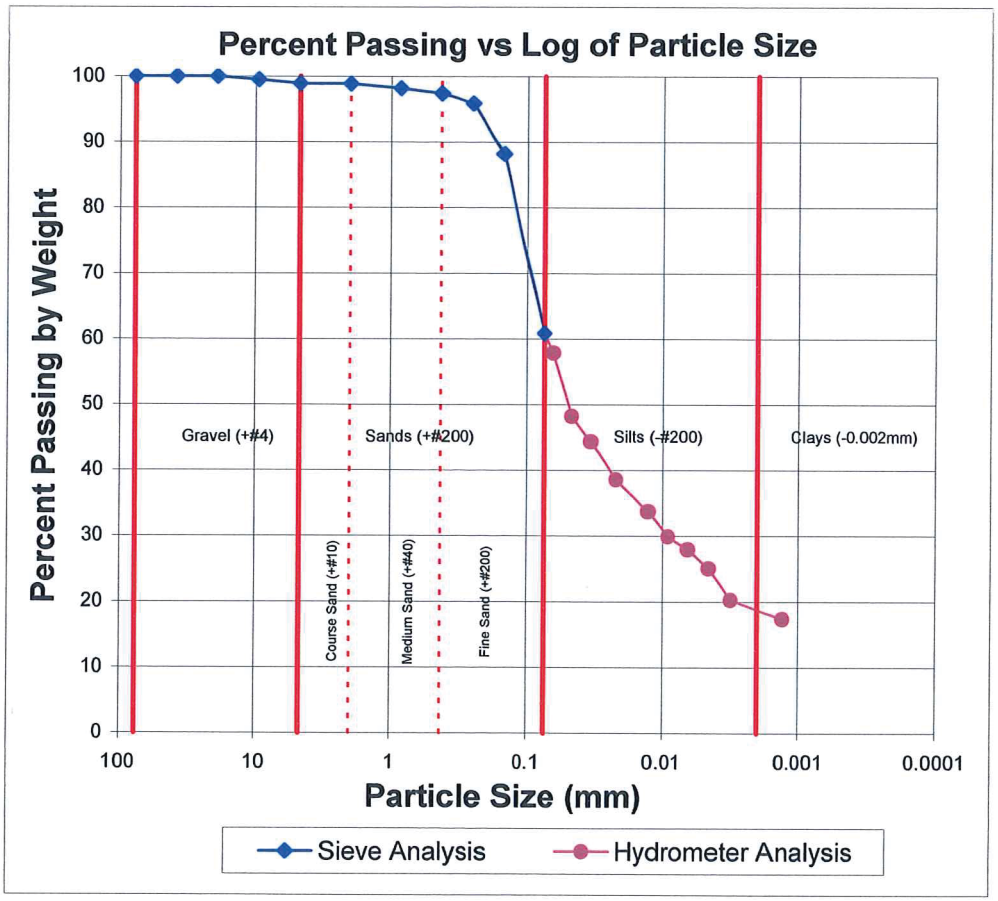
Plus Split Data

Original Weight of +#10 (g): 25.71
Calculated Weight of +#10 (g): 22.06

Minus Split Data

Original Weight of -#10 (g): 1,951.01
Calculated Dry Weight of -#10 (g): 1,905.64

Sieve Number	Sieve Size (mm)	Weight of Retained Soil & Pan (g)	Weight of Pan (g)	Weight of Retained Soil (g)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
3"	**76.2**	0.00	0.00	0.00	0.00	100.0
1.5"	**38.10**	0.00	0.00	0.00	0.00	100.0
3/4"	**19.05**	0.00	0.00	0.00	0.00	100.0
3/8"	**9.525**	9.33	0.00	9.33	9.33	99.5
#4	**4.750**	11.27	0.00	11.27	11.27	98.9
#10	**2.000**	1.46	0.00	1.46	1.46	98.9
52.654g split out of -#10 material.						
#20	**0.850**	4.05	3.71	0.34	12.58	98.2
#40	**0.425**	4.11	3.70	0.42	15.55	97.4
#60	**0.250**	4.63	3.84	0.79	29.29	95.9
#100	**0.150**	7.83	3.84	3.99	147.97	88.2
#200	**0.075**	17.98	3.78	14.20	527.11	60.9



Data Entered By: CAL
Date: 12/5/2013
File Name: 2512_77_hydrometer-ASTM-D422-R1_1.xls

Checked By: KR
Date: 12/5/13

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-7
Depth: 0-20"
Sample Number: TI-CS07-02A(0-20")
Sampled Date: 11/13/2013
Test Date: 12/2/2013

Sampled By: MWH
Technician: CAL

Hydrometer Data

Test Configuration

Hydrometer Type: 152H
Specific Gravity: 2.65
Deflocculant: Sodium Hexametaphosphate
Deflocculant Correction: 8.0
Specific Gravity Correction Factor - α: 1.00

Total Wet Weight of Sample (g): 1,976.72
Total Dry Weight of Sample (g): 1,927.70
Wet Weight of Sub-Sample (g): 52.654
Dry Weight of Sub-Sample (g): 51.333
Corrected Dry Weight of Sub-Sample - W(g): 51.904

Elapsed Time (min)	Hydrometer Reading	Corrected Hydrometer Reading	Temperature (°C)	Temperature Coefficient (K)	Effective Depth (L)	Grain Diameter (mm)	Percent in Suspension (%)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
0	-	-	-	-	-	-	-	-	-
0.5	38.0	30.0	16.9	0.0144	10.06	0.0644	57.9	1115.70	57.9
1	33.0	25.0	16.9	0.0144	10.88	0.0473	48.2	929.75	48.2
2	31.0	23.0	16.9	0.0144	11.21	0.0340	44.4	855.37	44.4
5	28.0	20.0	16.8	0.0144	11.70	0.0220	38.6	743.80	38.6
15	25.5	17.5	17.1	0.0142	12.11	0.0127	33.8	650.83	33.8
30	23.5	15.5	17.4	0.0142	12.44	0.0091	29.9	576.45	29.9
60	22.5	14.5	17.7	0.0142	12.60	0.0065	28.0	539.26	28.0
120	21.0	13.0	18.3	0.0140	12.85	0.0046	25.1	483.47	25.1
250	18.5	10.5	20.1	0.0137	13.26	0.0031	20.3	390.50	20.3
1440	17.0	9.0	20.2	0.0137	13.51	0.0013	17.4	334.71	17.4

Data Entered By: CAL
Date: 12/5/2013
File Name: 2512_77_hydrometer-ASTM-D422-R1_1.xls

Checked By: KR
Date: 12/5/13

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-9
Depth: 9-26"
Sample Number: TI-CS09-04A(9-26")
Sampled Date: 11/13/2013
Test Date: 12/2/2013

Sampled By: MWH
Technician: CAL

Grain Size Data

Hygroscopic Moisture of Fines

Weight of Wet Soil & Pan (g): 101.03
Weight of Dry Soil & Pan (g): 98.89
Weight of Water (g): 2.14
Weight of Pan (g): 3.77
Weight of Dry Soil (g): 95.12
Moisture (%): 2.3

General Sample Data

Total Wet Weight of Sample (g): 1,718.28
Total Dry Weight of Sample (g): 1,681.98
Calculated Weight Plus #200 (g): 707.36
Moisture of Total Sample (%): 2.2
Percent Retained #200 Sieve (%): 42.1

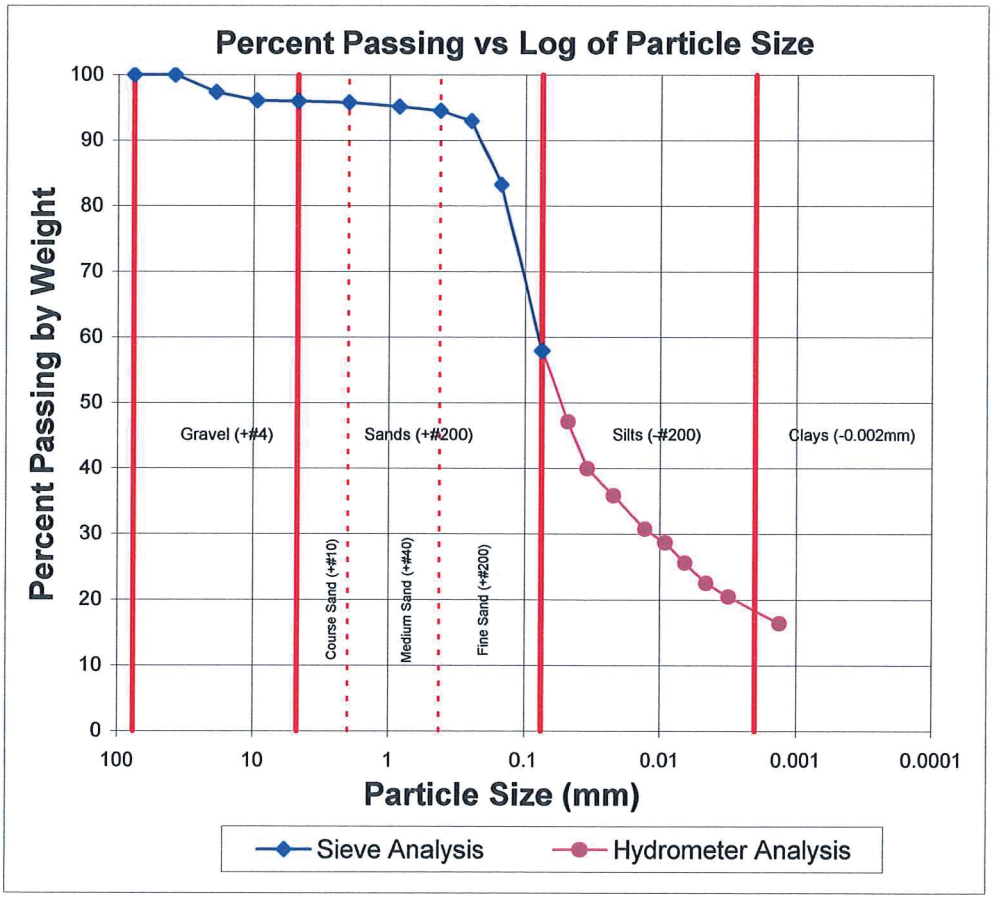
Plus Split Data

Original Weight of +#10 (g): 86.45
Calculated Weight of +#10 (g): 70.98

Minus Split Data

Original Weight of -#10 (g): 1,631.83
Calculated Dry Weight of -#10 (g): 1,611.00

Sieve Number	Sieve Size (mm)	Weight of Retained Soil & Pan (g)	Weight of Pan (g)	Weight of Retained Soil (g)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
3"	**76.2**	0.00	0.00	0.00	0.00	100.0
1.5"	**38.10**	0.00	0.00	0.00	0.00	100.0
3/4"	**19.05**	44.53	0.00	44.53	44.53	97.4
3/8"	**9.525**	21.02	0.00	21.02	21.02	96.1
#4	**4.750**	1.85	0.00	1.85	1.85	96.0
#10	**2.000**	3.58	0.00	3.58	3.58	95.8
47.875g split out of -#10 material.						
#20	**0.850**	4.13	3.83	0.30	10.22	95.2
#40	**0.425**	4.28	3.96	0.32	10.94	94.5
#60	**0.250**	4.58	3.80	0.77	26.67	92.9
#100	**0.150**	8.56	3.82	4.74	162.92	83.3
#200	**0.075**	15.92	3.55	12.37	425.63	57.9



Data Entered By: CAL
Date: 12/5/2013
File Name: 2512_77_hydrometer-ASTM-D422-R1_0.xls

Checked By: KR
Date: 12/5/13

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-9
Depth: 9-26"
Sample Number: TI-CS09-04A(9-26")
Sampled Date: 11/13/2013
Test Date: 12/2/2013

Sampled By: MWH
Technician: CAL

Hydrometer Data

Test Configuration

Hydrometer Type: 152H
Specific Gravity: 2.65
Deflocculant: Sodium Hexametaphosphate
Deflocculant Correction: 8.0
Specific Gravity Correction Factor - α: 1.00

Total Wet Weight of Sample (g): 1,718.28
Total Dry Weight of Sample (g): 1,681.98
Wet Weight of Sub-Sample (g): 47.875
Dry Weight of Sub-Sample (g): 46.820
Corrected Dry Weight of Sub-Sample - W(g): 48.873

Elapsed Time (min)	Hydrometer Reading	Corrected Hydrometer Reading	Temperature (°C)	Temperature Coefficient (K)	Effective Depth (L)	Grain Diameter (mm)	Percent in Suspension (%)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
0	-	-	-	-	-	-	-	-	-
1	31.0	23.0	16.7	0.0144	11.21	0.0480	47.1	792.64	47.1
2	27.5	19.5	16.7	0.0144	11.78	0.0348	40.0	672.02	40.0
5	25.5	17.5	16.7	0.0144	12.11	0.0223	35.9	603.09	35.9
15	23.0	15.0	17.0	0.0142	12.52	0.0129	30.7	516.94	30.7
30	22.0	14.0	17.2	0.0142	12.69	0.0092	28.7	482.47	28.7
60	20.5	12.5	17.7	0.0142	12.93	0.0066	25.6	430.78	25.6
120	19.0	11.0	18.1	0.0140	13.18	0.0046	22.5	379.09	22.5
250	18.0	10.0	20.1	0.0137	13.34	0.0032	20.5	344.62	20.5
1440	16.0	8.0	20.1	0.0137	13.67	0.0013	16.4	275.70	16.4

Data Entered By: CAL
Date: 12/5/2013
File Name: 2512_77_hydrometer-ASTM-D422-R1_0.xls

Checked By: KR
Date: 12/5/13

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-2
Depth: 0-10"
Sample Number: TI-CS02-02A(0-10")
Sampled Date: 11/12/2013
Test Date: 12/11/2013

Sampled By: MWH
Technician: DPM

Grain Size Data

Hygroscopic Moisture of Fines

Weight of Wet Soil & Pan (g): 117.84
Weight of Dry Soil & Pan (g): 112.26
Weight of Water (g): 5.58
Weight of Pan (g): 3.60
Weight of Dry Soil (g): 108.66
Moisture (%): 5.1

General Sample Data

Total Wet Weight of Sample (g): 10,935.00
Total Dry Weight of Sample (g): 10,592.42
Calculated Weight Plus #200 (g): 5,714.14
Moisture of Total Sample (%): 3.2
Percent Retained #200 Sieve (%): 53.9

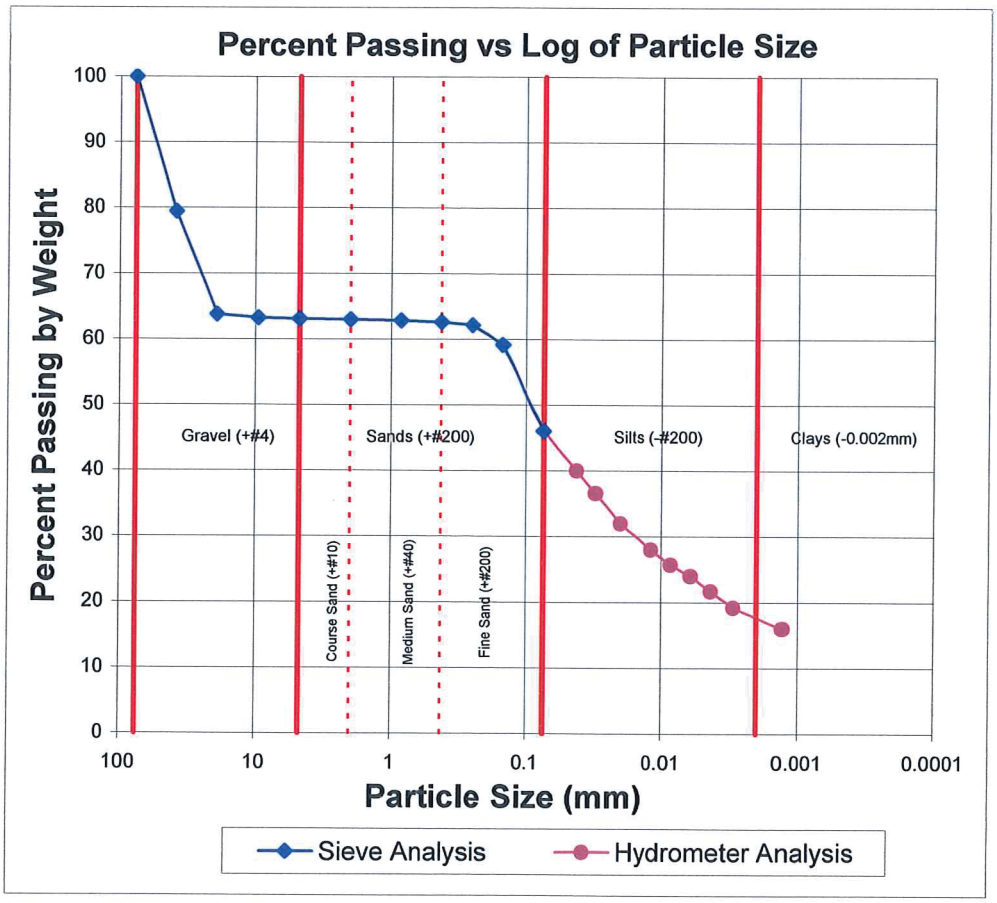
Plus Split Data

Original Weight of +#10 (g): 3,980.00
Calculated Weight of +#10 (g): 3,921.13

Minus Split Data

Original Weight of -#10 (g): 6,955.00
Calculated Dry Weight of -#10 (g): 6,671.29

Sieve Number	Sieve Size (mm)	Weight of Retained Soil & Pan (g)	Weight of Pan (g)	Weight of Retained Soil (g)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
3"	76.2	0.00	0.00	0.00	0.00	100.0
1.5"	38.10	2180.00	0.00	2180.00	2180.00	79.4
3/4"	19.05	1660.45	0.00	1660.45	1660.45	63.7
3/8"	9.525	54.02	0.00	54.02	54.02	63.2
#4	4.750	16.04	0.00	16.04	16.04	63.1
#10	2.000	10.62	0.00	10.62	10.62	63.0
58.043g split out of -#10 material.						
#20	0.850	3.95	3.80	0.15	18.01	62.8
#40	0.425	3.94	3.74	0.20	24.41	62.6
#60	0.250	4.15	3.77	0.38	46.16	62.1
#100	0.150	6.16	3.56	2.60	314.06	59.2
#200	0.075	14.57	3.07	11.51	1390.38	46.1



Data Entered By: KMR
Date: 12/13/2013
File Name: 2512_77_hydrometer-ASTM-D422-R0.xls_8.xls

Checked By: DPM
Date: 12/13/13

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-2
Depth: 0-10"
Sample Number: TI-CS02-02A(0-10")
Sampled Date: 11/12/2013
Test Date: 12/11/2013

Sampled By: MWH
Technician: DPM

Hydrometer Data

Test Configuration

Hydrometer Type: 152H
Specific Gravity: 2.65
Deflocculant: Sodium Hexametaphosphate
Deflocculant Correction: 6.0
Specific Gravity Correction Factor - α: 1.00

Total Wet Weight of Sample (g): 10,935.00
Total Dry Weight of Sample (g): 10,592.42
Wet Weight of Sub-Sample (g): 58.043
Dry Weight of Sub-Sample (g): 55.208
Corrected Dry Weight of Sub-Sample - W(g): 87.632

Elapsed Time (min)	Hydrometer Reading	Corrected Hydrometer Reading	Temperature (°C)	Temperature Coefficient (K)	Effective Depth (L)	Grain Diameter (mm)	Percent in Suspension (%)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
0	-	-	-	-	-	-	-	-	-
1	41.0	35.0	19.3	0.0138	9.57	0.0428	40.0	4236.37	40.0
2	38.0	32.0	19.3	0.0138	10.06	0.0310	36.6	3873.25	36.6
5	34.0	28.0	19.3	0.0138	10.72	0.0202	32.0	3389.09	32.0
15	30.5	24.5	19.4	0.0138	11.29	0.0120	28.0	2965.46	28.0
30	28.5	22.5	19.6	0.0138	11.62	0.0086	25.7	2723.38	25.7
60	27.0	21.0	19.9	0.0138	11.87	0.0061	24.0	2541.82	24.0
120	25.0	19.0	20.4	0.0137	12.19	0.0044	21.7	2299.74	21.7
250	22.8	16.8	22.0	0.0133	12.56	0.0030	19.2	2033.46	19.2
1440	20.0	14.0	20.1	0.0137	13.01	0.0013	16.0	1694.55	16.0

Data Entered By: KMR
Date: 12/13/2013
File Name: 2512_77_hydrometer-ASTM-D422-R0.xls_8.xls

Checked By: DPW
Date: 12/13/13

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-3
Depth: 0-6"
Sample Number: TI-CS03-02A(0-6")
Sampled Date: 11/12/2013
Test Date: 12/11/2013

Sampled By: MWH
Technician: DPM

Grain Size Data

Hygroscopic Moisture of Fines

Weight of Wet Soil & Pan (g): 114.81
Weight of Dry Soil & Pan (g): 107.72
Weight of Water (g): 7.10
Weight of Pan (g): 3.67
Weight of Dry Soil (g): 104.05
Moisture (%): 6.8

General Sample Data

Total Wet Weight of Sample (g): 12,025.00
Total Dry Weight of Sample (g): 11,659.26
Calculated Weight Plus #200 (g): 8,432.80
Moisture of Total Sample (%): 3.1
Percent Retained #200 Sieve (%): 72.3

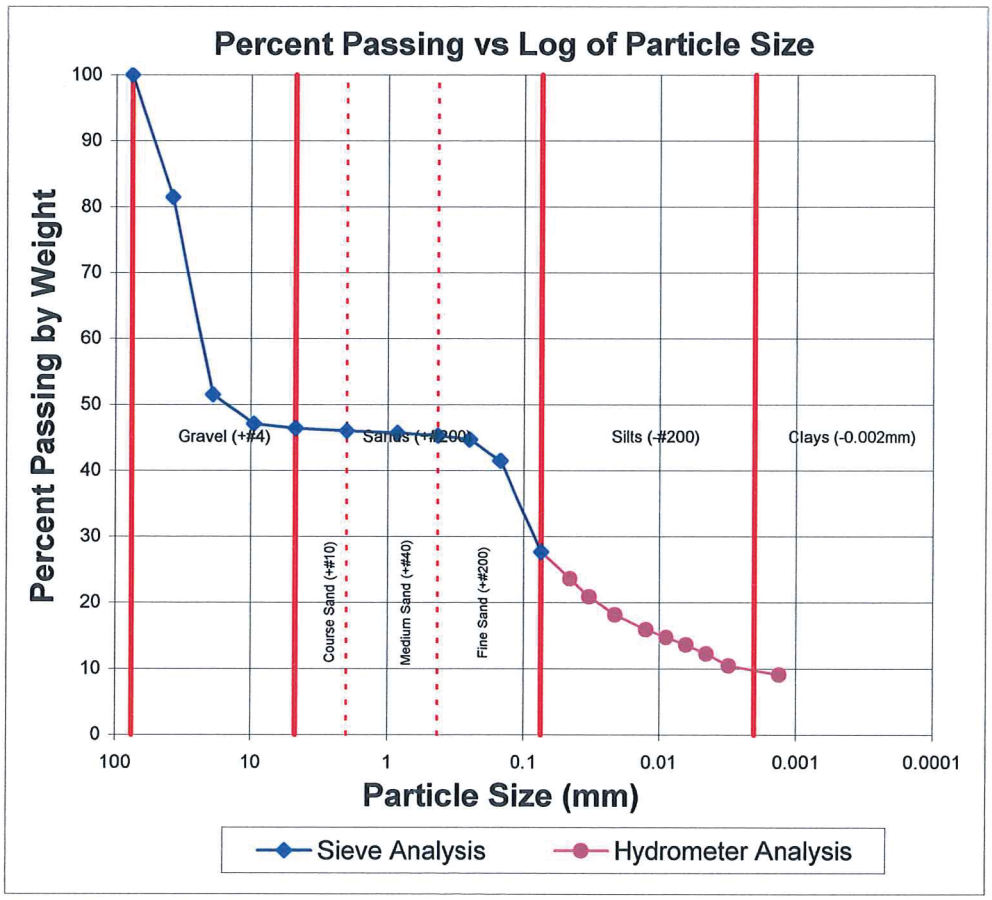
Plus Split Data

Original Weight of +#10 (g): 6,450.00
Calculated Weight of +#10 (g): 6,296.34

Minus Split Data

Original Weight of -#10 (g): 5,575.00
Calculated Dry Weight of -#10 (g): 5,362.92

Sieve Number	Sieve Size (mm)	Weight of Retained Soil & Pan (g)	Weight of Pan (g)	Weight of Retained Soil (g)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
3"	**76.2**	0.00	0.00	0.00	0.00	100.0
1.5"	**38.10**	2165.00	0.00	2165.00	2165.00	81.4
3/4"	**19.05**	3490.00	0.00	3490.00	3490.00	51.5
3/8"	**9.525**	516.72	0.00	516.72	516.72	47.1
#4	**4.750**	79.91	0.00	79.91	79.91	46.4
#10	**2.000**	44.71	0.00	44.71	44.71	46.0
54.113g split out of -#10 material.						
#20	**0.850**	4.25	3.89	0.36	38.43	45.7
#40	**0.425**	4.18	3.73	0.45	47.75	45.3
#60	**0.250**	4.22	3.55	0.67	71.25	44.6
#100	**0.150**	7.24	3.72	3.52	372.43	41.5
#200	**0.075**	18.73	3.56	15.18	1606.60	27.7



Data Entered By: KMR
Date: 12/13/2013
File Name: 2512_77_hydrometer-ASTM-D422-R0.xls_10.xls

Checked By: DPM
Date: 12/13/13

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-3
Depth: 0-6"
Sample Number: TI-CS03-02A(0-6")
Sampled Date: 11/12/2013
Test Date: 12/11/2013

Sampled By: MWH
Technician: DPM

Hydrometer Data

Test Configuration

Hydrometer Type: 152H
Specific Gravity: 2.65
Deflocculant: Sodium Hexametaphosphate
Deflocculant Correction: 6.0
Specific Gravity Correction Factor - α: 1.00

Total Wet Weight of Sample (g): 12,025.00
Total Dry Weight of Sample (g): 11,659.26
Wet Weight of Sub-Sample (g): 54.113
Dry Weight of Sub-Sample (g): 50.658
Corrected Dry Weight of Sub-Sample - W(g): 110.127

Elapsed Time (min)	Hydrometer Reading	Corrected Hydrometer Reading	Temperature (°C)	Temperature Coefficient (K)	Effective Depth (L)	Grain Diameter (mm)	Percent in Suspension (%)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
0	-	-	-	-	-	-	-	-	-
1	32.0	26.0	19.7	0.0138	11.05	0.0459	23.6	2756.41	23.6
2	29.0	23.0	19.7	0.0138	11.54	0.0332	20.9	2438.36	20.9
5	26.0	20.0	19.7	0.0138	12.03	0.0214	18.2	2120.32	18.2
15	23.5	17.5	19.8	0.0138	12.44	0.0126	15.9	1855.28	15.9
30	22.3	16.3	20.0	0.0137	12.65	0.0089	14.8	1722.76	14.8
60	21.0	15.0	20.4	0.0137	12.85	0.0063	13.6	1590.24	13.6
120	19.5	13.5	20.9	0.0137	13.10	0.0045	12.3	1431.21	12.3
250	17.5	11.5	22.4	0.0133	13.42	0.0031	10.5	1219.18	10.5
1440	16.0	10.0	20.4	0.0137	13.67	0.0013	9.1	1060.16	9.1

Data Entered By: KMR
Date: 12/13/2013
File Name: 2512_77_hydrometer-ASTM-D422-R0.xls_10.xls

Checked By: DPM
Date: 12/13/13

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-6
Depth: 0-7"
Sample Number: TI-CS06-02A(0-7")
Sampled Date: 11/13/2013
Test Date: 12/5/2013

Sampled By: MWH
Technician: CAL

Grain Size Data

Hygroscopic Moisture of Fines

Weight of Wet Soil & Pan (g): 118.66
Weight of Dry Soil & Pan (g): 112.58
Weight of Water (g): 6.08
Weight of Pan (g): 3.69
Weight of Dry Soil (g): 108.89
Moisture (%): 5.6

General Sample Data

Total Wet Weight of Sample (g): 8,880.00
Total Dry Weight of Sample (g): 8,635.72
Calculated Weight Plus #200 (g): 5,779.94
Moisture of Total Sample (%): 2.8
Percent Retained #200 Sieve (%): 66.9

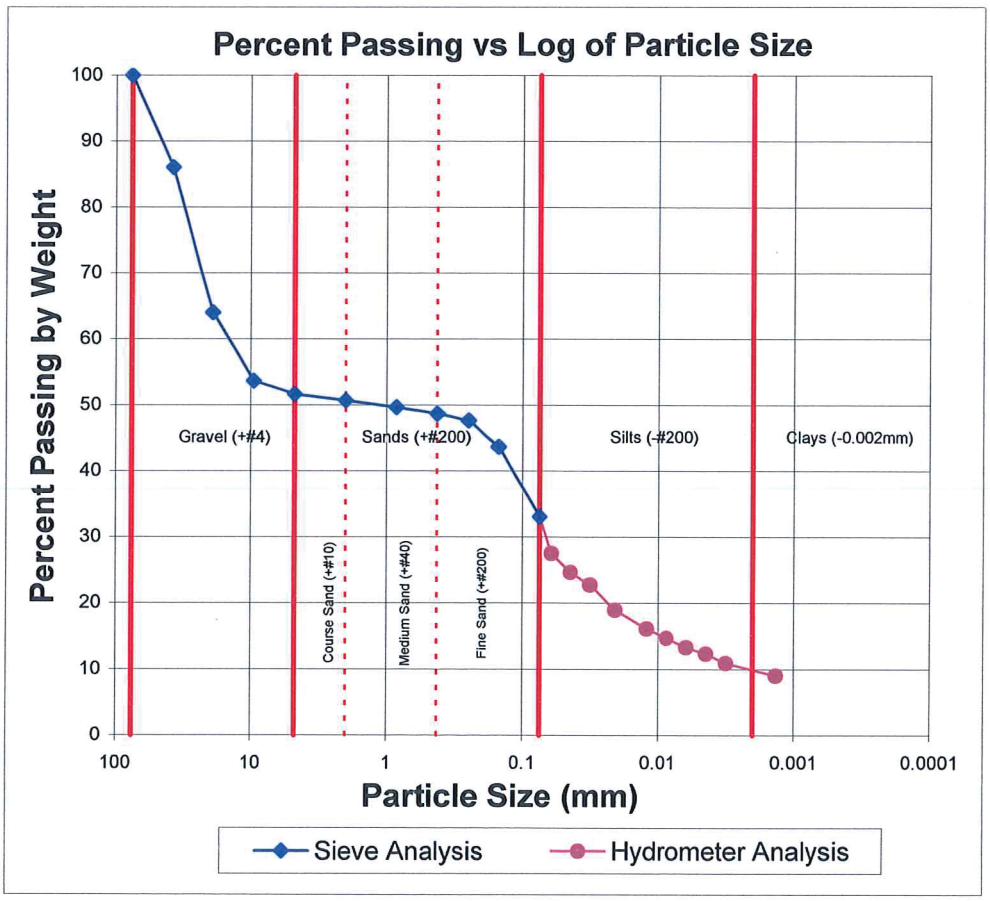
Plus Split Data

Original Weight of +#10 (g): 4,420.00
Calculated Weight of +#10 (g): 4,260.84

Minus Split Data

Original Weight of -#10 (g): 4,460.00
Calculated Dry Weight of -#10 (g): 4,374.88

Sieve Number	Sieve Size (mm)	Weight of Retained Soil & Pan (g)	Weight of Pan (g)	Weight of Retained Soil (g)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
3"	76.2	0.00	0.00	0.00	0.00	100.0
1.5"	38.10	1206.82	0.00	1206.82	1206.82	86.0
3/4"	19.05	1901.60	0.00	1901.60	1901.60	64.0
3/8"	9.525	896.62	0.00	896.62	896.62	53.6
#4	4.750	172.60	0.00	172.60	172.60	51.6
#10	2.000	83.20	0.00	83.20	83.20	50.7
56.524g split out of -#10 material.						
#20	0.850	4.77	3.70	1.07	87.60	49.6
#40	0.425	4.97	3.90	1.07	87.03	48.6
#60	0.250	4.82	3.77	1.05	86.05	47.6
#100	0.150	7.90	3.69	4.21	343.80	43.7
#200	0.075	14.82	3.63	11.19	914.61	33.1



Data Entered By: KMR
Date: 12/11/2013
File Name: 2512_77_hydrometer-ASTM-D422-R0.xls_6.xls

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Date: 12/11/13

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-6
Depth: 0-7"
Sample Number: TI-CS06-02A(0-7")
Sampled Date: 11/13/2013
Test Date: 12/5/2013

Sampled By: MWH
Technician: CAL

Hydrometer Data

Test Configuration

Hydrometer Type: 152H
Specific Gravity: 2.65
Deflocculant: Sodium Hexametaphosphate
Deflocculant Correction: 7.0
Specific Gravity Correction Factor - α: 1.00

Total Wet Weight of Sample (g): 8,880.00
Total Dry Weight of Sample (g): 8,635.72
Wet Weight of Sub-Sample (g): 56.524
Dry Weight of Sub-Sample (g): 53.535
Corrected Dry Weight of Sub-Sample - W(g): 105.591

Elapsed Time (min)	Hydrometer Reading	Corrected Hydrometer Reading	Temperature (°C)	Temperature Coefficient (K)	Effective Depth (L)	Grain Diameter (mm)	Percent in Suspension (%)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
0	-	-	-	-	-	-	-	-	-
0.5	36.0	29.0	21.3	0.0135	10.39	0.0615	27.5	2374.98	27.5
1	33.0	26.0	21.3	0.0135	10.88	0.0445	24.7	2129.29	24.7
2	31.0	24.0	21.3	0.0135	11.21	0.0319	22.8	1965.50	22.8
5	27.0	20.0	21.6	0.0135	11.87	0.0208	19.0	1637.92	19.0
15	24.0	17.0	21.7	0.0135	12.36	0.0122	16.1	1392.23	16.1
30	22.5	15.5	22.2	0.0133	12.60	0.0086	14.7	1269.39	14.7
60	21.0	14.0	22.0	0.0133	12.85	0.0062	13.3	1146.54	13.3
120	20.0	13.0	21.8	0.0135	13.01	0.0044	12.3	1064.65	12.3
250	18.5	11.5	20.2	0.0137	13.26	0.0031	10.9	941.80	10.9
1440	16.5	9.5	18.7	0.0140	13.59	0.0014	9.0	778.01	9.0

Data Entered By: KMR
Date: 12/11/2013
File Name: 2512_77_hydrometer-ASTM-D422-R0.xls_6.xls

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Date: 12/11/13

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-6
Depth: 7-24"
Sample Number: TI-CS06-04A(7-24")
Sampled Date: 11/13/2013
Test Date: 12/2/2013

Sampled By: MWH
Technician: CAL

Grain Size Data

Hygroscopic Moisture of Fines

Weight of Wet Soil & Pan (g): 125.91
Weight of Dry Soil & Pan (g): 120.93
Weight of Water (g): 4.98
Weight of Pan (g): 3.70
Weight of Dry Soil (g): 117.23
Moisture (%): 4.2

General Sample Data

Total Wet Weight of Sample (g): 4,129.13
Total Dry Weight of Sample (g): 3,972.23
Calculated Weight Plus #200 (g): 1,622.70
Moisture of Total Sample (%): 3.9
Percent Retained #200 Sieve (%): 40.9

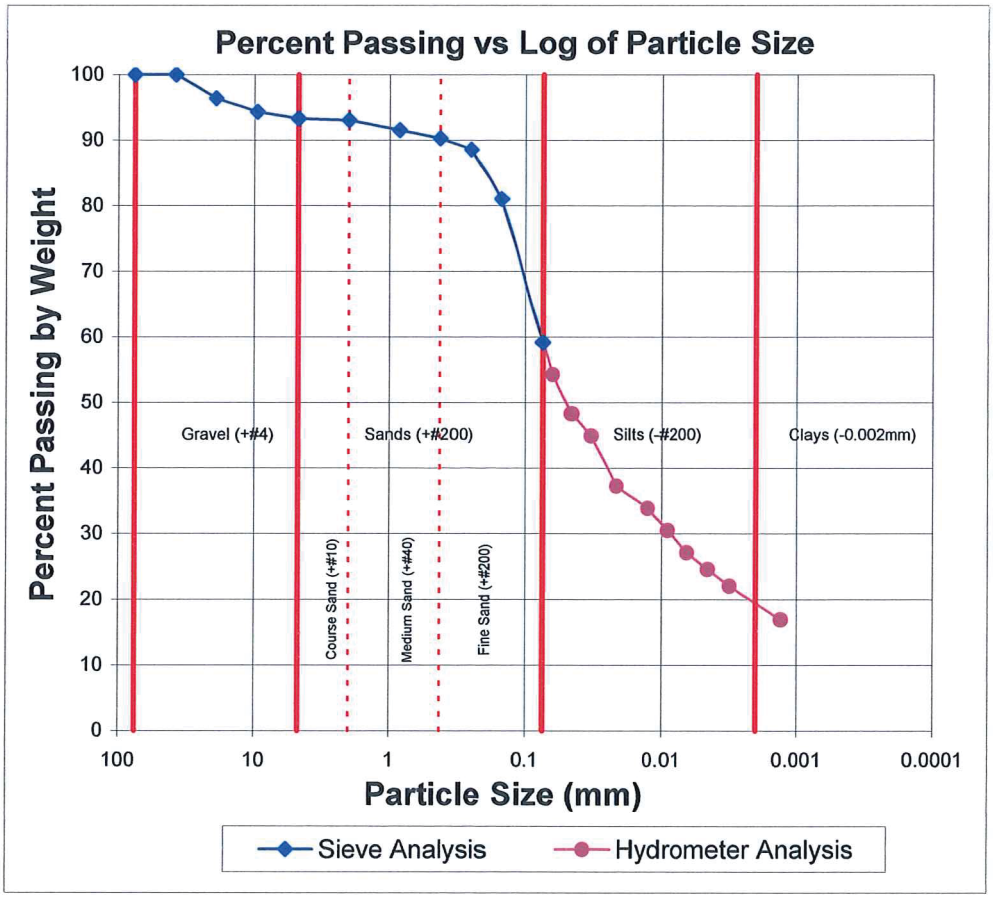
Plus Split Data

Original Weight of +#10 (g): 297.31
Calculated Weight of +#10 (g): 276.49

Minus Split Data

Original Weight of -#10 (g): 3,831.82
Calculated Dry Weight of -#10 (g): 3,695.74

Sieve Number	Sieve Size (mm)	Weight of Retained Soil & Pan (g)	Weight of Pan (g)	Weight of Retained Soil (g)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
3"	**76.2**	0.00	0.00	0.00	0.00	100.0
1.5"	**38.10**	0.00	0.00	0.00	0.00	100.0
3/4"	**19.05**	144.72	0.00	144.72	144.72	96.4
3/8"	**9.525**	80.77	0.00	80.77	80.77	94.3
#4	**4.750**	40.75	0.00	40.75	40.75	93.3
#10	**2.000**	10.25	0.00	10.25	10.25	93.0
57.274g split out of -#10 material.						
#20	**0.850**	4.50	3.62	0.89	59.53	91.5
#40	**0.425**	4.45	3.68	0.76	51.39	90.2
#60	**0.250**	4.58	3.56	1.02	68.48	88.5
#100	**0.150**	8.04	3.62	4.42	297.25	81.0
#200	**0.075**	16.69	3.76	12.93	869.56	59.1



Data Entered By: KMR
Date: 12/6/2013
File Name: 2512_77_hydrometer-ASTM-D422-R0.xls_0.xls

Checked By: DPM
Date: 11/04/13

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-6
Depth: 7-24"
Sample Number: TI-CS06-04A(7-24")
Sampled Date: 11/13/2013
Test Date: 12/2/2013

Sampled By: MWH
Technician: CAL

Hydrometer Data

Test Configuration

Hydrometer Type: 152H
Specific Gravity: 2.65
Deflocculant: Sodium Hexametaphosphate
Deflocculant Correction: 8.0
Specific Gravity Correction Factor - α: 1.00

Total Wet Weight of Sample (g): 4,129.13
Total Dry Weight of Sample (g): 3,972.23
Wet Weight of Sub-Sample (g): 57.274
Dry Weight of Sub-Sample (g): 54.941
Corrected Dry Weight of Sub-Sample - W(g): 59.077

Elapsed Time (min)	Hydrometer Reading	Corrected Hydrometer Reading	Temperature (°C)	Temperature Coefficient (K)	Effective Depth (L)	Grain Diameter (mm)	Percent in Suspension (%)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
0	-	-	-	-	-	-	-	-	-
0.5	40.0	32.0	16.1	0.0144	9.73	0.0633	54.2	2154.56	54.2
1	36.5	28.5	16.1	0.0144	10.31	0.0461	48.3	1918.91	48.3
2	34.5	26.5	16.1	0.0144	10.64	0.0331	44.9	1784.25	44.9
5	30.0	22.0	16.2	0.0144	11.37	0.0216	37.3	1481.26	37.3
15	28.0	20.0	16.3	0.0144	11.70	0.0127	33.9	1346.60	33.9
30	26.0	18.0	16.7	0.0144	12.03	0.0091	30.5	1211.94	30.5
60	24.0	16.0	17.4	0.0142	12.36	0.0064	27.1	1077.28	27.1
120	22.5	14.5	18.1	0.0140	12.60	0.0045	24.6	976.29	24.6
250	21.0	13.0	19.8	0.0138	12.85	0.0031	22.0	875.29	22.0
1440	18.0	10.0	20.1	0.0137	13.34	0.0013	17.0	673.30	17.0

Data Entered By: KMR
Date: 12/6/2013
File Name: 2512_77_hydrometer-ASTM-D422-R0.xls_0.xls

Checked By: DPM
Date: 12/09/13

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-8
Depth: 0-8"
Sample Number: TI-CS08-02A(0-8")
Sampled Date: 11/13/2013
Test Date: 12/5/2013

Sampled By: MWH
Technician: CAL

Grain Size Data

Hygroscopic Moisture of Fines

Weight of Wet Soil & Pan (g): 118.63
Weight of Dry Soil & Pan (g): 115.18
Weight of Water (g): 3.45
Weight of Pan (g): 3.56
Weight of Dry Soil (g): 111.62
Moisture (%): 3.1

General Sample Data

Total Wet Weight of Sample (g): 10,675.00
Total Dry Weight of Sample (g): 10,535.75
Calculated Weight Plus #200 (g): 7,923.68
Moisture of Total Sample (%): 1.3
Percent Retained #200 Sieve (%): 75.2

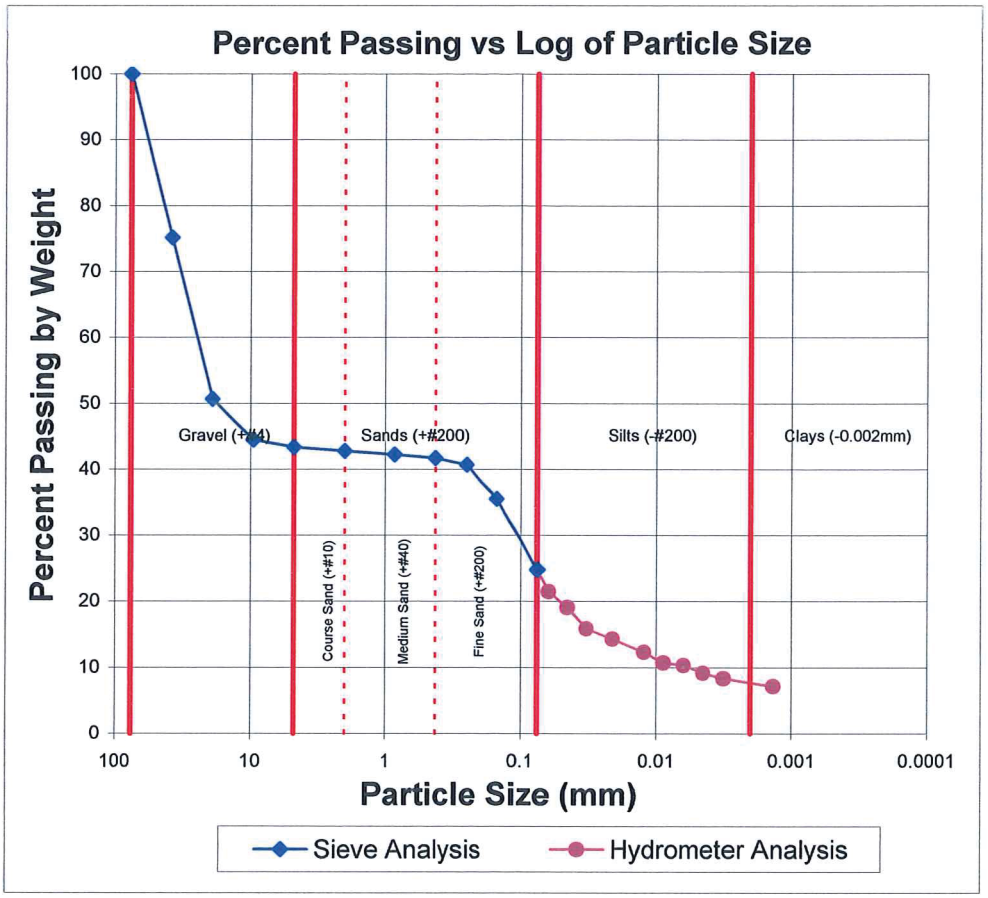
Plus Split Data

Original Weight of +#10 (g): 6,190.00
Calculated Weight of +#10 (g): 6,030.65

Minus Split Data

Original Weight of -#10 (g): 4,485.00
Calculated Dry Weight of -#10 (g): 4,505.10

Sieve Number	Sieve Size (mm)	Weight of Retained Soil & Pan (g)	Weight of Pan (g)	Weight of Retained Soil (g)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
3"	**76.2**	0.00	0.00	0.00	0.00	100.0
1.5"	**38.10**	2615.00	0.00	2615.00	2615.00	75.2
3/4"	**19.05**	2585.00	0.00	2585.00	2585.00	50.6
3/8"	**9.525**	650.00	0.00	650.00	650.00	44.5
#4	**4.750**	120.00	0.00	120.00	120.00	43.3
#10	**2.000**	60.65	0.00	60.65	60.65	42.8
55.584g split out of -#10 material.						
#20	**0.850**	4.50	3.82	0.68	57.07	42.2
#40	**0.425**	4.39	3.74	0.65	54.48	41.7
#60	**0.250**	4.85	3.57	1.29	107.54	40.7
#100	**0.150**	10.17	3.63	6.54	546.29	35.5
#200	**0.075**	17.15	3.65	13.50	1127.67	24.8



Data Entered By: KMR
Date: 12/11/2013
File Name: 2512_77_hydrometer-ASTM-D422-R0.xls_5.xls

Checked By: DPM
Date: 12/11/13

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-8
Depth: 0-8"
Sample Number: TI-CS08-02A(0-8")
Sampled Date: 11/13/2013
Test Date: 12/5/2013

Sampled By: MWH
Technician: CAL

Hydrometer Data

Test Configuration

Hydrometer Type: 152H
Specific Gravity: 2.65
Deflocculant: Sodium Hexametaphosphate
Deflocculant Correction: 7.0
Specific Gravity Correction Factor - α: 1.00

Total Wet Weight of Sample (g): 10,675.00
Total Dry Weight of Sample (g): 10,535.75
Wet Weight of Sub-Sample (g): 55.584
Dry Weight of Sub-Sample (g): 53.917
Corrected Dry Weight of Sub-Sample - W(g): 125.975

Elapsed Time (min)	Hydrometer Reading	Corrected Hydrometer Reading	Temperature (°C)	Temperature Coefficient (K)	Effective Depth (L)	Grain Diameter (mm)	Percent in Suspension (%)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
0	-	-	-	-	-	-	-	-	-
0.5	34.0	27.0	21.5	0.0135	10.72	0.0624	21.5	2261.18	21.5
1	31.0	24.0	21.5	0.0135	11.21	0.0451	19.1	2009.94	19.1
2	27.0	20.0	21.5	0.0135	11.87	0.0328	15.9	1674.95	15.9
5	25.0	18.0	21.6	0.0135	12.19	0.0211	14.3	1507.45	14.3
15	22.5	15.5	21.7	0.0135	12.60	0.0124	12.3	1298.09	12.3
30	20.5	13.5	21.9	0.0135	12.93	0.0089	10.7	1130.59	10.7
60	20.0	13.0	21.9	0.0135	13.01	0.0063	10.3	1088.72	10.3
120	18.5	11.5	21.1	0.0135	13.26	0.0045	9.1	963.10	9.1
250	17.5	10.5	20.5	0.0137	13.42	0.0032	8.3	879.35	8.3
1440	16.0	9.0	18.9	0.0140	13.67	0.0014	7.2	753.73	7.2

Data Entered By: KMR
Date: 12/11/2013
File Name: 2512_77_hydrometer-ASTM-D422-R0.xls_5.xls

Checked By: DPW
Date: 12/11/13

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-8
Depth: 8-28"
Sample Number: TI-CS08-04A(8-28")
Sampled Date: 11/13/2013
Test Date: 12/2/2013

Sampled By: MWH
Technician: CAL

Grain Size Data

Hygroscopic Moisture of Fines

Weight of Wet Soil & Pan (g): 128.22
Weight of Dry Soil & Pan (g): 125.73
Weight of Water (g): 2.49
Weight of Pan (g): 3.72
Weight of Dry Soil (g): 122.01
Moisture (%): 2.0

General Sample Data

Total Wet Weight of Sample (g): 4,694.51
Total Dry Weight of Sample (g): 4,611.22
Calculated Weight Plus #200 (g): 2,135.59
Moisture of Total Sample (%): 1.8
Percent Retained #200 Sieve (%): 46.3

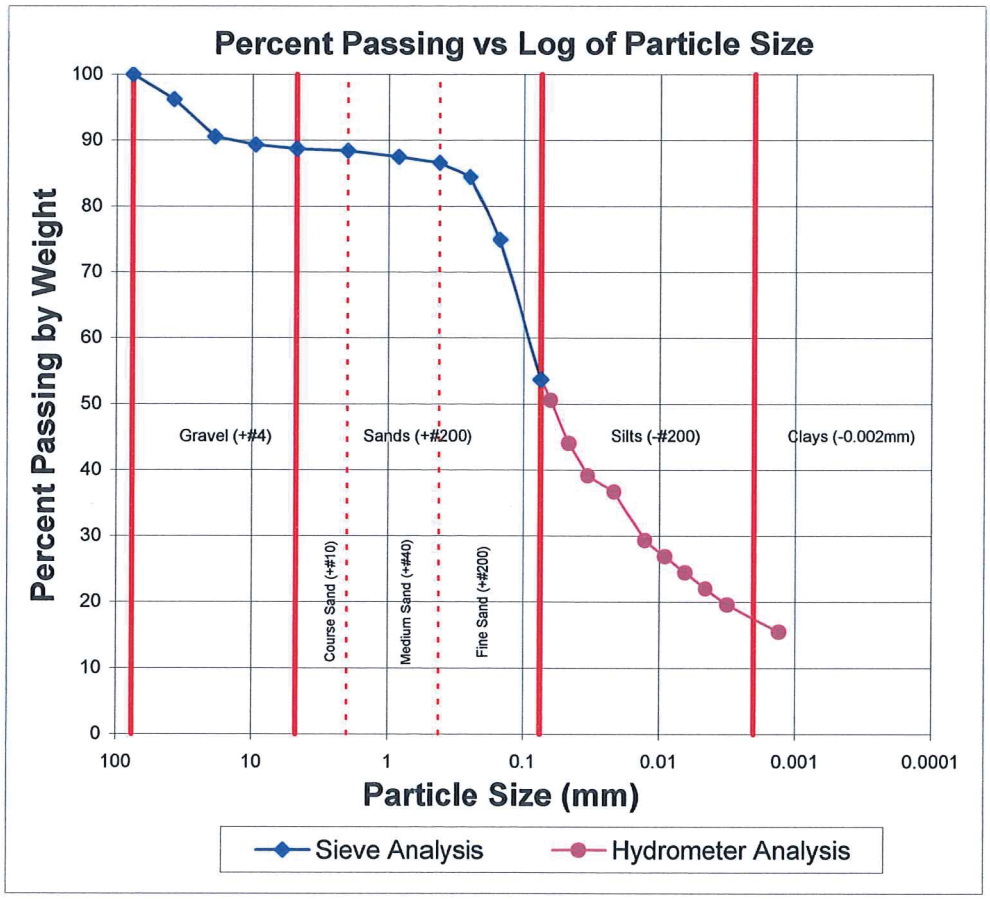
Plus Split Data

Original Weight of +#10 (g): 551.32
Calculated Weight of +#10 (g): 535.20

Minus Split Data

Original Weight of -#10 (g): 4,143.19
Calculated Dry Weight of -#10 (g): 4,076.02

Sieve Number	Sieve Size (mm)	Weight of Retained Soil & Pan (g)	Weight of Pan (g)	Weight of Retained Soil (g)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
3"	**76.2**	0.00	0.00	0.00	0.00	100.0
1.5"	**38.10**	175.09	0.00	175.09	175.09	96.2
3/4"	**19.05**	261.02	0.00	261.02	261.02	90.5
3/8"	**9.525**	54.75	0.00	54.75	54.75	89.4
#4	**4.750**	31.10	0.00	31.10	31.10	88.7
#10	**2.000**	13.24	0.00	13.24	13.24	88.4
55.178g split out of -#10 material.						
#20	**0.850**	4.34	3.77	0.57	42.67	87.5
#40	**0.425**	4.22	3.67	0.56	41.99	86.6
#60	**0.250**	5.06	3.75	1.31	98.82	84.4
#100	**0.150**	9.65	3.82	5.82	439.01	74.9
#200	**0.075**	16.77	3.80	12.97	977.90	53.7



Data Entered By: KMR
Date: 12/9/2013
File Name: 2512_77_hydrometer-ASTM-D422-R0.xls_1.xls

Checked By: DPM
Date: 12/09/13

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-8
Depth: 8-28"
Sample Number: TI-CS08-04A(8-28")
Sampled Date: 11/13/2013
Test Date: 12/2/2013

Sampled By: MWH
Technician: CAL

Hydrometer Data

Test Configuration

Hydrometer Type: 152H
Specific Gravity: 2.67
Deflocculant: Sodium Hexametaphosphate
Deflocculant Correction: 8.0
Specific Gravity Correction Factor - α: 1.00

Total Wet Weight of Sample (g): 4,694.51
Total Dry Weight of Sample (g): 4,611.22
Wet Weight of Sub-Sample (g): 55.178
Dry Weight of Sub-Sample (g): 54.073
Corrected Dry Weight of Sub-Sample - W(g): 61.169

Elapsed Time (min)	Hydrometer Reading	Corrected Hydrometer Reading	Temperature (°C)	Temperature Coefficient (K)	Effective Depth (L)	Grain Diameter (mm)	Percent in Suspension (%)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
0	-	-	-	-	-	-	-	-	-
0.5	39.0	31.0	16.3	0.0144	9.90	0.0639	50.5	2330.36	50.5
1	35.0	27.0	16.3	0.0144	10.55	0.0466	44.0	2029.67	44.0
2	32.0	24.0	16.3	0.0144	11.05	0.0337	39.1	1804.15	39.1
5	30.5	22.5	16.4	0.0144	11.29	0.0216	36.7	1691.39	36.7
15	26.0	18.0	16.5	0.0144	12.03	0.0129	29.3	1353.11	29.3
30	24.5	16.5	16.9	0.0144	12.28	0.0092	26.9	1240.35	26.9
60	23.0	15.0	17.6	0.0142	12.52	0.0065	24.5	1127.59	24.5
120	21.5	13.5	18.1	0.0140	12.77	0.0046	22.0	1014.83	22.0
250	20.0	12.0	19.9	0.0138	13.01	0.0032	19.6	902.08	19.6
1440	17.5	9.5	20.1	0.0137	13.42	0.0013	15.5	714.14	15.5

Data Entered By: KMR
Date: 12/9/2013
File Name: 2512_77_hydrometer-ASTM-D422-R0.xls_1.xls

Checked By: DPM
Date: 12/09/13

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-9
Depth: 0-9"
Sample Number: TI-CS09-02A(0-9")
Sampled Date: 11/13/2013
Test Date: 12/5/2013

Sampled By: MWH
Technician: CAL

Grain Size Data

Hygroscopic Moisture of Fines

Weight of Wet Soil & Pan (g): 119.55
Weight of Dry Soil & Pan (g): 115.83
Weight of Water (g): 3.72
Weight of Pan (g): 3.58
Weight of Dry Soil (g): 112.25
Moisture (%): 3.3

General Sample Data

Total Wet Weight of Sample (g): 9,180.00
Total Dry Weight of Sample (g): 9,043.04
Calculated Weight Plus #200 (g): 6,131.44
Moisture of Total Sample (%): 1.5
Percent Retained #200 Sieve (%): 67.8

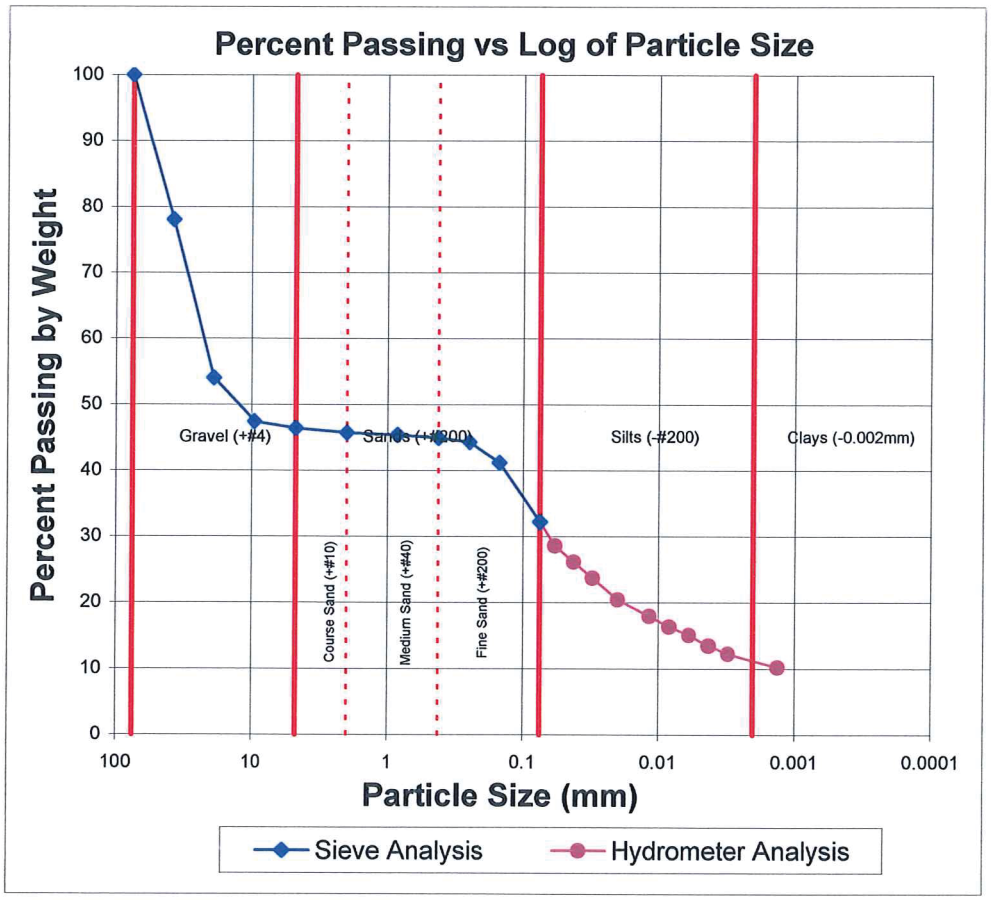
Plus Split Data

Original Weight of +#10 (g): 4,980.00
Calculated Weight of +#10 (g): 4,910.20

Minus Split Data

Original Weight of -#10 (g): 4,200.00
Calculated Dry Weight of -#10 (g): 4,132.84

Sieve Number	Sieve Size (mm)	Weight of Retained Soil & Pan (g)	Weight of Pan (g)	Weight of Retained Soil (g)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
3"	**76.2**	0.00	0.00	0.00	0.00	100.0
1.5"	**38.10**	1985.00	0.00	1985.00	1985.00	78.0
3/4"	**19.05**	2175.00	0.00	2175.00	2175.00	54.0
3/8"	**9.525**	595.00	0.00	595.00	595.00	47.4
#4	**4.750**	94.53	0.00	94.53	94.53	46.4
#10	**2.000**	60.67	0.00	60.67	60.67	45.7
57.839g split out of -#10 material.						
#20	**0.850**	4.27	3.84	0.43	31.52	45.4
#40	**0.425**	4.39	3.84	0.55	40.82	44.9
#60	**0.250**	4.50	3.75	0.75	55.15	44.3
#100	**0.150**	7.54	3.71	3.83	282.81	41.2
#200	**0.075**	14.68	3.70	10.99	810.94	32.2



Data Entered By: KMR
Date: 12/11/2013
File Name: 2512_77_hydrometer-ASTM-D422-R0.xls_4.xls

Checked By: DAM
Date: 12/11/13

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-9
Depth: 0-9"
Sample Number: TI-CS09-02A(0-9")
Sampled Date: 11/13/2013
Test Date: 12/5/2013

Sampled By: MWH
Technician: CAL

Hydrometer Data

Test Configuration

Hydrometer Type: 152H
Specific Gravity: 2.65
Deflocculant: Sodium Hexametaphosphate
Deflocculant Correction: 7.0
Specific Gravity Correction Factor - α: 1.00

Total Wet Weight of Sample (g): 9,180.00
Total Dry Weight of Sample (g): 9,043.04
Wet Weight of Sub-Sample (g): 57.839
Dry Weight of Sub-Sample (g): 55.984
Corrected Dry Weight of Sub-Sample - W(g): 122.503

Elapsed Time (min)	Hydrometer Reading	Corrected Hydrometer Reading	Temperature (°C)	Temperature Coefficient (K)	Effective Depth (L)	Grain Diameter (mm)	Percent in Suspension (%)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
0	-	-	-	-	-	-	-	-	-
0.5	42.0	35.0	21.5	0.0135	9.41	0.0585	28.6	2587.19	28.6
1	39.0	32.0	21.5	0.0135	9.90	0.0424	26.2	2365.43	26.2
2	36.0	29.0	21.5	0.0135	10.39	0.0307	23.7	2143.67	23.7
5	32.0	25.0	21.5	0.0135	11.05	0.0200	20.4	1848.00	20.4
15	29.0	22.0	22.0	0.0133	11.54	0.0117	18.0	1626.24	18.0
30	27.0	20.0	22.2	0.0133	11.87	0.0084	16.3	1478.40	16.3
60	25.5	18.5	22.1	0.0133	12.11	0.0060	15.1	1367.52	15.1
120	23.5	16.5	22.0	0.0133	12.44	0.0043	13.5	1219.68	13.5
250	22.0	15.0	20.3	0.0137	12.69	0.0031	12.3	1108.80	12.3
1440	19.5	12.5	18.9	0.0140	13.10	0.0013	10.2	924.00	10.2

Data Entered By: KMR
Date: 12/11/2013
File Name: 2512_77_hydrometer-ASTM-D422-R0.xls_4.xls

Checked By: PPM
Date: 12/11/13

ATT
ADVANCED TERRA TESTING